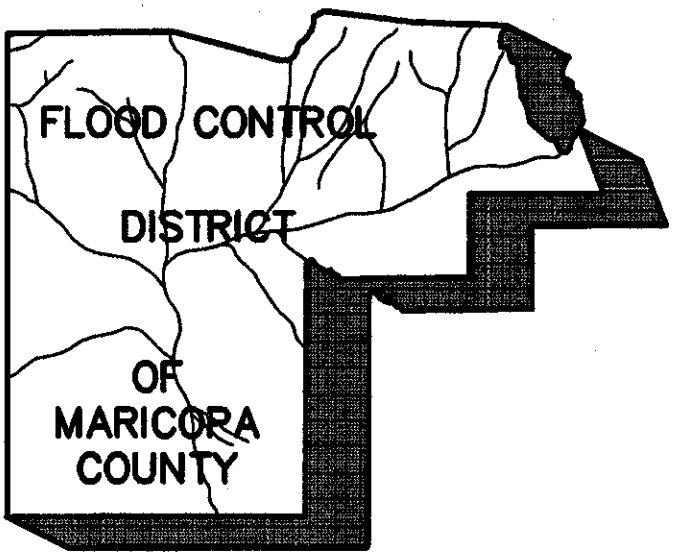
CAVE CREEK WATERSHED

VOLUME 1.7

ARIZONA CANAL DIVERSION CHANNEL AREA DRAINAGE MASTER STUDY

ACDC/ADMS PHASE 1



HYDROLOGY REPORT

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HYDROLOGY REPORT

May, 1993

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CAVE CREEK WATERSHED
HYDROLOGY REPORT

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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 Cave Creek for both existing and future condition as part of the Arizona Canal Diversion Channel (ACDC) Area Drainage Master Study (ADMS). Cave Creek drains approximately 36 square miles of rapidly developing desert land from its confluence with the ACDC to Cave Buttes Dam as indicated in Figure 1. The low-level outflow from Cave Buttes Dam is considered in the analysis to account for the watershed contributing to the dam.

Within the watershed, various improvements have been constructed along East Fork Cave Creek, a major tributary to Cave Creek, since the previous Cave Creek Floodplain Delineation Study (Ref. 3). These improvements include the channelization of East Fork Cave Creek between Beardsley Road and Union Hills Drive and the construction of Detention Basin Nos. 1, 3a, 3b and 4. Future drainage improvements within the watershed include the channelization of Cave Creek between Bell Road and Union Hills Drive, the construction of Detention Basin Nos. 2 and 5, and the construction of the Outer Loop Highway.

This report presents the hydrologic analysis of Cave Creek for both existing and future conditions upstream of its confluence with the ACDC and downstream of Cave Buttes Dam. Table 1 summarizes the computed peak discharges for existing conditions resulting from a 24-hour duration storm at specific locations along Cave Creek. Table 2 presents the computed peak discharges for future conditions corresponding to a 24-hour duration storm.

TABLE 1

24-Hour Peak Discharge (Existing Conditions)

Location	Drainage Area (Sq. Mi.)	2-Yr. (cfs)	10-Yr. (cfs)	100-Yr. (cfs)
Above the Central Arizona Project Canal	4.11	67	878	2,879
Below Beardsley Road	5.90	89	1,052	3,659
Above East Fork Cave Creek	8.94	184	1,297	4,450
Below East Fork Cave Creek	23.47	1,545	4,231	10,123
Above Moon Valley Wash	26.33	1,981	4,956	11,646
Below Moon Valley Wash	33.63	2,224	5,750	14,239
Above the ACDC	35.20	2,201	5,714	14,032

TABLE 2

24-Hour Peak Discharge (Future Conditions)

Location	Drainage Area (Sq. Mi.)	2-Yr. (cfs)	10-Yr. (cfs)	100-Yr. (cfs)
Above the Central Arizona Project Canal	4.15	304	1,324	3,292
Below Beardsley Road	7.01	455	1,704	4,917
Above East Fork Cave Creek	8.87	533	1,918	5,460
Below East Fork Cave Creek	23.23	2,523	5,249	10,561
Above Moon Valley Wash	26.66	2,995	6,182	12,649
Below Moon Valley Wash	33.96	3,417	7,322	16,668
Above the ACDC	35.53	3,390	7,292	16,418

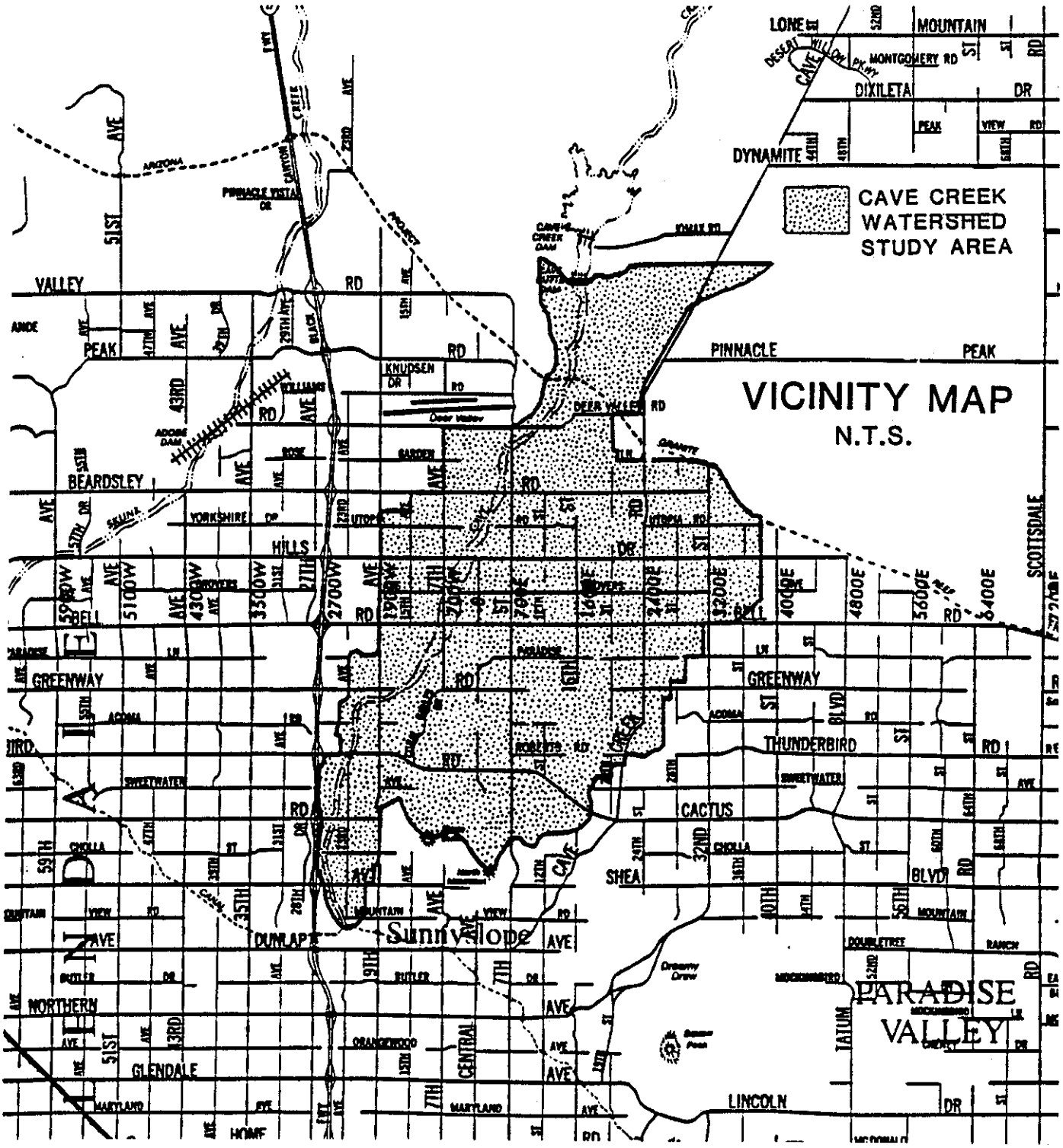

FIGURE 1 - VICINITY MAP (Ref. 3)

2.0 INTRODUCTION

A hydrologic analysis of Cave Creek for both existing and future conditions was developed 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 reach of Cave Creek is from its confluence with the ACDC on the south and Cave Buttes Dam on the north.

A previous hydrologic investigation of Cave Creek between the ACDC and Cave Buttes Dam was performed by Burgess and Niple, Inc. for the FCDMC in January 1990 (Ref. 3). This analysis served as the foundation for sub-basin delineations for existing conditions. However, the increased urbanization within the watershed and the construction of drainage improvements within the East Fork Cave Creek subwatershed have necessitated a revision to this hydrologic analysis.

The future sub-basin delineations for the East Fork Cave Creek closely followed the delineations presented by NBS Lowry (Ref. 26 & 29). The hydrologic and concept drainage plans for the Outer Loop Highway as presented by DeLeuw Cather and Company (Ref. 13) was incorporated into the future condition analysis. However, the KHE sub-basin delineations combined the smaller sub-basins from the above two analysis into larger sub-basins. Careful attention was placed on maintaining hydrologic consistency when combining the smaller sub-basins into larger sub-basins.

This report presents the existing and future hydrologic analysis for Cave Creek between the ACDC and Cave Buttes Dam. This report also contains the hydrologic assumptions and methodology necessary to determine the peak discharges.

3.0 STUDY PARAMETERS

3.1 Study Area

Cave Creek has a watershed area of approximately 36 square miles between the ACDC and Cave Buttes Dam. Approximately 191 square miles of watershed contributes to Cave Buttes Dam, which for this study will only be considered as an outflow from the dam. The Cave Creek watershed is bound to the north by Cave Buttes Dam and its levee system. The northerly boundary east of Cave Creek Road is set by the CAP Canal. The southerly boundary is set by the ACDC and the Phoenix Mountains. The westerly and easterly boundaries are variable and contain areas where flow is diverted out of the watershed.

Two sub-watersheds or tributaries contribute runoff to Cave Creek. The largest of the two tributaries is East Fork Cave Creek, which outfalls into Cave Creek east of 19th Avenue along the Greenway Parkway alignment. The East Fork Cave Creek watershed is approximately 14.5 square miles and extends northeasterly from its confluence with Cave Creek to the CAP Canal. As a part of the implementation of the Upper East Fork Cave Creek Area Drainage Master Study (Ref. 26), four detention basins (Nos. 1, 3a, 3b & 4) have been constructed with two detention basins (Nos. 2 & 5) planned for the future. The master plans include the construction of a two-year storm drain network which also will convey the 100-year storm outflow from the detention basins to the Greenway Channel (Ref. 29).

The second tributary is Moon Valley Wash which outfalls into Cave Creek west of 19th Avenue along the Sweetwater Channel. The Moon Valley Wash watershed is approximately 7.3 square miles of highly urbanized area with steep mountains along its easterly and southerly boundaries. The watershed contains three detention basins (Nos. 2a, 2b & 7) which are included in the computer model.

The future Outer Loop Highway (OLH) will be a significant feature that will affect drainage patterns within the watershed. The OLH interceptor channel will convey flows north of the freeway from approximately 20th Street westward to Cave Creek. Another channel will convey flows north of the freeway eastward from 20th Street to the East Fork Cave Creek. Flows east of Cave Creek Road, downstream of the CAP Canal and north of the OLH will be collected and conveyed by a channel to the East Fork Cave Creek.

3.2 Mapping

The available mapping utilized in this study are as follows:

1. **FCDMC Mapping:** The Cave Creek watershed was flown as a 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 September 1990 and February 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:** Union Hills and Sunnyslope, 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 and 1982.

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. **Construction Plans:** Construction plans for drainage structures associated with Cave Creek Road, Union Hills Drive, Bell Road, Greenway Parkway, Thunderbird Road, 19th Avenue, 7th Avenue, 7th Street, 32nd Street and Coral Gables Drive were used for routing and sub-basin delineation purposes. Construction plans for Detention Basin Nos. 1, 3a, 3b and 4 were utilized for routing purposes. Construction plans for the Upper East Fork Cave Creek drainage channel were used for flow routing purposes. Preliminary construction drawings for the OLH were used to locate the alignment for future sub-basin delineations and location of drainage structures.

6. **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.

7. **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 within the watershed were identified. The flow paths of all major mile and half-mile streets were identified. Some drainage patterns were documented for local streets.

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-hour 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 limited to a maximum of five square miles in area;

5. The S-graph method will be utilized;

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

7. The S-graph parameter, basin lag, will be estimated using the equation presented in the FCDMC's Drainage Design Manual (Ref. 17). The previously accepted 100-year peak discharge results for the Cave Creek watershed (Ref. 3 & 26) will be used to calibrate the KHE 100-year hydrologic model. This calibration will provide the most reliable estimates of hydraulic efficiency of the watershed, Kn, and basin lag.

8. The Maricopa County Unit Hydrograph Procedure 2 (MCUHP2) computer program, as provided by the FCDMC, will be used to convert an S-graph into a unit-graph and generate the necessary basin HEC-1 input file with the appropriate rainfall pattern distribution.

9. Rainfall distributions and depth-area relations for the 6-hour and 24-hour storm duration will be based on FCDMC data, as presented in the Drainage Design Manual (Ref. 17). This data is included in the MCUHP2 program to develop areal reduction for the watershed.

10. Cave Buttes Dam was assumed to retain the 100-year storm runoff volume contributing from the upstream watershed. For the purpose of this analysis, it was assumed that the low level outlet discharges 420 cfs when the 100-year storm volume is detained (Ref. 39). The low level discharge for a 10-year storm was estimated to be 325 cfs.

11. Existing and future flow rates are to be determined.

12. 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 (Kn), the exclusion of transmission losses has little impact on the flow peaks and volumes.

4.0 HYDROLOGY

4.1 General

The existing and future hydrology for the Cave 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 Cave Creek watershed was modeled using the COE HEC-1 computer program. The May, 1991, version of HEC-1 was used for this study. The S-graph method was used to represent runoff characteristics for the watershed and converted to a Unit-graph using the FCDMC's MCUHP2 program for input into the HEC-1 computer model. The HEC-1 modeling also included allowances for Green-Ampt infiltration losses, Muskingum-Cunge channel routing, storage routing, and combining and diversion of sub-basin hydrographs. This section describes the assumptions and methodologies used to develop the HEC-1 computer model for existing and future conditions within the Cave Creek watershed.

4.2 Previous Hydrologic Investigations

Previous hydrologic investigations of the watershed were reviewed for historical, as well as, hydrologic information that could be used as 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 Cave Creek watershed are presented below.

North Central Area Master Storm Drainage Study (East Half)(Ref. 4)

In 1981, a hydrologic investigation was undertaken by Cella Barr Associates to develop a storm drainage plan for the area bounded by the CAP Canal on the north, 32nd Street on the east, the ridge line of mountains north of the Moon Valley Wash watershed on the south, and Cave Creek on the west. This area, also called the East Fork Cave Creek, drains approximately 16 square miles of rapidly developing desert land.

The study utilized the Soil Conservation Service (SCS) TR-20 computer model to evaluate the existing conditions for the 1-, 2-, 5-, 10-, 50- and 100-year 24-hour duration storms. However, only the 2-year frequency storm was used for alternative drainage design purposes. The City of Phoenix rainfall distribution was used. Curve numbers were used to describe the infiltration characteristics of the watershed. For onsite retention purposes, commercial and industrial development areas were reduced by 85 percent with the remaining 15 percent as contributing street drainage.

Moon Valley Storm Drainage Study (Ref. 5)

In 1982, a drainage investigation was performed by Cella Barr Associates for the Moon Valley area which is bounded by Thunderbird Road on the south, Moon Hill on the west, a ridge line between Bell Road and Coral Gables Drive on the north, and Lookout Mountain on the east. Moon Valley Wash drains an area of approximately four square miles and flows westward across the watershed to an outlet at the southwest corner of the study area.

The study utilized the SCS TR-20 computer model to determine the existing peak flows for the 1-, 2-, 5-, 10-, 50- and 100-year, 24-hour duration storms. A 2-year storm analysis was used to evaluate alternative storm drainage systems.

Upper East Fork Cave Creek Area Drainage Master Study (Ref. 26)

In 1987, NBS/Lowry undertook a major drainage study of the East Fork Cave Creek watershed to identify and evaluate alternatives for providing 100-year flood protection throughout the area. The approximate 16 square mile watershed is bounded to the north by the CAP Canal, to the south and southeast by the Cave Creek - Indian Bend Wash divide, to the south by Lookout Mountain, and to the west by Cave Creek.

The SCS TR-20 computer model was used to evaluate the 10-, 50-, 100- and 500-year, 24-hour duration storms. The 500-year rainfall depth was extrapolated using Gumbel's extreme value method. The City of Phoenix 24-hour rainfall distribution was used in lieu of the Type II distribution. Curve numbers were used to describe the infiltration characteristics of the watershed. The Modified Attenuated-Kinematic (Att-Kin) routing method was used. A two-dimensional diffusion model was applied as an aid to predict the flood flow paths in alluvial fans.

A total of 144 subwatersheds were delineated for this study and were correlated with those boundaries presented in the North Central Area Master Storm Drainage Study (East Half) (Ref. 4). Calibration and flow path routing of the TR-20 model was based on the 100-year frequency storm. A curve number of 77 was used for future commercial and industrial developments. This low curve number allows the consideration of onsite retention by not increasing future flows above pre-existing conditions.

Four alternatives were considered for providing 100-year flood protection within the watershed. Alternative #4 was chosen for its "multi-use" concept of integrating flood management and recreation. This concept includes channelization of East Fork Cave Creek, the construction of six detention basins, and a storm drain system.

Upper East Fork Cave Creek Detention Area Sizing Study (Ref. 27 & 28)

The purpose of this study was to identify area and volume requirements for six detention basin sites recommended in the Upper East Fork Cave Creek Area Drainage Master Study (Ref. 26). The detention basins were located as follows: Basin No. 1, Upper East Fork at Beardsley Road; Basin No. 2, 9th Street at Union Hills Drive; Basin No. 3a, Upper East Fork at Cave Creek Road; Basin 3b, Upper East Fork at 20th Street; Basin No. 4, Paradise Valley Park; and Basin No. 5, 9th Street at Campo Bello Drive.

The SCS TR-20 computer model was used to evaluate the detention basin hydrology. The detention basins were sized for the 100-year, 24-hour duration storm with the basin outlets sized to limit the peak outflows to the capacity of the City of Phoenix two-year storm drain immediately downstream. Allowances were made to divert flows from two-year storms or smaller around the detention basins to minimize the number of occasions when the basin is inundated. The stage-discharge rating curves were developed using HEC No. 5 procedures (Ref. 45).

Update of North Central Area Master Storm Drainage Study (East Half)(Ref. 29)

The purpose of this study was to update the North Central Area Master Storm Drainage Study (East Half) (Ref. 4) by incorporating the effects of proposed detention basins (Ref. 27 & 28) on the two-year storm drain system. The recommended system will include sufficient capacity to convey the 100-year outflow from the proposed detention basins.

The SCS TR-20 computer model was used to evaluate the rainfall-runoff relationship for a 2-year, 24-hour duration storm. Curve numbers were used to describe the infiltration characteristics of the watershed. The Modified Attenuated-Kinematic (Att-Kin) routing method was used.

Cave Creek Floodplain Delineation (Ref. 3)

A recent hydrologic analysis of existing conditions for the Cave Creek watershed was performed by Burgess and Niple, Inc. for the FCDMC. The watershed area contributing to Cave Creek from the ACDC to Cave Buttes Dam was approximately 34.7 square miles. The watershed area is bounded by Cave Buttes Dam on the north, the CAP Canal east of Cave Creek Road on the northeast, and the Phoenix Mountains on the south. The west and east boundaries are variable and contain areas where flow is diverted out of the watershed.

The HEC-1 computer program was utilized to model the rainfall-runoff relationship for the 10-, 50- and 100-year storms. Each storm frequency was evaluated for the 2-, 6- and 24-hour storm durations. The SCS method was used to develop the unit hydrographs. The estimation of precipitation losses were made using the Initial and Uniform Loss Method. The Muskingum, Normal Depth Channel-Modified Puls, and Kinematic Wave methods were utilized for reach routing. The SCS TR-55 procedures were used to calculate the time of concentration.

Onsite retention calculations were performed using a 10-year, 2-hour rainfall depth. This parameter was implemented in the HEC-1 model by diverting the estimated retention volume for each sub-basin. Only existing condition flow rates were determined and channel infiltration losses were not considered. Cave Buttes Dam was assumed to retain the 100-year storm runoff volume. The low level outflow of 420 cfs for the 100-year storm was considered negligible.

Revised Hydrology and Drainage Concepts for Section 7 (Ref. 13)

The hydrology and concept drainage plan for Section 7 of the Pima Freeway was prepared by Greiner Engineering Sciences, Inc. for existing conditions (Ref. 22). This drainage concept was modified by DeLeuw Cather and Company to reflect various changes made in coordination with local agencies. The changes in concept include: (1) The use of an interceptor channel to convey flows north of the freeway from approximately 20th Street to Cave Creek replacing the original "pass through" concept; (2) The use of a detention basin at the East Fork Cave Creek near Beardsley Road in lieu of ADOT's detention basin west of Cave Creek Road; and (3) The inclusion of runoff from the northeast slope of Buffalo Ridge to the south freeway right-of-way west of Cave Creek Road.

The watershed area contributing to the detention basin at the East Fork Cave Creek north of Beardsley Road, also called Detention Basin No. 1, was divided into 14 sub-basins. The HEC-1 computer program was used to evaluate the 100-year, 24-hour duration storm for the revised hydrologic conditions. The SCS unit graph and curve number loss rate methods were utilized for this analysis. The Kinematic Wave routing method was used.

A drainage channel along the north side of the Outer Loop Highway was designed by Robert L. Ward to convey storm runoff from ¼ mile west of 20th Street to 7th Street (Ref. 35). This analysis was included in the Revised Hydrology and Drainage Concepts for Section 7 under Appendix A. The hydrologic analysis was almost identical to the Greiner Engineering Sciences, Inc. model (Ref. 20 & 22). The only exception to the model was the enlargement of Sub-Basin P7D from 0.63 square miles to 0.7667 square miles.

4.3 Parameter Estimation

4.3.1 Drainage Area Boundaries

Existing Condition

The Cave Creek watershed as presented in the Cave Creek Floodplain Delineation (Ref. 3) served as the foundation for sub-basin delineations. During the initial drainage delineation, these sub-basin boundaries were evaluated using new 1 inch to 400 feet topographic and aerial mapping flown as a part of this study. Particular attention was given to the areas contributing to detention basins and other drainage structures. The initial delineation was also supplemented by construction drawings of major collector streets and drainage structures.

The existing watershed condition included the delineation of sub-basins contributing to Detention Basin Nos. 1, 3a, 3b and 4. The drainage delineations for the detention basins as presented by NBS/Lowry were used as a base (Ref. 26 & 27). These detention basins, with the exception of No. 4, were not constructed prior to the aerial photography.

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 during lag time calculations for each sub-basin. The field investigations also included the determination of onsite retention locations and non-contributing areas within the watershed. The non-contributing areas were evaluated for each storm frequency. A parcel area labeled as non-contributing for a two-year storm may be contributing for a 10- and 100-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 with other hydrologic investigations.

Future Conditions

The drainage delineation for the Moon Valley Wash subwatershed as presented for existing conditions was unchanged for future conditions. The drainage delineation for areas upstream of the CAP Canal and south of Thunderbird Road along Cave Creek were also unchanged.

The drainage delineation prepared by Greiner, Inc. (Ref. 20 & 22) and modified by DeLeuw Cather and Company (Ref. 13) for areas contributing runoff to the OLH, served as the foundation for sub-basin delineations. However, due to the number of sub-basins delineated for the OLH in these reports, new sub-basin delineations were developed by combining these smaller basins into larger basins. These basins were carefully combined to maintain hydrologic consistency between the models.

The East Fork Cave Creek subwatershed as presented by NBS/Lowry served as the foundation for sub-basin delineations (Ref. 26, 27 & 28). However, due to the number of sub-basins (144) presented in the report, new basin delineations were generated by combining smaller basins into larger basins while maintaining hydrologic consistency. Particular attention was given to the City of Phoenix two-year storm drain master plan during the delineation process.

4.3.2 Rainfall Parameters

Rainfall Distributions

The rainfall distribution used for the 6-hour storm duration are as documented in the FCDMC's Drainage Design Manual (Ref. 17) and contained in the MCUHP2 program. The SCS Type II distribution was used for the 24-hour storm. The rainfall distributions are presented in Tables 13 & 14 in Section I of the Appendix.

Precipitation Data

The point precipitation values were obtained using the NOAA Atlas isopluvial maps for Maricopa County, Arizona. The point precipitation values are presented in Table 11 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 FCDMC's Drainage Design Manual (Ref. 17). This information was also included in the FCDMC's MCUHP2 program. The 24-hour storm reduction factors were obtained from the NOAA Technical Memorandum NWS HYDRO-40 (Ref. 44). These factors are presented in Table 12 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 for both existing and future conditions. 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 Drainage Design Manual (Ref. 17).

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 volumetric 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. 41 & 42) 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-Ampt Loss Parameter spreadsheet. The soil units within each sub-basin are shown on Plates 7-9 for existing conditions and Plates 19-21 for future conditions. 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 in Drainage Design Manual (Ref. 17).

The computed Green-Ampt parameters 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 Drainage Design Manual (Ref. 17) 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. The various land uses categories within each sub-basin are shown on Plates 4-6 for existing conditions and Plates 16-18 for future conditions. 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. 41 & 42). 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 associated with various land use categories were determined for each sub-basin. The City of Phoenix zoning designations were classified into land use categories based on aerial mapping and are presented in Table 15 in Section I of the Appendix.

The total "percent impervious" value for each sub-basin was computed as a summation of the above two "percent impervious" values. This computation was also incorporated into the Green-Ampt Loss Parameter spreadsheet. The average Green-Ampt parameters for existing and future conditions are presented in Tables 16 and 17, respectively in Section II of the Appendix.

Estimation of Lag Time

The S-graph method requires the estimation of the basin lag parameter. The following empirical equation was used to compute basin lag as a function of watershed characteristics (Ref. 17 & 19):

$$\text{Lag} = 24K_n\left(\frac{L\,L_{ca}^{\;0.38}}{S^{0.5}}\right)$$

where

Lag	=	basin lag, in hours.
L	=	length of the longest watercourse, in miles.
L_{ca}	=	length along the watercourse to a point opposite the basin centroid, in miles.
S	=	watercourse slope, in feet/mile.
K_n	=	estimated mean Manning's roughness coefficient for all channels within a basin.

The length of the longest watercourse within each sub-basin and its corresponding slope were determined using 1 inch to 400 feet topographic mapping and from street flow patterns observed from field investigations. The centroid of each sub-basin was determined using ARC INFO GIS and located along the watercourse to determine L_{ca}.

A major disadvantage of the Lag equation is that the roughness coefficient must be selected which is very subjective and introduces significant uncertainty into the lag prediction. Also, the roughness coefficient is not necessarily a constant for each sub-basin for all rainfall depths and requires some adjustment to account for the different storm frequencies. Therefore, Manning's roughness coefficients and basin lag were estimated for each sub-basin by calibrating to previously accepted peak discharge results (Ref. 3 & 26).

Estimation of Manning's roughness coefficient, Kn, for each sub-basin were performed using the 100-year 24-hour duration storm. Each land use classification within each sub-basin was evaluated using aerial maps to determine their estimated Kn value. Next, the Kn values for each land use classification were weighted to determine an overall sub-basin Kn value. For vacant or undeveloped areas, Kn values ranged from 0.075 to 0.150. Golf courses and grass covered parks were assigned a Kn value of 0.050. Parks having desert or natural landscaping were assigned a Kn value of 0.075. Parks and open spaces shown on the City of Phoenix General Plan for future conditions were assigned a Kn value of 0.075. Urban developments such as residential, commercial and industrial areas had Kn values ranging from 0.025 to 0.100. Typically, Kn values for very low residential areas were 0.100 and commercial/industrial areas were 0.025. Kn values for low, medium, and multi-family residential areas ranged from 0.025 to 0.050.

Generally, the roughness coefficient Kn increases as the storm frequency decreases (Ref. 17). The Kn estimation for the 2-year 24-hour future model was calibrated against the NBS/Lowry results (Ref. 29). This calibration produced 2-year Kn values that were approximately 33 percent greater than the 100-year Kn values. KHE assumed that the 10-year Kn values were approximately 17.6 percent greater than the 100-year Kn values.

The Kn calculations for existing and future conditions are presented in Section III of the Appendix. The hydrologic sub-basin characteristics for existing conditions are presented in Tables 18, 19 and 20 in Section III of the Appendix. The hydrologic sub-basin characteristics for future conditions are presented in Tables 22, 23 and 24 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 conditions are presented on Plates 10 - 12 and channel routing work sheets are presented in Section IV of the Appendix. For future conditions, previous hydrologic investigations were utilized for channel and pipe routing parameters (Ref. 3, 13, & 29). Channel routing flow paths for future conditions are presented on Plates 22 - 24 and channel routing work sheets are presented in Section IV of the Appendix.

Existing field data or literature was not available to estimate infiltration losses. Based on the watershed topography and this study's detail for the watershed roughness coefficient (Manning's "n"), not including transmission losses has little impact on the flow peaks and volumes.

Reservoir Routing

There are three detention basins in the Moon Valley subwatershed and, eventually, six detention basins in the East Fork Cave Creek subwatershed. Each upstream watershed hydrograph was routed through their respective detention basins using the Modified Puls method. The reservoir routing parameters for Detention Basin Nos. 2a, 2b and 7 within the Moon Valley subwatershed were obtained from the Burgess and Niple report (Ref. 3). These parameters were verified by KHE using 1" = 400 feet topographic mapping and used in the study.

The reservoir routing parameters for Detention Basin Nos. 1, 2, 3a, 3b, 4 and 5 within the East Fork Cave Creek subwatershed were provided to KHE by the FCDMC. At the time of aerial mapping, only Detention Basin No. 4 was under construction. Therefore, the rating curves for each detention basin could not be verified using the topographic mapping flown as a part of this study.

The inlet for detention basins within the East Fork Cave Creek subwatershed were provided with low flow bypass structures to divert flows from two-year storms or smaller around the detention basins. These diverted flows were discharged downstream into channels or storm drain pipes. The bypass structure minimizes the number of occasions when the detention basin is inundated.

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 Cave Creek watershed, the area south of the CAP and north of the Moon Valley subwatershed 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. The flow split analysis for this study was limited to areas that pass additional runoff into downstream areas that may drastically alter flow characteristics or may divert flow out of the Cave Creek watershed.

Based on the above criteria, there are eight (8) flow split locations within the model for existing conditions. These locations are as follows:

1. Deer Valley Road between Central Avenue and 7th Street;
2. 7th Avenue and Rose Garden Lane;
3. 13th Avenue and Renee Drive;
4. 13th Avenue and Grovers Avenue;
5. 20th Street and Grovers Avenue;
6. 19th Avenue and Bell Road;
7. 7th Street and Bell Road; and
8. 32nd Street and Bell Road.

At Location 1, Deer Valley Road has no curb and gutter and is constructed at grade. The street section does not have the capacity to convey all of the flow and therefore, flow would overtop the crown and continue southwesterly. The half street capacity of Deer Valley Road is approximately 60 cfs. Flows less than the half street capacity continue westward out of the Cave Creek watershed. The flow split calculations are presented in Section V of the Appendix.

At Location 2, a discharge-diversion relationship was developed using a HEC-2 split flow analysis (Ref. 10 & 11). The majority of flow collecting at this intersection continues south on 7th Avenue. For high flows, a portion of the storm runoff would overtop the 7th Avenue crown and proceed westward out of the watershed along Rose Garden Lane.

19th Avenue is a major north to south collector of storm runoff that ultimately discharges into Cave Creek south of Greenway Road. 19th Avenue also contains a major storm drain that collects flow and conveys it to Cave Creek. All of the flow collected along 19th Avenue north of Bell Road will have a strong impact on the amount of flow reaching the 19th Avenue and Bell Road intersection (Location 6). The Bell Road crown runs through this intersection forcing low flows west along Bell Road. However, when this intersection is flooded, surface flows will overtop the crown and proceed south along 19th Avenue. Therefore, it was necessary to perform a flow split analysis of this intersection to determine how much flow is diverted out of the Cave Creek watershed along Bell Road (Ref. 3).

Flow split analysis at Locations 3 and 4 were performed by Burgess and Niple to determine how much flow is diverted to 19th Avenue (Ref. 3). This diverted flow would eventually contribute to the 19th Avenue and Bell Road intersection. The remaining flows at both locations would continue south and eventually discharge into Cave Creek upstream of Bell Road between 7th Avenue and 11th Avenue.

The flow split analysis at Location 7 was performed by Burgess and Niple to determine how much flow would continue west along Bell Road to an unnamed tributary of the East Fork Cave Creek (Ref. 3). This unnamed tributary has its confluence point with the East Fork Cave Creek south of the Greenway Parkway and west of the Central Avenue alignment.

The flow split at Location 5 was modeled to estimate the westward "flow breakout" along 20th Street between Grovers Avenue and Union Hills Drive. 20th Street contains roll curb and gutter between Grovers Avenue to Michigan Avenue and no curb and gutter from Michigan Avenue to Union Hills Drive. Therefore, the half street capacity was minimal at best, with flows breaking out west along Michigan Avenue and Grovers Avenue. The street capacity at Grovers Avenue and 20th Street was estimated to be 60 cfs. It was assumed that a 50-50 flow split would occur above this street capacity.

32nd Street was much like 19th Avenue, a major north-south collector of storm runoff with a major storm drain. The 32nd Street and Bell Road intersection (Location 8) is a major flow split location where the northeast corner is sumped and flows continue west around the northwest corner. When the intersection is flooded, flow will overtop the Bell Road crown and continue south along 32nd Street. Therefore, it was necessary to perform a flow split analysis of this intersection to determine how much flow is diverted out of the Cave Creek watershed along 32nd Street (Ref. 3).

For locations 3, 4, 6, 7 and 8, Burgess and Niple, Inc. surveyed roadway cross-sections downstream of the intersections for flow split calculations (Ref. 3). Manning's equation was applied for each cross-section to determine flow rates at varying water depths. This information was used to develop rating curves for both downstream cross-section at each intersection.

4.4.2 Storm Drain Pipes

Existing Conditions

For existing conditions, there are four (4) locations where flow was diverted out of the watershed or diverted from one sub-basin into another using storm drains. These locations are as follows:

1. The Country Gables Drive and Moon Valley Drive Storm Drain at Coral Gables Drive;
2. The Coral Gables Drive Storm Drain from 7th Avenue to Cave Creek;
3. The Thunderbird Road Storm Drain from 19th Avenue to Cave Creek;
4. The Greenway Road Storm Drain at 32nd Street; and
5. The 32nd Street Storm Drain at Bell Road.

At Location 1, flow is diverted out of Sub-Basin 206 to 211 through a 48-inch diameter storm drain having a capacity of 87 cfs (Ref. 34). The storm drain collects flows contributing to 7th Street between Coral Gables Drive and Braeburn Drive. The storm drain in 7th Street proceeds west in Country Gables Drive to Moon Valley Drive, then north in Moon Valley Drive to Coral Gables Drive. KHE decided not to divert flows contributing to the 7th Street lateral from Sub-Basin 202 because these flows would discharge into Sub-Basin 206, which is the next downstream sub-basin. KHE decided to divert flows out of Sub-Basin 206 to account for the collected flows out of the 7th Street storm drain and the flows collected in the lateral passing through the northeastern corner of the sub-basin.

At Location 2, flow is diverted out of Sub-Basin 211 to Cave Creek through a 84-inch diameter storm drain having a capacity of 260 cfs (Ref. 34). The remaining flow continues south along Coral Gables Drive to the Moon Valley Wash.

At Location 3, Burgess and Niple, Inc. determined that the Thunderbird Road Storm Drain can convey approximately 100 cfs from 19th Avenue to Cave Creek (Ref. 3). Therefore, this flow was diverted out of Sub-Basin 214 to Cave Creek. The remaining flow should continue south in 19th Avenue to the Sweetwater Channel.

At Location 4, the Greenway Road Storm Drain conveys flow westerly from Sub-Basin 225 to the Greenway Channel. This 48-inch diameter storm drain has a capacity of approximately 95 cfs (Ref. 29). Flows in excess of this capacity are diverted easterly towards 32nd Street and out of the Cave Creek watershed.

Location 5 was involved in the flow split analysis discussed previously for the 32nd Street and Bell Road intersection. This 60-inch pipe was assumed to flow full at a hydraulic gradient approximating the gutter slope of the street. The pipe was found to convey 160 cfs out of the watershed and was incorporated into the model using a diversion rating curve (Ref. 3).

There is one (1) location where offsite flows are conveyed into the watershed using a storm drain system. This location is at the intersection of 19th Avenue and the northern project boundary. The 19th Avenue storm drain in this vicinity will be extended north in the future to Deer Valley Road and will collect the tributary areas east of 19th Avenue. The 78-inch diameter pipe at this location has been sized for a two-peak discharge of 365 cfs. This inflow was included in the model using the base flow record (BF) within Sub-Basin 260.

There are four (4) locations where storm drain pipes are an integral part of a detention basin system. These locations are as follows:

1. Detention Basin No. 1;
2. Detention Basin Nos. 3a and 3b;
3. Detention Basin No. 4; and
4. Detention Basin No. 7.

To prevent the inundation of detention basins during 2-year storms or smaller, a low flow bypass structure was constructed at the inlet side to divert flows around the basins. These diverted flows are collected downstream in channels or storm drain pipes. Low flow bypass structures were incorporated into detention basins at Locations 1-3. The detention basin at Location 4 had no bypass structure and discharged runoff directly into the 7th Street storm drain.

Future Conditions

For future conditions, there are six (6) additional locations within the watershed where flow was diverted from one sub-basin into another using storm drains. These locations are a direct result of the City of Phoenix Master Storm Drain Study for providing a two-year storm drain system within the East Fork Cave Creek subwatershed (Ref. 29). Each location has an impact on the two-year frequency storm, and to a lesser extent, the 10-year storm. However, the storm drain system does little to affect the natural drainage paths for the 100-year frequency storm, with the exception of those areas contributing to detention basins. These locations are as follows:

1. Union Hills Drive Storm Drain at 12th Street;
2. Union Hills Drive Storm Drain at 4th Street;
3. 7th Street to Union Hills Drive Storm Drain at 9th Street;
4. 16th Street Storm Drain between Grovers Avenue and Campo Bello Drive;
5. Bell Road Storm Drain at 26th Street; and
6. 20th Street Storm Drain at Bell Road.

The Union Hills Drive system collects runoff from Buffalo Ridge and conveys it via 16th Street, Rosemont Drive, 12th Street, and Union Hills Drive to Cave Creek (Ref. 29). The storm drain system is not connected to Detention Basin No. 2 or the 7th Street system. This system will prevent the inundation of Basin No. 2 for a two-year storm or smaller. For larger storms, the excess flow at Location 1 will continue southwesterly into Detention Basin No. 2. A low point in Union Hills Drive at Location 2 prevents surface flows from continuing west. Therefore, a pipe diversion analysis was performed at Location 1 and 2 to account for subsurface flows continuing westward to Cave Creek.

A low flow inlet at Location 3 will be provided in the 9th Street channel to intercept flows up to the two-year flow and convey it in a 48-inch pipe west along Union Hills Drive to 7th Street and south on 7th Street to the Greenway Channel (Ref. 29). When flows exceed the inlet capacity the excess flow will discharge into Detention Basin No. 2. This bypass structure was included in the model using the diversion card.

The 16th Street system collects runoff from the south side of Buffalo Ridge into a 48-inch pipe in Union Hills Drive between 17th Street and 20th Street. From 17th Street, the system proceeds south through a development to Grovers Avenue, then west to 16th Street, and south to the Greenway Channel. However, a depression in 16th Street at Location 4 directs surface flow west to Detention Basin No. 5. Therefore, a pipe diversion was included in the model to account for pipe flows which continue south to the Greenway Channel.

The Bell Road system begins at approximately 400 feet east of 30th Street and continues west to 20th Street. However, low points along Bell Road east of Cave Creek Road allow surface flows to continue south and southwesterly to the Greenway Channel. Therefore, a pipe diversion was performed at Location 5 to model pipe flows continuing west towards 20th Street.

The 20th Street system drains Detention Basin Nos. 3a and 3b at Grovers Avenue with a 108-inch pipe. This flow continues south to Bell Road where the flow is split into two parts. Approximately 65% of the flow is diverted west along Bell Road to 18th Street, then south on 18th Street to the Greenway Channel. The remaining 35% continues south on 20th Street and joins the Bell Road system from the east. The combined flows continue south along 20th Street to the Greenway Channel. This flow split at Location 6 was included in the model to account for the above conditions.

There are two (2) additional locations within the watershed where storm drain pipes are an integral part of a detention basin system. These locations are at Detention Basin Nos. 2 and 5. These detention basins are drained by the 9th Street system which also collects runoff from tributary areas to the east (Ref. 29). The 9th Street storm drain downstream of each detention basin are sized for their 100-year peak outflow. A two-year low flow bypass inlet structure is provided for Detention Basin No. 5 to prevent the inundation of the basin during frequent storms. The 9th Street system eventually outfalls into the Greenway Channel.

4.4.3 Channelization

Existing Conditions

Currently, there are four (4) improved channels throughout the watershed. These channels are as follows:

1. The Sweetwater Channel;
2. The Greenway Channel;
3. The Upper East Fork Cave Creek Channel; and
4. The Cave Creek Channel.

Moon Valley Wash discharges into the Sweetwater Channel at Thunderbird Road and continues southwesterly to Sweetwater Avenue where the channel proceeds westerly to Cave Creek. The Greenway Channel drains a majority of the East Fork Cave Creek subwatershed. The Greenway Channel begins at Cave Creek Road and continues westerly to 7th Street where it discharges into a natural channel.

The Upper East Fork Cave Creek Channel begins at Beardsley Road and continues south to Union Hills Drive where it proceeds southwesterly to Cave Creek Road. Outflow from Detention Basin No. 1 discharges into the channel at Beardsley Road. At Cave Creek Road, the channel will eventually discharge into Detention Basin Nos. 3a and 3b.

The channelization of Cave Creek begins at a sedimentation basin located downstream of the Cave Creek and Moon Valley Wash confluence. This concrete-lined channel continues south to its confluence with the ACDC.

Future Conditions

For future conditions, further channelization of Cave Creek is expected between Bell Road to the CAP Canal. A representative cross-section was selected from the channelization plans between Bell Road and Union Hills Drive by the FCDMC and provided to KHE for use in the future model.

Also, the Outer Loop Highway improvements will include drainage channels along the freeway alignment. The Cave Creek system will include an interceptor channel beginning at approximately 20th Street north of the freeway and continuing westerly to 7th Street. At 7th Street, the channel outfalls into four 9' x 6' concrete box culverts (C.B.C.'s) which convey the runoff to Cave Creek, south of the freeway.

The East Fork Cave Creek system includes three (3) channels to convey off-site flows to Detention Basin No. 1. The first channel is located west of Cave Creek Road along the southern boundary of the freeway. The second channel is located west of Cave Creek Road along the northern boundary of the freeway. These concrete-lined channels will convey offsite runoff to the east toward Cave Creek Road. The third channel drains an area bounded by the CAP Canal to the north, the OLH to the south, and the 26th Street alignment to the west. This channel begins at 32nd Street and proceeds westerly to approximately 26th Street where it discharges into Detention Basin No. 1.

4.4.4 Onsite Retention and Non-Contributing Areas

Existing Conditions

The City of Phoenix requires that all new developments retain the 100-year 2-hour duration storm volume which falls onsite. Based on field investigations within the watershed, a majority of lots had no onsite 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 onsite retention requirements. As directed by the FCDMC, the onsite 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 onsite retention were eliminated from consideration. Onsite 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 onsite 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. 17).

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 investigations. These areas are as follows:

1. Active Sand and Gravel Operation along Cave Creek between Cave Buttes Dam and the CAP Canal;
2. Inactive Sand and Gravel Operation along Cave Creek between the CAP Canal and Deer Valley Road;
3. Inactive Sand and Gravel Operation along Cave Creek between 7th Street and Beardsley Road;
4. Active Sand and Gravel Operation along Cave Creek between Beardsley Road and Union Hills Drive;
5. Unconnected portion of future Cave Creek Channel between Union Hills Drive and 7th Avenue; and
6. Turf Paradise Track Area.

Each sub-basin was also analyzed to determine how much area would contribute for the two-year storm frequency. Parcels having onsite retention volume calculations were treated as noncontributing areas. Parks, schools and golf courses were treated as non-contributing areas for the two-year storm frequency. These computations are presented in Section V of the Appendix.

Future Conditions

Undeveloped or vacant areas were assigned a land use category for future conditions based on the General Plan for Phoenix (Ref. 8). Mountainous areas will remain vacant for the future conditions model. The extent of development at the base of mountains were determined using topographic mapping and information presented in the General Plan for Phoenix (Ref. 8).

Future onsite retention calculations were performed for the following land use categories derived from existing vacant areas: Multi-Family Residential (MFR); Commercial (COMM); Industrial (INDUST); and Planned Shopping Center (PSC). Future onsite retention volumes were estimated for the 100-year, 2-hour duration storm. The 100-year 2-hour duration storm volumes for future conditions were added to the existing 10-year 2-hour duration storm volumes within each applicable sub-basin. This combined retention volume is subtracted from the front of the hydrograph by diverting the estimated volume. These computations are presented in Section V of the Appendix.

The noncontributing areas discussed under existing conditions were all treated as contributing areas for the future model, with the exception of the Turf Paradise Track Area. KHE made the assumption that the sand and gravel operations would be developed and treated as contributing areas. These calculations 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 existing and future conditions within the Cave Creek watershed. The 6-hour and 24-hour events were evaluated using the S-Graph method for each storm frequency. The hydrologic analysis for both existing and future conditions has been developed through the consolidation of previous hydrologic reports and verifying or updating that information with new topographic mapping and our own field investigations.

The existing peak discharge results are summarized in Table 3 for Cave Creek, Table 4 for the East Fork Cave Creek, and Table 5 for Moon Valley Wash. The future peak discharge results of this study are presented in Tables 6 through 8. Evaluation of the results indicated that larger peak discharges occur from a 24-hour duration storm for all three (3) recurrence intervals.

The City of Phoenix Detention Basin Nos. 2a, 2b and 7 were found to have sufficient capacity to detain the 100-year 24-hour duration storm runoff. These three (3) detention basins are an integral part of providing flood protection within the Moon Valley Wash subwatershed. Low level outflows from these basins were routed downstream and did not significantly contribute to the downstream peak discharges.

Detention Basins Nos. 1, 2, 3a, 3b, 4 and 5 were found to have sufficient capacity to detain the 100-year 24-hour duration storm runoff. Low level outflows from these basins were routed downstream using storm drains and drainage channels. Flows from 2-year storms or smaller were routed around each detention basin and discharged into downstream storm drains, thus preventing inundation of the basins during frequent storms. These five (5) detention basins in conjunction with the City of Phoenix 2-year storm drain system are an integral part of providing flood protection within the East Fork Cave Creek subwatershed.

The effects of onsite retention within the watershed had no significant impact on the downstream peak discharges for both the 10- and 100-year storms. The estimated retention volume of each sub-basin was insignificant when compared to the sub-basin total runoff volume for existing conditions.

A comparison between this study's 100-year 24-hour existing peak discharge results in Cave Creek and the results of previous investigations are presented in Table 9. The KHE peak discharge in Cave Creek is 4,450 cfs above the East Fork Cave Creek confluence, which is significantly lower than both the Burgess and Niple (B&N) value of 5,700 cfs and FEMA value of 5,400 cfs. This difference is more noticeable along Cave Creek above the CAP where the KHE value of 2,879 cfs is considerably smaller than the B&N value of 4,632 cfs. The land use classification for the contributing areas are similar for the two investigations, but the rainfall value and method of basin lag time determination are different. The KHE S-Graph lag times are much longer than the B&N SCS lag times. The flow paths used to determine the lag times between the two study's were slightly different. Therefore, the rainfall value, method of hydrograph development and the lag time determination were factors which led to the difference in peak discharge results.

The KHE peak discharge for Cave Creek below the confluence with East Fork Cave Creek is 10,123 cfs, which is considerably lower than the B&N value of 14,600 cfs. The main factor behind this difference was attributed to the exclusion of Detention Basin Nos. 1, 3a, 3b and 4 from the East Fork Cave Creek subwatershed for the B&N model. From Table 10, the KHE peak discharge value for East Fork Cave Creek above Cave Creek is 8,136 cfs, which is lower than the B&N value of 9,500 cfs without any of the detention basins modeled. Therefore, since the peak discharge values above the Cave Creek - East Fork Cave Creek confluence point are lower for the KHE study, the difference in peak discharges below the confluence is much higher when compared to the B&N results.

The KHE future 100-year 24-hour peak discharge for Cave Creek above East Fork Cave Creek is 5,460 cfs, which is higher than the existing KHE value of 4,450 cfs and comparable to the FEMA value of 5,400 cfs. This areas land use categories included parks, open space, floodplain and low density residential. The industrial and multi-family residential areas were assumed to retain the 100-year 2-hour duration storm volume onsite.

The future 100-year 24-hour peak discharge in Cave Creek below the East Fork Cave Creek confluence is 10,561 cfs, which is slightly higher than the existing value of 10,123 cfs. This slight increase in peak discharge reflects the benefits of Detention Basin Nos. 1, 2, 3a, 3b, 4 and 5 within the East Fork Cave Creek subwatershed in providing 100-year flood protection. The KHE 100-year 24-hour peak discharge of 8,029 cfs for East Fork Cave Creek above Cave Creek was almost equivalent to the NBS/Lowery value of 8,020 cfs for the future condition.

The future 100-year 24-hour peak discharge in Moon Valley Wash above Cave Creek is 4,551 cfs, which is slightly higher than the existing peak value of 4,065 cfs. This subwatershed is almost fully developed. This study's peak discharge results are drastically smaller than 6,500 cfs reported by B&N. The B&N value was determined using a 100-year 24-hour duration storm rainfall value of 3.96 inches, which was larger than the 3.65 inch value used for the KHE study.

The future 100-year 24-hour peak discharge in Cave Creek above the ACDC is 16,418 cfs, which is larger than the existing peak discharge value of 14,032 cfs. From Table 9, the existing peak value is slightly higher than the FEMA value and substantially lower than the B&N value. However, the B&N value did not include the modeling of detention basins within the East Fork Cave Creek subwatershed. The KHE future value of 16,418 cfs was slightly higher than the future peak discharge of 16,000 cfs reported by the Corps of Engineer.

TABLE 3
EXISTING PEAK DISCHARGES
IN CAVE CREEK (CFS)

Location	HEC-I.D.	2-Year		10-Year		100-Year		100-Year 24-Hour Time To Peak (Hrs.)
		6 Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.	
Above the Central Arizona Project Canal	HC250	55	67	550	878	2,071	2,879	12.67
Below Beardsley Road	HC253	79	89	618	1,052	2,590	3,659	13.00
Above Confluence with East Fork Cave Creek	HC258U	156	184	823	1,297	3,238	4,450	13.40
Below Confluence with East Fork Cave Creek	HC258D	1,340	1,545	3,626	4,231	8,562	10,123	12.93
Above Confluence with Moon Valley Wash	HC263U	1,730	1,981	4,327	4,956	9,908	11,646	13.27
Below Confluence with Moon Valley Wash	HC263D	1,932	2,224	5,009	5,750	12,164	14,239	13.07
Confluence of ACDC	HC266	1,945	2,201	4,990	5,714	12,197	14,032	13.27

TABLE 4
EXISTING PEAK DISCHARGES
IN EAST FORK CAVE CREEK (CFS)

Location	HEC-I.D.	2-Year		10-Year		100-Year		100-Year 24-Hour Time To Peak (Hrs.)
		6 Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.	
Above Confluence with Cave Creek	HC245	1,192	1,404	2,910	3,400	6,702	8,136	12.80

TABLE 5
EXISTING PEAK DISCHARGES
IN MOON VALLEY WASH (CFS)

Location	HEC-I.D.	2-Year		10-Year		100-Year		100-Year 24-Hour Time To Peak (Hrs.)
		6 Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.	
Above Confluence with Cave Creek	HC215	374	547	1,266	1,629	3,321	4,065	12.67

TABLE 6
FUTURE PEAK DISCHARGES
IN CAVE CREEK (CFS)

Location	HEC-I.D.	2-Year		10-Year		100-Year		100-Year 24-Hour Time To Peak (Hrs.)
		6 Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.	
Above the Central Arizona Project Canal	HC250	210	304	974	1,324	2,598	3,292	12.67
Below Beardsley Road	HC253D	368	455	1,304	1,704	4,019	4,917	12.80
Above Confluence with East Fork Cave Creek	HC259U	472	533	1,546	1,918	4,463	5,460	13.27
Below Confluence with East Fork Cave Creek	HC259D	2,105	2,523	4,728	5,249	9,068	10,561	12.73
Above Confluence with Moon Valley Wash	HC263U	2,591	2,995	5,666	6,182	10,779	12,649	13.00
Below Confluence with Moon Valley Wash	HC263D	2,951	3,417	6,763	7,322	13,973	16,668	12.87
Confluence of ACDC	HC266	2,902	3,390	6,819	7,292	14,144	16,418	13.07

TABLE 7
FUTURE PEAK DISCHARGES
IN EAST FORK CAVE CREEK (CFS)

Location	HEC-I.D.	2-Year		10-Year		100-Year		100-Year 24-Hour Time To Peak (Hrs.)
		6 Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.	
Above Confluence with Cave Creek	HC249	1,685	2,089	3,435	3,908	6,527	8,029	12.67

TABLE 8
FUTURE PEAK DISCHARGES
IN MOON VALLEY WASH (CFS)

Location	HEC-I.D.	2-Year		10-Year		100-Year		100-Year 24-Hour Time To Peak (Hrs.)
		6 Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.	
Above Confluence with Cave Creek	HC215	501	738	1,544	1,942	3,695	4,551	12.73

TABLE 9
Comparison of 100-Year Peak Discharges
In Cave Creek With Previous Studies

Location	Kaminski-Hubbard (1993)		Burgess & Niple (Ref. 3) (1990)		FEMA (Ref. 15) (1989)	
	Drainage Area (Sq. Mi.)	Q(CFS)	Drainage Area (Sq. Mi.)	Q(CFS)	Drainage Area (Sq. Mi.)	Q(CFS)
Above CAP Canal	4.1	2,879	4.0	4,622	----	----
Below Beardsley Road	5.9	3,659	6.1	5,520	----	----
Above East Fork Cave Creek	8.9	4,450	8.6	5,700	----	5,400
Below East Fork Cave Creek	23.5	10,123	23.5	14,600	22.5	11,000
Above Moon Valley Wash	26.3	11,646	26.5	15,400	----	11,000
Below Moon Valley Wash	33.6	14,239	33.1	17,500	29.3	12,000
Confluence of ACDC	35.2	14,032	34.7	18,500	30.4	13,000

TABLE 10
Comparison of 100-Year Peak Discharges
In East Fork at the Confluence With Cave Creek

Description	Condition	Drainage Area (Sq. Mi.)	Q(CFS)
Kaminski-Hubbard (1993)	Existing	14.5	8,136
Kaminski-Hubbard (1993)	Future	14.4	8,029
Burgess & Niple (1989) (Ref. 3)	Existing	14.6	9,500
FEMA (1988) (Ref. 15)	Existing	14.4	9,000
NBS/Lowry (1987) (Ref. 26)	Existing	14.9	9,590
NBS/Lowry (1989) (Ref. 28)	Future	14.7	8,020

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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 11

Point Precipitation Values For Cave Creek Study Area (Inches)

Return Period (Years)	Storm Duration (Hours)	
	6	24
2	1.25	1.60
10	2.00	2.35
100	3.25	4.10

Source: NOAA Atlas Isopluvial Maps For Arizona

TABLE 12

Areal Precipitation Reduction Data

Watershed Area (Sq. Mi.)	Storm Duration (Hours)	
	6(1)	24(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

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TABLE 13

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

Storm Time (Hours)	Watershed Area (Sq. Mi.)				
	≤ 0.5	2.8	16	90	500
0.00	0.000	0.000	0.00	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 14

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

Storm Time (Hours)	Precipiation 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)	Precipiation 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

TABLE 15

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 RI-18 RI-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 P-2	Parking (Open) Parking (Structure)	Parking Parking	PARKING PARKING	Variable 85

MISCELLANEOUS CATEGORIES: Evaluated on a Case by Case Basis

Zoning Unit	Zoning Description	Land Use Description	Land Use Unit	Percent Impervious
		Desert Cover	DESERT	0
		Undeveloped Parcel	VACANT or OPEN	0
		Golf Course	GC	0
		Park	PARK	0
		School	SCHOOL	Variable
		Airport	AIRPORT	Variable

SECTION II

Green-Ampt & Land Use Parameters

Green-Ampt Parameters
(Existing Condition)

TABLE 16

AVERAGE GREEN-AMPT PARAMETERS (EXISTING CONDITIONS)

Sub-Basin	IA(in)	DTHETA	PSIF(in)	XKSAT(in/hr)	RTIMP(%)
200	0.148	0.361	5.36	0.228	9.33
202	0.106	0.269	6.29	0.186	41.40
203	0.154	0.337	4.19	0.471	8.59
204	0.144	0.327	3.82	0.373	21.96
205	0.136	0.314	6.29	0.202	26.57
206	0.118	0.250	3.50	0.323	37.03
207	0.149	0.347	3.50	0.291	23.18
208	0.143	0.250	3.61	0.398	25.51
209	0.166	0.276	3.77	0.352	45.56
210	0.126	0.301	3.55	0.303	40.91
211	0.100	0.250	3.50	0.291	51.17
212	0.113	0.276	3.71	0.337	42.97
213	0.114	0.286	5.05	0.233	46.44
214	0.125	0.296	3.81	0.286	44.89
215	0.104	0.250	3.50	0.296	47.06
216	0.114	0.288	5.98	0.197	41.68
220	0.218	0.297	3.98	0.396	27.38
221	0.231	0.295	3.66	0.366	15.48
222	0.114	0.256	3.61	0.313	48.12
223	0.129	0.261	3.71	0.336	41.15
224	0.128	0.261	3.55	0.302	59.98
225	0.156	0.273	3.50	0.288	55.05
226	0.119	0.288	4.14	0.428	37.41
227	0.148	0.269	3.77	0.347	43.14
228	0.189	0.286	3.61	0.313	28.25
229	0.126	0.292	3.55	0.312	26.73
230	0.108	0.267	4.12	0.267	40.54
231	0.127	0.304	3.87	0.371	19.74
232	0.200	0.290	3.98	0.396	31.31
233	0.126	0.302	4.08	0.419	32.19
234	0.206	0.292	3.87	0.371	30.59
235	0.119	0.242	7.32	0.128	29.80

TABLE 16

AVERAGE GREEN-AMPT PARAMETERS (EXISTING CONDITIONS)

Sub-Basin	IA(in)	DTHETA	PSIF(in)	XKSAT(in/hr)	RTIMP(%)
236	0.200	0.246	7.32	0.127	36.96
237	0.133	0.321	6.96	0.151	22.81
238	0.118	0.285	4.19	0.443	39.50
239	0.123	0.296	3.92	0.384	27.80
240	0.124	0.297	3.82	0.361	29.60
241	0.118	0.287	3.61	0.313	43.16
242	0.115	0.286	4.43	0.253	46.44
243	0.108	0.253	3.55	0.302	60.92
244	0.150	0.270	3.61	0.313	48.77
245	0.201	0.286	3.82	0.382	35.24
246	0.130	0.309	4.24	0.454	28.88
250	0.347	0.349	3.61	0.315	6.49
251	0.345	0.348	4.08	0.419	1.39
252	0.146	0.342	4.08	0.418	8.55
253	0.248	0.349	3.92	0.384	3.03
254	0.295	0.328	4.19	0.441	12.92
255	0.178	0.279	3.50	0.303	31.71
256	0.141	0.266	3.50	0.291	37.71
257	0.200	0.290	3.92	0.384	28.66
258	0.263	0.315	3.92	0.383	23.50
260	0.137	0.265	3.55	0.302	40.93
261	0.131	0.266	5.36	0.220	47.21
262	0.186	0.278	3.50	0.315	33.89
263	0.189	0.272	3.87	0.447	23.43
264	0.124	0.254	3.87	0.405	42.30
265	0.117	0.252	3.66	0.345	54.08
266	0.198	0.282	3.82	0.392	37.61
336	0.146	0.343	3.82	0.360	12.36
339	0.295	0.328	3.50	0.288	16.75

LOSS PARAMETERS FOR SUBBASIN: 200

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
EbD	0.277	47.73	0.1	-0.477	0.00	0.00
18	0.173	29.79	0.33	-0.143	15.00	4.47
68	0.068	11.71	0.63	-0.023	0.00	0.00
RS	0.039	6.78	0.4	-0.027	65.00	4.41
44	0.023	3.98	0.03	-0.061	0.00	0.00

TOTAL = 0.580 SQ.MI. XKSAT = 0.19 %ROCK= 8.88

DTHETA

Dry = 0.38
Normal = 0.25
Wet = 0

PSIF

= 5.36

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.497	VACANT	85.72	DRY	25.00	0.00	0.00	0.15	0.129
0.006	V.L.D.R	1.00	NORMAL	25.00	15.00	0.00	0.10	0.001
0.050	M.D.R.	8.56	NORMAL	25.00	45.00	0.02	0.10	0.009
0.027	GC	4.72	NORMAL	90.00	0.00	0.00	0.20	0.009
0.579	=TOTAL AREA	OK	AVERAGE =	28.07	TOTAL =	0.02	AVG. =	0.148
					% =	4.00		

PERCENT OF SUBBASIN
DRY = 85.72 %
NORMAL = 14.28 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.361

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.228

IMPERVIOUS AREA:
URBAN @ 100 % effective = 4.00
ROCK OUTCROP @ 60 % effective = 5.33
% EFFECTIVE IMP. = 9.33

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
200	0.580	1.120	0.580	148.00	0.148	0.361	5.36	0.228	9.33

LOSS PARAMETERS FOR SUBBASIN: 202

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
EbD	0.335	55.05	0.1	-0.550	0.00	0.00
RbA	0.078	12.84	0.26	-0.075	0.00	0.00
18	0.077	12.72	0.33	-0.061	15.00	1.91
GxA	0.050	8.31	0.23	-0.053	0.00	0.00
LcA	0.044	7.23	0.25	-0.044	0.00	0.00
RS	0.019	3.19	0.4	-0.013	65.00	2.07
PsB	0.002	0.36	0.26	-0.002	0.00	0.00
RbB	0.002	0.30	0.25	-0.002	0.00	0.00

TOTAL = 0.608 SQ.MI. XKSAT = 0.16 %ROCK= 3.98

DTHETA		PSIF	
Dry =	0.4	=	6.29
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.
0.078	VACANT	12.86	DRY	25.00	0.00	0.00	0.15	0.019
0.027	V.L.D.R	4.39	NORMAL	25.00	15.00	0.00	0.10	0.004
0.486	M.D.R.	80.01	NORMAL	25.00	45.00	0.22	0.10	0.080
0.003	M.F.R.	0.48	NORMAL	25.00	65.00	0.00	0.10	0.000
0.014	COMM	2.26	NORMAL	20.00	90.00	0.01	0.10	0.002
0.608	=TOTAL AREA	OK	AVERAGE =	24.89	TOTAL =	0.24	AVG. =	0.106
					% =	39.01		

PERCENT OF SUBBASIN DRY = 12.86 %
NORMAL = 87.14 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.269

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.186

IMPERVIOUS AREA: URBAN @ 100 % effective = 39.01
ROCK OUTCROP @ 60 % effective = 2.39

% EFFECTIVE IMP. = 41.40

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
202	0.608	1.330	0.870	148.00	0.106	0.269	6.29	0.186	41.40

LOSS PARAMETERS FOR SUBBASIN: 203

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
18	0.313	72.44	0.33	-0.349	15.00	10.87
68	0.105	24.33	0.63	-0.049	0.00	0.00
EbD	0.009	2.17	0.1	-0.022	0.00	0.00
109	0.005	1.06	0.35	-0.005	35.00	0.37

TOTAL = 0.432 SQ.MI. XKSAT = 0.38 %ROCK= 11.24

DTHETA		PSIF	
Dry =	0.35	=	4.19
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.
0.375	VACANT	86.72	DRY	25.00	0.00	0.00	0.15	0.130
0.012	M.F.R.	2.84	NORMAL	25.00	65.00	0.01	0.10	0.003
0.045	GC	10.44	NORMAL	90.00	0.00	0.00	0.20	0.021
0.432	=TOTAL AREA	OK	AVERAGE =	31.79	TOTAL =	0.01	AVG. =	0.154
					% =	1.85		

PERCENT OF SUBBASIN DRY = 86.72 %
NORMAL = 13.28 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.337

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.471

IMPERVIOUS AREA: URBAN @ 100 % effective = 1.85
ROCK OUTCROP @ 60 % effective = 6.74
% EFFECTIVE IMP. = 8.59

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
203	0.432	1.060	0.580	126.00	0.154	0.337	4.19	0.471	8.59

LOSS PARAMETERS FOR SUBBASIN: 204

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
18	0.220	43.58	0.33	-0.210	15.00	6.54
RS	0.159	31.54	0.4	-0.126	65.00	20.50
PsB	0.092	18.29	0.26	-0.107	0.00	0.00
EbD	0.033	6.59	0.1	-0.066	0.00	0.00
TOTAL =	0.504 SQ.MI.		XKSAT =	0.31	%ROCK=	27.04

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.
0.389	VACANT	77.18	DRY	25.00	0.00	0.00	0.15	0.116
0.058	V.L.D.R	11.52	NORMAL	25.00	15.00	0.01	0.10	0.012
0.031	M.F.R.	6.17	NORMAL	25.00	65.00	0.02	0.10	0.006
0.026	GC	5.12	NORMAL	90.00	0.00	0.00	0.20	0.010
0.504	=TOTAL AREA	OK	AVERAGE =	28.33	TOTAL =	0.03	AVG. =	0.144
					% =	5.74		

PERCENT OF SUBBASIN

DRY =	77.18 %
NORMAL =	22.82 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.327

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.373

IMPERVIOUS AREA:

URBAN @	100 % effective =	5.74
ROCK OUTCROP @	60 % effective =	16.22
	% EFFECTIVE IMP. =	21.96

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
204	0.504	1.100	0.500	133.00	0.144	0.327	3.82	0.373	21.96

LOSS PARAMETERS FOR SUBBASIN: 205

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
EbD	0.157	48.54	0.1	-0.485	0.00	0.00
18	0.052	15.98	0.33	-0.077	15.00	2.40
TrA	0.044	13.49	0.11	-0.129	0.00	0.00
PeA	0.038	11.85	0.37	-0.051	0.00	0.00
RS	0.019	5.95	0.4	-0.024	65.00	3.86
PsB	0.009	2.77	0.26	-0.016	0.00	0.00
RbA	0.005	1.44	0.26	-0.008	0.00	0.00

TOTAL = 0.323 SQ.MI. XKSAT = 0.16 %ROCK= 6.26

DTHETA		PSIF	
Dry =	0.4	=	6.29
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.
0.138	VACANT	42.59	DRY	25.00	0.00	0.00	0.15	0.064
0.115	M.D.R.	35.69	NORMAL	25.00	45.00	0.05	0.10	0.036
0.011	PSC	3.55	NORMAL	20.00	90.00	0.01	0.10	0.004
0.013	COMM	3.95	NORMAL	20.00	90.00	0.01	0.10	0.004
0.046	GC	14.22	NORMAL	90.00	0.00	0.00	0.20	0.028

0.323 =TOTAL AREA OK AVERAGE = 33.87 TOTAL = 0.07 AVG. = 0.136
% = 22.82

PERCENT OF SUBBASIN DRY = 42.59 %
NORMAL = 57.41 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.314

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.202

IMPERVIOUS AREA: URBAN @ 100 % effective = 22.82
ROCK OUTCROP @ 60 % effective = 3.76

% EFFECTIVE IMP. = 26.57

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
205	0.323	0.820	0.490	103.00	0.136	0.314	6.29	0.202	26.57

LOSS PARAMETERS FOR SUBBASIN: 206

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.265	39.22	0.25	-0.236	0.00	0.00
GgA	0.143	21.17	0.25	-0.127	0.00	0.00
AbA	0.113	16.65	0.38	-0.070	0.00	0.00
EbD	0.066	9.74	0.1	-0.097	0.00	0.00
Es	0.041	6.05	0.25	-0.036	0.00	0.00
RbB	0.022	3.18	0.25	-0.019	0.00	0.00
RbA	0.017	2.57	0.26	-0.015	0.00	0.00
PsB	0.010	1.41	0.26	-0.008	0.00	0.00

TOTAL = 0.677 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.
0.000	VACANT	0.00	DRY	25.00	0.00	0.00	0.15	0.000
0.557	M.D.R.	82.30	NORMAL	25.00	45.00	0.25	0.10	0.082
0.120	GC	17.70	NORMAL	90.00	0.00	0.00	0.20	0.035
0.677	=TOTAL AREA	OK	AVERAGE =	36.51	TOTAL = % =	0.25 37.03	AVG. =	0.118

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. = 0.323

IMPERVIOUS AREA:
URBAN @ 100 % effective = 37.03
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 37.03

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
206	0.677	1.560	0.810	35.00	0.118	0.250	3.50	0.323	37.03

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LOSS PARAMETERS FOR SUBBASIN: 207

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.315	54.83	0.4	-0.218	65.00	35.64
TrB	0.110	19.08	0.13	-0.169	0.00	0.00
EbD	0.096	16.68	0.1	-0.167	0.00	0.00
PsB	0.043	7.46	0.26	-0.044	0.00	0.00
AfA	0.011	1.95	0.38	-0.008	0.00	0.00

TOTAL = 0.575 SQ.MI. XKSAT = 0.25 %ROCK= 35.64

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.
0.559	VACANT	97.24	DRY	25.00	0.00	0.00	0.15	0.146
0.016	M.F.R.	2.76	NORMAL	25.00	65.00	0.01	0.10	0.003
0.575	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.01	AVG. =	0.149
					% =	1.80		

PERCENT OF SUBBASIN DRY = 97.24 %
NORMAL = 2.76 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.347

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.291

IMPERVIOUS AREA:

URBAN @	100 %	effective =	1.80
ROCK OUTCROP @	60 %	effective =	21.38
	% EFFECTIVE IMP. =		23.18

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
207	0.575	1.050	0.530	209.00	0.149	0.347	3.50	0.291	23.18

LOSS PARAMETERS FOR SUBBASIN: 208

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.106	30.69	0.25	-0.185	0.00	0.00
AbA	0.069	20.16	0.38	-0.085	0.00	0.00
Ge	0.063	18.29	0.26	-0.107	0.00	0.00
GxA	0.052	15.07	0.23	-0.096	0.00	0.00
LcA	0.028	8.05	0.25	-0.048	0.00	0.00
Ae	0.015	4.45	0.39	-0.018	0.00	0.00
TrA	0.009	2.74	0.11	-0.026	0.00	0.00
RbA	0.001	0.29	0.26	-0.002	0.00	0.00
AfA	0.001	0.25	0.38	-0.001	0.00	0.00
TOTAL =	0.344 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.
0.000	VACANT	0.00	DRY	25.00	0.00	0.00	0.15	0.000
0.195	M.D.R.	56.69	NORMAL	25.00	45.00	0.09	0.10	0.057
0.149	GC	43.31	NORMAL	90.00	0.00	0.00	0.20	0.087
0.344	=TOTAL AREA	OK	AVERAGE =	53.15	TOTAL =	0.09	AVG. =	0.143
					% =	25.51		

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. = 0.398

IMPERVIOUS AREA:
URBAN @ 100 % effective = 25.51
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 25.51

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
208	0.344	1.020	0.320	19.00	0.143	0.250	3.61	0.398	25.51

LOSS PARAMETERS FOR SUBBASIN: 209

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Ge	0.157	40.11	0.26	-0.235	0.00	0.00
RS	0.122	31.28	0.4	-0.124	65.00	20.33
GgA	0.056	14.28	0.25	-0.086	0.00	0.00
AbA	0.031	7.94	0.38	-0.033	0.00	0.00
Ae	0.012	2.99	0.39	-0.012	0.00	0.00
Vh	0.005	1.30	0.27	-0.007	0.00	0.00
Ao	0.005	1.16	0.04	-0.016	0.00	0.00
Es	0.004	0.95	0.25	-0.006	0.00	0.00

TOTAL = 0.391 SQ.MI. XKSAT = 0.30 %ROCK= 20.33

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.
0.102	VACANT	26.12	DRY	25.00	0.00	0.00	0.35	0.091
0.005	L.D.R.	1.26	NORMAL	25.00	25.00	0.00	0.10	0.001
0.272	M.D.R.	69.48	NORMAL	25.00	45.00	0.12	0.10	0.069
0.008	CHURCH	1.99	NORMAL	20.00	90.00	0.01	0.10	0.002
0.005	GC\PARK	1.16	NORMAL	90.00	0.00	0.00	0.20	0.002
0.391	=TOTAL AREA	OK	AVERAGE =	25.65	TOTAL = % =	0.13 33.37	AVG. =	0.166

PERCENT OF SUBBASIN
DRY = 26.12 %
NORMAL = 73.88 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.276

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.352

IMPERVIOUS AREA:
URBAN @ 100 % effective = 33.37
ROCK OUTCROP @ 60 % effective = 12.20
% EFFECTIVE IMP. = 45.56

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
209	0.391	2.050	1.250	19.00	0.166	0.276	3.77	0.352	45.56

LOSS PARAMETERS FOR SUBBASIN: 210

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.393	47.46	0.4	-0.189	65.00	30.85
Ae	0.204	24.66	0.39	-0.101	0.00	0.00
EbD	0.149	17.99	0.1	-0.180	0.00	0.00
Gt	0.035	4.27	0.04	-0.060	0.00	0.00
Ao	0.025	2.99	0.04	-0.042	0.00	0.00
Cp	0.022	2.63	0.4	-0.010	0.00	0.00

TOTAL = 0.828 SQ.MI. XKSAT = 0.26 %ROCK= 30.85

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.
0.424	VACANT	51.21	DRY	25.00	0.00	0.00	0.15	0.077
0.005	M.F.R.	0.62	NORMAL	25.00	65.00	0.00	0.10	0.001
0.393	M.D.R.	47.45	NORMAL	25.00	45.00	0.18	0.10	0.047
0.006	COMM	0.71	NORMAL	20.00	90.00	0.01	0.10	0.001
0.828	=TOTAL AREA	OK	AVERAGE =	24.96	TOTAL = % =	0.19 22.40	AVG. =	0.126

PERCENT OF SUBBASIN
DRY = 51.21 %
NORMAL = 48.79 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.301

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.303

IMPERVIOUS AREA:
URBAN @ 100 % effective = 22.40
ROCK OUTCROP @ 60 % effective = 18.51
% EFFECTIVE IMP. = 40.91

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
210	0.828	1.270	0.730	183.00	0.126	0.301	3.55	0.303	40.91

LOSS PARAMETERS FOR SUBBASIN: 211

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.137	58.41	0.25	-0.352	0.00	0.00
LcA	0.050	21.32	0.25	-0.128	0.00	0.00
PsB	0.030	12.79	0.26	-0.075	0.00	0.00
GxB	0.009	3.80	0.24	-0.024	0.00	0.00
EbD	0.003	1.33	0.1	-0.013	0.00	0.00
AbA	0.003	1.26	0.38	-0.005	0.00	0.00
Es	0.003	1.09	0.25	-0.007	0.00	0.00

TOTAL = 0.234 SQ.MI. XKSAT = 0.25 %ROCK= 0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.036	M.F.R.	15.35	NORMAL	25.00	65.00	0.02	0.10	0.015
0.180	M.D.R.	77.11	NORMAL	25.00	45.00	0.08	0.10	0.077
0.003	PSC	1.49	NORMAL	20.00	90.00	0.00	0.10	0.001
0.013	COMM\CHURCH	5.73	NORMAL	20.00	90.00	0.01	0.10	0.006
0.001	PARK	0.33	NORMAL	90.00	0.00	0.00	0.20	0.001
0.234	=TOTAL AREA	OK	AVERAGE =	24.85	TOTAL =	0.12	AVG. =	0.100
					% =	51.17		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.291

IMPERVIOUS AREA: URBAN @ 100 % effective = 51.17
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 51.17

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
211	0.234	1.570	0.810	21.00	0.100	0.250	3.50	0.291	51.17

LOSS PARAMETERS FOR SUBBASIN: 212

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
18	0.105	26.47	0.33	-0.127	15.00	3.97
GgA	0.076	19.16	0.25	-0.115	0.00	0.00
PsB	0.075	18.78	0.26	-0.110	0.00	0.00
RS	0.063	15.76	0.4	-0.063	65.00	10.24
RpE	0.033	8.36	0.29	-0.045	0.00	0.00
CO	0.032	7.94	0.29	-0.043	20.00	1.59
GxB	0.008	2.01	0.24	-0.012	0.00	0.00
EbD	0.006	1.51	0.1	-0.015	0.00	0.00

TOTAL = 0.397 SQ.MI. XKSAT = 0.29 %ROCK= 15.80

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.
0.104	VACANT	26.08	DRY	25.00	0.00	0.00	0.15	0.039
0.017	L.D.R.	4.20	NORMAL	25.00	25.00	0.00	0.10	0.004
0.000	M.F.R.	0.03	NORMAL	25.00	65.00	0.00	0.10	0.000
0.267	M.D.R.	67.35	NORMAL	25.00	45.00	0.12	0.10	0.067
0.009	COMM	2.34	NORMAL	20.00	90.00	0.01	0.10	0.002

0.397 =TOTAL AREA OK AVERAGE = 24.88 TOTAL = 0.13 AVG. = 0.113
% = 33.49

PERCENT OF SUBBASIN DRY = 26.08 %
NORMAL = 73.92 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.276

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.337

IMPERVIOUS AREA: URBAN @ 100 % effective = 33.49
ROCK OUTCROP @ 60 % effective = 9.48

% EFFECTIVE IMP. = 42.97

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
212	0.397	1.050	0.700	122.00	0.113	0.276	3.71	0.337	42.97

LOSS PARAMETERS FOR SUBBASIN: 213

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
EbD	0.101	46.41	0.1	-0.464	0.00	0.00
RS	0.078	35.59	0.4	-0.142	65.00	23.14
GxA	0.021	9.81	0.23	-0.063	0.00	0.00
Ae	0.013	5.76	0.39	-0.024	0.00	0.00
AfA	0.005	2.43	0.38	-0.010	0.00	0.00

TOTAL = 0.218 SQ.MI. XKSAT = 0.20 %ROCK= 23.14

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.
0.060	VACANT	27.65	DRY	25.00	0.00	0.00	0.15	0.041
0.158	M.D.R.	72.35	NORMAL	25.00	45.00	0.07	0.10	0.072
0.218	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.07	AVG. =	0.114
					% =	32.56		

PERCENT OF SUBBASIN
DRY = 27.65 %
NORMAL = 72.35 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.286

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.233

IMPERVIOUS AREA:
URBAN @ 100 % effective = 32.56
ROCK OUTCROP @ 60 % effective = 13.88

% EFFECTIVE IMP. = 46.44

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
213	0.218	0.890	0.690	174.00	0.114	0.286	5.05	0.233	46.44

LOSS PARAMETERS FOR SUBBASIN: 214

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.220	46.01	0.4	-0.183	65.00	29.91
Ao	0.090	18.90	0.04	-0.264	0.00	0.00
Es	0.055	11.53	0.25	-0.069	0.00	0.00
Tc	0.042	8.87	0.4	-0.035	0.00	0.00
GgA	0.041	8.68	0.25	-0.052	0.00	0.00
Ae	0.029	6.01	0.39	-0.025	0.00	0.00

TOTAL = 0.477 SQ.MI. XKSAT = 0.24 %ROCK= 29.91

DTHETA		PSIF	
Dry =	0.36	=	3.81
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.
0.198	VACANT	41.56	DRY	25.00	0.00	0.00	0.15	0.062
0.019	V.L.D.R	4.02	NORMAL	25.00	15.00	0.00	0.10	0.004
0.028	L.D.R.	5.97	NORMAL	25.00	25.00	0.01	0.10	0.006
0.017	M.F.R.	3.48	NORMAL	25.00	65.00	0.01	0.10	0.003
0.116	M.D.R.	24.21	NORMAL	25.00	45.00	0.05	0.10	0.024
0.061	SCHOOL	12.76	NORMAL	25.00	65.00	0.04	0.10	0.013
0.018	COMM	3.78	NORMAL	20.00	90.00	0.02	0.10	0.004
0.020	GC	4.23	NORMAL	90.00	0.00	0.00	0.20	0.008
0.477	=TOTAL AREA	OK	AVERAGE =	27.56	TOTAL = % =	0.13 26.94	AVG. =	0.125

PERCENT OF SUBBASIN DRY = 41.56 %
NORMAL = 58.44 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.296

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.286

IMPERVIOUS AREA:

URBAN @	100 %	effective =	26.94
ROCK OUTCROP @	60 %	effective =	17.94
	% EFFECTIVE IMP. =		44.89

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
214	0.477	1.180	0.610	121.00	0.125	0.296	3.81	0.286	44.89

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LOSS PARAMETERS FOR SUBBASIN: 215

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Cp	0.186	69.29	0.4	-0.276	0.00	0.00
Gt	0.053	19.65	0.04	-0.275	0.00	0.00
Vk	0.021	7.79	0.26	-0.046	0.00	0.00
TD	0.006	2.21	1.2	0.002	0.00	0.00
Es	0.003	1.06	0.25	-0.006	0.00	0.00

TOTAL = 0.269 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.
0.000	VACANT	0.00	DRY	25.00	0.00	0.00	0.15	0.000
0.238	M.D.R.	88.41	NORMAL	25.00	45.00	0.11	0.10	0.088
0.022	COMM	8.08	NORMAL	20.00	90.00	0.02	0.10	0.008
0.009	PARK	3.51	NORMAL	90.00	0.00	0.00	0.20	0.007
0.269	=TOTAL AREA	OK	AVERAGE =	26.88	TOTAL = % =	0.13 47.06	AVG. =	0.104

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. = 0.296

IMPERVIOUS AREA: URBAN @ 100 % effective = 47.06
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 47.06

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
215	0.269	0.880	0.530	22.00	0.104	0.250	3.50	0.296	47.06

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LOSS PARAMETERS FOR SUBBASIN: 216

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
TrA	0.185	42.40	0.11	-0.406	0.00	0.00
EbD	0.077	17.72	0.1	-0.177	0.00	0.00
RS	0.070	16.00	0.4	-0.064	65.00	10.40
AfA	0.054	12.29	0.38	-0.052	0.00	0.00
LcA	0.020	4.47	0.25	-0.027	0.00	0.00
RbA	0.014	3.26	0.26	-0.019	0.00	0.00
GxA	0.014	3.26	0.23	-0.021	0.00	0.00
RbB	0.002	0.47	0.25	-0.003	0.00	0.00
PeA	0.001	0.13	0.37	-0.001	0.00	0.00

TOTAL = 0.437 SQ.MI. XKSAT = 0.17 %ROCK= 10.40

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.
0.120	VACANT	27.48	DRY	25.00	0.00	0.00	0.15	0.041
0.290	M.D.R.	66.29	NORMAL	25.00	45.00	0.13	0.10	0.066
0.027	COMM	6.23	NORMAL	20.00	90.00	0.02	0.10	0.006
0.437	=TOTAL AREA	OK	AVERAGE =	24.69	TOTAL = % =	0.15 35.44	AVG. =	0.114

PERCENT OF SUBBASIN DRY = 27.48 %
NORMAL = 72.52 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.288

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.197

IMPERVIOUS AREA: URBAN @ 100 % effective = 35.44
ROCK OUTCROP @ 60 % effective = 6.24

% EFFECTIVE IMP. = 41.68

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
216	0.437	0.830	0.530	95.00	0.114	0.288	5.98	0.197	41.68

LOSS PARAMETERS FOR SUBBASIN: 220

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
90	0.172	70.40	0.39	-0.288	0.00	0.00
60	0.036	14.88	0.26	-0.087	0.00	0.00
76	0.021	8.64	0.23	-0.055	0.00	0.00
55	0.015	6.09	0.27	-0.035	0.00	0.00

TOTAL = 0.244 SQ.MI. XKSAT = 0.34 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.98

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.115	VACANT	47.19	DRY	25.00	0.00	0.00	0.35	0.165
0.040	M.F.R.	16.53	NORMAL	25.00	65.00	0.03	0.10	0.017
0.087	M.D.R.	35.57	NORMAL	25.00	45.00	0.04	0.10	0.036
0.002	COMM	0.70	NORMAL	20.00	90.00	0.00	0.10	0.001

0.244 =TOTAL AREA OK AVERAGE = 24.96 TOTAL = 0.07 AVG. = 0.218
% = 27.38

PERCENT OF SUBBASIN
DRY = 47.19 %
NORMAL = 52.81 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.297

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.396

IMPERVIOUS AREA:
URBAN @ 100 % effective = 27.38
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 27.38

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
220	0.244	1.220	0.570	36.00	0.218	0.297	3.98	0.396	27.38

0

LOSS PARAMETERS FOR SUBBASIN: 221

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
55	0.471	62.55	0.27	-0.356	0.00	0.00
60	0.154	20.40	0.26	-0.119	0.00	0.00
90	0.075	9.91	0.39	-0.041	0.00	0.00
50	0.050	6.62	0.26	-0.039	0.00	0.00
76	0.004	0.53	0.23	-0.003	0.00	0.00

TOTAL = 0.753 SQ.MI. XKSAT = 0.28 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.66

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.336	VACANT	44.59	DRY	25.00	0.00	0.00	0.35	0.156
0.015	V.L.D.R	2.04	NORMAL	25.00	15.00	0.00	0.10	0.002
0.254	M.D.R.	33.71	NORMAL	25.00	45.00	0.11	0.10	0.034
0.148	PARK/GC	19.66	NORMAL	90.00	0.00	0.00	0.20	0.039
0.753	=TOTAL AREA	OK	AVERAGE =	37.78	TOTAL = % =	0.12 15.48	AVG. =	0.231

PERCENT OF SUBBASIN
DRY = 44.59 %
NORMAL = 55.41 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.295

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.366

IMPERVIOUS AREA:
URBAN @ 100 % effective = 15.48
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 15.48

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
221	0.753	1.670	0.960	34.00	0.231	0.295	3.66	0.366	15.48

0500

LOSS PARAMETERS FOR SUBBASIN: 222

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.189	55.01	0.26	-0.322	0.00	0.00
60	0.064	18.54	0.26	-0.108	0.00	0.00
1	0.030	8.77	0.41	-0.034	0.00	0.00
76	0.024	7.14	0.23	-0.046	0.00	0.00
101	0.020	5.89	0.28	-0.033	0.00	0.00
55	0.010	2.93	0.27	-0.017	0.00	0.00
90	0.006	1.72	0.39	-0.007	0.00	0.00
TOTAL =	0.343 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.
0.020	VACANT	5.79	DRY	25.00	0.00	0.00	0.35	0.020
0.279	M.D.R.	81.49	NORMAL	25.00	45.00	0.13	0.10	0.081
0.044	COMM	12.72	NORMAL	20.00	90.00	0.04	0.10	0.013
0.343	=TOTAL AREA	OK	AVERAGE =	24.36	TOTAL =	0.16	AVG. =	0.114
					% =	48.12		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.256

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.313

IMPERVIOUS AREA:
URBAN @ 100 % effective = 48.12
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 48.12

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
222	0.343	1.040	0.550	27.00	0.114	0.256	3.61	0.313	48.12

LOSS PARAMETERS FOR SUBBASIN: 223

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.170	22.67	0.26	-0.133	0.00	0.00
101	0.160	21.30	0.28	-0.118	0.00	0.00
1	0.130	17.39	0.41	-0.067	0.00	0.00
55	0.124	16.50	0.27	-0.094	0.00	0.00
76	0.093	12.42	0.23	-0.079	0.00	0.00
90	0.056	7.43	0.39	-0.030	0.00	0.00
60	0.017	2.30	0.26	-0.013	0.00	0.00
TOTAL =	0.750 SQ.MI.		XKSAT =	0.29	%ROCK=	0.00

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.
0.085	VACANT	11.40	DRY	25.00	0.00	0.00	0.35	0.040
0.235	L.D.R.	31.36	NORMAL	25.00	25.00	0.06	0.10	0.031
0.060	M.F.R.	7.95	NORMAL	25.00	65.00	0.04	0.10	0.008
0.270	M.D.R.	36.03	NORMAL	25.00	45.00	0.12	0.10	0.036
0.099	COMM	13.25	NORMAL	20.00	90.00	0.09	0.10	0.013
0.750	=TOTAL AREA	OK	AVERAGE =	24.34	TOTAL =	0.31	AVG. =	0.129
					% =	41.15		

PERCENT OF SUBBASIN
DRY = 11.40 %
NORMAL = 88.60 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.261

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.336

IMPERVIOUS AREA:
URBAN @ 100 % effective = 41.15
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 41.15

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
223	0.750	1.730	0.900	28.00	0.129	0.261	3.71	0.336	41.15

LOSS PARAMETERS FOR SUBBASIN: 224

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.227	46.67	0.26	-0.273	0.00	0.00
76	0.133	27.32	0.23	-0.174	0.00	0.00
101	0.089	18.30	0.28	-0.101	0.00	0.00
55	0.037	7.71	0.27	-0.044	0.00	0.00
TOTAL =	0.486 SQ.MI.		XKSAT =	0.26	%ROCK=	0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.055	VACANT	11.36	DRY	25.00	0.00	0.00	0.35	0.040
0.385	M.F.R.	79.19	NORMAL	25.00	65.00	0.25	0.10	0.079
0.046	COMM	9.45	NORMAL	20.00	90.00	0.04	0.10	0.009
0.486	=TOTAL AREA	OK	AVERAGE =	24.53	TOTAL =	0.29	AVG. =	0.128
					% =	59.98		

PERCENT OF SUBBASIN DRY = 11.36 %
NORMAL = 88.64 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.261

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.302

IMPERVIOUS AREA: URBAN @ 100 % effective = 59.98
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 59.98

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
224	0.486	1.360	0.700	22.00	0.128	0.261	3.55	0.302	59.98

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LOSS PARAMETERS FOR SUBBASIN: 225

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
76	0.164	54.19	0.23	-0.346	0.00	0.00
50	0.104	34.36	0.26	-0.201	0.00	0.00
2	0.020	6.59	0.41	-0.026	0.00	0.00
101	0.015	4.86	0.28	-0.027	0.00	0.00
TOTAL =	0.303 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.
0.069	VACANT	22.58	DRY	25.00	0.00	0.00	0.35	0.079
0.148	M.F.R.	48.66	NORMAL	25.00	65.00	0.10	0.10	0.049
0.017	SCHOOL	5.48	NORMAL	25.00	45.00	0.01	0.10	0.005
0.071	COMM	23.28	NORMAL	20.00	90.00	0.06	0.10	0.023
0.303	=TOTAL AREA	OK	AVERAGE =	23.84	TOTAL =	0.17	AVG. =	0.156
					% =	55.05		

PERCENT OF SUBBASIN

DRY = 22.58 %
NORMAL = 77.42 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.273

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.288

IMPERVIOUS AREA:

URBAN @ 100 % effective = 55.05
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 55.05

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
225	0.303	1.380	0.770	18.00	0.156	0.273	3.50	0.288	55.05

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LOSS PARAMETERS FOR SUBBASIN: 227

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.191	54.99	0.26	-0.322	0.00	0.00
1	0.087	25.13	0.41	-0.097	0.00	0.00
101	0.033	9.40	0.28	-0.052	0.00	0.00
90	0.016	4.59	0.39	-0.019	0.00	0.00
55	0.009	2.72	0.27	-0.015	0.00	0.00
76	0.007	1.95	0.23	-0.012	0.00	0.00
60	0.004	1.22	0.26	-0.007	0.00	0.00
TOTAL =	0.347 SQ.MI.		XKSAT =	0.30	%ROCK=	0.00

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.
0.066	VACANT	19.05	DRY	25.00	0.00	0.00	0.35	0.067
0.029	L.D.R.	8.47	NORMAL	25.00	25.00	0.01	0.10	0.008
0.036	M.F.R.	10.27	NORMAL	25.00	65.00	0.02	0.10	0.010
0.167	M.D.R.	48.09	NORMAL	25.00	45.00	0.08	0.10	0.048
0.049	COMM	14.12	NORMAL	20.00	90.00	0.04	0.10	0.014
0.347	=TOTAL AREA	OK	AVERAGE =	24.29	TOTAL =	0.15	AVG. =	0.148
					% =	43.14		

PERCENT OF SUBBASIN
DRY = 19.05 %
NORMAL = 80.95 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.269

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.347

IMPERVIOUS AREA:
URBAN @ 100 % effective = 43.14
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 43.14

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
227	0.347	1.700	0.870	26.00	0.148	0.269	3.77	0.347	43.14

LOSS PARAMETERS FOR SUBBASIN: 228

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.097	44.67	0.26	-0.261	0.00	0.00
101	0.076	35.05	0.28	-0.194	0.00	0.00
55	0.044	20.28	0.27	-0.115	0.00	0.00
TOTAL =	0.218 SQ.MI.		XKSAT =	0.27	%ROCK=	0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.078	VACANT	35.74	DRY	25.00	0.00	0.00	0.35	0.125
0.039	V.L.D.R	17.85	NORMAL	25.00	15.00	0.01	0.10	0.018
0.002	L.D.R.	0.88	NORMAL	25.00	25.00	0.00	0.10	0.001
0.076	M.D.R.	34.72	NORMAL	25.00	45.00	0.03	0.10	0.035
0.024	COMM	10.81	NORMAL	20.00	90.00	0.02	0.10	0.011
0.218	=TOTAL AREA	OK	AVERAGE =	24.46	TOTAL =	0.06	AVG. =	0.189
					% =	28.25		

PERCENT OF SUBBASIN DRY = 35.74 %
NORMAL = 64.26 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.286

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.313

IMPERVIOUS AREA:
URBAN @ 100 % effective = 28.25
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 28.25

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
228	0.218	0.890	0.430	22.00	0.189	0.286	3.61	0.313	28.25

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LOSS PARAMETERS FOR SUBBASIN: 229

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
68	0.247	38.83	0.63	-0.078	0.00	0.00
44	0.135	21.25	0.03	-0.324	0.00	0.00
100	0.084	13.21	0.4	-0.053	20.00	2.64
55	0.071	11.18	0.27	-0.064	0.00	0.00
112	0.063	9.92	0.39	-0.041	0.00	0.00
50	0.036	5.61	0.26	-0.033	0.00	0.00

TOTAL = 0.635 SQ.MI. XKSAT = 0.26 %ROCK= 2.64

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.268	VACANT	42.18	DRY	25.00	0.00	0.00	0.15	0.063
0.015	V.L.D.R	2.34	NORMAL	25.00	15.00	0.00	0.10	0.002
0.028	M.F.R.	4.45	NORMAL	25.00	65.00	0.02	0.10	0.004
0.270	M.D.R.	42.51	NORMAL	25.00	45.00	0.12	0.10	0.043
0.007	IND	1.18	NORMAL	20.00	75.00	0.01	0.10	0.001
0.013	COMM	2.09	NORMAL	20.00	90.00	0.01	0.10	0.002
0.033	PARK	5.24	NORMAL	90.00	0.00	0.00	0.20	0.010
0.635	=TOTAL AREA	OK	AVERAGE =	28.24	TOTAL =	0.16	AVG. =	0.126
					% =	25.14		

PERCENT OF SUBBASIN
DRY = 42.18 %
NORMAL = 57.82 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.292

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.312

IMPERVIOUS AREA:
URBAN @ 100 % effective = 25.14
ROCK OUTCROP @ 60 % effective = 1.59
% EFFECTIVE IMP. = 26.73

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
229	0.635	1.050	0.360	197.00	0.126	0.292	3.55	0.312	26.73

LOSS PARAMETERS FOR SUBBASIN: 230

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
68	0.187	32.98	0.63	-0.066	0.00	0.00
44	0.128	22.59	0.03	-0.344	0.00	0.00
55	0.114	20.12	0.27	-0.114	0.00	0.00
50	0.079	14.01	0.26	-0.082	0.00	0.00
1	0.058	10.30	0.41	-0.040	0.00	0.00
TOTAL =	0.566 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.
0.088	VACANT	15.49	DRY	25.00	0.00	0.00	0.15	0.023
0.014	L.D.R.	2.45	NORMAL	25.00	25.00	0.00	0.10	0.002
0.021	M.F.R.	3.68	NORMAL	25.00	65.00	0.01	0.10	0.004
0.415	M.D.R.	73.36	NORMAL	25.00	45.00	0.19	0.10	0.073
0.028	COMM	5.02	NORMAL	20.00	90.00	0.03	0.10	0.005
0.566	=TOTAL AREA	OK	AVERAGE =	24.75	TOTAL =	0.23	AVG. =	0.108
					% =	40.54		

PERCENT OF SUBBASIN

DRY =	15.49 %
NORMAL =	84.51 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.267

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.267

IMPERVIOUS AREA:

URBAN @	100 %	effective =	40.54
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		40.54

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
230	0.566	1.530	0.780	115.00	0.108	0.267	4.12	0.267	40.54

LOSS PARAMETERS FOR SUBBASIN: 231

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
101	0.454	34.02	0.28	-0.188	0.00	0.00
112	0.190	14.22	0.39	-0.058	0.00	0.00
21	0.175	13.15	0.38	-0.055	0.00	0.00
124	0.146	10.98	0.39	-0.045	0.00	0.00
55	0.108	8.07	0.27	-0.046	0.00	0.00
18	0.074	5.55	0.33	-0.027	15.00	0.83
115	0.043	3.21	0.39	-0.013	0.00	0.00
110	0.041	3.10	0.13	-0.028	0.00	0.00
100	0.040	3.01	0.4	-0.012	20.00	0.60
2	0.040	2.96	0.41	-0.011	0.00	0.00
60	0.023	1.72	0.26	-0.010	0.00	0.00

TOTAL = 1.334 SQ.MI. XKSAT = 0.32 %ROCK= 1.43

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.87

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.714	VACANT	53.53	DRY	25.00	0.00	0.00	0.15	0.080
0.084	V.L.D.R	6.33	NORMAL	25.00	15.00	0.01	0.10	0.006
0.281	L.D.R.	21.05	NORMAL	25.00	25.00	0.07	0.10	0.021
0.059	M.F.R.	4.39	NORMAL	25.00	65.00	0.04	0.10	0.004
0.060	M.D.R.	4.51	NORMAL	25.00	45.00	0.03	0.10	0.005
0.124	IND	9.28	NORMAL	20.00	75.00	0.09	0.10	0.009
0.012	COMM	0.92	NORMAL	20.00	90.00	0.01	0.10	0.001

1.334 =TOTAL AREA OK AVERAGE = 24.49 TOTAL = 0.25 AVG. = 0.127
% = 18.88

PERCENT OF SUBBASIN
DRY = 53.53 %
NORMAL = 46.47 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.304

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.371

IMPERVIOUS AREA:
URBAN @ 100 % effective = 18.88
ROCK OUTCROP @ 60 % effective = 0.86

% EFFECTIVE IMP. = 19.74

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
231	1.334	1.440	0.570	89.00	0.127	0.304	3.87	0.371	19.74

LOSS PARAMETERS FOR SUBBASIN: 232

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
90	0.225	17.82	0.39	-0.073	0.00	0.00
1	0.221	17.50	0.41	-0.068	0.00	0.00
55	0.172	13.65	0.27	-0.078	0.00	0.00
101	0.148	11.74	0.28	-0.065	0.00	0.00
50	0.131	10.39	0.26	-0.061	0.00	0.00
112	0.110	8.70	0.39	-0.036	0.00	0.00
100	0.068	5.37	0.4	-0.021	20.00	1.07
21	0.047	3.72	0.38	-0.016	0.00	0.00
2	0.035	2.75	0.41	-0.011	0.00	0.00
60	0.024	1.94	0.26	-0.011	0.00	0.00
76	0.009	0.75	0.23	-0.005	0.00	0.00
115	0.037	2.90	0.39	-0.012	0.00	0.00
124	0.035	2.76	0.39	-0.011	0.00	0.00

TOTAL = 1.260 SQ.MI. XKSAT = 0.34 %ROCK= 1.07

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.98

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.502	VACANT	39.81	DRY	25.00	0.00	0.00	0.35	0.139
0.030	V.L.D.R	2.39	NORMAL	25.00	15.00	0.00	0.10	0.002
0.158	L.D.R.	12.53	NORMAL	25.00	25.00	0.04	0.10	0.013
0.348	M.F.R.	27.58	NORMAL	25.00	65.00	0.23	0.10	0.028
0.187	M.D.R.	14.84	NORMAL	25.00	45.00	0.08	0.10	0.015
0.036	COMM	2.85	NORMAL	20.00	90.00	0.03	0.10	0.003
1.260	=TOTAL AREA	OK	AVERAGE =	24.86	TOTAL =	0.39	AVG. =	0.200
					% =	30.66		

PERCENT OF SUBBASIN

DRY = 39.81 %
NORMAL = 60.19 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.290

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.396

IMPERVIOUS AREA:

URBAN @ 100 % effective = 30.66
ROCK OUTCROP @ 60 % effective = 0.64

% EFFECTIVE IMP. = 31.31

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
232	1.260	2.010	0.640	31.00	0.200	0.290	3.98	0.396	31.31

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LOSS PARAMETERS FOR SUBBASIN: 233

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
1	0.125	52.64	0.41	-0.204	0.00	0.00
101	0.043	18.29	0.28	-0.101	0.00	0.00
55	0.024	10.22	0.27	-0.058	0.00	0.00
124	0.017	6.96	0.39	-0.028	0.00	0.00
100	0.016	6.61	0.4	-0.026	20.00	1.32
2	0.012	4.94	0.41	-0.019	0.00	0.00
50	0.001	0.35	0.26	-0.002	0.00	0.00

TOTAL = 0.238 SQ.MI. XKSAT = 0.36 %ROCK= 1.32

DTHETA		PSIF	
Dry =	0.35	=	4.08
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.
0.122	VACANT	51.52	DRY	25.00	0.00	0.00	0.15	0.077
0.105	M.F.R.	44.01	NORMAL	25.00	65.00	0.07	0.10	0.044
0.006	M.D.R.	2.73	NORMAL	25.00	45.00	0.00	0.10	0.003
0.004	COMM	1.74	NORMAL	20.00	90.00	0.00	0.10	0.002

0.238 =TOTAL AREA OK AVERAGE = 24.91 TOTAL = 0.07 AVG. = 0.126
% = 31.40

PERCENT OF SUBBASIN DRY = 51.52 %
NORMAL = 48.48 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.302

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.419

IMPERVIOUS AREA: URBAN @ 100 % effective = 31.40
ROCK OUTCROP @ 60 % effective = 0.79

% EFFECTIVE IMP. = 32.19

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
233	0.238	1.200	0.390	91.00	0.126	0.302	4.08	0.419	32.19

LOSS PARAMETERS FOR SUBBASIN: 234

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
1	0.149	39.15	0.41	-0.152	0.00	0.00
50	0.105	27.57	0.26	-0.161	0.00	0.00
2	0.074	19.52	0.41	-0.076	0.00	0.00
76	0.027	7.11	0.23	-0.045	0.00	0.00
77	0.011	2.97	0.05	-0.039	0.00	0.00
LcA	0.006	1.62	0.25	-0.010	0.00	0.00
55	0.004	1.17	0.27	-0.007	0.00	0.00
GgA	0.003	0.89	0.25	-0.005	0.00	0.00
TOTAL =	0.381 SQ.MI.		XKSAT =	0.32	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.35	=	3.87
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.
0.161	VACANT	42.21	DRY	25.00	0.00	0.00	0.35	0.148
0.018	V.L.D.R	4.76	NORMAL	25.00	15.00	0.00	0.10	0.005
0.019	L.D.R.	5.06	NORMAL	25.00	25.00	0.00	0.10	0.005
0.053	M.F.R.	13.88	NORMAL	25.00	65.00	0.03	0.10	0.014
0.094	M.D.R.	24.64	NORMAL	25.00	45.00	0.04	0.10	0.025
0.036	COMM	9.45	NORMAL	20.00	90.00	0.03	0.10	0.009
0.381	=TOTAL AREA	OK	AVERAGE =	24.53	TOTAL =	0.12	AVG. =	0.206
					% =	30.59		

PERCENT OF SUBBASIN DRY = 42.21 %
NORMAL = 57.79 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.292

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.371

IMPERVIOUS AREA:

URBAN @	100 %	effective =	30.59
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		30.59

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
234	0.381	1.210	0.470	30.00	0.206	0.292	3.87	0.371	30.59

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LOSS PARAMETERS FOR SUBBASIN: 235

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
44	0.178	50.25	0.03	-0.765	0.00	0.00
68	0.093	26.36	0.63	-0.053	0.00	0.00
1	0.026	7.27	0.41	-0.028	0.00	0.00
GgA	0.025	7.12	0.25	-0.043	0.00	0.00
77	0.012	3.50	0.05	-0.046	0.00	0.00
AdB	0.007	2.00	0.4	-0.008	0.00	0.00
50	0.007	1.86	0.26	-0.011	0.00	0.00
18	0.006	1.63	0.33	-0.008	15.00	0.24

TOTAL = 0.354 SQ.MI. XKSAT = 0.11 %ROCK= 0.24

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.
0.134	VACANT	37.82	DRY	25.00	0.00	0.00	0.15	0.057
0.002	V.L.D.R	0.44	NORMAL	25.00	15.00	0.00	0.10	0.000
0.032	M.F.R.	9.04	NORMAL	25.00	65.00	0.02	0.10	0.009
0.187	M.D.R.	52.71	NORMAL	25.00	45.00	0.08	0.10	0.053
0.354	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.11	AVG. =	0.119
					% =	29.66		

PERCENT OF SUBBASIN
DRY = 37.82 %
NORMAL = 62.18 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.242

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.128

IMPERVIOUS AREA:
URBAN @ 100 % effective = 29.66
ROCK OUTCROP @ 60 % effective = 0.15
% EFFECTIVE IMP. = 29.80

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
235	0.354	1.100	0.700	186.00	0.119	0.242	7.32	0.128	29.80

LOSS PARAMETERS FOR SUBBASIN: 236

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.101	29.53	0.25	-0.178	0.00	0.00
GgA	0.067	19.58	0.25	-0.118	0.00	0.00
1	0.056	16.17	0.03	-0.246	0.00	0.00
101	0.049	14.24	0.03	-0.217	0.00	0.00
Te	0.015	4.50	0.25	-0.027	0.00	0.00
50	0.013	3.81	0.03	-0.058	0.00	0.00
2	0.011	3.32	0.03	-0.051	0.00	0.00
AdA	0.010	2.91	0.4	-0.012	0.00	0.00
PeA	0.009	2.53	0.37	-0.011	0.00	0.00
55	0.006	1.80	0.03	-0.027	0.00	0.00
RbA	0.006	1.61	0.26	-0.009	0.00	0.00

TOTAL = 0.343 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.
0.137	VACANT	40.03	DRY	25.00	0.00	0.00	0.35	0.140
0.025	V.L.D.R	7.33	NORMAL	25.00	15.00	0.00	0.10	0.007
0.093	M.F.R.	27.10	NORMAL	25.00	65.00	0.06	0.10	0.027
0.036	M.D.R.	10.55	NORMAL	25.00	45.00	0.02	0.10	0.011
0.051	COMM	14.99	NORMAL	20.00	90.00	0.05	0.10	0.015
0.343	=TOTAL AREA	OK	AVERAGE =	24.25	TOTAL = % =	0.13 36.96	AVG. =	0.200

PERCENT OF SUBBASIN

DRY = 40.03 %
NORMAL = 59.97 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.246

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.127

IMPERVIOUS AREA:

URBAN @ 100 % effective = 36.96
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 36.96

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
236	0.343	1.370	0.730	43.00	0.200	0.246	7.32	0.127	36.96

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LOSS PARAMETERS FOR SUBBASIN: 237

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
44	0.159	41.46	0.03	-0.631	0.00	0.00
RS	0.083	21.72	0.4	-0.086	65.00	14.12
18	0.057	14.79	0.33	-0.071	15.00	2.22
GgA	0.036	9.42	0.25	-0.057	0.00	0.00
AdB	0.027	7.09	0.4	-0.028	0.00	0.00
68	0.012	3.25	0.63	-0.007	0.00	0.00
LcA	0.009	2.28	0.25	-0.014	0.00	0.00

TOTAL = 0.384 SQ.MI. XKSAT = 0.13 %ROCK= 16.33

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.
0.250	VACANT	65.13	DRY	25.00	0.00	0.00	0.15	0.098
0.034	V.L.D.R	8.94	NORMAL	25.00	15.00	0.01	0.10	0.009
0.100	M.D.R.	25.94	NORMAL	25.00	45.00	0.04	0.10	0.026
0.384	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.05	AVG. =	0.133
					% =	13.01		

PERCENT OF SUBBASIN DRY = 65.13 %
NORMAL = 34.87 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.321

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.151

IMPERVIOUS AREA: URBAN @ 100 % effective = 13.01
ROCK OUTCROP @ 60 % effective = 9.80

% EFFECTIVE IMP. = 22.81

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
237	0.384	1.310	0.860	156.00	0.133	0.321	6.96	0.151	22.81

LOSS PARAMETERS FOR SUBBASIN: 238

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
115	0.124	24.48	0.39	-0.100	0.00	0.00
2	0.113	22.40	0.41	-0.087	0.00	0.00
1	0.084	16.60	0.41	-0.064	0.00	0.00
18	0.079	15.58	0.33	-0.075	15.00	2.34
100	0.068	13.45	0.4	-0.054	20.00	2.69
PsA	0.017	3.27	0.25	-0.020	0.00	0.00
112	0.012	2.29	0.39	-0.009	0.00	0.00
101	0.010	1.92	0.28	-0.011	0.00	0.00
TOTAL =	0.506 SQ.MI.		XKSAT =	0.38	%ROCK=	5.03

DTHETA		PSIF	
Dry =	0.35	=	4.19
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.
0.178	VACANT	35.17	DRY	25.00	0.00	0.00	0.15	0.053
0.008	L.D.R.	1.59	NORMAL	25.00	25.00	0.00	0.10	0.002
0.193	M.F.R.	38.14	NORMAL	25.00	65.00	0.13	0.10	0.038
0.127	M.D.R.	25.11	NORMAL	25.00	45.00	0.06	0.10	0.025
0.506	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.18	AVG. =	0.118
					% =	36.48		

PERCENT OF SUBBASIN

DRY =	35.17 %
NORMAL =	64.83 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.285

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.443

IMPERVIOUS AREA:

URBAN @	100 % effective =	36.48
ROCK OUTCROP @	60 % effective =	3.02
	% EFFECTIVE IMP. =	39.50

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
238	0.506	1.420	0.770	80.00	0.118	0.285	4.19	0.443	39.50

LOSS PARAMETERS FOR SUBBASIN: 239

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RpE	0.140	20.79	0.29	-0.112	0.00	0.00
100	0.119	17.63	0.4	-0.070	20.00	3.53
101	0.114	16.87	0.28	-0.093	0.00	0.00
PeA	0.060	8.97	0.37	-0.039	0.00	0.00
18	0.051	7.55	0.33	-0.036	15.00	1.13
CO	0.046	6.87	0.29	-0.037	20.00	1.37
AfA	0.041	6.10	0.38	-0.026	0.00	0.00
RbB	0.041	6.05	0.25	-0.036	0.00	0.00
AbA	0.032	4.79	0.38	-0.020	0.00	0.00
68	0.021	3.17	0.63	-0.006	0.00	0.00
112	0.004	0.63	0.39	-0.003	0.00	0.00
2	0.004	0.57	0.41	-0.002	0.00	0.00

TOTAL = 0.674 SQ.MI. XKSAT = 0.33 %ROCK= 6.03

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.92

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.312	VACANT	46.26	DRY	25.00	0.00	0.00	0.15	0.069
0.362	M.D.R.	53.74	NORMAL	25.00	45.00	0.16	0.10	0.054
0.674	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.16	AVG. =	0.123
					% =	24.18		

PERCENT OF SUBBASIN DRY = 46.26 %
NORMAL = 53.74 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.296

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.384

IMPERVIOUS AREA: URBAN @ 100 % effective = 24.18
ROCK OUTCROP @ 60 % effective = 3.62

% EFFECTIVE IMP. = 27.80

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
239	0.674	1.490	0.600	96.00	0.123	0.296	3.92	0.384	27.80

LOSS PARAMETERS FOR SUBBASIN: 240

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RpE	0.189	22.35	0.29	-0.120	0.00	0.00
PeA	0.163	19.33	0.37	-0.083	0.00	0.00
GgA	0.152	18.06	0.25	-0.109	0.00	0.00
68	0.101	11.92	0.63	-0.024	0.00	0.00
18	0.098	11.66	0.33	-0.056	15.00	1.75
110	0.054	6.35	0.13	-0.056	0.00	0.00
LcA	0.046	5.43	0.25	-0.033	0.00	0.00
Ge	0.019	2.21	0.26	-0.013	0.00	0.00
100	0.015	1.81	0.4	-0.007	20.00	0.36
AfA	0.007	0.88	0.38	-0.004	0.00	0.00

TOTAL = 0.843 SQ.MI. XKSAT = 0.31 %ROCK= 2.11

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.
0.398	VACANT	47.24	DRY	25.00	0.00	0.00	0.15	0.071
0.134	M.F.R.	15.89	NORMAL	25.00	65.00	0.09	0.10	0.016
0.284	M.D.R.	33.72	NORMAL	25.00	45.00	0.13	0.10	0.034
0.027	COMM	3.15	NORMAL	20.00	90.00	0.02	0.10	0.003
0.843	=TOTAL AREA	OK	AVERAGE =	24.84	TOTAL = % =	0.24 28.34	AVG. =	0.124

PERCENT OF SUBBASIN DRY = 47.24 %
NORMAL = 52.76 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.297

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.361

IMPERVIOUS AREA:

URBAN @	100 %	effective =	28.34
ROCK OUTCROP @	60 %	effective =	1.27
% EFFECTIVE IMP. =			29.60

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
240	0.843	2.170	1.290	80.00	0.124	0.297	3.82	0.361	29.60

LOSS PARAMETERS FOR SUBBASIN: 241

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.432	43.98	0.25	-0.265	0.00	0.00
GgA	0.198	20.12	0.25	-0.121	0.00	0.00
18	0.094	9.61	0.33	-0.046	15.00	1.44
PsB	0.050	5.13	0.26	-0.030	0.00	0.00
PeA	0.044	4.44	0.37	-0.019	0.00	0.00
101	0.030	3.00	0.28	-0.017	0.00	0.00
2	0.024	2.45	0.41	-0.009	0.00	0.00
RbA	0.018	1.86	0.26	-0.011	0.00	0.00
1	0.015	1.48	0.41	-0.006	0.00	0.00
PsA	0.014	1.40	0.25	-0.008	0.00	0.00
Te	0.013	1.31	0.25	-0.008	0.00	0.00
Gr	0.012	1.27	0.23	-0.008	0.00	0.00
50	0.012	1.26	0.26	-0.007	0.00	0.00
GxB	0.011	1.12	0.24	-0.007	0.00	0.00
Tu	0.008	0.80	0.25	-0.005	0.00	0.00
EbD	0.007	0.76	0.1	-0.008	0.00	0.00

TOTAL = 0.983 SQ.MI. XKSAT = 0.27 %ROCK= 1.44

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.
0.363	VACANT	36.94	DRY	25.00	0.00	0.00	0.15	0.055
0.499	M.F.R.	50.81	NORMAL	25.00	65.00	0.32	0.10	0.051
0.024	M.D.R.	2.47	NORMAL	25.00	45.00	0.01	0.10	0.002
0.042	IND	4.30	NORMAL	20.00	75.00	0.03	0.10	0.004
0.034	COMM	3.45	NORMAL	20.00	90.00	0.03	0.10	0.003
0.020	P.S.C.	2.04	NORMAL	20.00	90.00	0.02	0.10	0.002
0.983	=TOTAL AREA	OK	AVERAGE =	24.51	TOTAL =	0.42	AVG. =	0.118
					% =	42.30		

PERCENT OF SUBBASIN DRY = 36.94 %
NORMAL = 63.06 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.287

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.313

IMPERVIOUS AREA:	URBAN @	100 % effective =	42.30
	ROCK OUTCROP @	60 % effective =	0.87
		% EFFECTIVE IMP. =	43.16

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
241	0.983	1.550	0.680	59.00	0.118	0.287	3.61	0.313	43.16

LOSS PARAMETERS FOR SUBBASIN: 242

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.333	61.00	0.25	-0.367	0.00	0.00
LcA	0.127	23.22	0.25	-0.140	0.00	0.00
44	0.034	6.30	0.03	-0.096	0.00	0.00
RS	0.016	2.97	0.4	-0.012	65.00	1.93
CO	0.012	2.23	0.29	-0.012	20.00	0.45
PsB	0.011	2.03	0.26	-0.012	0.00	0.00
PeA	0.005	0.85	0.37	-0.004	0.00	0.00
Ge	0.004	0.79	0.26	-0.005	0.00	0.00
Cf	0.003	0.61	0.5	-0.002	0.00	0.00

TOTAL = 0.546 SQ.MI. XKSAT = 0.22 %ROCK= 2.38

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.
0.164	VACANT	30.13	DRY	25.00	0.00	0.00	0.15	0.045
0.084	M.F.R.	15.45	NORMAL	25.00	65.00	0.05	0.10	0.015
0.170	M.D.R.	31.12	NORMAL	25.00	45.00	0.08	0.10	0.031
0.044	COMM	8.12	NORMAL	20.00	90.00	0.04	0.10	0.008
0.083	P.S.C.	15.18	NORMAL	20.00	90.00	0.07	0.10	0.015
0.546	=TOTAL AREA	OK	AVERAGE =	23.83	TOTAL =	0.25	AVG. =	0.115
					% =	45.02		

PERCENT OF SUBBASIN DRY = 30.13 %
NORMAL = 69.87 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.286

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.253

IMPERVIOUS AREA:

URBAN @	100 %	effective =	45.02
ROCK OUTCROP @	60 %	effective =	1.43
% EFFECTIVE IMP. =			46.44

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
242	0.546	1.800	0.780	69.00	0.115	0.286	4.43	0.253	46.44

LOSS PARAMETERS FOR SUBBASIN: 243

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.303	69.79	0.25	-0.420	0.00	0.00
Ge	0.126	29.06	0.26	-0.170	0.00	0.00
Vg	0.005	1.15	0.91	-0.000	0.00	0.00

TOTAL = 0.434 SQ.MI. XKSAT = 0.26 %ROCK= 0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.013	VACANT	3.03	DRY	25.00	0.00	0.00	0.35	0.011
0.334	M.F.R.	76.97	NORMAL	25.00	65.00	0.22	0.10	0.077
0.063	M.D.R.	14.48	NORMAL	25.00	45.00	0.03	0.10	0.014
0.017	IND	3.94	NORMAL	20.00	75.00	0.01	0.10	0.004
0.007	COMM	1.57	NORMAL	20.00	90.00	0.01	0.10	0.002
0.434	=TOTAL AREA	OK	AVERAGE =	24.72	TOTAL =	0.26	AVG. =	0.108
					% =	60.92		

PERCENT OF SUBBASIN DRY = 3.03 %
NORMAL = 96.97 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.253

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.302

IMPERVIOUS AREA: URBAN @ 100 % effective = 60.92
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 60.92

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
243	0.434	1.560	0.620	28.00	0.108	0.253	3.55	0.302	60.92

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LOSS PARAMETERS FOR SUBBASIN: 244

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.256	73.34	0.25	-0.442	0.00	0.00
Ge	0.049	13.94	0.26	-0.082	0.00	0.00
Cf	0.044	12.72	0.5	-0.038	0.00	0.00
TOTAL =	0.349 SQ.MI.		XKSAT =	0.27	%ROCK=	0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.069	VACANT	19.91	DRY	25.00	0.00	0.00	0.35	0.070
0.137	M.F.R.	39.15	NORMAL	25.00	65.00	0.09	0.10	0.039
0.105	M.D.R.	30.07	NORMAL	25.00	45.00	0.05	0.10	0.030
0.034	COMM	9.71	NORMAL	20.00	90.00	0.03	0.10	0.010
0.004	P.S.C.	1.16	NORMAL	20.00	90.00	0.00	0.10	0.001
0.349	=TOTAL AREA	OK	AVERAGE =	24.46	TOTAL =	0.17	AVG. =	0.150
					% =	48.77		

PERCENT OF SUBBASIN DRY = 19.91 %
NORMAL = 80.09 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.270

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.313

IMPERVIOUS AREA:

URBAN @	100 %	effective =	48.77
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		48.77

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
244	0.349	1.520	0.800	29.00	0.150	0.270	3.61	0.313	48.77

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LOSS PARAMETERS FOR SUBBASIN: 245

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.173	34.28	0.25	-0.206	0.00	0.00
RS	0.118	23.39	0.4	-0.093	65.00	15.21
Ge	0.109	21.60	0.26	-0.126	0.00	0.00
Cf	0.058	11.41	0.5	-0.034	0.00	0.00
AbA	0.025	4.98	0.38	-0.021	0.00	0.00
Vh	0.022	4.35	0.27	-0.025	0.00	0.00

TOTAL = 0.506 SQ.MI. XKSAT = 0.31 %ROCK= 15.21

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.
0.184	VACANT	36.37	DRY	25.00	0.00	0.00	0.35	0.127
0.013	V.L.D.R	2.61	NORMAL	25.00	15.00	0.00	0.10	0.003
0.011	L.D.R.	2.10	NORMAL	25.00	25.00	0.00	0.10	0.002
0.054	M.F.R.	10.74	NORMAL	25.00	65.00	0.04	0.10	0.011
0.184	M.D.R.	36.28	NORMAL	25.00	45.00	0.08	0.10	0.036
0.011	CHURCH	2.11	NORMAL	20.00	90.00	0.01	0.10	0.002
0.050	PARK	9.79	NORMAL	90.00	0.00	0.00	0.20	0.020
0.506	=TOTAL AREA	OK	AVERAGE =	31.26	TOTAL =	0.13	AVG. =	0.201
					% =	26.12		

PERCENT OF SUBBASIN
DRY = 36.37 %
NORMAL = 63.63 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.286

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.382

IMPERVIOUS AREA:
URBAN @ 100 % effective = 26.12
ROCK OUTCROP @ 60 % effective = 9.12

% EFFECTIVE IMP. = 35.24

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
245	0.506	1.460	0.650	29.00	0.201	0.286	3.82	0.382	35.24

LOSS PARAMETERS FOR SUBBASIN: 246

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
115	0.124	31.16	0.39	-0.127	0.00	0.00
2	0.091	22.92	0.41	-0.089	0.00	0.00
100	0.087	21.92	0.4	-0.087	20.00	4.38
124	0.040	9.99	0.39	-0.041	0.00	0.00
101	0.031	7.75	0.28	-0.043	0.00	0.00
1	0.025	6.26	0.41	-0.024	0.00	0.00

TOTAL = 0.398 SQ.MI. XKSAT = 0.39 %ROCK= 4.38

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.24

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.236	VACANT	59.42	DRY	25.00	0.00	0.00	0.15	0.089
0.155	M.F.R.	39.09	NORMAL	25.00	65.00	0.10	0.10	0.039
0.004	M.D.R.	1.12	NORMAL	25.00	45.00	0.00	0.10	0.001
0.001	COMM	0.37	NORMAL	20.00	90.00	0.00	0.10	0.000

0.398 =TOTAL AREA OK AVERAGE = 24.98 TOTAL = 0.10 AVG. = 0.130
% = 26.25

PERCENT OF SUBBASIN DRY = 59.42 %
NORMAL = 40.58 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.309

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.454

IMPERVIOUS AREA: URBAN @ 100 % effective = 26.25
ROCK OUTCROP @ 60 % effective = 2.63
% EFFECTIVE IMP. = 28.88

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
246	0.398	1.510	0.750	90.00	0.130	0.309	4.24	0.454	28.88

LOSS PARAMETERS FOR SUBBASIN: 250

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
52	0.675	27.75	0.16	-0.221	20.00	5.55
3	0.463	19.04	0.58	-0.045	0.00	0.00
18	0.315	12.97	0.33	-0.062	15.00	1.94
55	0.267	10.96	0.27	-0.062	0.00	0.00
113	0.243	10.00	0.39	-0.041	0.00	0.00
110	0.118	4.86	0.13	-0.043	0.00	0.00
103	0.113	4.65	0.1	-0.047	65.00	3.02
21	0.078	3.20	0.38	-0.013	0.00	0.00
98	0.068	2.80	0.37	-0.012	0.00	0.00
90	0.048	1.99	0.39	-0.008	0.00	0.00
101	0.044	1.79	0.28	-0.010	0.00	0.00

TOTAL = 2.433 SQ.MI. XKSAT = 0.27 %ROCK= 10.52

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
2.404	VACANT	98.80	DRY	25.00	0.00	0.00	0.35	0.346
0.029	V.L.D.R	1.20	NORMAL	25.00	15.00	0.00	0.10	0.001
2.433	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.00	AVG. =	0.347
					% =	0.18		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.349

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.315

IMPERVIOUS AREA: URBAN @ 100 % effective = 0.18
ROCK OUTCROP @ 60 % effective = 6.31

% EFFECTIVE IMP. = 6.49

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	* AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
250	2.433	3.580	1.440	43.00	0.347	0.349	3.61	0.315	6.49

* Includes Gravel Pit area excluded from 100-Year Storm sub-basin area (2.396 sq. mi.)

LOSS PARAMETERS FOR SUBBASIN: 251

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
113	0.865	50.31	0.39	-0.206	0.00	0.00
101	0.232	13.51	0.28	-0.075	0.00	0.00
18	0.168	9.77	0.33	-0.047	15.00	1.47
90	0.154	8.96	0.39	-0.037	0.00	0.00
112	0.096	5.57	0.39	-0.023	0.00	0.00
118	0.071	4.15	0.42	-0.016	0.00	0.00
2	0.061	3.57	0.41	-0.014	0.00	0.00
52	0.029	1.66	0.16	-0.013	20.00	0.33
55	0.022	1.28	0.27	-0.007	0.00	0.00
3	0.021	1.21	0.58	-0.003	0.00	0.00
TOTAL =	1.719 SQ.MI.		XKSAT =	0.36	%ROCK=	1.80

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.08

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
1.683	VACANT	97.93	DRY	25.00	0.00	0.00	0.35	0.343
0.036	V.L.D.R	2.07	NORMAL	25.00	15.00	0.01	0.10	0.002
1.719	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.01	AVG. =	0.345
					% =	0.31		

PERCENT OF SUBBASIN
DRY = 97.93 %
NORMAL = 2.07 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.348

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.419

IMPERVIOUS AREA:
URBAN @ 100 % effective = 0.31
ROCK OUTCROP @ 60 % effective = 1.08
% EFFECTIVE IMP. = 1.39

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
251	1.719	3.890	1.520	48.00	0.345	0.348	4.08	0.419	1.39

LOSS PARAMETERS FOR SUBBASIN: 252

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
3	0.316	30.78	0.58	-0.073	0.00	0.00
18	0.214	20.80	0.33	-0.100	15.00	3.12
110	0.115	11.15	0.13	-0.099	0.00	0.00
21	0.098	9.58	0.38	-0.040	0.00	0.00
101	0.091	8.84	0.28	-0.049	0.00	0.00
55	0.059	5.72	0.27	-0.032	0.00	0.00
68	0.032	3.14	0.63	-0.006	0.00	0.00
112	0.031	3.00	0.39	-0.012	0.00	0.00
113	0.026	2.57	0.39	-0.010	0.00	0.00
108	0.025	2.43	0.31	-0.012	30.00	0.73
50	0.020	1.99	0.26	-0.012	0.00	0.00
TOTAL =	1.028 SQ.MI.		XKSAT =	0.36	%ROCK=	3.85

DTHETA		PSIF	
Dry =	0.35	=	4.08
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.
0.942	VACANT	91.67	DRY	25.00	0.00	0.00	0.15	0.138
0.086	IND	8.33	NORMAL	20.00	75.00	0.06	0.10	0.008
1.028	=TOTAL AREA	OK	AVERAGE =	24.58	TOTAL =	0.06	AVG. =	0.146
					% =	6.24		

PERCENT OF SUBBASIN DRY = 91.67 %
NORMAL = 8.33 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.342

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.418

IMPERVIOUS AREA:

URBAN @	100 %	effective =	6.24
ROCK OUTCROP @	60 %	effective =	2.31
	% EFFECTIVE IMP. =		8.55

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	* AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
252	1.028	2.020	0.860	62.00	0.146	0.342	4.08	0.418	8.55

* Includes Gravel Pit area excluded from 100-Year Storm sub-basin area (0.858 sq. mi.).

LOSS PARAMETERS FOR SUBBASIN: 253

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
18	0.251	19.66	0.33	-0.095	15.00	2.95
CF	0.228	17.92	0.5	-0.054	0.00	0.00
110	0.210	16.51	0.13	-0.146	0.00	0.00
68	0.206	16.15	0.63	-0.032	0.00	0.00
GgA	0.104	8.13	0.25	-0.049	0.00	0.00
Ge	0.058	4.55	0.26	-0.027	0.00	0.00
Ma	0.050	3.92	0.4	-0.016	0.00	0.00
Mp	0.031	2.47	0.25	-0.015	0.00	0.00
Es	0.030	2.38	0.25	-0.014	0.00	0.00
21	0.024	1.86	0.38	-0.008	0.00	0.00
108	0.022	1.71	0.31	-0.009	30.00	0.51
Vg	0.022	1.70	0.91	-0.001	0.00	0.00
3	0.013	0.99	0.58	-0.002	0.00	0.00
Cb	0.012	0.96	0.4	-0.004	0.00	0.00
Gr	0.008	0.61	0.23	-0.004	0.00	0.00
Te	0.006	0.49	0.25	-0.003	0.00	0.00

TOTAL = 1.275 SQ.MI. XKSAT = 0.33 %ROCK= 3.46

DTHETA		PSIF	
Dry =	0.35	=	3.92
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.
1.256	VACANT	98.53	DRY	25.00	0.00	0.00	0.25	0.246
0.019	M.F.R.	1.47	NORMAL	25.00	65.00	0.01	0.10	0.001
1.275	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.01	AVG. =	0.248
					% =	0.96		

PERCENT OF SUBBASIN DRY = 98.53 %
NORMAL = 1.47 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.349

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.384

IMPERVIOUS AREA:

URBAN @	100 % effective =	0.96
ROCK OUTCROP @	60 % effective =	2.08
	% EFFECTIVE IMP. =	3.03

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	* AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
253	1.275	2.640	1.300	59.00	0.248	0.349	3.92	0.384	3.03

* Includes Gravel Pit areas excluded from 100-Year Storm sub-basin area (0.928 sq. mi.).

LOSS PARAMETERS FOR SUBBASIN: 254

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Cf	0.134	44.70	0.5	-0.135	0.00	0.00
Es	0.073	24.53	0.25	-0.148	0.00	0.00
Ge	0.036	11.91	0.26	-0.070	0.00	0.00
TfA	0.017	5.69	0.37	-0.025	0.00	0.00
Vg	0.016	5.45	0.91	-0.002	0.00	0.00
Mp	0.013	4.20	0.25	-0.025	0.00	0.00
GgA	0.011	3.51	0.25	-0.021	0.00	0.00
TOTAL =	0.299 SQ.MI.		XKSAT =	0.38	%ROCK=	0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.19

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.234	VACANT	78.07	DRY	25.00	0.00	0.00	0.35	0.273
0.011	M.F.R.	3.67	NORMAL	25.00	65.00	0.01	0.10	0.004
0.032	M.D.R.	10.53	NORMAL	25.00	45.00	0.01	0.10	0.011
0.023	IND	7.72	NORMAL	20.00	75.00	0.02	0.10	0.008
0.299	=TOTAL AREA	OK	AVERAGE =	24.61	TOTAL =	0.04	AVG. =	0.295
					% =	12.92		

PERCENT OF SUBBASIN
DRY = 78.07 %
NORMAL = 21.93 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.328

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.441

IMPERVIOUS AREA:
URBAN @ 100 % effective = 12.92
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 12.92

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	* AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
254	0.299	0.980	0.550	36.00	0.295	0.328	4.19	0.441	12.92

* Includes Land Fill/Gravel Pit area excluded from 100-Year Storm sub-basin area (0.174 sq. mi.).

LOSS PARAMETERS FOR SUBBASIN: 255

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.188	36.53	0.25	-0.220	0.00	0.00
Es	0.167	32.44	0.25	-0.195	0.00	0.00
GgA	0.067	13.08	0.25	-0.079	0.00	0.00
Gr	0.048	9.27	0.23	-0.059	0.00	0.00
Te	0.023	4.42	0.25	-0.027	0.00	0.00
TfA	0.022	4.26	0.37	-0.018	0.00	0.00
TOTAL =	0.514 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.
0.147	VACANT	28.54	DRY	25.00	0.00	0.00	0.35	0.100
0.057	M.F.R.	11.08	NORMAL	25.00	65.00	0.04	0.10	0.011
0.272	M.D.R.	52.87	NORMAL	25.00	45.00	0.12	0.10	0.053
0.004	COMM	0.79	NORMAL	20.00	90.00	0.00	0.10	0.001
0.035	PARK	6.71	NORMAL	90.00	0.00	0.00	0.20	0.013
0.514	=TOTAL AREA	OK	AVERAGE =	29.32	TOTAL =	0.16	AVG. =	0.178
					% =	31.71		

PERCENT OF SUBBASIN

DRY =	28.54 %
NORMAL =	71.46 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.279

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.303

IMPERVIOUS AREA:

URBAN @	100 %	effective =	31.71
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		31.71

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
255	0.514	1.430	0.500	29.00	0.178	0.279	3.50	0.303	31.71

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LOSS PARAMETERS FOR SUBBASIN: 256

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.093	66.52	0.25	-0.400	0.00	0.00
Es	0.046	32.90	0.25	-0.198	0.00	0.00
TfA	0.001	0.58	0.37	-0.003	0.00	0.00
TOTAL =	0.140 SQ.MI.		XKSAT =	0.25	%ROCK=	0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.023	VACANT	16.21	DRY	25.00	0.00	0.00	0.35	0.057
0.118	M.D.R.	83.79	NORMAL	25.00	45.00	0.05	0.10	0.084
0.140	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.05	AVG. =	0.141
					% =	37.71		

PERCENT OF SUBBASIN DRY = 16.21 %
NORMAL = 83.79 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.266

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.291

IMPERVIOUS AREA: URBAN @ 100 % effective = 37.71
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 37.71

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
256	0.140	0.820	0.450	24.00	0.141	0.266	3.50	0.291	37.71

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LOSS PARAMETERS FOR SUBBASIN: 257

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
CF	0.322	29.97	0.5	-0.090	0.00	0.00
Mp	0.245	22.80	0.25	-0.137	0.00	0.00
Ge	0.180	16.76	0.26	-0.098	0.00	0.00
GgA	0.129	11.98	0.25	-0.072	0.00	0.00
Es	0.128	11.89	0.25	-0.072	0.00	0.00
Cb	0.037	3.40	0.4	-0.014	0.00	0.00
Vg	0.034	3.20	0.91	-0.001	0.00	0.00

TOTAL = 1.076 SQ.MI. XKSAT = 0.33 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.92

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.432	VACANT	40.15	DRY	25.00	0.00	0.00	0.35	0.141
0.004	L.D.R.	0.41	NORMAL	25.00	25.00	0.00	0.10	0.000
0.083	M.F.R.	7.69	NORMAL	25.00	65.00	0.05	0.10	0.008
0.550	M.D.R.	51.14	NORMAL	25.00	45.00	0.25	0.10	0.051
0.007	COMM	0.60	NORMAL	20.00	90.00	0.01	0.10	0.001

1.076 =TOTAL AREA OK AVERAGE = 24.97 TOTAL = 0.31 AVG. = 0.200
% = 28.66

PERCENT OF SUBBASIN
DRY = 40.15 %
NORMAL = 59.85 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.290

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.384

IMPERVIOUS AREA:
URBAN @ 100 % effective = 28.66
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 28.66

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	* AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
257	1.076	2.210	0.880	26.00	0.200	0.290	3.92	0.384	28.66

* Includes subdivision area contributing to a portion of the Future Cave Creek channel between 7th Avenue and Union Hills Drive just west of Central Avenue which is considered non-contributing area for all storms (0.921 sq. mi.).

LOSS PARAMETERS FOR SUBBASIN: 258

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
CF	0.162	36.91	0.5	-0.111	0.00	0.00
GgA	0.146	33.16	0.25	-0.200	0.00	0.00
Ge	0.128	29.02	0.26	-0.170	0.00	0.00
Tc	0.004	0.91	0.4	-0.004	0.00	0.00

TOTAL = 0.440 SQ.MI. XKSAT = 0.33 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.92

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.287	VACANT	65.34	DRY	25.00	0.00	0.00	0.35	0.229
0.119	M.F.R.	27.08	NORMAL	25.00	65.00	0.08	0.10	0.027
0.009	M.D.R.	2.06	NORMAL	25.00	45.00	0.00	0.10	0.002
0.024	COMM	5.52	NORMAL	20.00	90.00	0.02	0.10	0.006
0.440	=TOTAL AREA	OK	AVERAGE =	24.72	TOTAL =	0.10	AVG. =	0.263
					% =	23.50		

PERCENT OF SUBBASIN DRY = 65.34 %
NORMAL = 34.66 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.315

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.383

IMPERVIOUS AREA:
URBAN @ 100 % effective = 23.50
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 23.50

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
258	0.440	1.520	0.920	34.00	0.263	0.315	3.92	0.383	23.50

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LOSS PARAMETERS FOR SUBBASIN: 260

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.419	63.29	0.25	-0.381	0.00	0.00
Es	0.114	17.16	0.25	-0.103	0.00	0.00
TfA	0.090	13.61	0.37	-0.059	0.00	0.00
Gr	0.028	4.21	0.23	-0.027	0.00	0.00
Te	0.011	1.73	0.25	-0.010	0.00	0.00
TOTAL =	0.662 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.
0.097	VACANT	14.63	DRY	25.00	0.00	0.00	0.35	0.051
0.036	M.F.R.	5.38	NORMAL	25.00	65.00	0.02	0.10	0.005
0.508	M.D.R.	76.81	NORMAL	25.00	45.00	0.23	0.10	0.077
0.021	P.S.C.	3.18	NORMAL	20.00	90.00	0.02	0.10	0.003
0.662	=TOTAL AREA	OK	AVERAGE =	24.84	TOTAL =	0.27	AVG. =	0.137
					% =	40.93		

PERCENT OF SUBBASIN

DRY =	14.63 %
NORMAL =	85.37 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.265

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.302

IMPERVIOUS AREA:

URBAN @	100 %	effective =	40.93
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		40.93

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
260	0.662	1.760	0.830	27.00	0.137	0.265	3.55	0.302	40.93

LOSS PARAMETERS FOR SUBBASIN: 261

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.345	55.95	0.25	-0.337	0.00	0.00
Es	0.132	21.35	0.25	-0.129	0.00	0.00
Mr	0.066	10.68	0.05	-0.139	0.00	0.00
GgA	0.039	6.30	0.25	-0.038	0.00	0.00
Vf	0.020	3.23	0.01	-0.065	0.00	0.00
Te	0.010	1.63	0.25	-0.010	0.00	0.00
TfA	0.005	0.85	0.37	-0.004	0.00	0.00

TOTAL = 0.617 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.
0.076	VACANT	12.26	DRY	25.00	0.00	0.00	0.35	0.043
0.013	L.D.R.	2.05	NORMAL	25.00	25.00	0.00	0.10	0.002
0.080	M.F.R.	12.95	NORMAL	25.00	65.00	0.05	0.10	0.013
0.373	M.D.R.	60.42	NORMAL	25.00	45.00	0.17	0.10	0.060
0.076	COMM	12.33	NORMAL	20.00	90.00	0.07	0.10	0.012
0.617	=TOTAL AREA	OK	AVERAGE =	24.38	TOTAL =	0.29	AVG. =	0.131
					% =	47.21		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.266

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.220

IMPERVIOUS AREA: URBAN @ 100 % effective = 47.21
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 47.21

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
261	0.617	1.490	0.950	21.00	0.131	0.266	5.36	0.220	47.21

LOSS PARAMETERS FOR SUBBASIN: 262

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.388	56.60	0.25	-0.341	0.00	0.00
Tc	0.085	12.38	0.4	-0.049	0.00	0.00
Mp	0.084	12.31	0.25	-0.074	0.00	0.00
Ge	0.035	5.17	0.26	-0.030	0.00	0.00
Mr	0.033	4.88	0.05	-0.063	0.00	0.00
Es	0.028	4.14	0.25	-0.025	0.00	0.00
RS	0.027	4.01	0.4	-0.016	65.00	2.61
Vf	0.003	0.51	0.01	-0.010	0.00	0.00
TOTAL =	0.685 SQ.MI.		XKSAT =	0.25	%ROCK=	2.61

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.
0.189	VACANT	27.60	DRY	25.00	0.00	0.00	0.35	0.097
0.143	L.D.R.	20.94	NORMAL	25.00	25.00	0.04	0.10	0.021
0.091	M.F.R.	13.23	NORMAL	25.00	65.00	0.06	0.10	0.013
0.011	M.D.R.	1.66	NORMAL	25.00	45.00	0.01	0.10	0.002
0.069	COMM/CHURCH	10.09	NORMAL	20.00	90.00	0.06	0.10	0.010
0.066	PARKING	9.63	NORMAL	5.00	90.00	0.06	0.10	0.010
0.115	PARK/GC	16.84	NORMAL	90.00	0.00	0.00	0.20	0.034
0.685	=TOTAL AREA	OK	AVERAGE =	33.52	TOTAL =	0.22	AVG. =	0.186
					% =	32.33		

PERCENT OF SUBBASIN

DRY =	27.60	%
NORMAL =	72.40	%
WET =	0.00	%

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.278

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.315

IMPERVIOUS AREA:

URBAN @	100	% effective =	32.33
ROCK OUTCROP @	60	% effective =	1.56
		% EFFECTIVE IMP. =	33.89

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	* AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
262	0.685	1.490	0.870	31.00	0.186	0.278	3.50	0.315	33.89

* Includes the Turf Paradise Race Track Area which is excluded from 100-Year Storm sub-basin area (0.589 sq. mi.).

LOSS PARAMETERS FOR SUBBASIN: 263

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.271	27.29	0.25	-0.164	0.00	0.00
Mp	0.147	14.86	0.25	-0.089	0.00	0.00
Es	0.139	14.03	0.25	-0.084	0.00	0.00
TD	0.105	10.59	1.2	0.008	0.00	0.00
Ge	0.072	7.26	0.26	-0.042	0.00	0.00
Ma	0.066	6.70	0.4	-0.027	0.00	0.00
Tc	0.055	5.59	0.4	-0.022	0.00	0.00
Cp	0.049	4.98	0.4	-0.020	0.00	0.00
Aa	0.020	2.06	0.26	-0.012	0.00	0.00
Vk	0.016	1.64	0.26	-0.010	0.00	0.00
Bs	0.015	1.49	0.39	-0.006	0.00	0.00
Vh	0.012	1.20	0.27	-0.007	0.00	0.00
Th	0.010	1.02	0.04	-0.014	0.00	0.00
Cb	0.007	0.74	0.4	-0.003	0.00	0.00
LcA	0.005	0.55	0.25	-0.003	0.00	0.00

TOTAL = 0.992 SQ.MI. XKSAT = 0.32 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.87

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.222	VACANT	22.44	DRY	25.00	0.00	0.00	0.35	0.079
0.067	L.D.R.	6.77	NORMAL	25.00	25.00	0.02	0.10	0.007
0.215	M.F.R.	21.69	NORMAL	25.00	65.00	0.14	0.10	0.022
0.160	M.D.R.	16.12	NORMAL	25.00	45.00	0.07	0.10	0.016
0.004	COMM	0.43	NORMAL	20.00	90.00	0.00	0.10	0.000
0.323	PARK/GC	32.55	NORMAL	90.00	0.00	0.00	0.20	0.065
0.992	=TOTAL AREA	OK	AVERAGE =	46.14	TOTAL =	0.23	AVG. =	0.189
					% =	23.43		

PERCENT OF SUBBASIN DRY = 22.44 %
NORMAL = 77.56 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.272

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.447

IMPERVIOUS AREA: URBAN @ 100 % effective = 23.43
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 23.43

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
263	0.992	2.300	1.110	30.00	0.189	0.272	3.87	0.447	23.43

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LOSS PARAMETERS FOR SUBBASIN: 264

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Cp	0.160	33.42	0.4	-0.133	0.00	0.00
Ge	0.114	23.72	0.26	-0.139	0.00	0.00
LcA	0.081	16.96	0.25	-0.102	0.00	0.00
GgA	0.055	11.47	0.25	-0.069	0.00	0.00
TD	0.023	4.90	1.2	0.004	0.00	0.00
Es	0.017	3.53	0.25	-0.021	0.00	0.00
RS	0.013	2.79	0.4	-0.011	65.00	1.82
RbA	0.012	2.51	0.26	-0.015	0.00	0.00
AbA	0.003	0.70	0.38	-0.003	0.00	0.00

TOTAL = 0.479 SQ.MI. XKSAT = 0.32 %ROCK= 1.82

DTHETA		PSIF	
Dry =	0.35	=	3.87
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.
0.019	VACANT	3.88	DRY	25.00	0.00	0.00	0.35	0.014
0.061	M.F.R.	12.73	NORMAL	25.00	65.00	0.04	0.10	0.013
0.312	M.D.R.	65.22	NORMAL	25.00	45.00	0.14	0.10	0.065
0.019	COMM	3.99	NORMAL	20.00	90.00	0.02	0.10	0.004
0.068	PARK	14.19	NORMAL	90.00	0.00	0.00	0.20	0.028
0.479	=TOTAL AREA	OK	AVERAGE =	34.02	TOTAL =	0.20	AVG. =	0.124
					% =	41.21		

PERCENT OF SUBBASIN DRY = 3.88 %
NORMAL = 96.12 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.254

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.405

IMPERVIOUS AREA:

URBAN @	100 %	effective =	41.21
ROCK OUTCROP @	60 %	effective =	1.09
	% EFFECTIVE IMP. =		42.30

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
264	0.479	1.130	0.490	19.00	0.124	0.254	3.87	0.405	42.30

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LOSS PARAMETERS FOR SUBBASIN: 265

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.470	53.70	0.25	-0.323	0.00	0.00
Es	0.113	12.93	0.25	-0.078	0.00	0.00
Ge	0.105	11.95	0.26	-0.070	0.00	0.00
Mp	0.054	6.16	0.25	-0.037	0.00	0.00
TD	0.050	5.74	1.2	0.005	0.00	0.00
GgA	0.032	3.66	0.25	-0.022	0.00	0.00
Cp	0.026	3.01	0.4	-0.012	0.00	0.00
PeA	0.010	1.13	0.37	-0.005	0.00	0.00
AbA	0.008	0.93	0.38	-0.004	0.00	0.00
Cb	0.007	0.78	0.4	-0.003	0.00	0.00

TOTAL = 0.876 SQ.MI. XKSAT = 0.28 %ROCK= 0.00

DTHETA

Dry =	0.35
Normal =	0.25
Wet =	0

PSIF

= 3.66

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.014	VACANT	1.64	DRY	25.00	0.00	0.00	0.35	0.006
0.069	M.F.R.	7.84	NORMAL	25.00	65.00	0.04	0.10	0.008
0.289	M.D.R.	33.00	NORMAL	25.00	45.00	0.13	0.10	0.033
0.347	IND	39.59	NORMAL	20.00	75.00	0.26	0.10	0.040
0.043	COMM	4.94	NORMAL	20.00	90.00	0.04	0.10	0.005
0.114	PARK	13.00	NORMAL	90.00	0.00	0.00	0.20	0.026
0.876	=TOTAL AREA	OK	AVERAGE =	31.22	TOTAL = % =	0.47 54.08	AVG. =	0.117

PERCENT OF SUBBASIN

DRY =	1.64 %
NORMAL =	98.36 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.252

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.345

IMPERVIOUS AREA:

URBAN @	100 %	effective =	54.08
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		54.08

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
265	0.876	1.750	0.800	23.00	0.117	0.252	3.66	0.345	54.08

0

LOSS PARAMETERS FOR SUBBASIN: 266

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Es	0.108	49.74	0.25	-0.299	0.00	0.00
LcA	0.045	20.58	0.25	-0.124	0.00	0.00
TD	0.017	7.98	1.2	0.006	0.00	0.00
Vh	0.012	5.49	0.27	-0.031	0.00	0.00
GgA	0.010	4.80	0.25	-0.029	0.00	0.00
Br	0.008	3.85	1.05	0.001	0.00	0.00
Mp	0.008	3.69	0.25	-0.022	0.00	0.00
Cb	0.005	2.11	0.4	-0.008	0.00	0.00
Cp	0.004	1.75	0.4	-0.007	0.00	0.00
TOTAL =	0.217 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.
0.070	VACANT	32.15	DRY	25.00	0.00	0.00	0.35	0.113
0.109	IND	50.14	NORMAL	20.00	75.00	0.08	0.10	0.050
0.038	PARK	17.71	NORMAL	90.00	0.00	0.00	0.20	0.035
0.217	=TOTAL AREA	OK	AVERAGE =	34.01	TOTAL =	0.08	AVG. =	0.198
					% =	37.61		

PERCENT OF SUBBASIN DRY = 32.15 %
NORMAL = 67.85 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.282

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.392

IMPERVIOUS AREA: URBAN @ 100 % effective = 37.61
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 37.61

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
266	0.217	0.840	0.440	21.00	0.198	0.282	3.82	0.392	37.61

LOSS PARAMETERS FOR SUBBASIN: 336

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
109	0.130	27.47	0.35	-0.125	35.00	9.61
Te	0.090	19.05	0.25	-0.115	0.00	0.00
50	0.087	18.39	0.26	-0.108	0.00	0.00
113	0.047	9.90	0.39	-0.041	0.00	0.00
55	0.035	7.43	0.27	-0.042	0.00	0.00
98	0.031	6.64	0.37	-0.029	0.00	0.00
108	0.029	6.16	0.31	-0.031	30.00	1.85
112	0.023	4.97	0.39	-0.020	0.00	0.00
TOTAL =	0.472 SQ.MI.		XKSAT =	0.31	%ROCK=	11.46

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.
0.438	VACANT	92.69	DRY	25.00	0.00	0.00	0.15	0.139
0.035	IND	7.31	NORMAL	20.00	75.00	0.03	0.10	0.007
0.472	=TOTAL AREA	OK	AVERAGE =	24.63	TOTAL =	0.03	AVG. =	0.146
					% =	5.48		

PERCENT OF SUBBASIN
DRY = 92.69 %
NORMAL = 7.31 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.343

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.360

IMPERVIOUS AREA:
URBAN @ 100 % effective = 5.48
ROCK OUTCROP @ 60 % effective = 6.88
% EFFECTIVE IMP. = 12.36

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
336	0.472	1.380	0.640	58.00	0.146	0.343	3.82	0.360	12.36

LOSS PARAMETERS FOR SUBBASIN: 339

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Te	0.202	57.68	0.25	-0.347	0.00	0.00
Es	0.053	15.11	0.25	-0.091	0.00	0.00
Gr	0.040	11.32	0.23	-0.072	0.00	0.00
GgA	0.026	7.52	0.25	-0.045	0.00	0.00
TfA	0.018	5.23	0.37	-0.023	0.00	0.00
CO	0.011	3.15	0.29	-0.017	20.00	0.63

TOTAL = 0.350 SQ.MI. XKSAT = 0.25 %ROCK= 0.63

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.
0.274	VACANT	78.17	DRY	25.00	0.00	0.00	0.35	0.274
0.076	IND	21.83	NORMAL	20.00	75.00	0.06	0.10	0.022
0.350	=TOTAL AREA	OK	AVERAGE =	23.91	TOTAL =	0.06	AVG. =	0.295
					% =	16.37		

PERCENT OF SUBBASIN DRY = 78.17 %
NORMAL = 21.83 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.328

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.288

IMPERVIOUS AREA: URBAN @ 100 % effective = 16.37
ROCK OUTCROP @ 60 % effective = 0.38
% EFFECTIVE IMP. = 16.75

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
339	0.350	1.110	0.490	31.00	0.295	0.328	3.50	0.288	16.75

0

Green-Ampt Parameters
(Future Condition)

TABLE 17

AVERAGE GREEN-AMPT PARAMETERS (FUTURE CONDITIONS)

Sub-Basin	IA(in)	DTHETA	PSIF(in)	XKSAT(in/hr)	RTIMP(%)
200	0.119	0.288	5.36	0.228	34.32
202	0.103	0.258	6.29	0.186	43.76
203	0.132	0.293	4.19	0.471	33.64
204	0.129	0.298	3.82	0.373	36.06
205	0.123	0.276	6.29	0.201	41.72
206	0.118	0.250	3.50	0.323	37.03
207	0.148	0.346	3.50	0.291	23.80
208	0.143	0.250	3.61	0.398	25.51
209	0.113	0.274	3.77	0.352	46.34
210	0.125	0.301	3.55	0.303	41.24
211	0.100	0.250	3.50	0.291	51.17
212	0.108	0.267	3.71	0.337	47.24
213	0.114	0.286	5.05	0.233	46.44
214	0.118	0.279	3.81	0.286	52.80
215	0.104	0.250	3.50	0.296	47.06
216	0.113	0.286	5.98	0.197	43.25
220	0.134	0.250	3.87	0.386	57.29
221	0.120	0.250	3.66	0.363	40.62
222	0.100	0.250	3.61	0.312	53.28
223	0.100	0.250	3.71	0.336	41.83
224	0.100	0.250	3.50	0.289	69.20
225	0.100	0.250	3.50	0.288	70.48
226	0.111	0.272	4.14	0.426	50.26
227	0.117	0.261	3.71	0.349	59.11
228	0.125	0.256	3.82	0.392	56.32
229	0.100	0.250	4.08	0.392	76.93
230	0.102	0.253	3.87	0.360	70.17
231	0.110	0.269	3.92	0.370	58.24
232	0.102	0.252	4.03	0.406	60.47
233	0.105	0.260	3.92	0.383	46.85
234	0.100	0.250	3.77	0.346	55.93
235	0.100	0.250	3.61	0.312	38.13
236	0.116	0.271	3.55	0.312	37.72

TABLE 17

AVERAGE GREEN-AMPT PARAMETERS (FUTURE CONDITIONS)

Sub-Basin	IA(in)	DTHETA	PSIF(in)	XKSAT(in/hr)	RTIMP(%)
237	0.102	0.256	4.74	0.244	45.37
238	0.120	0.255	4.19	0.468	51.02
239	0.100	0.250	3.77	0.345	62.71
240	0.109	0.186	7.50	0.117	35.23
241	0.118	0.303	6.29	0.186	31.11
242	0.128	0.258	3.92	0.440	34.35
243	0.104	0.259	3.77	0.343	49.30
244	0.118	0.257	3.61	0.315	57.00
245	0.100	0.250	3.66	0.317	68.43
246	0.101	0.253	4.12	0.265	62.43
247	0.106	0.250	3.55	0.313	56.20
248	0.102	0.254	3.55	0.301	58.51
249	0.115	0.267	3.87	0.388	43.93
250	0.136	0.323	3.61	0.315	10.39
251	0.109	0.267	4.08	0.421	25.21
252	0.105	0.260	3.87	0.357	76.93
253	0.142	0.260	3.98	0.421	41.44
254	0.149	0.262	4.14	0.460	36.74
255	0.132	0.262	3.87	0.391	37.05
256	0.152	0.260	4.30	0.512	28.08
257	0.100	0.250	3.50	0.289	48.38
258	0.100	0.250	4.19	0.443	49.47
259	0.100	0.250	3.92	0.382	42.33
260	0.100	0.250	3.55	0.300	49.22
261	0.100	0.250	5.05	0.232	53.64
262	0.116	0.253	3.81	0.297	44.96
263	0.134	0.250	3.87	0.449	36.76
264	0.116	0.254	3.87	0.405	42.30
265	0.113	0.250	3.66	0.345	55.21
266	0.118	0.250	3.82	0.386	61.72

LOSS PARAMETERS FOR SUBBASIN: 200 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
EbD	0.277	47.73	0.1	-0.477	0.00	0.00
18	0.173	29.79	0.33	-0.143	15.00	4.47
68	0.068	11.71	0.63	-0.023	0.00	0.00
RS	0.039	6.78	0.4	-0.027	65.00	4.41
44	0.023	3.98	0.03	-0.061	0.00	0.00
TOTAL =	0.580 SQ.MI.		XKSAT =	0.19	%ROCK=	8.88

DTHETA

Dry =	0.38
Normal =	0.25
Wet =	0

PSIF

= 5.36

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.168	VACANT	28.97	DRY	25.00	0.00	0.00	0.15	0.043
0.019	V.L.D.R	3.31	NORMAL	25.00	15.00	0.00	0.10	0.003
0.004	M.F.R.	0.73	NORMAL	25.00	65.00	0.00	0.10	0.001
0.361	M.D.R.	62.27	NORMAL	25.00	45.00	0.16	0.10	0.062
0.027	GC	4.72	NORMAL	90.00	0.00	0.00	0.20	0.009
0.580	=TOTAL AREA	OK	AVERAGE =	28.07	TOTAL =	0.17	AVG. =	0.119
					% =	28.99		

PERCENT OF SUBBASIN

DRY =	28.97 %
NORMAL =	71.03 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.288

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.228

IMPERVIOUS AREA:

URBAN @	100 % effective =	28.99
ROCK OUTCROP @	60 % effective =	5.33
	% EFFECTIVE IMP. =	34.32

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
200F	0.580	1.120	0.580	148.00	0.119	0.288	5.36	0.228	34.32

LOSS PARAMETERS FOR SUBBASIN: 202 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
EbD	0.335	55.05	0.1	-0.550	0.00	0.00
RbA	0.078	12.84	0.26	-0.075	0.00	0.00
18	0.077	12.72	0.33	-0.061	15.00	1.91
GxA	0.050	8.31	0.23	-0.053	0.00	0.00
LcA	0.044	7.23	0.25	-0.044	0.00	0.00
RS	0.019	3.19	0.4	-0.013	65.00	2.07
PsB	0.002	0.36	0.26	-0.002	0.00	0.00
RbB	0.002	0.30	0.25	-0.002	0.00	0.00

TOTAL = 0.608 SQ.MI. XKSAT = 0.16 %ROCK= 3.98

DTHETA

Dry = 0.4
Normal = 0.25
Wet = 0

PSIF

= 6.29

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.034	VACANT	5.57	DRY	25.00	0.00	0.00	0.15	0.008
0.048	V.L.D.R	7.91	NORMAL	25.00	15.00	0.01	0.10	0.008
0.505	M.D.R.	83.11	NORMAL	25.00	45.00	0.23	0.10	0.083
0.007	M.F.R.	1.14	NORMAL	25.00	65.00	0.00	0.10	0.001
0.014	COMM	2.27	NORMAL	20.00	90.00	0.01	0.10	0.002

0.608 =TOTAL AREA OK AVERAGE = 24.89 TOTAL = 0.25 AVG. = 0.103
% = 41.37

PERCENT OF SUBBASIN DRY = 5.57 %
NORMAL = 94.43 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.258

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.186

IMPERVIOUS AREA: URBAN @ 100 % effective = 41.37
ROCK OUTCROP @ 60 % effective = 2.39
% EFFECTIVE IMP. = 43.76

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
202F	0.608	1.330	0.870	148.00	0.103	0.258	6.29	0.186	43.76

LOSS PARAMETERS FOR SUBBASIN: 203 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
18	0.313	72.44	0.33	-0.349	15.00	10.87
68	0.105	24.33	0.63	-0.049	0.00	0.00
EbD	0.009	2.17	0.1	-0.022	0.00	0.00
109	0.005	1.06	0.35	-0.005	35.00	0.37

TOTAL = 0.432 SQ.MI. XKSAT = 0.38 %ROCK= 11.24

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.19

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.186	VACANT	43.02	DRY	25.00	0.00	0.00	0.15	0.065
0.117	M.F.R.	26.97	NORMAL	25.00	65.00	0.08	0.10	0.027
0.079	M.D.R.	18.31	NORMAL	25.00	45.00	0.04	0.10	0.018
0.005	COMM	1.26	NORMAL	20.00	90.00	0.00	0.10	0.001
0.045	GC	10.44	NORMAL	90.00	0.00	0.00	0.20	0.021
0.432	=TOTAL AREA	OK	AVERAGE =	31.72	TOTAL = % =	0.12 26.90	AVG. =	0.132

PERCENT OF SUBBASIN
DRY = 43.02 %
NORMAL = 56.98 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.293

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.471

IMPERVIOUS AREA:
URBAN @ 100 % effective = 26.90
ROCK OUTCROP @ 60 % effective = 6.74

% EFFECTIVE IMP. = 33.64

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
203F	0.432	1.060	0.580	126.00	0.132	0.293	4.19	0.471	33.64

LOSS PARAMETERS FOR SUBBASIN: 204 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
18	0.220	43.58	0.33	-0.210	15.00	6.54
RS	0.159	31.54	0.4	-0.126	65.00	20.50
PsB	0.092	18.29	0.26	-0.107	0.00	0.00
EbD	0.033	6.59	0.1	-0.066	0.00	0.00

TOTAL = 0.504 SQ.MI. XKSAT = 0.31 %ROCK= 27.04

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.
0.242	VACANT	48.08	DRY	25.00	0.00	0.00	0.15	0.072
0.058	V.L.D.R	11.60	NORMAL	25.00	15.00	0.01	0.10	0.012
0.057	M.F.R.	11.31	NORMAL	25.00	65.00	0.04	0.10	0.011
0.120	M.D.R.	23.88	NORMAL	25.00	45.00	0.05	0.10	0.024
0.026	GC	5.12	NORMAL	90.00	0.00	0.00	0.20	0.010
0.504	=TOTAL AREA	OK	AVERAGE =	28.33	TOTAL =	0.10	AVG. =	0.129
					% =	19.84		

PERCENT OF SUBBASIN DRY = 48.08 %
NORMAL = 51.92 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.298

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.373

IMPERVIOUS AREA: URBAN @ 100 % effective = 19.84
ROCK OUTCROP @ 60 % effective = 16.22

% EFFECTIVE IMP. = 36.06

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
204F	0.504	1.100	0.500	133.00	0.129	0.298	3.82	0.373	36.06

LOSS PARAMETERS FOR SUBBASIN: 205 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
EbD	0.157	48.54	0.1	-0.485	0.00	0.00
18	0.052	15.98	0.33	-0.077	15.00	2.40
TrA	0.044	13.49	0.11	-0.129	0.00	0.00
PeA	0.038	11.85	0.37	-0.051	0.00	0.00
RS	0.019	5.95	0.4	-0.024	65.00	3.86
PsB	0.009	2.77	0.26	-0.016	0.00	0.00
RbA	0.005	1.44	0.26	-0.008	0.00	0.00

TOTAL = 0.323 SQ.MI. XKSAT = 0.16 %ROCK= 6.26

DTHETA

Dry = 0.4
Normal = 0.25
Wet = 0

PSIF

= 6.29

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.056	VACANT	17.43	DRY	25.00	0.00	0.00	0.15	0.026
0.007	V.L.D.R	2.10	NORMAL	25.00	15.00	0.00	0.10	0.002
0.025	M.F.R.	7.72	NORMAL	25.00	65.00	0.02	0.10	0.008
0.144	M.D.R.	44.54	NORMAL	25.00	45.00	0.06	0.10	0.045
0.011	PSC	3.55	NORMAL	20.00	90.00	0.01	0.10	0.004
0.034	COMM	10.44	NORMAL	20.00	90.00	0.03	0.10	0.010
0.046	GC	14.22	NORMAL	90.00	0.00	0.00	0.20	0.028

0.323 =TOTAL AREA OK AVERAGE = 33.54 TOTAL = 0.12 AVG. = 0.123
% = 37.97

PERCENT OF SUBBASIN DRY = 17.43 %
NORMAL = 82.57 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.276

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.201

IMPERVIOUS AREA: URBAN @ 100 % effective = 37.97
ROCK OUTCROP @ 60 % effective = 3.76

% EFFECTIVE IMP. = 41.72

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
205F	0.323	0.820	0.490	103.00	0.123	0.276	6.29	0.201	41.72

LOSS PARAMETERS FOR SUBBASIN: 206 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.265	39.22	0.25	-0.236	0.00	0.00
GgA	0.143	21.17	0.25	-0.127	0.00	0.00
AbA	0.113	16.65	0.38	-0.070	0.00	0.00
EbD	0.066	9.74	0.1	-0.097	0.00	0.00
Es	0.041	6.05	0.25	-0.036	0.00	0.00
RbB	0.022	3.18	0.25	-0.019	0.00	0.00
RbA	0.017	2.57	0.26	-0.015	0.00	0.00
PsB	0.010	1.41	0.26	-0.008	0.00	0.00
TOTAL =	0.677 SQ.MI.		XKSAT =	0.25	%ROCK=	0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.557	M.D.R.	82.30	NORMAL	25.00	45.00	0.25	0.10	0.082
0.120	GC	17.70	NORMAL	90.00	0.00	0.00	0.20	0.035
0.677	=TOTAL AREA	OK	AVERAGE =	36.51	TOTAL =	0.25	AVG. =	0.118
					% =	37.03		

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. = 0.323

IMPERVIOUS AREA:

URBAN @	100 %	effective =	37.03
ROCK OUTCROP @	60 %	effective =	0.00
% EFFECTIVE IMP. =			37.03

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
206F	0.677	1.560	0.810	35.00	0.118	0.250	3.50	0.323	37.03

LOSS PARAMETERS FOR SUBBASIN: 207 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.315	54.83	0.4	-0.218	65.00	35.64
TrB	0.110	19.08	0.13	-0.169	0.00	0.00
EbD	0.096	16.68	0.1	-0.167	0.00	0.00
PsB	0.043	7.46	0.26	-0.044	0.00	0.00
AfA	0.011	1.95	0.38	-0.008	0.00	0.00

TOTAL = 0.575 SQ.MI. XKSAT = 0.25 %ROCK= 35.64

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.
0.554	VACANT	96.28	DRY	25.00	0.00	0.00	0.15	0.144
0.021	M.F.R.	3.72	NORMAL	25.00	65.00	0.01	0.10	0.004
0.575	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.01	AVG. =	0.148
					% =	2.42		

PERCENT OF SUBBASIN
DRY = 96.28 %
NORMAL = 3.72 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.346

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.291

IMPERVIOUS AREA:
URBAN @ 100 % effective = 2.42
ROCK OUTCROP @ 60 % effective = 21.38
% EFFECTIVE IMP. = 23.80

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
207F	0.575	1.050	0.530	209.00	0.148	0.346	3.50	0.291	23.80

LOSS PARAMETERS FOR SUBBASIN: 208 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.106	30.69	0.25	-0.185	0.00	0.00
AbA	0.069	20.16	0.38	-0.085	0.00	0.00
Ge	0.063	18.29	0.26	-0.107	0.00	0.00
GxA	0.052	15.07	0.23	-0.096	0.00	0.00
LcA	0.028	8.05	0.25	-0.048	0.00	0.00
Ae	0.015	4.45	0.39	-0.018	0.00	0.00
TrA	0.009	2.74	0.11	-0.026	0.00	0.00
RbA	0.001	0.29	0.26	-0.002	0.00	0.00
AfA	0.001	0.25	0.38	-0.001	0.00	0.00

TOTAL = 0.344 SQ.MI. XKSAT = 0.27 %ROCK= 0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.195	M.D.R.	56.69	NORMAL	25.00	45.00	0.09	0.10	0.057
0.149	GC	43.31	NORMAL	90.00	0.00	0.00	0.20	0.087
0.344	=TOTAL AREA	OK	AVERAGE =	53.15	TOTAL =	0.09	AVG. =	0.143
					% =	25.51		

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. = 0.398

IMPERVIOUS AREA:
URBAN @ 100 % effective = 25.51
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 25.51

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
208F	0.344	1.020	0.320	19.00	0.143	0.250	3.61	0.398	25.51

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LOSS PARAMETERS FOR SUBBASIN: 209 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Ge	0.157	40.11	0.26	-0.235	0.00	0.00
RS	0.122	31.28	0.4	-0.124	65.00	20.33
GgA	0.056	14.28	0.25	-0.086	0.00	0.00
AbA	0.031	7.94	0.38	-0.033	0.00	0.00
Ae	0.012	2.99	0.39	-0.012	0.00	0.00
Vh	0.005	1.30	0.27	-0.007	0.00	0.00
Ao	0.005	1.16	0.04	-0.016	0.00	0.00
Es	0.004	0.95	0.25	-0.006	0.00	0.00

TOTAL = 0.391 SQ.MI. XKSAT = 0.30 %ROCK= 20.33

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.
0.095	VACANT	24.40	DRY	25.00	0.00	0.00	0.15	0.037
0.005	L.D.R.	1.26	NORMAL	25.00	25.00	0.00	0.10	0.001
0.279	M.D.R.	71.19	NORMAL	25.00	45.00	0.13	0.10	0.071
0.008	CHURCH	1.99	NORMAL	20.00	90.00	0.01	0.10	0.002
0.005	GC\PARK	1.16	NORMAL	90.00	0.00	0.00	0.20	0.002
0.391	=TOTAL AREA	OK	AVERAGE =	25.65	TOTAL =	0.13	AVG. =	0.113
					% =	34.14		

PERCENT OF SUBBASIN DRY = 24.40 %
NORMAL = 75.60 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.274

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.352

IMPERVIOUS AREA: URBAN @ 100 % effective = 34.14
ROCK OUTCROP @ 60 % effective = 12.20

% EFFECTIVE IMP. = 46.34

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
209F	0.391	2.050	1.250	19.00	0.113	0.274	3.77	0.352	46.34

LOSS PARAMETERS FOR SUBBASIN: 210 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.393	47.46	0.4	-0.189	65.00	30.85
Ae	0.204	24.66	0.39	-0.101	0.00	0.00
EbD	0.149	17.99	0.1	-0.180	0.00	0.00
Gt	0.035	4.27	0.04	-0.060	0.00	0.00
Ao	0.025	2.99	0.04	-0.042	0.00	0.00
Cp	0.022	2.63	0.4	-0.010	0.00	0.00

TOTAL = 0.828 SQ.MI. XKSAT = 0.26 %ROCK= 30.85

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.
0.420	VACANT	50.70	DRY	25.00	0.00	0.00	0.15	0.076
0.009	M.F.R.	1.12	NORMAL	25.00	65.00	0.01	0.10	0.001
0.393	M.D.R.	47.46	NORMAL	25.00	45.00	0.18	0.10	0.047
0.006	COMM	0.72	NORMAL	20.00	90.00	0.01	0.10	0.001
0.828	=TOTAL AREA	OK	AVERAGE =	24.96	TOTAL =	0.19	AVG. =	0.125
					% =	22.73		

PERCENT OF SUBBASIN
DRY = 50.70 %
NORMAL = 49.30 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.301

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.303

IMPERVIOUS AREA:
URBAN @ 100 % effective = 22.73
ROCK OUTCROP @ 60 % effective = 18.51
% EFFECTIVE IMP. = 41.24

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
210F	0.828	1.270	0.730	183.00	0.125	0.301	3.55	0.303	41.24

LOSS PARAMETERS FOR SUBBASIN: 211 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.137	58.41	0.25	-0.352	0.00	0.00
LcA	0.050	21.32	0.25	-0.128	0.00	0.00
PsB	0.030	12.79	0.26	-0.075	0.00	0.00
GxB	0.009	3.80	0.24	-0.024	0.00	0.00
EbD	0.003	1.33	0.1	-0.013	0.00	0.00
AbA	0.003	1.26	0.38	-0.005	0.00	0.00
Es	0.003	1.09	0.25	-0.007	0.00	0.00
TOTAL =	0.234 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.
0.036	M.F.R.	15.35	NORMAL	25.00	65.00	0.02	0.10	0.015
0.180	M.D.R.	77.11	NORMAL	25.00	45.00	0.08	0.10	0.077
0.003	PSC	1.49	NORMAL	20.00	90.00	0.00	0.10	0.001
0.013	COMM\CHURCH	5.73	NORMAL	20.00	90.00	0.01	0.10	0.006
0.001	PARK	0.33	NORMAL	90.00	0.00	0.00	0.20	0.001
0.234	=TOTAL AREA	OK	AVERAGE =	24.85	TOTAL =	0.12	AVG. =	0.100
					% =	51.17		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.291

IMPERVIOUS AREA:
URBAN @ 100 % effective = 51.17
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 51.17

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
211F	0.234	1.570	0.810	21.00	0.100	0.250	3.50	0.291	51.17

LOSS PARAMETERS FOR SUBBASIN: 212 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
18	0.105	26.47	0.33	-0.127	15.00	3.97
GgA	0.076	19.16	0.25	-0.115	0.00	0.00
PsB	0.075	18.78	0.26	-0.110	0.00	0.00
RS	0.063	15.76	0.4	-0.063	65.00	10.24
RpE	0.033	8.36	0.29	-0.045	0.00	0.00
CO	0.032	7.94	0.29	-0.043	20.00	1.59
GxB	0.008	2.01	0.24	-0.012	0.00	0.00
EbD	0.006	1.51	0.1	-0.015	0.00	0.00

TOTAL = 0.397 SQ.MI. XKSAT = 0.29 %ROCK= 15.80

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.
0.066	VACANT	16.58	DRY	25.00	0.00	0.00	0.15	0.025
0.017	L.D.R.	4.20	NORMAL	25.00	25.00	0.00	0.10	0.004
0.000	M.F.R.	0.03	NORMAL	25.00	65.00	0.00	0.10	0.000
0.305	M.D.R.	76.85	NORMAL	25.00	45.00	0.14	0.10	0.077
0.009	COMM	2.34	NORMAL	20.00	90.00	0.01	0.10	0.002

0.397 =TOTAL AREA OK AVERAGE = 24.88 TOTAL = 0.15 AVG. = 0.108
% = 37.76

PERCENT OF SUBBASIN DRY = 16.58 %
NORMAL = 83.42 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.267

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.337

IMPERVIOUS AREA: URBAN @ 100 % effective = 37.76
ROCK OUTCROP @ 60 % effective = 9.48

% EFFECTIVE IMP. = 47.24

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
212F	0.397	1.060	0.690	95.00	0.108	0.267	3.71	0.337	47.24

LOSS PARAMETERS FOR SUBBASIN: 213 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
EbD	0.101	46.41	0.1	-0.464	0.00	0.00
RS	0.078	35.59	0.4	-0.142	65.00	23.14
GxA	0.021	9.81	0.23	-0.063	0.00	0.00
Ae	0.013	5.76	0.39	-0.024	0.00	0.00
AfA	0.005	2.43	0.38	-0.010	0.00	0.00

TOTAL = 0.218 SQ.MI. XKSAT = 0.20 %ROCK= 23.14

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.
0.060	VACANT	27.65	DRY	25.00	0.00	0.00	0.15	0.041
0.158	M.D.R.	72.35	NORMAL	25.00	45.00	0.07	0.10	0.072
0.218	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.07	AVG. =	0.114
					% =	32.56		

PERCENT OF SUBBASIN
DRY = 27.65 %
NORMAL = 72.35 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.286

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.233

IMPERVIOUS AREA:
URBAN @ 100 % effective = 32.56
ROCK OUTCROP @ 60 % effective = 13.88
% EFFECTIVE IMP. = 46.44

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
213F	0.218	0.890	0.690	174.00	0.114	0.286	5.05	0.233	46.44

LOSS PARAMETERS FOR SUBBASIN: 214 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RS	0.220	45.66	0.4	-0.182	65.00	29.68
Ao	0.090	18.69	0.04	-0.261	0.00	0.00
Es	0.053	11.02	0.25	-0.066	0.00	0.00
Tc	0.049	10.11	0.4	-0.040	0.00	0.00
GgA	0.041	8.58	0.25	-0.052	0.00	0.00
Ae	0.029	5.94	0.39	-0.024	0.00	0.00
TOTAL =	0.483 SQ.MI.		XKSAT =	0.24	%ROCK=	29.68

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.
0.127	VACANT	26.38	DRY	25.00	0.00	0.00	0.15	0.040
0.026	V.L.D.R	5.43	NORMAL	25.00	15.00	0.00	0.10	0.005
0.040	L.D.R.	8.22	NORMAL	25.00	25.00	0.01	0.10	0.008
0.026	M.F.R.	5.29	NORMAL	25.00	65.00	0.02	0.10	0.005
0.144	M.D.R.	29.79	NORMAL	25.00	45.00	0.06	0.10	0.030
0.061	SCHOOL	12.62	NORMAL	25.00	65.00	0.04	0.10	0.013
0.038	COMM	7.86	NORMAL	20.00	90.00	0.03	0.10	0.008
0.021	GC	4.41	NORMAL	90.00	0.00	0.00	0.20	0.009
0.483	=TOTAL AREA	OK	AVERAGE =	27.47	TOTAL =	0.17	AVG. =	0.118
					% =	34.99		

PERCENT OF SUBBASIN
DRY = 26.38 %
NORMAL = 73.62 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.279

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.286

IMPERVIOUS AREA:
URBAN @ 100 % effective = 34.99
ROCK OUTCROP @ 60 % effective = 17.81

% EFFECTIVE IMP. = 52.80

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
214F	0.483	1.180	0.610	121.00	0.118	0.279	3.81	0.286	52.80

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LOSS PARAMETERS FOR SUBBASIN: 215 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Cp	0.186	69.29	0.4	-0.276	0.00	0.00
Gt	0.053	19.65	0.04	-0.275	0.00	0.00
Vk	0.021	7.79	0.26	-0.046	0.00	0.00
TD	0.006	2.21	1.2	0.002	0.00	0.00
Es	0.003	1.06	0.25	-0.006	0.00	0.00

TOTAL = 0.269 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.
0.238	M.D.R.	88.41	NORMAL	25.00	45.00	0.11	0.10	0.088
0.022	COMM	8.08	NORMAL	20.00	90.00	0.02	0.10	0.008
0.009	PARK	3.51	NORMAL	90.00	0.00	0.00	0.20	0.007
0.269	=TOTAL AREA	OK	AVERAGE =	26.88	TOTAL =	0.13	AVG. =	0.104
					% =	47.06		

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. = 0.296

IMPERVIOUS AREA:
URBAN @ 100 % effective = 47.06
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 47.06

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
215F	0.269	0.880	0.530	22.00	0.104	0.250	3.50	0.296	47.06

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LOSS PARAMETERS FOR SUBBASIN: 216 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
TrA	0.185	42.40	0.11	-0.406	0.00	0.00
EbD	0.077	17.72	0.1	-0.177	0.00	0.00
RS	0.070	16.00	0.4	-0.064	65.00	10.40
AfA	0.054	12.29	0.38	-0.052	0.00	0.00
LcA	0.020	4.47	0.25	-0.027	0.00	0.00
RbA	0.014	3.26	0.26	-0.019	0.00	0.00
GxA	0.014	3.26	0.23	-0.021	0.00	0.00
RbB	0.002	0.47	0.25	-0.003	0.00	0.00
PeA	0.001	0.13	0.37	-0.001	0.00	0.00

TOTAL = 0.437 SQ.MI. XKSAT = 0.17 %ROCK= 10.40

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.
0.112	VACANT	25.73	DRY	25.00	0.00	0.00	0.15	0.039
0.290	M.D.R.	66.29	NORMAL	25.00	45.00	0.13	0.10	0.066
0.035	COMM	7.98	NORMAL	20.00	90.00	0.03	0.10	0.008
0.437	=TOTAL AREA	OK	AVERAGE =	24.60	TOTAL =	0.16	AVG. =	0.113
					% =	37.01		

PERCENT OF SUBBASIN DRY = 25.73 %
NORMAL = 74.27 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.286

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.197

IMPERVIOUS AREA: URBAN @ 100 % effective = 37.01
ROCK OUTCROP @ 60 % effective = 6.24

% EFFECTIVE IMP. = 43.25

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
216F	0.437	0.830	0.530	95.00	0.113	0.286	5.98	0.197	43.25

LOSS PARAMETERS FOR SUBBASIN: 220 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
90	0.095	56.79	0.39	-0.232	0.00	0.00
60	0.036	21.73	0.26	-0.127	0.00	0.00
76	0.021	12.59	0.23	-0.080	0.00	0.00
55	0.015	8.89	0.27	-0.051	0.00	0.00

TOTAL = 0.167 SQ.MI. XKSAT = 0.32 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.87

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	M.F.R.	24.11	NORMAL	25.00	65.00	0.03	0.10	0.024
0.030	M.D.R.	17.67	NORMAL	25.00	45.00	0.01	0.10	0.018
0.057	SCHOOL	33.84	NORMAL	40.00	45.00	0.03	0.20	0.068
0.002	COMM	1.05	NORMAL	20.00	90.00	0.00	0.10	0.001
0.039	IND	23.33	NORMAL	20.00	75.00	0.03	0.10	0.023

0.167 =TOTAL AREA OK AVERAGE = 28.86 TOTAL = 0.10 AVG. = 0.134
% = 57.29

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. = 0.386

IMPERVIOUS AREA:
URBAN @ 100 % effective = 57.29
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 57.29

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
220F	0.167	0.960	0.430	30.00	0.134	0.250	3.87	0.386	57.29

LOSS PARAMETERS FOR SUBBASIN: 221 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
55	0.470	62.03	0.27	-0.353	0.00	0.00
60	0.155	20.43	0.26	-0.120	0.00	0.00
90	0.079	10.43	0.39	-0.043	0.00	0.00
50	0.050	6.58	0.26	-0.038	0.00	0.00
76	0.004	0.53	0.23	-0.003	0.00	0.00

TOTAL = 0.757 SQ.MI. XKSAT = 0.28 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.66

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.085	L.D.R.	11.16	NORMAL	25.00	25.00	0.02	0.10	0.011
0.104	M.F.R.	13.75	NORMAL	25.00	65.00	0.07	0.10	0.014
0.322	M.D.R.	42.55	NORMAL	25.00	45.00	0.15	0.10	0.043
0.098	IND	13.00	NORMAL	20.00	75.00	0.07	0.10	0.013
0.148	PARK/GC	19.54	NORMAL	90.00	0.00	0.00	0.20	0.039

0.757 =TOTAL AREA OK AVERAGE = 37.05 TOTAL = 0.31 AVG. = 0.120
% = 40.62

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. = 0.363

IMPERVIOUS AREA:
URBAN @ 100 % effective = 40.62
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 40.62

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
221F	0.757	1.670	0.960	34.00	0.120	0.250	3.66	0.363	40.62

LOSS PARAMETERS FOR SUBBASIN: 222 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.189	55.01	0.26	-0.322	0.00	0.00
60	0.064	18.54	0.26	-0.108	0.00	0.00
1	0.030	8.77	0.41	-0.034	0.00	0.00
76	0.024	7.14	0.23	-0.046	0.00	0.00
101	0.020	5.89	0.28	-0.033	0.00	0.00
55	0.010	2.93	0.27	-0.017	0.00	0.00
90	0.006	1.72	0.39	-0.007	0.00	0.00
TOTAL =	0.343 SQ.MI.		XKSAT =	0.27	%ROCK=	0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.280	M.D.R.	81.59	NORMAL	25.00	45.00	0.13	0.10	0.082
0.063	COMM	18.41	NORMAL	20.00	90.00	0.06	0.10	0.018
0.343	=TOTAL AREA	OK	AVERAGE =	24.08	TOTAL =	0.18	AVG. =	0.100
					% =	53.28		

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. = 0.312

IMPERVIOUS AREA:

URBAN @ 100 % effective = 53.28
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 53.28

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
222F	0.343	1.040	0.550	27.00	0.100	0.250	3.61	0.312	53.28

LOSS PARAMETERS FOR SUBBASIN: 223 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.132	30.38	0.26	-0.178	0.00	0.00
101	0.115	26.50	0.28	-0.146	0.00	0.00
1	0.100	22.91	0.41	-0.089	0.00	0.00
55	0.043	9.99	0.27	-0.057	0.00	0.00
76	0.033	7.69	0.23	-0.049	0.00	0.00
60	0.011	2.54	0.26	-0.015	0.00	0.00
TOTAL =	0.434 SQ.MI.		XKSAT =	0.29	%ROCK=	0.00

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.
0.218	L.D.R.	50.21	NORMAL	25.00	25.00	0.05	0.10	0.050
0.017	M.F.R.	3.80	NORMAL	25.00	65.00	0.01	0.10	0.004
0.141	M.D.R.	32.42	NORMAL	25.00	45.00	0.06	0.10	0.032
0.059	COMM	13.57	NORMAL	20.00	90.00	0.05	0.10	0.014
0.434	=TOTAL AREA	OK	AVERAGE =	24.32	TOTAL =	0.18	AVG. =	0.100
					% =	41.83		

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. = 0.336

IMPERVIOUS AREA: URBAN @ 100 % effective = 41.83
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 41.83

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
223F	0.434	1.160	0.480	24.00	0.100	0.250	3.71	0.336	41.83

LOSS PARAMETERS FOR SUBBASIN: 224 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.248	44.21	0.26	-0.259	0.00	0.00
76	0.167	29.79	0.23	-0.190	0.00	0.00
101	0.102	18.22	0.28	-0.101	0.00	0.00
55	0.044	7.78	0.27	-0.044	0.00	0.00

TOTAL = 0.562 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.
0.467	M.F.R.	83.21	NORMAL	25.00	65.00	0.30	0.10	0.083
0.094	COMM	16.79	NORMAL	20.00	90.00	0.08	0.10	0.017
0.562	=TOTAL AREA	OK	AVERAGE =	24.16	TOTAL =	0.39	AVG. =	0.100
					% =	69.20		

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. = 0.289

IMPERVIOUS AREA: URBAN @ 100 % effective = 69.20
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 69.20

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
224F	0.562	1.360	0.690	22.00	0.100	0.250	3.50	0.289	69.20

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LOSS PARAMETERS FOR SUBBASIN: 225 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
76	0.164	54.19	0.23	-0.346	0.00	0.00
50	0.104	34.36	0.26	-0.201	0.00	0.00
2	0.020	6.59	0.41	-0.026	0.00	0.00
101	0.015	4.86	0.28	-0.027	0.00	0.00
TOTAL =	0.303 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.
0.207	M.F.R.	68.22	NORMAL	25.00	65.00	0.13	0.10	0.068
0.017	SCHOOL	5.48	NORMAL	25.00	45.00	0.01	0.10	0.005
0.080	COMM	26.30	NORMAL	20.00	90.00	0.07	0.10	0.026
0.303	=TOTAL AREA	OK	AVERAGE =	23.69	TOTAL =	0.21	AVG. =	0.100
					% =	70.48		

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. = 0.288

IMPERVIOUS AREA:

URBAN @	100 %	effective =	70.48
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		70.48

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
225F	0.303	1.380	0.770	18.00	0.100	0.250	3.50	0.288	70.48

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LOSS PARAMETERS FOR SUBBASIN: 226 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.177	49.38	0.26	-0.289	0.00	0.00
68	0.122	33.95	0.63	-0.068	0.00	0.00
100	0.047	13.25	0.4	-0.053	20.00	2.65
55	0.009	2.56	0.27	-0.015	0.00	0.00
1	0.003	0.86	0.41	-0.003	0.00	0.00

TOTAL = 0.358 SQ.MI. XKSAT = 0.37 %ROCK= 2.65

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.
0.079	VACANT	22.18	DRY	25.00	0.00	0.00	0.15	0.033
0.024	L.D.R.	6.61	NORMAL	25.00	25.00	0.01	0.10	0.007
0.066	M.F.R.	18.54	NORMAL	25.00	65.00	0.04	0.10	0.019
0.099	M.D.R.	27.64	NORMAL	25.00	45.00	0.04	0.10	0.028
0.090	COMM	25.03	NORMAL	20.00	90.00	0.08	0.10	0.025
0.358	=TOTAL AREA	OK	AVERAGE =	23.75	TOTAL =	0.17	AVG. =	0.111
					% =	48.67		

PERCENT OF SUBBASIN

DRY = 22.18 %
NORMAL = 77.82 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.272

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.426

IMPERVIOUS AREA:

URBAN @ 100 % effective = 48.67
ROCK OUTCROP @ 60 % effective = 1.59

% EFFECTIVE IMP. = 50.26

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
226F	0.358	1.250	0.640	111.00	0.111	0.272	4.14	0.426	50.26

LOSS PARAMETERS FOR SUBBASIN: 227 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
101	0.237	74.70	0.28	-0.413	0.00	0.00
18	0.048	15.19	0.33	-0.073	15.00	2.28
21	0.025	7.74	0.38	-0.033	0.00	0.00
55	0.004	1.39	0.27	-0.008	0.00	0.00
112	0.003	0.98	0.39	-0.004	0.00	0.00
TOTAL =	0.318 SQ.MI.		XKSAT =	0.29	%ROCK=	2.28

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.
0.036	VACANT	11.48	DRY	25.00	0.00	0.00	0.15	0.017
0.245	IND	77.00	NORMAL	20.00	75.00	0.18	0.10	0.077
0.037	PARK	11.52	NORMAL	90.00	0.00	0.00	0.20	0.023
0.318	=TOTAL AREA	OK	AVERAGE =	28.64	TOTAL =	0.18	AVG. =	0.117
					% =	57.75		

PERCENT OF SUBBASIN

DRY =	11.48 %
NORMAL =	88.52 %
WET =	0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.261

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.349

IMPERVIOUS AREA:

URBAN @	100 %	effective =	57.75
ROCK OUTCROP @	60 %	effective =	1.37
	% EFFECTIVE IMP. =		59.11

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
227F	0.318	0.760	0.410	141.00	0.117	0.261	3.71	0.349	59.11

LOSS PARAMETERS FOR SUBBASIN: 228 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
101	0.156	56.17	0.28	-0.311	0.00	0.00
115	0.045	16.22	0.39	-0.066	0.00	0.00
21	0.042	15.07	0.38	-0.063	0.00	0.00
18	0.028	9.91	0.33	-0.048	15.00	1.49
110	0.007	2.63	0.13	-0.023	0.00	0.00

TOTAL = 0.278 SQ.MI. XKSAT = 0.31 %ROCK= 1.49

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.
0.018	VACANT	6.46	DRY	25.00	0.00	0.00	0.15	0.010
0.029	R.O.W.	10.43	NORMAL	5.00	90.00	0.03	0.10	0.010
0.171	IND	61.39	NORMAL	20.00	75.00	0.13	0.10	0.061
0.060	PARK	21.72	NORMAL	90.00	0.00	0.00	0.20	0.043

0.278 =TOTAL AREA OK AVERAGE = 33.96 TOTAL = 0.15 AVG. = 0.125
% = 55.43

PERCENT OF SUBBASIN DRY = 6.46 %
NORMAL = 93.54 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.256

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.392

IMPERVIOUS AREA: URBAN @ 100 % effective = 55.43
ROCK OUTCROP @ 60 % effective = 0.89
% EFFECTIVE IMP. = 56.32

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
228F	0.278	0.770	0.350	88.00	0.125	0.256	3.82	0.392	56.32

LOSS PARAMETERS FOR SUBBASIN: 229 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
112	0.172	47.03	0.39	-0.192	0.00	0.00
124	0.098	26.78	0.39	-0.110	0.00	0.00
55	0.062	16.98	0.27	-0.097	0.00	0.00
101	0.030	8.25	0.28	-0.046	0.00	0.00
60	0.002	0.66	0.26	-0.004	0.00	0.00
90	0.001	0.31	0.39	-0.001	0.00	0.00

TOTAL = 0.366 SQ.MI. XKSAT = 0.36 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.08

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.047	R.O.W.	12.84	NORMAL	5.00	90.00	0.04	0.10	0.013
0.319	IND	87.16	NORMAL	20.00	75.00	0.24	0.10	0.087
0.366	=TOTAL AREA	OK	AVERAGE =	18.07	TOTAL =	0.28	AVG. =	0.100
					% =	76.93		

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. = 0.392

IMPERVIOUS AREA:
URBAN @ 100 % effective = 76.93
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 76.93

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
229F	0.366	0.830	0.310	31.00	0.100	0.250	4.08	0.392	76.93

LOSS PARAMETERS FOR SUBBASIN: 230 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
21	0.108	45.19	0.38	-0.190	0.00	0.00
110	0.044	18.60	0.13	-0.165	0.00	0.00
100	0.040	16.78	0.4	-0.067	20.00	3.36
2	0.040	16.57	0.41	-0.064	0.00	0.00
101	0.007	2.86	0.28	-0.016	0.00	0.00

TOTAL = 0.239 SQ.MI. XKSAT = 0.32 %ROCK= 3.36

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.87

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.008	VACANT	3.26	DRY	25.00	0.00	0.00	0.15	0.005
0.126	M.F.R.	53.01	NORMAL	25.00	65.00	0.08	0.10	0.053
0.027	M.D.R.	11.35	NORMAL	25.00	45.00	0.01	0.10	0.011
0.037	R.O.W.	15.55	NORMAL	5.00	90.00	0.03	0.10	0.016
0.039	COMM	16.22	NORMAL	20.00	90.00	0.03	0.10	0.016
0.001	PARK	0.61	NORMAL	90.00	0.00	0.00	0.20	0.001

0.239 =TOTAL AREA OK AVERAGE = 21.48 TOTAL = 0.16 AVG. = 0.102
% = 68.15

PERCENT OF SUBBASIN
DRY = 3.26 %
NORMAL = 96.74 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.253

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.360

IMPERVIOUS AREA:
URBAN @ 100 % effective = 68.15
ROCK OUTCROP @ 60 % effective = 2.01

% EFFECTIVE IMP. = 70.17

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
230F	0.239	0.880	0.490	86.00	0.102	0.253	3.87	0.360	70.17

LOSS PARAMETERS FOR SUBBASIN: 231 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
124	0.048	30.25	0.39	-0.124	0.00	0.00
55	0.040	25.37	0.27	-0.144	0.00	0.00
112	0.034	21.31	0.39	-0.087	0.00	0.00
101	0.023	14.39	0.28	-0.080	0.00	0.00
60	0.007	4.61	0.26	-0.027	0.00	0.00
21	0.006	4.07	0.38	-0.017	0.00	0.00

TOTAL = 0.158 SQ.MI. XKSAT = 0.33 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.92

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.030	VACANT\BASIN	19.12	DRY	25.00	0.00	0.00	0.15	0.029
0.029	M.F.R.	18.53	NORMAL	25.00	65.00	0.02	0.10	0.019
0.035	M.D.R.	22.02	NORMAL	25.00	45.00	0.02	0.10	0.022
0.022	R.O.W.	13.65	NORMAL	5.00	90.00	0.02	0.10	0.014
0.042	COMM	26.67	NORMAL	20.00	90.00	0.04	0.10	0.027
0.158	=TOTAL AREA	OK	AVERAGE =	20.94	TOTAL =	0.09	AVG. =	0.110
					% =	58.24		

PERCENT OF SUBBASIN DRY = 19.12 %
NORMAL = 80.88 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.269

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.370

IMPERVIOUS AREA: URBAN @ 100 % effective = 58.24
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 58.24

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
231F	0.158	0.480	0.230	39.00	0.110	0.269	3.92	0.370	58.24

LOSS PARAMETERS FOR SUBBASIN: 232 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
90	0.295	20.45	0.39	-0.084	0.00	0.00
1	0.218	15.12	0.41	-0.059	0.00	0.00
55	0.172	11.96	0.27	-0.068	0.00	0.00
101	0.168	11.63	0.28	-0.064	0.00	0.00
50	0.130	9.00	0.26	-0.053	0.00	0.00
100	0.117	8.10	0.4	-0.032	20.00	1.62
112	0.091	6.28	0.39	-0.026	0.00	0.00
2	0.085	5.86	0.41	-0.023	0.00	0.00
21	0.048	3.32	0.38	-0.014	0.00	0.00
60	0.038	2.61	0.26	-0.015	0.00	0.00
115	0.036	2.53	0.39	-0.010	0.00	0.00
124	0.035	2.46	0.39	-0.010	0.00	0.00
76	0.010	0.66	0.23	-0.004	0.00	0.00

TOTAL = 1.442 SQ.MI. XKSAT = 0.35 %ROCK= 1.62

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.03

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	VACANT	1.76	DRY	25.00	0.00	0.00	0.15	0.003
0.592	M.F.R.	41.02	NORMAL	25.00	65.00	0.38	0.10	0.041
0.516	M.D.R.	35.77	NORMAL	25.00	45.00	0.23	0.10	0.036
0.014	R.O.W.	0.98	NORMAL	5.00	90.00	0.01	0.10	0.001
0.123	COMM	8.53	NORMAL	20.00	90.00	0.11	0.10	0.009
0.157	IND	10.90	NORMAL	20.00	75.00	0.12	0.10	0.011
0.015	PARK	1.03	NORMAL	90.00	0.00	0.00	0.20	0.002
1.442	=TOTAL AREA	OK	AVERAGE =	24.50	TOTAL =	0.86	AVG. =	0.102
					% =	59.49		

PERCENT OF SUBBASIN DRY = 1.76 %
NORMAL = 98.24 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.252

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.406

IMPERVIOUS AREA: URBAN @ 100 % effective = 59.49
ROCK OUTCROP @ 60 % effective = 0.97

% EFFECTIVE IMP. = 60.47

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
232F	1.442	1.900	0.630	29.00	0.102	0.252	4.03	0.406	60.47

LOSS PARAMETERS FOR SUBBASIN: 233 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
1	0.219	36.56	0.41	-0.142	0.00	0.00
55	0.099	16.51	0.27	-0.094	0.00	0.00
50	0.081	13.52	0.26	-0.079	0.00	0.00
101	0.075	12.62	0.28	-0.070	0.00	0.00
90	0.072	12.11	0.39	-0.050	0.00	0.00
76	0.025	4.18	0.23	-0.027	0.00	0.00
124	0.017	2.76	0.39	-0.011	0.00	0.00
60	0.010	1.75	0.26	-0.010	0.00	0.00

TOTAL = 0.598 SQ.MI. XKSAT = 0.33 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.92

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	10.28	DRY	25.00	0.00	0.00	0.15	0.015
0.019	L.D.R.	3.13	NORMAL	25.00	25.00	0.00	0.10	0.003
0.135	M.F.R.	22.62	NORMAL	25.00	65.00	0.09	0.10	0.023
0.348	M.D.R.	58.23	NORMAL	25.00	45.00	0.16	0.10	0.058
0.034	COMM	5.74	NORMAL	20.00	90.00	0.03	0.10	0.006

0.598 =TOTAL AREA OK AVERAGE = 24.71 TOTAL = 0.28 AVG. = 0.105
% = 46.85

PERCENT OF SUBBASIN DRY = 10.28 %
NORMAL = 89.72 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.260

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.383

IMPERVIOUS AREA: URBAN @ 100 % effective = 46.85
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 46.85

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
233F	0.598	1.170	0.470	22.00	0.105	0.260	3.92	0.383	46.85

LOSS PARAMETERS FOR SUBBASIN: 234 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.138	48.70	0.26	-0.285	0.00	0.00
1	0.101	35.74	0.41	-0.138	0.00	0.00
76	0.021	7.44	0.23	-0.047	0.00	0.00
101	0.014	4.78	0.28	-0.026	0.00	0.00
55	0.009	3.33	0.27	-0.019	0.00	0.00
TOTAL =	0.283 SQ.MI.		XKSAT =	0.30	%ROCK=	0.00

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.
0.048	L.D.R.	16.84	NORMAL	25.00	25.00	0.01	0.10	0.017
0.056	M.F.R.	19.70	NORMAL	25.00	65.00	0.04	0.10	0.020
0.115	M.D.R.	40.44	NORMAL	25.00	45.00	0.05	0.10	0.040
0.065	COMM	23.02	NORMAL	20.00	90.00	0.06	0.10	0.023
0.283	=TOTAL AREA	OK	AVERAGE =	23.85	TOTAL =	0.16	AVG. =	0.100
					% =	55.93		

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. = 0.346

IMPERVIOUS AREA:

URBAN @	100 %	effective =	55.93
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		55.93

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
234F	0.283	0.790	0.420	25.00	0.100	0.250	3.77	0.346	55.93

LOSS PARAMETERS FOR SUBBASIN: 235 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
50	0.144	51.76	0.26	-0.303	0.00	0.00
101	0.074	26.63	0.28	-0.147	0.00	0.00
55	0.044	15.84	0.27	-0.090	0.00	0.00
1	0.014	4.99	0.41	-0.019	0.00	0.00
76	0.002	0.62	0.23	-0.004	0.00	0.00
2	0.000	0.16	0.41	-0.001	0.00	0.00

TOTAL = 0.279 SQ.MI. XKSAT = 0.27 %ROCK= 0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.132	V.L.D.R	47.47	NORMAL	25.00	15.00	0.02	0.10	0.047
0.002	L.D.R.	0.69	NORMAL	25.00	25.00	0.00	0.10	0.001
0.001	M.F.R.	0.31	NORMAL	25.00	65.00	0.00	0.10	0.000
0.097	M.D.R.	34.97	NORMAL	25.00	45.00	0.04	0.10	0.035
0.046	COMM	16.56	NORMAL	20.00	90.00	0.04	0.10	0.017

0.279 =TOTAL AREA OK AVERAGE = 24.17 TOTAL = 0.11 AVG. = 0.100
% = 38.13

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. = 0.312

IMPERVIOUS AREA: URBAN @ 100 % effective = 38.13
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 38.13

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
235F	0.279	0.830	0.490	25.00	0.100	0.250	3.61	0.312	38.13

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LOSS PARAMETERS FOR SUBBASIN: 236 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
68	0.247	38.83	0.63	-0.078	0.00	0.00
44	0.135	21.25	0.03	-0.324	0.00	0.00
100	0.084	13.21	0.4	-0.053	20.00	2.64
55	0.071	11.18	0.27	-0.064	0.00	0.00
112	0.063	9.92	0.39	-0.041	0.00	0.00
50	0.036	5.61	0.26	-0.033	0.00	0.00

TOTAL = 0.635 SQ.MI. XKSAT = 0.26 %ROCK= 2.64

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.
0.132	VACANT	20.82	DRY	25.00	0.00	0.00	0.15	0.031
0.024	V.L.D.R	3.71	NORMAL	25.00	15.00	0.00	0.10	0.004
0.042	M.F.R.	6.56	NORMAL	25.00	65.00	0.03	0.10	0.007
0.367	M.D.R.	57.76	NORMAL	25.00	45.00	0.17	0.10	0.058
0.038	COMM	5.91	NORMAL	20.00	90.00	0.03	0.10	0.006
0.033	PARK	5.24	NORMAL	90.00	0.00	0.00	0.20	0.010
0.635	=TOTAL AREA	OK	AVERAGE =	28.11	TOTAL =	0.23	AVG. =	0.116
					% =	36.13		

PERCENT OF SUBBASIN DRY = 20.82 %
NORMAL = 79.18 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.271

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.312

IMPERVIOUS AREA: URBAN @ 100 % effective = 36.13
ROCK OUTCROP @ 60 % effective = 1.59

% EFFECTIVE IMP. = 37.72

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
236F	0.635	1.050	0.360	197.00	0.116	0.271	3.55	0.312	37.72

LOSS PARAMETERS FOR SUBBASIN: 237 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
68	0.207	31.84	0.63	-0.064	0.00	0.00
44	0.164	25.25	0.03	-0.385	0.00	0.00
55	0.114	17.50	0.27	-0.100	0.00	0.00
1	0.082	12.66	0.41	-0.049	0.00	0.00
50	0.081	12.42	0.26	-0.073	0.00	0.00
18	0.002	0.33	0.33	-0.002	15.00	0.05

TOTAL = 0.651 SQ.MI. XKSAT = 0.21 %ROCK= 0.05

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.
0.032	VACANT	4.95	DRY	25.00	0.00	0.00	0.15	0.007
0.014	L.D.R.	2.13	NORMAL	25.00	25.00	0.00	0.10	0.002
0.021	M.F.R.	3.20	NORMAL	25.00	65.00	0.01	0.10	0.003
0.550	M.D.R.	84.50	NORMAL	25.00	45.00	0.25	0.10	0.084
0.034	COMM	5.22	NORMAL	20.00	90.00	0.03	0.10	0.005
0.651	=TOTAL AREA	OK	AVERAGE =	24.74	TOTAL =	0.29	AVG. =	0.102
					% =	45.34		

PERCENT OF SUBBASIN
DRY = 4.95 %
NORMAL = 95.05 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.256

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.244

IMPERVIOUS AREA:
URBAN @ 100 % effective = 45.34
ROCK OUTCROP @ 60 % effective = 0.03

% EFFECTIVE IMP. = 45.37

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
237F	0.651	1.690	0.890	135.00	0.102	0.256	4.74	0.244	45.37

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LOSS PARAMETERS FOR SUBBASIN: 238 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
115	0.248	27.40	0.39	-0.112	0.00	0.00
2	0.190	21.06	0.41	-0.082	0.00	0.00
1	0.123	13.66	0.41	-0.053	0.00	0.00
100	0.122	13.47	0.4	-0.054	20.00	2.69
18	0.079	8.72	0.33	-0.042	15.00	1.31
101	0.049	5.43	0.28	-0.030	0.00	0.00
124	0.040	4.39	0.39	-0.018	0.00	0.00
PsA	0.016	1.72	0.25	-0.010	0.00	0.00
50	0.012	1.38	0.26	-0.008	0.00	0.00
112	0.012	1.28	0.39	-0.005	0.00	0.00
LcA	0.008	0.87	0.25	-0.005	0.00	0.00
Gr	0.003	0.32	0.23	-0.002	0.00	0.00
Tu	0.003	0.30	0.25	-0.002	0.00	0.00

TOTAL = 0.904 SQ.MI. XKSAT = 0.38 %ROCK= 4.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.19

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.043	VACANT	4.76	DRY	25.00	0.00	0.00	0.15	0.007
0.008	L.D.R.	0.89	NORMAL	25.00	25.00	0.00	0.10	0.001
0.398	M.F.R.	44.08	NORMAL	25.00	65.00	0.26	0.10	0.044
0.293	M.D.R.	32.44	NORMAL	25.00	45.00	0.13	0.10	0.032
0.099	SCHOOL	10.93	NORMAL	40.00	45.00	0.04	0.20	0.022
0.002	COMM	0.25	NORMAL	20.00	90.00	0.00	0.10	0.000
0.060	PARK	6.65	NORMAL	90.00	0.00	0.00	0.20	0.013
0.904	=TOTAL AREA	OK	AVERAGE =	30.95	TOTAL =	0.44	AVG. =	0.120
					% =	48.62		

PERCENT OF SUBBASIN

DRY = 4.76 %
NORMAL = 95.24 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.255

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.468

IMPERVIOUS AREA:

URBAN @ 100 % effective = 48.62
ROCK OUTCROP @ 60 % effective = 2.40

% EFFECTIVE IMP. = 51.02

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
238F	0.904	1.950	1.170	65.00	0.120	0.255	4.19	0.468	51.02

LOSS PARAMETERS FOR SUBBASIN: 239 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
1	0.107	25.00	0.41	-0.097	0.00	0.00
2	0.085	19.99	0.41	-0.077	0.00	0.00
LcA	0.068	15.90	0.25	-0.096	0.00	0.00
50	0.061	14.33	0.26	-0.084	0.00	0.00
101	0.051	11.84	0.28	-0.065	0.00	0.00
Te	0.015	3.52	0.25	-0.021	0.00	0.00
77	0.011	2.65	0.05	-0.034	0.00	0.00
76	0.011	2.58	0.23	-0.016	0.00	0.00
55	0.009	2.13	0.27	-0.012	0.00	0.00
RbA	0.005	1.11	0.26	-0.006	0.00	0.00
GgA	0.003	0.80	0.25	-0.005	0.00	0.00
Gr	0.001	0.16	0.23	-0.001	0.00	0.00

TOTAL = 0.427 SQ.MI. XKSAT = 0.30 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.77
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.
0.023	V.L.D.R	5.45	NORMAL	25.00	15.00	0.00	0.10	0.005
0.134	M.D.R.	31.47	NORMAL	25.00	45.00	0.06	0.10	0.031
0.152	M.F.R.	35.57	NORMAL	25.00	65.00	0.10	0.10	0.036
0.004	IND	0.98	NORMAL	20.00	75.00	0.00	0.10	0.001
0.113	COMM	26.52	NORMAL	20.00	90.00	0.10	0.10	0.027
0.427	=TOTAL AREA	OK	AVERAGE =	23.62	TOTAL =	0.27	AVG. =	0.100
					% =	62.71		

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. = 0.345

IMPERVIOUS AREA: URBAN @ 100 % effective = 62.71
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 62.71

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
239F	0.427	1.370	0.680	34.00	0.100	0.250	3.77	0.345	62.71

LOSS PARAMETERS FOR SUBBASIN: 240 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
44	0.139	51.73	0.03	-0.788	0.00	0.00
68	0.073	27.02	0.63	-0.054	0.00	0.00
GgA	0.025	9.36	0.25	-0.056	0.00	0.00
77	0.012	4.60	0.05	-0.060	0.00	0.00
AdB	0.007	2.63	0.4	-0.010	0.00	0.00
18	0.006	2.14	0.33	-0.010	15.00	0.32
50	0.005	1.88	0.26	-0.011	0.00	0.00
1	0.002	0.64	0.41	-0.002	0.00	0.00

TOTAL = 0.270 SQ.MI. XKSAT = 0.10 %ROCK= 0.32

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.
0.049	VACANT	18.16	DRY	25.00	0.00	0.00	0.15	0.027
0.040	V.L.D.R	14.81	NORMAL	25.00	15.00	0.01	0.10	0.015
0.036	M.F.R.	13.25	NORMAL	25.00	65.00	0.02	0.10	0.013
0.145	M.D.R.	53.78	NORMAL	25.00	45.00	0.07	0.10	0.054
0.270	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.09	AVG. =	0.109
					% =	35.03		

PERCENT OF SUBBASIN DRY = 18.16 %
NORMAL = 81.84 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.186

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.117

IMPERVIOUS AREA: URBAN @ 100 % effective = 35.03
ROCK OUTCROP @ 60 % effective = 0.19

% EFFECTIVE IMP. = 35.23

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
240F	0.270	1.100	0.710	173.00	0.109	0.186	7.50	0.117	35.23

LOSS PARAMETERS FOR SUBBASIN: 241 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
44	0.159	30.62	0.03	-0.466	0.00	0.00
GgA	0.103	19.89	0.25	-0.120	0.00	0.00
RS	0.083	16.04	0.4	-0.064	65.00	10.43
18	0.057	10.92	0.33	-0.053	15.00	1.64
LcA	0.048	9.16	0.25	-0.055	0.00	0.00
AdB	0.027	5.24	0.4	-0.021	0.00	0.00
68	0.012	2.40	0.63	-0.005	0.00	0.00
AdA	0.010	1.92	0.4	-0.008	0.00	0.00
1	0.010	1.84	0.41	-0.007	0.00	0.00
PeA	0.009	1.67	0.37	-0.007	0.00	0.00
55	0.002	0.30	0.27	-0.002	0.00	0.00

TOTAL = 0.519 SQ.MI. XKSAT = 0.16 %ROCK= 12.06

DTHETA

Dry = 0.4
Normal = 0.25
Wet = 0

PSIF

= 6.29

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.183	VACANT	35.24	DRY	25.00	0.00	0.00	0.15	0.053
0.148	V.L.D.R	28.56	NORMAL	25.00	15.00	0.02	0.10	0.029
0.141	M.D.R.	27.06	NORMAL	25.00	45.00	0.06	0.10	0.027
0.028	IND	5.44	NORMAL	20.00	75.00	0.02	0.10	0.005
0.019	COMM	3.71	NORMAL	20.00	90.00	0.02	0.10	0.004

0.519 =TOTAL AREA OK AVERAGE = 24.54 TOTAL = 0.12 AVG. = 0.118
% = 23.87

PERCENT OF SUBBASIN
DRY = 35.24 %
NORMAL = 64.76 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.303

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.186

IMPERVIOUS AREA:
URBAN @ 100 % effective = 23.87
ROCK OUTCROP @ 60 % effective = 7.24

% EFFECTIVE IMP. = 31.11

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
241F	0.519	1.390	0.870	147.00	0.118	0.303	6.29	0.186	31.11

LOSS PARAMETERS FOR SUBBASIN: 242 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RpE	0.129	19.69	0.29	-0.106	0.00	0.00
100	0.116	17.73	0.4	-0.071	20.00	3.55
101	0.114	17.35	0.28	-0.096	0.00	0.00
PeA	0.060	9.23	0.37	-0.040	0.00	0.00
18	0.051	7.77	0.33	-0.037	15.00	1.17
CO	0.046	7.06	0.29	-0.038	20.00	1.41
AfA	0.041	6.28	0.38	-0.026	0.00	0.00
RbB	0.041	6.23	0.25	-0.038	0.00	0.00
AbA	0.032	4.93	0.38	-0.021	0.00	0.00
68	0.018	2.70	0.63	-0.005	0.00	0.00
2	0.004	0.59	0.41	-0.002	0.00	0.00
112	0.003	0.45	0.39	-0.002	0.00	0.00

TOTAL = 0.656 SQ.MI. XKSAT = 0.33 %ROCK= 6.12

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.92

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.054	VACANT	8.19	DRY	25.00	0.00	0.00	0.15	0.012
0.447	M.D.R.	68.16	NORMAL	25.00	45.00	0.20	0.10	0.068
0.155	PARK	23.65	NORMAL	90.00	0.00	0.00	0.20	0.047
0.655	=TOTAL AREA	OK	AVERAGE =	40.37	TOTAL =	0.20	AVG. =	0.128
					% =	30.67		

PERCENT OF SUBBASIN
DRY = 8.19 %
NORMAL = 91.81 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.258

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.440

IMPERVIOUS AREA:
URBAN @ 100 % effective = 30.67
ROCK OUTCROP @ 60 % effective = 3.67

% EFFECTIVE IMP. = 34.35

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
242F	0.656	1.460	0.870	84.00	0.128	0.258	3.92	0.440	34.35

LOSS PARAMETERS FOR SUBBASIN: 243 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
RpE	0.143	35.05	0.29	-0.188	0.00	0.00
PeA	0.122	29.98	0.37	-0.129	0.00	0.00
GgA	0.071	17.39	0.25	-0.105	0.00	0.00
110	0.024	5.87	0.13	-0.052	0.00	0.00
100	0.018	4.40	0.4	-0.018	20.00	0.88
LcA	0.017	4.24	0.25	-0.026	0.00	0.00
AfA	0.008	1.86	0.38	-0.008	0.00	0.00
68	0.005	1.21	0.63	-0.002	0.00	0.00

TOTAL = 0.408 SQ.MI. XKSAT = 0.30 %ROCK= 0.88

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.
0.036	VACANT	8.70	DRY	25.00	0.00	0.00	0.15	0.013
0.072	M.F.R.	17.53	NORMAL	25.00	65.00	0.05	0.10	0.018
0.263	M.D.R.	64.48	NORMAL	25.00	45.00	0.12	0.10	0.064
0.038	R.O.W.	9.29	NORMAL	5.00	90.00	0.03	0.10	0.009

0.408 =TOTAL AREA OK AVERAGE = 23.14 TOTAL = 0.20 AVG. = 0.104
% = 48.77

PERCENT OF SUBBASIN
DRY = 8.70 %
NORMAL = 91.30 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.259

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.343

IMPERVIOUS AREA:
URBAN @ 100 % effective = 48.77
ROCK OUTCROP @ 60 % effective = 0.53

% EFFECTIVE IMP. = 49.30

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
243F	0.408	2.020	1.360	85.00	0.104	0.259	3.77	0.343	49.30

LOSS PARAMETERS FOR SUBBASIN: 244 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.250	49.67	0.25	-0.299	0.00	0.00
18	0.094	18.76	0.33	-0.090	15.00	2.81
PsB	0.050	10.01	0.26	-0.059	0.00	0.00
PeA	0.027	5.34	0.37	-0.023	0.00	0.00
RbA	0.017	3.43	0.26	-0.020	0.00	0.00
PsA	0.014	2.73	0.25	-0.016	0.00	0.00
GgA	0.013	2.67	0.25	-0.016	0.00	0.00
GxB	0.011	2.19	0.24	-0.014	0.00	0.00
Gr	0.009	1.75	0.23	-0.011	0.00	0.00
EbD	0.007	1.44	0.1	-0.014	0.00	0.00
Tu	0.005	1.03	0.25	-0.006	0.00	0.00
101	0.005	0.98	0.28	-0.005	0.00	0.00

TOTAL = 0.504 SQ.MI. XKSAT = 0.27 %ROCK= 2.81

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.037	VACANT	7.35	DRY	25.00	0.00	0.00	0.35	0.026
0.343	M.F.R.	68.08	NORMAL	25.00	65.00	0.22	0.10	0.068
0.124	M.D.R.	24.57	NORMAL	25.00	45.00	0.06	0.10	0.025
0.504	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.28	AVG. =	0.118
					% =	55.31		

PERCENT OF SUBBASIN DRY = 7.35 %
NORMAL = 92.65 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.257

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.315

IMPERVIOUS AREA: URBAN @ 100 % effective = 55.31
ROCK OUTCROP @ 60 % effective = 1.69

% EFFECTIVE IMP. = 57.00

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
244F	0.504	1.100	0.560	75.00	0.118	0.257	3.61	0.315	57.00

LOSS PARAMETERS FOR SUBBASIN: 245 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.086	44.18	0.25	-0.266	0.00	0.00
PeA	0.044	22.74	0.37	-0.098	0.00	0.00
LcA	0.036	18.58	0.25	-0.112	0.00	0.00
Ge	0.018	9.07	0.26	-0.053	0.00	0.00
RpE	0.011	5.43	0.29	-0.029	0.00	0.00
TOTAL =	0.195 SQ.MI.		XKSAT =	0.28	%ROCK=	0.00

DTHETA

Dry =	0.35
Normal =	0.25
Wet =	0

PSIF

= 3.66

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.064	M.F.R.	32.76	NORMAL	25.00	65.00	0.04	0.10	0.033
0.058	M.D.R.	29.74	NORMAL	25.00	45.00	0.03	0.10	0.030
0.013	R.O.W.	6.85	NORMAL	5.00	90.00	0.01	0.10	0.007
0.060	COMM	30.65	NORMAL	20.00	90.00	0.05	0.10	0.031
0.195	=TOTAL AREA	OK	AVERAGE =	22.10	TOTAL =	0.13	AVG. =	0.100
					% =	68.43		

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. = 0.317

IMPERVIOUS AREA:

URBAN @	100 %	effective =	68.43
ROCK OUTCROP @	60 %	effective =	0.00
	% EFFECTIVE IMP. =		68.43

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
245F	0.195	1.300	0.470	34.00	0.100	0.250	3.66	0.317	68.43

LOSS PARAMETERS FOR SUBBASIN: 246 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.305	48.57	0.25	-0.292	0.00	0.00
LcA	0.209	33.24	0.25	-0.200	0.00	0.00
44	0.034	5.47	0.03	-0.083	0.00	0.00
PeA	0.018	2.85	0.37	-0.012	0.00	0.00
RS	0.016	2.58	0.4	-0.010	65.00	1.68
101	0.015	2.45	0.28	-0.014	0.00	0.00
Te	0.013	2.11	0.25	-0.013	0.00	0.00
CO	0.012	1.94	0.29	-0.010	20.00	0.39
PsB	0.003	0.51	0.26	-0.003	0.00	0.00
RbA	0.002	0.28	0.26	-0.002	0.00	0.00

TOTAL = 0.629 SQ.MI. XKSAT = 0.23 %ROCK= 2.06

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.
0.016	VACANT	2.48	DRY	25.00	0.00	0.00	0.15	0.004
0.049	V.L.D.R	7.84	NORMAL	25.00	15.00	0.01	0.10	0.008
0.288	M.F.R.	45.78	NORMAL	25.00	65.00	0.19	0.10	0.046
0.115	M.D.R.	18.32	NORMAL	25.00	45.00	0.05	0.10	0.018
0.042	IND	6.71	NORMAL	20.00	75.00	0.03	0.10	0.007
0.119	COMM\PSC	18.87	NORMAL	20.00	90.00	0.11	0.10	0.019
0.629	=TOTAL AREA	OK	AVERAGE =	23.72	TOTAL =	0.38	AVG. =	0.101
					% =	61.19		

PERCENT OF SUBBASIN DRY = 2.48 %
NORMAL = 97.52 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.253

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.265

IMPERVIOUS AREA:

URBAN @	100 %	effective =	61.19
ROCK OUTCROP @	60 %	effective =	1.24
% EFFECTIVE IMP. =			62.43

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
246F	0.629	1.450	0.480	23.00	0.101	0.253	4.12	0.265	62.43

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LOSS PARAMETERS FOR SUBBASIN: 247 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.148	71.46	0.25	-0.430	0.00	0.00
Ge	0.053	25.79	0.26	-0.151	0.00	0.00
Vg	0.005	2.42	0.91	-0.001	0.00	0.00
Cf	0.001	0.33	0.5	-0.001	0.00	0.00

TOTAL = 0.207 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.
0.118	M.F.R.	57.11	NORMAL	25.00	65.00	0.08	0.10	0.057
0.059	M.D.R.	28.77	NORMAL	25.00	45.00	0.03	0.10	0.029
0.017	IND	8.18	NORMAL	20.00	75.00	0.01	0.10	0.008
0.012	PARK	5.95	NORMAL	90.00	0.00	0.00	0.20	0.012
0.207	=TOTAL AREA	OK	AVERAGE =	28.46	TOTAL =	0.12	AVG. =	0.106
					% =	56.20		

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. = 0.313

IMPERVIOUS AREA:
URBAN @ 100 % effective = 56.20
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 56.20

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
247F	0.207	0.980	0.410	26.00	0.106	0.250	3.55	0.313	56.20

LOSS PARAMETERS FOR SUBBASIN: 248 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.675	70.01	0.25	-0.421	0.00	0.00
Ge	0.139	14.42	0.26	-0.084	0.00	0.00
LcA	0.086	8.94	0.25	-0.054	0.00	0.00
Cf	0.056	5.82	0.5	-0.018	0.00	0.00
PsB	0.008	0.82	0.26	-0.005	0.00	0.00

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

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.039	VACANT	4.07	DRY	25.00	0.00	0.00	0.15	0.006
0.054	V.L.D.R	5.60	NORMAL	25.00	15.00	0.01	0.10	0.006
0.006	L.D.R.	0.59	NORMAL	25.00	25.00	0.00	0.10	0.001
0.515	M.F.R.	53.37	NORMAL	25.00	65.00	0.33	0.10	0.053
0.212	M.D.R.	22.00	NORMAL	25.00	45.00	0.10	0.10	0.022
0.139	COMM\PSC	14.37	NORMAL	20.00	90.00	0.12	0.10	0.014

0.965 =TOTAL AREA OK AVERAGE = 24.28 TOTAL = 0.56 AVG. = 0.102
% = 58.51

PERCENT OF SUBBASIN DRY = 4.07 %
NORMAL = 95.93 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.254

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.301

IMPERVIOUS AREA: URBAN @ 100 % effective = 58.51
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 58.51

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
248F	0.965	2.030	0.880	28.00	0.102	0.254	3.55	0.301	58.51

0

LOSS PARAMETERS FOR SUBBASIN: 249 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.173	34.82	0.25	-0.210	0.00	0.00
RS	0.118	23.78	0.4	-0.095	65.00	15.45
Ge	0.106	21.36	0.26	-0.125	0.00	0.00
Cf	0.052	10.54	0.5	-0.032	0.00	0.00
AbA	0.025	5.06	0.38	-0.021	0.00	0.00
Tc	0.022	4.45	0.4	-0.018	0.00	0.00

TOTAL = 0.497 SQ.MI. XKSAT = 0.32 %ROCK= 15.45

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.87

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	VACANT	16.62	DRY	25.00	0.00	0.00	0.15	0.025
0.014	V.L.D.R	2.87	NORMAL	25.00	15.00	0.00	0.10	0.003
0.023	L.D.R.	4.63	NORMAL	25.00	25.00	0.01	0.10	0.005
0.048	M.F.R.	9.56	NORMAL	25.00	65.00	0.03	0.10	0.010
0.297	M.D.R.	59.69	NORMAL	25.00	45.00	0.13	0.10	0.060
0.033	PARK	6.63	NORMAL	90.00	0.00	0.00	0.20	0.013
0.497	=TOTAL AREA	OK	AVERAGE =	29.31	TOTAL = % =	0.17 34.66	AVG. =	0.115

PERCENT OF SUBBASIN
DRY = 16.62 %
NORMAL = 83.38 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.267

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.388

IMPERVIOUS AREA:
URBAN @ 100 % effective = 34.66
ROCK OUTCROP @ 60 % effective = 9.27

% EFFECTIVE IMP. = 43.93

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
249F	0.497	1.460	0.650	28.00	0.115	0.267	3.87	0.388	43.93

LOSS PARAMETERS FOR SUBBASIN: 250 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
52	0.675	27.75	0.16	-0.221	20.00	5.55
3	0.463	19.04	0.58	-0.045	0.00	0.00
18	0.315	12.97	0.33	-0.062	15.00	1.94
55	0.267	10.96	0.27	-0.062	0.00	0.00
113	0.243	10.00	0.39	-0.041	0.00	0.00
110	0.118	4.86	0.13	-0.043	0.00	0.00
103	0.113	4.65	0.1	-0.047	65.00	3.02
21	0.078	3.20	0.38	-0.013	0.00	0.00
98	0.068	2.80	0.37	-0.012	0.00	0.00
90	0.048	1.99	0.39	-0.008	0.00	0.00
101	0.044	1.79	0.28	-0.010	0.00	0.00
TOTAL =	2.433 SQ.MI.		XKSAT =	0.27	%ROCK=	10.52

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.
1.772	VACANT	72.84	DRY	25.00	0.00	0.00	0.15	0.109
0.661	V.L.D.R	27.16	NORMAL	25.00	15.00	0.10	0.10	0.027
2.433	=TOTAL AREA	OK	AVERAGE =	25.00	TOTAL =	0.10	AVG. =	0.136
					% =	4.07		

PERCENT OF SUBBASIN
DRY = 72.84 %
NORMAL = 27.16 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.323

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.315

IMPERVIOUS AREA:
URBAN @ 100 % effective = 4.07
ROCK OUTCROP @ 60 % effective = 6.31

% EFFECTIVE IMP. = 10.39

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
250F	2.433	3.580	1.440	43.00	0.136	0.323	3.61	0.315	10.39

LOSS PARAMETERS FOR SUBBASIN: 251 (FUTURE)

Soil Survey Used AGUILA

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
113	0.865	50.31	0.39	-0.206	0.00	0.00
101	0.232	13.51	0.28	-0.075	0.00	0.00
18	0.168	9.77	0.33	-0.047	15.00	1.47
90	0.154	8.96	0.39	-0.037	0.00	0.00
112	0.096	5.57	0.39	-0.023	0.00	0.00
118	0.071	4.15	0.42	-0.016	0.00	0.00
2	0.061	3.57	0.41	-0.014	0.00	0.00
52	0.029	1.66	0.16	-0.013	20.00	0.33
55	0.022	1.28	0.27	-0.007	0.00	0.00
3	0.021	1.21	0.58	-0.003	0.00	0.00
TOTAL =	1.719 SQ.MI.		XKSAT =	0.36	%ROCK=	1.80

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.08

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.295	VACANT	17.19	DRY	25.00	0.00	0.00	0.15	0.026
0.737	V.L.D.R	42.84	NORMAL	25.00	15.00	0.11	0.10	0.043
0.676	M.D.R.	39.34	NORMAL	25.00	45.00	0.30	0.10	0.039
0.011	PARK	0.62	NORMAL	90.00	0.00	0.00	0.20	0.001
1.719	=TOTAL AREA	OK	AVERAGE =	25.41	TOTAL =	0.41	AVG. =	0.109
					% =	24.13		

PERCENT OF SUBBASIN
DRY = 17.19 %
NORMAL = 82.81 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.267

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.421

IMPERVIOUS AREA:
URBAN @ 100 % effective = 24.13
ROCK OUTCROP @ 60 % effective = 1.08

% EFFECTIVE IMP. = 25.21

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
251F	1.719	3.890	1.520	48.00	0.109	0.267	4.08	0.421	25.21

LOSS PARAMETERS FOR SUBBASIN: 252 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
109	0.146	38.49	0.35	-0.176	35.00	13.47
50	0.077	20.30	0.26	-0.119	0.00	0.00
55	0.038	10.11	0.27	-0.057	0.00	0.00
113	0.038	10.10	0.39	-0.041	0.00	0.00
108	0.034	9.04	0.31	-0.046	30.00	2.71
98	0.031	8.29	0.37	-0.036	0.00	0.00
Te	0.010	2.60	0.25	-0.016	0.00	0.00
112	0.004	1.06	0.39	-0.004	0.00	0.00

TOTAL = 0.378 SQ.MI. XKSAT = 0.32 %ROCK= 16.19

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.87

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	VACANT	10.37	DRY	25.00	0.00	0.00	0.15	0.016
0.339	IND	89.63	NORMAL	20.00	75.00	0.25	0.10	0.090
0.379	=TOTAL AREA	OK	AVERAGE =	20.52	TOTAL =	0.25	AVG. =	0.105
					% =	67.22		

PERCENT OF SUBBASIN
DRY = 10.37 %
NORMAL = 89.63 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.260

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.357

IMPERVIOUS AREA:
URBAN @ 100 % effective = 67.22
ROCK OUTCROP @ 60 % effective = 9.71

% EFFECTIVE IMP. = 76.93

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
252F	0.378	1.050	0.520	49.00	0.105	0.260	3.87	0.357	76.93

LOSS PARAMETERS FOR SUBBASIN: 253 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
3	0.326	22.53	0.5	-0.068	0.00	0.00
18	0.212	14.64	0.33	-0.071	15.00	2.20
Cf	0.137	9.49	0.5	-0.029	0.00	0.00
110	0.115	7.93	0.13	-0.070	0.00	0.00
21	0.098	6.81	0.4	-0.027	0.00	0.00
GgA	0.098	6.77	0.25	-0.041	0.00	0.00
101	0.089	6.19	0.28	-0.034	0.00	0.00
55	0.059	4.06	0.27	-0.023	0.00	0.00
Ma	0.050	3.45	0.4	-0.014	0.00	0.00
68	0.036	2.46	0.63	-0.005	0.00	0.00
108	0.034	2.35	0.31	-0.012	30.00	0.71
Ge	0.033	2.30	0.26	-0.013	0.00	0.00
Mp	0.033	2.26	0.25	-0.014	0.00	0.00
112	0.031	2.13	0.39	-0.009	0.00	0.00
Es	0.029	1.99	0.25	-0.012	0.00	0.00
113	0.026	1.82	0.39	-0.007	0.00	0.00
50	0.020	1.41	0.26	-0.008	0.00	0.00
Cb	0.012	0.85	0.4	-0.003	0.00	0.00
Gr	0.008	0.54	0.23	-0.003	0.00	0.00

TOTAL = 1.446 SQ.MI. XKSAT = 0.34 %ROCK= 2.90

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.98

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.148	VACANT	10.25	DRY	25.00	0.00	0.00	0.15	0.015
0.088	M.F.R.	6.06	NORMAL	25.00	65.00	0.06	0.10	0.006
0.607	IND	41.99	NORMAL	20.00	75.00	0.46	0.10	0.042
0.053	COMM	3.69	NORMAL	20.00	90.00	0.05	0.10	0.004
0.015	R.O.W.	1.06	NORMAL	5.00	90.00	0.01	0.10	0.001
0.534	PARK	36.96	NORMAL	50.00	0.00	0.00	0.20	0.074
1.446	=TOTAL AREA	OK	AVERAGE =	31.74	TOTAL =	0.57	AVG. =	0.142
					% =	39.70		

PERCENT OF SUBBASIN
DRY = 10.25 %
NORMAL = 89.75 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.260

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.421

IMPERVIOUS AREA:	URBAN @	100 % effective =	39.70
	ROCK OUTCROP @	60 % effective =	1.74
		% EFFECTIVE IMP. =	41.44

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
253F	1.446	3.020	1.560	43.00	0.142	0.260	3.98	0.421	41.44

LOSS PARAMETERS FOR SUBBASIN: 254 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
68	0.099	36.47	0.63	-0.073	0.00	0.00
18	0.098	36.11	0.33	-0.174	15.00	5.42
RpE	0.045	16.67	0.29	-0.090	0.00	0.00
110	0.029	10.76	0.13	-0.095	0.00	0.00

TOTAL = 0.272 SQ.MI. XKSAT = 0.37 %ROCK= 5.42

DTHETA		PSIF	
Dry =	0.35	=	4.14
Normal =	0.25		
Wet =	0		

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.033	VACANT	12.05	DRY	25.00	0.00	0.00	0.15	0.018
0.064	M.F.R.	23.37	NORMAL	25.00	65.00	0.04	0.10	0.023
0.004	M.D.R.	1.30	NORMAL	25.00	45.00	0.00	0.10	0.001
0.008	IND	2.82	NORMAL	20.00	75.00	0.01	0.10	0.003
0.047	R.O.W.	17.34	NORMAL	5.00	90.00	0.04	0.10	0.017
0.117	PARK	43.13	NORMAL	50.00	0.00	0.00	0.20	0.086
0.272	=TOTAL AREA	OK	AVERAGE =	32.17	TOTAL =	0.09	AVG. =	0.149
					% =	33.49		

PERCENT OF SUBBASIN DRY = 12.05 %
NORMAL = 87.95 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.262

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.460

IMPERVIOUS AREA: URBAN @ 100 % effective = 33.49
ROCK OUTCROP @ 60 % effective = 3.25

% EFFECTIVE IMP. = 36.74

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
254F	0.272	1.040	0.520	109.00	0.149	0.262	4.14	0.460	36.74

LOSS PARAMETERS FOR SUBBASIN: 255 (FUTURE)

Soil Survey Used AGUILA & CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
18	0.254	33.19	0.33	-0.160	15.00	4.98
68	0.204	26.65	0.63	-0.053	0.00	0.00
110	0.202	26.39	0.13	-0.234	0.00	0.00
Cf	0.061	7.95	0.5	-0.024	0.00	0.00
21	0.027	3.50	0.38	-0.015	0.00	0.00
Ge	0.015	1.90	0.26	-0.011	0.00	0.00
3	0.003	0.41	0.58	-0.001	0.00	0.00
TOTAL =	0.765 SQ.MI.		XKSAT =	0.32	%ROCK=	4.98

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.87

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	12.01	DRY	25.00	0.00	0.00	0.15	0.018
0.099	V.L.D.R	12.93	NORMAL	25.00	15.00	0.01	0.10	0.013
0.101	M.F.R.	13.16	NORMAL	25.00	65.00	0.07	0.10	0.013
0.104	M.D.R.	13.65	NORMAL	25.00	45.00	0.05	0.10	0.014
0.124	IND	16.20	NORMAL	20.00	75.00	0.09	0.10	0.016
0.027	COMM	3.51	NORMAL	20.00	90.00	0.02	0.10	0.004
0.018	R.O.W.	2.35	NORMAL	5.00	90.00	0.02	0.10	0.002
0.200	PARK	26.18	NORMAL	50.00	0.00	0.00	0.20	0.052
0.765	=TOTAL AREA	OK	AVERAGE =	30.09	TOTAL =	0.26	AVG. =	0.132
					% =	34.06		

PERCENT OF SUBBASIN
DRY = 12.01 %
NORMAL = 87.99 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.262

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.391

IMPERVIOUS AREA:
URBAN @ 100 % effective = 34.06
ROCK OUTCROP @ 60 % effective = 2.99

% EFFECTIVE IMP. = 37.05

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
255F	0.765	1.890	0.950	59.00	0.132	0.262	3.87	0.391	37.05

LOSS PARAMETERS FOR SUBBASIN: 256 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Cf	0.165	44.40	0.5	-0.134	0.00	0.00
Es	0.075	20.17	0.25	-0.121	0.00	0.00
Ge	0.049	13.14	0.26	-0.077	0.00	0.00
Vg	0.037	9.86	0.91	-0.004	0.00	0.00
TfA	0.018	4.76	0.37	-0.021	0.00	0.00
GgA	0.016	4.23	0.25	-0.025	0.00	0.00
Mp	0.013	3.44	0.25	-0.021	0.00	0.00

TOTAL = 0.372 SQ.MI. XKSAT = 0.40 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.3

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	VACANT	10.36	DRY	25.00	0.00	0.00	0.15	0.016
0.081	M.F.R.	21.82	NORMAL	25.00	65.00	0.05	0.10	0.022
0.033	M.D.R.	8.74	NORMAL	25.00	45.00	0.01	0.10	0.009
0.023	IND	6.23	NORMAL	20.00	75.00	0.02	0.10	0.006
0.004	COMM	1.04	NORMAL	20.00	90.00	0.00	0.10	0.001
0.018	R.O.W.	4.84	NORMAL	5.00	90.00	0.02	0.10	0.005
0.175	PARK	46.98	NORMAL	50.00	0.00	0.00	0.20	0.094

0.372 =TOTAL AREA OK AVERAGE = 35.41 TOTAL = 0.10 AVG. = 0.152
% = 28.08

PERCENT OF SUBBASIN DRY = 10.36 %
NORMAL = 89.64 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.260

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.512

IMPERVIOUS AREA: URBAN @ 100 % effective = 28.08
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 28.08

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
256F	0.372	1.330	0.610	32.00	0.152	0.260	4.30	0.512	28.08

LOSS PARAMETERS FOR SUBBASIN: 257 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.264	68.15	0.25	-0.410	0.00	0.00
Es	0.094	24.33	0.25	-0.147	0.00	0.00
Te	0.021	5.51	0.25	-0.033	0.00	0.00
TfA	0.008	2.00	0.37	-0.009	0.00	0.00

TOTAL = 0.388 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.
0.017	M.F.R.	4.38	NORMAL	25.00	65.00	0.01	0.10	0.004
0.346	M.D.R.	89.29	NORMAL	25.00	45.00	0.16	0.10	0.089
0.023	R.O.W.	5.95	NORMAL	5.00	90.00	0.02	0.10	0.006
0.001	PARK	0.38	NORMAL	90.00	0.00	0.00	0.20	0.001
0.388	=TOTAL AREA	OK	AVERAGE =	24.06	TOTAL =	0.19	AVG. =	0.100
					% =	48.38		

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. = 0.289

IMPERVIOUS AREA:
URBAN @ 100 % effective = 48.38
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 48.38

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
257F	0.388	1.360	0.830	25.00	0.100	0.250	3.50	0.289	48.38

LOSS PARAMETERS FOR SUBBASIN: 258 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Cf	0.324	47.79	0.5	-0.144	0.00	0.00
Ge	0.176	25.99	0.26	-0.152	0.00	0.00
GgA	0.079	11.71	0.25	-0.071	0.00	0.00
Cb	0.037	5.40	0.4	-0.021	0.00	0.00
Es	0.034	5.03	0.25	-0.030	0.00	0.00
Vg	0.028	4.08	0.91	-0.002	0.00	0.00

TOTAL = 0.677 SQ.MI. XKSAT = 0.38 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 4.19

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	V.L.D.R	0.51	NORMAL	25.00	15.00	0.00	0.10	0.001
0.148	M.F.R.	21.89	NORMAL	25.00	65.00	0.10	0.10	0.022
0.522	M.D.R.	77.06	NORMAL	25.00	45.00	0.23	0.10	0.077
0.004	COMM	0.54	NORMAL	20.00	90.00	0.00	0.10	0.001
0.677	=TOTAL AREA	OK	AVERAGE =	24.97	TOTAL =	0.34	AVG. =	0.100
					% =	49.47		

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. = 0.443

IMPERVIOUS AREA:

URBAN @ 100 % effective = 49.47
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 49.47

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
258F	0.677	1.270	0.410	34.00	0.100	0.250	4.19	0.443	49.47

LOSS PARAMETERS FOR SUBBASIN: 259 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Cf	0.158	37.23	0.5	-0.112	0.00	0.00
Ge	0.132	31.08	0.26	-0.182	0.00	0.00
GgA	0.130	30.75	0.25	-0.185	0.00	0.00
Tc	0.004	0.94	0.4	-0.004	0.00	0.00

TOTAL = 0.424 SQ.MI. XKSAT = 0.33 %ROCK= 0.00

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.92

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.202	V.L.D.R	47.55	NORMAL	25.00	15.00	0.03	0.10	0.048
0.103	M.F.R.	24.34	NORMAL	25.00	65.00	0.07	0.10	0.024
0.056	M.D.R.	13.17	NORMAL	25.00	45.00	0.03	0.10	0.013
0.063	COMM	14.94	NORMAL	20.00	90.00	0.06	0.10	0.015
0.424	=TOTAL AREA	OK	AVERAGE =	24.25	TOTAL =	0.18	AVG. =	0.100
					% =	42.33		

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

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.250

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.382

IMPERVIOUS AREA:
URBAN @ 100 % effective = 42.33
ROCK OUTCROP @ 60 % effective = 0.00
% EFFECTIVE IMP. = 42.33

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
259F	0.424	1.610	0.800	32.00	0.100	0.250	3.92	0.382	42.33

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LOSS PARAMETERS FOR SUBBASIN: 260 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.665	66.68	0.25	-0.401	0.00	0.00
Es	0.173	17.37	0.25	-0.105	0.00	0.00
TfA	0.112	11.19	0.37	-0.048	0.00	0.00
Gr	0.026	2.59	0.23	-0.017	0.00	0.00
Te	0.012	1.20	0.25	-0.007	0.00	0.00
Tw	0.010	0.97	0.05	-0.013	0.00	0.00

TOTAL = 0.997 SQ.MI. XKSAT = 0.26 %ROCK= 0.00

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

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.061	M.F.R.	6.16	NORMAL	25.00	65.00	0.04	0.10	0.006
0.869	M.D.R.	87.20	NORMAL	25.00	45.00	0.39	0.10	0.087
0.027	COMM	2.75	NORMAL	20.00	90.00	0.02	0.10	0.003
0.039	R.O.W.	3.89	NORMAL	5.00	90.00	0.03	0.10	0.004

0.997 =TOTAL AREA OK AVERAGE = 24.08 TOTAL = 0.49 AVG. = 0.100
% = 49.22

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. = 0.300

IMPERVIOUS AREA: URBAN @ 100 % effective = 49.22
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 49.22

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
260F	0.997	1.780	0.970	24.00	0.100	0.250	3.55	0.300	49.22

LOSS PARAMETERS FOR SUBBASIN: 261 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Mp	0.429	53.38	0.25	-0.321	0.00	0.00
Es	0.202	25.18	0.25	-0.152	0.00	0.00
Mr	0.068	8.52	0.05	-0.111	0.00	0.00
GgA	0.060	7.41	0.25	-0.045	0.00	0.00
Vf	0.022	2.78	0.01	-0.056	0.00	0.00
Te	0.010	1.26	0.25	-0.008	0.00	0.00
Ge	0.007	0.83	0.26	-0.005	0.00	0.00
TfA	0.005	0.65	0.37	-0.003	0.00	0.00

TOTAL = 0.803 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.
0.020	L.D.R.	2.52	NORMAL	25.00	25.00	0.01	0.10	0.003
0.123	M.F.R.	15.27	NORMAL	25.00	65.00	0.08	0.10	0.015
0.552	M.D.R.	68.68	NORMAL	25.00	45.00	0.25	0.10	0.069
0.109	COMM	13.53	NORMAL	20.00	90.00	0.10	0.10	0.014
0.803	=TOTAL AREA	OK	AVERAGE =	24.32	TOTAL =	0.43	AVG. =	0.100
					% =	53.64		

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 = 53.64
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 53.64

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
261F	0.803	1.830	0.970	22.00	0.100	0.250	5.05	0.232	53.64

LOSS PARAMETERS FOR SUBBASIN: 262 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.356	59.88	0.25	-0.360	0.00	0.00
Mp	0.082	13.74	0.25	-0.083	0.00	0.00
Tc	0.050	8.46	0.4	-0.034	0.00	0.00
Mr	0.032	5.46	0.05	-0.071	0.00	0.00
Es	0.027	4.53	0.25	-0.027	0.00	0.00
RS	0.027	4.50	0.4	-0.018	65.00	2.92
Ge	0.018	3.04	0.26	-0.018	0.00	0.00
Vf	0.002	0.40	0.01	-0.008	0.00	0.00

TOTAL = 0.595 SQ.MI. XKSAT = 0.24 %ROCK= 2.92

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.
0.014	VACANT	2.35	DRY	25.00	0.00	0.00	0.15	0.004
0.093	V.L.D.R	15.67	NORMAL	25.00	15.00	0.01	0.10	0.016
0.130	L.D.R.	21.86	NORMAL	25.00	25.00	0.03	0.10	0.022
0.099	M.F.R.	16.67	NORMAL	25.00	65.00	0.06	0.10	0.017
0.016	M.D.R.	2.66	NORMAL	25.00	45.00	0.01	0.10	0.003
0.089	COMM/CHURCH	14.89	NORMAL	20.00	90.00	0.08	0.10	0.015
0.066	PARKING	11.07	NORMAL	5.00	90.00	0.06	0.10	0.011
0.088	PARK/GC	14.83	NORMAL	90.00	0.00	0.00	0.20	0.030
0.595	=TOTAL AREA	OK	AVERAGE =	31.68	TOTAL =	0.26	AVG. =	0.116
					% =	43.21		

PERCENT OF SUBBASIN DRY = 2.35 %
NORMAL = 97.65 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.253

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.297

IMPERVIOUS AREA:

URBAN @	100 %	effective =	43.21
ROCK OUTCROP @	60 %	effective =	1.75
	% EFFECTIVE IMP. =		44.96

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
262F	0.595	1.360	0.800	29.00	0.116	0.253	3.81	0.297	44.96

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LOSS PARAMETERS FOR SUBBASIN: 263 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
GgA	0.289	27.79	0.25	-0.167	0.00	0.00
Es	0.154	14.82	0.25	-0.089	0.00	0.00
Mp	0.147	14.17	0.25	-0.085	0.00	0.00
TD	0.105	10.09	1.2	0.008	0.00	0.00
Ge	0.072	6.92	0.26	-0.040	0.00	0.00
Tc	0.070	6.76	0.4	-0.027	0.00	0.00
Ma	0.066	6.39	0.4	-0.025	0.00	0.00
Cp	0.049	4.75	0.4	-0.019	0.00	0.00
Aa	0.020	1.97	0.26	-0.012	0.00	0.00
Vk	0.016	1.57	0.26	-0.009	0.00	0.00
Bs	0.015	1.42	0.39	-0.006	0.00	0.00
Vh	0.012	1.15	0.27	-0.007	0.00	0.00
Th	0.010	0.98	0.04	-0.014	0.00	0.00
Cb	0.007	0.71	0.4	-0.003	0.00	0.00
LcA	0.005	0.52	0.25	-0.003	0.00	0.00

TOTAL = 1.040 SQ.MI. XKSAT = 0.32 %ROCK= 0.00

DTHETA		PSIF	
Dry =	0.35	=	3.87
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.
0.091	L.D.R.	8.76	NORMAL	25.00	25.00	0.02	0.10	0.009
0.421	M.F.R.	40.46	NORMAL	25.00	65.00	0.27	0.10	0.040
0.167	M.D.R.	16.08	NORMAL	25.00	45.00	0.08	0.10	0.016
0.012	COMM	1.16	NORMAL	20.00	90.00	0.01	0.10	0.001
0.349	PARK/GC	33.55	NORMAL	90.00	0.00	0.00	0.20	0.067
1.040	=TOTAL AREA	OK	AVERAGE =	46.75	TOTAL =	0.38	AVG. =	0.134
					% =	36.76		

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. = 0.449

IMPERVIOUS AREA: URBAN @ 100 % effective = 36.76
ROCK OUTCROP @ 60 % effective = 0.00

% EFFECTIVE IMP. = 36.76

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
263F	1.040	2.300	1.110	29.00	0.134	0.250	3.87	0.449	36.76

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LOSS PARAMETERS FOR SUBBASIN: 264 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
Cp	0.160	33.42	0.4	-0.133	0.00	0.00
Ge	0.114	23.72	0.26	-0.139	0.00	0.00
LcA	0.081	16.96	0.25	-0.102	0.00	0.00
GgA	0.055	11.47	0.25	-0.069	0.00	0.00
TD	0.023	4.90	1.2	0.004	0.00	0.00
Es	0.017	3.53	0.25	-0.021	0.00	0.00
RS	0.013	2.79	0.4	-0.011	65.00	1.82
RbA	0.012	2.51	0.26	-0.015	0.00	0.00
AbA	0.003	0.70	0.38	-0.003	0.00	0.00
TOTAL =	0.479 SQ.MI.		XKSAT =	0.32	%ROCK=	1.82

DTHETA

Dry = 0.35
Normal = 0.25
Wet = 0

PSIF

= 3.87

LAND USE

AREA SQ.MI.	LAND USE type	% Area	DTHETA condition	% veg. cover	% Imp. Inc.ROW	ImpArea SQ.MI.	IA in.	Wgtd.IA in.
0.019	VACANT	3.88	DRY	25.00	0.00	0.00	0.15	0.006
0.061	M.F.R.	12.73	NORMAL	25.00	65.00	0.04	0.10	0.013
0.312	M.D.R.	65.22	NORMAL	25.00	45.00	0.14	0.10	0.065
0.019	COMM	3.99	NORMAL	20.00	90.00	0.02	0.10	0.004
0.068	PARK	14.19	NORMAL	90.00	0.00	0.00	0.20	0.028
0.479	=TOTAL AREA	OK	AVERAGE =	34.02	TOTAL =	0.20	AVG. =	0.116
					% =	41.21		

PERCENT OF SUBBASIN DRY = 3.88 %
NORMAL = 96.12 %
WET = 0.00 %

SUBBASIN DTHETA WEIGHTED BY LAND USE = 0.254

SUBBASIN XKSAT ADJUSTED FOR VEG. = 0.405

IMPERVIOUS AREA: URBAN @ 100 % effective = 41.21
ROCK OUTCROP @ 60 % effective = 1.09

% EFFECTIVE IMP. = 42.30

INPUT VALUES FOR MCUHP2 PROGRAM

SUBBASIN	AREA sq.mi.	LENGTH miles	Lca miles	SLOPE ft/mile	IA inches	DTHETA	PSIF	XKSAT	RTIMP %
264F	0.479	1.130	0.490	19.00	0.116	0.254	3.87	0.405	42.30

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LOSS PARAMETERS FOR SUBBASIN: 265 (FUTURE)

Soil Survey Used CENTRAL

XKSAT

Map Unit	AREA SQ.MI.	% Area	XKSAT	log(XKSAT) *(% Area)	% ROCK OUTCROP	% Area * %R.O.
LcA	0.470	53.70	0.25	-0.323	0.00	0.00
Es	0.113	12.93	0.25	-0.078	0.00	0.00
Ge	0.105	11.95	0.26	-0.070	0.00	0.00
Mp	0.054	6.16	0.25	-0.037	0.00	0.00
TD	0.050	5.74	1.2	0.005	0.00	0.00
GgA	0.032	3.66	0.25	-0.022	0.00	0.00
Cp	0.026	3.01	0.4	-0.012	0.00	0.00
PeA	0.010	1.13	0.37	-0.005	0.00	0.00
AbA	0.008	0.93	0.38	-0.004	0.00	0.00
Cb	0.007	0.78	0.4	-0.003	0.00	0.00
TOTAL =	0.876 SQ.MI.		XKSAT =	0.28	%ROCK=	0.00

DTHETA		PSIF	
Dry =	0.35	=	3.66
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.
0.078	M.F.R.	8.86	NORMAL	25.00	65.00	0.05	0.10	0.009
0.289	M.D.R.	33.00	NORMAL	25.00	45.00	0.13	0.10	0.033
0.352	IND	40.16	NORMAL	20.00	75.00	0.26	0.10	0.040
0.044	COMM	4.98	NORMAL	20.00	90.00	0.04	0.10	0.005
0.114	PARK	13.00	NORMAL	90.00	0.00	0.00	0.20	0.026
0.876	=TOTAL AREA	OK	AVERAGE =	31.19	TOTAL =	0.48	AVG. =	0.113
					% =	55.21		

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. = 0.345

IMPERVIOUS AREA:

URBAN @	100	% effective =	55.21
ROCK OUTCROP @	60	% effective =	0.00
		% EFFECTIVE IMP. =	55.21

SECTION III

Hydrologic Sub-Basin Characteristics

Hydrologic Sub-Basin Characteristics
(Existing Condition)

TABLE 18
EXISTING HYDROLOGIC SUB-BASIN CHARACTERISTICS
2-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
200	0.553	1.12	0.58	148	0.093	0.733
202	0.600	1.33	0.87	148	0.075	0.736
203	0.345	1.06	0.58	126	0.124	0.987
204	0.478	1.10	0.50	133	0.099	0.748
205	0.270	0.82	0.49	103	0.121	0.851
206	0.557	1.56	0.81	35	0.056	0.748
207	0.575	1.05	0.53	209	0.131	0.912
208	0.195	1.02	0.32	19	0.059	0.529
209	0.294	2.05	1.25	19	0.088	1.726
210	0.805	1.27	0.73	183	0.123	1.066
211	0.224	1.57	0.81	21	0.067	0.988
212	0.397	1.05	0.70	122	0.081	0.694
213	0.218	0.89	0.69	174	0.093	0.696
214	0.380	1.18	0.61	121	0.119	1.013
215	0.246	0.88	0.53	22	0.053	0.529
216	0.407	0.83	0.53	95	0.092	0.680
220	0.147	1.22	0.57	36	0.112	1.185
221	0.501	1.67	0.96	34	0.116	1.704
222	0.299	1.04	0.55	27	0.059	0.612
223	0.622	1.73	0.90	28	0.097	1.462
224	0.422	1.36	0.70	22	0.059	0.772
225	0.236	1.38	0.77	18	0.073	1.035
226	0.358	1.25	0.64	111	0.104	0.937
227	0.347	1.70	0.87	26	0.121	1.814
228	0.213	0.89	0.43	22	0.112	1.037
229	0.569	1.05	0.36	197	0.108	0.656
230	0.566	1.53	0.78	115	0.061	0.636
231	1.210	1.44	0.57	89	0.097	0.920
232	1.216	2.01	0.64	31	0.115	1.582
233	0.238	1.20	0.39	91	0.119	0.908
234	0.359	1.21	0.47	30	0.113	1.147
235	0.354	1.10	0.70	186	0.096	0.773

TABLE 18
EXISTING HYDROLOGIC SUB-BASIN CHARACTERISTICS
2-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
236	0.279	1.37	0.73	43	0.107	1.257
237	0.384	1.31	0.86	156	0.108	1.039
238	0.369	1.42	0.77	80	0.092	0.993
239	0.674	1.49	0.60	96	0.080	0.773
240	0.798	2.17	1.29	80	0.084	1.297
241	0.779	1.55	0.68	59	0.071	0.801
242	0.446	1.80	0.78	69	0.084	1.026
243	0.434	1.56	0.62	28	0.051	0.642
244	0.311	1.52	0.80	29	0.067	0.913
245	0.461	1.46	0.65	29	0.101	1.253
246	0.398	1.51	0.75	90	0.093	0.995
250	2.396	3.58	1.44	43	0.053	1.161
251	1.719	3.89	1.52	48	0.053	1.198
252	0.858	2.02	0.86	62	0.109	1.473
253	0.928	2.64	1.30	59	0.101	1.785
254	0.174	0.98	0.55	36	0.112	1.076
255	0.456	1.43	0.50	29	0.084	0.936
256	0.140	0.82	0.45	24	0.060	0.539
257	0.862	2.21	0.88	26	0.100	1.664
258	0.440	1.52	0.92	34	0.099	1.381
260	0.600	1.76	0.83	27	0.063	0.934
261	0.525	1.49	0.95	21	0.061	0.937
262	0.530	1.49	0.87	31	0.105	1.448
263	0.553	2.30	1.11	30	0.088	1.580
264	0.411	1.13	0.49	19	0.056	0.614
265	0.535	1.75	0.80	23	0.053	0.797
266	0.192	0.84	0.44	21	0.100	0.922
336	0.472	1.38	0.64	58	0.112	1.185
339	0.300	1.11	0.49	31	0.112	1.111

TABLE 19
EXISTING HYDROLOGIC SUB-BASIN CHARACTERISTICS
10-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
200	0.580	1.12	0.58	148	0.082	0.646
202	0.608	1.33	0.87	148	0.066	0.648
203	0.432	1.06	0.58	126	0.109	0.868
204	0.504	1.10	0.50	133	0.087	0.657
205	0.323	0.82	0.49	103	0.107	0.753
206	0.677	1.56	0.81	35	0.049	0.654
207	0.575	1.05	0.53	209	0.115	0.800
208	0.344	1.02	0.32	19	0.052	0.466
209	0.368	2.05	1.25	19	0.078	1.530
210	0.828	1.27	0.73	183	0.108	0.936
211	0.234	1.57	0.81	21	0.059	0.870
212	0.397	1.05	0.70	122	0.072	0.617
213	0.218	0.89	0.69	174	0.082	0.614
214	0.477	1.18	0.61	121	0.105	0.894
215	0.269	0.88	0.53	22	0.047	0.469
216	0.437	0.83	0.53	95	0.081	0.599
220	0.244	1.22	0.57	36	0.099	1.048
221	0.748	1.67	0.96	34	0.102	1.499
222	0.343	1.04	0.55	27	0.052	0.540
223	0.750	1.73	0.90	28	0.086	1.297
224	0.486	1.36	0.70	22	0.052	0.681
225	0.303	1.38	0.77	18	0.065	0.922
226	0.358	1.25	0.64	111	0.092	0.829
227	0.347	1.70	0.87	26	0.107	1.604
228	0.218	0.89	0.43	22	0.099	0.917
229	0.635	1.05	0.36	197	0.095	0.577
230	0.566	1.53	0.78	115	0.054	0.563
231	1.210	1.44	0.57	89	0.086	0.816
232	1.260	2.01	0.64	31	0.101	1.389
233	0.238	1.20	0.39	91	0.105	0.801
234	0.381	1.21	0.47	30	0.100	1.015
235	0.354	1.10	0.70	186	0.085	0.684

TABLE 19
EXISTING HYDROLOGIC SUB-BASIN CHARACTERISTICS
10-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
236	0.343	1.37	0.73	43	0.094	1.104
237	0.384	1.31	0.86	156	0.095	0.914
238	0.472	1.42	0.77	80	0.081	0.875
239	0.674	1.49	0.60	96	0.071	0.686
240	0.843	2.17	1.29	80	0.074	1.142
241	0.983	1.55	0.68	59	0.062	0.700
242	0.546	1.80	0.78	69	0.074	0.904
243	0.434	1.56	0.62	28	0.045	0.566
244	0.349	1.52	0.80	29	0.059	0.804
245	0.506	1.46	0.65	29	0.089	1.104
246	0.398	1.51	0.75	90	0.082	0.878
250	2.396	3.58	1.44	43	0.047	1.029
251	1.719	3.89	1.52	48	0.047	1.062
252	0.858	2.02	0.86	62	0.096	1.297
253	0.928	2.64	1.30	59	0.089	1.573
254	0.174	0.98	0.55	36	0.099	0.951
255	0.491	1.43	0.50	29	0.074	0.825
256	0.140	0.82	0.45	24	0.053	0.476
257	0.921	2.21	0.88	26	0.088	1.464
258	0.440	1.52	0.92	34	0.087	1.214
260	0.662	1.76	0.83	27	0.055	0.815
261	0.617	1.49	0.95	21	0.054	0.829
262	0.589	1.49	0.87	31	0.093	1.283
263	0.992	2.30	1.11	30	0.078	1.401
264	0.479	1.13	0.49	19	0.049	0.537
265	0.876	1.75	0.80	23	0.047	0.706
266	0.217	0.84	0.44	21	0.088	0.811
336	0.497	1.38	0.64	58	0.099	1.048
339	0.350	1.11	0.49	31	0.099	0.982

TABLE 20
EXISTING HYDROLOGIC SUB-BASIN CHARACTERISTICS
100-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
200	0.580	1.12	0.58	148	0.070	0.552
202	0.608	1.33	0.87	148	0.056	0.550
203	0.432	1.06	0.58	126	0.093	0.740
204	0.504	1.10	0.50	133	0.074	0.559
205	0.323	0.82	0.49	103	0.091	0.640
206	0.677	1.56	0.81	35	0.042	0.561
207	0.575	1.05	0.53	209	0.098	0.682
208	0.344	1.02	0.32	19	0.044	0.394
209	0.391	2.05	1.25	19	0.066	1.294
210	0.828	1.27	0.73	183	0.092	0.797
211	0.234	1.57	0.81	21	0.050	0.737
212	0.397	1.05	0.70	122	0.061	0.523
213	0.218	0.89	0.69	174	0.070	0.524
214	0.477	1.18	0.61	121	0.089	0.758
215	0.269	0.88	0.53	22	0.040	0.399
216	0.437	0.83	0.53	95	0.069	0.510
220	0.244	1.22	0.57	36	0.084	0.889
221	0.753	1.67	0.96	34	0.087	1.278
222	0.343	1.04	0.55	27	0.044	0.457
223	0.750	1.73	0.90	28	0.073	1.101
224	0.486	1.36	0.70	22	0.044	0.576
225	0.303	1.38	0.77	18	0.055	0.780
226	0.358	1.25	0.64	111	0.078	0.703
227	0.347	1.70	0.87	26	0.091	1.365
228	0.218	0.89	0.43	22	0.084	0.778
229	0.635	1.05	0.36	197	0.081	0.492
230	0.566	1.53	0.78	115	0.046	0.479
231	1.334	1.44	0.57	89	0.073	0.693
232	1.260	2.01	0.64	31	0.086	1.183
233	0.238	1.20	0.39	91	0.089	0.679
234	0.381	1.21	0.47	30	0.085	0.863
235	0.354	1.10	0.70	186	0.072	0.580

TABLE 20
EXISTING HYDROLOGIC SUB-BASIN CHARACTERISTICS
100-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
236	0.343	1.37	0.73	43	0.080	0.940
237	0.384	1.31	0.86	156	0.081	0.779
238	0.506	1.42	0.77	80	0.069	0.745
239	0.674	1.49	0.60	96	0.060	0.580
240	0.843	2.17	1.29	80	0.063	0.972
241	0.983	1.55	0.68	59	0.053	0.598
242	0.546	1.80	0.78	69	0.063	0.769
243	0.434	1.56	0.62	28	0.038	0.478
244	0.349	1.52	0.80	29	0.050	0.682
245	0.506	1.46	0.65	29	0.076	0.943
246	0.398	1.51	0.75	90	0.070	0.749
250	2.396	3.58	1.44	43	0.040	0.876
251	1.719	3.89	1.52	48	0.040	0.904
252	0.858	2.02	0.86	62	0.082	1.108
253	0.928	2.64	1.30	59	0.076	1.343
254	0.174	0.98	0.55	36	0.084	0.807
255	0.514	1.43	0.50	29	0.063	0.702
256	0.140	0.82	0.45	24	0.045	0.404
257	0.921	2.21	0.88	26	0.075	1.248
258	0.440	1.52	0.92	34	0.074	1.032
260	0.662	1.76	0.83	27	0.047	0.696
261	0.617	1.49	0.95	21	0.046	0.706
262	0.589	1.49	0.87	31	0.079	1.090
263	0.992	2.30	1.11	30	0.066	1.185
264	0.479	1.13	0.49	19	0.042	0.460
265	0.876	1.75	0.80	23	0.040	0.601
266	0.217	0.84	0.44	21	0.075	0.691
336	0.497	1.38	0.64	58	0.084	0.889
339	0.350	1.11	0.49	31	0.084	0.833

TABLE 21
SUMMARY OF SUB-BASIN PEAK DISCHARGES (CFS)
(EXISTING CONDITIONS)

Sub-Basin I.D.	2-Year		10-Year		100-Year	
	6 Hr.	24 Hr.	6Hr.	24 Hr.	6 Hr.	24 Hr.
200	19	42	110	184	394	552
202	95	146	243	302	530	682
203	10	11	24	59	173	278
204	39	48	100	163	334	474
205	25	39	89	120	236	307
206	77	118	240	310	552	720
207	46	72	140	194	389	508
208	21	31	98	155	273	411
209	33	38	84	97	209	243
210	106	140	252	306	584	714
211	39	52	89	103	186	224
212	65	89	145	190	332	442
213	39	56	89	112	192	251
214	56	74	158	190	355	433
215	49	77	125	165	257	360
216	65	100	176	222	385	509
220	12	13	42	59	129	171
221	19	23	80	126	298	391
222	57	84	149	191	314	426
223	70	86	187	220	439	518
224	93	122	218	258	437	550
225	42	54	114	129	237	283
226	46	51	87	117	231	307
227	36	42	76	88	178	206
228	20	28	53	71	142	180
229	59	100	199	280	507	699
230	91	144	230	298	501	674
231	82	105	215	344	797	1,094
232	100	107	208	273	591	746
233	26	30	52	74	149	203
234	34	39	77	106	220	284
235	50	84	142	172	307	391

TABLE 21
SUMMARY OF SUB-BASIN PEAK DISCHARGES (CFS)
(EXISTING CONDITIONS)

Sub-Basin I.D.	2-Year		10-Year		100-Year	
	6 Hr.	24 Hr.	6Hr.	24 Hr.	6 Hr.	24 Hr.
236	33	49	109	123	243	283
237	29	54	103	132	266	330
238	48	54	115	151	318	419
239	69	85	156	235	462	640
240	69	83	167	223	463	584
241	122	168	353	445	795	1,021
242	68	90	188	221	412	499
243	104	143	213	259	416	546
244	52	68	126	152	276	341
245	48	54	108	141	288	362
246	38	42	70	102	218	303
250	48	59	207	419	1,112	1,552
251	7	8	18	134	539	908
252	20	21	50	109	294	437
253	7	7	28	87	264	396
254	7	8	13	25	71	109
255	49	72	141	182	368	466
256	22	37	58	79	128	181
257	63	68	141	189	413	521
258	29	31	60	88	204	271
260	84	118	223	273	504	628
261	84	116	227	269	491	601
262	49	64	133	162	333	398
263	34	36	124	180	412	547
264	69	89	166	231	397	557
265	105	135	351	426	740	936
266	25	29	56	75	147	193
336	18	22	56	101	236	326
339	16	23	61	90	201	261

100-YEAR STORM
(EXISTING CONDITIONS)

Sub Basin	Undevelop	Undevelop	Urban	Urban	Urban	Weighted Kn
200	85.7 × 0.075	4.7 × 0.050		9.6 × 0.035		0.070
202	12.9 × 0.150		4.4 × 0.10	2.3 × 0.025	80.4 × 0.040	0.056
203	86.7 × 0.10	10.4 × 0.050		2.8 × 0.025		0.093
204	77.2 × 0.075	5.1 × 0.050		11.5 × 0.10	6.2 × 0.025	0.074
205	42.6 × 0.15	14.2 × 0.050		35.7 × 0.050	7.5 × 0.025	0.091
206		17.7 × 0.050			82.3 × 0.040	0.042
207	97.2 × 0.10			2.8 × 0.040		0.098
208		43.3 × 0.050		56.7 × 0.040		0.044
209	26.1 × 0.15	1.2 × 0.050	1.3 × 0.10	15.6 × 0.050	55.8 × 0.030	0.066
210	51.2 × 0.15			2.8 × 0.050	46.0 × 0.030	0.092
211				77.4 × 0.050	22.6 × 0.050	0.050
212	26.1 × 0.15		4.2 × 0.10		69.7 × 0.025	0.061
213	27.6 × 0.15			72.4 × 0.040		0.070
214	41.6 × 0.15	4.2 × 0.050	10.0 × 0.10	12.8 × 0.050	31.4 × 0.025	0.089
215		3.5 × 0.050		88.4 × 0.040	8.1 × 0.035	0.040
216	27.5 × 0.15			66.3 × 0.040	6.2 × 0.025	0.069
220	47.2 × 0.15				52.8 × 0.025	0.084
221	44.6 × 0.15	19.6 × 0.050	2.0 × 0.10		33.8 × 0.025	0.087
222	5.8 × 0.15			81.5 × 0.040	12.7 × 0.025	0.044
223	11.4 × 0.15		43.1 × 0.10	7.1 × 0.050	38.4 × 0.025	0.073
224	11.4 × 0.15				88.6 × 0.030	0.044
225	22.6 × 0.15			5.5 × 0.050	71.9 × 0.025	0.055
226	20.7 × 0.15	17.6 × 0.15	6.6 × 0.10		55.1 × 0.025	0.078
227	19.0 × 0.15			56.6 × 0.10	24.4 × 0.025	0.091
228	35.7 × 0.15		18.8 × 0.10		46.5 × 0.025	0.084
229	42.2 × 0.15	5.2 × 0.050	2.3 × 0.10		50.3 × 0.025	0.081
230	15.5 × 0.15		2.5 × 0.10		82.0 × 0.025	0.046
231	53.5 × 0.10		6.3 × 0.10	21.1 × 0.040	19.1 × 0.025	0.073

100-YEAR STORM
(EXISTING CONDITIONS)

Sub Basin	Undevelop	Undevelop	Urban	Urban	Urban	Weighted Kn
232	39.8 x 0.15		14.9 x 0.10		45.3 x 0.025	0.086
233	51.5 x 0.15				48.5 x 0.025	0.089
234	42.2 x 0.15		9.8 x 0.10		48.0 x 0.025	0.085
235	37.8 x 0.15				62.2 x 0.025	0.072
236	40.0 x 0.15		7.3 x 0.10		52.7 x 0.025	0.080
237	65.1 x 0.15		8.9 x 0.10		26.0 x 0.025	0.081
238	35.2 x 0.15				64.8 x 0.025	0.069
239	46.3 x 0.10				53.7 x 0.025	0.060
240	5.5 x 0.15	41.7 x 0.10			52.8 x 0.025	0.063
241	36.9 x 0.10				63.1 x 0.025	0.053
242	30.1 x 0.15				69.9 x 0.025	0.063
243	3.0 x 0.15				97.0 x 0.035	0.038
244	19.9 x 0.15				80.1 x 0.025	0.050
245	36.4 x 0.15		4.7 x 0.10	9.8 x 0.050	49.1 x 0.025	0.076
246	59.4 x 0.10				40.6 x 0.025	0.070
250			100.0 x 0.040			0.040
251			100.0 x 0.040			0.040
252		38.2 x 0.10	53.5 x 0.075	8.3 x 0.050		0.082
253		52.9 x 0.10	45.6 x 0.050		1.5 x 0.025	0.076
254		78.1 x 0.10			21.9 x 0.025	0.084
255	28.5 x 0.15		6.7 x 0.050	4.5 x 0.050	60.3 x 0.025	0.063
256	16.2 x 0.15				83.8 x 0.025	0.045
257	40.2 x 0.15				59.8 x 0.025	0.075
258		65.3 x 0.10			34.7 x 0.025	0.074
260	14.6 x 0.15		1.9 x 0.050	74.9 x 0.030	8.6 x 0.025	0.047
261	12.3 x 0.15		3.9 x 0.050 2.0 x 0.10	56.5 x 0.030	25.3 x 0.025	0.046
262	27.6 x 0.15	16.8 x 0.050	20.9 x 0.10		34.7 x 0.025	0.079
263	22.4 x 0.15	32.6 x 0.050	6.8 x 0.10		38.2 x 0.025	0.066

100-YEAR STORM
(EXISTING CONDITIONS)

SubBasin	Undevelop	Undevelop	Urban	Urban	Urban	Weighted Kn
264	3.9 x 0.15	14.2x0.050		5.1x0.05	76.8x0.035	0.042
265	1.6x0.15	13.0x0.050		33.0x0.040	52.4x 0.035	0.040
266	32.2x0.15	17.7x0.050			50.1x0.035	0.075
336		92.7 x 0.089			7.3x 0.025	0.084
339		78.2x0.10			21.8x0.025	0.084

CAVE CREEK - EXISTING

SubBasin		Kn 2 Year $Kn_{100yr}/0.75$		Kn 10 Year $Kn_{100yr}/0.85$		
200		0.093		0.082		
202		0.075		0.066		
203		0.124		0.109		
204		0.099		0.087		
205		0.121		0.107		
206		0.056		0.049		
207		0.131		0.115		
208		0.059		0.052		
209		0.088		0.078		
210		0.123		0.108		
211		0.067		0.059		
212		0.081		0.072		
213		0.093		0.082		
214		0.119		0.105		
215		0.053		0.047		
216		0.092		0.081		
220		0.112		0.099		
221		0.116		0.102		
222		0.059		0.052		
223		0.097		0.086		
224		0.059		0.052		
225		0.073		0.065		
226		0.104		0.092		
227		0.121		0.107		
228		0.112		0.099		
229		0.108		0.095		
230		0.061		0.054		
231		0.097		0.086		

		Kn 2 Year		Kn 10 Year		
SubBasin		$Kn_{100yr}/0.75$		$Kn_{100yr}/0.85$		
232		0.115		0.101		
233		0.119		0.105		
234		0.113		0.100		
235		0.096		0.085		
236		0.107		0.094		
237		0.108		0.095		
238		0.092		0.081		
239		0.080		0.071		
240		0.084		0.074		
241		0.071		0.062		
242		0.084		0.074		
243		0.051		0.045		
244		0.067		0.059		
245		0.101		0.089		
246		0.093		0.082		
250		0.053		0.047		
251		0.053		0.047		
252		0.109		0.096		
253		0.101		0.089		
254		0.112		0.099		
255		0.084		0.074		
256		0.060		0.053		
257		0.100		0.088		
258		0.099		0.087		
260		0.063		0.055		
261		0.061		0.054		
262		0.105		0.093		
263		0.088		0.078		

		Kn 2 Year		Kn 10 Year		
Sub Basin		Kn100yr/0.75		Kn100yr/0.85		
264		0.056		0.049		
265		0.053		0.047		
266		0.100		0.088		
336		0.112		0.099		
339		0.112		0.099		

Hydrologic Sub-Basin Characteristics
(Future Condition)

TABLE 22
FUTURE HYDROLOGIC SUB-BASIN CHARACTERISTICS
2-YEAR STORM

Sub-Basin	Area (Sq.Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
200	0.549	1.12	0.58	148	0.071	0.560
202	0.596	1.33	0.87	148	0.068	0.668
203	0.387	1.06	0.58	126	0.087	0.692
204	0.478	1.10	0.50	133	0.083	0.627
205	0.250	0.82	0.49	103	0.081	0.570
206	0.557	1.56	0.81	35	0.056	0.748
207	0.575	1.05	0.53	209	0.131	0.912
208	0.195	1.02	0.32	19	0.059	0.529
209	0.294	2.05	1.25	19	0.085	1.667
210	0.805	1.27	0.73	183	0.121	1.049
211	0.217	1.57	0.81	21	0.067	0.988
212	0.397	1.06	0.70	122	0.071	0.611
213	0.218	0.89	0.69	174	0.093	0.696
214	0.354	1.18	0.61	121	0.103	0.877
215	0.247	0.88	0.53	22	0.053	0.529
216	0.399	0.83	0.53	95	0.091	0.673
220	0.039	0.96	0.43	30	0.053	0.476
221	0.516	1.67	0.96	34	0.060	0.882
222	0.280	1.04	0.55	27	0.056	0.581
223	0.395	1.16	0.48	24	0.091	0.956
224	0.425	1.36	0.69	22	0.053	0.690
225	0.166	1.38	0.77	18	0.055	0.780
226	0.316	1.25	0.64	111	0.087	0.784
227	0.103	0.76	0.41	141	0.068	0.409
228	0.150	0.77	0.35	88	0.064	0.399
229	0.127	0.83	0.31	31	0.053	0.395
230	0.200	0.88	0.49	86	0.059	0.441
231	0.087	0.48	0.23	39	0.068	0.352
232	1.004	1.90	0.63	29	0.056	0.759
233	0.489	1.17	0.47	22	0.067	0.712
234	0.266	0.79	0.42	25	0.061	0.522
235	0.246	0.83	0.49	25	0.088	0.814

TABLE 22
FUTURE HYDROLOGIC SUB-BASIN CHARACTERISTICS
2-YEAR STORM

Sub-Basin	Area (Sq.Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
236	0.593	1.05	0.36	197	0.083	0.504
237	0.651	1.69	0.89	135	0.056	0.618
238	0.736	1.95	1.17	65	0.060	0.891
239	0.341	1.37	0.68	34	0.057	0.681
240	0.270	1.10	0.71	173	0.081	0.665
241	0.478	1.39	0.87	147	0.091	0.910
242	0.640	1.46	0.87	84	0.067	0.759
243	0.408	2.02	1.36	85	0.055	0.833
244	0.327	1.10	0.56	75	0.053	0.466
245	0.120	1.30	0.47	34	0.052	0.530
246	0.438	1.45	0.48	23	0.056	0.645
247	0.207	0.98	0.41	26	0.056	0.512
248	0.818	2.03	0.88	28	0.056	0.890
249	0.435	1.46	0.65	28	0.067	0.837
250	2.433	3.58	1.44	43	0.053	1.161
251	1.719	3.89	1.52	48	0.053	1.198
252	0.124	1.05	0.52	49	0.056	0.510
253	0.850	3.02	1.56	43	0.075	1.587
254	0.200	1.04	0.52	109	0.076	0.592
255	0.544	1.89	0.95	59	0.083	1.147
256	0.315	1.33	0.61	32	0.073	0.838
257	0.371	1.36	0.83	25	0.052	0.709
258	0.557	1.27	0.41	34	0.052	0.498
259	0.394	1.61	0.80	32	0.073	0.998
260	0.893	1.78	0.97	24	0.052	0.840
261	0.634	1.83	0.97	22	0.052	0.863
262	0.458	1.36	0.80	29	0.064	0.836
263	0.403	2.30	1.11	29	0.063	1.139
264	0.367	1.13	0.49	19	0.056	0.614
265	0.527	1.75	0.80	23	0.052	0.782
266	0.109	0.84	0.44	21	0.051	0.470

TABLE 23
FUTURE HYDROLOGIC SUB-BASIN CHARACTERISTICS
10-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
200	0.580	1.12	0.58	148	0.062	0.489
202	0.608	1.33	0.87	148	0.060	0.589
203	0.432	1.06	0.58	126	0.076	0.605
204	0.504	1.10	0.50	133	0.073	0.551
205	0.296	0.82	0.49	103	0.072	0.507
206	0.677	1.56	0.81	35	0.049	0.654
207	0.575	1.05	0.53	209	0.115	0.800
208	0.344	1.02	0.32	19	0.052	0.466
209	0.368	2.05	1.25	19	0.075	1.471
210	0.828	1.27	0.73	183	0.107	0.927
211	0.234	1.57	0.81	21	0.059	0.870
212	0.397	1.06	0.70	122	0.062	0.533
213	0.218	0.89	0.69	174	0.082	0.614
214	0.452	1.18	0.61	121	0.091	0.775
215	0.269	0.88	0.53	22	0.047	0.469
216	0.437	0.83	0.53	95	0.080	0.592
220	0.136	0.96	0.43	30	0.047	0.422
221	0.684	1.67	0.96	34	0.053	0.779
222	0.324	1.04	0.55	27	0.049	0.508
223	0.424	1.16	0.48	24	0.080	0.840
224	0.498	1.36	0.69	22	0.047	0.612
225	0.235	1.38	0.77	18	0.048	0.681
226	0.316	1.25	0.64	111	0.076	0.685
227	0.103	0.76	0.41	141	0.060	0.361
228	0.150	0.77	0.35	88	0.056	0.349
229	0.127	0.83	0.31	31	0.047	0.351
230	0.200	0.88	0.49	86	0.052	0.389
231	0.087	0.48	0.23	39	0.060	0.311
232	1.047	1.90	0.63	29	0.049	0.664
233	0.547	1.17	0.47	22	0.059	0.627
234	0.266	0.79	0.42	25	0.054	0.462
235	0.260	0.83	0.49	25	0.078	0.721

TABLE 23
FUTURE HYDROLOGIC SUB-BASIN CHARACTERISTICS
10-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
236	0.626	1.05	0.36	197	0.073	0.444
237	0.651	1.69	0.89	135	0.049	0.541
238	0.753	1.95	1.17	65	0.053	0.787
239	0.368	1.37	0.68	34	0.051	0.610
240	0.270	1.10	0.71	173	0.072	0.591
241	0.491	1.39	0.87	147	0.080	0.800
242	0.656	1.46	0.87	84	0.059	0.668
243	0.408	2.02	1.36	85	0.048	0.727
244	0.424	1.10	0.56	75	0.047	0.413
245	0.162	1.30	0.47	34	0.046	0.468
246	0.588	1.45	0.48	23	0.049	0.565
247	0.207	0.98	0.41	26	0.049	0.448
248	0.910	2.03	0.88	28	0.049	0.778
249	0.497	1.46	0.65	28	0.059	0.737
250	2.433	3.58	1.44	43	0.047	1.029
251	1.719	3.89	1.52	48	0.047	1.062
252	0.124	1.05	0.52	49	0.049	0.446
253	0.850	3.02	1.56	43	0.066	1.397
254	0.200	1.04	0.52	109	0.067	0.522
255	0.544	1.89	0.95	59	0.073	1.008
256	0.315	1.33	0.61	32	0.065	0.746
257	0.371	1.36	0.83	25	0.046	0.627
258	0.617	1.27	0.41	34	0.046	0.441
259	0.394	1.61	0.80	32	0.065	0.889
260	0.972	1.78	0.97	24	0.046	0.743
261	0.750	1.83	0.97	22	0.046	0.763
262	0.472	1.36	0.80	29	0.056	0.732
263	0.867	2.30	1.11	29	0.055	0.994
264	0.479	1.13	0.49	19	0.049	0.537
265	0.862	1.75	0.80	23	0.046	0.691
266	0.147	0.84	0.44	21	0.045	0.415

TABLE 24
FUTURE HYDROLOGIC SUB-BASIN CHARACTERISTICS
100-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
200	0.580	1.12	0.58	148	0.053	0.418
202	0.608	1.33	0.87	148	0.051	0.501
203	0.432	1.06	0.58	126	0.065	0.517
204	0.504	1.10	0.50	133	0.062	0.468
205	0.323	0.82	0.49	103	0.061	0.429
206	0.677	1.56	0.81	35	0.042	0.561
207	0.575	1.05	0.53	209	0.098	0.682
208	0.344	1.02	0.32	19	0.044	0.394
209	0.391	2.05	1.25	19	0.064	1.255
210	0.828	1.27	0.73	183	0.091	0.789
211	0.234	1.57	0.81	21	0.050	0.737
212	0.397	1.06	0.70	122	0.053	0.456
213	0.218	0.89	0.69	174	0.070	0.524
214	0.483	1.18	0.61	121	0.077	0.656
215	0.269	0.88	0.53	22	0.040	0.399
216	0.437	0.83	0.53	95	0.068	0.503
220	0.167	0.96	0.43	30	0.040	0.359
221	0.757	1.67	0.96	34	0.045	0.661
222	0.343	1.04	0.55	27	0.042	0.436
223	0.434	1.16	0.48	24	0.068	0.714
224	0.562	1.36	0.69	22	0.040	0.521
225	0.303	1.38	0.77	18	0.041	0.581
226	0.358	1.25	0.64	111	0.065	0.586
227	0.318	0.76	0.41	141	0.051	0.307
228	0.278	0.77	0.35	88	0.048	0.299
229	0.366	0.83	0.31	31	0.040	0.298
230	0.239	0.88	0.49	86	0.044	0.329
231	0.158	0.48	0.23	39	0.051	0.264
232	1.442	1.90	0.63	29	0.042	0.569
233	0.598	1.17	0.47	22	0.050	0.531
234	0.283	0.79	0.42	25	0.046	0.394
235	0.279	0.83	0.49	25	0.066	0.610

TABLE 24
FUTURE HYDROLOGIC SUB-BASIN CHARACTERISTICS
100-YEAR STORM

Sub-Basin	Area (Sq. Mile)	Length (Miles)	Lca (Miles)	Slope (Ft/Mile)	Kn	Lag (Hours)
236	0.635	1.05	0.36	197	0.062	0.377
237	0.651	1.69	0.89	135	0.042	0.464
238	0.904	1.95	1.17	65	0.045	0.668
239	0.427	1.37	0.68	34	0.043	0.514
240	0.270	1.10	0.71	173	0.061	0.501
241	0.519	1.39	0.87	147	0.068	0.680
242	0.656	1.46	0.87	84	0.050	0.566
243	0.408	2.02	1.36	85	0.041	0.621
244	0.504	1.10	0.56	75	0.040	0.352
245	0.195	1.30	0.47	34	0.039	0.397
246	0.629	1.45	0.48	23	0.042	0.484
247	0.207	0.98	0.41	26	0.042	0.384
248	0.965	2.03	0.88	28	0.042	0.667
249	0.497	1.46	0.65	28	0.050	0.625
250	2.433	3.58	1.44	43	0.040	0.876
251	1.719	3.89	1.52	48	0.040	0.904
252	0.378	1.05	0.52	49	0.042	0.382
253	1.446	3.02	1.56	43	0.056	1.185
254	0.272	1.04	0.52	109	0.057	0.444
255	0.765	1.89	0.95	59	0.062	0.857
256	0.372	1.33	0.61	32	0.055	0.631
257	0.388	1.36	0.83	25	0.039	0.532
258	0.677	1.27	0.41	34	0.039	0.374
259	0.424	1.61	0.80	32	0.055	0.752
260	0.997	1.78	0.97	24	0.039	0.630
261	0.803	1.83	0.97	22	0.039	0.647
262	0.595	1.36	0.80	29	0.048	0.627
263	1.040	2.30	1.11	29	0.047	0.849
264	0.479	1.13	0.49	19	0.042	0.460
265	0.876	1.75	0.80	23	0.039	0.586
266	0.217	0.84	0.44	21	0.038	0.350

TABLE 25
SUMMARY OF SUB-BASIN PEAK DISCHARGES (CFS)
(FUTURE CONDITIONS)

Sub-Basin I.D.	2-Year		10-Year		100-Year	
	Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.
200	77	128	225	309	512	720
202	104	161	262	327	553	728
203	50	59	101	150	289	413
204	68	88	156	225	397	555
205	43	66	125	165	293	402
206	77	118	240	310	532	681
207	47	73	141	196	391	509
208	21	31	98	155	256	363
209	35	40	89	102	210	242
210	107	142	255	309	579	704
211	37	50	89	103	211	272
212	75	105	164	214	343	455
213	39	56	89	112	192	251
214	65	86	178	211	398	491
215	49	78	125	165	262	375
216	67	101	180	227	390	516
220	10	13	64	87	161	231
221	73	96	217	276	566	723
222	60	88	153	195	338	481
223	56	75	138	170	322	402
224	113	149	257	301	567	746
225	43	55	118	135	298	380
226	58	68	107	138	279	368
227	27	39	53	73	325	475
228	37	53	72	102	276	409
229	43	60	76	100	400	573
230	61	84	112	148	252	358
231	23	33	44	63	163	240
232	224	268	433	529	1,240	1,593
233	87	109	197	258	492	656
234	62	87	126	166	272	382
235	34	52	91	114	222	284

TABLE 25
SUMMARY OF SUB-BASIN PEAK DISCHARGES (CFS)
(FUTURE CONDITIONS)

Sub-Basin I.D.	2-Year		10-Year		100-Year	
	Hr.	24 Hr.	6 Hr.	24 Hr.	6 Hr.	24 Hr.
236	94	156	257	359	569	809
237	118	183	286	364	599	807
238	130	148	239	297	657	850
239	82	106	171	207	407	541
240	54	83	130	156	252	320
241	51	82	152	192	370	458
242	81	97	168	243	464	641
243	72	93	152	187	318	397
244	80	118	216	287	496	696
245	34	47	88	111	200	274
246	108	147	296	358	606	784
247	49	72	104	136	204	287
248	167	217	384	445	804	973
249	68	83	158	204	340	428
250	78	155	362	578	1,285	1,689
251	132	149	286	421	895	1,187
252	40	52	71	90	397	547
253	92	99	178	216	751	912
254	30	36	56	83	206	303
255	63	73	132	170	473	596
256	31	36	56	85	214	310
257	69	102	159	196	357	475
258	117	150	240	342	613	914
259	55	68	115	145	270	330
260	157	220	385	460	870	1,109
261	121	164	311	364	699	868
262	73	104	177	216	434	520
263	46	51	195	258	572	725
264	62	79	166	231	386	529
265	106	137	354	429	745	940
266	29	39	73	98	211	297

100-YEAR STORM
(FUTURE CONDITIONS)

Sub Basin	Undevelop	Undevelop	Urban	Urban	Urban	Weighted Kn
200	29.0 x 0.075	4.7 x 0.050	3.3 x 0.10	63.0 x 0.040		0.053
202	5.6 x 0.15		7.9 x 0.10	84.2 x 0.040	2.3 x 0.035	0.051
203	43.0 x 0.10	10.4 x 0.050		18.4 x 0.040	28.2 x 0.035	0.065
204	48.1 x 0.075	5.1 x 0.050	11.5 x 0.10		35.3 x 0.035	0.062
205	17.4 x 0.15	14.2 x 0.050	2.1 x 0.10	44.6 x 0.040	21.7 x 0.035	0.061
206		17.7 x 0.050		82.3 x 0.040		0.042
207	96.3 x 0.10			3.7 x 0.040		0.098
208		43.3 x 0.050		56.7 x 0.040		0.044
209	24.4 x 0.15	1.2 x 0.050	1.3 x 0.10	15.6 x 0.050	57.5 x 0.030	0.064
210	50.7 x 0.15			2.8 x 0.050	46.5 x 0.030	0.091
211				77.4 x 0.050	22.6 x 0.050	0.050
212	16.6 x 0.15		4.2 x 0.10		79.2 x 0.030	0.053
213	27.7 x 0.15			72.3 x 0.040		0.070
214	26.4 x 0.15	4.4 x 0.050	13.6 x 0.10	12.6 x 0.050	43.0 x 0.035	0.077
215		3.5 x 0.050		88.4 x 0.040	8.1 x 0.035	0.040
216	25.7 x 0.15			66.3 x 0.040	8.0 x 0.035	0.068
220				33.8 x 0.050	66.2 x 0.035	0.040
221		19.5 x 0.050	11.2 x 0.10		69.3 x 0.035	0.045
222				81.6 x 0.045	18.4 x 0.030	0.042
223			50.2 x 0.10	5.0 x 0.050	44.8 x 0.035	0.068
224					100.0 x 0.040	0.040
225				5.5 x 0.050	94.5 x 0.040	0.041
226	22.2 x 0.15		6.6 x 0.10		71.2 x 0.035	0.065
227	11.5 x 0.10	11.5 x 0.075			77.0 x 0.040	0.051
228	6.5 x 0.10	21.7 x 0.075			71.8 x 0.035	0.048
229					100.0 x 0.040	0.040
230	3.3 x 0.15	0.6 x 0.075			96.1 x 0.040	0.044
231	19.1 x 0.10				80.9 x 0.040	0.051

100-YEAR STORM
(FUTURE CONDITIONS)

SubBasin	Underelop	Underelop	Urban	Urban	Urban	Weighted Kn
232	1.8 x 0.15	1.0 x 0.075			97.2 x 0.040	0.042
233	10.3 x 0.15		3.1 x 0.10	5.3 x 0.050	81.3 x 0.035	0.050
234			16.8 x 0.10		83.2 x 0.035	0.046
235			48.2 x 0.10		51.8 x 0.035	0.066
236	20.8 x 0.15	5.2 x 0.050	3.7 x 0.10		70.3 x 0.035	0.062
237	5.0 x 0.15		2.1 x 0.10		92.9 x 0.035	0.042
238	4.8 x 0.15	6.7 x 0.075	0.9 x 0.10	10.9 x 0.050	76.7 x 0.035	0.045
239			5.5 x 0.10	31.5 x 0.050	63.0 x 0.035	0.043
240	18.2 x 0.15		14.8 x 0.075	53.8 x 0.035	13.2 x 0.025	0.061
241	35.2 x 0.10		28.6 x 0.075	27.1 x 0.035	9.1 x 0.025	0.068
242	8.2 x 0.10	23.6 x 0.075			68.2 x 0.035	0.050
243	8.7 x 0.10				91.3 x 0.035	0.041
244	7.4 x 0.10				92.6 x 0.035	0.040
245				29.7 x 0.050	70.3 x 0.035	0.039
246	2.5 x 0.10		7.8 x 0.10		89.7 x 0.035	0.042
247		5.9 x 0.075		28.8 x 0.050	65.3 x 0.035	0.042
248	4.1 x 0.10		6.2 x 0.10		89.7 x 0.035	0.042
249	16.6 x 0.10	6.6 x 0.050	7.5 x 0.075	3.6 x 0.050	65.7 x 0.035	0.050
250	72.8 x 0.050				27.2 x 0.035	0.040
251	17.2 x 0.075	0.6 x 0.050			82.2 x 0.035	0.040
252	10.4 x 0.10				89.6 x 0.035	0.042
253	10.3 x 0.10	37.0 x 0.075			52.7 x 0.035	0.056
254	12.1 x 0.075	43.1 x 0.075			44.8 x 0.035	0.057
255	12.0 x 0.10	26.2 x 0.075	12.9 x 0.10		48.9 x 0.035	0.062
256	10.4 x 0.050	47.0 x 0.075			42.6 x 0.035	0.055
257				89.3 x 0.040	10.7 x 0.035	0.039
258			0.5 x 0.075	77.1 x 0.040	22.4 x 0.035	0.039
259			47.6 x 0.075	13.2 x 0.040	39.2 x 0.035	0.055

100-YEAR STORM
(FUTURE CONDITIONS)

SubBasin	Underelop	Underelop	Urban	Urban	Urban	Weighted Kn
260				87.2 x 0.040	12.8 x 0.035	0.039
261			2.5 x 0.075	68.7 x 0.040	28.8 x 0.035	0.039
262	2.4 x 0.10	14.8 x 0.050	37.5 x 0.075		28.9 x 0.035	0.048
263		33.6 x 0.050	8.8 x 0.10	16.1 x 0.040	41.5 x 0.035	0.047
264	3.9 x 0.15	14.2 x 0.050		5.1 x 0.05	76.8 x 0.035	0.042
265		13.0 x 0.050		33.0 x 0.040	54.0 x 0.035	0.039
266		17.7 x 0.050			82.3 x 0.035	0.038

CAVE CREEK - FUTURE
Resistance Coefficient K_n

		2-Year		10-Year		
SubBasin		$K_{n_{100yr}}/0.75$		$K_{n_{100yr}}/0.85$		
200		0.071		0.062		
202		0.068		0.060		
203		0.087		0.076		
204		0.083		0.073		
205		0.081		0.072		
206		0.056		0.049		
207		0.131		0.115		
208		0.059		0.052		
209		0.085		0.075		
210		0.121		0.107		
211		0.067		0.059		
212		0.071		0.062		
213		0.093		0.082		
214		0.103		0.091		
215		0.053		0.047		
216		0.091		0.080		
220		0.053		0.047		
221		0.060		0.053		
222		0.056		0.049		
223		0.091		0.080		
224		0.053		0.047		
225		0.055		0.048		
226		0.087		0.076		
227		0.068		0.060		
228		0.064		0.056		
229		0.053		0.047		
230		0.059		0.052		
231		0.068		0.060		

CAVE CREEK - FUTURE
Resistance Coefficient Kn

Sub Basin		2-Year $Kn_{100yr}/0.75$		10-Year $Kn_{100yr}/0.85$		
232		0.056		0.049		
233		0.067		0.059		
234		0.061		0.054		
235		0.088		0.078		
236		0.083		0.073		
237		0.056		0.049		
238		0.060		0.053		
239		0.057		0.051		
240		0.081		0.072		
241		0.091		0.080		
242		0.067		0.059		
243		0.055		0.048		
244		0.053		0.047		
245		0.052		0.046		
246		0.056		0.049		
247		0.056		0.049		
248		0.056		0.049		
249		0.067		0.059		
250		0.053		0.047		
251		0.053		0.047		
252		0.056		0.049		
253		0.075		0.066		
254		0.076		0.067		
255		0.083		0.073		
256		0.073		0.065		
257		0.052		0.046		
258		0.052		0.046		
259		0.073		0.065		

CAVE CREEK - FUTURE
Resistance Coefficient Kn

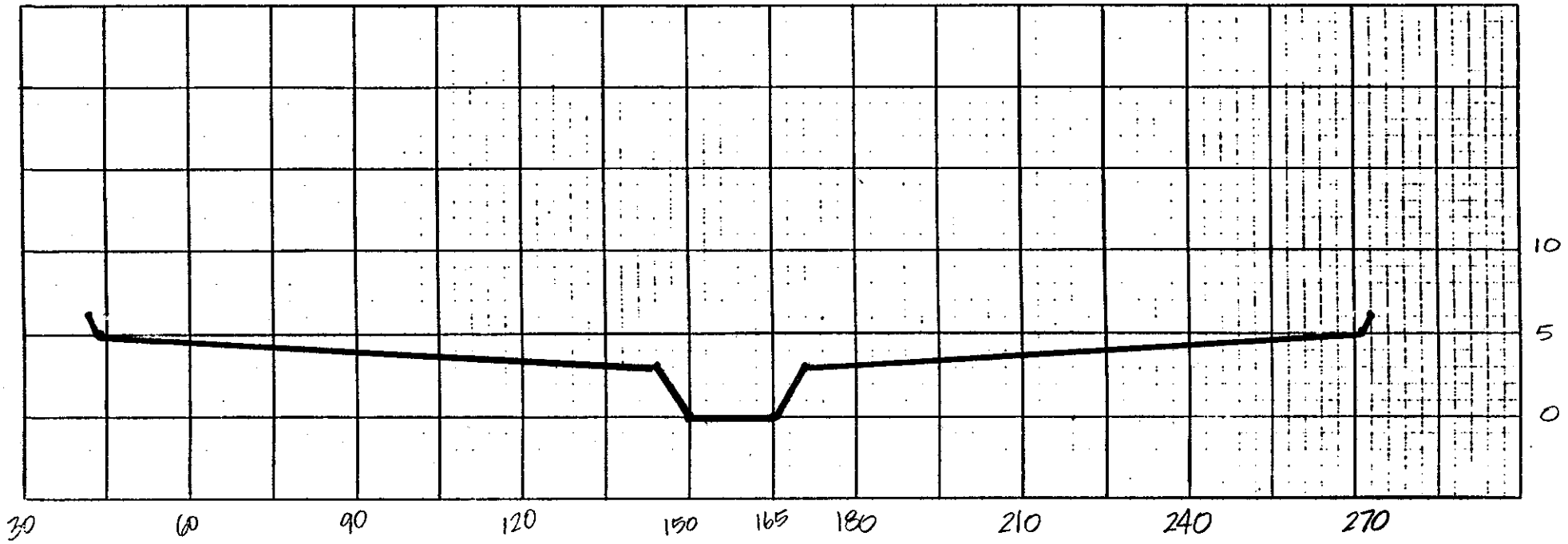
Sub Basin		2-Year $K_{n100yr}/0.75$		10-Year $K_{n100yr}/0.85$		
260		0.052		0.046		
261		0.052		0.046		
262		0.064		0.056		
263		0.063		0.055		
264		0.056		0.049		
265		0.052		0.046		
266		0.051		0.045		

SECTION IV

Hydrograph Routing Parameters

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM 200A (EXISTING & FUTURE MODEL)

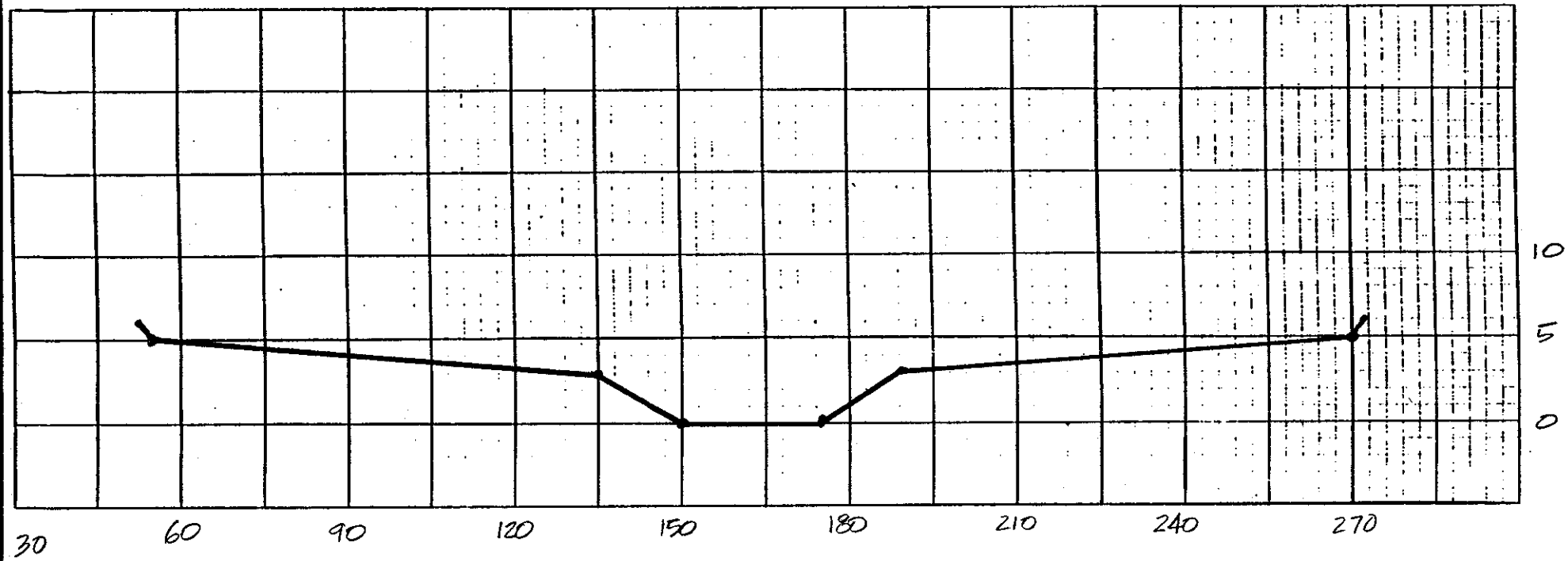


RD ~~RS~~								
RC	0.045	0.035	0.045	2320	0.0084			
RX	42	44	144	150	165	171	271	273
RY	6	5	3	0	0	3	5	6

CALCULATED BY: DLB 10-8-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM202 (EXISTING & FUTURE MODEL)

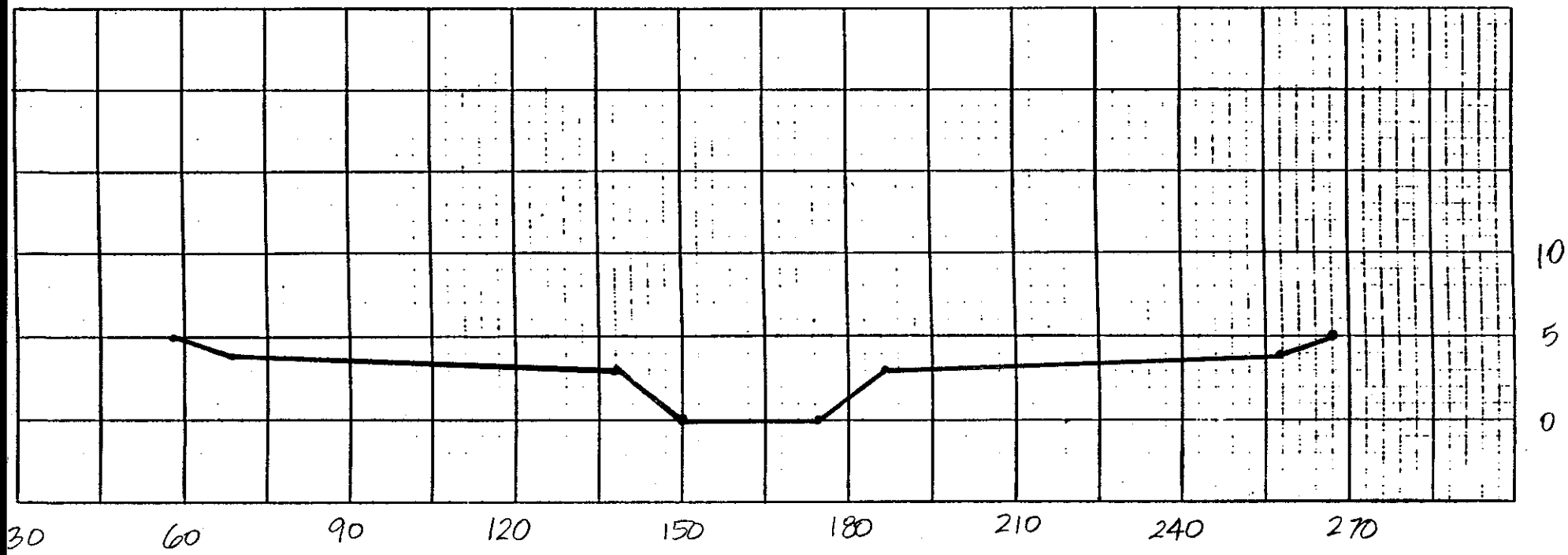


RD ~~RS~~								
RC	0.045	0.035	0.045	3580	0.0047			
RX	53	55	135	150	175	190	270	272
RY	6	5	3	0	0	3	5	6

CALCULATED BY: DLB 10-15-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM206 (EXISTING & FUTURE MODEL)

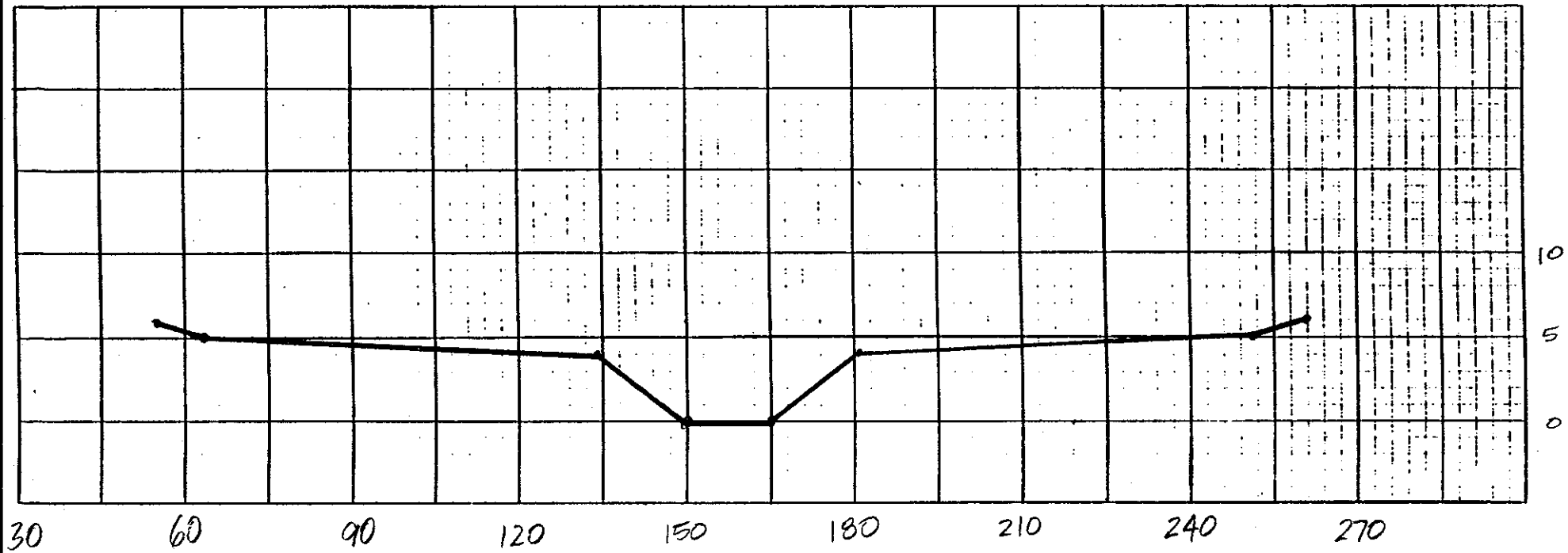


RD ~~RS~~								
RC	0.045	0.035	0.045	1780	0.0045			
RX	58	68	138	150	175	187	257	267
RY	6	4	3	0	0	3	4	6

CALCULATED BY: DLB 10-15-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM203 (EXISTING & FUTURE MODEL)

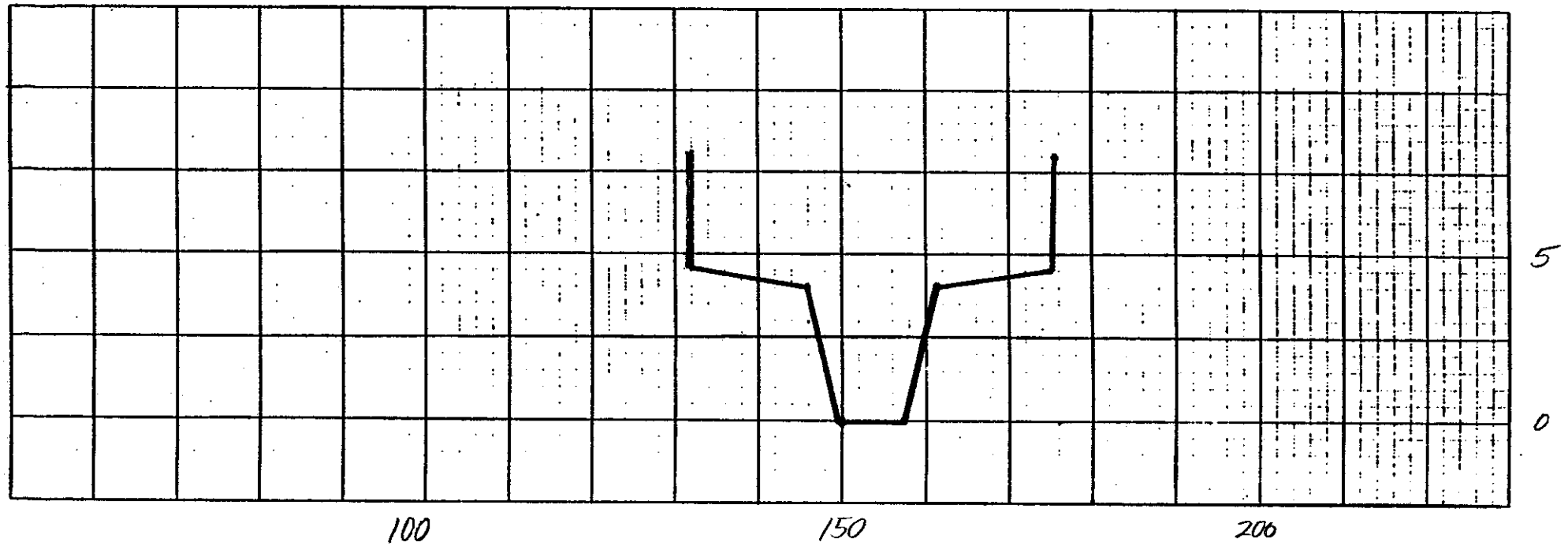


RD ~~BS~~								
RC	0.045	0.035	0.045	2760	0.0098			
RX	54	64	134	150	165	181	251	261
RY	6	5	4	0	0	4	5	6

CALCULATED BY: DLB 10-15-91

NORMAL DEPTH CHANNEL ROUTL
COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM 205 (EXISTING & FUTURE MODEL)

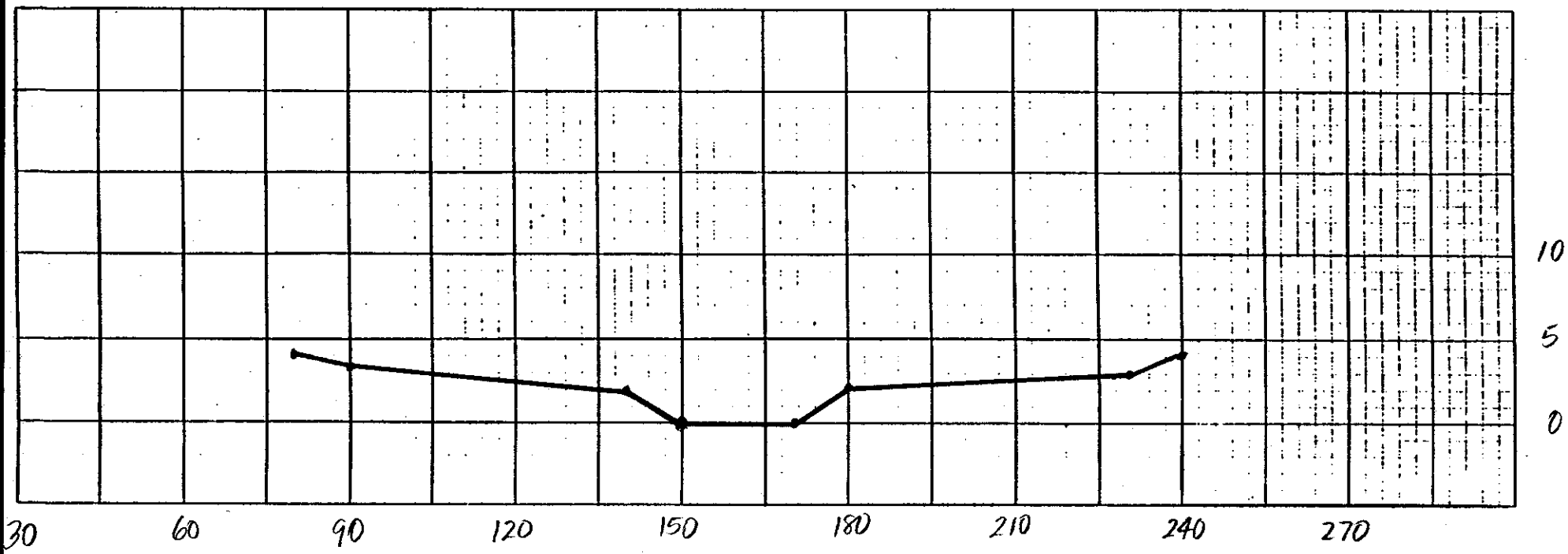


RD ~~RS~~								
RC	0.025	0.020	0.025	3300	.0078			
RX	132	132	146	150	157	161	175	175
RY	8.	4.5	4	0	0	4	4.5	8

CALCULATED BY: DLB 10-17-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM216 (EXISTING & FUTURE MODEL)

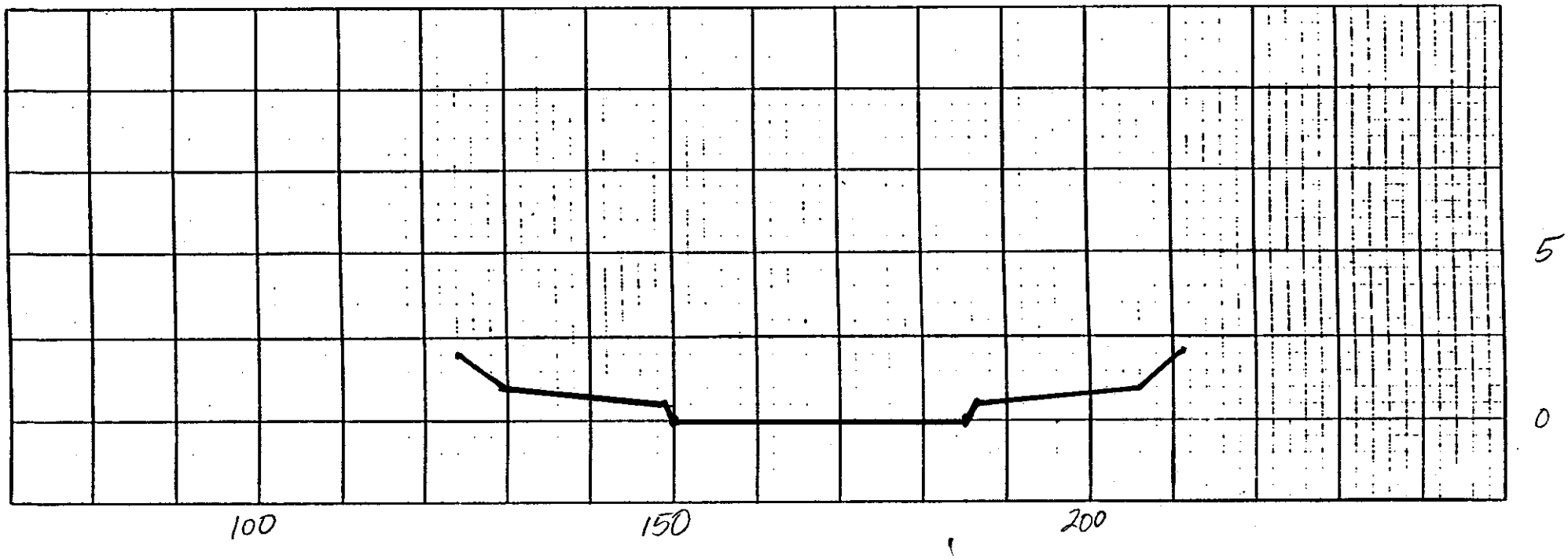


RD ~~RS~~								
RC	0.045	0.035	0.045	3380	0.0065			
RX	80	90	140	150	170	180	230	240
RY	4	3	2	0	0	2	3	4

CALCULATED BY: DLB 10-15-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM212 (EXISTING & FUTURE MODEL)

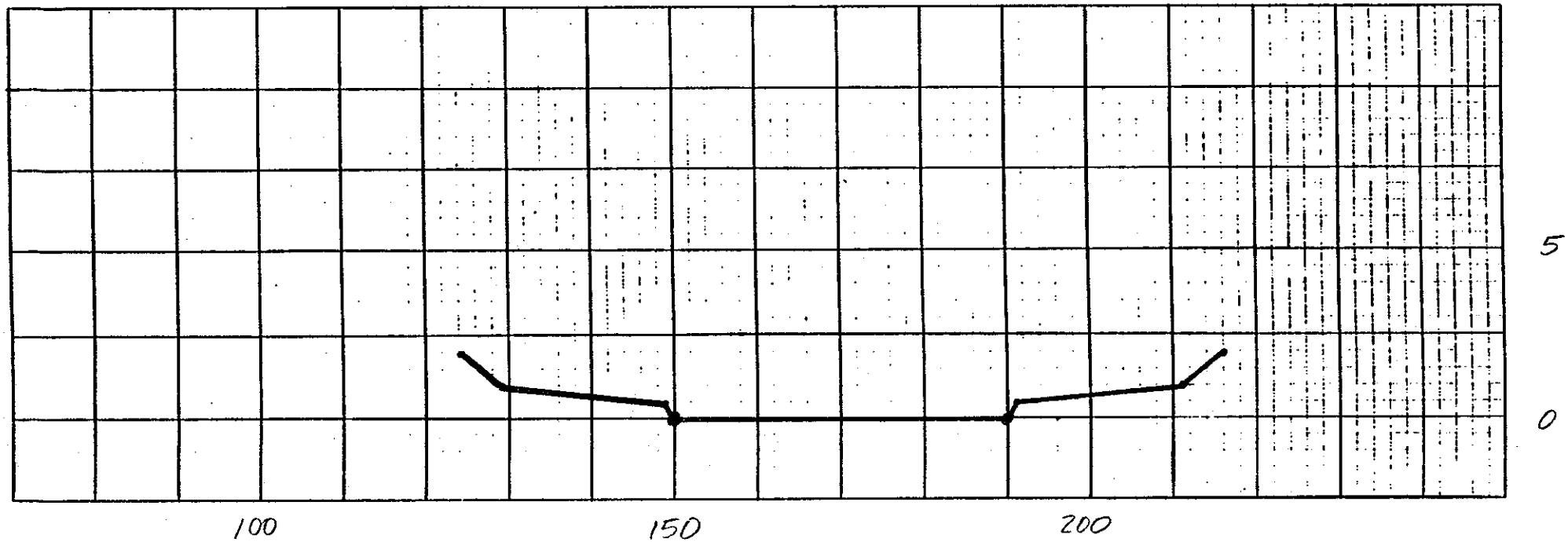


RD~~BS~~								
RC	0.030	0.020	0.030	6240	0.0043			
RX	124	129	149	150	185	186	206	211
RY	2	1	0.5	0	0	0.5	1	2

CALCULATED BY: DLB 10-15-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM211 (EXISTING & FUTURE MODEL)

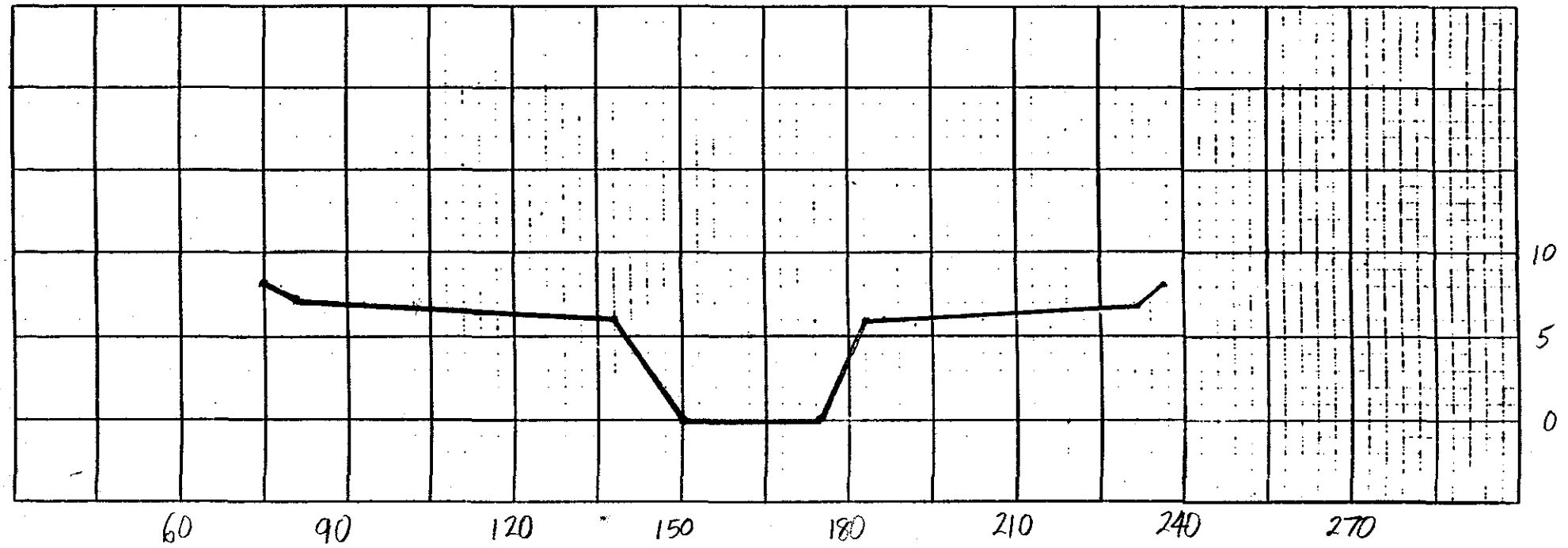


RD ~~RS~~								
RC	0.030	0.020	0.030	8360	0.0038			
RX	124	129	149	150	190	191	211	216
RY	2	1	0.5	0	0	0.5	1	2

CALCULATED BY: DLB 10-15-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM213 (EXISTING & FUTURE MODEL)

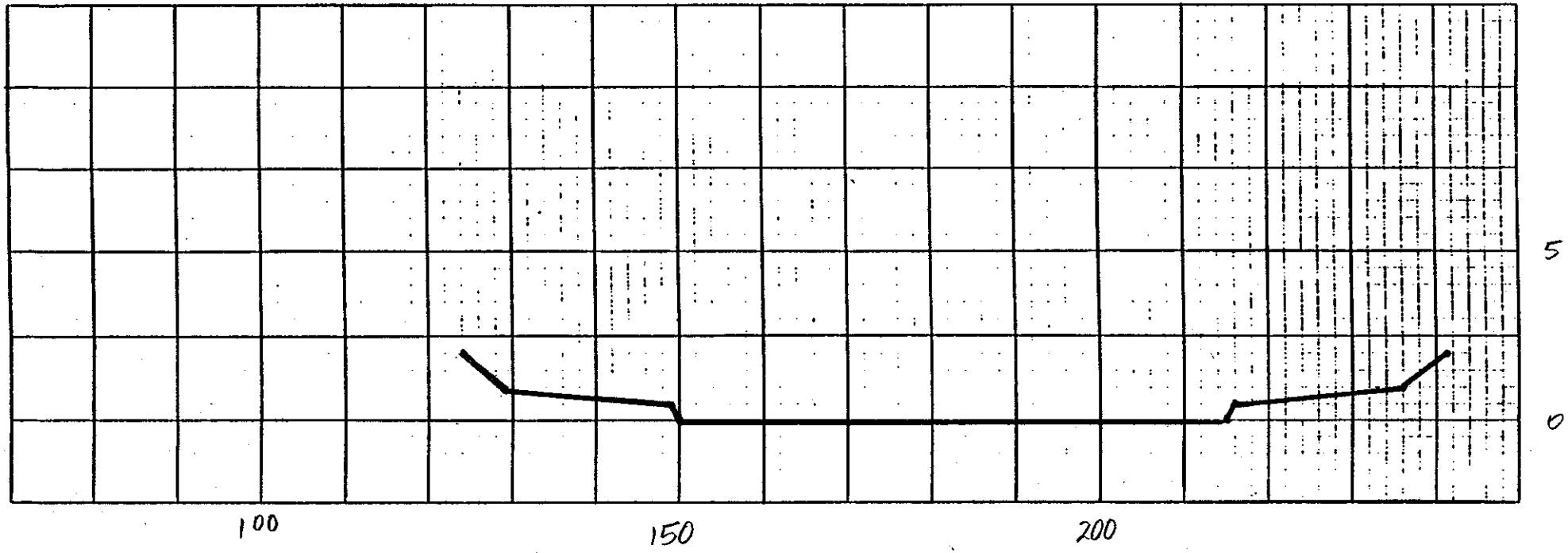


RD ~~RS~~								
RC	0.045	0.035	0.045	4200	0.0059			
RX	75	80	130	139	174	183	232	237
RY	8	7	6	0	0	6	7	8

CALCULATED BY: DLB 10-16-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM 214 (EXISTING & FUTURE MODEL)

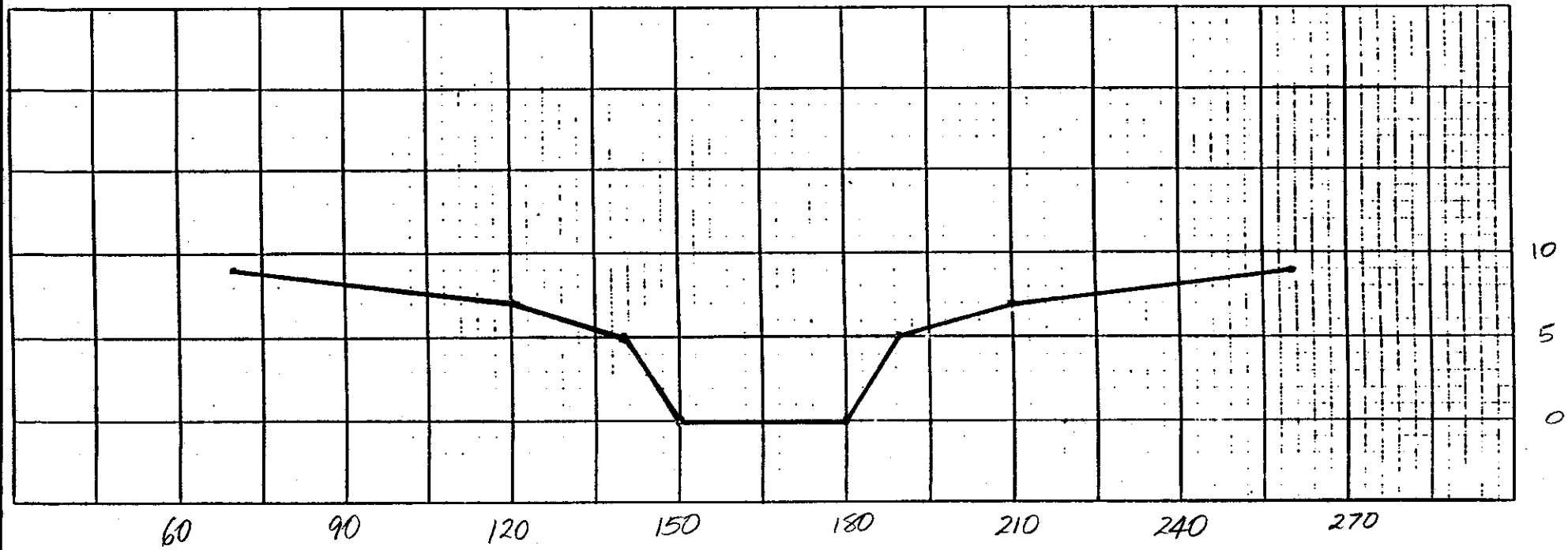


RD ~~RS~~								
RC	0.030	0.020	0.030	2560	0.0032			
RX	124	129	149	150	215	216	236	241
RY	2	1	0.5	0	0	0.5	1	2

CALCULATED BY: DLB 10-15-91

NORMAL DEPTH CHANNEL ROUTE COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM210 (EXISTING & FUTURE MODEL)

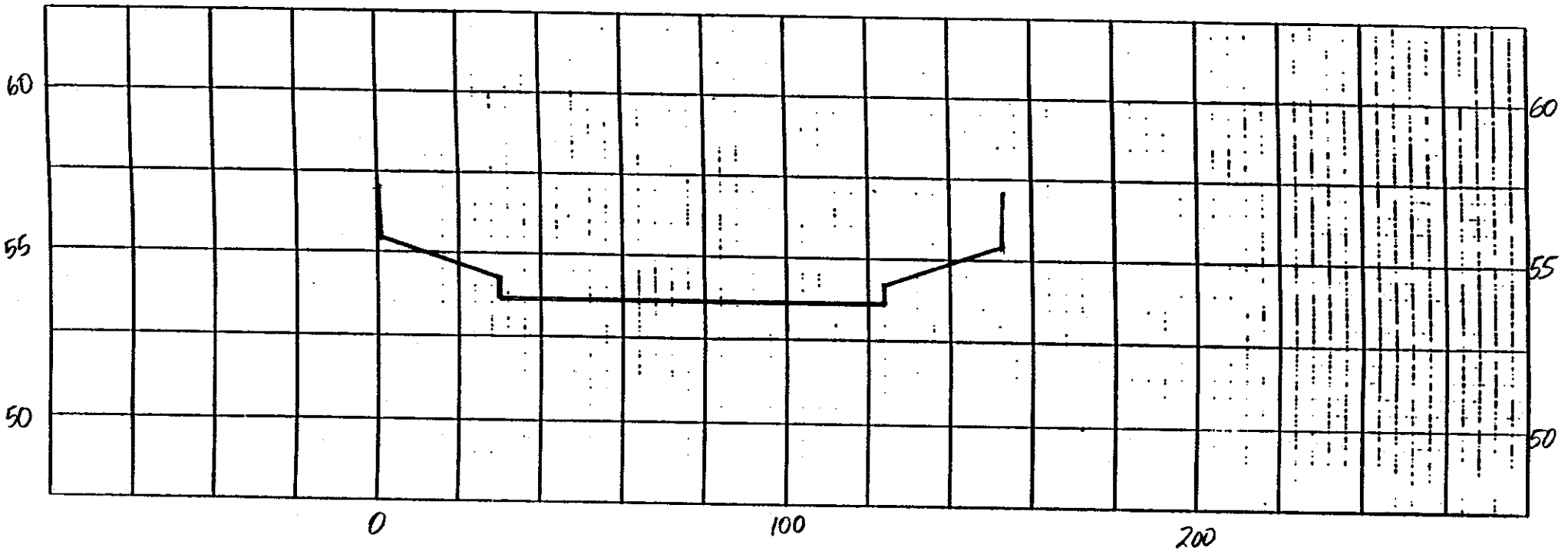


RD ~~RS~~								
RC	0.045	0.025	0.045	3080	0.0028			
RX	70	120	138	143	183	188	210	260
RY	9	7	5	0	0	5	7	9

CALCULATED BY: DLB 10-16-91

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM222 (EXISTING & FUTURE MODEL)

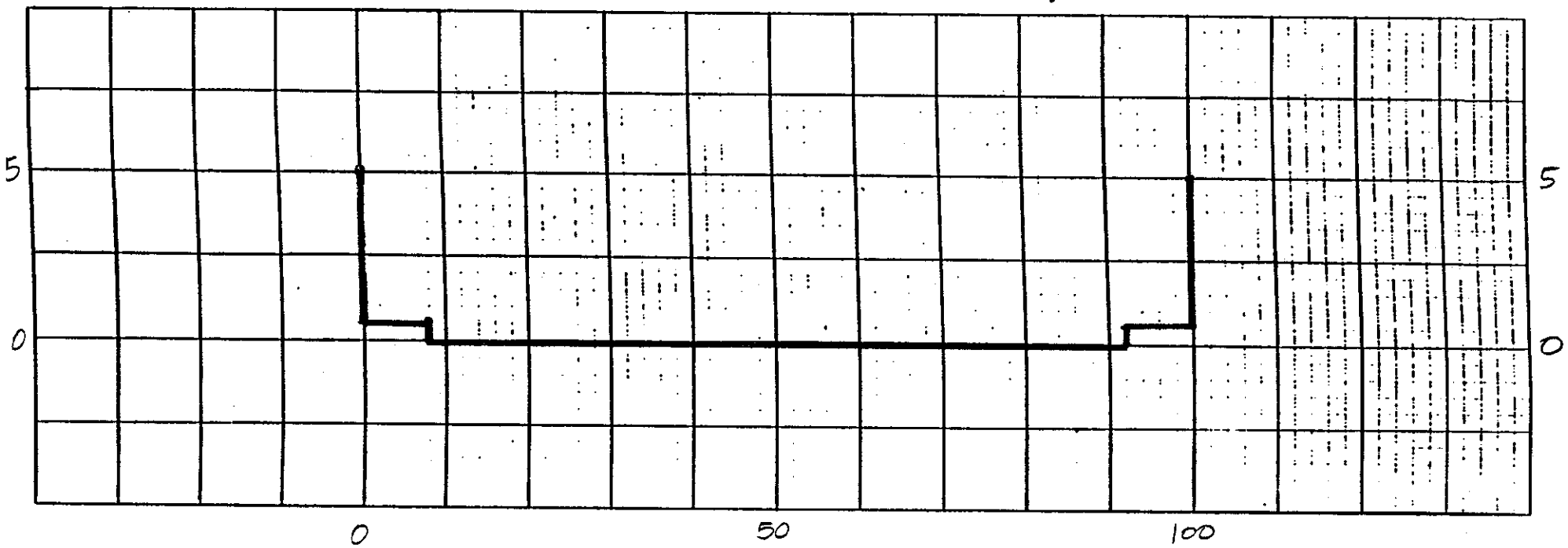


RD				6160	0.0047	(Existing)		
RC	0.030	0.020	0.030	4000	0.0045	(Future)		
RX	0	1	31	31	123	123	153	153
RY	57	55.3	54.2	53.7	53.8	54.3	55.3	57

CALCULATED BY: Burgess & Niple Report / Revised by DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM223 (EXISTING)
RM223A (FUTURE)



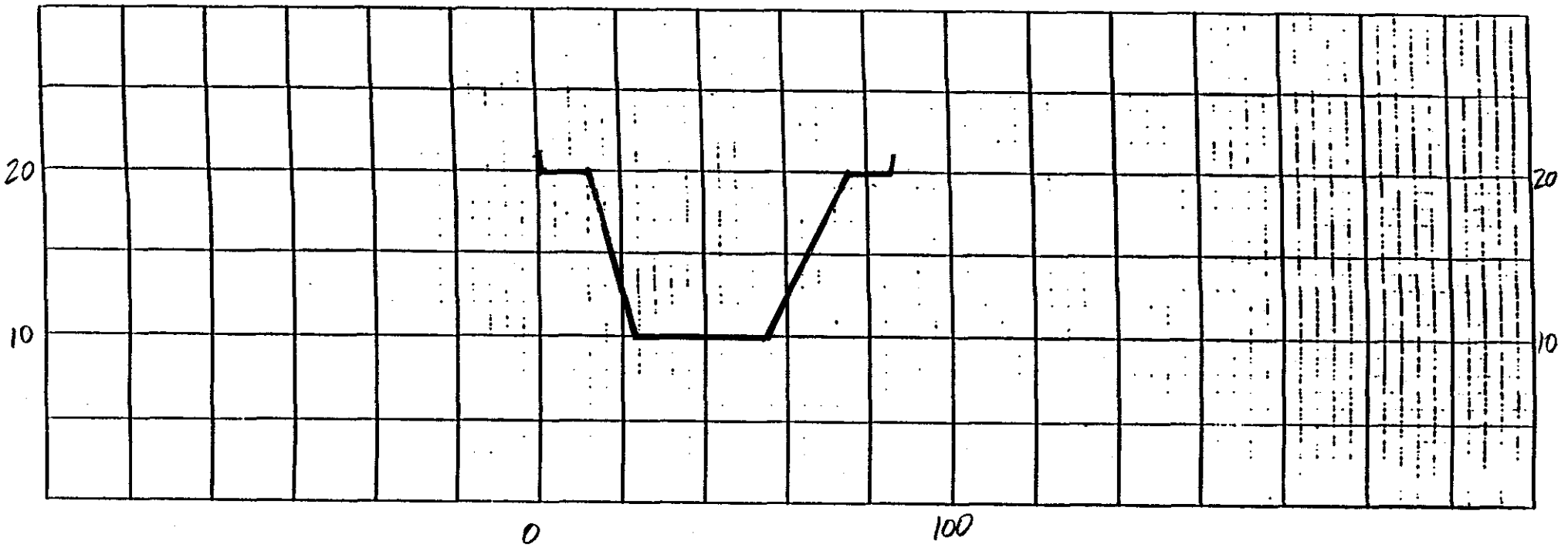
Cave Creek Rd. - Between Bell Rd. & Paradise Ln.

RD				1920	0.0021	(RM223 - Existing)		
RC	0.030	0.020	0.030	4240	0.0035	(RM223A - Future)		
RX	0	0	.8	8	92	92	100	100
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM226 (EXISTING & FUTURE MODEL)



RD				2080	0.0034	(Existing)		
RC	0.045	0.035	0.045	2640	0.0034	(Future)		
RX	0	1	13	23	55	75	87	88
RY	21	20	20	10	10	20	20	21

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM227 (EXISTING)
RM 234B (FUTURE)

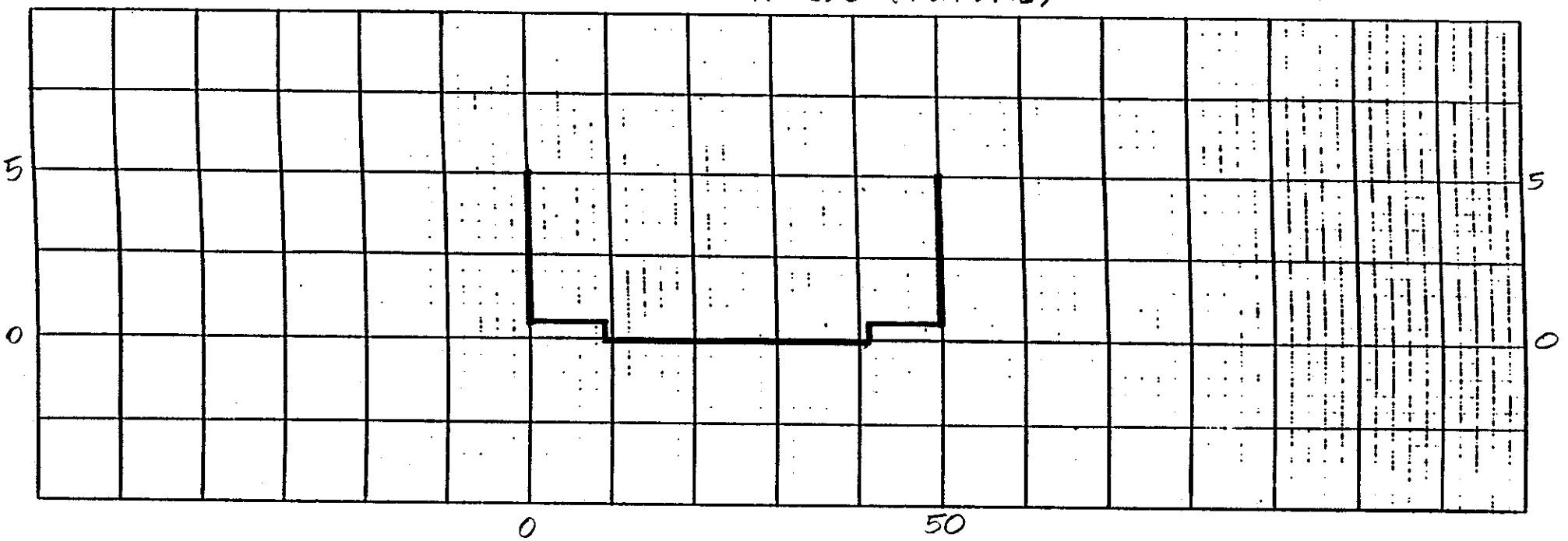
21st street - Between Bell Rd. & Paradise Ln.

RD				3160	0.0051	(RM227- Existing)		
RC	0.030	0.020	0.030	3800	0.0051	(RM234B- Future)		
RX	0	0	.7	7	43	43	50	50
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM229 (EXISTING)
RM236 (FUTURE)

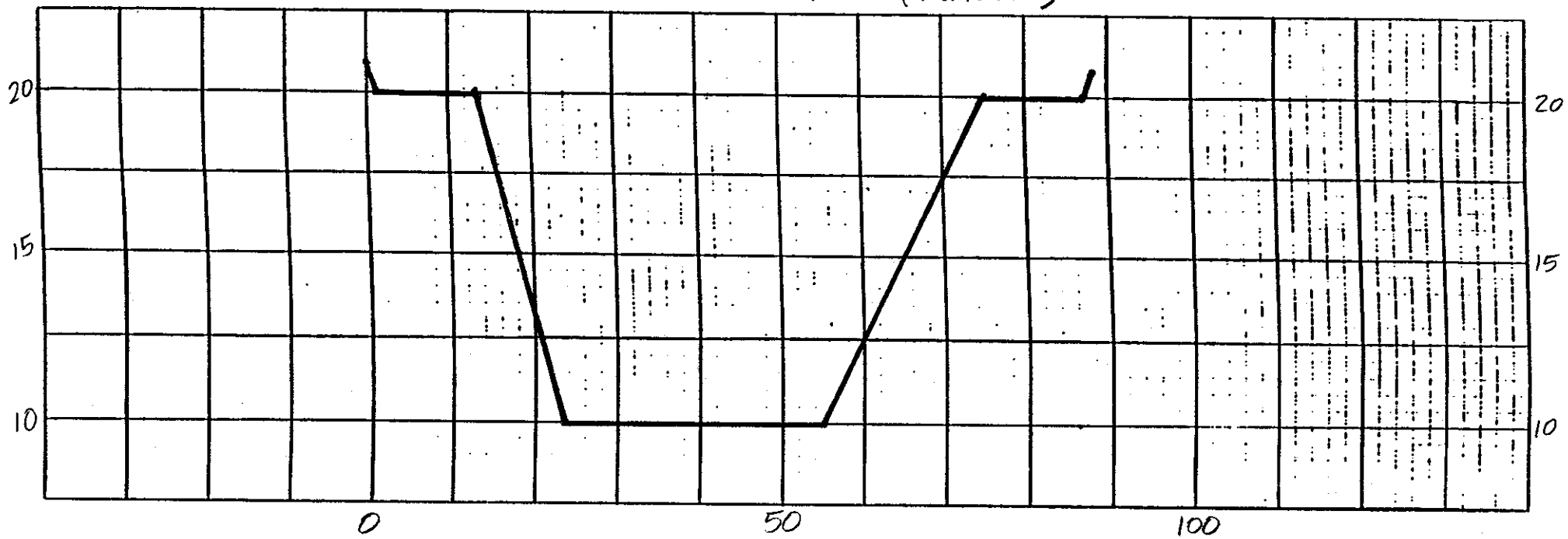


RD				6240	0.0061	(RM229 - Existing)		
RC	0.030	0.020	0.030	6890	0.0050	(RM236 - Future)		
RX	0	0	9	9	41	41	50	50
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM230 (EXISTING)
RM237 (FUTURE)

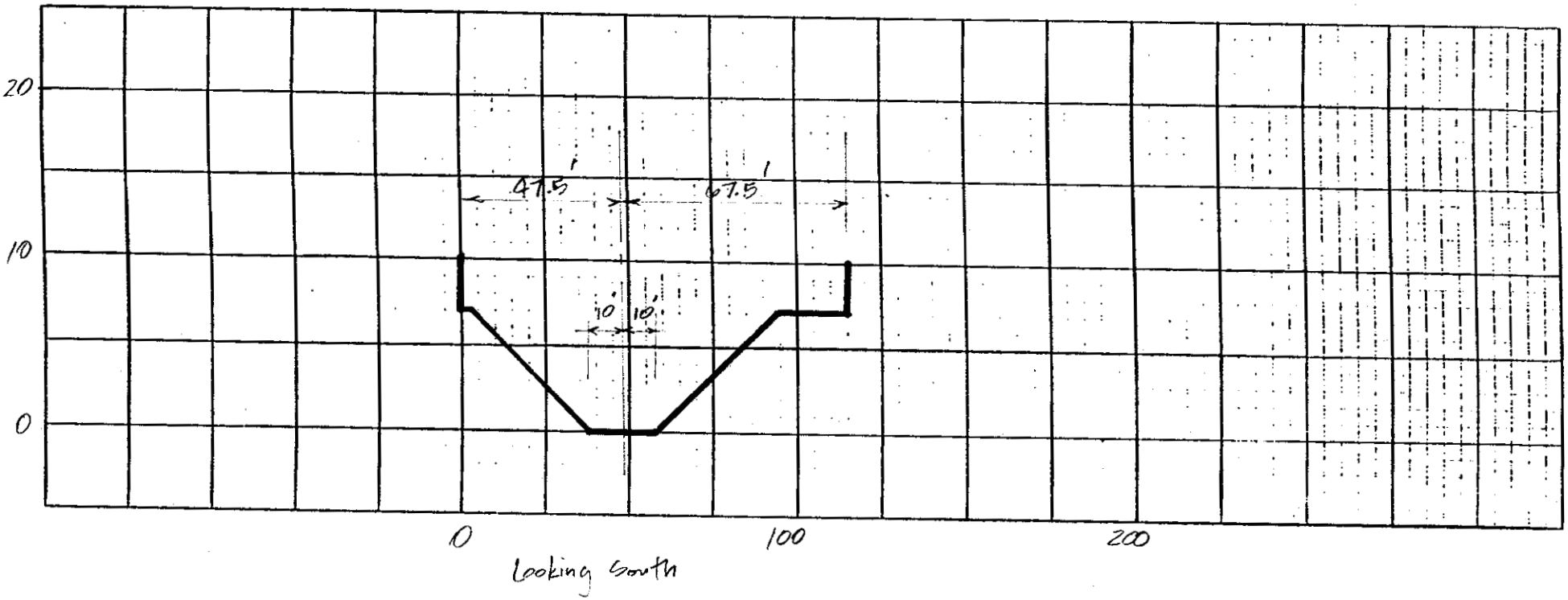


RD				3560	0.0039	(RM230- Existing)		
RC	0.045	0.035	0.045	2960	0.0040	(RM237- Future)		
RX	0	1	13	23	55	75	87	88
RY	21	20	20	10	10	20	20	21

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM231A (EXISTING & FUTURE MODEL)



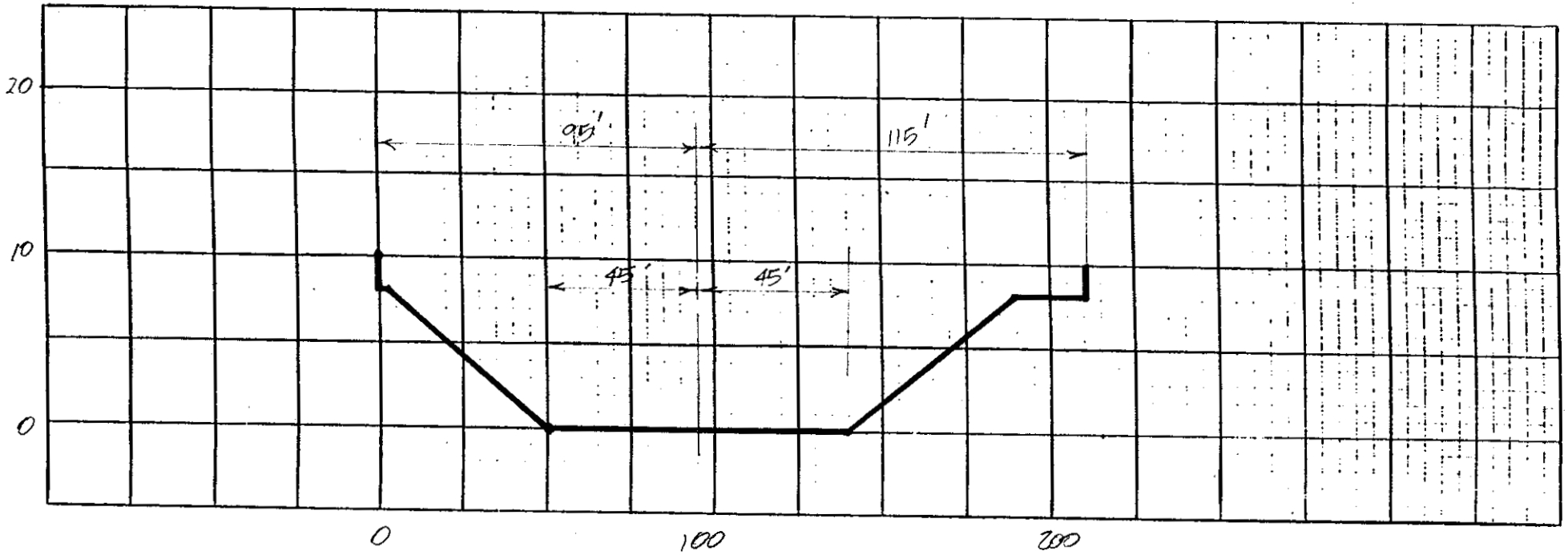
RD								
RC	0.035	0.030	0.035	2725	0.0005			
RX	0	0	2	37.5	57.5	93	115	115
RY	10	7.1	7.1	0	0	7.1	7.1	10

CALCULATED BY: DLB 7/7/92

* Avg. Cross-Section Taken From NBS Lowry Dams for the Upper East Fork Cave Creek Channel.

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM 231 B (EXISTING & FUTURE MODEL)



slope as shown on plans – However, there are numerous drop structures along the channel.

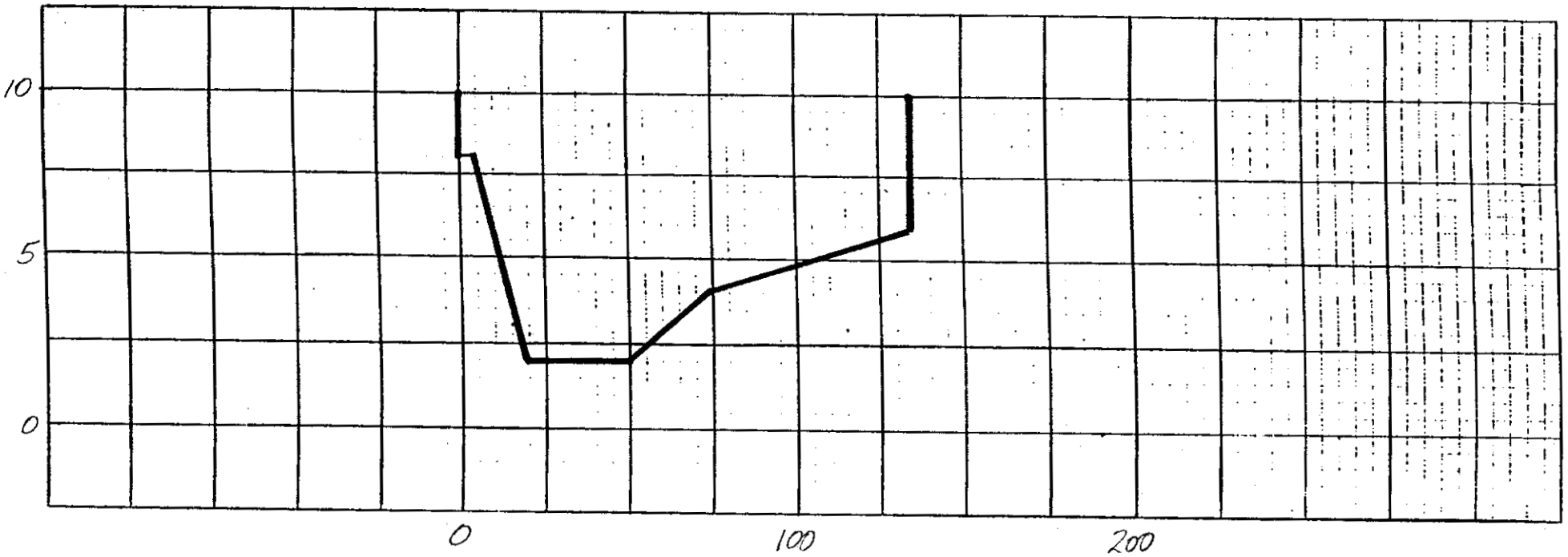
RD								
RC	0.035	0.030	0.035	2830	0.0005			
RX	0	0	2	50	140	188	210	210
RY	10	8	8	0	0	8	8	10

CALCULATED BY: DLB 7/7/92

* Avg. Cross-Section Taken from NBS Lowry Plans for the Upper East Fork Cave Creek Channel.

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM232 (EXISTING & FUTURE MODEL)

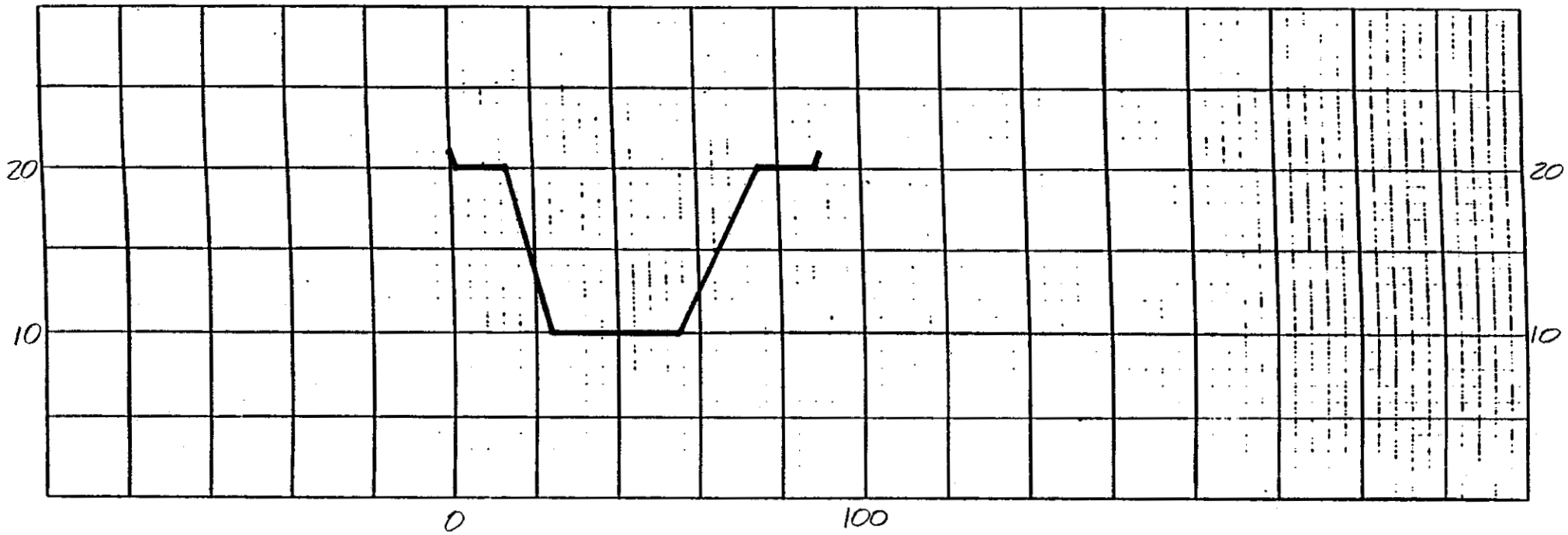


R				4000	0.0060	(Existing)		
RC	Floor 0.035	Grass 0.030	Grass 0.030	2480	0.0072	(Future)		
RX	0	0	5	20	50	75	135	135
RY	10	8	8	2	2	4	6	10

CALCULATED BY: DLB 7/7/92

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM 233 B

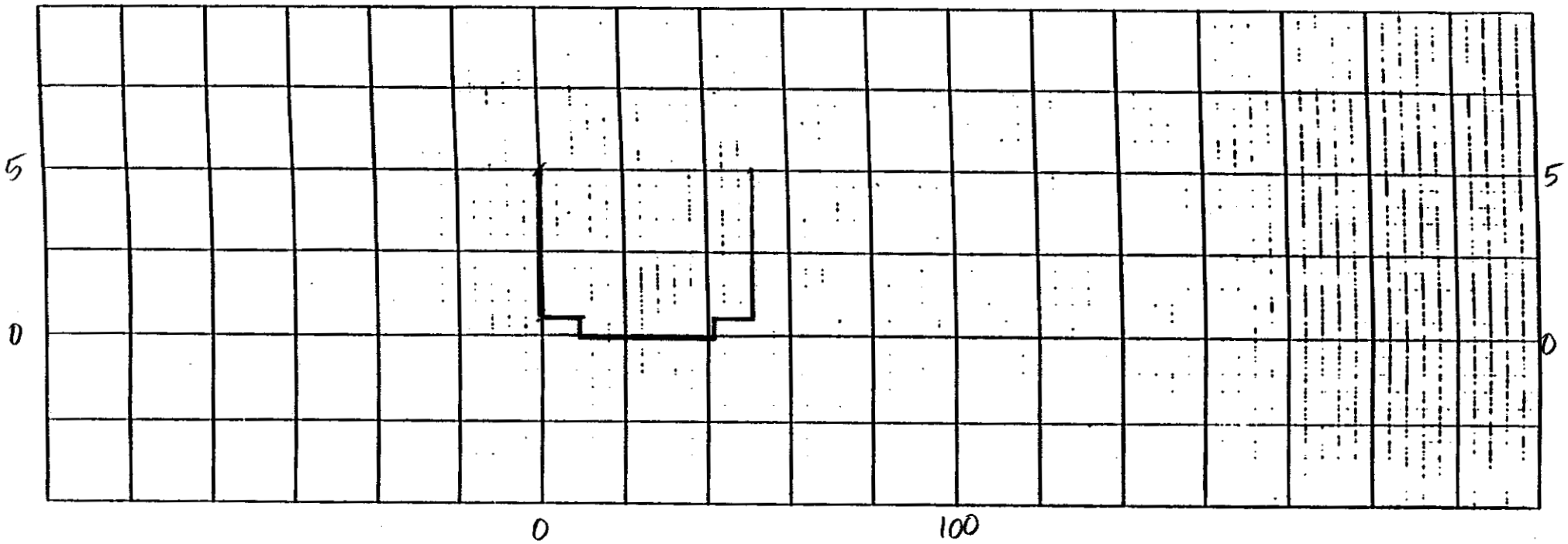


RD								
RC	0.045	0.035	0.045	3000	0.0039			
RX	0	1	13	23	55	75	87	88
RY	21	20	20	10	10	20	20	21

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM246A

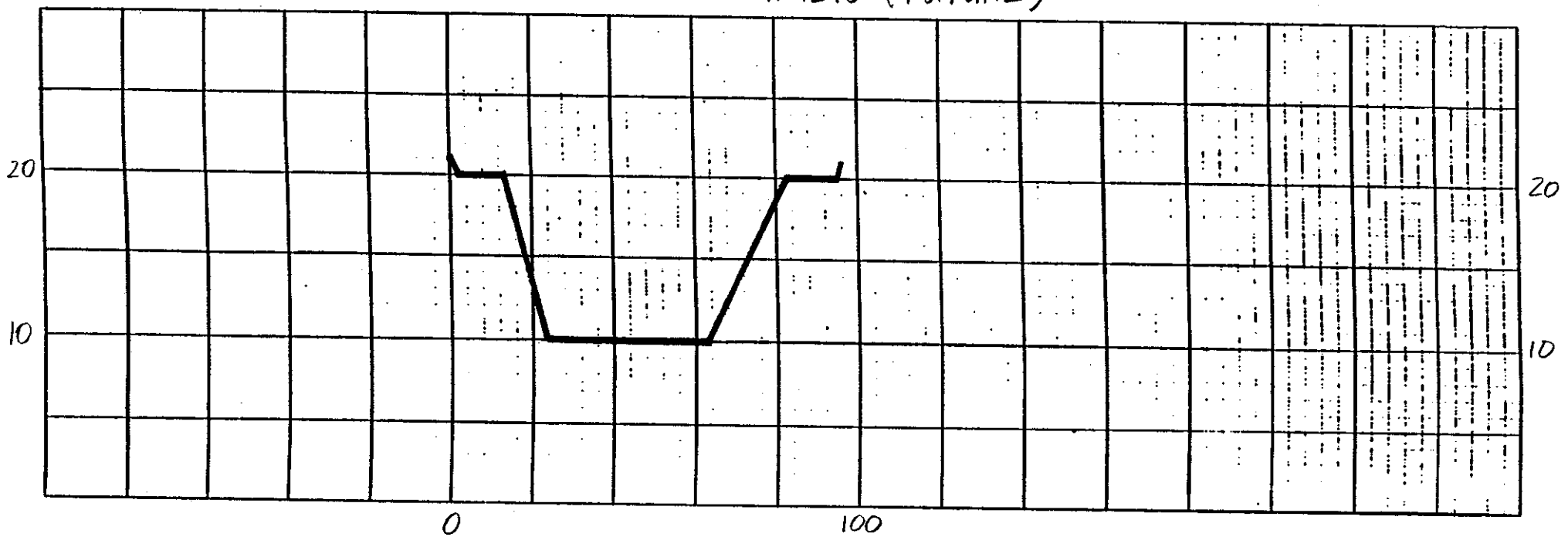


RD								
RC	0.030	0.020	0.030	6400	0.0050			
RX	0	0	9	9	41	41	50	50
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM235 (EXISTING)
RM240 (FUTURE)

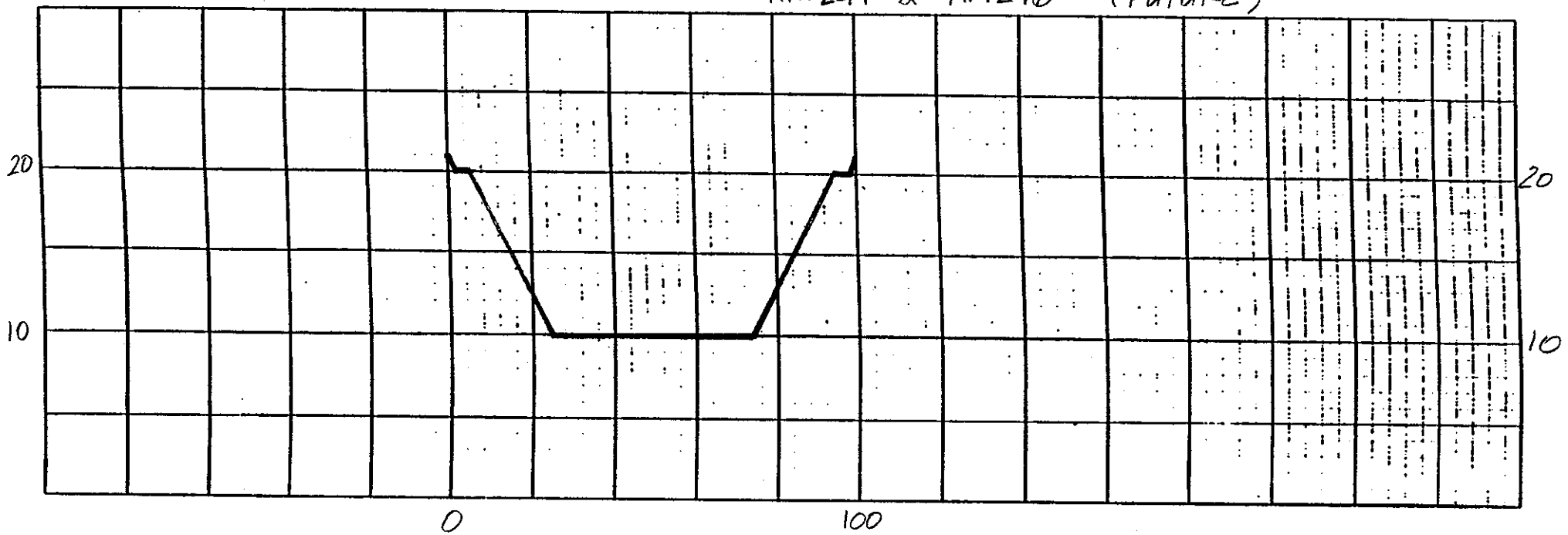


RD								
RC	0.045	0.035	0.045	2920	0.0048			
RX	0	1	13	23	63	83	95	96
RY	21	20	20	10	10	20	20	21

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM237 & RM241B (EXISTING)
RM241 & RM246 (FUTURE)

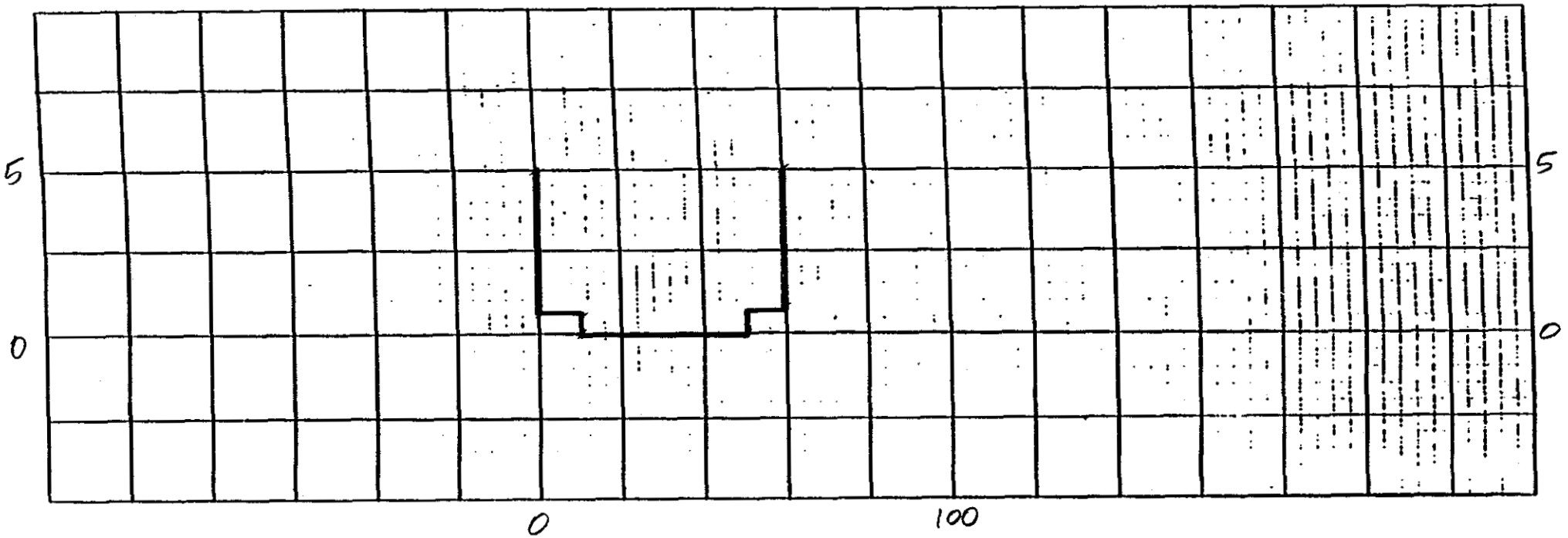


RD				6240	0.0048	(RM237 - Existing)		
				3880	0.0031	(RM241B - Existing)		
				2400	0.0033	(RM241 - Future)		
RC	0.045	0.035	0.045	3880	0.0057	(RM246 - Future)		
RX	0	1	5	25	75	95	99	100
RY	21	20	20	10	10	20	20	21

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM246B



RD								
RC	0.030	0.020	0.030	2650	0.0064			
RX	0	0	10	10	50	50	60	60
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

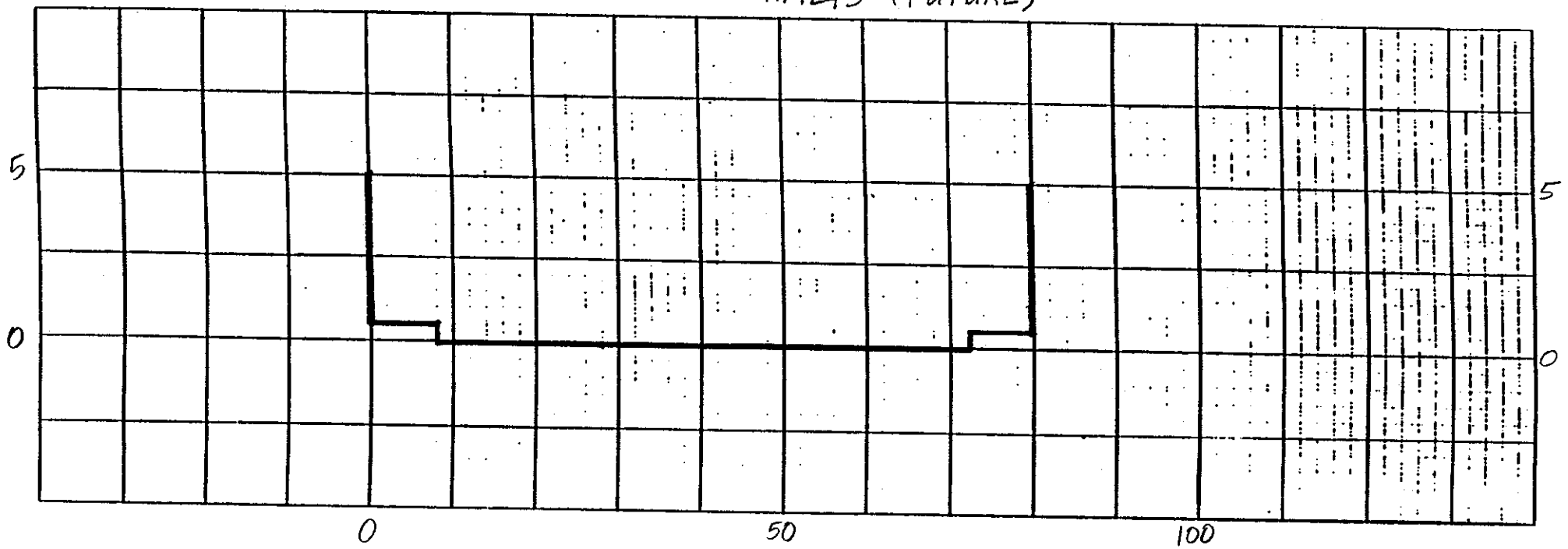
ROUTE IDENTIFICATION NUMBER RM239

RD								
RC	0.030	0.020	0.030	7560	0.0050			
RX	0	0	7	7	43	43	50	50
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM240 (EXISTING)
RM245 (FUTURE)

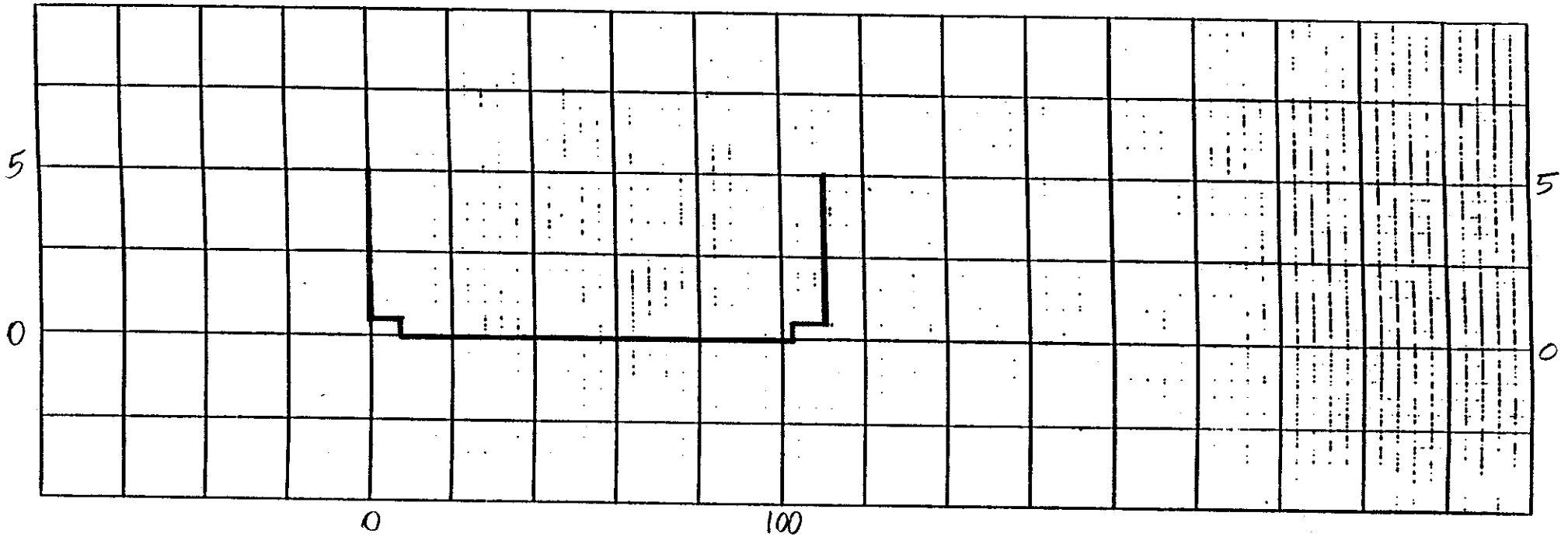


RD				5240	0.0051 (RM240 - Existing)			
RC	0.030	0.020	0.030	6530	0.0047 (RM245 - Future)			
RX	0	0	8	8	72	72	80	80
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM241A



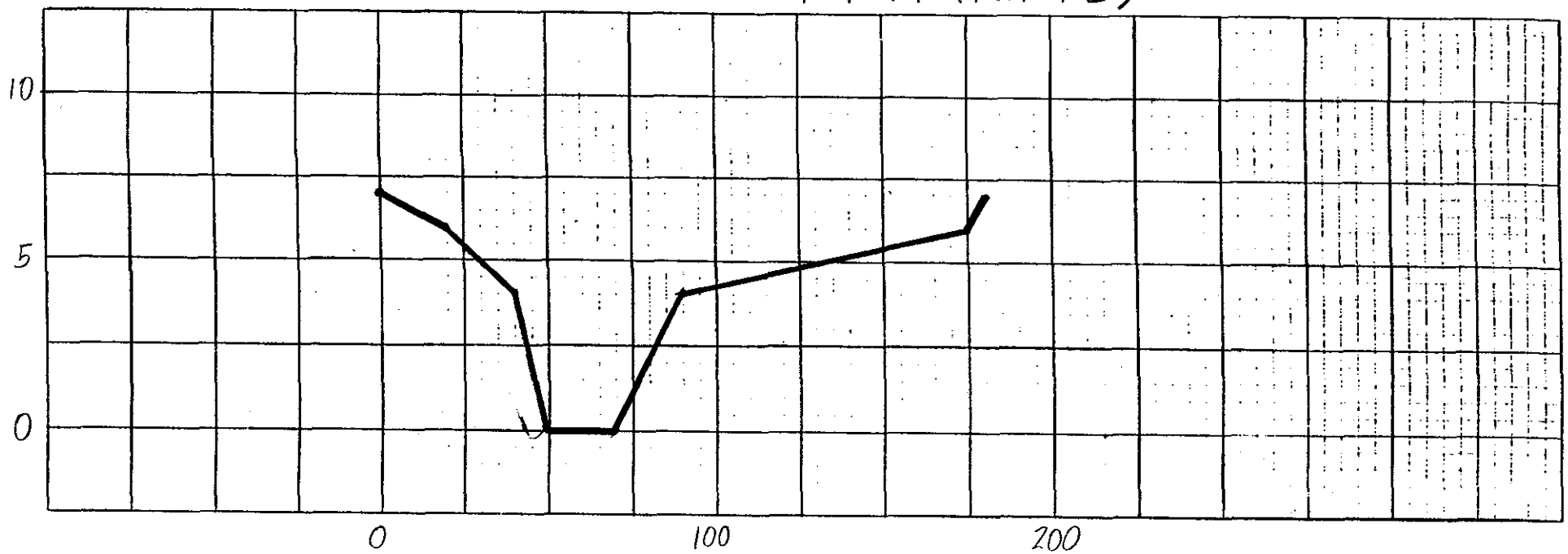
7th Street - Between Bell Rd. & Greenway Channel

RD								
RC	0.030	0.020	0.030	1130	0.0035			
RX	0	0	8	8	102	102	110	110
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM243 & RM241D (EXISTING)
RM247 (FUTURE)



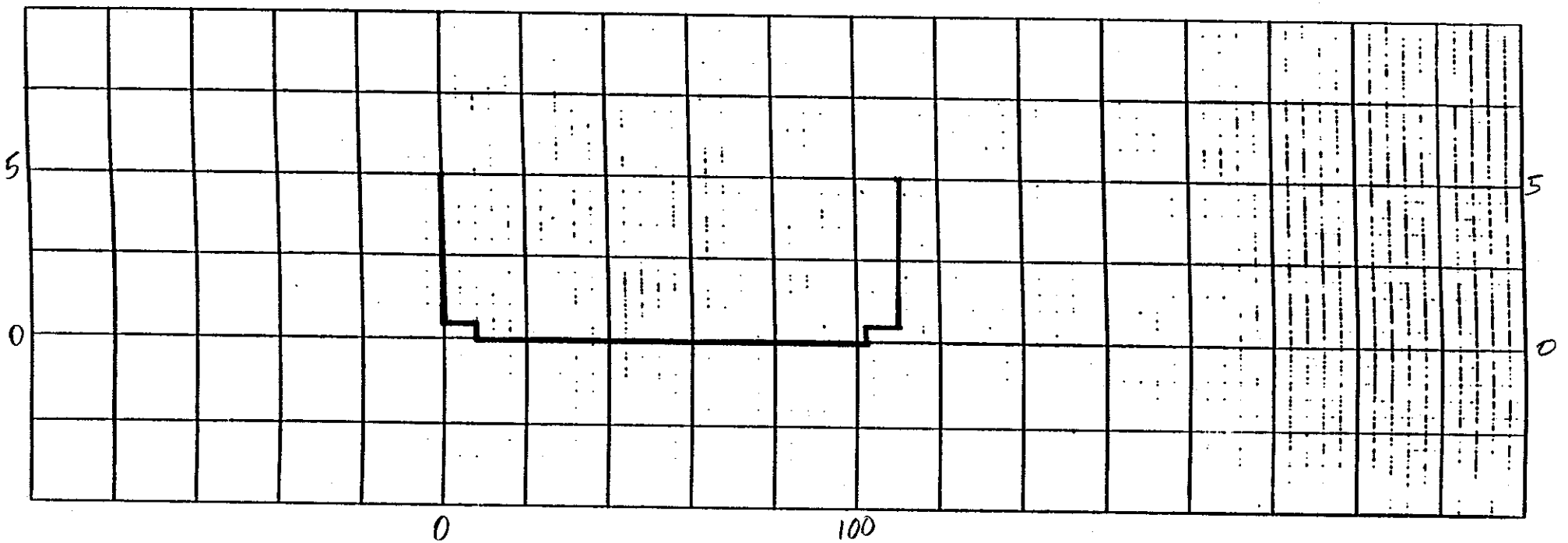
Reason For Lower Mannings "n":
To Account For Portions Flowing on Pavement

RD				5940	0.0063	(RM243 - Existing)		
RC	0.040	0.030	0.040	3120	0.0063	(RM241D - Existing)		
				10200	0.0057	(RM247 - Future)		
RX	0	20	40	50	70	85	175	180
RY	7	6	4	0	0	4	6	7

CALCULATED BY: DLB 6/30/92

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM241C



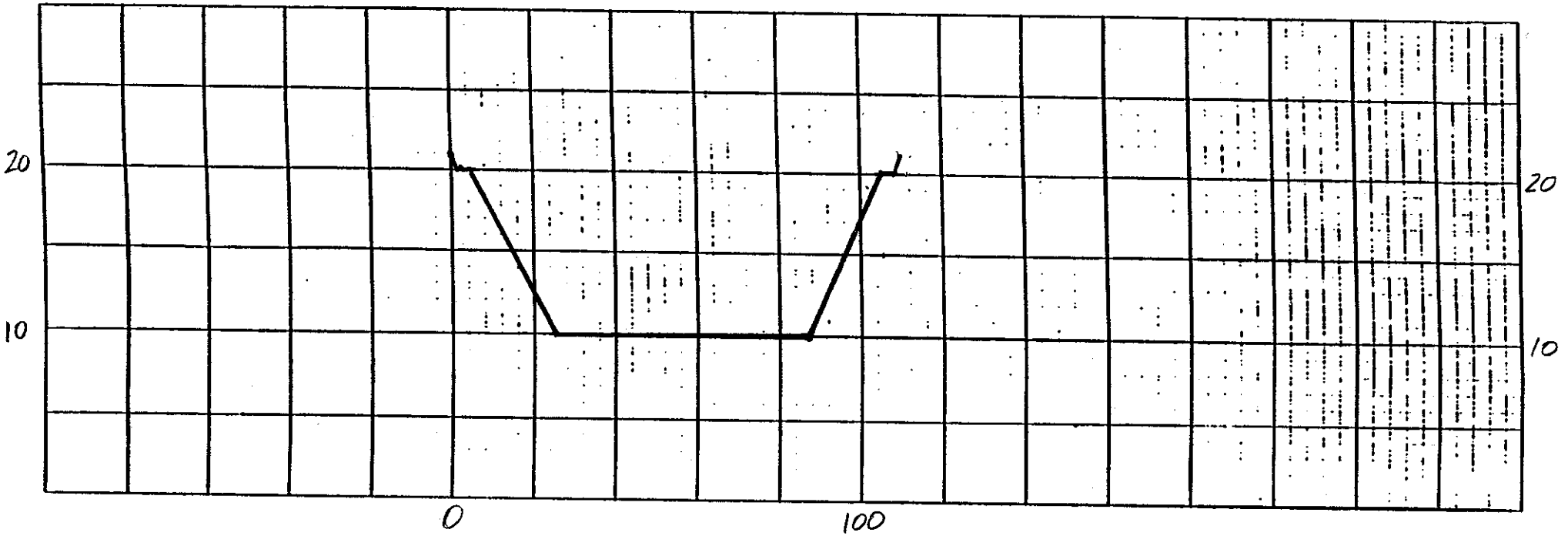
Bell Rd. - Between Central Ave & 7th St.

RD								
RC	0.030	0.020	0.030	2150	0.0020			
RX	0	0	8	8	102	102	110	110
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM242 (EXISTING)
RM211B (EXISTING & FUTURE)
RM248 (FUTURE)

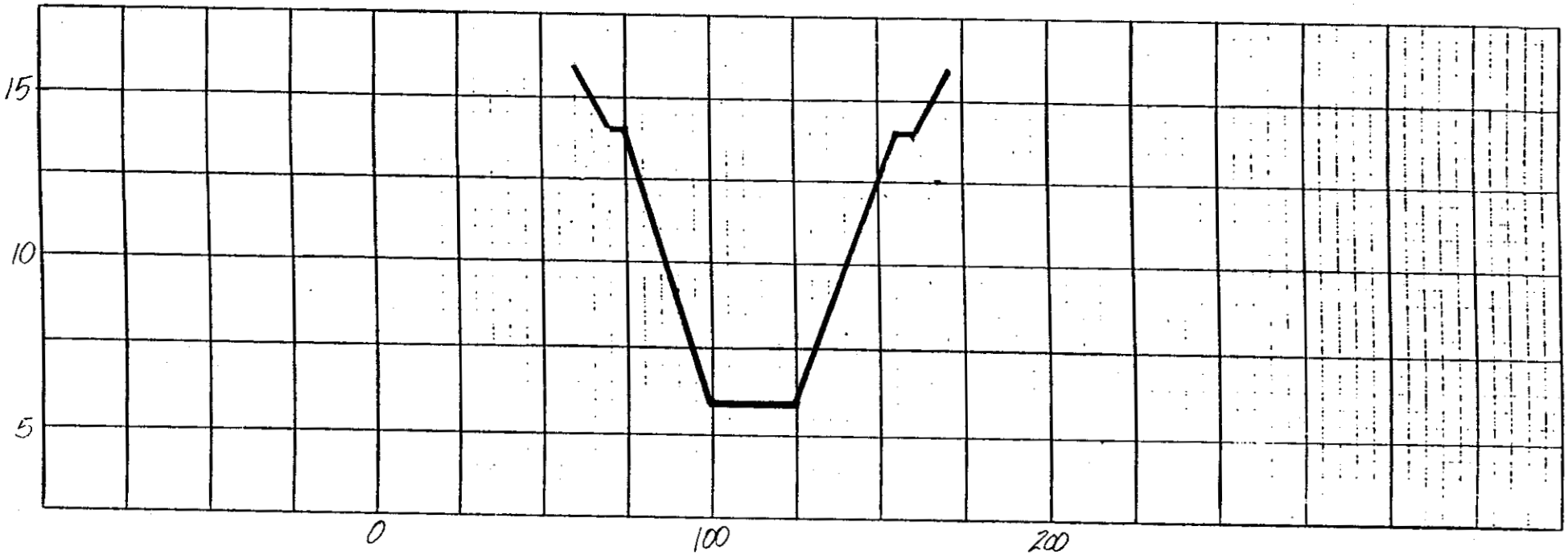


RD				6600 3720	0.0042 (RM242 - Existing) 0.0060 (RM211B - Existing and Future)			
RC	0.045	0.035	0.045	6600	0.0042 (RM 248 - Future)			
RX	0	1	5	25	85	105	109	110
RY	21	20	20	10	10	20	20	21

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM252

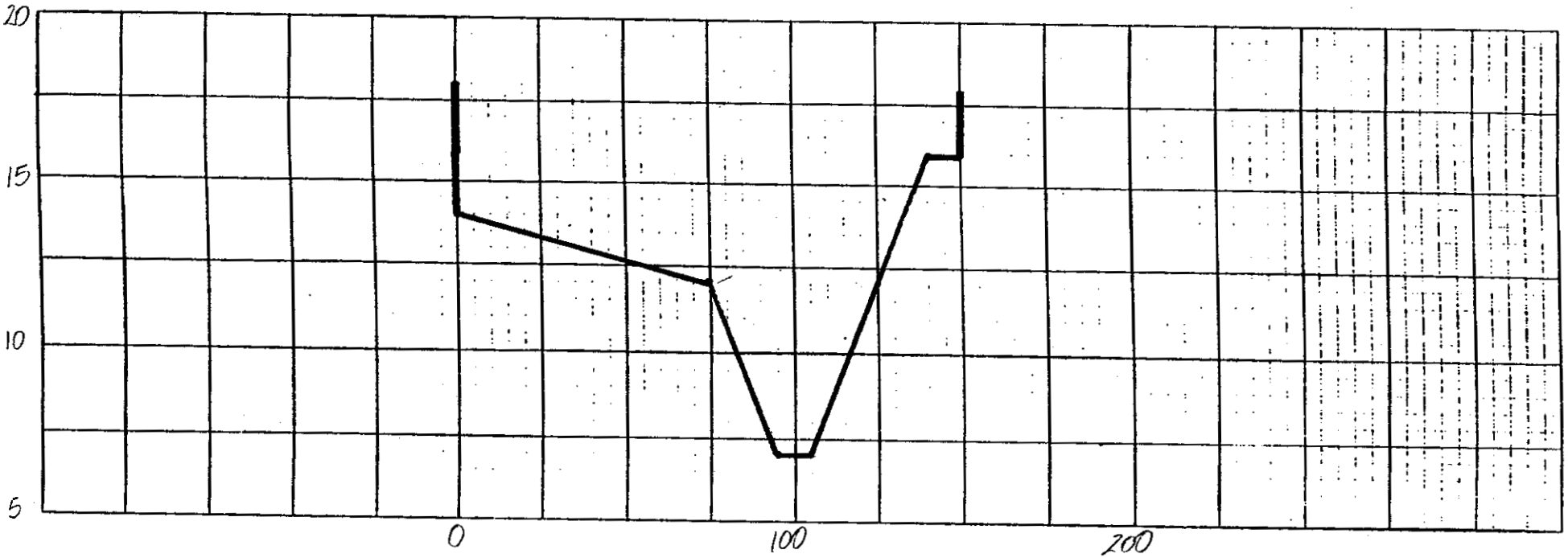


R								
RC	0.045	0.040	0.045	7240	0.0054			
RX	60	70	75	100	125	155	160	170
RY	16	14	14	6	6	14	14	16

CALCULATED BY: DLB 6/30/92

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM253

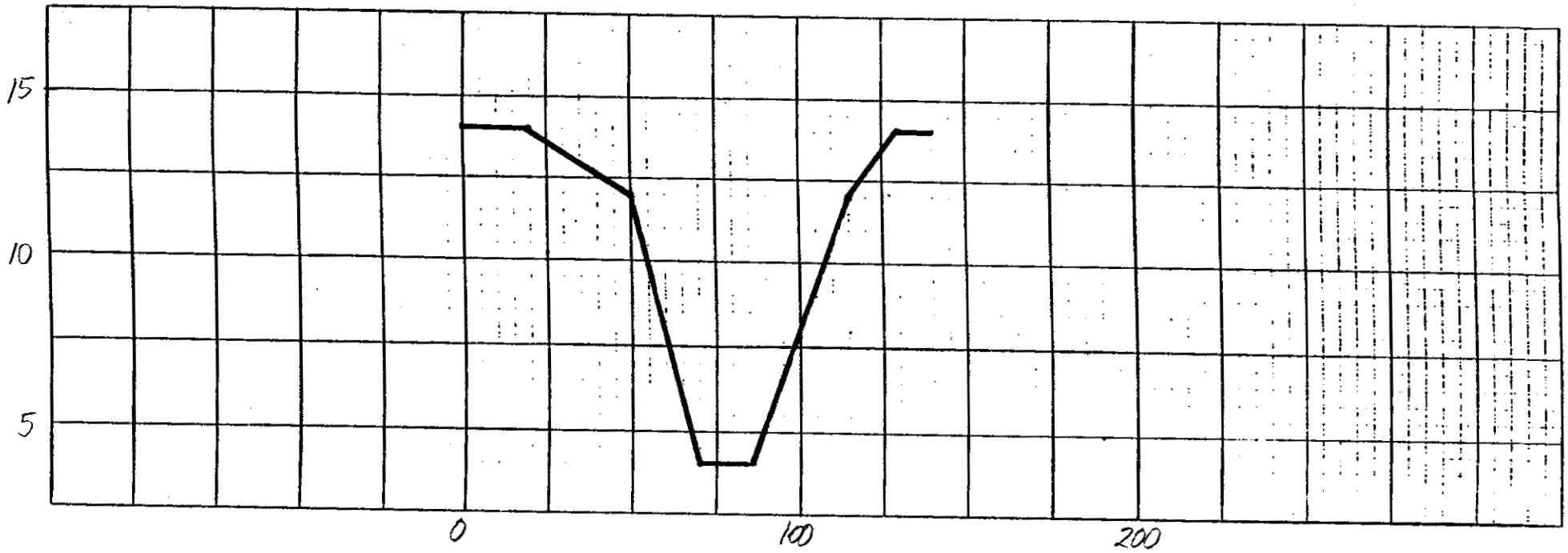


R								
RC	0.045	0.040	0.045	4920	0.0047			
RX	0	0	75	95	105	140	150	150
RY	18	14	12	7	7	16	16	18

CALCULATED BY: DLB 6/30/92

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM254

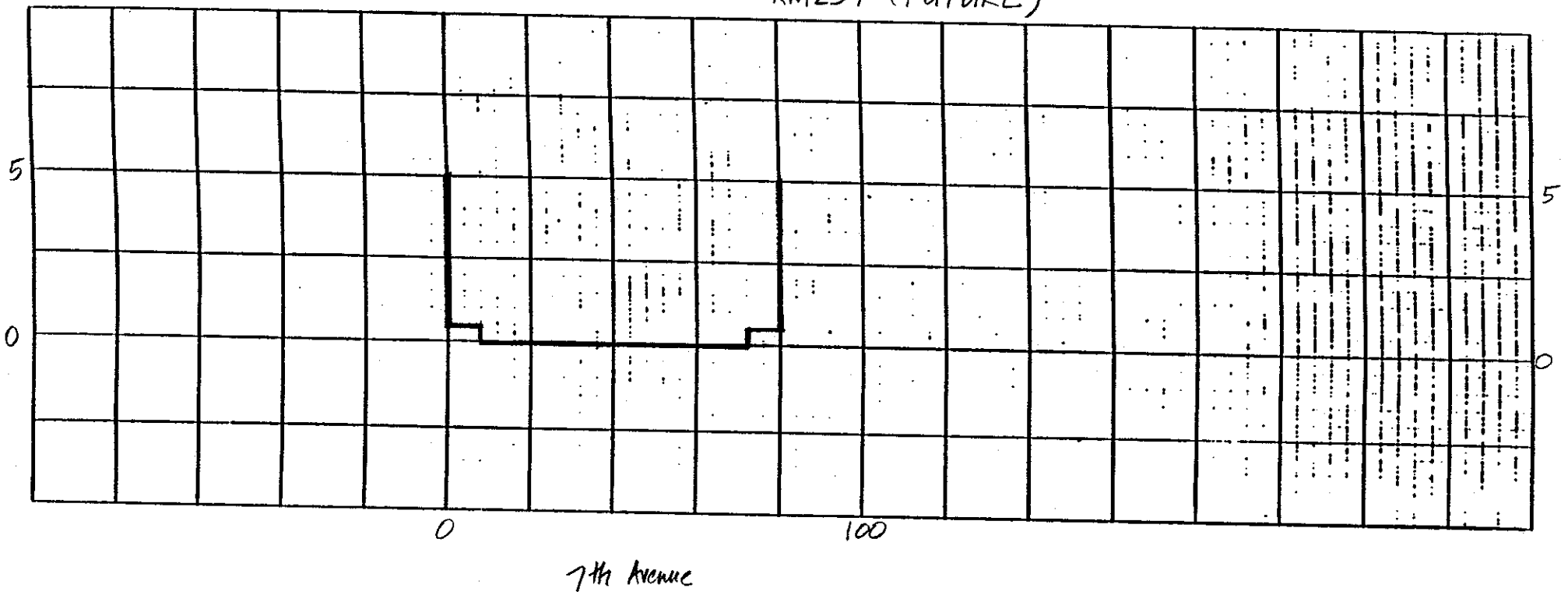


R								
RC	0.045	0.040	0.045	5800	0.0064			
RX	0	20	50	70	85	115	130	140
RY	14	14	12	4	4	12	14	14

CALCULATED BY: DLB 6/30/92

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM339 (EXISTING)
RM257 (FUTURE)

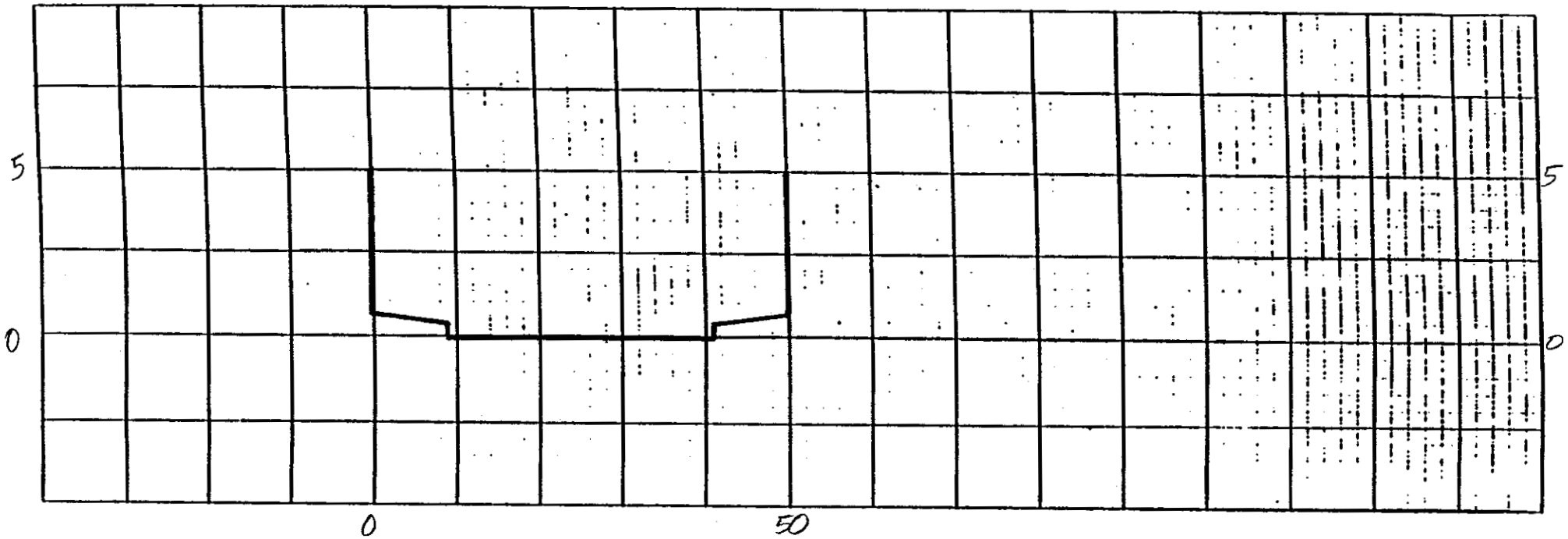


RD				5280	0.0049 (RM339 - Existing)			
RC	0.030	0.020	0.030	5400	0.0072 (RM257 - Future)			
RX	0	0	8	8	72	72	80	80
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM255A

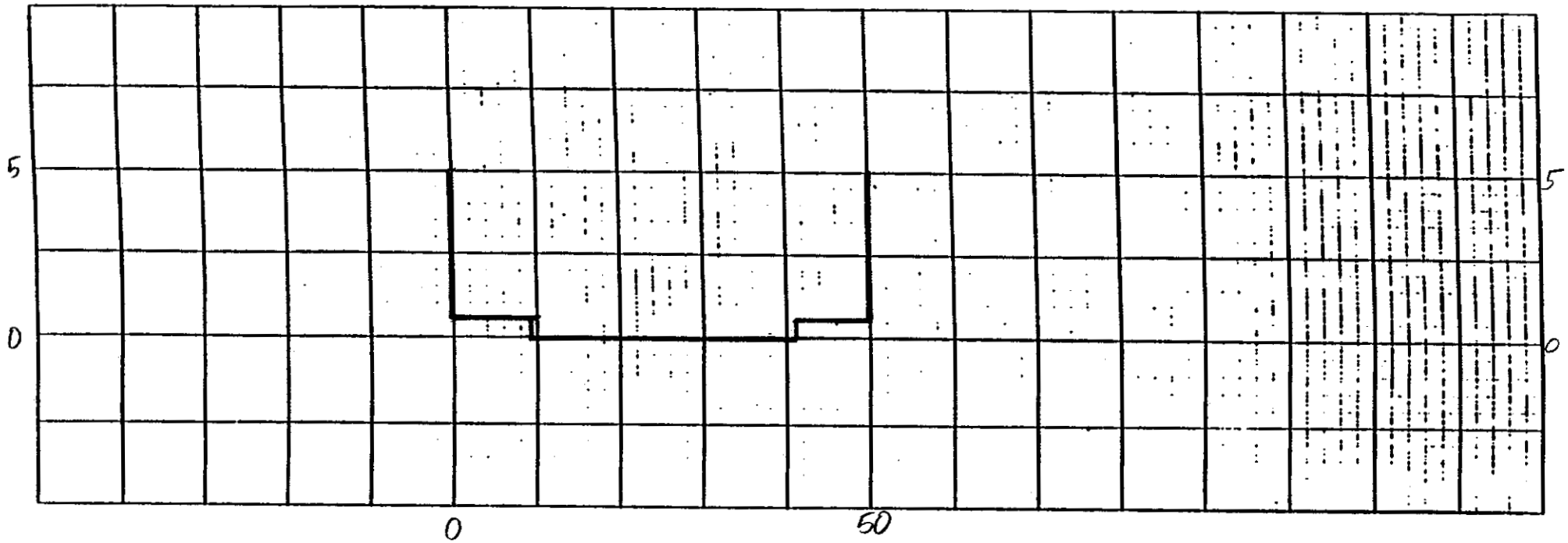


RD								
RC	0.030	0.020	0.030	4280	0.0054			
RX	0	0	.9	9	41	41	50.	50
RY	5	0.7	0.33	0	0	0.33	0.7	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM255B

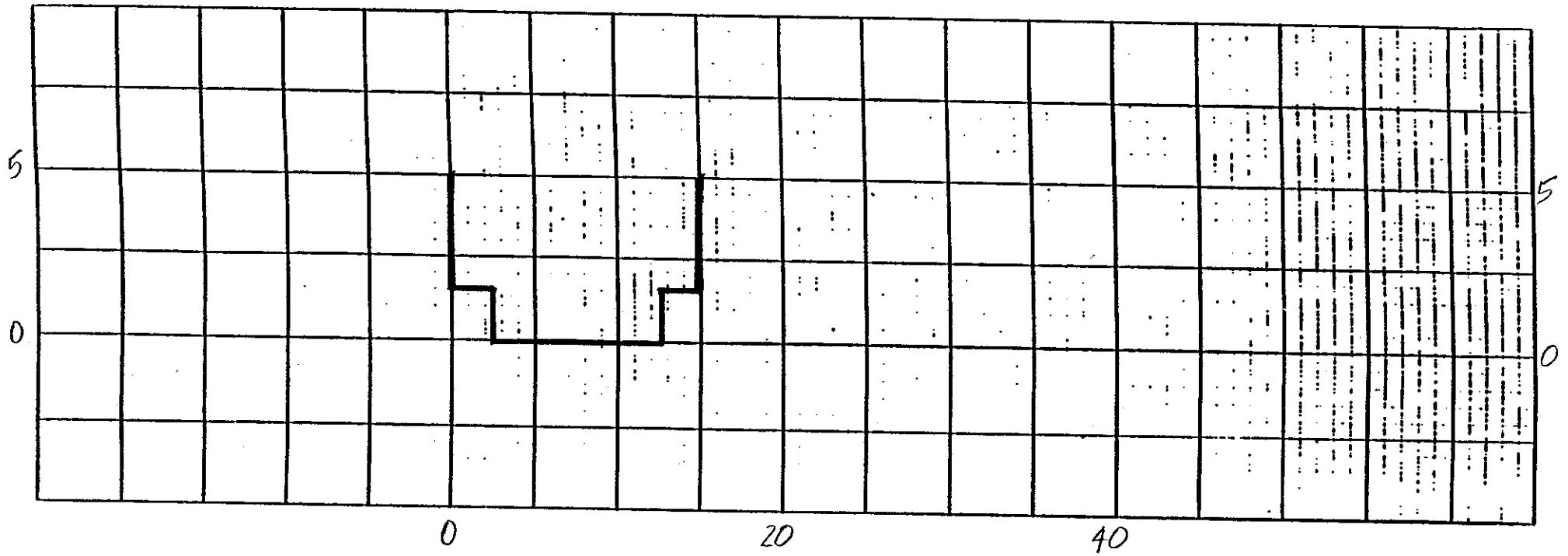


RD								
RC	0.030	0.030	0.030	2800	0.0043			
RX	0	0	9	9	41	41	50	50
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM255C

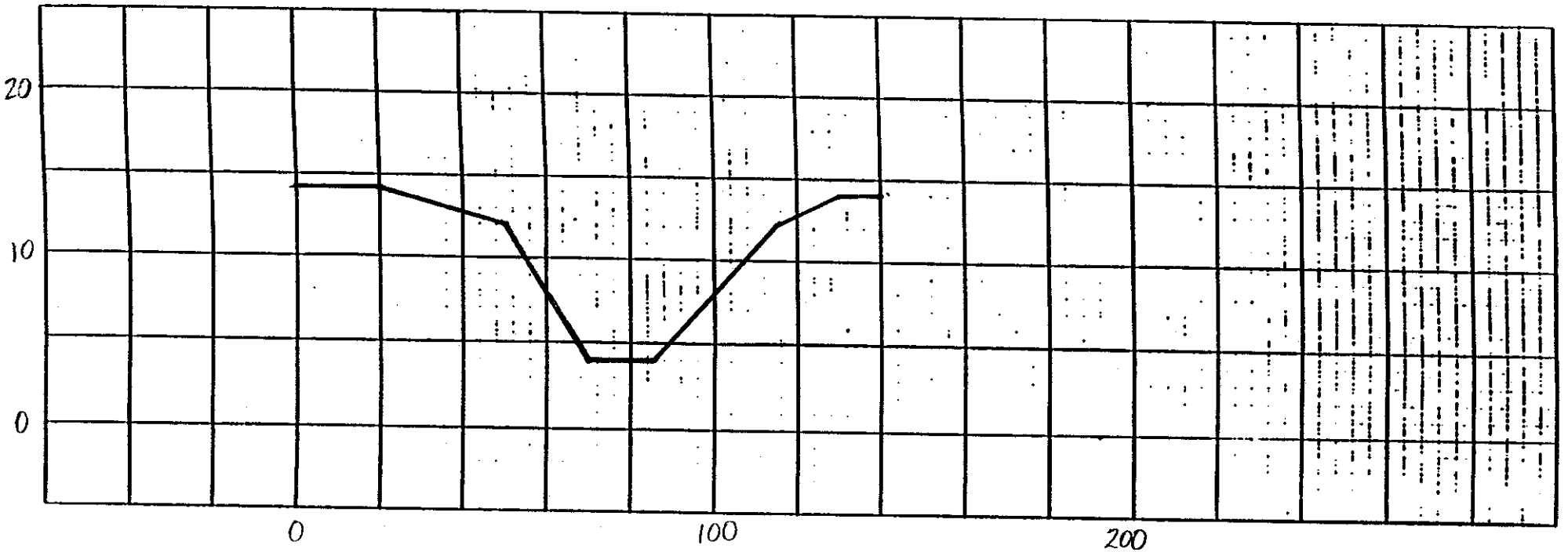


RD								
RC	0.030	0.020	0.030	3640	0.0047			
RX	0	0	2.5	2.5	12.5	12.5	15	15
RY	5	1.5	1.5	0	0	1.5	1.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM256

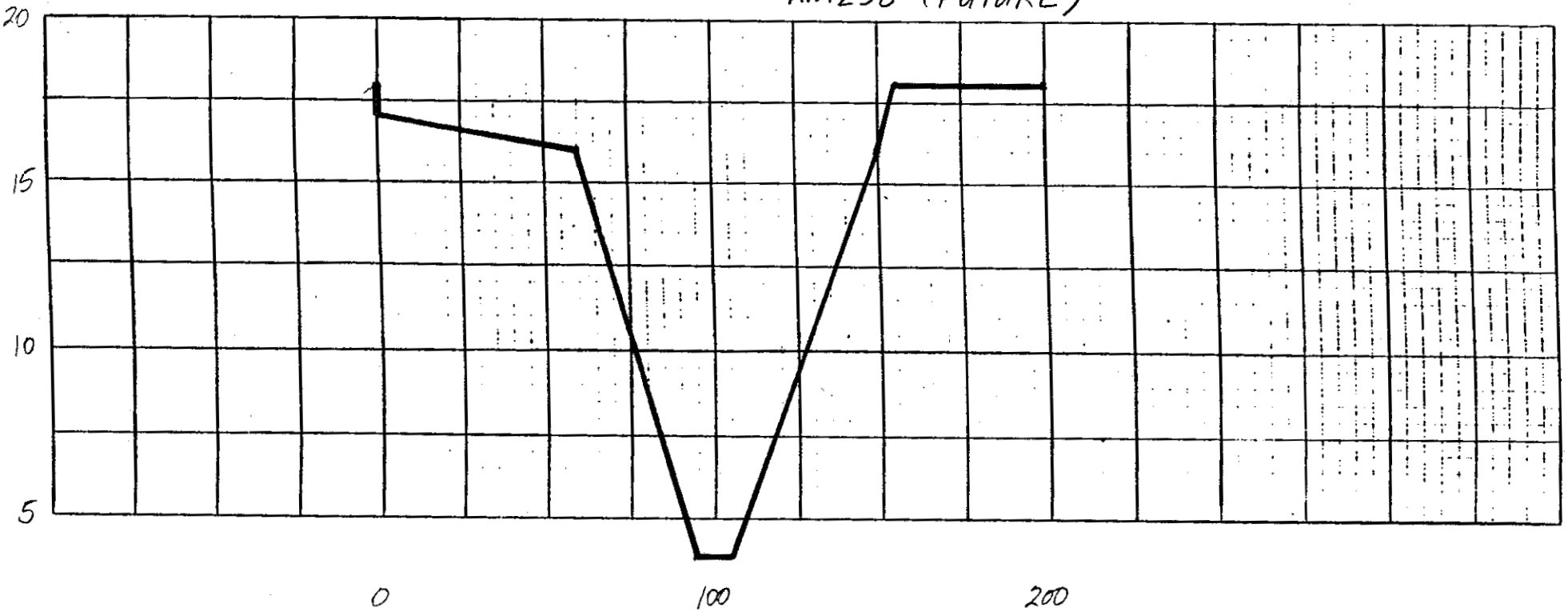


RD								
RC	0.045	0.040	0.045	5440	0.0072			
RX	0	20	50	70	85	115	130	140
RY	14	14	12	4	4	12	14	14

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM257 (EXISTING)
RM258 (FUTURE)

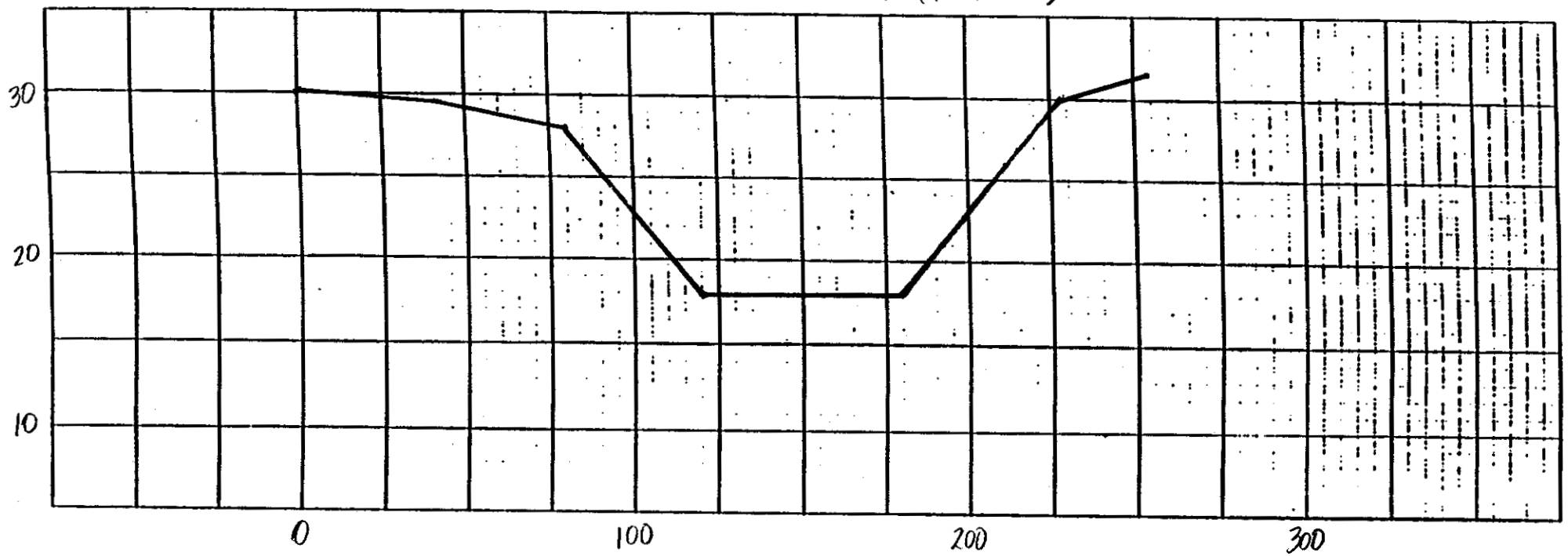


RD								
RC	0.045	0.040	0.045	6400	0.0061			
RX	0	0	60	95	105	150	155	200
RY	18	17	16	4	4	16	18	18

CALCULATED BY: DLB 6/30/92

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM258 (EXISTING)
RM259 (FUTURE)

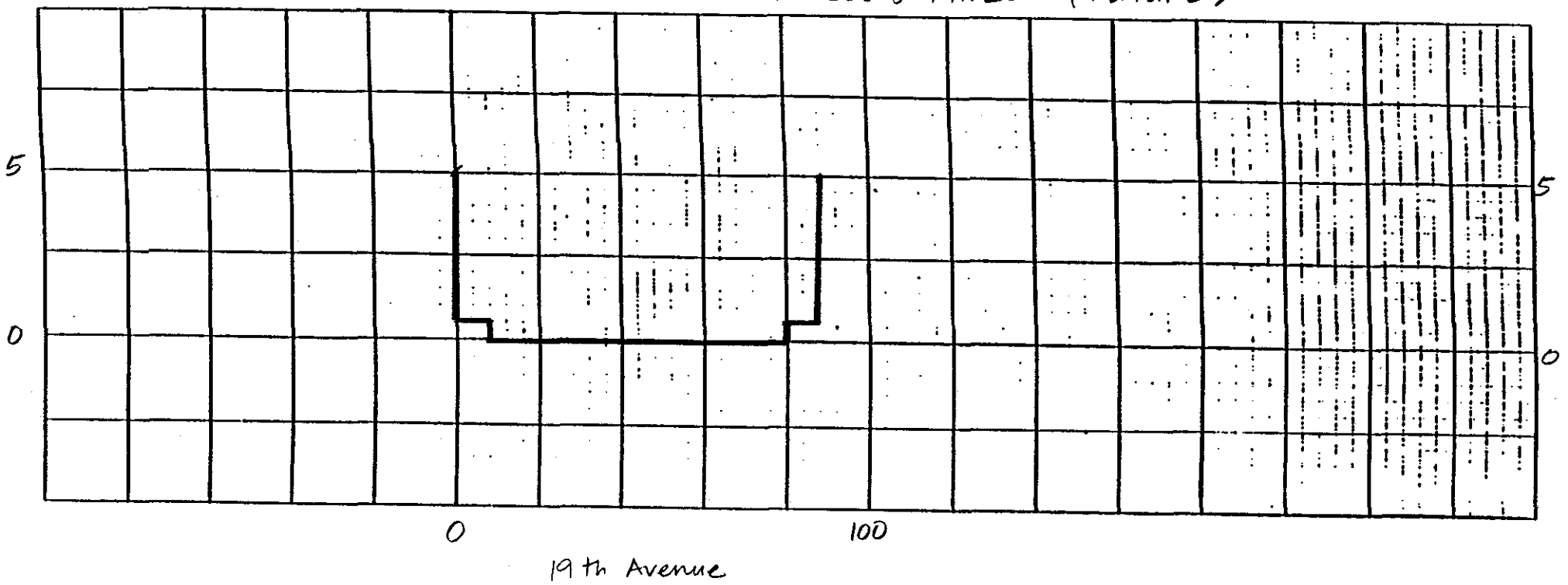


RD				2240	0.0080			
RC	0.045	0.035	0.045	1560	0.0038			
RX	0	40	80	120	180	228	253	253
RY	30	29.5	28	18	18	30	32	32

CALCULATED BY: Burgess & Niple Report

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM260 & RM261 (EXISTING)
RM260 & RM261 (FUTURE)

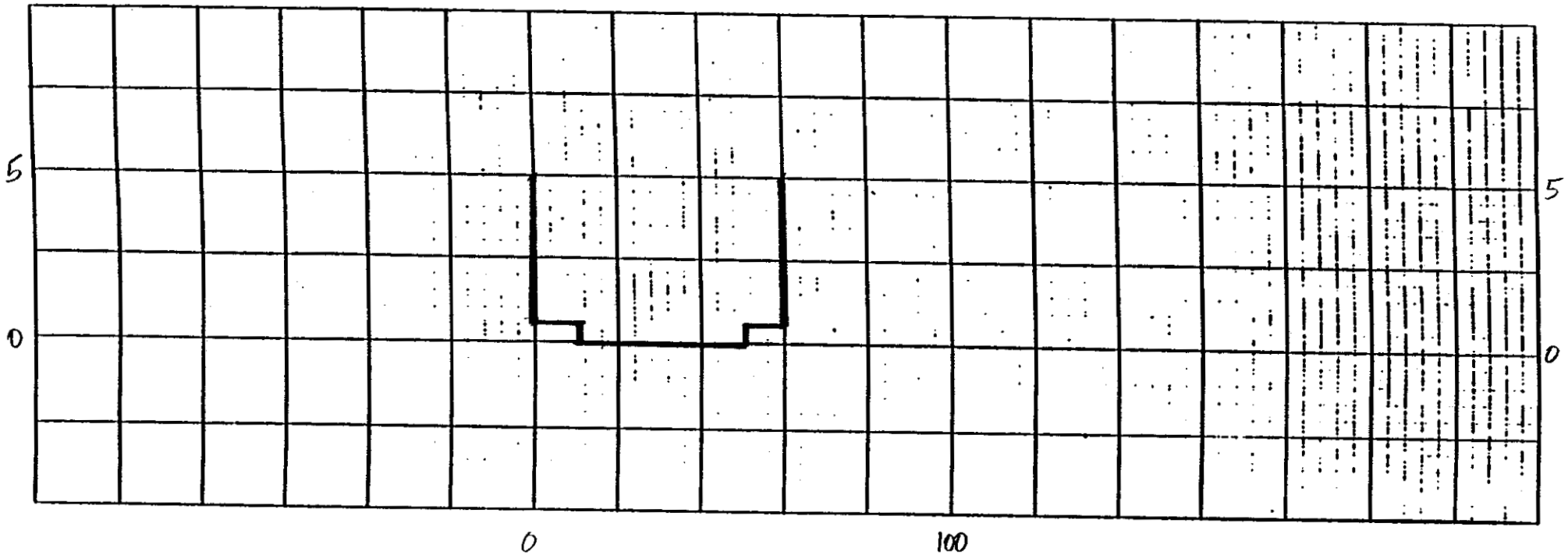


RD				5280	0.0042	(RM260 – Existing & Future)		
				6440	0.0050	(RM261 – Existing)		
RC	0.030	0.020	0.030	5840	0.0048	(RM261 - Future)		
RX	0	0	8	8	80	80	88	88
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM257A

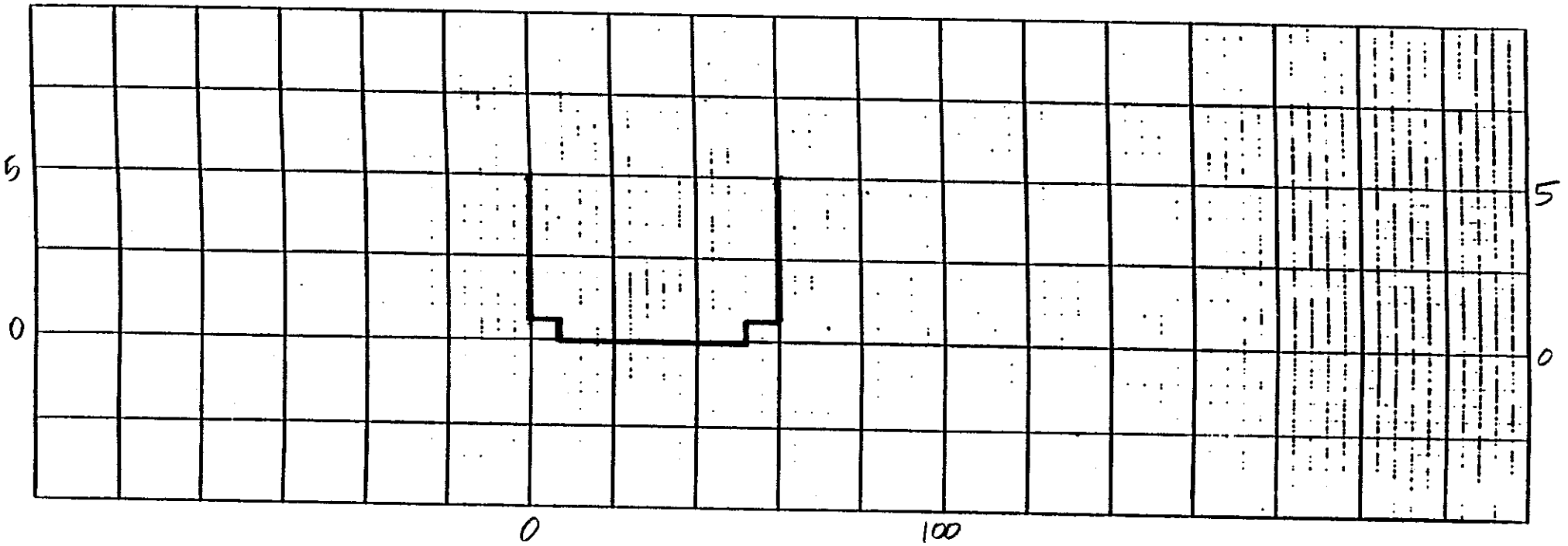


RD								
RC	0.030	0.020	0.030	8400	0.0039			
RX	0	0	10	10	50	50	60	60
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM257B

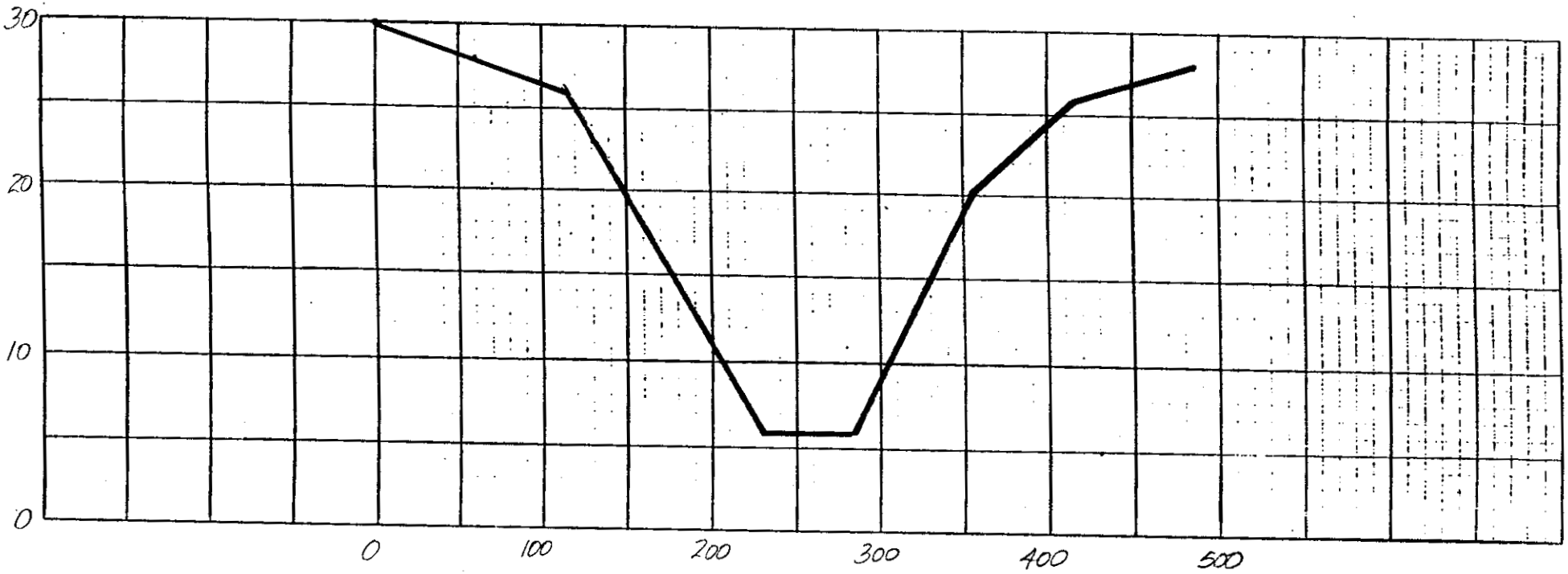


RD								
RC	0.030	0.020	0.030	5640	0.0037			
RX	0	0	7	7	53	53	60	60
RY	5	0.5	0.5	0	0	0.5	0.5	5

CALCULATED BY: DLB

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM262 (EXISTING & FUTURE)

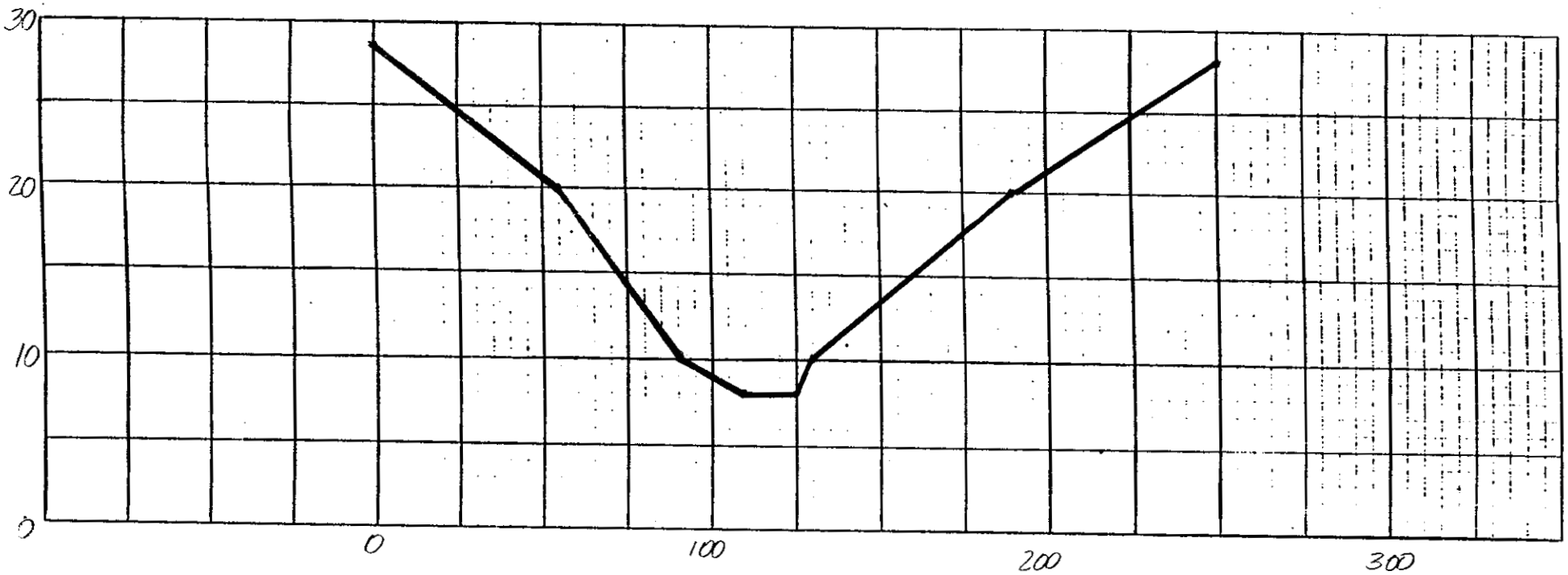


RD				9040	0.0024 (RM262 - Existing)			
RC	0.045	0.040	0.045	9440	0.0030 (RM262- Future)			
RX	0	60	115	230	285	355	415	485
RY	30	28	26	6	6	20	26	28

CALCULATED BY: DLB 7/1/92

COMPUTATION SHEET

ROUTE IDENTIFICATION NUMBER RM 214 C (EXISTING & FUTURE)



R								
RC	0.05	0.04	0.05	3200	0.0031			
RX	0	55	90	110	125	130	190	250
RY	28	20	10	8	8	10	20	28

CALCULATED BY: DLB 7/1/92

SECTION V

Divert & Onsite Retention Parameters

Onsite Retention Calculations
(Existing Condition)

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 7-16-92	Job No. 0146
	Checked by	Date	Sheet No.
	For Onsite Retention Calculations – Existing		

EXISTING CONDITIONS

PRECIPITATION CALCULATIONS FOR ONSITE RETENTION

Location: Cave Creek Watershed (specifically, 12th Street and Bell Road)
T4N R3E, SEC. 4

Determine 10-Year 2-Hour Precipitation Depth.

First, compute the 100-year & 2-Year, 1-hour depths as follows:

$$Y_2 = -0.011 + 0.942(X_1)(X_1/X_2)$$

$$Y_{100} = 0.494 + 0.755(X_3)(X_3/X_4)$$

where:

Y_2 = 2-Yr., 1-Hr. estimated value
Y_{100} = 100-Yr., 1-Hr. estimated value
X_1 = 2-Yr., 6-Hr. value from precipitation-frequency maps
X_2 = 2-Yr., 24-Hr. " " " " "
X_3 = 100-Yr., 6-Hr. " " " " "
X_4 = 100-Yr., 24-Hr. value from precipitation-frequency maps

From Figures 2.2, 2.7, 2.8 & 2.13,

$X_1 = 1.25$ in. $X_2 = 1.60$ in. $X_3 = 3.25$ in. $X_4 = 4.10$ in.

$$Y_2 = -0.011 + 0.942(1.25)(1.25/1.60) = 0.91 \text{ in.}$$

$$Y_{100} = 0.494 + 0.755(3.25)(3.25/4.10) = 2.44 \text{ in.}$$

Next, the 2-Year and 100-Year, 2 Hour depths are calculated as follows:

$$\text{2-Year, 2-Hour Depth} = 0.341(\text{2-Year, 6-Hour}) + 0.659(\text{2-Year, 1-Hour})$$
$$= 0.341(1.25) + 0.659(0.91)$$
$$= 1.03 \text{ in.}$$

$$\text{100-Year, 2-Hour Depth} = 0.341(\text{100-Year, 6-Hour}) + 0.659(\text{100-Year, 1-Hour})$$
$$= 0.341(3.25) + 0.659(2.44)$$
$$= 2.72 \text{ in.}$$

From Figure 2.14, 10-Year, 2-Hour Depth = 1.73 in.

Total Watershed Area = 36.1 Sq. Mi. → Areal Reduction = 0.90

$\therefore$ 10-Year, 2Hour Depth = 1.56 in.

EXISTING CONDITIONS

VOLUME, $V = C\left(\frac{P}{12}\right)A = 0.13\,CA$ in Acre-Feet 8-25-92

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
220	6.74	13.47	20.18	6.727	24.71	MF RES	0.55	1.77
222	2.34	4.67	6.98	2.327	8.55	LIBRARY	0.65	0.72
	3.41	6.82	10.24	3.413	12.54	COMM.	0.80	1.30
	0.87	1.72	2.58	0.86	3.16	COMM.	0.80	0.33
							$\Sigma =$	2.35
223	4.45	8.89	13.33	4.443	16.32	MF RES	0.55	1.17
	0.96	1.94	2.91	0.97	3.56	COMM	0.80	0.37
	0.20	0.41	0.63	0.21	0.77	COMM	0.80	0.08
	0.72	1.44	2.16	0.72	2.64	COMM	0.80	0.27
	0.87	1.73	2.59	0.863	3.17	COMM	0.80	0.33
							$\Sigma =$	2.22
224	1.14	2.28	3.41	1.137	4.18	COMM	0.80	0.43
	1.19	2.36	3.53	1.177	4.32	MF RES - APT.	0.60	0.34
	6.40	12.81	19.19	6.397	23.50	MF RES	0.55	1.68
	2.45	4.88	7.30	2.433	8.94	MF RES - APT.	0.60	0.70
							$\Sigma =$	3.15
225	0.99	1.96	2.94	0.98	3.60	MF RES - APT.	0.60	0.28
	0.32	0.63	0.94	0.313	1.15	COMM	0.80	0.12
	1.40	2.80	4.20	1.40	5.14	MF RES - APT.	0.60	0.40
	0.93	1.85	2.77	0.923	3.39	MF RES - APT.	0.60	0.26
	1.77	3.52	5.28	1.76	6.46	MF RES - APT.	0.60	0.50
	2.00	4.02	6.04	2.013	7.40	MF RES - APT.	0.60	0.58

EXISTING CONDITIONS

8-25-92

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
225	0.98	1.95	2.93	0.977	3.59	MF RES - APT.	0.60	0.28
	0.77	1.53	2.29	0.763	2.80	MF RES - APT.	0.60	0.22
							Σ =	2.64
228	2.50	5.00	7.48	2.493	9.16	COMM	0.80	0.95
232	5.82	11.63	17.45	5.817	21.37	MED RES	0.50	1.39
	0.85	1.68	2.50	0.833	3.06	PSC	0.80	0.32
	1.03	2.07	3.10	1.033	3.80	COMM	0.80	0.40
							Σ =	2.11
234	1.10	2.22	3.34	1.113	4.09	COMM	0.80	0.43
	0.37	0.75	1.12	0.373	1.37	COMM	0.80	0.14
							Σ =	0.57
236	0.79	1.57	2.33	0.777	2.85	MF RES	0.55	0.20
	2.51	5.02	7.54	2.513	9.23	MF RES - APT.	0.60	0.72
	2.50	4.40	6.60	2.20	8.08	COMM	0.80	0.84
							Σ =	1.76
238	2.92	5.82	8.73	2.91	10.69	MF RES-APT	0.60	0.83
240	3.25	6.49	9.73	3.243	11.91	MF RES-	0.55	0.85
	4.05	8.10	12.14	4.047	14.86	COMM	0.80	1.55
							Σ =	2.40

EXISTING CONDITIONS

8-25-92

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
241	2.52	5.03	7.53	2.51	9.22	PSC	0.80	0.96
	2.48	4.97	7.45	2.483	9.12	MF RES	0.55	0.65
	1.76	3.53	5.30	1.767	6.49	MF RES - APT	0.60	0.51
	5.06	10.12	15.18	5.06	18.59	MF RES - APT	0.60	1.45
	1.66	3.29	4.90	1.633	18.00	MF RES - APT	0.60	1.40
	4.06	8.12	12.16	4.053	14.89	COMM	0.80	1.55
	7.62	15.26	22.89	7.63	28.02	INDUST.	0.65	2.37
	7.60	15.23	22.86	7.62	27.99	MF RES	0.55	2.00
							Σ =	10.89
242	2.21	4.41	6.61	2.203	8.09	COMM	0.80	0.84
	0.78	1.56	2.35	0.783	2.88	COMM	0.80	0.30
	4.49	8.96	13.44	4.48	16.46	PSC	0.80	1.71
	7.59	15.13	22.73	7.577	27.83	PSC	0.80	2.89
	3.44	6.90	10.35	3.45	12.67	PSC	0.80	1.32
							Σ =	7.06
244	4.97	9.96	14.92	4.973	18.27	COMM	0.80	1.90
245	2.43	4.86	7.28	2.427	8.91	CHURCH	0.60	0.69
339	2.19	4.36	6.54	2.18	8.01	INDUST	0.65	0.68
	1.67	3.33	4.99	1.663	6.11	INDUST	0.65	0.52
	3.10	6.21	9.31	3.103	11.40	INDUST	0.65	0.96
	0.26	0.51	0.77	0.257	0.94	INDUST	0.65	0.08
	0.69	1.37	2.03	0.677	2.49	INDUST	0.65	0.21

EXISTING CONDITIONS

8-25-92

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
339	0.80	1.56	2.33	0.777	2.85	INDUST	0.65	0.24
							Σ =	2.69
257	2.80	5.61	8.44	2.813	10.33	MF RES - APT	0.60	0.81
	7.63	15.22	22.84	7.613	27.96	MF RES - APT	0.60	2.18
							Σ =	2.99
260	2.07	4.10	6.18	2.06	7.57	MF RES - APT	0.60	0.59
	1.73	3.47	5.20	1.733	6.37	CHURCH	0.60	0.50
	4.07	8.14	12.20	4.067	14.94	MF-RES-APT	0.60	1.17
	2.78	5.55	8.30	2.767	10.16	PSC	0.80	1.06
							Σ =	3.32
261	0.55	1.10	1.62	0.54	1.98	MF RES - APT	0.60	0.15
	4.50	9.01	13.49	4.497	16.52	MF RES - APT	0.60	1.29
	3.48	6.95	10.43	3.477	12.77	MF RES - APT	0.60	1.00
	1.80	3.60	5.40	1.80	6.61	MF RES	0.55	0.47
	1.44	2.88	4.32	1.44	5.29	COMM	0.80	0.55
	3.50	7.00	10.50	3.50	12.86	MF RES - APT	0.60	1.00
	0.73	1.47	2.20	0.733	2.69	COMM	0.80	0.28
							Σ =	4.74
262	2.50	5.00	7.50	2.50	9.18	COMM	0.80	0.95
	1.27	2.55	3.82	1.273	4.68	COMM	0.80	0.49
							Σ =	1.44

EXISTING CONDITIONS

8-25-92

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
263	0.48	0.96	1.44	0.48	1.76	CHURCH	0.50	0.11
	7.50	15.03	22.55	7.517	27.61	MF RES - APT	0.60	2.15
	8.40	16.79	25.13	8.377	30.77	MF RES - APT	0.60	2.40
	3.77	7.50	11.26	3.753	13.79	MF RES - APT	0.60	1.08
							Σ =	5.74
264	2.02	4.00	6.00	2.00	7.35	MF RES - APT	0.60	0.57
	1.49	2.98	4.48	1.493	5.49	COMM	0.60	0.43
							Σ =	1.00
265	7.92	15.80	23.70	7.90	29.02	MF RES - APT	0.60	2.26
	0.96	1.93	2.90	0.967	3.55	COMM	0.80	0.37
	2.84	5.68	8.52	2.84	10.43	CHURCH	0.60	0.81
	3.95	7.90	11.89	3.963	14.56	INDUST - Heavy	0.75	1.42
	20.30	40.60	60.93	20.31	74.60	INDUST - Light	0.65	6.30
	6.33	12.66	19.00	6.333	23.26	INDUST - Light.	0.65	1.97
							Σ =	13.13
202	0.40	0.80	1.20	0.40	1.47	COMM	0.80	0.15
	0.40	0.79	1.18	0.393	1.44	COMM	0.80	0.15
	0.69	1.37	2.04	0.68	2.50	COMM	0.80	0.26
							Σ =	0.56
205	1.22	2.42	3.64	1.213	4.46	PSC	0.80	0.46

EXISTING CONDITIONS

8-25-92

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
216	1.40	2.80	4.20	1.40	5.14	PSC	0.80	0.53
	3.79	7.60	11.42	3.807	13.98	MED RES	0.50	0.91
							Σ =	1.44
211	1.58	3.14	4.70	1.567	5.75	COMM	0.80	0.60
209	1.32	2.63	3.94	1.313	4.82	CHURCH	0.80	0.50
	10.57	21.18	31.76	10.587	38.88	MF RES	0.55	2.78
							Σ =	3.28
214	1.73	3.47	5.19	1.73	6.35	MF RES-APT	0.60	0.50
	1.07	2.15	3.22	1.073	3.94	COMM	0.80	0.41
							Σ =	0.91
215	2.35	4.72	7.07	2.357	8.66	COMM	0.80	0.90

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 8-13-92	Job No. 0146
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	For		

POINT PRECIPITATION VALUES FOR CAVE CREEK WATERSHED (inches)

RETURN PERIOD (Years)	STORM DURATION (Hours)	
	6	24
2	1.25	1.60
10	2.00	2.35
100	3.25	4.10

LOCATION: T4N R3E, SEC. 4

Cave Creek Watershed Area = 36.1 sq. mi.

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 1-27-93	Job No. 0146
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	For EXISTING CONDITIONS		

CONTRIBUTING AREA – 2-YEAR STORM

1. Undevelop (Vacant) Areas contribute 100%.
2. Onsite Retention Areas are Noncontributing.
3. Parks & Golf Courses are Noncontributing.
4. Gravel Pits and Landfills are Noncontributing.

Sub-Basin 200 Area = 0.580 − 0.027 = 0.553 mi.²

202 Area = 0.608 − 0.008 = 0.600 mi²

203 Area = 0.432 − 0.045 − 0.042 = 0.345 mi²

204 Area = 0.504 − 0.026 = 0.478 mi.²

Sub-Basin 205 Area = 0.323 − 0.007 − 0.046 = 0.270 mi.²

206 Area = 0.677 − 0.120 = 0.557 mi.²

207 Area = 0.575 mi.²

208 Area = 0.344 − 0.149 = 0.195 mi.²

209 Area = 0.391 − 0.061 − 0.008 − 0.005 − 0.023
= 0.294 mi.²

Sub-Basin 210 Area = 0.828 − 0.023 = 0.805 mi.²

211 Area = 0.234 − 0.009 − 0.001 = 0.224 mi.²

212 Area = 0.397 mi.²

213 Area = 0.218 mi.²

214 Area = 0.477 − 0.010 − 0.061 − 0.006 − 0.020
= 0.380 mi.²

Sub-Basin 215 Area = 0.269 − 0.014 − 0.009 = 0.246 mi²

216 Area = 0.437 − 0.022 − 0.008 = 0.407 mi.²

220 Area = 0.244 − 0.040 − 0.057 = 0.147 mi.²

Sub-Basin 221 Area = 0.753 − 0.020 − 0.148 − 0.084
= 0.501 mi.²

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 1-27-93	Job No. 0146
	Checked by	Date	Sheet No. 2
	For EXISTING CONDITIONS		

CONTRIBUTING AREA - 2-YEAR STORM (CONT'D)

Sub-Basin 222 Area = 0.343 - 0.044 = 0.299 mi.^{2}

223 Area = 0.750 - 0.026 - 0.053 - 0.016 - 0.033
= 0.622 mi.^{2}

224 Area = 0.486 - 0.057 - 0.007 = 0.422 mi.^{2}

225 Area = 0.303 - 0.050 - 0.017 = 0.236 mi.^{2}

Sub-Basin 226 Area = 0.358 mi.^{2}

227 Area = 0.347 mi.^{2}

228 Area = 0.218 - 0.005 = 0.213 mi.^{2}

229 Area = 0.635 - 0.033 - 0.033 = 0.569 mi.^{2}

Sub-Basin 230 Area = 0.566 mi.^{2}

231 Area = 1.334 - 0.124 = 1.210 mi.^{2}

232 Area = 1.260 - 0.033 - 0.011 = 1.216 mi.^{2}

233 Area = 0.238 mi.^{2}

Sub-Basin 234 Area = 0.381 - 0.009 - 0.013 = 0.359 mi.^{2}

235 Area = 0.354 mi.^{2}

236 Area = 0.343 - 0.019 - 0.013 - 0.032
= 0.279 mi.^{2}

237 Area = 0.384 mi.^{2}

Sub-Basin 238 Area = 0.506 - 0.017 - 0.120 = 0.369 mi.^{2}

239 Area = 0.674 mi.^{2}

240 Area = 0.843 - 0.018 - 0.027 = 0.798 mi.^{2}

Sub-Basin 241 Area = 0.983 - 0.125 - 0.042 - 0.023 - 0.014
= 0.779 mi.^{2}

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 1-27-93	Job No. 0146
	Checked by	Date	Sheet No. 3
	For EXISTING CONDITIONS		

CONTRIBUTING AREA - 2-YEAR STORM (CONT'D)

Sub-Basin 242 Area = 0.546 - 0.017 - 0.083 = 0.446 mi.^{2}

243 Area = 0.434 mi.^{2}

244 Area = 0.349 - 0.034 - 0.004 = 0.311 mi.^{2}

245 Area = 0.506 - 0.011 - 0.034 = 0.461 mi.^{2}

Sub-Basin 246 Area = 0.398 mi.^{2}

250 Area = 2.433 - 0.037 = 2.396 mi.^{2}

251 Area = 1.719 mi.^{2}

252 Area = 1.028 - 0.170 = 0.858 mi.^{2}

Sub-Basin 253 Area = 1.275 - 0.162 - 0.185 = 0.928 mi.^{2}

254 Area = 0.299 - 0.059 - 0.066 = 0.174 mi.^{2}

255 Area = 0.514 - 0.035 - 0.023 (SCH) = 0.456 mi.^{2}

256 Area = 0.140 mi.^{2}

Sub-Basin 257 Area = 1.076 - 0.060 - 0.101 - 0.053 = 0.862 mi.^{2}

258 Area = 0.440 mi.^{2}

260 Area = 0.662 - 0.010 - 0.036 - 0.016 = 0.600 mi.^{2}

261 Area = 0.617 - 0.080 - 0.012 = 0.525 mi.^{2}

Sub-Basin 262 Area = 0.685 - 0.018 - 0.022 - 0.115 = 0.530 mi.^{2}

263 Area = 0.992 - 0.003 - 0.113 - 0.323 = 0.553 mi.^{2}

264 Area = 0.479 - 0.024 (SCH) - 0.011 - 0.009 - 0.024 (PARK) = 0.411 mi.^{2}

265 Area = 0.876 - 0.069 - 0.176 - 0.006 - 0.090 = 0.535 mi.^{2}

Sub-Basin 266 Area = 0.217 - 0.025 (PARK) = 0.192 mi.^{2}

336 Area = 0.472 mi.^{2}

Sub-Basin 339 Area = 0.350 - 0.050 = 0.300 mi.^{2}

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 8-24-92	Job No. 0146
	Checked by	Date	Sheet No. 1
	For EXISTING CONDITIONS		

CONTRIBUTING AREA - 10 YEAR STORM

1. Undeveloped (vacant) areas contribute 100%.
2. Land Use impervious and pervious areas contribute 100%.
3. Parks, Golf courses & school areas contribute 100%, unless sufficient retention requires otherwise.
4. Gravel Pits are non-contributing.

Sub-Basin 200 Area = 0.580 sq. mi.

Sub-Basin 202 Area = 0.608 sq. mi.

Sub-Basin 203 Area = 0.432 sq. mi.

Sub-Basin 204 Area = 0.504 sq. mi.

Sub-Basin 205 Area = 0.323 sq. mi.

Sub-Basin 206 Area = 0.677 sq. mi.

Sub-Basin 207 Area = 0.575 sq. mi.

Sub-Basin 208 Area = 0.344 sq. mi.

Sub-Basin 209 Area = 0.391 − 0.023 (SCHOOL) = 0.368 sq. mi.

Sub-Basin 210 Area = 0.828 sq. mi.

Sub-Basin 211 Area = 0.234 sq. mi.

Sub-Basin 212 Area = 0.397 sq. mi.

Sub-Basin 213 Area = 0.218 sq. mi.

Sub-Basin 214 Area = 0.477 sq. mi.

Sub-Basin 215 Area = 0.269 sq. mi.

Sub-Basin 220 Area = 0.244 sq. mi.

Sub-Basin 221 Area = 0.753 − 0.005 (man-made pond) = 0.748 sq. mi.

Sub-Basin 222 Area = 0.343 sq. mi.

Sub-Basin 216 Area = 0.437 sq. mi.

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 8-25-92	Job No. 0146
	Checked by	Date	Sheet No. 2
	For EXISTING CONDITIONS		

CONTRIBUTING AREA - 10 YEAR STORM (CONT'D)

Sub-Basin 223 Area = 0.750 sq. mi.

Sub-Basin 224 Area = 0.486 sq. mi.

Sub-Basin 225 Area = 0.303 sq. mi.

Sub-Basin 226 Area = 0.358 sq. mi.

Sub-Basin 227 Area = 0.347 sq. mi.

Sub-Basin 228 Area = 0.218 sq. mi.

Sub-Basin 229 Area = 0.635 sq. mi.

Sub-Basin 230 Area = 0.566 sq. mi.

Sub-Basin 231 Area = 1.334 − 0.124 (Water Treatment Plant) = 1.210 sq. mi.

Sub-Basin 232 Area = 1.260 sq. mi.

Sub-Basin 233 Area = 0.238 sq. mi.

Sub-Basin 234 Area = 0.381 sq. mi.

Sub-Basin 235 Area = 0.354 sq. mi.

Sub-Basin 236 Area = 0.343 sq. mi.

Sub-Basin 237 Area = 0.384 sq. mi.

Sub-Basin 238 Area = 0.506 − 0.034 (SCHOOL) = 0.472 sq. mi.

Sub-Basin 239 Area = 0.674 sq. mi.

Sub-Basin 240 Area = 0.843 sq. mi.

Sub-Basin 241 Area = 0.983 sq. mi.

Sub-Basin 242 Area = 0.546 sq. mi.

Sub-Basin 243 Area = 0.434 sq. mi.

Sub-Basin 244 Area = 0.349 sq. mi.

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 9-25-92	Job No. 0146
	Checked by	Date	Sheet No. 3
	For EXISTING CONDITIONS		

CONTRIBUTING AREA - 10 YEAR STORM (CONT'D)

Sub-Basin 245 Area = 0.506 sq.mi.

Sub-Basin 246 Area = 0.398 sq.mi.

Sub-Basin 250 Area = 2.433 - 0.037 = 2.396 sq.mi.

Sub-Basin 251 Area = 1.719 sq.mi.

Sub-Basin 252 Area = 1.028 - 0.170 = 0.858 sq.mi.

Sub-Basin 253 Area = 1.275 - 0.162 - 0.185 = 0.928 sq.mi.
(Gravel Pits)

Sub-Basin 254 Area = 0.299 - 0.059 - 0.066 = 0.174 sq.mi.
(Gravel Pits)

Sub-Basin 255 Area = 0.514 - 0.023 = 0.491 sq.mi.
(SCHOOL)

Sub-Basin 256 Area = 0.140 sq.mi.

Sub-Basin 257 Area = 1.076 - 0.153 = 0.921 sq.mi.

Sub-Basin 258 Area = 0.440 sq.mi.

Sub-Basin 260 Area = 0.662 sq.mi.

Sub-Basin 261 Area = 0.617 sq.mi.

Sub-Basin 262 Area = 0.695 - 0.078 - 0.018 = 0.589 sq.mi.

Sub-Basin 263 Area = 0.992 sq.mi.

Sub-Basin 264 Area = 0.479 sq.mi.

Sub-Basin 265 Area = 0.876 sq.mi.

Sub-Basin 266 Area = 0.217 sq.mi.

Sub-Basin 336 Area = 0.497 sq.mi.

Sub-Basin 339 Area = 0.350 sq.mi.

Onsite Retention Calculations
(Future Condition)

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 10-23-92	Job No. 0146
	Checked by	Date	Sheet No.
	For		

CAVE CREEK WATERSHED - FUTURE CONDITIONS

Onsite Retention Calculations

X_1 = 2-Yr., 6-Hr. precip. value = 1.25"
X_2 = 2-Yr., 24-Hr. precip. value = 1.60"
X_3 = 100-Yr., 6-Hr. precip. value = 3.25"
X_4 = 100-Yr., 24-Hr. precip. value = 4.10"

Y_2 = 2-Yr., 1-Hr. Est. precip. value $= -0.011 + 0.942(X_1)(X_1/X_2)$
$= -0.011 + 0.942(1.25)(1.25/1.60)$
$= 0.91''$

Y_{100} = 100-Yr., 1-Hr. Est. precip. value $= 0.494 + 0.755(X_3)(X_3/X_4)$
$= 0.494 + 0.755(3.25)(3.25/4.10)$
$= 2.44''$

$\therefore$ 2-Yr., 2-Hr. Depth $= 0.341(1.25) + 0.659(0.91) = \underline{\underline{1.03''}}$

100-Yr., 2-Hr. Depth $= 0.341(3.25) + 0.659(2.44) = \underline{\underline{2.72''}}$

From Figure 2.14, 10-Yr., 2-Hr. Depth = 1.73"

For 36.1 sq. mi. watershed area, Areal Reduction = 0.90

$\therefore$ 10-Yr., 2-Hr. Depth = 1.56"
100-Yr., 2-Hr. Depth = 2.45"

For 10-Yr., 2-Hr. duration storm volume,

$$V_{10} = C\left(\frac{P}{12}\right)A = 0.13CA \quad (\text{Ac-Ft.})$$

For 100-Yr., 2-Hr. duration storm volume,

$$V_{100} = C\left(\frac{P}{12}\right)A = 0.204\,CA \quad (\text{Ac-Ft.})$$

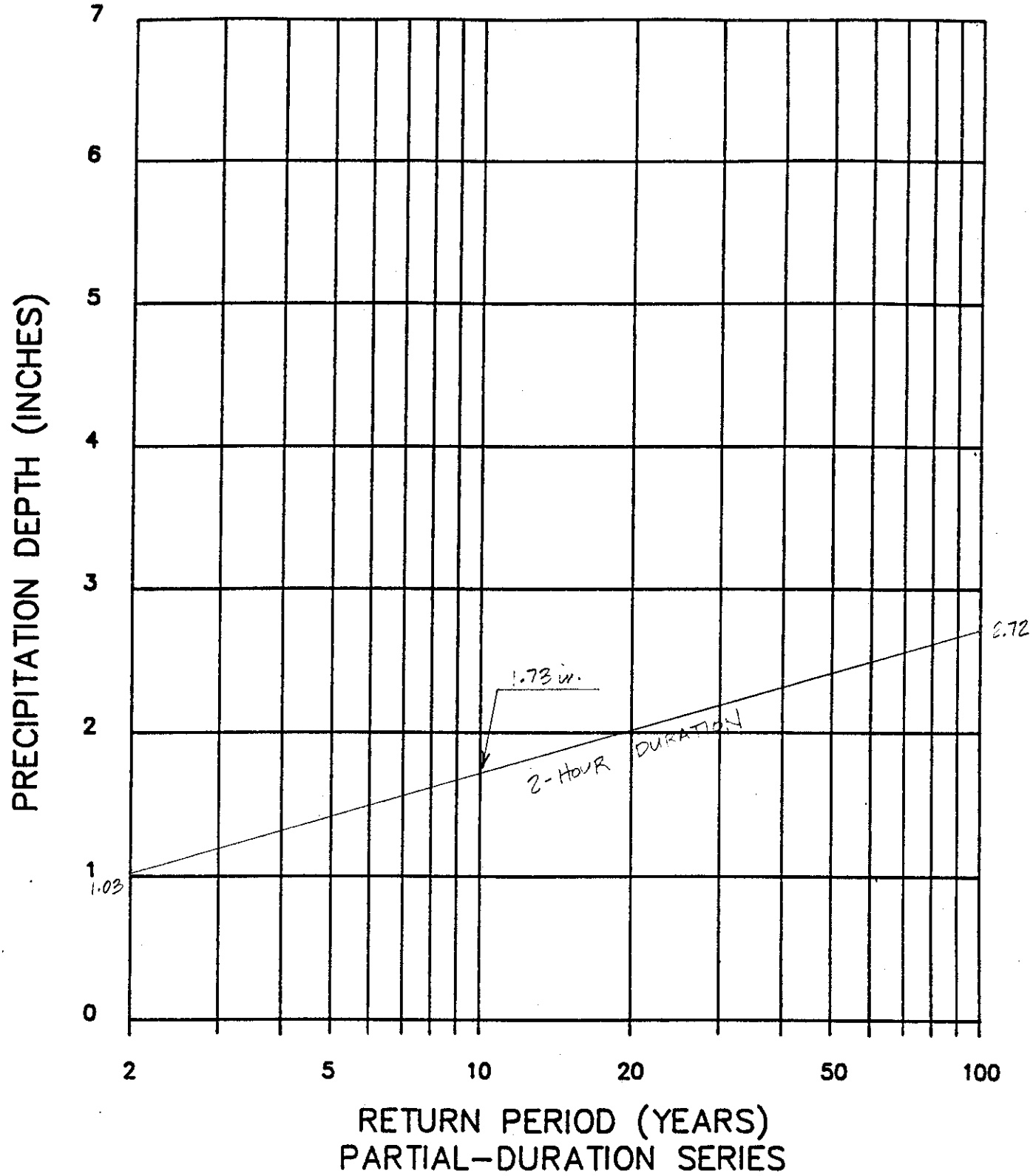

Figure 2.14
Precipitation Depth versus Return Period for Partial-Duration Series

CAVE CREEK WATERSHED
ONSITE RETENTION CALCS.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
202					1.47	COMM *	0.80	0.15
					1.44	COMM *	0.80	0.15
					2.50	COMM *	0.80	0.26
					2.57	MF RES	0.60	0.31
							Σ =	0.87
205					4.46	PSC *	0.80	0.46
					13.09	COMM	0.80	2.14
							Σ =	2.60
209					4.82	CHURCH *	0.80	0.50
					38.88	MF RES *	0.55	2.78
							Σ =	3.28
211					5.75	COMM *	0.80	0.60
214					6.35	MF RES *	0.60	0.50
					3.94	COMM *	0.80	0.41
					2.76	COMM	0.80	0.45
					9.97	COMM	0.80	1.63
					7.19	MF RES	0.60	0.88
							Σ =	3.87
215					8.66	COMM *	0.80	0.90

* Calcs. based on 10-Year 2-Hour duration storm.

ONSITE RETENTION CALCS.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
216					5.14	PSC *	0.80	0.53
					13.98	MED RES *	0.50	0.91
					4.89	COMM	0.80	0.80
							Σ =	2.24
220					24.71	MF RES *	0.55	1.77
					8.18	INDUST	0.65	1.08
					13.06	INDUST	0.65	1.73
							Σ =	4.58
221					22.90	INDUST	0.65	3.04
					39.52	INDUST	0.65	5.24
							Σ =	8.28
222					8.55	LIBRARY *	0.65	0.72
					12.54	COMM *	0.80	1.30
					3.16	COMM *	0.80	0.33
					12.47	COMM	0.80	2.04
							Σ =	4.39
223					3.56	COMM *	0.80	0.37
					0.77	COMM *	0.80	0.08
					0.70	COMM	0.80	0.11
					5.85	MF RES	0.60	0.72
							Σ =	1.28

* Calcs. based on 10-Year 2-Hour duration storm.

ONSITE RETENTION CALC'S.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
224					4.18	COMM. *	0.80	0.43
					4.32	MF RES *	0.60	0.34
					23.50	MF RES *	0.55	1.68
					8.94	MF RES *	0.60	0.70
					2.64	COMM *	0.80	0.27
					3.17	COMM *	0.80	0.33
					4.68	COMM	0.80	0.76
					36.18	MF RES	0.60	4.43
							Σ =	8.94
225					3.60	MF RES *	0.60	0.28
					1.15	COMM *	0.80	0.12
					5.14	MF RES *	0.60	0.40
					3.39	MF RES *	0.60	0.26
					6.46	MF RES *	0.60	0.50
					7.40	MF RES *	0.60	0.58
					3.59	MF RES *	0.60	0.28
					2.80	MF RES *	0.60	0.22
					5.89	COMM.	0.80	0.96
					37.62	MF RES.	0.60	4.61
							Σ =	8.21
226					3.40	MF RES *	0.60	0.27
					11.31	COMM.	0.80	1.85
					11.94	MF RES	0.60	1.46
							Σ =	3.58

* Calcs. based on 10-Year 2-Hour duration storm.

ONSITE RETENTION CALCS.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
227					77.17	INDUST	0.65	10.23
228					109.37	INDUST	0.65	14.50
229					204.17	INDUST	0.65	27.07
230					24.77	COMM	0.80	4.04
231					26.93	COMM	0.80	4.40
					18.71	MF RES	0.60	2.29
							Σ =	6.69
232					21.37	MED RES *	0.50	1.39
					3.06	PSC *	0.80	0.32
					3.80	COMM *	0.80	0.40
					133.10	MF RES	0.60	16.29
					47.15	COMM	0.80	7.69
					96.51	INDUST	0.65	12.80
							Σ =	38.89
233					16.32	MF RES *	0.55	1.17
					8.83	COMM	0.80	1.44
					11.03	PSC	0.80	1.80
					12.91	MF RES	0.60	1.58
							Σ =	5.99

* Calcs. based on 10-Year 2-Hour duration storm.

ONSITE RETENTION CALCS.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
234					8.31	COMM	0.80	1.36
					2.71	MF RES	0.60	0.33
							Σ =	1.69
235					9.16	COMM *	0.80	0.95
					12.23	COMM	0.80	2.00
							Σ =	2.95
236					5.90	COMM	0.80	0.96
238					10.69	MF RES *	0.60	0.83
					33.28	MF RES	0.60	4.07
							Σ =	4.90
239					4.09	COMM *	0.80	0.43
					1.37	COMM *	0.80	0.14
					2.85	MF RES *	0.55	0.20
					9.23	MF RES *	0.60	0.72
					33.47	COMM	0.80	5.47
					4.08	MF RES	0.60	0.50
							Σ =	7.46
241					8.08	COMM *	0.80	0.84
					17.68	INDUST	0.65	2.34
							Σ =	3.18

* Calcs. based on 10-Year 2-Hour duration storm.

ONSITE RETENTION CALCS.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
244					9.12	MF RES *	0.55	0.65
					6.49	MF RES *	0.60	0.51
					18.59	MF RES *	0.60	1.45
					27.99	MF RES *	0.55	2.00
					50.92	MF RES	0.60	6.23
							Σ =	10.84
245					11.91	MF RES *	0.55	0.85
					14.86	COMM *	0.80	1.55
					21.19	COMM	0.80	3.46
							Σ =	5.86
246					9.22	PSC *	0.80	0.96
					18.00	MF RES *	0.60	1.40
					14.89	COMM *	0.80	1.55
					28.02	INDUST *	0.65	2.37
					8.09	COMM *	0.80	0.84
					2.88	COMM *	0.80	0.30
					16.46	PSC *	0.80	1.71
					3.84	COMM	0.80	0.63
					22.23	MF RES	0.60	2.72
							Σ =	12.48

* Calcs. based on 10-Year 2-Hour duration storm.

ONSITE RETENTION CALCS.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
248					27.83	PSC *	0.80	2.89
					12.67	PSC *	0.80	1.32
					18.27	COMM *	0.80	1.90
					15.81	COMM	0.80	2.58
					19.58	MF RES	0.60	2.40
							Σ =	11.09
249					8.91	CHURCH *	0.60	0.69
252					217.17	INDUST	0.65	28.80
253					56.06	MF RES	0.60	6.86
					333.73	INDUST	0.65	44.25
					34.15	COMM.	0.80	5.57
							Σ =	56.68
254					40.72	MF RES	0.60	4.98
					4.91	INDUST	0.65	0.65
							Σ =	5.63
255					64.44	MF RES	0.60	7.89
					79.30	INDUST	0.65	10.52
					17.16	COMM	0.80	2.80
							Σ =	21.21

* Calcs. based on 10-Year 2-Hour duration storm.

ONSITE RETENTION CALCS.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
256					2.46	COMM	0.80	0.40
					33.80	MF RES	0.60	4.14
							Σ =	4.54
257					10.14	MF RES	0.60	1.24
258					10.33	MF RES*	0.60	0.81
					27.96	MF RES*	0.60	2.18
					38.56	MF RES	0.60	4.72
							Σ =	7.71
259					19.42	COMM.	0.80	3.17
260					7.57	MF RES *	0.60	0.59
					6.37	CHURCH*	0.60	0.50
					14.94	MF RES*	0.60	1.17
					10.16	PSC*	0.80	1.06
					15.74	MF RES	0.60	1.93
							Σ =	5.25
261					44.13	MF RES*	0.60	3.44
					6.61	MF RES*	0.55	0.47
					7.98	COMM*	0.80	0.83
					22.91	MF RES	0.60	2.81
					11.24	COMM	0.80	1.83
							Σ =	9.38

* Calcs based on 10-Year 2-Hour duration storm

ONSITE RETENTION CALCS.
(FUTURE CONDITION)

Sub-Basin	Planimetered Area (in^2) ①	②	③	Avg.	Area (Ac.)	Land Use	C	Vol. (Ac-Ft.)
262					9.18	COMM*	0.80	0.95
					4.68	COMM*	0.80	0.49
					17.50	COMM	0.80	2.86
							Σ =	4.30
263					1.76	CHURCH *	0.50	0.11
					72.17	MF RES *	0.60	5.63
					2.37	COMM	0.80	0.39
					130.15	MF RES	0.60	15.94
							Σ =	22.07
264					7.35	MF RES *	0.60	0.57
					5.49	MFRES *	0.60	0.43
							Σ =	1.00
265					29.02	MF RES *	0.60	2.26
					3.55	COMM *	0.80	0.37
					10.43	CHURCH *	0.60	0.81
					14.56	INDUST *	0.75	1.42
					74.60	INDUST *	0.65	6.30
					23.26	INDUST *	0.65	1.97
					3.24	INDUST	0.65	0.43
					5.73	MF RES	0.60	0.70
							Σ =	14.26
266					44.66	INDUST	0.65	5.93

* Calcs based on 10-Year 2-Hour duration storm.

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 2-3-93	Job No. 0146
	Checked by	Date	Sheet No. 1
	For FUTURE CONDITIONS		

CONTRIBUTING AREA - 2-YEAR STORM

1. Undevelop (Vacant) Areas contribute 100%.
2. Onsite Retention Areas are Noncontributing.

Sub Basin 200 Area = 0.580 - 0.004 - 0.027 = 0.549 mi.^{2}

202 Area = 0.608 - 0.004 - 0.008 = 0.596 mi.^{2}

203 Area = 0.432 - 0.045 = 0.387 mi.^{2}

204 Area = 0.504 - 0.026 = 0.478 mi.^{2}

205 Area = 0.323 - 0.027 - 0.046 = 0.250 mi^2

Sub-Basin 206 Area = 0.677 - 0.120 = 0.557 mi.^{2}

207 Area = 0.575 mi.^{2}

208 Area = 0.344 - 0.149 = 0.195 mi.^{2}

209 Area = 0.391 - 0.061 - 0.008 - 0.005 - 0.023 (SCH) = 0.294 mi.^{2}

210 Area = 0.828 - 0.023 (SCH) = 0.805 mi.^{2}

Sub-Basin 211 Area = 0.234 - 0.003 - 0.013 - 0.001 = 0.217 mi.^{2}

212 Area = 0.397 mi.^{2}

213 Area = 0.218 mi.^{2}

214 Area = 0.483 - 0.021 - 0.061 - 0.026 - 0.021 = 0.354 mi.^{2}

215 Area = 0.269 - 0.013 - 0.009 = 0.247 mi.^{2}

Sub-Basin 216 Area = 0.437 - 0.022 - 0.016 = 0.399 mi.^{2}

220 Area = 0.167 - 0.040 - 0.057 - 0.002 - (0.75)(0.039)
= 0.039 mi.^{2}

221 Area = 0.757 - 0.020 - 0.148 - 0.75(0.098)
= 0.516 mi.^{2}

Sub-Basin 222 Area = 0.343 - 0.063 = 0.280 mi.^{2}

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 2-3-93	Job No. 0146
	Checked by	Date	Sheet No. 2
	For FUTURE CONDITIONS		

CONTRIBUTING AREA - 2-YEAR STORM (CONT'D)

Sub-Basin 223 Area = 0.434 - 0.009 - 0.022 (SCH) - 0.008 = 0.395 mi.²

224 Area = 0.562 - 0.114 - 0.023 = 0.425 mi.²

225 Area = 0.303 - 0.109 - 0.017 - 0.011 = 0.166 mi.²

226 Area = 0.358 - 0.024 - 0.018 = 0.316 mi.²

227 Area = 0.318 - (0.75)(0.121) - 0.124 (Water Treatment)
= 0.103 mi.²

Sub-Basin 228 Area = 0.278 - (0.75)(0.171) = 0.150 mi.²

229 Area = 0.366 - (0.75)(0.319) = 0.127 mi.²

230 Area = 0.239 - 0.039 = 0.200 mi.²

231 Area = 0.158 - 0.042 - 0.029 = 0.087 mi.²

232 Area = 1.442 - 0.208 - 0.033 - 0.084 - (0.75)(0.151) = 1.004 mi.²

Sub-Basin 233 Area = 0.598 - 0.046 - 0.032 - 0.031 = 0.489 mi.²

234 Area = 0.283 - 0.004 - 0.013 = 0.266 mi.²

235 Area = 0.279 - 0.033 = 0.246 mi.²

236 Area = 0.635 - 0.009 - 0.033 = 0.593 mi.²

237 Area = 0.651 mi.²

Sub-Basin 238 Area = 0.904 - 0.069 - 0.099 = 0.736 mi.²

239 Area = 0.427 - 0.025 - 0.061 = 0.341 mi.²

240 Area = 0.270 mi.²

241 Area = 0.519 - 0.028 - 0.013 = 0.478 mi.²

242 Area = 0.656 - 0.016 (SCH) = 0.640 mi.²

Sub-Basin 243 Area = 0.408 mi.²

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 2-3-93	Job No. 0146
	Checked by	Date	Sheet No. 3
	For FUTURE CONDITIONS		

CONTRIBUTING AREA - 2-YEAR STORM (CONT'D)

Sub-Basin 244 Area = 0.504 - 0.177 = 0.327 mi^2

245 Area = 0.195 - 0.019 - 0.056 = 0.120 mi^2

246 Area = 0.629 - 0.063 - 0.042 - 0.086 = 0.438 mi^2

247 Area = 0.207 mi^2

248 Area = 0.965 - 0.031 - 0.116 = 0.818 mi^2

Sub-Basin 249 Area = 0.497 - 0.011 - 0.018 - 0.033 = 0.435 mi^2

250 Area = 2.433 mi^2

251 Area = 1.719 mi^2

252 Area = 0.378 - (0.75)(0.339) = 0.124 mi^2

253 Area = 1.446 - 0.088 - (0.75)(0.607) - 0.053
= 0.850 mi^2

Sub-Basin 254 Area = 0.272 - 0.064 - 0.008 = 0.200 mi^2

255 Area = 0.765 - 0.101 - (0.75)(0.124) - 0.027
= 0.544 mi^2

256 Area = 0.372 - 0.053 - 0.004 = 0.315 mi^2

257 Area = 0.388 - 0.017 = 0.371 mi^2

258 Area = 0.677 - 0.120 = 0.557 mi^2

Sub-Basin 259 Area = 0.424 - 0.030 = 0.394 mi^2

260 Area = 0.997 - 0.061 - 0.017 - 0.026 = 0.893 mi^2

261 Area = 0.803 - 0.115 - 0.024 - 0.030 = 0.634 mi^2

262 Area = 0.595 - 0.049 - 0.088 = 0.458 mi^2

263 Area = 1.040 - (0.85)(0.319) - 0.013 - 0.004 - 0.349 = 0.403 mi^2

264 Area = 0.479 - 0.011 - 0.024 - 0.009 - 0.068 = 0.367 mi^2

265 Area = 0.876 - 0.054 - 0.181 - 0.114 = 0.527 mi^2

Sub-Basin 266 Area = 0.217 - 0.070 - 0.038 = 0.109 mi^2

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 2-3-93	Job No. 0146
	Checked by	Date	Sheet No. 4
	For FUTURE CONDITIONS		

CONTRIBUTING AREA – 10 YEAR STORM

1. Vacant Areas contribute 100%
2. Onsite Retention Areas having 100-year 2-hour Volumes are Noncontributing.

Sub-Basin	200	Area = 0.580 mi^2
	202	Area = 0.608 mi^2
	203	Area = 0.432 mi^2
	204	Area = 0.504 mi^2
	205	Area = 0.323 − 0.027 = 0.296 mi^2
Sub-Basin	206	Area = 0.677 mi^2
	207	Area = 0.575 mi^2
	208	Area = 0.344 mi^2
	209	Area = 0.391 − 0.023 (SCH) = 0.368 mi^2
	210	Area = 0.828 mi^2
Sub-Basin	211	Area = 0.234 mi^2
	212	Area = 0.397 mi^2
	213	Area = 0.218 mi^2
	214	Area = 0.483 − 0.031 = 0.452 mi^2
	215	Area = 0.269 mi^2
Sub-Basin	216	Area = 0.437 mi^2
	220	Area = 0.167 − 0.002 − (0.75)(0.039) = 0.136 mi^2
	221	Area = 0.757 − (0.75)(0.098) = 0.684 mi^2
	222	Area = 0.343 − 0.019 = 0.324 mi^2
	223	Area = 0.434 − 0.010 = 0.424 mi^2
Sub-Basin	224	Area = 0.562 − 0.064 = 0.498 mi^2

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 2-3-93	Job No. 0146
	Checked by	Date	Sheet No. 5
	For FUTURE CONDITIONS		

CONTRIBUTING AREA – 10 YEAR STORM (CONT'D)

Sub-Basin 225 Area = 0.303 - 0.068 = 0.235 mi.²

226 Area = 0.358 - 0.042 = 0.316 mi.²

227 Area = 0.318 - 0.124 - (0.75)(0.121) = 0.103 mi²

228 Area = 0.278 - (0.75)(0.171) = 0.150 mi.²

229 Area = 0.366 - (0.75)(0.319) = 0.127 mi.²

Sub-Basin 230 Area = 0.239 - 0.039 = 0.200 mi.²

231 Area = 0.158 - 0.042 - 0.029 = 0.087 mi.²

232 Area = 1.442 - 0.208 - 0.074 - (0.75)(0.151) = 1.047 mi²

233 Area = 0.598 - 0.051 = 0.547 mi.²

234 Area = 0.283 - 0.017 = 0.266 mi.²

Sub-Basin 235 Area = 0.279 - 0.019 = 0.260 mi.²

236 Area = 0.635 - 0.009 = 0.626 mi.²

237 Area = 0.651 mi.²

238 Area = 0.904 - 0.099 - 0.052 = 0.753 mi.²

239 Area = 0.427 - 0.059 = 0.368 mi.²

Sub-Basin 240 Area = 0.270 mi.²

241 Area = 0.519 - 0.028 = 0.491 mi.²

242 Area = 0.656 mi.²

243 Area = 0.408 mi.²

244 Area = 0.504 - 0.080 = 0.424 mi.²

245 Area = 0.195 - 0.033 = 0.162 mi.²

SubBasin 246 Area = 0.629 - 0.041 = 0.588 mi.²

KAMINSKI HUBBARD engineering inc. • Surveying • Civil • Hydrology	Made by DLB	Date 2-3-93	Job No. 0146
	Checked by	Date	Sheet No. 6
	For FUTURE CONDITIONS		

CONTRIBUTING AREA - 10 YEAR STORM (CONT'D)

Sub-Basin 247 Area = 0.207 mi^2

248 Area = 0.965 - 0.055 = 0.910 mi^2

249 Area = 0.497 mi^2

250 Area = 2.433 mi^2

251 Area = 1.719 mi^2

Sub-Basin 252 Area = 0.378 - (0.75)(0.339) = 0.124 mi^2

253 Area = 1.446 - 0.088 - (0.75)(0.607) - 0.053 = 0.850 mi^2

254 Area = 0.272 - 0.064 - 0.008 = 0.200 mi^2

255 Area = 0.765 - (0.75)(0.124) - 0.101 - 0.027 = 0.544 mi^2

256 Area = 0.372 - 0.053 - 0.004 = 0.315 mi^2

Sub-Basin 257 Area = 0.388 - 0.017 = 0.371 mi^2

258 Area = 0.677 - 0.060 = 0.617 mi^2

259 Area = 0.424 - 0.030 = 0.394 mi^2

260 Area = 0.997 - 0.025 = 0.972 mi^2

261 Area = 0.803 - 0.053 = 0.750 mi^2

Sub-Basin 262 Area = 0.595 - 0.027 - 0.078 - 0.018 = 0.472 mi^2

263 Area = 1.040 - (0.85)(0.203) = 0.867 mi^2

264 Area = 0.479 mi^2

265 Area = 0.876 - 0.014 = 0.862 mi^2

Sub-Basin 266 Area = 0.217 - 0.070 = 0.147 mi^2

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  04/26/93  TIME  13:43:40  *
*                                      *
****************************************
```

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

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

  1           ID       ACDC AREA DRAINAGE MASTER STUDY
  2           ID       FILENAME:  CCW324.DAT        KHE JOB NO. 0146
  3           ID       CAVE CREEK WATERSHED
  4           ID       100-YEAR 24-HOUR DURATION STORM
  5           ID       SCS TYPE-II DISTRIBUTION WAS USED
              *                                                       *
              *             HEC-1 RUN FOR CAVE CREEK WATERSHED        *
              *                 Submitted August 26, 1992             *
              *                 Revised October 2, 1992               *
              *                 REVISED NOVEMBER 30, 1992             *
              *                   - Revised Kn Values                 *
              *                                                       *
              *DIAGRAM
  6           IT       4 10OCT92    1200     800
  7           IO       5
              *   *   *   *   *   *   *   *
              *                           *
              *       MOON VALLEY WASH    *
              *     SUB-BASINS 200 - 215  *
              *                           *
              *   *   *   *   *   *   *   *

  8           KK    200S
  9           KM    RUNOFF GENERATED ON SUB-BASIN 200
 10           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 11           KM    L=  1.12 mi.  Lca= 0.58 mi.  S= 148 ft/mi.  Kn= .070  LAG= 33.11 min.
 12           KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 13           BA    .580
 14           IN      30
 15           KM    RAINFALL DEPTH OF 4.10 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 16           KM    AN AREAL REDUCTION COEFFICIENT OF .89  WAS USED
 17           PB    3.65
 18           KM    THE FOLLOWING PC RECORD USED A 24-HR 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    .148    .361   5.360    .228   9.330
 25           UI     59.     72.    211.    288.    341.    409.    507.    717.    658.    524.
 26           UI    441.    362.    294.    219.    128.    100.     82.     59.     39.     18.
 27           UI     18.     18.     18.     18.      0.      0.      0.      0.      0.      0.
 28           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 29           KK  RM200A
 30           KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 200 THROUGH 202
 31           KM            1) Natural Channel
 32           KM            2) Reach Length = 2320 ft.
 33           RD
 34           RC    .045    .035    .045   2320   .0084
 35           RX      42      44     144    150     165     171     271     273
 36           RY       6       5       3      0       0       3       5       6
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  37          KK  RM200B
  38          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 200 THROUGH 202
  39          KM             1) Gunite Lined Channel
  40          KM             2) Reach Length = 2020 ft.
  41          RD    2020    .010    .020            TRAP      10       0

  42          KK    202S
  43          KM    RUNOFF GENERATED ON SUB-BASIN 202
  44          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  45          KM    L=  1.33 mi.  Lca= 0.87 mi.  S= 148 ft/mi.  Kn= .056  LAG= 32.98 min.
  46          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
  47          BA    .608
  48          LG    .106    .269   6.290    .186  41.400
  49          UI     62.     77.    223.    303.    360.    433.    537.    759.    686.    548.
  50          UI    460.    378.    307.    225.    131.    105.     84.     62.     38.     19.
  51          UI     19.     19.     19.     19.      0.      0.      0.      0.      0.      0.
  52          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

  53          KK   DT202
  54          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.6 AC-FT FROM SUB-BASIN 202
  55          KM                                               (Hydrograph identified as OR202)
  56          KM                                             2) Balance of runoff continues on.
  57          KM                                               (Hydrograph identified as DT202)
  58          DT   OR202     0.6
  59          DI       0   10000
  60          DQ       0   10000

  61          KK   HC202
  62          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200, 201 & 202
  63          HC       2

  64          KK   RM202
  65          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 202 THROUGH 206
  66          KM             1) Reach Length = 3580 FT.
  67          RD
  68          RC    .045    .035    .045    3580   .0047
  69          RX      53      55     135     150     175     190     270     272
  70          RY       6       5       3       0       0       3       5       6

  71          KK    206S
  72          KM    RUNOFF GENERATED ON SUB-BASIN 206
  73          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  74          KM    L=  1.56 mi.  Lca= 0.81 mi.  S= 35 ft/mi.  Kn= .042  LAG= 33.64 min.
  75          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
  76          BA    .677
  77          LG    .118    .250   3.500    .323  37.030
  78          UI     68.     78.    240.    326.    388.    462.    566.    796.    787.    620.
  79          UI    523.    428.    354.    277.    165.    117.    106.     68.     59.     21.
  80          UI     21.     21.     21.     21.     21.      0.      0.      0.      0.      0.
  81          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  82          KK   HC206
  83          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200-202 & 206
  84          HC       2

  85          KK   206RE
  86          KM    DIVERT FLOW OUT OF SUB-BASIN 206 INTO 211 THROUGH A 48-IN. DIAMETER
  87          KM    STORM DRAIN.
  88          KM    SOURCE:  Storm Drain Design for Coral Gables Dr., Project Engineering
  89          KM             Consultants.
  90          DT    211D
  91          DI       0      87     200     500    1000    2000    3000
  92          DQ       0      87      87      87      87      87      87

  93          KK   RM206
  94          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 206 THROUGH 208
  95          KM             1) Reach Length = 1780 FT.
  96          RD
  97          RC    .045    .035    .045    1780   .0045
  98          RX      58      68     138     150     175     187     257     267
  99          RY       6       4       3       0       0       3       4       6

 100          KK    203S
 101          KM    RUNOFF GENERATED ON SUB-BASIN 203
 102          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 103          KM    L= 1.06 mi.  Lca= 0.58 mi.  S= 126 ft/mi.  Kn= .093  LAG= 44.41 min.
 104          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 105          BA    .432
 106          LG    .154    .337   4.190    .471   8.590
 107          UI     33.     33.     66.    120.    155.    178.    201.    231.    267.    348.
 108          UI    419.    356.    300.    265.    230.    199.    170.    145.    106.     68.
 109          UI     57.     54.     38.     33.     29.     10.     10.     10.     10.     10.
 110          UI     10.     10.     10.      0.      0.      0.      0.      0.      0.      0.
 111          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 112          KK   203RR
 113          KM    RESERVOIR ROUTE THROUGH DETENTION BASIN NO. 2B
 114          KM       1)  Total Volume = 48 AC-FT.
 115          KM       2)  Spillway Elev. = 1412
 116          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
 117          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
 118          KM             Niple, Inc.
 119          RS       1    ELEV    1395
 120          SV       0       1      18      37      48      68
 121          SE    1395    1400    1405    1410    1412    1415
 122          SS    1412      80    2.63     1.5
 123          SL  1396.7    1.78     .60     .50

 124          KK   RM203
 125          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 203 THROUGH 205
 126          KM             1) Reach Length = 2760 FT.
 127          RD
 128          RC    .045    .035    .045    2760   .0098
 129          RX      54      64     134     150     165     181     251     261
 130          RY       6       5       4       0       0       4       5       6
```

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

 131          KK    204S
 132          KM    RUNOFF GENERATED ON SUB-BASIN 204
 133          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 134          KM    L= 1.10 mi.  Lca= 0.50 mi.  S= 133 ft/mi.  Kn= .074  LAG= 33.53 min.
 135          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 136          BA    .504
 137          LG    .144    .327   3.820    .373   21.96
 138          UI     51.     59.    180.    244.    290.    346.    425.    599.    583.    460.
 139          UI    388.    318.    262.    203.    120.     87.     77.     51.     42.     16.
 140          UI     16.     16.     16.     16.     16.      0.      0.      0.      0.      0.
 141          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 142          KK   204RR
 143          KM    RESERVOIR ROUTE THROUGH DETENTION BASIN NO. 2A
 144          KM       1) Total Volume = 60 AC-FT.
 145          KM       2) Spillway Elev. = 1408
 146          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
 147          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
 148          KM             Niple, Inc.
 149          RS      1    ELEV    1391
 150          SV      0       2       5      10      25      60      69      81      94     108
 151          SE   1391    1393    1397    1400    1404    1408    1409    1410    1411    1412
 152          SS   1408    80.0    2.63     1.5
 153          SL 1392.2    1.78     .60     .50

 154          KK   RM204
 155          KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM SUB-BASIN 204 THROUGH 205
 156          KM             1) Reach Length = 2400 FT.
 157          KM             2) Avg. Pipe Diameter = 54"
 158          RD    2400   .0104    .020            CIRC     4.5

 159          KK    205S
 160          KM    RUNOFF GENERATED ON SUB-BASIN 205
 161          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 162          KM    L= 0.82 mi.  Lca= 0.49 mi.  S= 103 ft/mi.  Kn= .091  LAG= 38.41 min.
 163          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 164          BA    .323
 165          LG    .136    .314   6.290    .202  26.570
 166          UI     28.     28.     81.    121.    148.    170.    201.    240.    326.    346.
 167          UI    274.    235.    200.    170.    141.    113.     71.     50.     47.     33.
 168          UI     28.     18.      9.      9.      9.      9.      9.      9.      0.      0.
 169          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 170          KK   DT205
 171          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.5 AC-FT FROM SUB-BASIN 205
 172          KM                                               (Hydrograph identified as OR205)
 173          KM                                             2) Balance of runoff continues on.
 174          KM                                               (Hydrograph identified as DT205)
 175          DT   OR205     0.5
 176          DI       0   10000
 177          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 178          KK   HC205
 179          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 203, 204 & 205.
 180          HC      3

 181          KK   RM205
 182          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 205 THROUGH 216
 183          KM            1) Gunite Lined Channel
 184          KM            2) Reach Length = 3300 ft.
 185          RD
 186          RC   .025     .02    .025    3300   .0078
 187          RX    132     132     146     150     157     161     175     175
 188          RY      8     4.5       4       0       0       4     4.5       8

 189          KK   207S
 190          KM   RUNOFF GENERATED ON SUB-BASIN 207
 191          KM   THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 192          KM   L= 1.05 mi.  Lca= 0.53 mi.  S= 209 ft/mi.  Kn= .098  LAG= 40.93 min.
 193          KM   PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 194          BA   .575
 195          LG   .149    .347   3.500    .291  23.180
 196          UI    47.     47.    117.    191.    236.    271.    312.    365.    464.    598.
 197          UI   526.    436.    380.    324.    278.    234.    191.    124.     84.     78.
 198          UI    63.     47.     43.     15.     15.     15.     15.     15.     15.     15.
 199          UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 200          UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 201          KK   207RR
 202          KM    RESERVOIR ROUTE THROUGH DETENTION BASIN NO. 7
 203          KM       1) Total Volume = 120 AC-FT.
 204          KM       2) Spillway Elev. = 1392
 205          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
 206          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
 207          KM             Niple, Inc.
 208          RS      1    ELEV    1369
 209          SV      0     120     136     152     175     200     224     248     272
 210          SE   1369    1392    1393    1394    1395    1396    1397    1398    1399
 211          SQ      0      53     363     928    1660    2526    3508    4594    5775

 212          KK   RM207
 213          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 207 THROUGH 208
 214          KM            1) Reach Length = 2500 ft.
 215          RD    2500   .0100    .035            TRAP      10       2

 216          KK    216S
 217          KM    RUNOFF GENERATED ON SUB-BASIN 216
 218          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 219          KM    L= 0.83 mi.  Lca= 0.53 mi.  S= 95 ft/mi.  Kn= .069  LAG= 30.61 min.
 220          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 221          BA    .437
 222          LG    .114    .288    5.98    .197   41.68
 223          UI     48.     74.    186.    246.    295.    363.    497.    592.    453.    375.
 224          UI    302.    244.    177.    100.     81.     59.     48.     18.     15.     15.
 225          UI     15.     15.      0.      0.      0.      0.      0.      0.      0.      0.
 226          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 227          KK   DT216
 228          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.4 AC-FT FROM SUB-BASIN 216
 229          KM                                               (Hydrograph identified as OR216)
 230          KM                                             2) Balance of runoff continues on.
 231          KM                                               (Hydrograph identified as DT216)
 232          DT   OR216     1.4
 233          DI       0   10000
 234          DQ       0   10000

 235          KK   HC216
 236          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 216 WITH ROUTED FLOWS FROM 205 & 207
 237          HC       3

 238          KK   RM216
 239          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 216 THROUGH 208
 240          KM             1) Natural Channel
 241          KM             2) Reach Length = 3380 ft.
 242          RD
 243          RC    .045    .035    .045    3380   .0065
 244          RX      80      90     140     150     170     180     230     240
 245          RY       4       3       2       0       0       2       3       4

 246          KK    208S
 247          KM    RUNOFF GENERATED ON SUB-BASIN 208
 248          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 249          KM    L= 1.02 mi.  Lca= 0.32 mi.  S= 19 ft/mi.  Kn= .044  LAG= 23.66 min.
 250          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 251          BA    .344
 252          LG    .143    .250    3.61    .398   25.51
 253          UI     49.    127.    236.    304.    404.    594.    474.    366.    277.    197.
 254          UI    101.     76.     49.     23.     15.     15.     15.      0.      0.      0.
 255          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 256          KK   HC208
 257          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 208 WITH ROUTED FLOWS FROM 206 & 216
 258          HC       3

 259          KK   RM208
 260          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 208 THROUGH 209
 261          KM             1) Reach Length = 1120 FT.
 262          RD    1120   .0049    .035            TRAP      25       4

 263          KK    212S
 264          KM    RUNOFF GENERATED ON SUB-BASIN 212
 265          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 266          KM    L= 1.05 mi.  Lca= 0.70 mi.  S= 122 ft/mi.  Kn= .061  LAG= 31.37 min.
 267          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 268          BA    .397
 269          LG    .113    .276   3.710    .337  42.970
 270          UI     43.     62.    161.    215.    257.    313.    420.    529.    421.    347.
 271          UI    282.    230.    181.    104.     73.     63.     43.     29.     13.     13.
 272          UI     13.     13.     13.      0.      0.      0.      0.      0.      0.      0.
 273          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 274          KK   RM212
 275          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 212 THROUGH 211
 276          KM            1) Reach Length = 6240 ft.
 277          KM            2) Channel Slope = 0.0043 '/ft
 278          RD
 279          RC   .030    .020    .030    6240   .0043
 280          RX    124     129     149     150     185     186     206     211
 281          RY      2       1      .5       0       0      .5       1       2

 282          KK   211S
 283          KM   RUNOFF GENERATED ON SUB-BASIN 211
 284          KM   THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 285          KM   L= 1.57 mi.  Lca= 0.81 mi.  S= 21 ft/mi.  Kn= .050  LAG= 44.24 min.
 286          KM   PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 287          BA   .234
 288          LG   .100    .250   3.500    .291  51.170
 289          UI    18.     18.     36.     65.     84.     97.    109.    126.    146.    190.
 290          UI   228.    192.    162.    143.    124.    107.     91.     78.     57.     35.
 291          UI    31.     29.     20.     18.     14.      5.      5.      5.      5.      5.
 292          UI     5.      5.      5.      0.      0.      0.      0.      0.      0.      0.
 293          UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 294          KK   DT211
 295          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.6 AC-FT FROM SUB-BASIN 211
 296          KM                                               (Hydrograph identified as OR211)
 297          KM                                             2) Balance of runoff continues on.
 298          KM                                               (Hydrograph identified as DT211)
 299          DT   OR211     0.6
 300          DI       0   10000
 301          DQ       0   10000

 302          KK   R211
 303          KM   RETRIEVE FLOW DIVERTED FROM SUB-BASIN 206
 304          DR   211D

 305          KK   HC211
 306          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 211 & 212 WITH DIVERT 211D
 307          HC       3

 308          KK   211RE
 309          KM    DIVERT FLOW INTO CAVE CREEK WASH THROUGH 84-IN. DIAMETER STORM DRAIN
 310          KM    (Hydrograph identified as 245D)
 311          KM    REMAINDER FLOWS SOUTH INTO SUB-BASIN 209
 312          KM    (Hydrograph identified as 211RE)
 313          KM    SOURCE:  Storm Drain Design for Coral Gables Dr., Project Engineering
 314          KM             Consultants
 315          DT   245D
 316          DI       0     260     300     500    1000    2000    3000    4000
 317          DQ       0     260     260     260     260     260     260     260
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 318          KK   RM211
 319          KM    MUSKINGUM-CUNGE ROUTE REMAINING FLOW THROUGH SUB-BASIN 209
 320          KM            1) Reach Length = 8360 ft.
 321          RD
 322          RC    .030    .020    .030    8360   .0038
 323          RX     124     129     149     150     190     191     211     216
 324          RY       2       1      .5       0       0      .5       1       2

 325          KK    209S
 326          KM    RUNOFF GENERATED ON SUB-BASIN 209
 327          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 328          KM    L= 2.05 mi.  Lca= 1.25 mi.  S= 19 ft/mi.  Kn= .066  LAG= 77.67 min.
 329          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 330          BA    .391
 331          LG    .166    .276   3.770    .352  45.560
 332          UI     17.     17.     17.     17.     38.     57.     65.     78.     84.     92.
 333          UI     97.    104.    114.    124.    132.    149.    175.    204.    225.    198.
 334          UI    176.    160.    148.    138.    129.    117.    107.    100.     91.     84.
 335          UI     78.     65.     51.     43.     30.     30.     28.     28.     27.     17.
 336          UI     17.     17.     17.     10.      5.      5.      5.      5.      5.      5.
 337          UI      5.      5.      5.      5.      5.      5.      5.      0.      0.      0.
 338          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 339          KK   DT209
 340          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 3.3 AC-FT FROM SUB-BASIN 209
 341          KM                                               (Hydrograph identified as OR209)
 342          KM                                             2) Balance of runoff continues on.
 343          KM                                               (Hydrograph identified as DT209)
 344          DT   OR209     3.3
 345          DI       0   10000
 346          DQ       0   10000

 347          KK   HC209
 348          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200-209 & 211-212
 349          HC       3

 350          KK    213S
 351          KM    RUNOFF GENERATED ON SUB-BASIN 213
 352          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 353          KM    L= 0.89 mi.  Lca= 0.69 mi.  S= 174 ft/mi.  Kn= .070  LAG= 31.43 min.
 354          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 355          BA    .218
 356          LG    .114    .286    5.05    .233   46.44
 357          UI     23.     34.     88.    118.    141.    171.    229.    290.    232.    191.
 358          UI    155.    126.    100.     58.     40.     35.     23.     16.      7.      7.
 359          UI      7.      7.      7.      0.      0.      0.      0.      0.      0.      0.
 360          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 361          KK   HC213
 362          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200-209 & 211-213
 363          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 364          KK   RM213
 365          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 213 THROUGH 210
 366          KM             1) Reach Length = 4200 ft.
 367          RD
 368          RC   .045    .035    .045    4200   .0059
 369          RX     75      80     130     139     174     183     232     237
 370          RY      8       7       6       0       0       6       7       8

 371          KK    214S
 372          KM    RUNOFF GENERATED ON SUB-BASIN 214
 373          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 374          KM    L= 1.18 mi.  Lca= 0.61 mi.  S= 121 ft/mi.  Kn= .089  LAG= 45.47 min.
 375          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 376          BA    .477
 377          LG   .125    .296    3.81    .286   44.89
 378          UI    35.     35.     66.    127.    163.    189.    211.    244.    278.    352.
 379          UI   446.    407.    339.    296.    262.    225.    196.    169.    133.     91.
 380          UI    62.     59.     54.     35.     35.     21.     11.     11.     11.     11.
 381          UI    11.     11.     11.      0.      0.      0.      0.      0.      0.      0.
 382          UI     0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 383          KK   DT214
 384          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.9 AC-FT FROM SUB-BASIN 214
 385          KM                                               (Hydrograph identified as OR214)
 386          KM                                              2) Balance of runoff continues on.
 387          KM                                               (Hydrograph identified as DT214)
 388          DT   OR214     0.9
 389          DI       0   10000
 390          DQ       0   10000

 391          KK   214RE
 392          KM    DIVERT FLOW TO CAVE CREEK WASH THROUGH 72-IN. DIAMETER STORM DRAIN ALONG
 393          KM    THUNDERBIRD ROAD. (Hydrograph identified as 263D)
 394          KM    REMAINDER FLOWS SOUTH ALONG 19TH AVENUE TO SWEETWATER CHANNEL.
 395          KM    (Hydrograph identified as 214RE)
 396          DT    263D
 397          DI       0     100    1000
 398          DQ       0     100     100

 399          KK   RM214
 400          KM    MUSKINGUM-CUNGE ROUTE REMAINING FLOW IN STREET THROUGH SUB-BASIN 210
 401          KM             1) Reach Length = 2560 ft.
 402          RD
 403          RC   .030    .020    .030    2560   .0032
 404          RX    124     129     149     150     215     216     236     241
 405          RY      2       1      .5       0       0      .5       1       2

 406          KK    210S
 407          KM    RUNOFF GENERATED ON SUB-BASIN 210
 408          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 409          KM    L= 1.27 mi.  Lca= 0.73 mi.  S= 183 ft/mi.  Kn= .092  LAG= 47.84 min.
 410          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 411          BA    .828
 412          LG   .126    .301   3.550    .303  40.910
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 413          UI     58.     58.     91.    205.    256.    300.    337.    380.    435.    508.
 414          UI    655.    751.    621.    531.    473.    417.    361.    315.    276.    216.
 415          UI    152.    103.     98.     95.     58.     58.     48.     18.     18.     18.
 416          UI     18.     18.     18.     18.     18.      0.      0.      0.      0.      0.
 417          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 418          KK   HC210
 419          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200-209 & 210 & 211-214
 420          HC       3

 421          KK   RM210
 422          KM    MUSKINGUM-CUNGE ROUTE IN SWEETWATER CHANNEL THROUGH SUB-BASIN 215
 423          KM             1) Reach Length = 3080 ft.
 424          RD
 425          RC    .045    .025    .045    3080   .0028
 426          RX      70     120     138     143     183     188     210     260
 427          RY       9       7       5       0       0       5       7       9

 428          KK    215S
 429          KM    RUNOFF GENERATED ON SUB-BASIN 215
 430          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 431          KM    L= 0.88 mi.  Lca= 0.53 mi.  S= 22 ft/mi.  Kn= .040  LAG= 23.96 min.
 432          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 433          BA    .269
 434          LG    .104    .250    3.50    .296   47.06
 435          UI     38.     96.    180.    232.    305.    456.    375.    289.    221.    161.
 436          UI     84.     63.     38.     22.     12.     12.     12.      0.      0.      0.
 437          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 438          KK   DT215
 439          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.9 AC-FT FROM SUB-BASIN 215
 440          KM                                               (Hydrograph identified as OR215)
 441          KM                                              2) Balance of runoff continues on.
 442          KM                                               (Hydrograph identified as DT215)
 443          DT   OR215     0.9
 444          DI       0   10000
 445          DQ       0   10000

 446          KK   HC215
 447          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 200-214 & 216 WITH 215
 448          KM   ALSO, TOTAL FLOW FROM MOON VALLEY WASH AT CAVE CREEK WASH
 449          HC       2
 450          ZW    A=MOON VALLEY WASH  B=HC215  C=FLOW  F=CAVE CREEK
              *     *     *     *     *     *     *     *     *     *
              *                                                     *
              *        BREAK SEQUENCE - JUMP TO SUB-BASIN 220       *
              *                                                     *
              *                EAST FORK OF CAVE CREEK              *
              *                 SUB-BASINS 220 - 245                *
              *                                                     *
              *     *     *     *     *     *     *     *     *     *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 451          KK    220S
 452          KM    RUNOFF GENERATED ON SUB-BASIN 220
 453          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 454          KM    L= 1.22 mi.  Lca= 0.57 mi.  S= 36 ft/mi.  Kn= .084  LAG= 53.33 min.
 455          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 456          BA    .244
 457          LG    .218    .297    3.98    .396   27.38
 458          UI     15.     15.     15.     48.     61.     73.     83.     91.    102.    115.
 459          UI    131.    168.    198.    177.    151.    134.    121.    106.     94.     84.
 460          UI     74.     62.     45.     30.     27.     25.     23.     15.     15.     13.
 461          UI      5.      5.      5.      5.      5.      5.      5.      5.      5.      0.
 462          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 463          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 464          KK   DT220
 465          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.8 AC-FT FROM SUB-BASIN 220
 466          KM                                               (Hydrograph identified as OR220)
 467          KM                                             2) Balance of runoff continues on.
 468          KM                                               (Hydrograph identified as DT220)
 469          DT   OR220     1.8
 470          DI       0   10000
 471          DQ       0   10000

 472          KK   220RE
 473          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO. 4
 474          KM    SOURCE:  Detention Basin No. 4 Design Hydrology by NBS Lowry.
 475          DT    222D
 476          DI       0      27   10000
 477          DQ       0      27      27

 478          KK    221S
 479          KM    RUNOFF GENERATED ON SUB-BASIN 221
 480          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 481          KM    L= 1.67 mi.  Lca= 0.96 mi.  S= 34 ft/mi.  Kn= .087  LAG= 76.70 min.
 482          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 483          BA    .753
 484          LG    .231    .295    3.66    .366   15.48
 485          UI     33.     33.     33.     33.     78.    113.    129.    153.    165.    180.
 486          UI    191.    206.    224.    245.    262.    299.    363.    403.    430.    375.
 487          UI    334.    305.    282.    264.    245.    221.    205.    190.    170.    158.
 488          UI    142.    119.     95.     69.     58.     58.     54.     54.     43.     33.
 489          UI     33.     33.     30.     10.     10.     10.     10.     10.     10.     10.
 490          UI     10.     10.     10.     10.     10.     10.     10.      0.      0.      0.
 491          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 492          KK  HC221A
 493          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 221 WITH OVERFLOW FROM 220
 494          KM    ALSO, TOTAL FLOW INTO DETENTION BASIN NO. 4
 495          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

496           KK   221RR
497           KO      3
498           KM    ROUTE FLOW THROUGH DETENTION BASIN NO.4
499           KM    RATING CURVE PROVIDED BY NBS LOWRY
500           RS      1    ELEV    1462
501           SV      0      .9     3.8    10.8    22.5      38    55.5    73.8
502           SE   1462    1464    1465    1466    1467    1468    1469    1470
503           SQ      0      24      50      73      81      87      93      99

504           KK    R220
505           KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 220
506           DR    222D

507           KK  HC221B
508           KM    COMBINE DIVERTED LOW FLOW FROM SUB-BASIN 220 WITH BASIN NO. 4 OUTFLOW
509           HC      2

510           KK   RM221
511           KM    MUSKINGUM-CUNGE ROUTE FLOW IN PIPE FROM BASIN NO. 4 THROUGH 222
512           KM            1) Reach Length = 3060 ft.
513           KM            2) Pipe Diameter = 60 in.
514           RD    3060   .0041    .012            CIRC     5.0

515           KK    222S
516           KM    RUNOFF GENERATED ON SUB-BASIN 222
517           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
518           KM    L= 1.04 mi.  Lca= 0.55 mi.  S= 27 ft/mi.  Kn= .044  LAG= 27.39 min.
519           KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
520           BA    .343
521           LG    .114    .256    3.61    .313   48.12
522           UI     42.     83.    180.    233.    290.    383.    523.    409.    328.    259.
523           UI    203.    130.     73.     62.     42.     22.     13.     13.     13.     13.
524           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
525           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

526           KK   DT222
527           KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.4 AC-FT FROM SUB-BASIN 222
528           KM                                               (Hydrograph identified as OR222)
529           KM                                             2) Balance of runoff continues on.
530           KM                                               (Hydrograph identified as DT222)
531           DT   OR222     2.4
532           DI      0   10000
533           DQ      0   10000

534           KK   HC222
535           KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 222 WITH ROUTED FLOW FROM 221
536           HC      2

537           KK   222RE
538           KM    SPLIT FLOW AT INTERSECTION OF 32nd ST. AND BELL RD.
539           KM    SEND FLOW SOUTH IN 32nd ST. OUT OF WATERSHED IN STREET AND 60" PIPE.
540           KM    (Hydrograph identified as FL-2D) (160 cfs in PIPE)
541           KM    REMAINDER FLOWS WEST IN BELL RD.  (Hydrograph identified as 222RE)
542           KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  543         KM            FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
  544         KM            Niple, Inc.
  545         DT   FL-2D
  546         DI       0     185     243    1947    5014
  547         DQ       0     160     160    1093    2655

  548         KK   RM222
  549         KM    MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 222 THROUGH 223
  550         KM            1) Reach Length = 6160 ft.
  551         KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
  552         KM            FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
  553         KM            Niple, Inc.
  554         RD
  555         RC     .03     .02     .03    6160   .0047    54.5
  556         RX       0       1      31      31     123     123     153     153
  557         RY      57    55.3    54.2    53.7    53.8    54.3    55.3      57

  558         KK    223S
  559         KM    RUNOFF GENERATED ON SUB-BASIN 223
  560         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  561         KM    L= 1.73 mi.  Lca= 0.90 mi.  S= 28 ft/mi.  Kn= .073  LAG= 66.04 min.
  562         KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
  563         BA    .750
  564         LG    .129    .261    3.71    .336   41.15
  565         UI     38.     38.     38.     56.    127.    148.    178.    195.    213.    231.
  566         UI    252.    280.    305.    356.    431.    502.    453.    394.    353.    323.
  567         UI    300.    269.    243.    224.    197.    182.    157.    122.     96.     68.
  568         UI     67.     63.     63.     41.     38.     38.     36.     12.     12.     12.
  569         UI     12.     12.     12.     12.     12.     12.     12.     12.     12.      0.
  570         UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
  571         UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

  572         KK   DT223
  573         KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.2 AC-FT FROM SUB-BASIN 223
  574         KM                                               (Hydrograph identified as OR223)
  575         KM                                             2) Balance of runoff continues on.
  576         KM                                               (Hydrograph identified as DT223)
  577         DT   OR223     2.2
  578         DI       0   10000
  579         DQ       0   10000

  580         KK   HC223
  581         KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 223 WITH ROUTED FLOW FROM 222
  582         HC       2

  583         KK   RM223
  584         KM    MUSKINGUM-CUNGE ROUTE FLOW IN STREET FROM SUB-BASIN 223 THROUGH 224
  585         KM            1) Reach Length = 1920 ft.
  586         RD
  587         RC     .03     .02     .03    1920   .0021
  588         RX       0       0       8       8      92      92     100     100
  589         RY       5      .5      .5       0       0      .5      .5       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 590          KK    224S
 591          KM    RUNOFF GENERATED ON SUB-BASIN 224
 592          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 593          KM    L= 1.36 mi.  Lca= 0.70 mi.  S= 22 ft/mi.  Kn= .044  LAG= 34.57 min.
 594          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 595          BA    .486
 596          LG    .128    .261    3.55    .302   59.98
 597          UI     47.     49.    166.    221.    266.    314.    378.    517.    584.    455.
 598          UI    384.    318.    264.    215.    150.     84.     79.     58.     47.     25.
 599          UI     15.     15.     15.     15.     15.      0.      0.      0.      0.      0.
 600          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 601          KK   DT224
 602          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 3.2 AC-FT FROM SUB-BASIN 224
 603          KM                                               (Hydrograph identified as OR224)
 604          KM                                             2) Balance of runoff continues on.
 605          KM                                               (Hydrograph identified as DT224)
 606          DT   OR224     3.2
 607          DI       0   10000
 608          DQ       0   10000

 609          KK    225S
 610          KM    RUNOFF GENERATED ON SUB-BASIN 225
 611          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 612          KM    L= 1.38 mi.  Lca= 0.77 mi.  S= 18 ft/mi.  Kn= .055  LAG= 46.80 min.
 613          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 614          BA    .303
 615          LG    .156    .273    3.50    .288   55.05
 616          UI     22.     22.     37.     77.     98.    114.    128.    145.    167.    200.
 617          UI    261.    271.    221.    191.    171.    148.    130.    111.     95.     71.
 618          UI     46.     38.     36.     28.     22.     22.      9.      7.      7.      7.
 619          UI      7.      7.      7.      7.      0.      0.      0.      0.      0.      0.
 620          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 621          KK   DT225
 622          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.6 AC-FT FROM SUB-BASIN 225
 623          KM                                               (Hydrograph identified as OR225)
 624          KM                                             2) Balance of runoff continues on.
 625          KM                                               (Hydrograph identified as DT225)
 626          DT   OR225     2.6
 627          DI       0   10000
 628          DQ       0   10000

 629          KK   225RE
 630          KM    DIVERT FLOW IN EXCESS OF 2-YEAR PIPE DESIGN OUT OF WATERSHED
 631          KM    (Hydrograph identified as D225)
 632          KM    REMAINDER FLOWS WEST IN 48" PIPE ALONG GREENWAY PARKWAY TO CAVE CREEK RD.
 633          KM    (Hydrograph identified as 225RE)
 634          DT    D225
 635          DI       0      95     295    1095
 636          DQ       0       0     200    1000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 637          KK   RM225
 638          KM    MUSKINGUM-CUNGE ROUTE PIPE FLOW FROM SUB-BASIN 225 THROUGH 224
 639          KM             1) Reach Length = 3600 ft.
 640          KM             2) Pipe Diameter = 48 in.
 641          RD    3600   .0019    .012            CIRC     4.0

 642          KK    226S
 643          KM    RUNOFF GENERATED ON SUB-BASIN 226
 644          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 645          KM    L= 1.25 mi.  Lca= 0.64 mi.  S= 111 ft/mi.  Kn= .078  LAG= 42.17 min.
 646          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 647          BA    .358
 648          LG    .119    .288    4.14    .428   37.41
 649          UI     29.     29.     66.    112.    140.    161.    183.    213.    258.    345.
 650          UI    344.    278.    240.    210.    179.    153.    130.     95.     60.     49.
 651          UI     47.     31.     29.     20.      9.      9.      9.      9.      9.      9.
 652          UI      9.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 653          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 654          KK   HC226
 655          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 224 & 226 WITH ROUTED FLOWS FROM
 656          KM    223 & 225
 657          HC       4

 658          KK   RM226
 659          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 226 THROUGH 230
 660          KM             1) Reach Length = 2080 ft.
 661          KM    NOTE:  This section was taken from the HEC-1 input data file provided
 662          KM           by the FCDMC to KHE.
 663          RD
 664          RC    .045    .035    .045    2080   .0034
 665          RX       0       1      13      23      55      75      87      88
 666          RY      21      20      20      10      10      20      20      21

 667          KK    227S
 668          KM    RUNOFF GENERATED ON SUB-BASIN 227
 669          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 670          KM    L= 1.70 mi.  Lca= 0.87 mi.  S= 26 ft/mi.  Kn= .091  LAG= 81.87 min.
 671          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 672          BA    .347
 673          LG    .148    .269    3.77    .347   43.14
 674          UI     14.     14.     14.     14.     24.     47.     54.     62.     68.     74.
 675          UI     79.     84.     91.     98.    107.    113.    128.    152.    171.    190.
 676          UI    168.    150.    137.    126.    118.    111.    102.     94.     87.     80.
 677          UI     73.     68.     62.     53.     41.     34.     25.     25.     24.     23.
 678          UI     23.     15.     14.     14.     14.     12.      4.      4.      4.      4.
 679          UI      4.      4.      4.      4.      4.      4.      4.      4.      4.      4.
 680          UI      4.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 681          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

682           KK   RM227
683           KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 227 THROUGH 228
684           KM             1) Reach Length = 3160 ft.
685           RD
686           RC    .03     .02     .03    3160   .0051
687           RX      0       0       7       7      43      43      50      50
688           RY      5      .5      .5       0       0      .5      .5       5

689           KK    228S
690           KM    RUNOFF GENERATED ON SUB-BASIN 228
691           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
692           KM    L= 0.89 mi.  Lca= 0.43 mi.  S= 22 ft/mi.  Kn= .084  LAG= 46.67 min.
693           KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
694           BA    .218
695           LG    .189    .286    3.61    .313   28.25
696           UI     16.     16.     27.     56.     71.     82.     93.    105.    120.    145.
697           UI    189.    194.    159.    137.    123.    106.     93.     80.     68.     50.
698           UI     32.     27.     26.     20.     16.     16.      6.      5.      5.      5.
699           UI      5.      5.      5.      5.      0.      0.      0.      0.      0.      0.
700           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

701           KK   DT228
702           KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.0 AC-FT FROM SUB-BASIN 228
703           KM                                               (Hydrograph identified as OR228)
704           KM                                             2) Balance of runoff continues on.
705           KM                                               (Hydrograph identified as DT228)
706           DT   OR228     1.0
707           DI       0   10000
708           DQ       0   10000

709           KK   HC228
710           KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 228 WITH ROUTED FLOW FROM 227
711           HC       2

712           KK    229S
713           KM    RUNOFF GENERATED ON SUB-BASIN 229
714           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
715           KM    L= 1.05 mi.  Lca= 0.36 mi.  S= 197 ft/mi.  Kn= .081  LAG= 29.54 min.
716           KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
717           BA    .635
718           LG    .126    .292    3.55    .312   26.73
719           UI     72.    122.    288.    380.    460.    573.    823.    832.    641.    525.
720           UI    420.    332.    210.    126.    110.     72.     48.     22.     22.     22.
721           UI     22.     22.      0.      0.      0.      0.      0.      0.      0.      0.
722           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

723           KK   RM229
724           KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 229 THROUGH 230
725           KM             1) Reach Length = 6240 ft.
726           RD
727           RC    .03     .02     .03    6240   .0061    2.37
728           RX      0       0       9       9      41      41      50      50
729           RY      5      .5      .5       0       0      .5      .5       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 730          KK    230S
 731          KM    RUNOFF GENERATED ON SUB-BASIN 230
 732          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 733          KM    L= 1.53 mi.  Lca= 0.78 mi.  S= 115 ft/mi.  Kn= .046  LAG= 28.76 min.
 734          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 735          BA    .566
 736          LG    .108    .267    4.12    .267   40.54
 737          UI     66.    119.    270.    355.    432.    547.    796.    714.    561.    454.
 738          UI    361.    274.    153.    112.     84.     66.     24.     20.     20.     20.
 739          UI     20.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 740          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 741          KK  HC230A
 742          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 230 WITH ROUTED FLOW FROM 229
 743          HC       2

 744          KK  HC230B
 745          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 228 & 230 WITH ROUTED FLOW FROM 226
 746          HC       3

 747          KK   RM230
 748          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 230 THROUGH 235
 749          KM             1) Reach Length = 3560 ft.
 750          RD
 751          RC    .045    .035    .045    3560   .0039
 752          RX       0       1      13      23      55      75      87      88
 753          RY      21      20      20      10      10      20      20      21

 754          KK    231S
 755          KM    RUNOFF GENERATED ON SUB-BASIN 231
 756          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 757          KM    L= 1.44 mi.  Lca= 0.57 mi.  S= 89 ft/mi.  Kn= .073  LAG= 41.56 min.
 758          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 759          BA   1.334
 760          LG    .127    .304    3.87    .371   19.74
 761          UI    108.    108.    259.    429.    533.    613.    703.    818.   1010.   1351.
 762          UI   1249.   1023.    888.    768.    656.    556.    465.    332.    196.    183.
 763          UI    167.    108.    108.     51.     33.     33.     33.     33.     33.     33.
 764          UI     33.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 765          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 766          KK   231RE
 767          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO. 1.  FROM THE WEST,
 768          KM    150 CFS DIVERTED IN 60" PIPE AND FROM THE EAST, 35 CFS DIVERTED IN
 769          KM    36" PIPE.  TOTAL DIVERSION = 185 CFS.
 770          KM    SOURCE:  Detention Basin No. 3A & 3B Design by NBS Lowry.
 771          DT    232D
 772          DI       0     185   10000
 773          DQ       0     185     185
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  774         KK   231RR
  775         KO      3
  776         KM    ROUTE FLOW THROUGH DETENTION BASIN NO. 1
  777         KM    SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
  778         KM             Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
  779         KM             P-901801, September 9, 1991, prepared by NBS Lowry Engineers.
  780         RS      1    ELEV  1487.8
  781         SV      0    .021   1.189   5.893  14.491  25.114  36.539  74.474    90.0
  782         SE  1487.8    1488    1489    1490    1491    1492    1493    1496    1497
  783         SQ      0       2      10      25      45      75     130     270     400

  784         KK    R231
  785         KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 231
  786         DR    232D

  787         KK   HC231
  788         KM    COMBINE DIVERTED LOW FLOW FROM SUB-BASIN 231 WITH BASIN NO. 1 OUTFLOW.
  789         HC      2

  790         KK  RM231A
  791         KM    MUSKINGUM-CUNGE ROUTE DETENTION BASIN NO. 1 OUTFLOW IN CHANNEL FROM
  792         KM    BEARDSLEY ROAD TO UTOPIA ROAD.
  793         KM             1) Reach Length = 2725 ft.
  794         RD
  795         RC    .035    .030    .035    2725   .0005
  796         RX      0       0       2    37.5    57.5      93     115     115
  797         RY     10     7.1     7.1       0       0     7.1     7.1      10

  798         KK  RM231B
  799         KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM UTOPIA ROAD TO UNION HILLS DRIVE
  800         KM             1) Reach Length = 2830 ft.
  801         RD
  802         RC    .035    .030    .035    2830   .0005
  803         RX      0       0       2      50     140     188     210     210
  804         RY     10       8       8       0       0       8       8      10

  805         KK    232S
  806         KM    RUNOFF GENERATED ON SUB-BASIN 232
  807         KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  808         KM    L= 2.01 mi.  Lca= 0.64 mi.  S= 31 ft/mi.  Kn= .086  LAG= 70.97 min.
  809         KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
  810         BA   1.260
  811         LG    .200    .290    3.98    .396   31.31
  812         UI     60.     60.     60.     60.    185.    219.    257.    288.    319.    342.
  813         UI    367.    403.    444.    479.    556.    673.    769.    734.    638.    573.
  814         UI    524.    485.    449.    405.    370.    340.    304.    283.    244.    194.
  815         UI    159.    106.    106.     99.     98.     83.     60.     60.     60.     46.
  816         UI     18.     18.     18.     18.     18.     18.     18.     18.     18.     18.
  817         UI     18.     18.      0.      0.      0.      0.      0.      0.      0.      0.
  818         UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 819          KK   DT232
 820          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.1 AC-FT FROM SUB-BASIN 232
 821          KM                                               (Hydrograph identified as OR232)
 822          KM                                             2) Balance of runoff continues on.
 823          KM                                               (Hydrograph identified as DT232)
 824          DT   OR232     2.1
 825          DI       0   10000
 826          DQ       0   10000

 827          KK   HC232
 828          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 232 WITH ROUTED FLOW FROM 231
 829          HC       2

 830          KK   RM232
 831          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 232 THROUGH 233
 832          KM             1) Reach Length = 4000 ft.
 833          RD
 834          RC    .035    .030    .030    4000   .0060
 835          RX       0       0       5      20      50      75     135     135
 836          RY      10       8       8       2       2       4       6      10

 837          KK    233S
 838          KM    RUNOFF GENERATED ON SUB-BASIN 233
 839          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 840          KM    L= 1.20 mi.  Lca= 0.39 mi.  S= 91 ft/mi.  Kn= .089  LAG= 40.76 min.
 841          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 842          BA    .238
 843          LG    .126    .302    4.08    .419   32.19
 844          UI     20.     20.     49.     80.     98.    113.    130.    153.    196.    249.
 845          UI    216.    180.    157.    133.    114.     97.     77.     50.     35.     32.
 846          UI     25.     20.     17.      6.      6.      6.      6.      6.      6.      6.
 847          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 848          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 849          KK  HC233A
 850          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 233 WITH ROUTED FLOW FROM 232
 851          KM    ALSO, TOTAL RUNOFF INTO DETENTION BASINS 3A & 3B
 852          HC       2

 853          KK   233RE
 854          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO.'s 3A & 3B.
 855          KM    SOURCE:  Detention Basin Nos. 3A & 3B Design by NBS Lowry.
 856          DT    234D
 857          DI       0     206   10000
 858          DQ       0     206     206

 859          KK   B3ARR
 860          KO       3
 861          KM   ROUTE FLOW THROUGH DETENTION BASIN NO. 3A
 862          KM    SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
 863          KM             Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
 864          KM             P-901801, September 9, 1991, prepared by NBS Lowry Engineers.
 865          RS       1    ELEV    1423
 866          SV       0     .04     .28     .72    1.36    2.51    5.38   11.43   19.53   28.19
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 867          SV   37.25   46.73    56.7   67.55   79.23   91.45  104.21  117.54
 868          SE    1423    1424    1425    1426    1427    1428    1429    1430    1431    1432
 869          SE    1433    1434    1435    1436    1437    1438    1439    1440
 870          SQ       0      11      50     144     234     315     390     445     495     540
 871          SQ     585     625     660     690     720     755     795     840

 872          KK   B3BRR
 873          KO       3
 874          KM   ROUTE FLOW THROUGH DETENTION BASIN NO. 3B
 875          KM    SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
 876          KM             Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
 877          KM             P-901801, September 9, 1991, prepared by NBS Lowry Engineers.
 878          RS       1    ELEV    1417
 879          SV       0     .03     .85    5.94    16.5   27.84   39.53   51.57   63.98   76.75
 880          SV   89.89  103.39  117.28  131.57  146.26  161.34
 881          SE    1417    1418    1419    1420    1421    1422    1423    1424    1425    1426
 882          SE    1427    1428    1429    1430    1431    1432
 883          SQ       0       4      18      54      89     121     150     175     200     220
 884          SQ     239     256     273     287     301     316

 885          KK    R233
 886          KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 233
 887          DR    234D

 888          KK   HC233B
 889          KM    COMBINE DIVERTED LOW FLOW FROM SUB-BASIN 233 WITH BASIN NO. 3B OUTFLOW
 890          HC       2

 891          KK   RM233A
 892          KM    MUSKINGUM-CUNGE ROUTE DETENTION BASIN NO. 3B OUTFLOW THROUGH SUB-BASIN 234
 893          KM    TO THE GREENWAY CHANNEL AT 20TH ST.  THE REACH IS MODELED AS A 108"
 894          KM    CIRCULAR PIPE.
 895          KM             1) Reach Length = 4940 ft.
 896          RD    4940   .0038    .012            CIRC     9.0

 897          KK   RM233B
 898          KM    MUSKINGUM-CUNGE ROUTE IN GREENWAY CHANNEL FROM 20TH ST. TO 16TH ST.
 899          KM             1) Reach Length = 3000 ft.
 900          RD
 901          RC    .045    .035    .045    3000   .0039
 902          RX       0       1      13      23      55      75      87      88
 903          RY      21      20      20      10      10      20      20      21

 904          KK    246S
 905          KM    RUNOFF GENERATED ON SUB-BASIN 246
 906          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 907          KM    L= 1.51 mi.  Lca= 0.75 mi.  S= 90 ft/mi.  Kn= .070  LAG= 44.95 min.
 908          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 909          BA    .398
 910          LG    .130    .309    4.24    .454   28.88
 911          UI     30.     30.     58.    108.    140.    161.    180.    208.    238.    311.
 912          UI    377.    334.    280.    246.    215.    185.    160.    139.    103.     70.
 913          UI     53.     49.     40.     30.     30.     12.      9.      9.      9.      9.
 914          UI      9.      9.      9.      0.      0.      0.      0.      0.      0.      0.
 915          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 916          KK   246RE
 917          KM   SPLIT FLOW AT INTERSECTION OF 20TH ST. AND GROVERS AVE.
 918          KM   SEND FLOW WEST IN GROVERS AVE. (Hydrograph identified as 238D)
 919          KM   REMAINDER FLOWS SOUTH IN 20TH ST. TO THE GREENWAY CHANNEL
 920          KM   (Hydrograph identified as 246RE)
 921          DT    238D
 922          DI       0      60     100     200     400     600
 923          DQ       0       0      20      70     170     270

 924          KK  RM246A
 925          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 246 THROUGH 234
 926          KM             1) Reach Length = 6400 ft.
 927          RD
 928          RC     .03     .02     .03    6400   .0050
 929          RX       0       0       9       9      41      41      50      50
 930          RY       5      .5      .5       0       0      .5      .5       5

 931          KK    234S
 932          KM    RUNOFF GENERATED ON SUB-BASIN 234
 933          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 934          KM    L= 1.21 mi.  Lca= 0.47 mi.  S= 30 ft/mi.  Kn= .085  LAG= 51.76 min.
 935          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 936          BA    .381
 937          LG    .206    .292    3.87    .371   30.59
 938          UI     25.     25.     26.     83.    101.    120.    136.    150.    170.    191.
 939          UI    227.    288.    319.    265.    229.    205.    184.    160.    143.    125.
 940          UI    107.     81.     57.     44.     41.     40.     25.     25.     24.      8.
 941          UI      8.      8.      8.      8.      8.      8.      8.      8.      0.      0.
 942          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 943          KK   DT234
 944          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.6 AC-FT FROM SUB-BASIN 234
 945          KM                                               (Hydrograph identified as OR234)
 946          KM                                             2) Balance of runoff continues on.
 947          KM                                               (Hydrograph identified as DT234)
 948          DT   OR234     0.6
 949          DI       0   10000
 950          DQ       0   10000

 951          KK    235S
 952          KM    RUNOFF GENERATED ON SUB-BASIN 235
 953          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 954          KM    L= 1.10 mi.  Lca= 0.70 mi.  S= 186 ft/mi.  Kn= .072  LAG= 34.78 min.
 955          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 956          BA    .354
 957          LG    .119    .242    7.32    .128   29.80
 958          UI     34.     34.    120.    159.    192.    225.    271.    369.    426.    333.
 959          UI    280.    234.    194.    159.    112.     64.     57.     44.     34.     21.
 960          UI     11.     11.     11.     11.     11.      0.      0.      0.      0.      0.
 961          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 962        KK   HC235
 963        KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 234 & 235 WITH ROUTED FLOWS FROM 230,
 964        KM    233 & 246.  TOTAL RUNOFF INTO GREENWAY CHANNEL AT 16TH ST.
 965        HC       5

 966        KK   RM235
 967        KM    MUSKINGUM-CUNGE ROUTE IN GREENWAY CHANNEL FROM 16TH ST. TO 12TH ST. OR
 968        KM    SUB-BASIN 235 THROUGH 237.
 969        KM             1) Reach Length = 2920 ft.
 970        RD
 971        RC    .045    .035    .045    2920   .0048
 972        RX       0       1      13      23      63      83      95      96
 973        RY      21      20      20      10      10      20      20      21

 974        KK    236S
 975        KM    RUNOFF GENERATED ON SUB-BASIN 236
 976        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 977        KM    L= 1.37 mi.  Lca= 0.73 mi.  S= 43 ft/mi.  Kn= .080  LAG= 56.38 min.
 978        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 979        BA    .343
 980        LG    .200    .246    7.32    .127   36.96
 981        UI     20.     20.     20.     56.     76.     94.    105.    117.    128.    144.
 982        UI    160.    190.    237.    267.    226.    196.    175.    161.    141.    126.
 983        UI    113.    100.     86.     66.     47.     36.     34.     34.     24.     20.
 984        UI     20.     14.      6.      6.      6.      6.      6.      6.      6.      6.
 985        UI      6.      6.      0.      0.      0.      0.      0.      0.      0.      0.
 986        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 987        KK   DT236
 988        KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.8 AC-FT FROM SUB-BASIN 236
 989        KM                                               (Hydrograph identified as OR236)
 990        KM                                             2) Balance of runoff continues on.
 991        KM                                               (Hydrograph identified as DT236)
 992        DT   OR236     1.8
 993        DI       0   10000
 994        DQ       0   10000

 995        KK    237S
 996        KM    RUNOFF GENERATED ON SUB-BASIN 237
 997        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 998        KM    L= 1.31 mi.  Lca= 0.86 mi.  S= 156 ft/mi.  Kn= .081  LAG= 46.75 min.
 999        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1000        BA    .384
1001        LG    .133    .321    6.96    .151   22.81
1002        UI     28.     28.     47.     98.    125.    145.    162.    184.    211.    255.
1003        UI    332.    342.    280.    242.    216.    187.    164.    140.    120.     89.
1004        UI     58.     48.     45.     36.     28.     28.     11.      8.      8.      8.
1005        UI      8.      8.      8.      8.      0.      0.      0.      0.      0.      0.
1006        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1007          KK   HC237
1008          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 236 & 237 WITH ROUTED FLOW FROM 235.
1009          KM    ALSO, TOTAL FLOW AT CONFLUENCE OF EAST FORK OF CAVE CREEK AND THE
1010          KM    GREENWAY CHANNEL.
1011          HC       3

1012          KK   RM237
1013          KM    MUSKINGUM-CUNGE ROUTE IN GREENWAY CHANNEL FROM SUB-BASIN 237 THROUGH 242.
1014          KM             1) Reach Length = 6240 ft.
1015          RD
1016          RC    .045    .035    .045    6240   .0048
1017          RX       0       1       5      25      75      95      99     100
1018          RY      21      20      20      10      10      20      20      21

1019          KK    R246
1020          KM    RETRIEVE HYDROGRAPH OF DIVERTED FLOW FROM SUB-BASIN 246
1021          DR    238D

1022          KK  RM246B
1023          KM    MUSKINGUM-CUNGE ROUTE DIVERTED FLOW THROUGH SUB-BASIN 238
1024          KM             1) Reach Length = 2650 ft.
1025          RD
1026          RC    .030    .020    .030    2650   .0064
1027          RX       0       0      10      10      50      50      60      60
1028          RY       5      .5      .5       0       0      .5      .5       5

1029          KK    238S
1030          KM    RUNOFF GENERATED ON SUB-BASIN 238
1031          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1032          KM    L= 1.42 mi.  Lca= 0.77 mi.  S= 80 ft/mi.  Kn= .069  LAG= 44.71 min.
1033          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1034          BA    .506
1035          LG    .118    .285    4.19    .443   39.50
1036          UI     38.     38.     75.    139.    179.    206.    232.    267.    307.    401.
1037          UI    484.    421.    354.    311.    272.    234.    201.    174.    128.     84.
1038          UI     67.     63.     48.     38.     38.     12.     12.     12.     12.     12.
1039          UI     12.     12.     12.      0.      0.      0.      0.      0.      0.      0.
1040          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1041          KK   DT238
1042          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.8 AC-FT FROM SUB-BASIN 238
1043          KM                                               (Hydrograph identified as OR238)
1044          KM                                             2) Balance of runoff continues on.
1045          KM                                               (Hydrograph identified as DT238)
1046          DT   OR238     0.8
1047          DI       0   10000
1048          DQ       0   10000

1049          KK   HC238
1050          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 238 WITH ROUTED FLOW FROM 246.
1051          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1052          KK   RM238
1053          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 238 THROUGH 241
1054          KM             1) Reach Length = 7480 ft.
1055          RD    7480   .0051     .03            TRAP      25       4

1056          KK    239S
1057          KM    RUNOFF GENERATED ON SUB-BASIN 239
1058          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1059          KM    L= 1.49 mi.  Lca= 0.60 mi.  S= 96 ft/mi.  Kn= .060  LAG= 34.78 min.
1060          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1061          BA    .674
1062          LG    .123    .296    3.92    .384   27.80
1063          UI     65.     65.    228.    303.    366.    429.    517.    702.    811.    634.
1064          UI    534.    445.    369.    303.    213.    122.    109.     84.     65.     40.
1065          UI     20.     20.     20.     20.     20.      0.      0.      0.      0.      0.
1066          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1067          KK   RM239
1068          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 239 THROUGH 241
1069          KM             1) Reach Length = 7560 ft.
1070          RD
1071          RC     .03     .02     .03    7560   .0050
1072          RX       0       0       7       7      43      43      50      50
1073          RY       5      .5      .5       0       0      .5      .5       5

1074          KK    240S
1075          KM    RUNOFF GENERATED ON SUB-BASIN 240
1076          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1077          KM    L= 2.17 mi.  Lca= 1.29 mi.  S= 80 ft/mi.  Kn= .063  LAG= 58.34 min.
1078          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1079          BA    .843
1080          LG    .124    .297    3.82    .361   29.60
1081          UI     49.     49.     49.    120.    176.    215.    245.    271.    295.    329.
1082          UI    369.    416.    528.    613.    585.    499.    442.    401.    366.    322.
1083          UI    291.    258.    232.    197.    147.    103.     86.     81.     80.     57.
1084          UI     49.     49.     36.     15.     15.     15.     15.     15.     15.     15.
1085          UI     15.     15.     15.      0.      0.      0.      0.      0.      0.      0.
1086          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1087          KK   DT240
1088          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.4 AC-FT FROM SUB-BASIN 240
1089          KM                                               (Hydrograph identified as OR240)
1090          KM                                             2) Balance of runoff continues on.
1091          KM                                               (Hydrograph identified as DT240)
1092          DT   OR240     2.4
1093          DI       0   10000
1094          DQ       0   10000

1095          KK   RM240
1096          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 240 THROUGH 241
1097          KM             1) Reach Length = 5240 ft.
1098          RD
1099          RC     .03     .02     .03    5240   .0051
1100          RX       0       0       8       8      72      72      80      80
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1101        RY      5      .5      .5       0       0      .5      .5       5

1102        KK    241S
1103        KM    RUNOFF GENERATED ON SUB-BASIN 241
1104        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1105        KM    L= 1.55 mi.  Lca= 0.68 mi.  S= 59 ft/mi.  Kn= .053  LAG= 35.88 min.
1106        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1107        BA    .983
1108        LG    .118    .287    3.61    .313   43.16
1109        UI     92.     92.    305.    417.    506.    588.    702.    930.   1157.    956.
1110        UI    792.    676.    562.    464.    363.    222.    160.    151.     92.     92.
1111        UI     32.     28.     28.     28.     28.     28.      0.      0.      0.      0.
1112        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1113        KK   DT241
1114        KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 10.9 AC-FT FROM SUB-BASIN 241
1115        KM                                               (Hydrograph identified as OR241)
1116        KM                                             2) Balance of runoff continues on.
1117        KM                                               (Hydrograph identified as DT241)
1118        DT   OR241    10.9
1119        DI       0   10000
1120        DQ       0   10000

1121        KK   HC241
1122        KM    COMBINE HYDROGRAPH FROM SUB-BASIN 241 WITH ROUTED FLOWS FROM 238, 239 & 240.
1123        KM    ALSO, TOTAL FLOW AT 7TH ST. AND BELL RD.
1124        HC       4

1125        KK   241RE
1126        KM    SPLIT FLOW AT INTERSECTION OF 7TH ST. AND BELL RD.
1127        KM    SEND FLOW WEST IN BELL RD. IN STREET, 84" AND 36" PIPES.
1128        KM    (Hydrograph identified as 244D) (300 cfs total in PIPES)
1129        KM    REMAINDER FLOWS SOUTH IN 7TH ST. TO THE GREENWAY CHANNEL.
1130        KM    (Hydrograph identified as 241RE)
1131        KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
1132        KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
1133        KM             Niple, Inc.
1134        DT    244D
1135        DI       0     309     336    5556
1136        DQ       0       9      36     743

1137        KK  RM241A
1138        KM    MUSKINGUM-CUNGE ROUTE FROM BELL RD. TO GREENWAY CHANNEL ALONG 7TH ST.
1139        KM             1) Reach Length = 1130 ft.
1140        RD
1141        RC     .03     .02     .03    1130   .0035
1142        RX       0       0       8       8     102     102     110     110
1143        RY       5      .5      .5       0       0      .5      .5       5

1144        KK  RM241B
1145        KM    MUSKINGUM-CUNGE ROUTE IN GREENWAY CHANNEL FROM 7TH ST. TO APPROXIMATELY
1146        KM    JUST WEST OF CENTRAL AVE.
1147        KM             1) Reach Length = 3880 ft.
1148        RD
1149        RC    .045    .035    .045    3880   .0031
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1150          RX       0       1       5      25      75      95      99     100
1151          RY      21      20      20      10      10      20      20      21

1152          KK    242S
1153          KM    RUNOFF GENERATED ON SUB-BASIN 242
1154          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1155          KM    L= 1.80 mi.  Lca= 0.78 mi.  S= 69 ft/mi.  Kn= .063  LAG= 46.17 min.
1156          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1157          BA    .546
1158          LG    .115    .286    4.43    .253   46.44
1159          UI     40.     40.     71.    143.    182.    210.    236.    269.    308.    377.
1160          UI    493.    478.    393.    342.    304.    262.    229.    197.    166.    119.
1161          UI     72.     68.     65.     44.     40.     35.     12.     12.     12.     12.
1162          UI     12.     12.     12.     12.      0.      0.      0.      0.      0.      0.
1163          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1164          KK   DT242
1165          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 7.1 AC-FT FROM SUB-BASIN 242
1166          KM                                               (Hydrograph identified as OR242)
1167          KM                                             2) Balance of runoff continues on.
1168          KM                                               (Hydrograph identified as DT242)
1169          DT   OR242     7.1
1170          DI       0   10000
1171          DQ       0   10000

1172          KK  HC242A
1173          KM    COMBINE HYDROGRAPH FROM SUB-BASIN 242 WITH ROUTED FLOW FROM 237 & 241.
1174          HC       3

1175          KK    243S
1176          KM    RUNOFF GENERATED ON SUB-BASIN 243
1177          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1178          KM    L= 1.56 mi.  Lca= 0.62 mi.  S= 28 ft/mi.  Kn= .038  LAG= 28.69 min.
1179          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1180          BA    .434
1181          LG    .108    .253    3.55    .302   60.92
1182          UI     51.     92.    208.    273.    333.    422.    614.    546.    429.    347.
1183          UI    276.    208.    116.     86.     64.     51.     17.     16.     16.     16.
1184          UI     16.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1185          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1186          KK   RM243
1187          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 243 THROUGH 244
1188          KM             1) Reach Length = 5840 ft.
1189          RD
1190          RC     .04     .03     .04    5840   .0063
1191          RX       0      20      40      50      70      85     175     180
1192          RY       7       6       4       0       0       4       6       7

1193          KK    244S
1194          KM    RUNOFF GENERATED ON SUB-BASIN 244
1195          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1196          KM    L= 1.52 mi.  Lca= 0.80 mi.  S= 29 ft/mi.  Kn= .050  LAG= 40.90 min.
1197          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1198          BA    .349
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1199          LG    .150    .270    3.61    .313   48.77
1200          UI     29.     29.     71.    116.    143.    165.    189.    222.    283.    363.
1201          UI    319.    264.    231.    196.    168.    142.    115.     75.     51.     47.
1202          UI     38.     29.     26.      9.      9.      9.      9.      9.      9.      9.
1203          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1204          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1205          KK   DT244
1206          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.9 AC-FT FROM SUB-BASIN 244
1207          KM                                               (Hydrograph identified as OR244)
1208          KM                                             2) Balance of runoff continues on.
1209          KM                                               (Hydrograph identified as DT244)
1210          DT   OR244     1.9
1211          DI       0   10000
1212          DQ       0   10000

1213          KK    R241
1214          KM    RETRIEVE HYDROGRAPH FOR DIVERTED FLOW FROM SUB-BASIN 241
1215          DR    244D

1216          KK  RM241C
1217          KM    MUSKINGUM-CUNGE ROUTE FROM 7TH ST. TO CENTRAL AVE. ALONG BELL RD.
1218          KM             1) Reach Length = 2150 ft.
1219          RD
1220          RC     .03     .02     .03    2150   .0020
1221          RX       0       0       8       8     102     102     110     110
1222          RY       5      .5      .5       0       0      .5      .5       5

1223          KK  RM241D
1224          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM BELL RD. TO EAST FORK CAVE CREEK
1225          KM             1) Reach Length = 3120 ft.
1226          RD
1227          RC     .04     .03     .04    3120   .0063
1228          RX       0      20      40      50      70      85     175     180
1229          RY       7       6       4       0       0       4       6       7

1230          KK   HC244
1231          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 244 WITH ROUTED FLOW FROM 241 & 243
1232          HC       3

1233          KK  HC242B
1234          KM    TOTAL FLOW AT EAST FORK OF CAVE CREEK AND CENTRAL AVE.
1235          HC       2

1236          KK   RM242
1237          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 242 THROUGH 245
1238          KM             1) Reach Length = 6600 ft.
1239          RD
1240          RC    .045    .035    .045    6600   .0042
1241          RX       0       1       5      25      85     105     109     110
1242          RY      23      20      20      10      10      20      20      23
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1243          KK    R211
1244          KM    RETRIEVE HYDROGRAPH OF DIVERTED FLOW THROUGH 84" PIPE FROM SUB-BASIN 211
1245          DR    245D

1246          KK  RM211B
1247          KM    MUSKINGUM-CUNGE ROUTE DIVERTED FLOW THROUGH SUB-BASIN 245
1248          KM            1) Reach Length = 3720 ft.
1249          RD
1250          RC    .045    .035    .045    3720   .0060
1251          RX       0       1       5      25      85     105     109     110
1252          RY      21      20      20      10      10      20      20      21

1253          KK    245S
1254          KM    RUNOFF GENERATED ON SUB-BASIN 245
1255          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1256          KM    L= 1.46 mi.  Lca= 0.65 mi.  S= 29 ft/mi.  Kn= .076  LAG= 56.58 min.
1257          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1258          BA    .506
1259          LG    .201    .286    3.82    .382   35.24
1260          UI     30.     30.     30.     81.    111.    138.    155.    171.    188.    211.
1261          UI    234.    277.    345.    393.    335.    290.    259.    237.    210.    187.
1262          UI    167.    148.    129.     99.     72.     53.     51.     49.     37.     30.
1263          UI     30.     22.      9.      9.      9.      9.      9.      9.      9.      9.
1264          UI      9.      9.      0.      0.      0.      0.      0.      0.      0.      0.
1265          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1266          KK   DT245
1267          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.7 AC-FT FROM SUB-BASIN 245
1268          KM                                               (Hydrograph identified as OR245)
1269          KM                                             2) Balance of runoff continues on.
1270          KM                                               (Hydrograph identified as DT245)
1271          DT   OR245     0.7
1272          DI       0   10000
1273          DQ       0   10000

1274          KK   HC245
1275          KM    COMBINE HYDROGRAPH FROM SUB-BASIN 245 WITH ROUTED FLOWS FROM 211 & 244.
1276          KM    ALSO, TOTAL FLOW INTO CAVE CREEK FROM EAST FORK OF CAVE CREEK
1277          HC       3
1278          ZW    A=EAST FORK CAVE CREEK  B=HC245  C=FLOW  F=CAVE CREEK
              *     *     *     *     *     *     *     *     *     *
              *                                                     *
              *        BREAK SEQUENCE - JUMP TO SUB-BASIN 250       *
              *                                                     *
              *                   CAVE CREEK                        *
              *              SUB-BASINS 250 - 266                   *
              *                                                     *
              *     *     *     *     *     *     *     *     *     *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1279          KK    250S
1280          KM    RUNOFF GENERATED ON SUB-BASIN 250
1281          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1282          KM    L= 3.58 mi.  Lca= 1.44 mi.  S= 43 ft/mi.  Kn= .040  LAG= 52.57 min.
1283          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1284          BA   2.396
1285          BF     420
1286          LG    .347    .349    3.61    .315    6.49
1287          UI    153.    153.    153.    501.    620.    733.    838.    919.   1029.   1169.
1288          UI   1355.   1707.   2001.   1702.   1459.   1301.   1173.   1028.    915.    797.
1289          UI    717.    554.    410.    271.    262.    252.    189.    153.    153.     88.
1290          UI     47.     47.     47.     47.     47.     47.     47.     47.     47.      0.
1291          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1292          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1293          KK    251S
1294          KM    RUNOFF GENERATED ON SUB-BASIN 251
1295          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1296          KM    L= 3.89 mi.  Lca= 1.52 mi.  S= 48 ft/mi.  Kn= .040  LAG= 54.23 min.
1297          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1298          BA   1.719
1299          BF       0
1300          LG    .345    .348    4.08    .419    1.39
1301          UI    107.    107.    107.    322.    415.    505.    568.    624.    694.    786.
1302          UI    883.   1116.   1341.   1279.   1081.    952.    861.    769.    677.    604.
1303          UI    533.    461.    353.    252.    189.    179.    175.    120.    107.    107.
1304          UI     56.     33.     33.     33.     33.     33.     33.     33.     33.     33.
1305          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1306          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1307          KK   HC250
1308          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 250 & 251.  ALSO, TOTAL FLOW IN
1309          KM    CAVE CREEK UPSTREAM OF THE C.A.P.
1310          HC       2

1311          KK   RM250
1312          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 250 THROUGH 252
1313          KM            1) Reach Length = 6960 ft.
1314          RD    6960   .0057    .045            TRAP      20       3

1315          KK    252S
1316          KM    RUNOFF GENERATED ON SUB-BASIN 252
1317          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1318          KM    L= 2.02 mi.  Lca= 0.86 mi.  S= 62 ft/mi.  Kn= .082  LAG= 66.49 min.
1319          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1320          BA    .858
1321          LG    .146    .342    4.08    .418    8.55
1322          UI     43.     43.     43.     61.    143.    167.    202.    221.    240.    261.
1323          UI    284.    316.    343.    399.    486.    562.    524.    454.    406.    371.
1324          UI    344.    311.    281.    257.    230.    209.    184.    147.    118.     77.
1325          UI     77.     71.     71.     53.     43.     43.     43.     18.     13.     13.
1326          UI     13.     13.     13.     13.     13.     13.     13.     13.     13.      0.
1327          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1328          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1329          KK   HC252
1330          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 252 WITH ROUTED FLOW FROM 250
1331          HC      2

1332          KK   RM252
1333          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 252 THROUGH 253
1334          KM            1) Reach Length = 7240 ft.
1335          RD
1336          RC   .045    .040    .045    7240   .0054
1337          RX     60      70      75     100     125     155     160     170
1338          RY     16      14      14       6       6      14      14      16

1339          KK    253S
1340          KM    RUNOFF GENERATED ON SUB-BASIN 253
1341          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1342          KM    L= 2.64 mi.  Lca= 1.30 mi.  S= 59 ft/mi.  Kn= .076  LAG= 80.58 min.
1343          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1344          BA    .928
1345          LG    .248    .349    3.92    .384    3.03
1346          UI     39.     39.     39.     39.     71.    127.    148.    171.    187.    204.
1347          UI    218.    233.    249.    272.    293.    316.    363.    437.    479.    501.
1348          UI    439.    393.    360.    334.    313.    292.    268.    245.    229.    209.
1349          UI    192.    180.    153.    125.    110.     69.     69.     67.     64.     64.
1350          UI     49.     39.     39.     39.     39.     13.     12.     12.     12.     12.
1351          UI     12.     12.     12.     12.     12.     12.     12.     12.     12.     12.
1352          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1353          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1354          KK   HC253
1355          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 253 WITH ROUTED FLOW FROM 252
1356          HC      2

1357          KK   RM253
1358          KM    MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 253 THROUGH 254
1359          KM            1) Reach Length = 4920 ft.
1360          RD
1361          RC   .045    .040    .045    4920   .0047
1362          RX      0       0      75      95     105     140     150     150
1363          RY     18      14      12       7       7      16      16      18

1364          KK    254S
1365          KM    RUNOFF GENERATED ON SUB-BASIN 254
1366          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1367          KM    L= 0.98 mi.  Lca= 0.55 mi.  S= 36 ft/mi.  Kn= .084  LAG= 48.41 min.
1368          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1369          BA    .174
1370          LG    .295    .328    4.19    .441   12.92
1371          UI     12.     12.     18.     42.     52.     62.     69.     78.     89.    103.
1372          UI    132.    157.    132.    113.    100.     89.     77.     68.     59.     49.
1373          UI     35.     22.     21.     20.     14.     12.     12.      4.      4.      4.
1374          UI      4.      4.      4.      4.      4.      4.      0.      0.      0.      0.
1375          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1376        KK   HC254
1377        KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 254 WITH ROUTED FLOW FROM 253
1378        HC       2

1379        KK   RM254
1380        KM    MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 254 THROUGH 257
1381        KM             1) Reach Length = 5800 ft.
1382        RD
1383        RC   .045    .040    .045    5800   .0064
1384        RX      0      20      50      70      85     115     130     140
1385        RY     14      14      12       4       4      12      14      14
            *    *    *    *    *    *    *    *    *
            *                                         *
            *    BREAK SEQUENCE - JUMP TO SUB-BASIN 336    *
            *                                         *
            *    *    *    *    *    *    *    *    *

1386        KK    336S
1387        KM    RUNOFF GENERATED ON SUB-BASIN 336
1388        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1389        KM    L= 1.38 mi.  Lca= 0.64 mi.  S= 58 ft/mi.  Kn= .084  LAG= 53.34 min.
1390        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1391        BA    .497
1392        LG    .146    .343    3.82    .360   12.36
1393        UI     31.     31.     31.     98.    125.    149.    169.    186.    207.    235.
1394        UI    268.    342.    403.    360.    307.    272.    247.    217.    192.    170.
1395        UI    150.    127.     93.     61.     55.     52.     46.     31.     31.     27.
1396        UI     10.     10.     10.     10.     10.     10.     10.     10.     10.      0.
1397        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1398        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1399        KK   336RE
1400        KM    DIVERT FLOW OUT OF SUB-BASIN 339 WEST ALONG DEER VALLEY RD.
1401        KM    (Hydrograph identified as 337D)
1402        KM    REMAINDER FLOWS SOUTHWESTERLY THROUGH SUB-BASIN 339 TO THE 7TH AVE. - ROSE
1403        KM    GARDEN LN. INTERSECTION.  (Hydrograph identified as 336RE)
1404        DT    337D
1405        DI       0      60     100     500    1000    2000
1406        DQ       0      60      60      60      60      60

1407        KK   RM336
1408        KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 336 THROUGH 339
1409        KM             1) Reach Length = 4440 ft.
1410        RD    4440   .0056    .045            TRAP      10       4

1411        KK    339S
1412        KM    RUNOFF GENERATED ON SUB-BASIN 339
1413        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1414        KM    L= 1.11 mi.  Lca= 0.49 mi.  S= 31 ft/mi.  Kn= .084  LAG= 49.98 min.
1415        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1416        BA    .350
1417        LG    .295    .328    3.50    .288   16.75
1418        UI     24.     24.     30.     81.     99.    118.    132.    147.    168.    189.
1419        UI    239.    297.    280.    233.    205.    185.    161.    142.    123.    110.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1420          UI     83.     60.     42.     40.     39.     25.     24.     23.      7.      7.
1421          UI      7.      7.      7.      7.      7.      7.      7.      0.      0.      0.
1422          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1423          KK   DT339
1424          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.7 AC-FT FROM SUB-BASIN 339
1425          KM                                               (Hydrograph identified as OR339)
1426          KM                                             2) Balance of runoff continues on.
1427          KM                                               (Hydrograph identified as DT339)
1428          DT   OR339     2.7
1429          DI       0   10000
1430          DQ       0   10000

1431          KK   HC339
1432          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 339 WITH ROUTED FLOW FROM 336
1433          HC       2

1434          KK   339RE
1435          KM    DIVERT FLOW WEST ALONG ROSE GARDEN LN.  (Hydrograph identified as 340D)
1436          KM    REMAINDER FLOWS SOUTH ALONG 7TH AVE. THROUGH SUB-BASIN 255.
1437          KM    (Hydrograph identified as 339RE)
1438          KM    SOURCE:  Concept Drainage Design Hydrology, I-17 to Cave Creek, Outer Loop
1439          KM             Highway, by CRS Sirrine, Inc.
1440          DT    340D
1441          DI       0     100     500    1000    2000
1442          DQ       0       0      84     222     514

1443          KK   RM339
1444          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 339 THROUGH 255
1445          KM             1) Reach Length = 5280 ft.
1446          RD
1447          RC     .03     .02     .03    5280   .0049
1448          RX       0       0       8       8      72      72      80      80
1449          RY       5      .5      .5       0       0      .5      .5       5

1450          KK    255S
1451          KM    RUNOFF GENERATED ON SUB-BASIN 255
1452          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1453          KM    L= 1.43 mi.  Lca= 0.50 mi.  S= 29 ft/mi.  Kn= .063  LAG= 42.12 min.
1454          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1455          BA    .514
1456          LG    .178    .279    3.50    .303   31.71
1457          UI     41.     41.     95.    161.    201.    231.    264.    307.    372.    498.
1458          UI    493.    399.    345.    301.    256.    219.    186.    135.     85.     71.
1459          UI     68.     44.     41.     28.     13.     13.     13.     13.     13.     13.
1460          UI     13.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1461          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1462          KK   HC255
1463          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 255 WITH ROUTED FLOW FROM 339
1464          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1465          KK  RM255A
1466          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 255 TO RENEE DR. & 13TH AVE.
1467          KM             1) Reach Length = 4280 ft.
1468          RD
1469          RC     .03     .02     .03    4280   .0054
1470          RX       0       0       9       9      41      41      50      50
1471          RY       5      .7     .33       0       0     .33      .7       5

1472          KK   255R1
1473          KM    DIVERT FLOW WEST ALONG RENEE DRIVE.  (Hydrograph identified as 261D1)
1474          KM    REMAINDER FLOWS SOUTH ALONG 13TH AVE. ACROSS UNION HILLS DR. TO THE
1475          KM    INTERSECTION OF GROVERS AVE. & 13TH AVE.
1476          KM    (Hydrograph identified as 255R1)
1477          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
1478          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
1479          KM             Niple, Inc.
1480          DT   261D1
1481          DI       0       8      78     647    2044
1482          DQ       0       0       6     243     992

1483          KK  RM255B
1484          KM    MUSKINGUM-CUNGE ROUTE ALONG 13TH AVE. FROM RENEE DR. TO GROVERS AVE.
1485          KM             1) Reach Length = 2800 ft.
1486          RD
1487          RC     .03     .03     .03    2800   .0043
1488          RX       0       0       9       9      41      41      50      50
1489          RY       5      .5      .5       0       0      .5      .5       5

1490          KK   255R2
1491          KM    DIVERT FLOW WEST ALONG GROVERS AVE.  (Hydrograph identified as 261D2)
1492          KM    REMAINDER FLOWS SOUTH ALONG 13TH AVE. FROM GROVERS AVE. TO BELL RD.
1493          KM    (Hydrograph identified as 255R2)
1494          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
1495          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
1496          KM             Niple, Inc.
1497          DT   261D2
1498          DI       0      27      44     141     834
1499          DQ       0       0       0      37     303

1500          KK  RM255C
1501          KM    MUSKINGUM-CUNGE ROUTE FROM GROVERS AVE. TO BELL RD.
1502          KM             1) Reach Length = 3460 ft.
1503          RD
1504          RC     .03     .02     .03    3640   .0047
1505          RX       0       0     2.5     2.5    12.5    12.5      15      15
1506          RY       5     1.5     1.5       0       0     1.5     1.5       5

1507          KK    256S
1508          KM    RUNOFF GENERATED ON SUB-BASIN 256
1509          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1510          KM    L= 0.82 mi.  Lca= 0.45 mi.  S= 24 ft/mi.  Kn= .045  LAG= 24.26 min.
1511          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1512          BA    .140
1513          LG    .141    .266    3.50    .291   37.71
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1514          UI     19.     48.     92.    118.    154.    231.    198.    152.    117.     87.
1515          UI     47.     33.     22.     14.      6.      6.      6.      6.      0.      0.
1516          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1517          KK   RM256
1518          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 256 THROUGH 257
1519          KM             1) Reach Length = 5440 ft.
1520          RD
1521          RC   .045    .040    .045    5440   .0072
1522          RX      0      20      50      70      85     115     130     140
1523          RY     14      14      12       4       4      12      14      14

1524          KK    257S
1525          KM    RUNOFF GENERATED ON SUB-BASIN 257
1526          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1527          KM    L= 2.21 mi.  Lca= 0.88 mi.  S= 26 ft/mi.  Kn= .075  LAG= 74.88 min.
1528          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1529          BA    .921
1530          LG    .200    .290    3.92    .384   28.66
1531          UI     41.     41.     41.     41.    107.    145.    167.    194.    211.    228.
1532          UI    245.    264.    289.    314.    340.    399.    472.    544.    505.    443.
1533          UI    399.    366.    340.    318.    288.    263.    244.    222.    203.    187.
1534          UI    159.    119.     96.     73.     73.     68.     68.     56.     41.     41.
1535          UI     41.     37.     13.     13.     13.     13.     13.     13.     13.     13.
1536          UI     13.     13.     13.     13.     13.      0.      0.      0.      0.      0.
1537          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1538          KK   DT257
1539          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 3.0 AC-FT FROM SUB-BASIN 257
1540          KM                                               (Hydrograph identified as OR257)
1541          KM                                             2) Balance of runoff continues on.
1542          KM                                               (Hydrograph identified as DT257)
1543          DT   OR257     3.0
1544          DI       0   10000
1545          DQ       0   10000

1546          KK   HC257
1547          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 257 WITH ROUTED FLOWS FROM 254, 255 & 256
1548          HC       4

1549          KK   RM257
1550          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 257 THROUGH 258
1551          KM             1) Reach Length = 6400 ft.
1552          RD
1553          RC   .045    .040    .045    6400   .0061
1554          RX      0       0      60      95     105     150     155     200
1555          RY     18      17      16       4       4      16      18      18

1556          KK    258S
1557          KM    RUNOFF GENERATED ON SUB-BASIN 258
1558          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1559          KM    L= 1.52 mi.  Lca= 0.92 mi.  S= 34 ft/mi.  Kn= .074  LAG= 61.94 min.
1560          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1561          BA    .440
1562          LG    .263    .315    3.92    .383   23.50
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1563          UI     24.     24.     24.     48.     83.     99.    115.    129.    139.    152.
1564          UI    170.    186.    217.    266.    310.    282.    244.    218.    198.    182.
1565          UI    162.    147.    132.    118.    105.     84.     66.     42.     42.     39.
1566          UI     39.     25.     24.     24.     18.      7.      7.      7.      7.      7.
1567          UI      7.      7.      7.      7.      7.      7.      0.      0.      0.      0.
1568          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1569          KK  HC258U
1570          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 258 WITH ROUTED FLOW FROM 257.  ALSO,
1571          KM    TOTAL FLOW IN CAVE CREEK UPSTREAM OF CONFLUENCE WITH EAST FORK OF CAVE CREEK
1572          HC       2
1573          ZW    A=CAVE CREEK UPSTREAM EF  B=HC258U  C=FLOW  F=CAVE CREEK

1574          KK  HC258D
1575          KM    COMBINE HYDROGRAPHS FOR TOTAL FLOW FROM CAVE CREEK AND EAST FORK OF
1576          KM    CAVE CREEK
1577          HC       2
1578          ZW    A=CAVE CREEK DOWNSTREAM EF B=HC258D  C=FLOW  F=CAVE CREEK

1579          KK   RM258
1580          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 245/258 THROUGH 262
1581          KM             1)  Reach Length = 2240 ft.
1582          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
1583          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
1584          KM             Niple, Inc.
1585          RD
1586          RC    .045    .035    .045    2240   .0080
1587          RX       0      40      80     120     180     228     253     253
1588          RY      30    29.5      28      18      18      30      32      32
              *    *    *    *    *    *    *    *    *
              *                                         *
              *   BREAK SEQUENCE - JUMP TO SUB-BASIN 260      *
              *                                         *
              *    *    *    *    *    *    *    *    *

1589          KK    260S
1590          KM    RUNOFF GENERATED ON SUB-BASIN 260
1591          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1592          KM    L= 1.76 mi.  Lca= 0.83 mi.  S= 27 ft/mi.  Kn= .047  LAG= 41.79 min.
1593          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1594          BA    .662
1595          BF     365
1596          LG    .137    .265    3.55    .302   40.93
1597          UI     53.     53.    126.    210.    262.    301.    345.    402.    492.    658.
1598          UI    626.    510.    443.    384.    326.    278.    234.    169.    102.     91.
1599          UI     86.     53.     53.     30.     16.     16.     16.     16.     16.     16.
1600          UI     16.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1601          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1602          KK   DT260
1603          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 3.3 AC-FT FROM SUB-BASIN 260
1604          KM                                               (Hydrograph identified as OR260)
1605          KM                                             2) Balance of runoff continues on.
1606          KM                                               (Hydrograph identified as DT260)
1607          DT   OR260     3.3
```

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

1608          DI       0   10000
1609          DQ       0   10000

1610          KK   RM260
1611          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 260 THROUGH 261
1612          KM             1) Reach Length = 5280 ft.
1613          RD
1614          RC     .03     .02     .03    5280   .0042
1615          RX       0       0       8       8      80      80      88      88
1616          RY       5      .5      .5       0       0      .5      .5       5

1617          KK   R257A
1618          KM    RETRIEVE DIVERTED HYDROGRAPH FROM RENEE DR. AND 13TH AVE.
1619          DR   261D1

1620          KK  RM257A
1621          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM RENEE DR. AND 13TH AVE. THROUGH 261
1622          KM             1) Reach Length = 8400 ft.
1623          RD
1624          RC     .03     .02     .03    8400   .0039
1625          RX       0       0      10      10      50      50      60      60
1626          RY       5      .5      .5       0       0      .5      .5       5

1627          KK   R257B
1628          KM    RETRIEVE DIVERTED HYDROGRAPH FROM GROVERS AVE. AND 13TH AVE.
1629          DR   261D2

1630          KK  RM257B
1631          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM GROVERS AVE. AND 13TH AVE. THROUGH 261
1632          KM             1) Reach Length = 5640 ft.
1633          RD
1634          RC     .03     .02     .03    5640   .0037
1635          RX       0       0       7       7      53      53      60      60
1636          RY       5      .5      .5       0       0      .5      .5       5

1637          KK    261S
1638          KM    RUNOFF GENERATED ON SUB-BASIN 261
1639          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1640          KM    L= 1.49 mi.  Lca= 0.95 mi.  S= 21 ft/mi.  Kn= .046  LAG= 42.39 min.
1641          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1642          BA    .617
1643          BF       0
1644          LG    .131    .266    5.36    .220   47.21
1645          UI     49.     49.    112.    190.    238.    275.    312.    364.    437.    584.
1646          UI    597.    482.    415.    364.    310.    265.    228.    167.    108.     85.
1647          UI     81.     57.     49.     39.     15.     15.     15.     15.     15.     15.
1648          UI     15.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1649          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1650          KK   DT261
1651          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 4.7 AC-FT FROM SUB-BASIN 261
1652          KM                                               (Hydrograph identified as OR261)
1653          KM                                             2) Balance of runoff continues on.
1654          KM                                               (Hydrograph identified as DT261)
1655          DT   OR261     4.7
```

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

1656          DI       0   10000
1657          DQ       0   10000

1658          KK   HC261
1659          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 261 WITH ROUTED FLOW FROM 260 AND
1660          KM    DIVERTED FLOWS FROM RENEE DR. & 13TH AVE. AND GROVERS AVE. & 13TH AVE.
1661          KM    ALSO, TOTAL FLOW AT 19TH AVE. AND BELL RD.
1662          HC       4

1663          KK   261RE
1664          KM    DIVERT FLOW WEST ALONG BELL ROAD OUT OF WATERSHED.
1665          KM    (Hydrograph identified as 358D)
1666          KM    REMAINDER FLOWS SOUTH ALONG 19TH AVE. IN STREET AND 90" PIPE.
1667          KM    (Hydrograph identified as 261RE)  (490 cfs in PIPE)
1668          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
1669          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
1670          KM             Niple, Inc.
1671          DT   358D
1672          DI       0     961    1006    3470
1673          DQ       0     336     336    1517

1674          KK   RM261
1675          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 261 THROUGH 262
1676          KM             1) Reach Length = 6440 ft.
1677          RD
1678          RC     .03     .02     .03    6440   .0050
1679          RX       0       0       8       8      80      80      88      88
1680          RY       5      .5      .5       0       0      .5      .5       5

1681          KK    262S
1682          KM    RUNOFF GENERATED ON SUB-BASIN 262
1683          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1684          KM    L= 1.49 mi.  Lca= 0.87 mi.  S= 31 ft/mi.  Kn= .079  LAG= 65.38 min.
1685          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1686          BA    .589
1687          LG    .186    .278    3.50    .315   33.89
1688          UI     30.     30.     30.     47.    101.    119.    142.    156.    170.    184.
1689          UI    203.    225.    245.    290.    351.    400.    350.    306.    276.    252.
1690          UI    233.    209.    189.    172.    154.    142.    118.     89.     66.     54.
1691          UI     52.     50.     46.     30.     30.     30.     21.      9.      9.      9.
1692          UI      9.      9.      9.      9.      9.      9.      9.      9.      0.      0.
1693          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1694          KK   DT262
1695          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.4 AC-FT FROM SUB-BASIN 262
1696          KM                                               (Hydrograph identified as OR262)
1697          KM                                             2) Balance of runoff continues on.
1698          KM                                               (Hydrograph identified as DT262)
1699          DT   OR262     1.4
1700          DI       0   10000
1701          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1702          KK   HC262
1703          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 262 WITH ROUTED FLOW FROM 245/258 & 261.
1704          KM    ALSO, TOTAL FLOW IN CAVE CREEK 500' SOUTH OF GREENWAY RD. AND 600' WEST
1705          KM    OF 19TH AVE.
1706          HC       3

1707          KK   RM262
1708          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 262 THROUGH 263
1709          KM             1) Reach Length = 9040 ft.
1710          RD
1711          RC    .045    .040    .045    9040   .0024
1712          RX       0      60     115     230     285     355     415     485
1713          RY      30      28      26       6       6      20      26      28

1714          KK    R214
1715          KM    RETRIEVE DIVERTED HYDROGRAPH FROM SUB-BASIN 214
1716          DR    263D

1717          KK  RM214B
1718          KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM 19TH AVENUE TO CAVE CREEK ALONG
1719          KM    THUNDERBIRD ROAD.
1720          KM             1) Reach Length = 2500 ft.
1721          RD    2500   .0020    .012            CIRC     6.0

1722          KK  RM214C
1723          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 214 THROUGH 263
1724          KM             1) Reach Length = 3200 ft.
1725          RD
1726          RC    .050    .040    .050    3200   .0031
1727          RX       0      55      90     110     125     130     190     250
1728          RY      28      20      10       8       8      10      20      28

1729          KK    263S
1730          KM    RUNOFF GENERATED ON SUB-BASIN 263
1731          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1732          KM    L= 2.30 mi.  Lca= 1.11 mi.  S= 30 ft/mi.  Kn= .066  LAG= 71.11 min.
1733          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1734          BA    .992
1735          LG    .189    .272    3.87    .447   23.43
1736          UI     47.     47.     47.     47.    145.    171.    202.    226.    250.    269.
1737          UI    288.    316.    348.    375.    435.    528.    601.    580.    504.    451.
1738          UI    413.    382.    354.    320.    292.    269.    240.    223.    193.    155.
1739          UI    128.     83.     83.     78.     77.     67.     47.     47.     47.     39.
1740          UI     14.     14.     14.     14.     14.     14.     14.     14.     14.     14.
1741          UI     14.     14.     14.      0.      0.      0.      0.      0.      0.      0.
1742          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1743          KK   DT263
1744          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 5.7 AC-FT FROM SUB-BASIN 263
1745          KM                                               (Hydrograph identified as OR263)
1746          KM                                             2) Balance of runoff continues on.
1747          KM                                               (Hydrograph identified as DT263)
1748          DT   OR263     5.7
1749          DI       0   10000
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1750        DQ       0   10000

1751        KK  HC263U
1752        KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 263 WITH ROUTED FLOWS FROM 210 AND 262.
1753        KM    ALSO, TOTAL FLOW IN CAVE CREEK UPSTREAM OF THE SWEETWATER CHANNEL.
1754        HC       3
1755        ZW    A=CAVE CREEK UPSTREAM MV  B=HC263U  C=FLOW  F=CAVE CREEK

1756        KK  HC263D
1757        KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 263 WITH 215.  ALSO, TOTAL FLOW IN
1758        KM    CAVE CREEK AT THE SWEETWATER CHANNEL.
1759        HC       2
1760        ZW    A=CAVE CREEK DOWNSTREAM MV  B=HC263D  C=FLOW  F=CAVE CREEK

1761        KK   263RR
1762        KM    RESERVOIR ROUTE THROUGH THE CAVE CREEK SEDIMENT BASIN.  STORAGE-OUTFLOW
1763        KM    RELATIONSHIP FROM THE COE ACDC DESIGN MEMORANDUM NO.5.  THE COE ASSUMED THAT
1764        KM    THE SEDIMENT STORAGE PART OF THE BASIN WAS FULL TO THE SPILLWAY IN THE
1765        KM    DEVELOPMENT OF THIS RATING CURVE.
1766        RS       1    ELEV    1267
1767        SV       0       4       7      16      30      36      50      68      76      86
1768        SV      94     102     112     120     128     136     144     160     184
1769        SE    1267  1267.9  1268.4  1269.2  1270.0  1270.4  1271.1  1272.0  1272.4  1272.9
1770        SE  1273.2  1273.6  1274.0  1274.4  1274.8  1275.1  1275.4  1276.1  1277.0
1771        SQ       0     500    1000    2000    3000    4000    5000    7000    8000    9000
1772        SQ   10000   11000   12000   13000   14000   15000   16000   17000   20000

1773        KK    264S
1774        KM    RUNOFF GENERATED ON SUB-BASIN 264
1775        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1776        KM    L= 1.13 mi.  Lca= 0.49 mi.  S= 19 ft/mi.  Kn= .042  LAG= 27.61 min.
1777        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1778        BA    .479
1779        LG    .124    .254    3.87    .405   42.30
1780        UI     58.    113.    248.    321.    398.    519.    726.    577.    462.    366.
1781        UI    288.    192.    102.     90.     58.     35.     18.     18.     18.     18.
1782        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1783        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1784        KK   DT264
1785        KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.0 AC-FT FROM SUB-BASIN 264
1786        KM                                               (Hydrograph identified as OR264)
1787        KM                                             2) Balance of runoff continues on.
1788        KM                                               (Hydrograph identified as DT264)
1789        DT   OR264     1.0
1790        DI       0   10000
1791        DQ       0   10000

1792        KK   HC264
1793        KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 264 WITH OUTFLOW FROM THE CAVE CREEK
1794        KM    SEDIMENTATION BASIN.  ALSO, TOTAL FLOW IN CAVE CREEK AT CACTUS RD.
1795        HC       2
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```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1796          KK   RM264
1797          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 264 THROUGH 265
1798          KM             1) Reach Length = 5480 ft.
1799          RD    5480   .0040    .020            TRAP      60       2

1800          KK    265S
1801          KM    RUNOFF GENERATED ON SUB-BASIN 265
1802          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1803          KM    L= 1.75 mi.  Lca= 0.80 mi.  S= 23 ft/mi.  Kn= .040  LAG= 36.08 min.
1804          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1805          BA    .876
1806          LG    .117    .252    3.66    .345   54.08
1807          UI     82.     82.    268.    368.    446.    519.    617.    812.   1027.    858.
1808          UI    708.    605.    503.    418.    333.    204.    143.    134.     87.     82.
1809          UI     35.     25.     25.     25.     25.     25.      0.      0.      0.      0.
1810          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1811          KK   DT265
1812          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 13.1 AC-FT FROM SUB-BASIN 265
1813          KM                                               (Hydrograph identified as OR265)
1814          KM                                             2) Balance of runoff continues on.
1815          KM                                               (Hydrograph identified as DT265)
1816          DT   OR265    13.1
1817          DI       0   10000
1818          DQ       0   10000

1819          KK   HC265
1820          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 265 WITH ROUTED FLOW FROM 264. ALSO,
1821          KM    TOTAL FLOW IN CAVE CREEK AT PEORIA AVE.
1822          HC       2

1823          KK   RM265
1824          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 265 THROUGH 266
1825          KM             1) Reach Length = 3400 ft.
1826          RD    3400    .010    .035            TRAP      35       3

1827          KK    266S
1828          KM    RUNOFF GENERATED ON SUB-BASIN 266
1829          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1830          KM    L= 0.84 mi.  Lca= 0.44 mi.  S= 21 ft/mi.  Kn= .075  LAG= 41.49 min.
1831          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1832          BA    .217
1833          LG    .198    .282    3.82    .392   37.61
1834          UI     18.     18.     42.     70.     87.    100.    115.    134.    165.    221.
1835          UI    203.    166.    144.    125.    107.     90.     75.     54.     31.     30.
1836          UI     27.     18.     18.      8.      5.      5.      5.      5.      5.      5.
1837          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1838          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1839          KK   HC266
1840          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 266 WITH ROUTED FLOW FROM 265
1841          KM    ALSO, TOTAL FLOW IN CAVE CREEK AT THE CONFLUENCE WITH THE ARIZONA CANAL
1842          KM    DIVERSION CHANNEL
1843          HC       2
1844          ZW    A=CAVE CREEK UPSTREAM ACDC  B=HC266  C=FLOW  F=CAVE CREEK

1845          KK    R261
1846          KM    RETRIEVE DIVERTED HYDROGRAPH FROM BELL ROAD AND 19TH AVENUE.  THIS
1847          KM    HYDROGRAPH WILL BE STORED IN FILENAME:  CCW324.DSS   FOR RETRIEVAL
1848          KM    AS A PART OF THE WATERSHED CONTRIBUTING TO THE ACDC FROM CAVE CREEK
1849          KM    TO SKUNK CREEK.
1850          DR    358D
1851          ZW    A=BELL ROAD  B=R261  C=FLOW  F=CAVE CREEK
1852          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  8         200S
               V
               V
 29       RM200A
               V
               V
 37       RM200B
               .
               .
 42            .        202S
               .           .
               .           .
 58            .           .-------->   OR202
 53            .       DT202
               .           .
               .           .
 61       HC202............
               V
               V
 64       RM202
               .
               .
 71            .        206S
               .           .
               .           .
 82       HC206............
               .
               .
 90            .-------->    211D
 85       206RE
               V
               V
 93       RM206
               .
               .
100            .        203S
               .           V
               .           V
112            .       203RR
               .           V
               .           V
124            .       RM203
               .           .
               .           .
131            .           .        204S
               .           .           V
               .           .           V
142            .           .       204RR
               .           .           V
               .           .           V
154            .           .       RM204
               .           .           .
               .           .           .
169            .           .           .        205S
               .           .           .           .
               .           .           .           .
175            .           .           .           .-------->   OR205
170            .           .           .       DT205
               .           .           .           .
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                .          .          .
178             .      HC205.......................
                .          V
                .          V
[illegible]1    .      RM205
                .          .
                .          .
189             .          .       207S
                .          .          V
                .          .          V
201             .          .      207RR
                .          .          V
                .          .          V
212             .          .      RM207
                .          .          .
                .          .          .
216             .          .          .       216S
                .          .          .          .
                .          .          .          .
232             .          .          .          .-------->   OR216
227             .          .          .      DT216
                .          .          .          .
                .          .          .          .
235             .      HC216.......................
                .          V
                .          V
238             .      RM216
                .          .
                .          .
246             .          .       208S
                .          .          .
                .          .          .
[illegible]5    HC208.......................
                V
                V
259             RM208
                .
                .
263             .       212S
                .          V
                .          V
274             .      RM212
                .          .
                .          .
282             .          .       211S
                .          .          .
                .          .          .
299             .          .          .-------->   OR211
294             .          .      DT211
                .          .          .
                .          .          .
304             .          .          .          .<--------    211D
302             .          .          .       R211
                .          .          .          .
                .          .          .          .
305             .      HC211.......................
                .          .
                .          .
315             .          .-------->    245D
[illegible]08   .      211RE
                .          V
                .          V
318             .      RM211
                .          .
                .          .
325             .          .       209S
```

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            .          .          .
            .          .          .
344         .          .          .-------->   OR209
339         .          .      DT209
            .          .          .
            .          .          .
347      HC209.......................
            .
            .
350         .       213S
            .          .
            .          .
361      HC213............
            V
            V
364      RM213
            .
            .
371         .       214S
            .          .
            .          .
388         .          .-------->   OR214
383         .      DT214
            .          .
            .          .
396         .          .-------->    263D
391         .      214RE
            .          V
            .          V
399         .      RM214
            .          .
            .          .
6           .          .       210S
            .          .          .
            .          .          .
418      HC210.......................
            V
            V
421      RM210
            .
            .
428         .       215S
            .          .
            .          .
443         .          .-------->   OR215
438         .      DT215
            .          .
            .          .
446      HC215............
            .
            .
451         .       220S
            .          .
            .          .
469         .          .-------->   OR220
464         .      DT220
            .          .
            .          .
475         .          .-------->    222D
472         .      220RE
            .          .
            .          .
478         .          .       221S
            .          .          .
            .          .          .
492         .     HC221A............
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```
          .          V
          .          V
496       .       221RR
          .          .
          .          .
506       .          .          .<-------    222D
504       .          .       R220
          .          .          .
          .          .          .
507       .      HC221B............
          .          V
          .          V
510       .       RM221
          .          .
          .          .
515       .          .       222S
          .          .          .
          .          .          .
531       .          .          .------->   OR222
526       .          .      DT222
          .          .          .
          .          .          .
534       .       HC222............
          .          .
          .          .
545       .          .------->   FL-2D
537       .       222RE
          .          V
          .          V
548       .       RM222
          .          .
          .          .
568       .          .       223S
          .          .          .
          .          .          .
577       .          .          .------->   OR223
572       .          .      DT223
          .          .          .
          .          .          .
580       .       HC223............
          .          V
          .          V
583       .       RM223
          .          .
          .          .
590       .          .       224S
          .          .          .
          .          .          .
606       .          .          .------->   OR224
601       .          .      DT224
          .          .          .
          .          .          .
609       .          .          .       225S
          .          .          .          .
          .          .          .          .
626       .          .          .          .------->   OR225
621       .          .          .      DT225
          .          .          .          .
          .          .          .          .
634       .          .          .          .------->    D225
639       .          .          .      225RE
          .          .          .          V
          .          .          .          V
637       .          .          .      RM225
          .          .          .          .
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642   .         .         .         .       226S
      .         .         .         .         .
      .         .         .         .         .
654   .      HC226.................................
      .         V
      .         V
658   .      RM226
      .         .
      .         .
667   .         .      227S
      .         .         V
      .         .         V
682   .         .      RM227
      .         .         .
      .         .         .
689   .         .         .      228S
      .         .         .         .
      .         .         .         .
706   .         .         .         .-------->   OR228
701   .         .         .     DT228
      .         .         .         .
      .         .         .         .
709   .         .      HC228............
      .         .         .
      .         .         .
712   .         .         .      229S
      .         .         .         V
      .         .         .         V
723   .         .         .     RM229
      .         .         .         .
      .         .         .         .
730   .         .         .         .       230S
      .         .         .         .         .
      .         .         .         .         .
741   .         .         .    HC230A............
      .         .         .         .
      .         .         .         .
744   .      HC230B........................
      .         V
      .         V
747   .      RM230
      .         .
      .         .
754   .         .      231S
      .         .         .
      .         .         .
771   .         .         .-------->    232D
766   .         .      231RE
      .         .         V
      .         .         V
774   .         .      231RR
      .         .         .
      .         .         .
786   .         .         .         .<--------    232D
784   .         .         .      R231
      .         .         .         .
      .         .         .         .
787   .         .      HC231............
      .         .         V
      .         .         V
      .         .     RM231A
      .         .         V
      .         .         V
798   .         .     RM231B
      .         .         .
      .         .         .
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805   .         .         .       232S
      .         .         .         .
      .         .         .         .
824   .         .         .         .-------->  OR232
819   .         .         .      DT232
      .         .         .         .
      .         .         .         .
827   .         .      HC232............
      .         .         V
      .         .         V
830   .         .      RM232
      .         .         .
      .         .         .
837   .         .         .       233S
      .         .         .         .
      .         .         .         .
849   .         .     HC233A............
      .         .         .
      .         .         .
856   .         .         .-------->   234D
853   .         .      233RE
      .         .         V
      .         .         V
859   .         .      B3ARR
      .         .         V
      .         .         V
872   .         .      B3BRR
      .         .         .
      .         .         .
887   .         .         .         .<--------   234D
885   .         .         .       R233
      .         .         .         .
      .         .         .         .
8     .         .     HC233B............
      .         .         V
      .         .         V
891   .         .     RM233A
      .         .         V
      .         .         V
897   .         .     RM233B
      .         .         .
      .         .         .
904   .         .         .       246S
      .         .         .         .
      .         .         .         .
921   .         .         .         .-------->   238D
916   .         .         .      246RE
      .         .         .         V
      .         .         .         V
924   .         .         .     RM246A
      .         .         .         .
      .         .         .         .
931   .         .         .         .       234S
      .         .         .         .         .
      .         .         .         .         .
948   .         .         .         .         .-------->  OR234
943   .         .         .         .      DT234
      .         .         .         .         .
      .         .         .         .         .
951   .         .         .         .         .       235S
      .         .         .         .         .         .
      .         .         .         .         .         .
962   .      HC235.............................................
      .         V
      .         V
966   .      RM235
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                .          .
                .          .
 974            .          .       236S
                .          .          .
                .          .          .
 992            .          .          .-------> OR236
 987            .          .      DT236
                .          .          .
                .          .          .
 995            .          .          .       237S
                .          .          .          .
                .          .          .          .
1007            .      HC237.......................
                .          V
                .          V
1012            .      RM237
                .          .
                .          .
1021            .          .          .<-------    238D
1019            .          .       R246
                .          .          V
                .          .          V
1022            .          .     RM246B
                .          .          .
                .          .          .
1029            .          .          .       238S
                .          .          .          .
                .          .          .          .
1046            .          .          .          .-------> OR238
1041            .          .          .      DT238
                .          .          .          .
                .          .          .          .
 9              .          .      HC238............
                .          .          V
                .          .          V
1052            .          .      RM238
                .          .          .
                .          .          .
1056            .          .          .       239S
                .          .          .          V
                .          .          .          V
1067            .          .          .      RM239
                .          .          .          .
                .          .          .          .
1074            .          .          .          .       240S
                .          .          .          .          .
                .          .          .          .          .
1092            .          .          .          .          .-------> OR240
1087            .          .          .          .      DT240
                .          .          .          .          V
                .          .          .          .          V
1095            .          .          .          .      RM240
                .          .          .          .          .
                .          .          .          .          .
1102            .          .          .          .          .       241S
                .          .          .          .          .          .
                .          .          .          .          .          .
1118            .          .          .          .          .          .-------> OR241
1113            .          .          .          .          .      DT241
                .          .          .          .          .          .
                .          .          .          .          .          .
1121            .          .      HC241.................................
                .          .          .
                .          .          .
1134            .          .          .------->    244D
1125            .          .      241RE
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```
                .         .         V
                .         .         V
1137            .         .     RM241A
                .         .         V
                .         .         V
1144            .         .     RM241B
                .         .         .
                .         .         .
1152            .         .         .       242S
                .         .         .          .
                .         .         .          .
1169            .         .         .          .-------->   OR242
1164            .         .         .      DT242
                .         .         .          .
                .         .         .          .
1172            .     HC242A.......................
                .         .
                .         .
1175            .         .       243S
                .         .         V
                .         .         V
1186            .         .      RM243
                .         .         .
                .         .         .
1193            .         .         .       244S
                .         .         .          .
                .         .         .          .
1210            .         .         .          .-------->   OR244
1205            .         .         .      DT244
                .         .         .          .
                .         .         .          .
15              .         .         .          .          .<-------    244D
3               .         .         .          .       R241
                .         .         .          .          V
                .         .         .          .          V
1216            .         .         .          .     RM241C
                .         .         .          .          V
                .         .         .          .          V
1223            .         .         .          .     RM241D
                .         .         .          .          .
                .         .         .          .          .
1230            .         .      HC244........................
                .         .         .
                .         .         .
1233            .     HC242B............
                .         V
                .         V
1236            .      RM242
                .         .
                .         .
1245            .         .         .<-------    245D
1243            .         .       R211
                .         .         V
                .         .         V
1246            .         .     RM211B
                .         .         .
                .         .         .
1253            .         .         .       245S
                .         .         .          .
                .         .         .          .
/1              .         .         .          .-------->   OR245
1266            .         .         .      DT245
                .         .         .          .
                .         .         .          .
1274            .      HC245........................
                .         .
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1279                 250S
                       .
                       .
[illegible]3                 251S
                         .
                         .
1307                 HC250............
                       V
                       V
1311                 RM250
                       .
                       .
1315                         252S
                         .
                         .
1329                 HC252............
                       V
                       V
1332                 RM252
                       .
                       .
1339                         253S
                         .
                         .
1354                 HC253............
                       V
                       V
1357                 RM253
                       .
                       .
[illegible]364                       254S
                         .
                         .
1376                 HC254............
                       V
                       V
1379                 RM254
                       .
                       .
1386                         336S
                         .
                         .
1404                         .-------->    337D
1399                       336RE
                           V
                           V
1407                       RM336
                           .
                           .
1411                           .       339S
                               .         .
                               .         .
1428                           .         .-------->   OR339
1423                           .      DT339
                               .         .
                               .         .
1431                       HC339............
                           .
                           .
[illegible]0                   .-------->    340D
1434                       339RE
                           V
                           V
1443                       RM339
                           .
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1450                                  255S
                                        .
                                        .
1462                            HC255............
                                    V
                                    V
1465                            RM255A
                                    .
                                    .
1480                                .-------> 261D1
1472                             255R1
                                    V
                                    V
1483                            RM255B
                                    .
                                    .
1497                                .-------> 261D2
1490                             255R2
                                    V
                                    V
1500                            RM255C
                                    .
                                    .
1507                                  256S
                                        V
                                        V
1517                                  RM256
                                        .
                                        .
1524                                      .       257S
                                          .         .
                                          .         .
1543                                      .         .-------> OR257
1538                                      .       DT257
                                          .         .
                                          .         .
1546                        HC257.................................
                                V
                                V
1549                        RM257
                                .
                                .
1556                             258S
                                    .
                                    .
1569                       HC258U............
                                .
                                .
1574                   HC258D............
                            V
                            V
1579                    RM258
                            .
                            .
1589                      260S
                            .
                            .
1607                        .-------> OR260
1602                        DT260
                                V
                                V
1610                        RM260
                                .
                                .
1619                                .<------- 261D1
```

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1617          .          .          .      R257A
              .          .          .          V
              .          .          .          V
1620          .          .          .     RM257A
              .          .          .          .
              .          .          .          .
1629          .          .          .          .          .<-------   261D2
1627          .          .          .          .     R257B
              .          .          .          .          V
              .          .          .          .          V
1630          .          .          .          .    RM257B
              .          .          .          .          .
              .          .          .          .          .
1637          .          .          .          .          .       261S
              .          .          .          .          .          .
              .          .          .          .          .          .
1655          .          .          .          .          .          .------->   OR261
1650          .          .          .          .          .      DT261
              .          .          .          .          .          .
              .          .          .          .          .          .
1658          .          .      HC261.................................
              .          .          .
              .          .          .
1671          .          .          .------->    358D
1663          .          .      261RE
              .          .          V
              .          .          V
1674          .          .      RM261
              .          .          .
              .          .          .
1681          .          .          .       262S
              .          .          .          .
              .          .          .          .
1689          .          .          .          .------->   OR262
1694          .          .          .      DT262
              .          .          .          .
              .          .          .          .
1702          .      HC262......................
              .          V
              .          V
1707          .      RM262
              .          .
              .          .
1716          .          .          .<-------    263D
1714          .          .      R214
              .          .          V
              .          .          V
1717          .          .    RM214B
              .          .          V
              .          .          V
1722          .          .    RM214C
              .          .          .
              .          .          .
1729          .          .          .       263S
              .          .          .          .
              .          .          .          .
1748          .          .          .          .------->   OR263
1743          .          .          .      DT263
              .          .          .          .
              .          .          .          .
1751          .     HC263U......................
              .          .
              .          .
1756     HC263D............
              V
              V
```

```
1761      263RR
              .
              .
1773          .        264S
              .           .
              .           .
1789          .           .-------->   OR264
1784          .      DT264
              .           .
              .           .
1792      HC264............
              V
              V
1796      RM264
              .
              .
1800          .        265S
              .           .
              .           .
1816          .           .-------->   OR265
1811          .      DT265
              .           .
              .           .
1819      HC265............
              V
              V
1823      RM265
              .
              .
1827          .        266S
              .           .
              .           .
1[illegible]59      HC266............
              .
              .
1850          .           .<--------    358D
1845          .        R261
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*           VERSION 4.0.1E             *
*                                      *
*  RUN DATE  04/26/93  TIME  13:43:40  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    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:  CCW324.DAT        KHE JOB NO. 0146
                         CAVE CREEK WATERSHED
                         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: CCW324.DSS
                     Unit:  71;  DSS Version: 6-FT
-----DSS---ZWRITE Unit  71; Vers.    5:  /MOON VALLEY WASH/HC215/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /MOON VALLEY WASH/HC215/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /MOON VALLEY WASH/HC215/FLOW/12OCT1992/4MIN/CAVE CREEK/


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


          **************
          *            *
496 KK    *     221RR  *
          *            *
          **************

497 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
```

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                    ROUTE FLOW THROUGH DETENTION BASIN NO.4
                    RATING CURVE PROVIDED BY NBS LOWRY

          HYDROGRAPH ROUTING DATA

    RS        STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       ELEV  TYPE OF INITIAL CONDITION
                  RSVRIC    1462.00  INITIAL CONDITION
                       X       0.00 WORKING R AND D COEFFICIENT

501 SV          STORAGE        0.0       0.9       3.8      10.8      22.5      38.0      55.5      73.8

502 SE        ELEVATION    1462.00   1464.00   1465.00   1466.00   1467.00   1468.00   1469.00   1470.00

503 SQ        DISCHARGE         0.       24.       50.       73.       81.       87.       93.       99.

                                                                  ***

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

                     HYDROGRAPH AT STATION    221RR

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                 6-HR       24-HR       72-HR     53.27-HR
     88.      14.13      (CFS)      84.         34.         15.         15.
                       (INCHES)    0.780       1.260       1.263       1.263
                        (AC-FT)     41.         67.         67.         67.

PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                 6-HR       24-HR       72-HR     53.27-HR
     41.      14.13                 30.          9.          4.          4.

   K STAGE     TIME                          MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                 6-HR       24-HR       72-HR     53.27-HR
  1468.16      14.13             1467.47     1464.20     1463.00     1463.00

                       CUMULATIVE AREA =    1.00 SQ MI


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


          **************
          *            *
774 KK    *     231RR  *
          *            *
          **************

775 KO        OUTPUT CONTROL VARIABLES
                   IPRNT          3  PRINT CONTROL
                   IPLOT          0  PLOT CONTROL
                   QSCAL         0.  HYDROGRAPH PLOT SCALE
                        ROUTE FLOW THROUGH DETENTION BASIN NO. 1
                        SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
                                 Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
                                 P-901801, September 9, 1991, prepared by NBS Lowry Engineers.

          HYDROGRAPH ROUTING DATA

780 RS        STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       ELEV  TYPE OF INITIAL CONDITION
                  RSVRIC    1487.80  INITIAL CONDITION
```

```
                    X        0.00 WORKING R AND D COEFFICIENT

781 SV        STORAGE        0.0       0.0       1.2       5.9      14.5      25.1      36.5      74.5      90.0

    SE      ELEVATION     1487.80   1488.00   1489.00   1490.00   1491.00   1492.00   1493.00   1496.00   1497.00

783 SQ      DISCHARGE         0.        2.       10.       25.       45.       75.      130.      270.      400.

                                                          ***

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

                    HYDROGRAPH AT STATION    231RR

 PEAK FLOW    TIME                        MAXIMUM AVERAGE FLOW
   (CFS)      (HR)                 6-HR      24-HR      72-HR    53.27-HR
    165.     13.00       (CFS)      87.        28.        13.        13.
                       (INCHES)   0.605      0.780      0.780      0.780
                       (AC-FT)     43.        55.        55.        55.

PEAK STORAGE  TIME                       MAXIMUM AVERAGE STORAGE
  (AC-FT)     (HR)                 6-HR      24-HR      72-HR    53.27-HR
     46.     13.00                  26.         8.         4.         4.

 PEAK STAGE   TIME                        MAXIMUM AVERAGE STAGE
   (FEET)     (HR)                 6-HR      24-HR      72-HR    53.27-HR
  1493.76     13.00              1492.06    1489.43    1488.54    1488.54

                       CUMULATIVE AREA =    1.33 SQ MI


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


          **************
          *            *
859 KK    *     B3ARR  *
          *            *
          **************

860 KO      OUTPUT CONTROL VARIABLES
                  IPRNT          3  PRINT CONTROL
                  IPLOT          0  PLOT CONTROL
                  QSCAL         0.  HYDROGRAPH PLOT SCALE
                     ROUTE FLOW THROUGH DETENTION BASIN NO. 3A
                      SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
                               Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
                               P-901801, September 9, 1991, prepared by NBS Lowry Engineers.

          HYDROGRAPH ROUTING DATA

865 RS      STORAGE ROUTING
                  NSTPS          1  NUMBER OF SUBREACHES
                   ITYP       ELEV  TYPE OF INITIAL CONDITION
                 RSVRIC    1423.00  INITIAL CONDITION
                      X       0.00 WORKING R AND D COEFFICIENT

    SV        STORAGE        0.0       0.0       0.3       0.7       1.4       2.5       5.4      11.4      19.5      28.2
                            37.3      46.7      56.7      67.6      79.2      91.4     104.2     117.5

868 SE      ELEVATION     1423.00   1424.00   1425.00   1426.00   1427.00   1428.00   1429.00   1430.00   1431.00   1432.00
                          1433.00   1434.00   1435.00   1436.00   1437.00   1438.00   1439.00   1440.00

870 SQ      DISCHARGE         0.       11.       50.      144.      234.      315.      390.      445.      495.      540.
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                                585.     625.     660.     690.     720.     755.     795.     840.

                                                                  ***

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

                    HYDROGRAPH AT STATION    B3ARR

 PEAK FLOW    TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                 6-HR      24-HR      72-HR    53.27-HR
   517.      13.67      (CFS)      199.       50.        22.        22.
                      (INCHES)    0.652      0.652      0.652      0.652
                      (AC-FT)      99.        99.        99.        99.

PEAK STORAGE  TIME                          MAXIMUM AVERAGE STORAGE
 (AC-FT)      (HR)                 6-HR      24-HR      72-HR    53.27-HR
    24.      13.67                  6.         1.         1.         1.

 PEAK STAGE   TIME                          MAXIMUM AVERAGE STAGE
  (FEET)      (HR)                 6-HR      24-HR      72-HR    53.27-HR
 1431.49      13.67             1426.30    1423.82    1423.37    1423.37

                    CUMULATIVE AREA =    2.83 SQ MI


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          *            *
  KK      *    B3BRR   *
          *            *
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 873 KO        OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                         ROUTE FLOW THROUGH DETENTION BASIN NO. 3B
                          SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
                                   Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
                                   P-901801, September 9, 1991, prepared by NBS Lowry Engineers.

            HYDROGRAPH ROUTING DATA

 878 RS        STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC    1417.00  INITIAL CONDITION
                         X       0.00 WORKING R AND D COEFFICIENT

 879 SV          STORAGE        0.0      0.0      0.9      5.9     16.5     27.8     39.5     51.6     64.0     76.8
                               89.9    103.4    117.3    131.6    146.3    161.3

 881 SE        ELEVATION     1417.00  1418.00  1419.00  1420.00  1421.00  1422.00  1423.00  1424.00  1425.00  1426.00
                            1427.00  1428.00  1429.00  1430.00  1431.00  1432.00

 883 SQ        DISCHARGE        0.       4.      18.      54.      89.     121.     150.     175.     200.     220.
                               239.     256.     273.     287.     301.     316.

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HYDROGRAPH AT STATION B3BRR

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	53.27-HR
204.	14.93	(CFS)	153.	50.	22.	22.
		(INCHES)	0.503	0.652	0.652	0.652
		(AC-FT)	76.	99.	99.	99.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	53.27-HR
67.	14.93	42.	12.	5.	5.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	53.27-HR
1425.22	14.93	1423.21	1419.23	1418.00	1418.00

CUMULATIVE AREA = 2.83 SQ MI

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-----DSS---ZWRITE Unit  71; Vers.    5:  /EAST FORK CAVE CREEK/HC245/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /EAST FORK CAVE CREEK/HC245/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /EAST FORK CAVE CREEK/HC245/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM EF/HC258U/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM EF/HC258U/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM EF/HC258U/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK DOWNSTREAM EF/HC258D/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK DOWNSTREAM EF/HC258D/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK DOWNSTREAM EF/HC258D/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM MV/HC263U/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM MV/HC263U/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM MV/HC263U/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK DOWNSTREAM MV/HC263D/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK DOWNSTREAM MV/HC263D/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK DOWNSTREAM MV/HC263D/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM ACDC/HC266/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM ACDC/HC266/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /CAVE CREEK UPSTREAM ACDC/HC266/FLOW/12OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /BELL ROAD/R261/FLOW/10OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /BELL ROAD/R261/FLOW/11OCT1992/4MIN/CAVE CREEK/
-----DSS---ZWRITE Unit  71; Vers.    5:  /BELL ROAD/R261/FLOW/12OCT1992/4MIN/CAVE CREEK/
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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	200S	552.	12.33	74.	20.	9.	0.58		
ROUTED TO	RM200A	553.	12.40	74.	20.	9.	0.58		
ROUTED TO	RM200B	550.	12.40	74.	20.	9.	0.58		
HYDROGRAPH AT	202S	682.	12.33	115.	36.	16.	0.61		
DIVERSION TO	OR202	7.	12.33	1.	0.	0.	0.61		
HYDROGRAPH AT	DT202	682.	12.33	115.	36.	16.	0.61		
2 COMBINED AT	HC202	1221.	12.33	189.	56.	25.	1.19		
ROUTED TO	RM202	1208.	12.53	189.	56.	25.	1.19		
HYDROGRAPH AT	206S	720.	12.33	119.	37.	17.	0.68		
2 COMBINED AT	HC206	1843.	12.47	308.	93.	42.	1.87		
DIVERSION TO	211D	87.	12.47	68.	32.	15.	1.87		
HYDROGRAPH AT	206RE	1756.	12.47	240.	60.	27.	1.87		
ROUTED TO	RM206	1736.	12.53	241.	60.	27.	1.87		
HYDROGRAPH AT	203S	278.	12.53	46.	13.	6.	0.43		
ROUTED TO	203RR	25.	13.47	23.	12.	6.	0.43	1405.09	13.47
ROUTED TO	RM203	25.	13.73	23.	12.	6.	0.43		
HYDROGRAPH AT	204S	474.	12.33	72.	21.	10.	0.50		
ROUTED TO	204RR	30.	13.33	29.	20.	9.	0.50	1404.59	13.40
ROUTED TO	RM204	30.	13.40	29.	20.	9.	0.50		
HYDROGRAPH AT	205S	307.	12.40	52.	15.	7.	0.32		
DIVERSION TO	OR205	3.	12.40	1.	0.	0.	0.32		
HYDROGRAPH AT	DT205	307.	12.40	52.	15.	7.	0.32		
3 COMBINED AT	HC205	350.	12.40	100.	47.	22.	1.26		
ROUTED TO	RM205	349.	12.47	100.	47.	22.	1.26		
HYDROGRAPH AT	207S	508.	12.47	87.	26.	12.	0.57		
ROUTED TO	207RR	19.	14.00	18.	14.	9.	0.57	1377.07	14.00
ROUTED TO	RM207	19.	14.13	18.	14.	9.	0.57		
HYDROGRAPH AT	216S	509.	12.27	82.	26.	12.	0.44		
DIVERSION TO	OR216	6.	12.27	3.	1.	0.	0.44		

HYDROGRAPH AT	DT216	509.	12.27	82.	25.	11.	0.44
3 COMBINED AT	HC216	835.	12.33	193.	84.	42.	2.27
ROUTED TO	RM216	828.	12.53	193.	83.	42.	2.27
HYDROGRAPH AT	208S	411.	12.13	52.	16.	7.	0.34
3 COMBINED AT	HC208	2698.	12.53	483.	158.	76.	4.48
ROUTED TO	RM208	2694.	12.53	482.	158.	76.	4.48
HYDROGRAPH AT	212S	442.	12.27	73.	23.	10.	0.40
ROUTED TO	RM212	439.	12.53	73.	23.	10.	0.40
HYDROGRAPH AT	211S	224.	12.47	47.	15.	7.	0.23
DIVERSION TO	OR211	3.	12.47	1.	0.	0.	0.23
HYDROGRAPH AT	DT211	224.	12.47	47.	15.	7.	0.23
HYDROGRAPH AT	R211	87.	11.53	68.	32.	15.	0.00
3 COMBINED AT	HC211	749.	12.53	187.	70.	32.	0.63
DIVERSION TO	245D	260.	12.53	136.	58.	26.	0.63
HYDROGRAPH AT	211RE	489.	12.53	51.	13.	6.	0.63
ROUTED TO	RM211	482.	12.87	51.	13.	6.	0.63
HYDROGRAPH AT	209S	243.	13.00	72.	23.	10.	0.39
DIVERSION TO	OR209	8.	13.00	6.	2.	1.	0.39
HYDROGRAPH AT	DT209	243.	13.00	72.	22.	10.	0.39
3 COMBINED AT	HC209	2851.	12.53	605.	193.	91.	5.50
HYDROGRAPH AT	213S	251.	12.27	42.	13.	6.	0.22
2 COMBINED AT	HC213	3023.	12.53	645.	205.	97.	5.72
ROUTED TO	RM213	3002.	12.60	645.	205.	97.	5.72
HYDROGRAPH AT	214S	433.	12.53	90.	29.	13.	0.48
DIVERSION TO	OR214	6.	12.53	2.	0.	0.	0.48
HYDROGRAPH AT	DT214	433.	12.53	90.	28.	13.	0.48
DIVERSION TO	263D	100.	12.53	47.	17.	8.	0.48
HYDROGRAPH AT	214RE	333.	12.53	43.	11.	5.	0.48
ROUTED TO	RM214	330.	12.67	43.	11.	5.	0.48
HYDROGRAPH AT	210S	714.	12.53	150.	47.	21.	0.83
3 COMBINED AT	HC210	4040.	12.60	835.	261.	124.	7.02
ROUTED TO	RM210	3996.	12.73	834.	261.	123.	7.02
HYDROGRAPH AT	215S	360.	12.13	52.	17.	8.	0.27

DIVERSION TO	OR215	4.	12.13	2.	0.	0.	0.27		
HYDROGRAPH AT	DT215	360.	12.13	52.	16.	7.	0.27		
2 COMBINED AT	HC215	4065.	12.67	884.	277.	131.	7.29		
HYDROGRAPH AT	220S	171.	12.67	36.	11.	5.	0.24		
DIVERSION TO	OR220	4.	12.67	3.	1.	0.	0.24		
HYDROGRAPH AT	DT220	171.	12.67	36.	10.	5.	0.24		
DIVERSION TO	222D	27.	12.67	14.	5.	2.	0.24		
HYDROGRAPH AT	220RE	144.	12.67	22.	5.	2.	0.24		
HYDROGRAPH AT	221S	391.	13.00	100.	28.	13.	0.75		
2 COMBINED AT	HC221A	488.	12.87	122.	34.	15.	1.00		
ROUTED TO	221RR	88.	14.13	84.	34.	15.	1.00	1468.16	14.13
HYDROGRAPH AT	R220	27.	11.80	14.	5.	2.	0.00		
2 COMBINED AT	HC221B	114.	13.67	94.	38.	17.	1.00		
ROUTED TO	RM221	114.	13.67	94.	38.	17.	1.00		
HYDROGRAPH AT	222S	426.	12.20	66.	21.	10.	0.34		
DIVERSION TO	OR222	7.	12.20	5.	1.	1.	0.34		
HYDROGRAPH AT	DT222	426.	12.20	66.	20.	9.	0.34		
2 COMBINED AT	HC222	493.	12.20	153.	59.	26.	1.34		
DIVERSION TO	FL-2D	297.	12.20	119.	47.	21.	1.34		
HYDROGRAPH AT	222RE	196.	12.20	34.	11.	5.	1.34		
ROUTED TO	RM222	217.	12.47	35.	11.	5.	1.34		
HYDROGRAPH AT	223S	518.	12.87	135.	43.	19.	0.75		
DIVERSION TO	OR223	9.	12.87	4.	1.	0.	0.75		
HYDROGRAPH AT	DT223	518.	12.87	135.	42.	19.	0.75		
2 COMBINED AT	HC223	665.	12.60	167.	53.	24.	2.09		
ROUTED TO	RM223	666.	12.80	167.	53.	24.	2.09		
HYDROGRAPH AT	224S	550.	12.33	104.	34.	15.	0.49		
DIVERSION TO	OR224	10.	12.33	6.	2.	1.	0.49		
HYDROGRAPH AT	DT224	550.	12.33	104.	33.	15.	0.49		
HYDROGRAPH AT	225S	283.	12.53	62.	20.	9.	0.30		
DIVERSION TO	OR225	7.	12.53	5.	1.	1.	0.30		
HYDROGRAPH AT	DT225	283.	12.53	62.	19.	9.	0.30		
DIVERSION TO	D225	188.	11.93	22.	6.	3.	0.30		

HYDROGRAPH AT	225RE	95.	11.93	40.	14.	6.	0.30		
ROUTED TO	RM225	95.	12.40	40.	13.	6.	0.30		
HYDROGRAPH AT	226S	307.	12.47	59.	19.	8.	0.36		
4 COMBINED AT	HC226	1414.	12.53	369.	118.	53.	3.24		
ROUTED TO	RM226	1388.	12.60	369.	118.	53.	3.24		
HYDROGRAPH AT	227S	206.	13.07	63.	20.	9.	0.35		
ROUTED TO	RM227	206.	13.20	63.	20.	9.	0.35		
HYDROGRAPH AT	228S	180.	12.53	35.	10.	5.	0.22		
DIVERSION TO	OR228	3.	12.53	2.	1.	0.	0.22		
HYDROGRAPH AT	DT228	180.	12.53	35.	10.	4.	0.22		
2 COMBINED AT	HC228	291.	12.60	98.	30.	14.	0.56		
HYDROGRAPH AT	229S	699.	12.27	101.	30.	14.	0.63		
ROUTED TO	RM229	699.	12.40	101.	30.	14.	0.63		
HYDROGRAPH AT	230S	674.	12.20	104.	33.	15.	0.57		
2 COMBINED AT	HC230A	1334.	12.33	205.	63.	28.	1.20		
3 COMBINED AT	HC230B	2730.	12.40	670.	210.	95.	5.00		
ROUTED TO	RM230	2708.	12.47	670.	210.	95.	5.00		
HYDROGRAPH AT	231S	1094.	12.47	187.	54.	24.	1.33		
DIVERSION TO	232D	185.	12.47	75.	26.	12.	1.33		
HYDROGRAPH AT	231RE	909.	12.47	112.	28.	13.	1.33		
ROUTED TO	231RR	165.	13.00	87.	28.	13.	1.33	1493.76	13.00
HYDROGRAPH AT	R231	185.	11.80	75.	26.	12.	0.00		
2 COMBINED AT	HC231	350.	13.00	155.	54.	24.	1.33		
ROUTED TO	RM231A	328.	13.20	152.	54.	24.	1.33		
ROUTED TO	RM231B	294.	13.47	150.	54.	24.	1.33		
HYDROGRAPH AT	232S	746.	12.93	197.	61.	27.	1.26		
DIVERSION TO	OR232	12.	12.93	4.	1.	0.	1.26		
HYDROGRAPH AT	DT232	746.	12.93	197.	60.	27.	1.26		
2 COMBINED AT	HC232	968.	13.00	339.	113.	51.	2.59		
ROUTED TO	RM232	965.	13.13	339.	113.	51.	2.59		
HYDROGRAPH AT	233S	203.	12.47	37.	12.	5.	0.24		
2 COMBINED AT	HC233A	1016.	13.07	374.	125.	57.	2.83		
DIVERSION TO	234D	206.	13.07	176.	75.	34.	2.83		

HYDROGRAPH AT	233RE	810.	13.07	199.	50.	22.	2.83		
ROUTED TO	B3ARR	517.	13.67	199.	50.	22.	2.83	1431.49	13.67
ROUTED TO	B3BRR	204.	14.93	153.	50.	22.	2.83	1425.22	14.93
HYDROGRAPH AT	R233	206.	12.07	176.	75.	34.	0.00		
2 COMBINED AT	HC233B	410.	14.93	317.	125.	57.	2.83		
ROUTED TO	RM233A	410.	15.00	317.	125.	57.	2.83		
ROUTED TO	RM233B	410.	15.13	317.	125.	57.	2.83		
HYDROGRAPH AT	246S	303.	12.53	59.	18.	8.	0.40		
DIVERSION TO	238D	122.	12.53	16.	4.	2.	0.40		
HYDROGRAPH AT	246RE	182.	12.53	43.	14.	6.	0.40		
ROUTED TO	RM246A	180.	12.80	43.	14.	6.	0.40		
HYDROGRAPH AT	234S	284.	12.60	60.	18.	8.	0.38		
DIVERSION TO	OR234	3.	12.60	1.	0.	0.	0.38		
HYDROGRAPH AT	DT234	284.	12.60	60.	18.	8.	0.38		
HYDROGRAPH AT	235S	391.	12.33	64.	19.	9.	0.35		
5 COMBINED AT	HC235	3676.	12.47	1127.	384.	175.	8.97		
ROUTED TO	RM235	3667.	12.53	1127.	384.	175.	8.97		
HYDROGRAPH AT	236S	283.	12.73	65.	20.	9.	0.34		
DIVERSION TO	OR236	5.	12.73	4.	1.	0.	0.34		
HYDROGRAPH AT	DT236	283.	12.73	65.	19.	9.	0.34		
HYDROGRAPH AT	237S	330.	12.53	62.	18.	8.	0.38		
3 COMBINED AT	HC237	4263.	12.53	1250.	421.	191.	9.70		
ROUTED TO	RM237	4243.	12.67	1249.	421.	191.	9.70		
HYDROGRAPH AT	R246	122.	12.53	16.	4.	2.	0.00		
ROUTED TO	RM246B	121.	12.67	16.	4.	2.	0.00		
HYDROGRAPH AT	238S	419.	12.53	85.	27.	12.	0.51		
DIVERSION TO	OR238	6.	12.53	2.	0.	0.	0.51		
HYDROGRAPH AT	DT238	419.	12.53	85.	27.	12.	0.51		
2 COMBINED AT	HC238	535.	12.53	101.	31.	14.	0.51		
ROUTED TO	RM238	530.	12.80	101.	31.	14.	0.51		
HYDROGRAPH AT	239S	640.	12.33	103.	31.	14.	0.67		
ROUTED TO	RM239	636.	12.53	103.	31.	14.	0.67		
HYDROGRAPH AT	240S	584.	12.73	133.	40.	18.	0.84		

DIVERSION TO	OR240	9.	12.73	5.	1.	1.	0.84
HYDROGRAPH AT	DT240	584.	12.73	133.	39.	18.	0.84
ROUTED TO	RM240	582.	12.87	133.	39.	18.	0.84
HYDROGRAPH AT	241S	1021.	12.33	181.	57.	26.	0.98
DIVERSION TO	OR241	26.	12.33	17.	5.	2.	0.98
HYDROGRAPH AT	DT241	1021.	12.33	181.	52.	23.	0.98
4 COMBINED AT	HC241	2263.	12.53	518.	153.	69.	3.01
DIVERSION TO	244D	297.	12.53	58.	15.	7.	3.01
HYDROGRAPH AT	241RE	1966.	12.53	460.	138.	62.	3.01
ROUTED TO	RM241A	1958.	12.60	460.	138.	62.	3.01
ROUTED TO	RM241B	1944.	12.73	460.	138.	62.	3.01
HYDROGRAPH AT	242S	499.	12.53	105.	34.	15.	0.55
DIVERSION TO	OR242	17.	12.53	11.	4.	2.	0.55
HYDROGRAPH AT	DT242	499.	12.53	105.	30.	14.	0.55
3 COMBINED AT	HC242A	6646.	12.67	1801.	589.	267.	13.25
HYDROGRAPH AT	243S	546.	12.20	93.	31.	14.	0.43
ROUTED TO	RM243	544.	12.40	93.	31.	14.	0.43
HYDROGRAPH AT	244S	341.	12.47	68.	22.	10.	0.35
DIVERSION TO	OR244	6.	12.47	4.	1.	0.	0.35
HYDROGRAPH AT	DT244	341.	12.47	68.	21.	9.	0.35
HYDROGRAPH AT	R241	297.	12.53	58.	15.	7.	0.00
ROUTED TO	RM241C	295.	12.73	58.	15.	7.	0.00
ROUTED TO	RM241D	295.	12.80	58.	15.	7.	0.00
3 COMBINED AT	HC244	1030.	12.53	219.	67.	30.	0.78
2 COMBINED AT	HC242B	7589.	12.67	2015.	655.	297.	14.03
ROUTED TO	RM242	7523.	12.80	2013.	655.	297.	14.03
HYDROGRAPH AT	R211	260.	12.07	136.	58.	26.	0.00
ROUTED TO	RM211B	264.	12.40	136.	58.	26.	0.00
HYDROGRAPH AT	245S	362.	12.73	84.	26.	12.	0.51
DIVERSION TO	OR245	5.	12.73	1.	0.	0.	0.51
HYDROGRAPH AT	DT245	362.	12.73	84.	26.	12.	0.51
3 COMBINED AT	HC245	8136.	12.80	2224.	738.	335.	14.54
HYDROGRAPH AT	250S	1972.	12.60	701.	495.	454.	2.40

HYDROGRAPH AT	251S	908.	12.67	160.	41.	18.	1.72
2 COMBINED AT	HC250	2879.	12.67	861.	535.	472.	4.11
ROUTED TO	RM250	2864.	12.80	860.	535.	472.	4.11
HYDROGRAPH AT	252S	437.	12.87	96.	26.	12.	0.86
2 COMBINED AT	HC252	3297.	12.80	956.	561.	484.	4.97
ROUTED TO	RM252	3268.	13.00	956.	561.	484.	4.97
HYDROGRAPH AT	253S	396.	13.07	96.	25.	11.	0.93
2 COMBINED AT	HC253	3659.	13.00	1052.	586.	495.	5.90
ROUTED TO	RM253	3619.	13.13	1052.	586.	495.	5.90
HYDROGRAPH AT	254S	109.	12.60	20.	6.	3.	0.17
2 COMBINED AT	HC254	3660.	13.13	1072.	592.	497.	6.07
ROUTED TO	RM254	3649.	13.27	1072.	592.	497.	6.07
HYDROGRAPH AT	336S	326.	12.67	63.	17.	8.	0.50
DIVERSION TO	337D	60.	12.67	25.	8.	4.	0.50
HYDROGRAPH AT	336RE	266.	12.67	38.	9.	4.	0.50
ROUTED TO	RM336	262.	12.87	38.	9.	4.	0.50
HYDROGRAPH AT	339S	261.	12.60	49.	14.	6.	0.35
DIVERSION TO	OR339	18.	12.60	4.	1.	1.	0.35
HYDROGRAPH AT	DT339	261.	12.60	48.	13.	6.	0.35
2 COMBINED AT	HC339	485.	12.73	86.	22.	10.	0.85
DIVERSION TO	340D	81.	12.73	10.	3.	1.	0.85
HYDROGRAPH AT	339RE	404.	12.73	75.	19.	9.	0.85
ROUTED TO	RM339	401.	12.93	75.	19.	9.	0.85
HYDROGRAPH AT	255S	466.	12.47	86.	26.	12.	0.51
2 COMBINED AT	HC255	657.	12.80	160.	46.	21.	1.36
ROUTED TO	RM255A	652.	12.87	160.	46.	21.	1.36
DIVERSION TO	261D1	245.	12.87	50.	13.	6.	1.36
HYDROGRAPH AT	255R1	406.	12.87	110.	33.	15.	1.36
ROUTED TO	RM255B	406.	13.00	110.	33.	15.	1.36
DIVERSION TO	261D2	139.	13.00	30.	7.	3.	1.36
HYDROGRAPH AT	255R2	267.	13.00	80.	25.	12.	1.36
ROUTED TO	RM255C	266.	13.13	80.	25.	12.	1.36
HYDROGRAPH AT	256S	181.	12.13	25.	8.	4.	0.14

ROUTED TO	RM256	178.	12.47	25.	8.	4.	0.14
HYDROGRAPH AT	257S	521.	13.00	141.	43.	19.	0.92
DIVERSION TO	OR257	9.	13.00	6.	2.	1.	0.92
HYDROGRAPH AT	DT257	521.	13.00	141.	41.	19.	0.92
4 COMBINED AT	HC257	4350.	13.27	1318.	666.	531.	8.50
ROUTED TO	RM257	4327.	13.40	1318.	666.	531.	8.50
HYDROGRAPH AT	258S	271.	12.80	62.	19.	8.	0.44
2 COMBINED AT	HC258U	4450.	13.40	1380.	685.	539.	8.94
2 COMBINED AT	HC258D	10123.	12.93	3602.	1423.	874.	23.47
ROUTED TO	RM258	10112.	12.93	3602.	1423.	874.	23.47
HYDROGRAPH AT	260S	993.	12.47	486.	403.	382.	0.66
DIVERSION TO	OR260	365.	12.47	5.	1.	1.	0.66
HYDROGRAPH AT	DT260	993.	12.47	486.	403.	382.	0.66
ROUTED TO	RM260	991.	12.60	486.	403.	380.	0.66
HYDROGRAPH AT	R257A	245.	12.87	50.	13.	6.	0.00
ROUTED TO	RM257A	251.	13.13	51.	13.	6.	0.00
HYDROGRAPH AT	R257B	139.	13.00	30.	7.	3.	0.00
ROUTED TO	RM257B	137.	13.33	30.	8.	3.	0.00
HYDROGRAPH AT	261S	601.	12.47	121.	38.	17.	0.62
DIVERSION TO	OR261	12.	12.47	9.	2.	1.	0.62
HYDROGRAPH AT	DT261	601.	12.47	121.	36.	16.	0.62
4 COMBINED AT	HC261	1577.	12.53	687.	460.	405.	1.28
DIVERSION TO	358D	610.	12.53	245.	162.	142.	1.28
HYDROGRAPH AT	261RE	967.	12.53	443.	298.	263.	1.28
ROUTED TO	RM261	966.	12.67	443.	298.	261.	1.28
HYDROGRAPH AT	262S	398.	12.87	100.	31.	14.	0.59
DIVERSION TO	OR262	6.	12.87	3.	1.	0.	0.59
HYDROGRAPH AT	DT262	398.	12.87	100.	30.	14.	0.59
3 COMBINED AT	HC262	11357.	12.93	4139.	1750.	1149.	25.34
ROUTED TO	RM262	11141.	13.27	4131.	1748.	1145.	25.34
HYDROGRAPH AT	R214	100.	11.87	47.	17.	8.	0.00
ROUTED TO	RM214B	100.	12.00	47.	17.	8.	0.00
ROUTED TO	RM214C	100.	12.87	47.	17.	8.	0.00

HYDROGRAPH AT	263S	547.	12.93	140.	42.	19.	0.99		
DIVERSION TO	OR263	14.	12.93	9.	3.	1.	0.99		
HYDROGRAPH AT	DT263	547.	12.93	140.	39.	17.	0.99		
3 COMBINED AT	HC263U	11646.	13.27	4311.	1804.	1171.	26.33		
2 COMBINED AT	HC263D	14239.	13.07	5191.	2080.	1301.	33.63		
ROUTED TO	263RR	13887.	13.20	5190.	2080.	1300.	33.63	1274.75	13.20
HYDROGRAPH AT	264S	557.	12.20	85.	27.	12.	0.48		
DIVERSION TO	OR264	6.	12.20	2.	1.	0.	0.48		
HYDROGRAPH AT	DT264	557.	12.20	85.	27.	12.	0.48		
2 COMBINED AT	HC264	13931.	13.20	5269.	2107.	1312.	34.11		
ROUTED TO	RM264	13873.	13.27	5267.	2106.	1310.	34.11		
HYDROGRAPH AT	265S	936.	12.33	177.	58.	26.	0.88		
DIVERSION TO	OR265	32.	12.33	20.	7.	3.	0.88		
HYDROGRAPH AT	DT265	936.	12.33	177.	51.	23.	0.88		
2 COMBINED AT	HC265	14011.	13.27	5432.	2157.	1333.	34.98		
ROUTED TO	RM265	13997.	13.27	5432.	2157.	1332.	34.98		
HYDROGRAPH AT	266S	193.	12.47	37.	11.	5.	0.22		
2 COMBINED AT	HC266	14032.	13.27	5467.	2169.	1337.	35.20		
HYDROGRAPH AT	R261	610.	12.53	245.	162.	142.	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)
RM200A	MANE	4.00	552.68	744.00	1.29	4.00	552.68	744.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3993E+02 EXCESS=0.0000E+00 OUTFLOW=0.3995E+02 BASIN STORAGE=0.3341E-03 PERCENT ERROR= -0.1

RM200B	MANE	1.61	550.58	744.73	1.29	4.00	550.13	744.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3995E+02 EXCESS=0.0000E+00 OUTFLOW=0.3996E+02 BASIN STORAGE=0.2564E-02 PERCENT ERROR= 0.0

RM202	MANE	4.00	1207.73	752.00	1.74	4.00	1207.73	752.00	1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1106E+03 EXCESS=0.0000E+00 OUTFLOW=0.1105E+03 BASIN STORAGE=0.9805E-03 PERCENT ERROR= 0.1

RM206	MANE	3.80	1738.70	752.40	1.20	4.00	1735.77	752.00	1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1193E+03 EXCESS=0.0000E+00 OUTFLOW=0.1192E+03 BASIN STORAGE=0.5289E-03 PERCENT ERROR= 0.1

RM203	MANE	4.00	24.79	824.00	1.06	4.00	24.79	824.00	1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2448E+02 EXCESS=0.0000E+00 OUTFLOW=0.2449E+02 BASIN STORAGE=0.3590E-03 PERCENT ERROR= 0.0

RM204	MANE	4.00	30.11	808.00	1.52	4.00	30.11	808.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4073E+02 EXCESS=0.0000E+00 OUTFLOW=0.4073E+02 BASIN STORAGE=0.3732E-03 PERCENT ERROR= 0.0

RM205	MANE	4.00	349.23	748.00	1.42	4.00	349.23	748.00	1.42

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9524E+02 EXCESS=0.0000E+00 OUTFLOW=0.9525E+02 BASIN STORAGE=0.2333E-03 PERCENT ERROR= 0.0

RM207	MANE	4.00	18.59	848.00	1.28	4.00	18.59	848.00	1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3935E+02 EXCESS=0.0000E+00 OUTFLOW=0.3920E+02 BASIN STORAGE=0.1598E+00 PERCENT ERROR= 0.0

RM216	MANE	4.00	827.97	752.00	1.52	4.00	827.97	752.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1840E+03 EXCESS=0.0000E+00 OUTFLOW=0.1838E+03 BASIN STORAGE=0.3438E+00 PERCENT ERROR= -0.1

RM208	MANE	1.95	2693.92	752.49	1.40	4.00	2693.85	752.00	1.40

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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3339E+03 EXCESS=0.0000E+00 OUTFLOW=0.3338E+03 BASIN STORAGE=0.1234E+00 PERCENT ERROR=   0.0

          RM212  MANE        4.00    438.58    752.00      2.16      4.00    438.58    752.00        2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4581E+02 EXCESS=0.0000E+00 OUTFLOW=0.4578E+02 BASIN STORAGE=0.1995E-02 PERCENT ERROR=   0.1

          RM211  MANE        1.80    481.72    772.20      0.76      4.00    481.62    772.00        0.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2530E+02 EXCESS=0.0000E+00 OUTFLOW=0.2542E+02 BASIN STORAGE=0.2037E-02 PERCENT ERROR=  -0.5

          RM213  MANE        4.00   3002.01    756.00      1.40      4.00   3002.01    756.00        1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4288E+03 EXCESS=0.0000E+00 OUTFLOW=0.4286E+03 BASIN STORAGE=0.2824E+00 PERCENT ERROR=   0.0

          RM214  MANE        2.80    331.05    758.80      0.85      4.00    330.05    760.00        0.84

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2142E+02 EXCESS=0.0000E+00 OUTFLOW=0.2153E+02 BASIN STORAGE=0.1004E-02 PERCENT ERROR=  -0.5

          RM210  MANE        4.00   3995.56    764.00      1.45      4.00   3995.56    764.00        1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5438E+03 EXCESS=0.0000E+00 OUTFLOW=0.5433E+03 BASIN STORAGE=0.2000E+00 PERCENT ERROR=   0.1

          RM221  MANE        4.00    114.09    820.00      1.44      4.00    114.09    820.00        1.44

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7632E+02 EXCESS=0.0000E+00 OUTFLOW=0.7632E+02 BASIN STORAGE=0.4651E-03 PERCENT ERROR=   0.0

          RM222  MANE        4.00    217.40    748.00      0.32      4.00    217.40    748.00        0.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2247E+02 EXCESS=0.0000E+00 OUTFLOW=0.2264E+02 BASIN STORAGE=0.3972E-02 PERCENT ERROR=  -0.8

          RM223  MANE        4.00    665.59    768.00      0.95      4.00    665.59    768.00        0.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1054E+03 EXCESS=0.0000E+00 OUTFLOW=0.1054E+03 BASIN STORAGE=0.3926E-03 PERCENT ERROR=   0.0

          RM225  MANE        4.00     95.00    756.00      1.66      4.00     95.00    756.00        1.66

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2681E+02 EXCESS=0.0000E+00 OUTFLOW=0.2677E+02 BASIN STORAGE=0.1124E-02 PERCENT ERROR=   0.1

          RM226  MANE        4.00   1388.30    756.00      1.36      4.00   1388.30    756.00        1.36

INUITY SUMMARY (AC-FT) - INFLOW=0.2341E+03 EXCESS=0.0000E+00 OUTFLOW=0.2341E+03 BASIN STORAGE=0.3479E-03 PERCENT ERROR=   0.0

          RM227  MANE        4.00    205.71    792.00      2.16      4.00    205.71    792.00        2.16
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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3994E+02 EXCESS=0.0000E+00 OUTFLOW=0.3994E+02 BASIN STORAGE=0.4518E-03 PERCENT ERROR=   0.0

         RM229  MANE        4.00    699.45    744.00      1.76      4.00    699.45    744.00        1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5954E+02 EXCESS=0.0000E+00 OUTFLOW=0.5957E+02 BASIN STORAGE=0.1195E-02 PERCENT ERROR=  -0.1

         RM230  MANE        4.00   2708.34    748.00      1.57      4.00   2708.34    748.00        1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4181E+03 EXCESS=0.0000E+00 OUTFLOW=0.4179E+03 BASIN STORAGE=0.5785E-03 PERCENT ERROR=   0.0

        RM231A  MANE        4.00    328.20    792.00      1.51      4.00    328.20    792.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1077E+03 EXCESS=0.0000E+00 OUTFLOW=0.1072E+03 BASIN STORAGE=0.2261E-02 PERCENT ERROR=   0.5

        RM231B  MANE        4.00    294.28    808.00      1.51      4.00    294.28    808.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1072E+03 EXCESS=0.0000E+00 OUTFLOW=0.1075E+03 BASIN STORAGE=0.1454E-02 PERCENT ERROR=  -0.3

         RM232  MANE        4.00    965.01    788.00      1.63      4.00    965.01    788.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2260E+03 EXCESS=0.0000E+00 OUTFLOW=0.2260E+03 BASIN STORAGE=0.6293E-03 PERCENT ERROR=   0.0

        RM233A  MANE        4.00    410.34    900.00      1.65      4.00    410.34    900.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2489E+03 EXCESS=0.0000E+00 OUTFLOW=0.2489E+03 BASIN STORAGE=0.1127E-02 PERCENT ERROR=   0.0

        RM233B  MANE        4.00    410.13    908.00      1.65      4.00    410.13    908.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2489E+03 EXCESS=0.0000E+00 OUTFLOW=0.2489E+03 BASIN STORAGE=0.6232E-03 PERCENT ERROR=   0.0

        RM246A  MANE        4.00    180.46    768.00      1.31      4.00    180.46    768.00        1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2781E+02 EXCESS=0.0000E+00 OUTFLOW=0.2787E+02 BASIN STORAGE=0.9850E-03 PERCENT ERROR=  -0.2

         RM235  MANE        4.00   3666.87    752.00      1.61      4.00   3666.87    752.00        1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7684E+03 EXCESS=0.0000E+00 OUTFLOW=0.7683E+03 BASIN STORAGE=0.4917E-03 PERCENT ERROR=   0.0

         RM237  MANE        4.00   4243.42    760.00      1.63      4.00   4243.42    760.00        1.63

INUITY SUMMARY (AC-FT) - INFLOW=0.8418E+03 EXCESS=0.0000E+00 OUTFLOW=0.8415E+03 BASIN STORAGE=0.9382E-03 PERCENT ERROR=   0.0

        RM246B  MANE        2.20    121.43    759.00     -1.00      4.00    121.09    760.00       -1.00
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RM238  MANE        4.00    530.09    768.00      2.25      4.00    530.09    768.00        2.25

INUITY SUMMARY (AC-FT) - INFLOW=0.6084E+02 EXCESS=0.0000E+00 OUTFLOW=0.6082E+02 BASIN STORAGE=0.1408E-01 PERCENT ERROR=   0.0

RM239  MANE        4.00    635.78    752.00      1.72      4.00    635.78    752.00        1.72

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6167E+02 EXCESS=0.0000E+00 OUTFLOW=0.6174E+02 BASIN STORAGE=0.1152E-02 PERCENT ERROR=  -0.1

RM240  MANE        4.00    582.45    772.00      1.74      4.00    582.45    772.00        1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7795E+02 EXCESS=0.0000E+00 OUTFLOW=0.7802E+02 BASIN STORAGE=0.9135E-03 PERCENT ERROR=  -0.1

RM241A  MANE       2.15   1960.69    755.14      1.71      4.00   1958.09    756.00        1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2737E+03 EXCESS=0.0000E+00 OUTFLOW=0.2737E+03 BASIN STORAGE=0.1640E-03 PERCENT ERROR=   0.0

RM241B  MANE       4.00   1943.78    764.00      1.71      4.00   1943.78    764.00        1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2737E+03 EXCESS=0.0000E+00 OUTFLOW=0.2735E+03 BASIN STORAGE=0.9415E-03 PERCENT ERROR=   0.1

RM243  MANE        4.00    544.36    744.00      2.65      4.00    544.36    744.00        2.65

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6145E+02 EXCESS=0.0000E+00 OUTFLOW=0.6145E+02 BASIN STORAGE=0.1283E-02 PERCENT ERROR=   0.0

RM241C  MANE       4.00    294.67    764.00     -1.00      4.00    294.67    764.00       -1.00

RM241D  MANE       4.00    294.77    768.00     -1.00      4.00    294.77    768.00       -1.00

RM242  MANE        4.00   7523.00    768.00      1.75      4.00   7523.00    768.00        1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1308E+04 EXCESS=0.0000E+00 OUTFLOW=0.1307E+04 BASIN STORAGE=0.8126E-03 PERCENT ERROR=   0.1

RM211B  MANE       4.00    264.36    744.00     -1.00      4.00    264.36    744.00       -1.00

RM250  MANE        4.00   2864.06    768.00      9.47      4.00   2864.06    768.00        9.47

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2080E+04 EXCESS=0.0000E+00 OUTFLOW=0.2080E+04 BASIN STORAGE=-.2438E-06 PERCENT ERROR=   0.0

RM252  MANE        4.00   3268.24    780.00      8.03      4.00   3268.24    780.00        8.03

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2132E+04 EXCESS=0.0000E+00 OUTFLOW=0.2131E+04 BASIN STORAGE=-.5072E-06 PERCENT ERROR=   0.0
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          RM253  MANE        4.00   3619.13    788.00      6.92      4.00   3619.13    788.00        6.92

INUITY SUMMARY (AC-FT) - INFLOW=0.2181E+04 EXCESS=0.0000E+00 OUTFLOW=0.2181E+04 BASIN STORAGE=0.0000E+00 PERCENT ERROR=   0.0

          RM254  MANE        4.00   3648.68    796.00      6.76      4.00   3648.68    796.00        6.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2192E+04 EXCESS=0.0000E+00 OUTFLOW=0.2192E+04 BASIN STORAGE=-.1016E-05 PERCENT ERROR=   0.0

          RM336  MANE        3.00    262.39    771.00      0.70      4.00    262.29    772.00        0.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1862E+02 EXCESS=0.0000E+00 OUTFLOW=0.1861E+02 BASIN STORAGE=0.5518E-02 PERCENT ERROR=   0.0

          RM339  MANE        4.00    400.85    776.00      0.86      4.00    400.85    776.00        0.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3844E+02 EXCESS=0.0000E+00 OUTFLOW=0.3864E+02 BASIN STORAGE=0.6708E-03 PERCENT ERROR=  -0.5

         RM255A  MANE        4.00    651.58    772.00      1.25      4.00    651.58    772.00        1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9056E+02 EXCESS=0.0000E+00 OUTFLOW=0.9059E+02 BASIN STORAGE=0.4558E-03 PERCENT ERROR=   0.0

         RM255B  MANE        4.00    405.92    780.00      0.90      4.00    405.92    780.00        0.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6557E+02 EXCESS=0.0000E+00 OUTFLOW=0.6557E+02 BASIN STORAGE=0.5022E-03 PERCENT ERROR=   0.0

         RM255C  MANE        4.00    265.57    788.00      0.70      4.00    265.57    788.00        0.70

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5074E+02 EXCESS=0.0000E+00 OUTFLOW=0.5074E+02 BASIN STORAGE=0.5803E-03 PERCENT ERROR=   0.0

          RM256  MANE        4.00    178.19    748.00      2.09      4.00    178.19    748.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1547E+02 EXCESS=0.0000E+00 OUTFLOW=0.1558E+02 BASIN STORAGE=0.8952E-03 PERCENT ERROR=  -0.7

          RM257  MANE        4.00   4327.08    804.00      5.16      4.00   4327.08    804.00        5.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2341E+04 EXCESS=0.0000E+00 OUTFLOW=0.2340E+04 BASIN STORAGE=0.0000E+00 PERCENT ERROR=   0.0

          RM258  MANE        2.56  10120.15    777.79      3.07      4.00  10112.49    776.00        3.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3849E+04 EXCESS=0.0000E+00 OUTFLOW=0.3849E+04 BASIN STORAGE=0.0000E+00 PERCENT ERROR=   0.0

          RM260  MANE        4.00    990.88    756.00     47.32      4.00    990.88    756.00       47.32

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1681E+04 EXCESS=0.0000E+00 OUTFLOW=0.1672E+04 BASIN STORAGE=0.9741E+01 PERCENT ERROR=   0.0
```

```
RM257A  MANE        4.00    251.36    788.00     -1.00      4.00    251.36    788.00       -1.00

RM257B  MANE        2.20    136.88    800.80     -1.00      4.00    136.79    800.00       -1.00

RM261   MANE        4.00    966.05    760.00     16.85      4.00    966.05    760.00       16.85

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1158E+04 EXCESS=0.0000E+00 OUTFLOW=0.1150E+04 BASIN STORAGE=0.8489E+01 PERCENT ERROR=  -0.1

RM262   MANE        4.00  11140.70    796.00      3.73      4.00  11140.70    796.00        3.73

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5060E+04 EXCESS=0.0000E+00 OUTFLOW=0.5045E+04 BASIN STORAGE=0.1117E+02 PERCENT ERROR=   0.1

RM214B  MANE        4.00    100.19    720.00     -1.00      4.00    100.19    720.00       -1.00

RM214C  MANE        4.00    100.00    784.00     -1.00      4.00    100.00    784.00       -1.00

RM264   MANE        3.89  13905.97    794.31      3.17      4.00  13873.34    796.00        3.17

TINUITY SUMMARY (AC-FT) - INFLOW=0.5775E+04 EXCESS=0.0000E+00 OUTFLOW=0.5766E+04 BASIN STORAGE=0.1353E+02 PERCENT ERROR=  -0.1

RM265   MANE        2.56  14000.46    796.19      3.14      4.00  13997.11    796.00        3.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5868E+04 EXCESS=0.0000E+00 OUTFLOW=0.5863E+04 BASIN STORAGE=0.8023E+01 PERCENT ERROR=   0.0


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


  -----DSS---ZCLOSE Unit:  71,   File: CCW324.DSS
            Pointer Utilization:  0.26
            Number of Records:     57
            File Size:    129.8  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  05/20/93  TIME  13:57:53   *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    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:  CC324F.DAT        KHE JOB NO. 0146
  3           ID       CAVE CREEK WATERSHED - FUTURE CONDITIONS
  4           ID       100-YEAR 24-HOUR DURATION STORM
  5           ID       SCS TYPE-II DISTRIBUTION WAS USED
              *                                                          *
              *              HEC-1 RUN FOR CAVE CREEK WATERSHED          *
              *                 Submitted: October 23, 1992              *
              *                 REVISED:   December 4, 1992              *
              *                 REVISED:  April 5, 1993  to reflect the  *
              *                           the City of Phoenix General Plan *
              *DIAGRAM
  6           IT       4 10OCT92    1200     800
  7           IO       5
              *   *   *   *   *   *   *   *
              *                               *
              *       MOON VALLEY WASH        *
              *     SUB-BASINS 200 - 215      *
              *                               *
              *   *   *   *   *   *   *   *

  8           KK    200S
  9           KM    RUNOFF GENERATED ON SUB-BASIN 200
 10           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 11           KM    L=  1.12 mi.  Lca= 0.58 mi.  S= 148 ft/mi.  Kn= .053  LAG= 25.07 min.
 12           KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 13           BA    .580
 14           IN      30
 15           KM    RAINFALL DEPTH OF 4.10 WAS SPACIALLY REDUCED AS SHOWN BY THE PB RECORD
 16           KM    AN AREAL REDUCTION COEFFICIENT OF .89  WAS USED
 17           PB    3.65
 18           KM    THE FOLLOWING PC RECORD USED A 24-HR 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    .119    .288   5.360    .228  34.320
 25           UI     76.    173.    346.    446.    565.    823.    876.    655.    516.    398.
 26           UI    273.    142.    116.     76.     38.     23.     23.     23.     23.      0.
 27           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 28           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 29           KK  RM200A
 30           KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 200 THROUGH 202
 31           KM            1) Natural Channel
 32           KM            2) Reach Length = 2320 ft.
 33           RD
 34           RC    .045    .035    .045    2320   .0084
 35           RX      42      44     144     150     165     171     271     273
 36           RY       6       5       3       0       0       3       5       6
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  37          KK  RM200B
  38          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 200 THROUGH 202
  39          KM             1) Gunite Lined Channel
  40          KM             2) Reach Length = 2020 ft.
  41          RD    2020    .010    .020            TRAP      10       0

  42          KK    202S
  43          KM    RUNOFF GENERATED ON SUB-BASIN 202
  44          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  45          KM    L=  1.33 mi.  Lca= 0.87 mi.  S= 148 ft/mi.  Kn= .051  LAG= 30.04 min.
  46          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
  47          BA    .608
  48          LG    .103    .258   6.290    .186  43.760
  49          UI     68.    111.    267.    354.    426.    526.    741.    814.    621.    512.
  50          UI    412.    331.    224.    123.    112.     71.     58.     21.     21.     21.
  51          UI     21.     21.      0.      0.      0.      0.      0.      0.      0.      0.
  52          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

  53          KK   DT202
  54          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.9 AC-FT FROM SUB-BASIN 202
  55          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR202)
  56          KM                                              2) Balance of runoff continues on.
  57          KM                                                (Hydrograph identified as DT202)
  58          DT   OR202     0.9
  59          DI       0   10000
  60          DQ       0   10000

  61          KK   HC202
  62          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200 & 202
  63          HC       2

  64          KK   RM202
  65          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 202 THROUGH 206
  66          KM             1) Reach Length = 3580 FT.
  67          RD
  68          RC    .045    .035    .045    3580   .0047
  69          RX      53      55     135     150     175     190     270     272
  70          RY       6       5       3       0       0       3       5       6

  71          KK    206S
  72          KM    RUNOFF GENERATED ON SUB-BASIN 206
  73          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
  74          KM    L=  1.56 mi.  Lca= 0.81 mi.  S= 35 ft/mi.  Kn= .042  LAG= 33.64 min.
  75          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
  76          BA    .677
  77          LG    .118    .250   3.500    .323  37.030
  78          UI     62.     62.    195.    274.    332.    385.    459.    572.    779.    682.
  79          UI    555.    478.    398.    333.    275.    192.    109.    103.     81.     62.
  80          UI     44.     19.     19.     19.     19.     19.     19.      0.      0.      0.
  81          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  82          KK   HC206
  83          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200-202 & 206
  84          HC       2

  85          KK   206RE
  86          KM    DIVERT FLOW OUT OF SUB-BASIN 206 INTO 211 THROUGH A 48-IN. DIAMETER
  87          KM    STORM DRAIN.
  88          KM    SOURCE:  Storm Drain Design for Coral Gables Dr., Project Engineering
  89          KM             Consultants.
  90          DT    211D
  91          DI       0      87     200     500    1000    2000    3000
  92          DQ       0      87      87      87      87      87      87

  93          KK   RM206
  94          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 206 THROUGH 208
  95          KM             1) Reach Length = 1780 FT.
  96          RD
  97          RC    .045    .035    .045    1780   .0045
  98          RX      58      68     138     150     175     187     257     267
  99          RY       6       4       3       0       0       3       4       6

 100          KK    203S
 101          KM    RUNOFF GENERATED ON SUB-BASIN 203
 102          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 103          KM    L= 1.06 mi.  Lca= 0.58 mi.  S= 126 ft/mi.  Kn= .065  LAG= 31.04 min.
 104          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 105          BA    .432
 106          LG    .132    .293   4.190    .471  33.640
 107          UI     45.     58.    164.    221.    263.    318.    401.    558.    477.    385.
 108          UI    321.    262.    214.    148.     84.     74.     53.     45.     18.     14.
 109          UI     14.     14.     14.     14.      0.      0.      0.      0.      0.      0.
 110          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 111          KK   203RR
 112          KM    RESERVOIR ROUTE THROUGH DETENTION BASIN NO. 2B
 113          KM       1)  Total Volume = 48 AC-FT.
 114          KM       2)  Spillway Elev. = 1412
 115          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
 116          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
 117          KM             Niple, Inc.
 118          RS       1    ELEV    1395
 119          SV       0       1      18      37      48      68
 120          SE    1395    1400    1405    1410    1412    1415
 121          SS    1412      80    2.63     1.5
 122          SL  1396.7    1.78     .60     .50

 123          KK   RM203
 124          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 203 THROUGH 205
 125          KM             1) Reach Length = 2760 FT.
 126          RD
 127          RC    .045    .035    .045    2760   .0098
 128          RX      54      64     134     150     165     181     251     261
 129          RY       6       5       4       0       0       4       5       6
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 130          KK    204S
 131          KM    RUNOFF GENERATED ON SUB-BASIN 204
 132          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 133          KM    L= 1.10 mi.  Lca= 0.50 mi.  S= 133 ft/mi.  Kn= .062  LAG= 28.09 min.
 134          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 135          BA    .504
 136          LG    .129    .298   3.820    .373  36.060
 137          UI     59.    103.    237.    312.    378.    476.    694.    643.    502.    408.
 138          UI    325.    254.    142.    100.     79.     59.     27.     18.     18.     18.
 139          UI     18.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 140          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 141          KK   204RR
 142          KM    RESERVOIR ROUTE THROUGH DETENTION BASIN NO. 2A
 143          KM       1) Total Volume = 60 AC-FT.
 144          KM       2) Spillway Elev. = 1408
 145          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
 146          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
 147          KM             Niple, Inc.
 148          RS       1    ELEV    1391
 149          SV       0       2       5      10      25      60      69      81      94     108
 150          SE    1391    1393    1397    1400    1404    1408    1409    1410    1411    1412
 151          SS    1408    80.0    2.63     1.5
 152          SL  1392.2    1.78     .60     .50

 153          KK   RM204
 154          KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM SUB-BASIN 204 THROUGH 205
 155          KM             1) Reach Length = 2400 FT.
 156          KM             2) Avg. Pipe Diameter = 54"
 157          RD    2400   .0104    .020            CIRC     4.5

 158          KK    205S
 159          KM    RUNOFF GENERATED ON SUB-BASIN 205
 160          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 161          KM    L= 0.82 mi.  Lca= 0.49 mi.  S= 103 ft/mi.  Kn= .061  LAG= 25.75 min.
 162          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 163          BA    .323
 164          LG    .123    .276   6.290    .201  41.720
 165          UI     40.     81.    174.    225.    280.    381.    492.    381.    305.    240.
 166          UI    185.    111.     69.     54.     40.     15.     12.     12.     12.     12.
 167          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 168          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 169          KK   DT205
 170          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.6 AC-FT FROM SUB-BASIN 205
 171          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)        (Hydrograph identified as OR205)
 172          KM                                              2) Balance of runoff continues on.
 173          KM                                                (Hydrograph identified as DT205)
 174          DT   OR205     2.6
 175          DI       0   10000
 176          DQ       0   10000
```

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

 177          KK   HC205
 178          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 203, 204 & 205.
 179          HC      3

 180          KK   RM205
 181          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 205 THROUGH 216
 182          KM            1) Gunite Lined Channel
 183          KM            2) Reach Length = 3300 ft.
 184          RD
 185          RC   .025     .02    .025    3300   .0078
 186          RX    132     132     146     150     157     161     175     175
 187          RY      8     4.5       4       0       0       4     4.5       8

 188          KK    207S
 189          KM    RUNOFF GENERATED ON SUB-BASIN 207
 190          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 191          KM    L= 1.05 mi.  Lca= 0.53 mi.  S= 209 ft/mi.  Kn= .098  LAG= 40.93 min.
 192          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 193          BA    .575
 194          LG    .148    .346   3.500    .291  23.800
 195          UI     47.     47.    117.    191.    236.    271.    312.    365.    464.    598.
 196          UI    526.    436.    380.    324.    278.    234.    191.    124.     84.     78.
 197          UI     63.     47.     43.     15.     15.     15.     15.     15.     15.     15.
 198          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 199          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 200          KK   207RR
 201          KM    RESERVOIR ROUTE THROUGH DETENTION BASIN NO. 7
 202          KM       1) Total Volume = 120 AC-FT.
 203          KM       2) Spillway Elev. = 1392
 204          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
 205          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
 206          KM             Niple, Inc.
 207          RS      1    ELEV    1369
 208          SV      0     120     136     152     175     200     224     248     272
 209          SE   1369    1392    1393    1394    1395    1396    1397    1398    1399
 210          SQ      0      53     363     928    1660    2526    3508    4594    5775

 211          KK   RM207
 212          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 207 THROUGH 208
 213          KM            1) Reach Length = 2500 ft.
 214          RD   2500   .0100    .035            TRAP      10       2

 215          KK    216S
 216          KM    RUNOFF GENERATED ON SUB-BASIN 216
 217          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 218          KM    L= 0.83 mi.  Lca= 0.53 mi.  S= 95 ft/mi.  Kn= .068  LAG= 30.17 min.
 219          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 220          BA    .437
 221          LG    .113    .286    5.98    .197   43.25
 222          UI     49.     78.    191.    253.    304.    375.    524.    588.    448.    369.
 223          UI    298.    239.    165.     91.     81.     53.     44.     15.     15.     15.
 224          UI     15.     15.      0.      0.      0.      0.      0.      0.      0.      0.
 225          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 226          KK   DT216
 227          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 2.2 AC-FT FROM SUB-BASIN 216
 228          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR216)
 229          KM                                             2) Balance of runoff continues on.
 230          KM                                               (Hydrograph identified as DT216)
 231          DT   OR216     2.2
 232          DI       0   10000
 233          DQ       0   10000

 234          KK   HC216
 235          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 216 WITH ROUTED FLOWS FROM 205 & 207
 236          HC       3

 237          KK   RM216
 238          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 216 THROUGH 208
 239          KM             1) Natural Channel
 240          KM             2) Reach Length = 3380 ft.
 241          RD
 242          RC    .045    .035    .045    3380   .0065
 243          RX      80      90     140     150     170     180     230     240
 244          RY       4       3       2       0       0       2       3       4

 245          KK    208S
 246          KM    RUNOFF GENERATED ON SUB-BASIN 208
 247          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 248          KM    L= 1.02 mi.  Lca= 0.32 mi.  S= 19 ft/mi.  Kn= .044  LAG= 23.66 min.
 249          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 250          BA    .344
 251          LG    .143    .250    3.61    .398   25.51
 252          UI     39.     66.    156.    205.    249.    309.    444.    452.    348.    285.
 253          UI    228.    180.    115.     68.     60.     39.     27.     12.     12.     12.
 254          UI     12.     12.      0.      0.      0.      0.      0.      0.      0.      0.
 255          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 256          KK   HC208
 257          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 208 WITH ROUTED FLOWS FROM 206 & 216
 258          HC       3

 259          KK   RM208
 260          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 208 THROUGH 209
 261          KM             1) Reach Length = 1120 FT.
 262          RD    1120   .0049    .035            TRAP      25       4

 263          KK    212S
 264          KM    RUNOFF GENERATED ON SUB-BASIN 212
 265          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 266          KM    L= 1.06 mi.  Lca= 0.70 mi.  S= 122 ft/mi.  Kn= .053  LAG= 27.35 min.
 267          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 268          BA    .397
 269          LG    .108    .267   3.710    .337  47.240
 270          UI     44.     67.    168.    223.    267.    328.    447.    538.    413.    341.
 271          UI    275.    222.    163.     92.     73.     54.     44.     18.     13.     13.
 272          UI     13.     13.      0.      0.      0.      0.      0.      0.      0.      0.
 273          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 274          KK   RM212
 275          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 212 THROUGH 211
 276          KM             1) Reach Length = 6240 ft.
 277          KM             2) Channel Slope = 0.0043 '/ft
 278          RD
 279          RC    .030    .020    .030    6240   .0043
 280          RX     124     129     149     150     185     186     206     211
 281          RY       2       1      .5       0       0      .5       1       2

 282          KK    211S
 283          KM    RUNOFF GENERATED ON SUB-BASIN 211
 284          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 285          KM    L= 1.57 mi.  Lca= 0.81 mi.  S= 21 ft/mi.  Kn= .050  LAG= 44.24 min.
 286          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 287          BA    .234
 288          LG    .100    .250   3.500    .291  51.170
 289          UI     25.     34.     92.    123.    147.    179.    233.    310.    253.    206.
 290          UI    170.    138.    111.     71.     43.     40.     25.     21.      8.      8.
 291          UI      8.      8.      8.      0.      0.      0.      0.      0.      0.      0.
 292          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 293          KK   DT211
 294          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.6 AC-FT FROM SUB-BASIN 211
 295          KM                                               (Hydrograph identified as OR211)
 296          KM                                              2) Balance of runoff continues on.
 297          KM                                               (Hydrograph identified as DT211)
 298          DT   OR211     0.6
 299          DI       0   10000
 300          DQ       0   10000

 301          KK    R211
 302          KM    RETRIEVE FLOW DIVERTED FROM SUB-BASIN 206
 303          DR    211D

 304          KK   HC211
 305          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 211 & 212 WITH DIVERT 211D
 306          HC       3

 307          KK   211RE
 308          KM    DIVERT FLOW INTO CAVE CREEK WASH THROUGH 84-IN. DIAMETER STORM DRAIN
 309          KM    (Hydrograph identified as 249D)
 310          KM    REMAINDER FLOWS SOUTH INTO SUB-BASIN 209
 311          KM    (Hydrograph identified as 211RE)
 312          KM    SOURCE:  Storm Drain Design for Coral Gables Dr., Project Engineering
 313          KM             Consultants
 314          DT    249D
 315          DI       0     260     300     500    1000    2000    3000    4000
 316          DQ       0     260     260     260     260     260     260     260
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 317          KK   RM211
 318          KM    MUSKINGUM-CUNGE ROUTE REMAINING FLOW THROUGH SUB-BASIN 209
 319          KM             1) Reach Length = 8360 ft.
 320          RD
 321          RC    .030    .020    .030    8360   .0038
 322          RX     124     129     149     150     190     191     211     216
 323          RY       2       1      .5       0       0      .5       1       2

 324          KK    209S
 325          KM    RUNOFF GENERATED ON SUB-BASIN 209
 326          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 327          KM    L= 2.05 mi.  Lca= 1.25 mi.  S= 19 ft/mi.  Kn= .064  LAG= 75.31 min.
 328          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 329          BA    .391
 330          LG    .113    .274   3.770    .352  46.340
 331          UI     17.     17.     17.     17.     35.     56.     64.     76.     81.     90.
 332          UI     95.    102.    110.    120.    129.    142.    165.    193.    222.    203.
 333          UI    179.    162.    149.    139.    130.    119.    109.    101.     93.     85.
 334          UI     79.     70.     58.     48.     34.     30.     29.     27.     27.     22.
 335          UI     17.     17.     17.     17.      6.      5.      5.      5.      5.      5.
 336          UI      5.      5.      5.      5.      5.      5.      5.      5.      0.      0.
 337          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 338          KK   DT209
 339          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 3.3 AC-FT FROM SUB-BASIN 209
 340          KM                                               (Hydrograph identified as OR209)
 341          KM                                             2) Balance of runoff continues on.
 342          KM                                               (Hydrograph identified as DT209)
 343          DT   OR209     3.3
 344          DI       0   10000
 345          DQ       0   10000

 346          KK   HC209
 347          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200-209 & 211-212
 348          HC       3

 349          KK    213S
 350          KM    RUNOFF GENERATED ON SUB-BASIN 213
 351          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 352          KM    L= 0.89 mi.  Lca= 0.69 mi.  S= 174 ft/mi.  Kn= .070  LAG= 31.43 min.
 353          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 354          BA    .218
 355          LG    .114    .286    5.05    .233   46.44
 356          UI     23.     34.     88.    118.    141.    171.    229.    290.    232.    191.
 357          UI    155.    126.    100.     58.     40.     35.     23.     16.      7.      7.
 358          UI      7.      7.      7.      0.      0.      0.      0.      0.      0.      0.
 359          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 360          KK   HC213
 361          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200-209 & 211-213
 362          HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 363          KK   RM213
 364          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 213 THROUGH 210
 365          KM             1) Reach Length = 4200 ft.
 366          RD
 367          RC    .045    .035    .045    4200   .0059
 368          RX      75      80     130     139     174     183     232     237
 369          RY       8       7       6       0       0       6       7       8

 370          KK    214S
 371          KM    RUNOFF GENERATED ON SUB-BASIN 214
 372          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 373          KM    L= 1.18 mi.  Lca= 0.61 mi.  S= 121 ft/mi.  Kn= .077  LAG= 39.34 min.
 374          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 375          BA    .483
 376          LG    .118    .279    3.81    .286   52.80
 377          UI     41.     41.    107.    169.    207.    239.    277.    325.    430.    519.
 378          UI    427.    359.    313.    263.    224.    189.    137.     86.     70.     67.
 379          UI     41.     41.     20.     13.     13.     13.     13.     13.     13.      0.
 380          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 381          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 382          KK   DT214
 383          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 3.9 AC-FT FROM SUB-BASIN 214
 384          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR214)
 385          KM                                              2) Balance of runoff continues on.
 386          KM                                               (Hydrograph identified as DT214)
 387          DT   OR214     3.9
 388          DI       0   10000
 389          DQ       0   10000

 390          KK   214RE
 391          KM    DIVERT FLOW TO CAVE CREEK WASH THROUGH 72-IN. DIAMETER STORM DRAIN ALONG
 392          KM    THUNDERBIRD ROAD.  (Hydrograph identified as 263D)
 393          KM    REMAINDER FLOWS SOUTH ALONG 19TH AVENUE TO SWEETWATER CHANNEL.
 394          KM    (Hydrograph identified as 214RE)
 395          DT    263D
 396          DI       0     100    1000
 397          DQ       0     100     100

 398          KK   RM214
 399          KM    MUSKINGUM-CUNGE ROUTE REMAINING FLOW IN STREET THROUGH SUB-BASIN 210
 400          KM             1) Reach Length = 2560 ft.
 401          RD
 402          RC    .030    .020    .030    2560   .0032
 403          RX     124     129     149     150     215     216     236     241
 404          RY       2       1      .5       0       0      .5       1       2

 405          KK    210S
 406          KM    RUNOFF GENERATED ON SUB-BASIN 210
 407          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 408          KM    L= 1.27 mi.  Lca= 0.73 mi.  S= 183 ft/mi.  Kn= .091  LAG= 47.32 min.
 409          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 410          BA    .828
 411          LG    .125    .301   3.550    .303  41.240
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 412          UI     57.     57.     82.    198.    245.    290.    325.    363.    417.    476.
 413          UI    614.    732.    639.    541.    479.    428.    369.    326.    283.    241.
 414          UI    177.    114.     99.     94.     76.     57.     57.     30.     17.     17.
 415          UI     17.     17.     17.     17.     17.     17.      0.      0.      0.      0.
 416          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 417          KK   HC210
 418          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 200-209 & 210 & 211-214
 419          HC       3

 420          KK   RM210
 421          KM    MUSKINGUM-CUNGE ROUTE IN SWEETWATER CHANNEL THROUGH SUB-BASIN 215
 422          KM            1) Reach Length = 3080 ft.
 423          RD
 424          RC    .045    .025    .045    3080   .0028
 425          RX      70     120     138     143     183     188     210     260
 426          RY       9       7       5       0       0       5       7       9

 427          KK    215S
 428          KM    RUNOFF GENERATED ON SUB-BASIN 215
 429          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 430          KM    L= 0.88 mi.  Lca= 0.53 mi.  S= 22 ft/mi.  Kn= .040  LAG= 23.96 min.
 431          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 432          BA    .269
 433          LG    .104    .250    3.50    .296   47.06
 434          UI     42.    126.    218.    285.    419.    479.    344.    256.    183.     91.
 435          UI     64.     42.     14.     13.     13.     13.      0.      0.      0.      0.
 436          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 437          KK   DT215
 438          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.9 AC-FT FROM SUB-BASIN 215
 439          KM                                               (Hydrograph identified as OR215)
 440          KM                                             2) Balance of runoff continues on.
 441          KM                                               (Hydrograph identified as DT215)
 442          DT   OR215     0.9
 443          DI       0   10000
 444          DQ       0   10000

 445          KK   HC215
 446          KM   COMBINE HYDROGRAPHS FROM SUB-BASINS 200-214 & 216 WITH 215
 447          KM   ALSO, TOTAL FLOW FROM MOON VALLEY WASH AT CAVE CREEK WASH
 448          HC       2
 449          ZW    A=MOON VALLEY WASH  B=HC215  C=FLOW  F=CAVE CREEK FUTURE
              *     *     *     *     *     *     *     *     *     *
              *                                                    *
              *        BREAK SEQUENCE - JUMP TO SUB-BASIN 220      *
              *                                                    *
              *                EAST FORK OF CAVE CREEK             *
              *                 SUB-BASINS 220 - 249               *
              *                                                    *
              *     *     *     *     *     *     *     *     *     *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 450          KK    220S
 451          KM    RUNOFF GENERATED ON SUB-BASIN 220
 452          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 453          KM    L= 0.96 mi.  Lca= 0.43 mi.  S= 30 ft/mi.  Kn= .040  LAG= 21.57 min.
 454          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 455          BA    .167
 456          LG    .134    .250    3.87    .386   57.29
 457          UI     26.     78.    135.    177.    260.    298.    214.    159.    114.     57.
 458          UI     40.     26.      9.      8.      8.      8.      0.      0.      0.      0.
 459          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 460          KK   DT220
 461          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 4.6 AC-FT FROM SUB-BASIN 220
 462          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR220)
 463          KM                                              2) Balance of runoff continues on.
 464          KM                                                (Hydrograph identified as DT220)
 465          DT   OR220     4.6
 466          DI       0   10000
 467          DQ       0   10000

 468          KK   220RE
 469          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO. 4
 470          KM    SOURCE:  Detention Basin No. 4 Design Hydrology by NBS Lowry.
 471          DT    222D
 472          DI       0      27   10000
 473          DQ       0      27      27

 474          KK    221S
 475          KM    RUNOFF GENERATED ON SUB-BASIN 221
 476          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 477          KM    L= 1.67 mi.  Lca= 0.96 mi.  S= 34 ft/mi.  Kn= .045  LAG= 39.67 min.
 478          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 479          BA    .757
 480          LG    .120    .250    3.66    .363   40.62
 481          UI     64.     64.    171.    267.    328.    377.    439.    515.    681.    818.
 482          UI    667.    560.    488.    410.    348.    293.    211.    129.    110.    101.
 483          UI     64.     64.     28.     20.     20.     20.     20.     20.     20.      0.
 484          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 485          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 486          KK   DT221
 487          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 8.3 AC-FT FROM SUB-BASIN 221
 488          KM                                                (Hydrograph identified as OR221)
 489          KM                                              2) Balance of runoff continues on.
 490          KM                                                (Hydrograph identified as DT221)
 491          DT   OR221     8.3
 492          DI       0   10000
 493          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

494           KK  HC221A
495           KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 221 WITH OVERFLOW FROM 220
496           KM    ALSO, TOTAL FLOW INTO DETENTION BASIN NO. 4
497           HC       2

498           KK   221RR
499           KO       3
500           KM    ROUTE FLOW THROUGH DETENTION BASIN NO.4
501           KM    RATING CURVE PROVIDED BY NBS LOWRY
502           RS       1    ELEV    1462
503           SV       0      .9     3.8    10.8    22.5      38    55.5    73.8
504           SE    1462    1464    1465    1466    1467    1468    1469    1470
505           SQ       0      24      50      73      81      87      93      99

506           KK    R220
507           KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 220
508           DR    222D

509           KK  HC221B
510           KM    COMBINE DIVERTED LOW FLOW FROM SUB-BASIN 220 WITH BASIN NO. 4 OUTFLOW
511           HC       2

512           KK   RM221
513           KM    MUSKINGUM-CUNGE ROUTE FLOW IN PIPE FROM BASIN NO. 4 THROUGH 222
514           KM             1) Reach Length = 3060 ft.
515           KM             2) Pipe Diameter = 60 in.
516           RD    3060   .0041    .012            CIRC     5.0

517           KK    222S
518           KM    RUNOFF GENERATED ON SUB-BASIN 222
519           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
520           KM    L= 1.04 mi.  Lca= 0.55 mi.  S= 27 ft/mi.  Kn= .042  LAG= 26.15 min.
521           KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
522           BA    .343
523           LG    .100    .250    3.61    .312   53.28
524           UI     53.    156.    273.    356.    516.    615.    443.    332.    241.    122.
525           UI     86.     53.     23.     16.     16.     16.      0.      0.      0.      0.
526           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

527           KK   DT222
528           KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 4.4 AC-FT FROM SUB-BASIN 222
529           KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR222)
530           KM                                              2) Balance of runoff continues on.
531           KM                                                 (Hydrograph identified as DT222)
532           DT   OR222     4.4
533           DI       0   10000
534           DQ       0   10000

535           KK   HC222
536           KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 222 WITH ROUTED FLOW FROM 221
537           HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

538           KK   222RE
539           KM    SPLIT FLOW AT INTERSECTION OF 32nd ST. AND BELL RD.
540           KM    SEND FLOW SOUTH IN 32nd ST. OUT OF WATERSHED IN STREET AND 60" PIPE.
541           KM    (Hydrograph identified as FL-2D) (160 cfs in PIPE)
542           KM    REMAINDER FLOWS WEST IN BELL RD.  (Hydrograph identified as 222RE)
543           KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
544           KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
545           KM             Niple, Inc.
546           DT   FL-2D
547           DI       0     185     243    1947    5014
548           DQ       0     160     160    1093    2655

549           KK   RM222
550           KM    MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 222 THROUGH 223
551           KM             1) Reach Length = 4000 ft.
552           KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
553           KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
554           KM             Niple, Inc.
555           RD
556           RC     .03     .02     .03    4000   .0045    54.5
557           RX       0       1      31      31     123     123     153     153
558           RY      57    55.3    54.2    53.7    53.8    54.3    55.3      57

559           KK    223S
560           KM    RUNOFF GENERATED ON SUB-BASIN 223
561           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
562           KM    L= 1.16 mi.  Lca= 0.48 mi.  S= 24 ft/mi.  Kn= .068  LAG= 42.85 min.
563           KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
564           BA    .434
565           LG    .100    .250    3.71    .336   41.83
566           UI     34.     34.     76.    130.    165.    190.    215.    251.    298.    394.
567           UI    425.    343.    294.    259.    220.    190.    163.    125.     83.     60.
568           UI     56.     45.     34.     33.     10.     10.     10.     10.     10.     10.
569           UI     10.      0.      0.      0.      0.      0.      0.      0.      0.      0.
570           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

571           KK   DT223
572           KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.3 AC-FT FROM SUB-BASIN 223
573           KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR223)
574           KM                                              2) Balance of runoff continues on.
575           KM                                                (Hydrograph identified as DT223)
576           DT   OR223     1.3
577           DI       0   10000
578           DQ       0   10000

579           KK   HC223
580           KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 223 WITH ROUTED FLOW FROM 222
581           HC       2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 582          KK   223RE
 583          KM    DIVERT 159 CFS WEST IN 54" PIPE ALONG BELL RD. TO 20TH ST.  REMAINDER
 584          KM    CONTINUES SOUTH (Hydrograph identified as 223RE).
 585          KM    SOURCE:  Detention Basin Nos. 3A & 3B Design by NBS Lowry.
 586          DT   234D1
 587          DI       0     159   10000
 588          DQ       0     159     159

 589          KK  RM223A
 590          KM    MUSKINGUM-CUNGE ROUTE FLOW IN STREET FROM SUB-BASIN 223 THROUGH 224
 591          KM            1) Reach Length = 4240 ft.
 592          RD
 593          RC     .03     .02     .03    4240   .0035
 594          RX       0       0       8       8      92      92     100     100
 595          RY       5      .5      .5       0       0      .5      .5       5

 596          KK    224S
 597          KM    RUNOFF GENERATED ON SUB-BASIN 224
 598          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 599          KM    L= 1.36 mi.  Lca= 0.69 mi.  S= 22 ft/mi.  Kn= .040  LAG= 31.25 min.
 600          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 601          BA    .562
 602          LG    .100    .250    3.50    .289   69.20
 603          UI     69.    137.    296.    384.    476.    632.    857.    669.    537.    424.
 604          UI    331.    210.    120.    101.     69.     35.     21.     21.     21.     21.
 605          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 606          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 607          KK   DT224
 608          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 8.9 AC-FT FROM SUB-BASIN 224
 609          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR224)
 610          KM                                              2) Balance of runoff continues on.
 611          KM                                                (Hydrograph identified as DT224)
 612          DT   OR224     8.9
 613          DI       0   10000
 614          DQ       0   10000

 615          KK    225S
 616          KM    RUNOFF GENERATED ON SUB-BASIN 225
 617          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 618          KM    L= 1.38 mi.  Lca= 0.77 mi.  S= 18 ft/mi.  Kn= .041  LAG= 34.89 min.
 619          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 620          BA    .303
 621          LG    .100    .250    3.50    .288   70.48
 622          UI     33.     51.    128.    171.    204.    252.    344.    410.    314.    260.
 623          UI    210.    169.    123.     70.     56.     41.     33.     13.     10.     10.
 624          UI     10.     10.      0.      0.      0.      0.      0.      0.      0.      0.
 625          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 626          KK   DT225
 627          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 8.2 AC-FT FROM SUB-BASIN 225
 628          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR225)
 629          KM                                              2) Balance of runoff continues on.
 630          KM                                                (Hydrograph identified as DT225)
 631          DT   OR225     8.2
 632          DI       0   10000
 633          DQ       0   10000

 634          KK   225RE
 635          KM    DIVERT FLOW IN EXCESS OF 2-YEAR PIPE DESIGN OUT OF WATERSHED
 636          KM    (Hydrograph identified as D225)
 637          KM    REMAINDER FLOWS WEST IN 48" PIPE ALONG GREENWAY PARKWAY TO CAVE CREEK RD.
 638          KM    (Hydrograph identified as 225RE)
 639          DT    D225
 640          DI       0      95     295     595    1095
 641          DQ       0       0     200     500    1000

 642          KK   RM225
 643          KM    MUSKINGUM-CUNGE ROUTE PIPE FLOW FROM SUB-BASIN 225 THROUGH 224
 644          KM             1) Reach Length = 3600 ft.
 645          KM             2) Pipe Diameter = 48 in.
 646          RD    3600   .0027    .012            CIRC     4.0

 647          KK    226S
 648          KM    RUNOFF GENERATED ON SUB-BASIN 226
 649          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 650          KM    L= 1.25 mi.  Lca= 0.64 mi.  S= 111 ft/mi.  Kn= .065  LAG= 35.14 min.
 651          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 652          BA    .358
 653          LG    .111    .272    4.14    .426   50.26
 654          UI     34.     34.    118.    158.    191.    223.    268.    359.    432.    341.
 655          UI    285.    240.    199.    166.    117.     70.     58.     48.     34.     26.
 656          UI     11.     11.     11.     11.     11.     11.      0.      0.      0.      0.
 657          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 658          KK   DT226
 659          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 3.6 AC-FT FROM SUB-BASIN 226
 660          KM                                                (Hydrograph identified as OR226)
 661          KM                                              2) Balance of runoff continues on.
 662          KM                                                (Hydrograph identified as DT226)
 663          DT   OR226     3.6
 664          DI       0   10000
 665          DQ       0   10000

 666          KK   HC226
 667          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 224 & 226 WITH ROUTED FLOWS FROM
 668          KM    223 & 225
 669          HC       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 670          KK   RM226
 671          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 226 THROUGH 237
 672          KM             1) Reach Length = 2640 ft.
 673          KM    NOTE:  This section was taken from the HEC-1 input data file provided
 674          KM           by the FCDMC to KHE.
 675          RD
 676          RC    .045    .035    .045    2640   .0034
 677          RX       0       1      13      23      55      75      87      88
 678          RY      21      20      20      10      10      20      20      21

 679          KK    227S
 680          KM    RUNOFF GENERATED ON SUB-BASIN 227
 681          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 682          KM    L= 0.76 mi.  Lca= 0.41 mi.  S= 141 ft/mi.  Kn= .051  LAG= 18.41 min.
 683          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 684          BA    .318
 685          LG    .117    .261    3.71    .349   59.11
 686          UI     58.    220.    337.    485.    686.    485.    343.    219.    100.     67.
 687          UI     30.     18.     18.      0.      0.      0.      0.      0.      0.      0.
 688          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 689          KK   DT227
 690          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 10.2 AC-FT FROM SUB-BASIN 227
 691          KM                                              (Hydrograph identified as OR227)
 692          KM                                            2) Balance of runoff continues on.
 693          KM                                              (Hydrograph identified as DT227)
 694          DT   OR227    10.2
 695          DI       0   10000
 696          DQ       0   10000

 697          KK   RM227
 698          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 227 THROUGH 229
 699          KM             1) Reach Length = 2210 ft.
 700          KM    SOURCE:  Pima Freeway - Revised Hydrology and Drainage Concepts for
 701          KM             Section 7, Interoffice Correspondence, October 4,1990, by
 702          KM             DeLeuw Cather & Co.
 703          RD    2210   .0070    .035            TRAP      50       2

 704          KK    228S
 705          KM    RUNOFF GENERATED ON SUB-BASIN 228
 706          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 707          KM    L= 0.77 mi.  Lca= 0.35 mi.  S= 88 ft/mi.  Kn= .048  LAG= 17.94 min.
 708          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 709          BA    .278
 710          LG    .125    .256    3.82    .392   56.32
 711          UI     52.    204.    309.    462.    598.    415.    290.    165.     88.     52.
 712          UI     17.     16.     16.      0.      0.      0.      0.      0.      0.      0.
 713          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 714          KK   DT228
 715          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 14.5 AC-FT FROM SUB-BASIN 228
 716          KM                                              (Hydrograph identified as OR228)
 717          KM                                            2) Balance of runoff continues on.
 718          KM                                              (Hydrograph identified as DT228)
 719          DT   OR228    14.5
 720          DI       0   10000
 721          DQ       0   10000

 722          KK   RM228
 723          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 228 THROUGH 229
 724          KM             1) Reach Length = 1300 ft.
 725          KM    SOURCE:  Pima Freeway - Revised Hydrology and Drainage Concepts for
 726          KM             Section 7, Interoffice Correspondence, October 4,1990, by
 727          KM             DeLeuw Cather & Co.
 728          RD    1300   .0050    .013            TRAP      18       0

 729          KK    230S
 730          KM    RUNOFF GENERATED ON SUB-BASIN 230
 731          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 732          KM    L= 0.88 mi.  Lca= 0.49 mi.  S= 86 ft/mi.  Kn= .044  LAG= 19.74 min.
 733          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 734          BA    .239
 735          LG    .102    .253    3.87    .360   70.17
 736          UI     41.    140.    224.    305.    477.    386.    282.    200.    104.     65.
 737          UI     41.     13.     13.     13.      0.      0.      0.      0.      0.      0.
 738          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 739          KK   DT230
 740          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 4.0 AC-FT FROM SUB-BASIN 230
 741          KM                                              (Hydrograph identified as OR230)
 742          KM                                            2) Balance of runoff continues on.
 743          KM                                              (Hydrograph identified as DT230)
 744          DT   OR230     4.0
 745          DI       0   10000
 746          DQ       0   10000

 747          KK   RM230
 748          KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM SUB-BASIN 230 THROUGH 229
 749          KM             1) Reach Length = 1250 ft.
 750          KM             2) Pipe Diameter= 72"
 751          KM    SOURCE:  Pima Freeway - Revised Hydrology and Drainage Concepts for
 752          KM             Section 7, Interoffice Correspondence, October 4,1990, by
 753          KM             DeLeuw Cather & Co.
 754          RD    1250   .0080    .012            CIRC     6.0

 755          KK    229S
 756          KM    RUNOFF GENERATED ON SUB-BASIN 229
 757          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 758          KM    L= 0.83 mi.  Lca= 0.31 mi.  S= 31 ft/mi.  Kn= .040  LAG= 17.91 min.
 759          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 760          BA    .366
 761          LG    .100    .250    4.08    .392   76.93
 762          UI     69.    270.    409.    610.    787.    546.    381.    216.    115.     69.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 763          UI     22.     21.     21.      0.      0.      0.      0.      0.      0.      0.
 764          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 765          KK   DT229
 766          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 27.1 AC-FT FROM SUB-BASIN 229
 767          KM                                               (Hydrograph identified as OR229)
 768          KM                                             2) Balance of runoff continues on.
 769          KM                                               (Hydrograph identified as DT229)
 770          DT   OR229    27.1
 771          DI       0   10000
 772          DQ       0   10000

 773          KK   HC229
 774          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 229 WITH ROUTED FLOWS FROM 227, 228
 775          KM    & 230.
 776          HC       4

 777          KK    231S
 778          KM    RUNOFF GENERATED ON SUB-BASIN 231
 779          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 780          KM    L= 0.48 mi.  Lca= 0.23 mi.  S= 39 ft/mi.  Kn= .051  LAG= 15.85 min.
 781          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 782          BA    .158
 783          LG    .110    .269    3.92    .370   58.24
 784          UI     40.    147.    222.    370.    309.    207.    120.     56.     30.     10.
 785          UI     10.      0.      0.      0.      0.      0.      0.      0.      0.      0.
 786          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 787          KK   DT231
 788          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 6.7 AC-FT FROM SUB-BASIN 231
 789          KM                                               (Hydrograph identified as OR231)
 790          KM                                             2) Balance of runoff continues on.
 791          KM                                               (Hydrograph identified as DT231)
 792          DT   OR231     6.7
 793          DI       0   10000
 794          DQ       0   10000

 795          KK  HC231A
 796          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 231 WITH 227-230.  ALSO, TOTAL FLOW
 797          KM    UPSTREAM OF DETENTION BASIN NO. 1.
 798          HC       2

 799          KK   231RE
 800          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO. 1.  FROM THE WEST,
 801          KM    150 CFS DIVERTED IN 60" PIPE AND FROM THE EAST, 35 CFS DIVERTED IN
 802          KM    36" PIPE.  TOTAL DIVERSION = 185 CFS.
 803          KM    SOURCE:  Detention Basin No. 3A & 3B Design by NBS Lowry.
 804          DT    232D
 805          DI       0     185   10000
 806          DQ       0     185     185
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

807           KK   231RR
808           KO      3
809           KM    ROUTE FLOW THROUGH DETENTION BASIN NO. 1
810           KM    SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
811           KM             Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
812           KM             P-901801, September 9, 1991, prepared by NBS Lowry Engineers.
813           RS      1    ELEV  1487.8
814           SV      0    .021   1.189   5.893  14.491  25.114  36.539  74.474    90.0
815           SE  1487.8    1488    1489    1490    1491    1492    1493    1496    1497
816           SQ      0       2      10      25      45      75     130     270     400

817           KK    R231
818           KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 231
819           DR    232D

820           KK  HC231B
821           KM    COMBINE DIVERTED LOW FLOW FROM SUB-BASIN 231 WITH BASIN NO. 1 OUTFLOW.
822           HC      2

823           KK  RM231A
824           KM    MUSKINGUM-CUNGE ROUTE DETENTION BASIN NO. 1 OUTFLOW IN CHANNEL FROM
825           KM    BEARDSLEY ROAD TO UTOPIA ROAD.
826           KM             1) Reach Length = 2725 ft.
827           RD
828           RC    .035    .030    .035    2725   .0005
829           RX      0       0       2    37.5    57.5      93     115     115
830           RY     10     7.1     7.1       0       0     7.1     7.1      10

831           KK  RM231B
832           KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM UTOPIA ROAD TO UNION HILLS DRIVE
833           KM             1) Reach Length = 2830 ft.
834           RD
835           RC    .035    .030    .035    2830   .0005
836           RX      0       0       2      50     140     188     210     210
837           RY     10       8       8       0       0       8       8      10

838           KK    232S
839           KM    RUNOFF GENERATED ON SUB-BASIN 232
840           KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
841           KM    L= 1.90 mi.  Lca= 0.63 mi.  S= 29 ft/mi.  Kn= .042  LAG= 34.15 min.
842           KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
843           BA   1.442
844           LG    .102    .252    4.03    .406   60.47
845           UI    142.    154.    501.    673.    805.    955.   1157.   1607.   1710.   1335.
846           UI   1127.    930.    768.    622.    399.    250.    234.    154.    142.     52.
847           UI     44.     44.     44.     44.     44.      0.      0.      0.      0.      0.
848           UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

849           KK   DT232
850           KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 38.9 AC-FT FROM SUB-BASIN 232
851           KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR232)
852           KM                                              2) Balance of runoff continues on.
853           KM                                                (Hydrograph identified as DT232)
854           DT   OR232    38.9
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 855          DI       0   10000
 856          DQ       0   10000

 857          KK   HC232
 858          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 232 WITH ROUTED FLOW FROM 231.
 859          HC       2

 860          KK   RM232
 861          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 232 THROUGH 233
 862          KM             1) Reach Length = 2480 ft.
 863          RD
 864          RC    .035    .030    .030    2480   .0072
 865          RX       0       0       5      20      50      75     135     135
 866          RY      10       8       8       2       2       4       6      10

 867          KK    233S
 868          KM    RUNOFF GENERATED ON SUB-BASIN 233
 869          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 870          KM    L= 1.17 mi.  Lca= 0.47 mi.  S= 22 ft/mi.  Kn= .050  LAG= 31.88 min.
 871          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 872          BA    .598
 873          LG    .105    .260    3.92    .383   46.85
 874          UI     63.     87.    235.    315.    376.    456.    592.    792.    646.    527.
 875          UI    435.    354.    283.    182.    111.    103.     63.     55.     19.     19.
 876          UI     19.     19.     19.      0.      0.      0.      0.      0.      0.      0.
 877          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 878          KK   DT233
 879          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 6.0 AC-FT FROM SUB-BASIN 233
 880          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR233)
 881          KM                                              2) Balance of runoff continues on.
 882          KM                                               (Hydrograph identified as DT233)
 883          DT   OR233     6.0
 884          DI       0   10000
 885          DQ       0   10000

 886          KK  HC233A
 887          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 233 WITH ROUTED FLOW FROM 232. ALSO,
 888          KM    TOTAL FLOW UPSTREAM OF DETENTION BASIN NOS. 3A & 3B.
 889          HC       2

 890          KK   233RE
 891          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO.'s 3A & 3B.
 892          KM    SOURCE:  Detention Basin Nos. 3A & 3B Design by NBS Lowry.
 893          DT   234D2
 894          DI       0     206   10000
 895          DQ       0     206     206

 896          KK   B3ARR
 897          KO       3
 898          KM   ROUTE FLOW THROUGH DETENTION BASIN NO. 3A
 899          KM    SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
 900          KM             Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
 901          KM             P-901801, September 9, 1991, prepared by NBS Lowry Engineers.
 902          RS       1    ELEV    1423
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

903           SV       0     .04     .28     .72    1.36    2.51    5.38   11.43   19.53   28.19
904           SV   37.25   46.73    56.7   67.55   79.23   91.45  104.21  117.54
905           SE    1423    1424    1425    1426    1427    1428    1429    1430    1431    1432
906           SE    1433    1434    1435    1436    1437    1438    1439    1440
907           SQ       0      11      50     144     234     315     390     445     495     540
908           SQ     585     625     660     690     720     755     795     840

909           KK   B3BRR
910           KO       3
911           KM   ROUTE FLOW THROUGH DETENTION BASIN NO. 3B
912           KM    SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
913           KM             Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
914           KM             P-901801, September 9, 1991, prepared by NBS Lowry Engineers.
915           RS       1    ELEV    1417
916           SV       0     .03     .85    5.94    16.5   27.84   39.53   51.57   63.98   76.75
917           SV   89.89  103.39  117.28  131.57  146.26  161.34
918           SE    1417    1418    1419    1420    1421    1422    1423    1424    1425    1426
919           SE    1427    1428    1429    1430    1431    1432
920           SQ       0       4      18      54      89     121     150     175     200     220
921           SQ     239     256     273     287     301     316

922           KK    R233
923           KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 233
924           DR   234D2

925           KK  HC233B
926           KM    COMBINE DIVERTED LOW FLOW FROM SUB-BASIN 233 WITH BASIN NO. 3B OUTFLOW
927           HC       2

928           KK   RM233
929           KM    MUSKINGUM-CUNGE ROUTE DETENTION BASIN NO. 3B OUTFLOW IN PIPE ALONG 20TH ST.
930           KM    TO BELL RD.
931           KM             1) Reach Length = 2100 ft.
932           KM             2) Pipe Diameter = 108"
933           RD    2100   .0033    .012            CIRC     9.0

934           KK   B3BRE
935           KM    DIVERT 65% OF FLOW WEST IN 84" PIPE ALONG BELL RD. AND REMAINING 35%
936           KM    SOUTH IN 72" PIPE ALONG 20TH ST. TO THE GREENWAY CHANNEL.
937           DT    239D
938           DI       0      50     100     200     300     400     500    1000
939           DQ       0      32      65     130     195     260     325     650

940           KK    R223
941           KM    RETRIEVE HYDROGRAPH FOR DIVERTED FLOW FROM SUB-BASIN 223
942           DR   234D1

943           KK  RM223B
944           KM    MUSKINGUM-CUNGE ROUTE FLOW IN PIPE FROM SUB-BASIN 223 THROUGH 234
945           KM             1) Reach Length = 3970 ft.
946           KM             2) Pipe Diameter = 60"
947           RD    3970   .0015    .012            CIRC     5.0
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 948          KK   HC234
 949          KM    COMBINE OUTFLOW HYDROGRAPHS FROM BASIN NO. 3B WITH ROUTED FLOW FROM
 950          KM    SUB-BASIN 223.
 951          HC       2

 952          KK  RM234A
 953          KM    MUSKINGUM-CUNGE ROUTE FLOW IN PIPE FROM 20TH ST. & BELL RD. TO
 954          KM    GREENWAY CHANNEL.
 955          KM             1) Reach Length = 2850 ft.
 956          KM             2) Pipe Diameter = 78"
 957          RD    2850   .0044    .012            CIRC     6.5

 958          KK    234S
 959          KM    RUNOFF GENERATED ON SUB-BASIN 234
 960          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 961          KM    L= 0.79 mi.  Lca= 0.42 mi.  S= 25 ft/mi.  Kn= .046  LAG= 23.63 min.
 962          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 963          BA    .283
 964          LG    .100    .250    3.77    .346   55.93
 965          UI     40.    104.    194.    250.    333.    490.    389.    300.    228.    161.
 966          UI     83.     62.     40.     18.     12.     12.     12.      0.      0.      0.
 967          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

 968          KK   DT234
 969          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.7 AC-FT FROM SUB-BASIN 234
 970          KM                                              (Hydrograph identified as OR234)
 971          KM                                            2) Balance of runoff continues on.
 972          KM                                              (Hydrograph identified as DT234)
 973          DT   OR234     1.7
 974          DI       0   10000
 975          DQ       0   10000

 976          KK  RM234B
 977          KM    MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASIN 234 THROUGH 235
 978          KM             1) Reach Length = 3800 ft.
 979          RD
 980          RC     .03     .02     .03    3800   .0051
 981          RX       0       0       7       7      43      43      50      50
 982          RY       5      .5      .5       0       0      .5      .5       5

 983          KK    235S
 984          KM    RUNOFF GENERATED ON SUB-BASIN 235
 985          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
 986          KM    L= 0.83 mi.  Lca= 0.49 mi.  S= 25 ft/mi.  Kn= .066  LAG= 36.63 min.
 987          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
 988          BA    .279
 989          LG    .100    .250    3.61    .312   38.13
 990          UI     26.     26.     82.    114.    138.    160.    191.    241.    324.    278.
 991          UI    228.    196.    163.    136.    112.     75.     45.     42.     32.     26.
 992          UI     16.      8.      8.      8.      8.      8.      8.      0.      0.      0.
 993          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 994          KK   DT235
 995          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 3.0 AC-FT FROM SUB-BASIN 235
 996          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR235)
 997          KM                                             2) Balance of runoff continues on.
 998          KM                                               (Hydrograph identified as DT235)
 999          DT   OR235     3.0
1000          DI       0   10000
1001          DQ       0   10000

1002          KK   HC235
1003          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 235 WITH ROUTED FLOWS FROM 234
1004          HC       3

1005          KK    236S
1006          KM    RUNOFF GENERATED ON SUB-BASIN 236
1007          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1008          KM    L= 1.05 mi.  Lca= 0.36 mi.  S= 197 ft/mi.  Kn= .062  LAG= 22.61 min.
1009          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1010          BA    .635
1011          LG    .116    .271    3.55    .312   37.72
1012          UI     88.    215.    410.    528.    686.   1034.    904.    695.    533.    402.
1013          UI    223.    148.    102.     67.     27.     27.     27.     27.      0.      0.
1014          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1015          KK   DT236
1016          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.0 AC-FT FROM SUB-BASIN 236
1017          KM                                               (Hydrograph identified as OR236)
1018          KM                                             2) Balance of runoff continues on.
1019          KM                                               (Hydrograph identified as DT236)
1020          DT   OR236     1.0
1021          DI       0   10000
1022          DQ       0   10000

1023          KK   RM236
1024          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 236 THROUGH 237
1025          KM            1) Reach Length = 6890 ft.
1026          RD
1027          RC     .03     .02     .03    6890   .0050    2.37
1028          RX       0       0       9       9      41      41      50      50
1029          RY       5      .5      .5       0       0      .5      .5       5

1030          KK    237S
1031          KM    RUNOFF GENERATED ON SUB-BASIN 237
1032          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1033          KM    L= 1.69 mi.  Lca= 0.89 mi.  S= 135 ft/mi.  Kn= .042  LAG= 27.81 min.
1034          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1035          BA    .651
1036          LG    .102    .256    4.74    .244   45.37
1037          UI     79.    151.    332.    431.    533.    691.    977.    789.    631.    501.
1038          UI    396.    271.    145.    127.     79.     54.     24.     24.     24.     24.
1039          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1040          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1041          KK   HC237
1042          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 235 & 237 WITH ROUTED FLOWS FROM
1043          KM    226 & 236
1044          HC       4

1045          KK   RM237
1046          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 237 THROUGH 240
1047          KM             1) Reach Length = 2960 ft.
1048          RD
1049          RC    .045    .035    .045    2960   .0040
1050          RX       0       1      13      23      55      75      87      88
1051          RY      21      20      20      10      10      20      20      21

1052          KK    238S
1053          KM    RUNOFF GENERATED ON SUB-BASIN 238
1054          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1055          KM    L= 1.95 mi.  Lca= 1.17 mi.  S= 65 ft/mi.  Kn= .045  LAG= 40.11 min.
1056          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1057          BA    .904
1058          LG    .120    .255    4.19    .468   51.02
1059          UI     76.     76.    196.    313.    383.    442.    512.    599.    790.    962.
1060          UI    805.    674.    588.    496.    424.    361.    262.    168.    131.    125.
1061          UI     82.     76.     45.     23.     23.     23.     23.     23.     23.      0.
1062          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1063          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1064          KK   DT238
1065          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 4.9 AC-FT FROM SUB-BASIN 238
1066          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR238)
1067          KM                                              2) Balance of runoff continues on.
1068          KM                                               (Hydrograph identified as DT238)
1069          DT   OR238     4.9
1070          DI       0   10000
1071          DQ       0   10000

1072          KK   238RE
1073          KM    DIVERT FLOW IN EXCESS OF 2-YR. STORM DRAIN DESIGN WEST INTO SUB-BASIN 244
1074          KM    (Hydrograph identified as 244D)
1075          KM    REMAINING FLOW (154 CFS) CONTINUES SOUTH IN 84" PIPE TO THE GREENWAY
1076          KM    CHANNEL (Hydrograph identified as 238RE)
1077          DT    244D
1078          DI       0     154     500    1000    5000
1079          DQ       0       0     346     846    4846

1080          KK  RM238A
1081          KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM SUB-BASIN 238 THROUGH 239
1082          KM             1) Reach Length = 3670 ft.
1083          KM             2) Pipe Diameter = 84"
1084          RD    3670   .0019    .012            CIRC     7.0
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1085        KK    R234
1086        KM    RETRIEVE HYDROGRAPH FOR 65% FLOW SPLIT AT 20TH ST. & BELL RD.
1087        DR    239D

1088        KK  RM234C
1089        KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM SUB-BASIN 234 THROUGH 239
1090        KM             1) Reach Length = 5100 ft.
1091        KM             2) Pipe Diameter = 84"
1092        RD    5100   .0059    .012            CIRC     7.0

1093        KK    239S
1094        KM    RUNOFF GENERATED ON SUB-BASIN 239
1095        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1096        KM    L= 1.37 mi.  Lca= 0.68 mi.  S= 34 ft/mi.  Kn= .043  LAG= 30.84 min.
1097        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1098        BA    .427
1099        LG    .100    .250    3.77    .345   62.71
1100        UI     51.     97.    215.    280.    345.    446.    635.    520.    416.    331.
1101        UI    262.    183.     99.     85.     52.     38.     16.     16.     16.     16.
1102        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1103        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1104        KK   DT239
1105        KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 7.5 AC-FT FROM SUB-BASIN 239
1106        KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR239)
1107        KM                                              2) Balance of runoff continues on.
1108        KM                                               (Hydrograph identified as DT239)
1109        DT   OR239     7.5
1110        DI       0   10000
1111        DQ       0   10000

1112        KK    240S
1113        KM    RUNOFF GENERATED ON SUB-BASIN 240
1114        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1115        KM    L= 1.10 mi.  Lca= 0.71 mi.  S= 173 ft/mi.  Kn= .061  LAG= 30.04 min.
1116        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1117        BA    .270
1118        LG    .109    .186    7.50    .117   35.23
1119        UI     28.     36.    102.    138.    164.    198.    250.    348.    299.    241.
1120        UI    201.    164.    134.     93.     53.     47.     33.     28.     12.      9.
1121        UI      9.      9.      9.      9.      0.      0.      0.      0.      0.      0.
1122        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1123        KK   HC240
1124        KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 239 & 240 WITH ROUTED FLOWS FROM 234,
1125        KM    237 & 238.  TOTAL RUNOFF INTO GREENWAY CHANNEL AT 16TH ST.
1126        HC       5

1127        KK   RM240
1128        KM    MUSKINGUM-CUNGE ROUTE IN GREENWAY CHANNEL FROM 16TH ST. TO 12TH ST. OR
1129        KM    SUB-BASIN 240 THROUGH 241.
1130        KM             1) Reach Length = 2920 ft.
1131        RD
1132        RC    .045    .035    .045    2920   .0048
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1133          RX      0       1      13      23      63      83      95      96
1134          RY     21      20      20      10      10      20      20      21

1135          KK    241S
1136          KM    RUNOFF GENERATED ON SUB-BASIN 241
1137          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1138          KM    L= 1.39 mi.  Lca= 0.87 mi.  S= 147 ft/mi.  Kn= .068  LAG= 40.78 min.
1139          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1140          BA    .519
1141          LG    .118    .303    6.29    .186   31.11
1142          UI     38.     38.     72.    138.    177.    204.    229.    264.    301.    378.
1143          UI    484.    444.    369.    323.    285.    245.    213.    184.    148.    101.
1144          UI     68.     64.     59.     38.     38.     24.     12.     12.     12.     12.
1145          UI     12.     12.     12.     12.      0.      0.      0.      0.      0.      0.
1146          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1147          KK   DT241
1148          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 3.2 AC-FT FROM SUB-BASIN 241
1149          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR241)
1150          KM                                              2) Balance of runoff continues on.
1151          KM                                                (Hydrograph identified as DT241)
1152          DT   OR241     3.2
1153          DI       0   10000
1154          DQ       0   10000

1155          KK   HC241
1156          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 241 WITH ROUTED FLOW FROM 240.
1157          KM    ALSO, TOTAL FLOW AT CONFLUENCE OF EAST FORK OF CAVE CREEK AND THE
1158          KM    GREENWAY CHANNEL.
1159          HC       2

1160          KK   RM241
1161          KM    MUSKINGUM-CUNGE ROUTE IN GREENWAY CHANNEL FROM SUB-BASIN 241 THROUGH 246.
1162          KM             1) Reach Length = 2400 ft.
1163          RD
1164          RC    .045    .035    .045    2400   .0033
1165          RX       0       1       5      25      75      95      99     100
1166          RY      21      20      20      10      10      20      20      21

1167          KK    242S
1168          KM    RUNOFF GENERATED ON SUB-BASIN 242
1169          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1170          KM    L= 1.46 mi.  Lca= 0.87 mi.  S= 84 ft/mi.  Kn= .050  LAG= 33.98 min.
1171          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1172          BA    .656
1173          LG    .128    .258    3.92    .440   34.35
1174          UI     65.     72.    230.    309.    370.    439.    533.    745.    773.    605.
1175          UI    511.    421.    347.    280.    173.    114.    107.     67.     65.     20.
1176          UI     20.     20.     20.     20.     20.      0.      0.      0.      0.      0.
1177          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1178          KK   242RE
1179          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO. 2.  DIVERTED FLOW
1180          KM    CONTINUES WEST ALONG UNION HILLS DR. TO CAVE CREEK.
1181          KM    (Hydrograph identified as 247D)
1182          KM    REMAINING FLOW DISCHARGES INTO BASIN NO. 2 (Hydrograph identified as 242RE)
1183          KM    SOURCE:  Update of North Central Area Master Storm Drainage Study
1184          KM             (East Half) by NBS Lowry.
1185          DT    247D
1186          DI       0     154   10000
1187          DQ       0     154     154

1188          KK    243S
1189          KM    RUNOFF GENERATED ON SUB-BASIN 243
1190          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1191          KM    L= 2.02 mi.  Lca= 1.36 mi.  S= 85 ft/mi.  Kn= .041  LAG= 37.27 min.
1192          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1193          BA    .408
1194          LG    .104    .259    3.77    .343   49.30
1195          UI     34.     34.     83.    136.    167.    193.    221.    260.    330.    425.
1196          UI    373.    309.    270.    229.    197.    166.    135.     87.     59.     56.
1197          UI     45.     34.     30.     10.     10.     10.     10.     10.     10.     10.
1198          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1199          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1200          KK   243RE
1201          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO. 2.  DIVERTED FLOW
1202          KM    CONTINUES WEST ALONG UNION HILLS DR. TO 7TH ST. TRUNKLINE.
1203          KM    (Hydrograph identified as 245D)
1204          KM    REMAINING FLOW DISCHARGES INTO BASIN NO. 2 (Hydrograph identified as 243RE)
1205          KM    SOURCE:  Update of North Central Area Master Storm Drainage Study
1206          KM             (East Half) by NBS Lowry.
1207          DT    245D
1208          DI       0      67   10000
1209          DQ       0      67      67

1210          KK   HC243
1211          KM    COMBINE HYDROGRAPHS OF REMAINING FLOWS FROM SUB-BASINS 242 & 243 INTO
1212          KM    DETENTION BASIN NO. 2
1213          HC       2

1214          KK   243RR
1215          KO       3
1216          KM    ROUTE FLOW THROUGH DETENTION BASIN NO. 2
1217          KM    SOURCE:  HDR Preliminary Design received by the FCDMC on 1-16-91.
1218          RS       1    ELEV    1389
1219          SV       0     .03    1.67     6.7   14.32   23.12   32.82   43.46   55.07   67.68
1220          SV      71
1221          SQ       0      30      90     168     210     246     277     304     330     353
1222          SQ     359
1223          SE    1389    1391    1393    1395    1397    1399    1401    1403    1405    1407
1224          SE  1407.5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1225          KK   RM243
1226          KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM SUB-BASIN 243 THROUGH 244
1227          KM             1) Reach Length = 3000 ft.
1228          KM             2) Pipe Diameter = 84"
1229          RD    3000   .0050    .012            CIRC     7.0

1230          KK    R238
1231          KM    RETRIEVE HYDROGRAPH FOR DIVERTED FLOW FROM SUB-BASIN 238
1232          DR    244D

1233          KK  RM238B
1234          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 238 THROUGH 244
1235          KM             1) Reach Length = 4240 ft.
1236          RD    4240   .0061    .040            TRAP      20       2

1237          KK    244S
1238          KM    RUNOFF GENERATED ON SUB-BASIN 244
1239          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1240          KM    L= 1.10 mi.  Lca= 0.56 mi.  S= 75 ft/mi.  Kn= .040  LAG= 21.10 min.
1241          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1242          BA    .504
1243          LG    .118    .257    3.61    .315   57.00
1244          UI     73.    195.    358.    461.    624.    892.    682.    526.    396.    267.
1245          UI    134.    103.     72.     22.     22.     22.     22.      0.      0.      0.
1246          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1247          KK   DT244
1248          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 10.8 AC-FT FROM SUB-BASIN 244
1249          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR244)
1250          KM                                              2) Balance of runoff continues on.
1251          KM                                                (Hydrograph identified as DT244)
1252          DT   OR244    10.8
1253          DI       0   10000
1254          DQ       0   10000

1255          KK  HC244A
1256          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 244 WITH ROUTED FLOW FROM DETENTION
1257          KM    BASIN NO. 2 AND DIVERTED FLOW FROM SUB-BASIN 238.  ALSO, TOTAL FLOW INTO
1258          KM    DETENTION BASIN NO. 5
1259          HC       3

1260          KK   244RE
1261          KM    DIVERT LOW FLOW FROM ENTERING DETENTION BASIN NO. 5.  DIVERTED FLOW
1262          KM    CONTINUES WEST TO 9TH ST. TRUNKLINE.
1263          KM    (Hydrograph identified as 246D)
1264          KM    REMAINING FLOW DISCHARGES INTO BASIN NO. 5 (Hydrograph identified as 244RE)
1265          KM    SOURCE:  Update of North Central Area Master Storm Drainage Study
1266          KM             (East Half) by NBS Lowry.
1267          DT    246D
1268          DI       0     104   10000
1269          DQ       0     104     104
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1270          KK   244RR
1271          KO      3
1272          KM    ROUTE FLOW THROUGH DETENTION BASIN NO. 5
1273          KM    SOURCE:  NBS Lowry TR-20 diskette submittal of June 27, 1989.
1274          KM             Information provided to KHE by FCDMC.
1275          RS      1    ELEV    1372
1276          SV      0     .02     .33    2.05    6.97   16.68   31.34   49.36   88.62  129.66
1277          SE   1372    1376    1377    1378    1379    1380    1381    1382    1384    1386
1278          SQ      0      72      94     111     130     147     161     175     201     227

1279          KK    R244
1280          KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 244
1281          DR    246D

1282          KK  HC244B
1283          KM    COMBINE DIVERTED LOW FLOW FROM SUB-BASIN 244 WITH BASIN NO. 5 OUTFLOW
1284          HC      2

1285          KK   RM244
1286          KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM SUB-BASIN 244 THROUGH 246
1287          KM             1) Reach Length = 3880 ft.
1288          KM             2) Pipe Diameter = 96"
1289          RD    3880   .0016    .012            CIRC     8.0

1290          KK    R243
1291          KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 243
1292          DR    245D

1293          KK    245S
1294          KM    RUNOFF GENERATED ON SUB-BASIN 245
1295          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1296          KM    L= 1.30 mi.  Lca= 0.47 mi.  S= 34 ft/mi.  Kn= .039  LAG= 23.83 min.
1297          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1298          BA    .195
1299          LG    .100    .250    3.66    .317   68.43
1300          UI     28.     70.    132.    170.    224.    333.    270.    209.    158.    115.
1301          UI     59.     45.     28.     15.      8.      8.      8.      0.      0.      0.
1302          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1303          KK   DT245
1304          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 5.9 AC-FT FROM SUB-BASIN 245
1305          KM                                               (Hydrograph identified as OR245)
1306          KM                                             2) Balance of runoff continues on.
1307          KM                                               (Hydrograph identified as DT245)
1308          DT   OR245     5.9
1309          DI      0   10000
1310          DQ      0   10000

1311          KK   HC245
1312          KM    COMBINE HYDROGRAPH FROM SUB-BASIN 245 WITH DIVERTED FLOW FROM SUB-BASIN 243
1313          HC      2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1314          KK   RM245
1315          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 245 THROUGH 246
1316          KM             1) Reach Length = 6530 ft.
1317          RD
1318          RC     .03     .02     .03    6530   .0047
1319          RX       0       0       8       8      72      72      80      80
1320          RY       5      .5      .5       0       0      .5      .5       5

1321          KK    246S
1322          KM    RUNOFF GENERATED ON SUB-BASIN 246
1323          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1324          KM    L= 1.45 mi.  Lca= 0.48 mi.  S= 23 ft/mi.  Kn= .042  LAG= 29.05 min.
1325          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1326          BA    .629
1327          LG    .101    .253    4.12    .265   62.43
1328          UI     71.    118.    282.    372.    450.    558.    796.    832.    638.    525.
1329          UI    420.    334.    219.    125.    113.     71.     53.     22.     22.     22.
1330          UI     22.     22.      0.      0.      0.      0.      0.      0.      0.      0.
1331          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1332          KK   DT246
1333          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 12.5 AC-FT FROM SUB-BASIN 246
1334          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR246)
1335          KM                                              2) Balance of runoff continues on.
1336          KM                                                (Hydrograph identified as DT246)
1337          DT   OR246    12.5
1338          DI       0   10000
1339          DQ       0   10000

1340          KK   HC246
1341          KM    COMBINE HYDROGRAPH FROM SUB-BASIN 246 WITH ROUTED FLOWS FROM 241, 244 & 245.
1342          KM    ALSO, TOTAL FLOW AT 7TH ST. AND THE GREENWAY CHANNEL.
1343          HC       4

1344          KK   RM246
1345          KM    MUSKINGUM-CUNGE ROUTE IN GREENWAY CHANNEL FROM SUB-BASIN 246 THROUGH 248
1346          KM             1) Reach Length = 3880 ft.
1347          RD
1348          RC    .045    .035    .045    3880   .0057
1349          RX       0       1       5      25      75      95      99     100
1350          RY      21      20      20      10      10      20      20      21

1351          KK    247S
1352          KM    RUNOFF GENERATED ON SUB-BASIN 247
1353          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1354          KM    L= 0.98 mi.  Lca= 0.41 mi.  S= 26 ft/mi.  Kn= .042  LAG= 23.03 min.
1355          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1356          BA    .207
1357          LG    .106    .250    3.55    .313   56.20
1358          UI     30.     82.    149.    192.    261.    369.    278.    214.    161.    107.
1359          UI     53.     41.     28.      9.      9.      9.      9.      0.      0.      0.
1360          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1361        KK    R242
1362        KM    RETRIEVE HYDROGRAPH FOR DIVERTED LOW FLOW FROM SUB-BASIN 242
1363        DR    247D

1364        KK   RM242
1365        KM    MUSKINGUM-CUNGE ROUTE IN PIPE FROM SUB-BASIN 242 TO 247
1366        KM             1) Reach Length = 3770 ft.
1367        KM             2) Pipe Diameter = 72"
1368        RD    3770   .0004    .012            CIRC     6.0

1369        KK   HC247
1370        KM    COMBINE HYDROGRAPH FROM SUB-BASIN 247 WITH DIVERTED FLOW FROM SUB-BASIN 242
1371        HC       2

1372        KK   247RE
1373        KM    DIVERT 2-YR. FLOW WEST IN 72" PIPE ALONG UNION HILLS DR. TO CAVE CREEK
1374        KM    (Hydrograph identified as 256D)
1375        KM    REMAINING FLOW DISCHARGES INTO SUB-BASIN 248
1376        KM    (Hydrograph identified as 247RE)
1377        KM    SOURCE:  Update of North Central Area Master Storm Drainage Study
1378        KM             (East Half) by NBS Lowry.
1379        DT    256D
1380        DI       0     178   10000
1381        DQ       0     178     178

1382        KK   RM247
1383        KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 247 THROUGH 248
1384        KM             1) Reach Length = 10200 ft.
1385        RD
1386        RC     .04     .03     .04   10200   .0057
1387        RX       0      20      40      50      70      85     175     180
1388        RY       7       6       4       0       0       4       6       7

1389        KK    248S
1390        KM    RUNOFF GENERATED ON SUB-BASIN 248
1391        KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1392        KM    L= 2.03 mi.  Lca= 0.88 mi.  S= 28 ft/mi.  Kn= .042  LAG= 40.03 min.
1393        KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1394        BA    .965
1395        LG    .102    .254    3.55    .301   58.51
1396        UI     77.     77.    182.    304.    380.    437.    499.    582.    709.    948.
1397        UI    918.    747.    646.    562.    478.    408.    345.    250.    154.    133.
1398        UI    127.     79.     77.     48.     24.     24.     24.     24.     24.     24.
1399        UI     24.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1400        UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1401        KK   DT248
1402        KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 11.1 AC-FT FROM SUB-BASIN 248
1403        KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR248)
1404        KM                                              2) Balance of runoff continues on.
1405        KM                                                 (Hydrograph identified as DT248)
1406        DT   OR248    11.1
1407        DI       0   10000
1408        DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1409          KK   HC248
1410          KM    TOTAL FLOW AT EAST FORK OF CAVE CREEK AND CENTRAL AVE.
1411          HC       3

1412          KK   RM248
1413          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 248 THROUGH 249
1414          KM             1) Reach Length = 6600 ft.
1415          RD
1416          RC    .045    .035    .045    6600   .0042
1417          RX       0       1       5      25      85     105     109     110
1418          RY      23      20      20      10      10      20      20      23

1419          KK    R211
1420          KM    RETRIEVE HYDROGRAPH OF DIVERTED FLOW THROUGH 84" PIPE FROM SUB-BASIN 211
1421          DR    249D

1422          KK  RM211B
1423          KM    MUSKINGUM-CUNGE ROUTE DIVERTED FLOW THROUGH SUB-BASIN 249
1424          KM             1) Reach Length = 3720 ft.
1425          RD
1426          RC    .045    .035    .045    3720   .0060
1427          RX       0       1       5      25      85     105     109     110
1428          RY      21      20      20      10      10      20      20      21

1429          KK    249S
1430          KM    RUNOFF GENERATED ON SUB-BASIN 249
1431          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1432          KM    L= 1.46 mi.  Lca= 0.65 mi.  S= 28 ft/mi.  Kn= .050  LAG= 37.47 min.
1433          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1434          BA    .497
1435          LG    .115    .267    3.87    .388   43.93
1436          UI     36.     36.     63.    128.    163.    189.    212.    241.    276.    337.
1437          UI    439.    439.    360.    313.    279.    241.    210.    181.    153.    112.
1438          UI     70.     62.     59.     43.     36.     35.     11.     11.     11.     11.
1439          UI     11.     11.     11.     11.      0.      0.      0.      0.      0.      0.
1440          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1441          KK   DT249
1442          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 0.7 AC-FT FROM SUB-BASIN 249
1443          KM                                               (Hydrograph identified as OR249)
1444          KM                                             2) Balance of runoff continues on.
1445          KM                                               (Hydrograph identified as DT249)
1446          DT   OR249     0.7
1447          DI       0   10000
1448          DQ       0   10000

1449          KK   HC249
1450          KM    COMBINE HYDROGRAPH FROM SUB-BASIN 249 WITH ROUTED FLOWS FROM 211 & 248.
1451          KM    ALSO, TOTAL FLOW INTO CAVE CREEK FROM EAST FORK OF CAVE CREEK
1452          HC       3
1453          ZW    A=EAST FORK CAVE CREEK  B=HC249  C=FLOW  F=CAVE CREEK FUTURE
              *     *     *     *     *     *     *     *     *     *
              *                                                     *
              *        BREAK SEQUENCE - JUMP TO SUB-BASIN 250       *
              *                                                     *
              *                   CAVE CREEK                        *
              *              SUB-BASINS 250 - 266                   *
              *                                                     *
              *     *     *     *     *     *     *     *     *     *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1454          KK    250S
1455          KM    RUNOFF GENERATED ON SUB-BASIN 250
1456          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1457          KM    L= 3.58 mi.  Lca= 1.44 mi.  S= 43 ft/mi.  Kn= .046  LAG= 60.45 min.
1458          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1459          BA   2.433
1460          BF     420
1461          LG    .136    .323    3.61    .315   10.39
1462          UI    156.    156.    156.    509.    629.    745.    850.    933.   1045.   1187.
1463          UI   1376.   1734.   2032.   1728.   1482.   1321.   1191.   1044.    929.    809.
1464          UI    728.    562.    416.    276.    266.    256.    192.    156.    156.     90.
1465          UI     48.     48.     48.     48.     48.     48.     48.     48.     48.      0.
1466          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1467          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1468          KK    251S
1469          KM    RUNOFF GENERATED ON SUB-BASIN 251
1470          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1471          KM    L= 3.89 mi.  Lca= 1.52 mi.  S= 48 ft/mi.  Kn= .042  LAG= 56.95 min.
1472          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1473          BA   1.719
1474          BF       0
1475          LG    .109    .267    4.08    .421   25.21
1476          UI    107.    107.    107.    322.    415.    505.    568.    624.    694.    786.
1477          UI    883.   1116.   1341.   1279.   1081.    952.    861.    769.    677.    604.
1478          UI    533.    461.    353.    252.    189.    179.    175.    120.    107.    107.
1479          UI     56.     33.     33.     33.     33.     33.     33.     33.     33.     33.
1480          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1481          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1482          KK   HC250
1483          KM    COMBINE HYDROGRAPHS FROM SUB-BASINS 250 & 251.  ALSO, TOTAL FLOW IN
1484          KM    CAVE CREEK UPSTREAM OF THE C.A.P.
1485          HC       2

1486          KK   RM250
1487          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 250 THROUGH 253
1488          KM             1) Reach Length = 11600 ft.
1489          RD   11600   .0066    .045            TRAP      50       3

1490          KK    252S
1491          KM    RUNOFF GENERATED ON SUB-BASIN 252
1492          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1493          KM    L= 1.05 mi.  Lca= 0.52 mi.  S= 49 ft/mi.  Kn= .042  LAG= 22.94 min.
1494          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1495          BA    .378
1496          LG    .105    .260    3.87    .357   76.93
1497          UI     55.    150.    275.    354.    482.    676.    506.    389.    292.    190.
1498          UI     96.     73.     49.     17.     17.     17.     17.      0.      0.      0.
1499          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1500          KK   DT252
1501          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 28.8 AC-FT FROM SUB-BASIN 252
1502          KM                                              (Hydrograph identified as OR252)
1503          KM                                            2) Balance of runoff continues on.
1504          KM                                              (Hydrograph identified as DT252)
1505          DT   OR252    28.8
1506          DI       0   10000
1507          DQ       0   10000.

1508          KK   RM252
1509          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 252 THROUGH 253
1510          KM             1) Reach Length = 5840 ft.
1511          RD    5840   .0072    .045            TRAP      50       3

1512          KK    253S
1513          KM    RUNOFF GENERATED ON SUB-BASIN 253
1514          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1515          KM    L= 3.02 mi.  Lca= 1.56 mi.  S= 43 ft/mi.  Kn= .056  LAG= 71.12 min.
1516          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1517          BA   1.446
1518          LG    .142    .260    3.98    .421   41.44
1519          UI     68.     68.     68.     68.    211.    250.    294.    329.    364.    392.
1520          UI    419.    461.    507.    547.    634.    769.    875.    846.    735.    658.
1521          UI    602.    558.    516.    466.    425.    392.    350.    325.    282.    226.
1522          UI    187.    121.    121.    114.    112.     98.     68.     68.     68.     57.
1523          UI     21.     21.     21.     21.     21.     21.     21.     21.     21.     21.
1524          UI     21.     21.     21.      0.      0.      0.      0.      0.      0.      0.
1525          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1526          KK   DT253
1527          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 56.7 AC-FT FROM SUB-BASIN 253
1528          KM                                              (Hydrograph identified as OR253)
1529          KM                                            2) Balance of runoff continues on.
1530          KM                                              (Hydrograph identified as DT253)
1531          DT   OR253    56.7
1532          DI       0   10000
1533          DQ       0   10000

1534          KK  HC253U
1535          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 253 WITH ROUTED FLOW FROM 250 & 252
1536          HC       3

1537          KK    254S
1538          KM    RUNOFF GENERATED ON SUB-BASIN 254
1539          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1540          KM    L= 1.04 mi.  Lca= 0.52 mi.  S= 109 ft/mi.  Kn= .057  LAG= 26.65 min.
1541          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1542          BA    .272
1543          LG    .149    .262    4.14    .460   36.74
1544          UI     34.     71.    150.    195.    242.    334.    418.    317.    254.    198.
1545          UI    151.     83.     58.     42.     32.     11.     11.     11.     11.      0.
1546          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1547          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1548          KK   DT254
1549          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 5.6 AC-FT FROM SUB-BASIN 254
1550          KM                                              (Hydrograph identified as OR254)
1551          KM                                            2) Balance of runoff continues on.
1552          KM                                              (Hydrograph identified as DT254)
1553          DT   OR254     5.6
1554          DI       0   10000
1555          DQ       0   10000

1556          KK    255S
1557          KM    RUNOFF GENERATED ON SUB-BASIN 255
1558          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1559          KM    L= 1.89 mi.  Lca= 0.95 mi.  S= 59 ft/mi.  Kn= .062  LAG= 51.39 min.
1560          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1561          BA    .765
1562          LG    .132    .262    3.87    .391   37.05
1563          UI     50.     50.     55.    169.    207.    244.    276.    306.    346.    389.
1564          UI    468.    595.    636.    527.    457.    410.    365.    319.    283.    248.
1565          UI    212.    157.    105.     89.     82.     75.     50.     50.     41.     15.
1566          UI     15.     15.     15.     15.     15.     15.     15.     15.      0.      0.
1567          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1568          KK   DT255
1569          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 21.2 AC-FT FROM SUB-BASIN 255
1570          KM                                              (Hydrograph identified as OR255)
1571          KM                                            2) Balance of runoff continues on.
1572          KM                                              (Hydrograph identified as DT255)
1573          DT   OR255    21.2
1574          DI       0   10000
1575          DQ       0   10000

1576          KK   HC255
1577          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 254 & 255
1578          HC       2

1579          KK  HC253D
1580          KM    COMBINE HYDROGRAPHS FROM CAVE CREEK UPSTREAM OF THE OUTER LOOP HIGHWAY (OLH)
1581          KM    WITH 20TH ST. TO 7TH ST. OLH INTERCEPTOR CHANNEL.
1582          HC       2

1583          KK   RM253
1584          KM    MUSKINGUM-CUNGE ROUTE FLOW FROM SUB-BASINS 253 & 255 THROUGH 256
1585          KM             1) Reach Length = 6120 ft.
1586          RD    6120   .0056    .040            TRAP      30       2

1587          KK    256S
1588          KM    RUNOFF GENERATED ON SUB-BASIN 256
1589          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1590          KM    L= 1.33 mi.  Lca= 0.61 mi.  S= 32 ft/mi.  Kn= .055  LAG= 37.86 min.
1591          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1592          BA    .372
1593          LG    .152    .260    4.30    .512   28.08
1594          UI     33.     33.     98.    143.    174.    201.    238.    289.    396.    390.
1595          UI    312.    268.    226.    191.    160.    119.     74.     57.     54.     33.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1596          UI     33.     14.     10.     10.     10.     10.     10.     10.      0.      0.
1597          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1598          KK   DT256
1599          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 4.5 AC-FT FROM SUB-BASIN 256
1600          KM                                               (Hydrograph identified as OR256)
1601          KM                                             2) Balance of runoff continues on.
1602          KM                                               (Hydrograph identified as DT256)
1603          DT   OR256     4.5
1604          DI       0   10000
1605          DQ       0   10000

1606          KK    R247
1607          KM    RETRIEVE HYDROGRAPH FOR DIVERTED FLOW FROM SUB-BASIN 247
1608          DR    256D

1609          KK   HC256
1610          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 256 WITH ROUTED FLOW FROM 253 AND
1611          KM    DIVERTED FLOW FROM 247.
1612          HC       3

1613          KK   RM256
1614          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 256 THROUGH 258
1615          KM             1) Reach Length = 6270 ft.
1616          KM    SOURCE:  AmWest Cross-Section No. 6.46 provided by the FCDMC.
1617          RD
1618          RC    .035    .035    .035    6270   .0070
1619          RX      10      38     110     130     136     140     222     270
1620          RY      25      18   17.28   13.28   11.28   13.28    14.1    26.1

1621          KK    257S
1622          KM    RUNOFF GENERATED ON SUB-BASIN 257
1623          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1624          KM    L= 1.36 mi.  Lca= 0.83 mi.  S= 25 ft/mi.  Kn= .039  LAG= 31.90 min.
1625          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1626          BA    .388
1627          LG    .100    .250    3.50    .290   48.07
1628          UI     46.     83.    187.    245.    299.    380.    552.    486.    384.    309.
1629          UI    246.    184.    102.     77.     56.     46.     14.     14.     14.     14.
1630          UI     14.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1631          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1632          KK   DT257
1633          KM    THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 1.2 AC-FT FROM SUB-BASIN 257
1634          KM                                               (Hydrograph identified as OR257)
1635          KM                                             2) Balance of runoff continues on.
1636          KM                                               (Hydrograph identified as DT257)
1637          DT   OR257     1.2
1638          DI       0   10000
1639          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1640          KK   RM257
1641          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 257 THROUGH 258
1642          KM             1) Reach Length = 5400 ft.
1643          RD
1644          RC   .030    .020    .030    5400   .0072
1645          RX      0       0       8       8      72      72      80      80
1646          RY      5      .5      .5       0       0      .5      .5       5

1647          KK    258S
1648          KM    RUNOFF GENERATED ON SUB-BASIN 258
1649          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1650          KM    L= 1.27 mi.  Lca= 0.41 mi.  S= 34 ft/mi.  Kn= .039  LAG= 22.43 min.
1651          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1652          BA    .677
1653          LG    .100    .250    4.19    .443   49.47
1654          UI    113.    378.    614.    826.   1301.   1113.    815.    591.    332.    192.
1655          UI    120.     55.     35.     35.     35.      0.      0.      0.      0.      0.
1656          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1657          KK   DT258
1658          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 7.7 AC-FT FROM SUB-BASIN 258
1659          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR258)
1660          KM                                              2) Balance of runoff continues on.
1661          KM                                                (Hydrograph identified as DT258)
1662          DT   OR258     7.7
1663          DI       0   10000
1664          DQ       0   10000

1665          KK   HC258
1666          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 258 WITH ROUTED FLOWS FROM 256 & 257
1667          HC       3

1668          KK   RM258
1669          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 258 THROUGH 259
1670          KM             1) Reach Length = 6400 ft.
1671          RD
1672          RC   .045    .040    .045    6400   .0061
1673          RX      0       0      60      95     105     150     155     200
1674          RY     18      17      16       4       4      16      18      18

1675          KK    259S
1676          KM    RUNOFF GENERATED ON SUB-BASIN 259
1677          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1678          KM    L= 1.61 mi.  Lca= 0.80 mi.  S= 32 ft/mi.  Kn= .055  LAG= 45.14 min.
1679          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1680          BA    .424
1681          LG    .100    .250    3.92    .382   42.33
1682          UI     26.     26.     26.     80.    103.    125.    140.    154.    172.    194.
1683          UI    219.    277.    331.    315.    266.    234.    212.    189.    167.    149.
1684          UI    131.    113.     86.     61.     47.     44.     43.     29.     26.     26.
1685          UI     13.      8.      8.      8.      8.      8.      8.      8.      8.      8.
1686          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
1687          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1688          KK   DT259
1689          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 3.2 AC-FT FROM SUB-BASIN 259
1690          KM                                              (Hydrograph identified as OR259)
1691          KM                                            2) Balance of runoff continues on.
1692          KM                                              (Hydrograph identified as DT259)
1693          DT   OR259     3.2
1694          DI       0   10000
1695          DQ       0   10000

1696          KK  HC259U
1697          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 259 WITH ROUTED FLOW FROM 258.  ALSO,
1698          KM    TOTAL FLOW IN CAVE CREEK UPSTREAM OF CONFLUENCE WITH EAST FORK OF CAVE CREEK
1699          HC       2
1700          ZW    A=CAVE CREEK UPSTREAM EF  B=HC259U  C=FLOW  F=CAVE CREEK FUTURE

1701          KK  HC259D
1702          KM    COMBINE HYDROGRAPHS FOR TOTAL FLOW FROM CAVE CREEK AND EAST FORK OF
1703          KM    CAVE CREEK
1704          HC       2
1705          ZW    A=CAVE CREEK DOWNSTREAM EF B=HC259D  C=FLOW  F=CAVE CREEK FUTURE

1706          KK   RM259
1707          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 249/259 THROUGH 262
1708          KM             1)  Reach Length = 1560 ft.
1709          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
1710          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
1711          KM             Niple, Inc.
1712          RD
1713          RC    .045    .035    .045    1560   .0038
1714          RX       0      40      80     120     180     228     253     253
1715          RY      30    29.5      28      18      18      30      32      32
              *     *     *     *     *     *     *     *     *
              *                                                 *
              *   BREAK SEQUENCE - JUMP TO SUB-BASIN 260        *
              *                                                 *
              *     *     *     *     *     *     *     *     *

1716          KK    260S
1717          KM    RUNOFF GENERATED ON SUB-BASIN 260
1718          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1719          KM    L= 1.78 mi.  Lca= 0.97 mi.  S= 24 ft/mi.  Kn= .039  LAG= 37.79 min.
1720          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1721          BA    .997
1722          BF     365
1723          LG    .100    .250    3.55    .300   49.22
1724          UI     99.    110.    350.    472.    564.    670.    813.   1142.   1173.    917.
1725          UI    775.    639.    525.    423.    257.    173.    163.     99.     96.     30.
1726          UI     30.     30.     30.     30.     30.      0.      0.      0.      0.      0.
1727          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1728          KK   DT260
1729          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 5.3 AC-FT FROM SUB-BASIN 260
1730          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR260)
1731          KM                                              2) Balance of runoff continues on.
1732          KM                                                (Hydrograph identified as DT260)
1733          DT   OR260     5.3
1734          DI       0   10000
1735          DQ       0   10000

1736          KK   RM260
1737          KM    MUSKINGUM-CUNGE ROUTE IN STREET FROM SUB-BASIN 260 THROUGH 261
1738          KM             1) Reach Length = 5280 ft.
1739          RD
1740          RC     .03     .02     .03    5280   .0042
1741          RX       0       0       8       8      80      80      88      88
1742          RY       5      .5      .5       0       0      .5      .5       5

1743          KK    261S
1744          KM    RUNOFF GENERATED ON SUB-BASIN 261
1745          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1746          KM    L= 1.83 mi.  Lca= 0.97 mi.  S= 22 ft/mi.  Kn= .039  LAG= 38.82 min.
1747          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1748          BA    .803
1749          BF       0
1750          LG    .100    .250    5.05    .232   53.64
1751          UI     73.     73.    231.    325.    394.    457.    544.    679.    924.    808.
1752          UI    658.    567.    472.    395.    326.    227.    130.    122.     96.     73.
1753          UI     52.     23.     23.     23.     23.     23.     23.      0.      0.      0.
1754          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1755          KK   DT261
1756          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 9.4 AC-FT FROM SUB-BASIN 261
1757          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR261)
1758          KM                                              2) Balance of runoff continues on.
1759          KM                                                (Hydrograph identified as DT261)
1760          DT   OR261     9.4
1761          DI       0   10000
1762          DQ       0   10000

1763          KK   HC261
1764          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 261 WITH ROUTED FLOW FROM 260
1765          HC       2

1766          KK   261RE
1767          KM    DIVERT FLOW WEST ALONG BELL ROAD OUT OF WATERSHED.
1768          KM    (Hydrograph identified as 261D)
1769          KM    REMAINDER FLOWS SOUTH ALONG 19TH AVE. IN STREET AND 90" PIPE.
1770          KM    (Hydrograph identified as 261RE)  (490 cfs in PIPE)
1771          KM    SOURCE:  Cave Creek Floodplain Delineation, Cave Buttes Dam to the ACDC,
1772          KM             FCD 88-56, Final Hydrology Report, January 1990, by Burgess &
1773          KM             Niple, Inc.
1774          DT    261D
1775          DI       0     961    1006    3470
1776          DQ       0     336     336    1517
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1823          KK  RM214C
1824          KM    MUSKINGUM-CUNGE ROUTE FROM SUB-BASIN 214 THROUGH 263
1825          KM             1) Reach Length = 3200 ft.
1826          RD
1827          RC    .050    .040    .050    3200   .0031
1828          RX       0      55      90     110     125     130     190     250
1829          RY      28      20      10       8       8      10      20      28

1830          KK    263S
1831          KM    RUNOFF GENERATED ON SUB-BASIN 263
1832          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1833          KM    L= 2.30 mi.  Lca= 1.11 mi.  S= 29 ft/mi.  Kn= .047  LAG= 50.97 min.
1834          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1835          BA   1.040
1836          LG    .134    .250    3.87    .449   36.76
1837          UI     60.     60.     60.    146.    216.    263.    301.    332.    362.    403.
1838          UI    452.    508.    640.    748.    728.    618.    548.    495.    452.    400.
1839          UI    360.    321.    286.    246.    186.    133.    106.    101.     98.     74.
1840          UI     60.     60.     49.     18.     18.     18.     18.     18.     18.     18.
1841          UI     18.     18.     18.      0.      0.      0.      0.      0.      0.      0.
1842          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1843          KK   DT263
1844          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 22.1 AC-FT FROM SUB-BASIN 263
1845          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR263)
1846          KM                                              2) Balance of runoff continues on.
1847          KM                                                (Hydrograph identified as DT263)
1848          DT   OR263    22.1
1849          DI       0   10000
1850          DQ       0   10000

1851          KK  HC263U
1852          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 263 WITH ROUTED FLOWS FROM 210 AND 262.
1853          KM    ALSO, TOTAL FLOW IN CAVE CREEK UPSTREAM OF THE SWEETWATER CHANNEL.
1854          HC       3
1855          ZW    A=CAVE CREEK UPSTREAM MV  B=HC263U  C=FLOW  F=CAVE CREEK FUTURE

1856          KK  HC263D
1857          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 263 WITH 215.  ALSO, TOTAL FLOW IN
1858          KM    CAVE CREEK AT THE SWEETWATER CHANNEL.
1859          HC       2
1860          ZW    A=CAVE CREEK DOWNSTREAM MV  B=HC263D  C=FLOW  F=CAVE CREEK FUTURE

1861          KK   263RR
1862          KM    RESERVOIR ROUTE THROUGH THE CAVE CREEK SEDIMENT BASIN.  STORAGE-OUTFLOW
1863          KM    RELATIONSHIP FROM THE COE ACDC DESIGN MEMORANDUM NO.5.  THE COE ASSUMED THAT
1864          KM    THE SEDIMENT STORAGE PART OF THE BASIN WAS FULL TO THE SPILLWAY IN THE
1865          KM    DEVELOPMENT OF THIS RATING CURVE.
1866          RS       1    ELEV    1267
1867          SV       0       4       7      16      30      36      50      68      76      86
1868          SV      94     102     112     120     128     136     144     160     184
1869          SE    1267  1267.9  1268.4  1269.2  1270.0  1270.4  1271.1  1272.0  1272.4  1272.9
1870          SE  1273.2  1273.6  1274.0  1274.4  1274.8  1275.1  1275.4  1276.1  1277.0
1871          SQ       0     500    1000    2000    3000    4000    5000    7000    8000    9000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1872          SQ   10000   11000   12000   13000   14000   15000   16000   17000   20000

1873          KK    264S
1874          KM    RUNOFF GENERATED ON SUB-BASIN 264
1875          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1876          KM    L= 1.13 mi.  Lca= 0.49 mi.  S= 19 ft/mi.  Kn= .042  LAG= 27.61 min.
1877          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1878          BA    .479
1879          LG    .124    .254    3.87    .405   42.30
1880          UI     53.     85.    208.    276.    331.    409.    569.    645.    492.    406.
1881          UI    328.    262.    183.    102.     88.     59.     50.     16.     16.     16.
1882          UI     16.     16.      0.      0.      0.      0.      0.      0.      0.      0.
1883          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1884          KK   DT264
1885          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 1.0 AC-FT FROM SUB-BASIN 264
1886          KM                                               (Hydrograph identified as OR264)
1887          KM                                             2) Balance of runoff continues on.
1888          KM                                               (Hydrograph identified as DT264)
1889          DT   OR264     1.0
1890          DI       0   10000
1891          DQ       0   10000

1892          KK   HC264
1893          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 264 WITH OUTFLOW FROM THE CAVE CREEK
1894          KM    SEDIMENTATION BASIN.  ALSO, TOTAL FLOW IN CAVE CREEK AT CACTUS RD.
1895          HC       2

1896          KK   RM264
1897          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 264 THROUGH 265
1898          KM             1) Reach Length = 5480 ft.
1899          RD    5480   .0040    .020            TRAP      60       2

1900          KK    265S
1901          KM    RUNOFF GENERATED ON SUB-BASIN 265
1902          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1903          KM    L= 1.75 mi.  Lca= 0.80 mi.  S= 23 ft/mi.  Kn= .039  LAG= 35.17 min.
1904          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1905          BA    .876
1906          LG    .113    .250    3.66    .345   55.21
1907          UI     82.     82.    268.    368.    446.    519.    617.    812.   1027.    858.
1908          UI    708.    605.    503.    418.    333.    204.    143.    134.     87.     82.
1909          UI     35.     25.     25.     25.     25.     25.      0.      0.      0.      0.
1910          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1911          KK   DT265
1912          KM    THROW AWAY 10-YR 2-HR RETENTION VOLUME:  1) 14.3 AC-FT FROM SUB-BASIN 265
1913          KM    (INCLUDES 100-YR 2-HR FUTURE VOLUME)       (Hydrograph identified as OR265)
1914          KM                                             2) Balance of runoff continues on.
1915          KM                                               (Hydrograph identified as DT265)
1916          DT   OR265    14.3
1917          DI       0   10000
1918          DQ       0   10000
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1919          KK   HC265
1920          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 265 WITH ROUTED FLOW FROM 264. ALSO,
1921          KM    TOTAL FLOW IN CAVE CREEK AT PEORIA AVE.
1922          HC       2

1923          KK   RM265
1924          KM    MUSKINGUM-CUNGE ROUTE IN CHANNEL FROM SUB-BASIN 265 THROUGH 266
1925          KM             1) Reach Length = 3400 ft.
1926          RD    3400    .010    .035            TRAP      35       3

1927          KK    266S
1928          KM    RUNOFF GENERATED ON SUB-BASIN 266
1929          KM    THE FOLLOWING PARAMETERS WERE PROVIDED FOR THIS BASIN
1930          KM    L= 0.84 mi.  Lca= 0.44 mi.  S= 21 ft/mi.  Kn= .038  LAG= 21.02 min.
1931          KM    PHOENIX VALLEY S-GRAPH WAS USED FOR THIS BASIN
1932          BA    .217
1933          LG    .118    .250    3.82    .386   61.72
1934          UI     31.     84.    154.    198.    268.    383.    294.    227.    171.    116.
1935          UI     58.     45.     31.     10.     10.     10.     10.      0.      0.      0.
1936          UI      0.      0.      0.      0.      0.      0.      0.      0.      0.      0.

1937          KK   DT266
1938          KM   THROW AWAY 100-YR 2-HR RETENTION VOLUME:  1) 5.9 AC-FT FROM SUB-BASIN 266
1939          KM                                               (Hydrograph identified as OR266)
1940          KM                                             2) Balance of runoff continues on.
1941          KM                                               (Hydrograph identified as DT266)
1942          DT   OR266     5.9
1943          DI       0   10000
1944          DQ       0   10000

1945          KK   HC266
1946          KM    COMBINE HYDROGRAPHS FROM SUB-BASIN 266 WITH ROUTED FLOW FROM 265
1947          KM    ALSO, TOTAL FLOW IN CAVE CREEK AT THE CONFLUENCE WITH THE ARIZONA CANAL
1948          KM    DIVERSION CHANNEL
1949          HC       2
1950          ZW    A=CAVE CREEK UPSTREAM ACDC  B=HC266  C=FLOW  F=CAVE CREEK FUTURE
1951          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  8         200S
               V
               V
 29       RM200A
               V
               V
 37       RM200B
               .
               .
 42            .        202S
               .           .
               .           .
 58            .           .-------->   OR202
 53            .       DT202
               .           .
               .           .
 61        HC202............
               V
               V
 64        RM202
               .
               .
 71            .        206S
               .           .
               .           .
 82        HC206............
               .
               .
 90            .-------->    211D
 85        206RE
               V
               V
 93        RM206
               .
               .
100            .        203S
               .           V
               .           V
111            .       203RR
               .           V
               .           V
123            .       RM203
               .           .
               .           .
130            .           .        204S
               .           .           V
               .           .           V
141            .           .       204RR
               .           .           V
               .           .           V
153            .           .       RM204
               .           .           .
               .           .           .
168            .           .           .        205S
               .           .           .           .
               .           .           .           .
174            .           .           .           .-------->   OR205
169            .           .           .       DT205
               .           .           .           .
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          .          .          .          .
177       .      HC205.......................
          .          V
          .          V
0         .      RM205
          .          .
          .          .
188       .          .       207S
          .          .          V
          .          .          V
200       .          .      207RR
          .          .          V
          .          .          V
211       .          .      RM207
          .          .          .
          .          .          .
215       .          .          .       216S
          .          .          .          .
          .          .          .          .
231       .          .          .          .-------->   OR216
226       .          .          .      DT216
          .          .          .          .
          .          .          .          .
234       .      HC216.......................
          .          V
          .          V
237       .      RM216
          .          .
          .          .
245       .          .       208S
          .          .          .
          .          .          .
6     HC208.......................
          V
          V
259   RM208
          .
          .
263       .       212S
          .          V
          .          V
274       .      RM212
          .          .
          .          .
282       .          .       211S
          .          .          .
          .          .          .
298       .          .          .-------->   OR211
293       .          .      DT211
          .          .          .
          .          .          .
303       .          .          .          .<--------    211D
301       .          .          .       R211
          .          .          .          .
          .          .          .          .
304       .      HC211.......................
          .          .
          .          .
314       .          .-------->    249D
307       .      211RE
          .          V
          .          V
317       .      RM211
          .          .
          .          .
324       .          .       209S
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            .          .          .
            .          .          .
343         .          .          .-------> OR209
338         .          .      DT209
            .          .          .
            .          .          .
346     HC209.......................
            .
            .
349         .       213S
            .          .
            .          .
360     HC213............
            V
            V
363     RM213
            .
            .
370         .       214S
            .          .
            .          .
387         .          .-------> OR214
382         .      DT214
            .          .
            .          .
395         .          .------->  263D
390         .      214RE
            .          V
            .          V
398         .      RM214
            .          .
            .          .
405         .          .       210S
            .          .          .
            .          .          .
417     HC210.......................
            V
            V
420     RM210
            .
            .
427         .       215S
            .          .
            .          .
442         .          .-------> OR215
437         .      DT215
            .          .
            .          .
445     HC215............
            .
            .
450         .       220S
            .          .
            .          .
465         .          .-------> OR220
460         .      DT220
            .          .
            .          .
471         .          .------->  222D
468         .      220RE
            .          .
            .          .
474         .          .       221S
            .          .          .
            .          .          .
491         .          .          .-------> OR221
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486   .         .      DT221
      .         .         .
      .         .         .
494   .     HC221A............
      .         V
      .         V
498   .      221RR
      .         .
      .         .
508   .         .         .<-------    222D
506   .         .      R220
      .         .         .
      .         .         .
509   .     HC221B............
      .         V
      .         V
512   .      RM221
      .         .
      .         .
517   .         .      222S
      .         .         .
      .         .         .
532   .         .         .------->   OR222
527   .         .      DT222
      .         .         .
      .         .         .
535   .      HC222............
      .         .
      .         .
546   .         .------->   FL-2D
538   .      222RE
      .         V
      .         V
549   .      RM222
      .         .
      .         .
559   .         .      223S
      .         .         .
      .         .         .
576   .         .         .------->   OR223
571   .         .      DT223
      .         .         .
      .         .         .
579   .      HC223............
      .         .
      .         .
586   .         .------->   234D1
582   .      223RE
      .         V
      .         V
589   .     RM223A
      .         .
      .         .
596   .         .      224S
      .         .         .
      .         .         .
612   .         .         .------->   OR224
607   .         .      DT224
      .         .         .
      .         .         .
615   .         .         .      225S
      .         .         .         .
      .         .         .         .
631   .         .         .         .------->   OR225
626   .         .         .      DT225
      .         .         .         .
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639  .  .  .  .-------> D225
634  .  .  .  225RE
     .  .  .     V
     .  .  .     V
642  .  .  .  RM225
     .  .  .     .
     .  .  .     .
647  .  .  .     .     226S
     .  .  .     .        .
     .  .  .     .        .
663  .  .  .     .        .-------> OR226
658  .  .  .     .    DT226
     .  .  .     .        .
     .  .  .     .        .
666  .  HC226.................................
     .     V
     .     V
670  .  RM226
     .     .
     .     .
679  .     .  227S
     .     .     .
     .     .     .
694  .     .     .-------> OR227
689  .     .  DT227
     .     .     V
     .     .     V
697  .     .  RM227
     .     .     .
     .     .     .
704  .     .     .  228S
     .     .     .     .
     .     .     .     .
719  .     .     .     .-------> OR228
714  .     .     .  DT228
     .     .     .     V
     .     .     .     V
722  .     .     .  RM228
     .     .     .     .
     .     .     .     .
729  .     .     .     .     230S
     .     .     .     .        .
     .     .     .     .        .
744  .     .     .     .        .-------> OR230
739  .     .     .     .    DT230
     .     .     .     .        V
     .     .     .     .        V
747  .     .     .     .    RM230
     .     .     .     .        .
     .     .     .     .        .
755  .     .     .     .        .     229S
     .     .     .     .        .        .
     .     .     .     .        .        .
770  .     .     .     .        .        .-------> OR229
765  .     .     .     .        .    DT229
     .     .     .     .        .        .
     .     .     .     .        .        .
773  .     .  HC229.................................
     .     .     .
     .     .     .
77   .     .     .  231S
     .     .     .     .
     .     .     .     .
792  .     .     .     .-------> OR231
787  .     .     .  DT231
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                .          .
                .          .
795             .          .     HC231A............
                .          .          .
                .          .          .
[illegible]4    .          .          .-------->    232D
799             .          .     231RE
                .          .          V
                .          .          V
807             .          .     231RR
                .          .          .
                .          .          .
819             .          .          .          .<-------    232D
817             .          .          .       R231
                .          .          .          .
                .          .          .          .
820             .          .     HC231B............
                .          .          V
                .          .          V
823             .          .     RM231A
                .          .          V
                .          .          V
831             .          .     RM231B
                .          .          .
                .          .          .
838             .          .          .       232S
                .          .          .          .
                .          .          .          .
854             .          .          .          .-------->   OR232
849             .          .          .      DT232
                .          .          .          .
                .          .          .          .
[illegible]7    .          .     HC232............
                .          .          V
                .          .          V
860             .          .     RM232
                .          .          .
                .          .          .
867             .          .          .       233S
                .          .          .          .
                .          .          .          .
883             .          .          .          .-------->   OR233
878             .          .          .      DT233
                .          .          .          .
                .          .          .          .
886             .          .     HC233A............
                .          .          .
                .          .          .
893             .          .          .-------->   234D2
890             .          .     233RE
                .          .          V
                .          .          V
896             .          .     B3ARR
                .          .          V
                .          .          V
909             .          .     B3BRR
                .          .          .
                .          .          .
924             .          .          .          .<-------   234D2
922             .          .          .       R233
                .          .          .          .
                .          .          .          .
925             .          .     HC233B............
                .          .          V
                .          .          V
928             .          .     RM233
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                .          .          .
                .          .          .
937             .          .          .-------->   239D
934             .          .      B3BRE
                .          .          .
                .          .          .
942             .          .          .          .<-------   234D1
940             .          .          .       R223
                .          .          .          V
                .          .          .          V
943             .          .          .     RM223B
                .          .          .          .
                .          .          .          .
948             .          .      HC234............
                .          .          V
                .          .          V
952             .          .     RM234A
                .          .          .
                .          .          .
958             .          .          .       234S
                .          .          .          .
                .          .          .          .
973             .          .          .          .-------->   OR234
968             .          .          .      DT234
                .          .          .          V
                .          .          .          V
976             .          .          .     RM234B
                .          .          .          .
                .          .          .          .
983             .          .          .          .       235S
                .          .          .          .          .
                .          .          .          .          .
989             .          .          .          .          .-------->   OR235
994             .          .          .          .      DT235
                .          .          .          .          .
                .          .          .          .          .
1002            .          .      HC235........................
                .          .          .
                .          .          .
1005            .          .          .       236S
                .          .          .          .
                .          .          .          .
1020            .          .          .          .-------->   OR236
1015            .          .          .      DT236
                .          .          .          V
                .          .          .          V
1023            .          .          .      RM236
                .          .          .          .
                .          .          .          .
1030            .          .          .          .       237S
                .          .          .          .          .
                .          .          .          .          .
1041            .      HC237.................................
                .          V
                .          V
1045            .      RM237
                .          .
                .          .
1052            .          .       238S
                .          .          .
                .          .          .
1069            .          .          .-------->   OR238
1064            .          .      DT238
                .          .          .
                .          .          .
1077            .          .          .-------->   244D
```

```
1072   .        .      238RE
       .        .         V
       .        .         V
1080   .        .     RM238A
       .        .         .
       .        .         .
1087   .        .         .          .<-------    239D
1085   .        .         .      R234
       .        .         .         V
       .        .         .         V
1088   .        .         .     RM234C
       .        .         .         .
       .        .         .         .
1093   .        .         .         .        239S
       .        .         .         .          .
       .        .         .         .          .
1109   .        .         .         .          .------->   OR239
1104   .        .         .         .      DT239
       .        .         .         .          .
       .        .         .         .          .
1112   .        .         .         .          .       240S
       .        .         .         .          .         .
       .        .         .         .          .         .
1123   .     HC240.............................................
       .        V
       .        V
1127   .     RM240
       .        .
       .        .
1135   .        .       241S
       .        .         .
       .        .         .
       .        .         .------->   OR241
       .        .     DT241
       .        .         .
       .        .         .
1155   .     HC241............
       .        V
       .        V
1160   .     RM241
       .        .
       .        .
1167   .        .       242S
       .        .         .
       .        .         .
1185   .        .         .------->    247D
1178   .        .     242RE
       .        .         .
       .        .         .
1188   .        .         .      243S
       .        .         .         .
       .        .         .         .
1207   .        .         .         .------->    245D
1200   .        .         .     243RE
       .        .         .         .
       .        .         .         .
1210   .        .     HC243............
       .        .         V
       .        .         V
1214   .        .     243RR
       .        .         V
       .        .         V
1225   .        .     RM243
       .        .         .
       .        .         .
1232   .        .         .          .<-------    244D
```

```
1230    .       .       .     R238
        .       .       .       V
        .       .       .       V
1233    .       .       .   RM238B
        .       .       .       .
        .       .       .       .
1237    .       .       .       .      244S
        .       .       .       .        .
        .       .       .       .        .
1252    .       .       .       .        .-------> OR244
1247    .       .       .       .    DT244
        .       .       .       .        .
        .       .       .       .        .
1255    .       .   HC244A.......................
        .       .       .
        .       .       .
1267    .       .       .-------> 246D
1260    .       .    244RE
        .       .       V
        .       .       V
1270    .       .    244RR
        .       .       .
        .       .       .
1281    .       .       .       .<-------  246D
1279    .       .       .     R244
        .       .       .       .
        .       .       .       .
1282    .       .   HC244B............
        .       .       V
        .       .       V
1285    .       .    RM244
        .       .       .
        .       .       .
1292    .       .       .       .<-------  245D
1290    .       .       .     R243
        .       .       .       .
        .       .       .       .
1293    .       .       .       .      245S
        .       .       .       .        .
        .       .       .       .        .
1308    .       .       .       .        .-------> OR245
1303    .       .       .       .    DT245
        .       .       .       .        .
        .       .       .       .        .
1311    .       .       .    HC245............
        .       .       .       V
        .       .       .       V
1314    .       .       .    RM245
        .       .       .       .
        .       .       .       .
1321    .       .       .       .      246S
        .       .       .       .        .
        .       .       .       .        .
1337    .       .       .       .        .-------> OR246
1332    .       .       .       .    DT246
        .       .       .       .        .
        .       .       .       .        .
1340    .    HC246...................................
        .       V
        .       V
1344    .    RM246
        .       .
        .       .
1351    .       .    247S
        .       .       .
        .       .       .
```

```
1363   .        .        .        .<-------   247D
1361   .        .        .      R242
       .        .        .        V
       .        .        .        V
       .        .        .     RM242
       .        .        .        .
       .        .        .        .
1369   .        .     HC247............
       .        .        .
       .        .        .
1379   .        .        .------->   256D
1372   .        .     247RE
       .        .        V
       .        .        V
1382   .        .     RM247
       .        .        .
       .        .        .
1389   .        .        .      248S
       .        .        .        .
       .        .        .        .
1406   .        .        .        .------->   OR248
1401   .        .        .     DT248
       .        .        .        .
       .        .        .        .
1409   .     HC248........................
       .        V
       .        V
1412   .     RM248
       .        .
       .        .
1421   .        .        .<-------   249D
1419   .        .     R211
       .        .        V
       .        .        V
1422   .        .    RM211B
       .        .        .
       .        .        .
1429   .        .        .      249S
       .        .        .        .
       .        .        .        .
1446   .        .        .        .------->   OR249
1441   .        .        .     DT249
       .        .        .        .
       .        .        .        .
1449   .     HC249........................
       .        .
       .        .
1454   .        .     250S
       .        .        .
       .        .        .
1468   .        .        .      251S
       .        .        .        .
       .        .        .        .
1482   .        .     HC250............
       .        .        V
       .        .        V
1486   .        .     RM250
       .        .        .
       .        .        .
1490   .        .        .      252S
       .        .        .        .
       .        .        .        .
1505   .        .        .        .------->   OR252
1500   .        .        .     DT252
       .        .        .        V
       .        .        .        V
```

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1508  .         .         .      RM252
      .         .         .         .
      .         .         .         .
1512  .         .         .         .       253S
      .         .         .         .         .
      .         .         .         .         .
1531  .         .         .         .         .-------> OR253
1526  .         .         .         .      DT253
      .         .         .         .         .
      .         .         .         .         .
1534  .         .     HC253U.......................
      .         .         .
      .         .         .
1537  .         .         .      254S
      .         .         .         .
      .         .         .         .
1553  .         .         .         .-------> OR254
1548  .         .         .      DT254
      .         .         .         .
      .         .         .         .
1556  .         .         .         .       255S
      .         .         .         .         .
      .         .         .         .         .
1573  .         .         .         .         .-------> OR255
1568  .         .         .         .      DT255
      .         .         .         .         .
      .         .         .         .         .
1576  .         .         .      HC255............
      .         .         .         .
      .         .         .         .
1579  .         .     HC253D............
      .         .         V
      .         .         V
1583  .         .     RM253
      .         .         .
      .         .         .
1587  .         .         .      256S
      .         .         .         .
      .         .         .         .
1603  .         .         .         .-------> OR256
1598  .         .         .      DT256
      .         .         .         .
      .         .         .         .
1608  .         .         .         .         .<-------   256D
1606  .         .         .         .       R247
      .         .         .         .         .
      .         .         .         .         .
1609  .         .     HC256........................
      .         .         V
      .         .         V
1613  .         .     RM256
      .         .         .
      .         .         .
1621  .         .         .      257S
      .         .         .         .
      .         .         .         .
1637  .         .         .         .-------> OR257
1632  .         .         .      DT257
      .         .         .         V
      .         .         .         V
1640  .         .         .      RM257
      .         .         .         .
      .         .         .         .
1647  .         .         .         .       258S
      .         .         .         .         .
      .         .         .         .         .
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1662   .        .        .        .        .-------> OR258
1657   .        .        .        .     DT258
       .        .        .        .        .
       .        .        .        .        .
       .        .     HC258.......................
       .        .        V
       .        .        V
1668   .        .     RM258
       .        .        .
       .        .        .
1675   .        .        .      259S
       .        .        .        .
       .        .        .        .
1693   .        .        .        .-------> OR259
1688   .        .        .     DT259
       .        .        .        .
       .        .        .        .
1696   .        .    HC259U............
       .        .        .
       .        .        .
1701   .    HC259D............
       .        V
       .        V
1706   .     RM259
       .        .
       .        .
1716   .        .      260S
       .        .        .
       .        .        .
1733   .        .        .-------> OR260
1728   .        .     DT260
       .        .        V
       .        .        V
1736   .        .     RM260
       .        .        .
       .        .        .
1743   .        .        .      261S
       .        .        .        .
       .        .        .        .
1760   .        .        .        .-------> OR261
1755   .        .        .     DT261
       .        .        .        .
       .        .        .        .
1763   .        .     HC261............
       .        .        .
       .        .        .
1774   .        .        .-------> 261D
1766   .        .     261RE
       .        .        V
       .        .        V
1777   .        .     RM261
       .        .        .
       .        .        .
1784   .        .        .      262S
       .        .        .        .
       .        .        .        .
1801   .        .        .        .-------> OR262
1796   .        .        .     DT262
       .        .        .        .
       .        .        .        .
1814   .     HC262.......................
       .        V
       .        V
1808   .     RM262
       .        .
       .        .
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1817          .           .           .<-------    263D
1815          .           .        R214
              .           .           V
              .           .           V
1818          .           .      RM214B
              .           .           V
              .           .           V
1823          .           .      RM214C
              .           .           .
              .           .           .
1830          .           .           .        263S
              .           .           .           .
              .           .           .           .
1848          .           .           .           .------->   OR263
1843          .           .           .       DT263
              .           .           .           .
              .           .           .           .
1851          .      HC263U.......................
              .           .
              .           .
1856     HC263D............
             V
             V
1861     263RR
             .
             .
1873         .        264S
             .           .
             .           .
1889         .           .------->   OR264
1884         .       DT264
             .           .
             .           .
1892     HC264............
             V
             V
1896     RM264
             .
             .
1900         .        265S
             .           .
             .           .
1916         .           .------->   OR265
1911         .       DT265
             .           .
             .           .
1919     HC265............
             V
             V
1923     RM265
             .
             .
1927         .        266S
             .           .
             .           .
1942         .           .------->   OR266
1937         .       DT266
             .           .
             .           .
1945     HC266............
```

(*) RUNOFF ALSO COMPUTED AT THIS LOCATION

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****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*           VERSION 4.0.1E             *
*                                      *
*  RUN DATE  05/20/93  TIME  13:57:53  *
*                                      *
****************************************
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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
                         FILENAME:  CC324F.DAT        KHE JOB NO. 0146
                         CAVE 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: CC324F.DSS
                     Unit:  71;  DSS Version: 6-FT
-----DSS---ZWRITE Unit  71; Vers.    3:  /MOON VALLEY WASH/HC215/FLOW/10OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /MOON VALLEY WASH/HC215/FLOW/11OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /MOON VALLEY WASH/HC215/FLOW/12OCT1992/4MIN/CAVE CREEK FUTURE/


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


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          *            *
 498 KK   *     221RR  *
          *            *
          **************

 499 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
```

ROUTE FLOW THROUGH DETENTION BASIN NO.4
RATING CURVE PROVIDED BY NBS LOWRY

HYDROGRAPH ROUTING DATA

502 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	ELEV	TYPE OF INITIAL CONDITION
RSVRIC	1462.00	INITIAL CONDITION
X	0.00	WORKING R AND D COEFFICIENT

503 SV	STORAGE	0.0	0.9	3.8	10.8	22.5	38.0	55.5	73.8
504 SE	ELEVATION	1462.00	1464.00	1465.00	1466.00	1467.00	1468.00	1469.00	1470.00
505 SQ	DISCHARGE	0.	24.	50.	73.	81.	87.	93.	99.

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HYDROGRAPH AT STATION 221RR

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	53.27-HR
93.	13.40	(CFS)	89.	43.	20.	20.
		(INCHES)	0.896	1.748	1.748	1.748
		(AC-FT)	44.	86.	86.	86.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	53.27-HR
55.	13.40	44.	15.	7.	7.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	53.27-HR
1468.97	13.40	1468.34	1464.91	1463.31	1463.31

CUMULATIVE AREA = 0.92 SQ MI

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*            *
807 KK  *   231RR  *
*            *
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808 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

ROUTE FLOW THROUGH DETENTION BASIN NO. 1
SOURCE: Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design, Preliminary Design Submittal, City of Phoenix Index No. ST-896829, P-901801, September 9, 1991, prepared by NBS Lowry Engineers.

HYDROGRAPH ROUTING DATA

813 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	ELEV	TYPE OF INITIAL CONDITION
RSVRIC	1487.80	INITIAL CONDITION

```
                    X        0.00 WORKING R AND D COEFFICIENT

814 SV        STORAGE        0.0       0.0       1.2       5.9      14.5      25.1      36.5      74.5      90.0

    SE      ELEVATION     1487.80   1488.00   1489.00   1490.00   1491.00   1492.00   1493.00   1496.00   1497.00

816 SQ      DISCHARGE         0.        2.       10.       25.       45.       75.      130.      270.      400.

                                                          ***

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

                    HYDROGRAPH AT STATION    231RR

PEAK FLOW    TIME                          MAXIMUM AVERAGE FLOW
  (CFS)      (HR)                 6-HR       24-HR       72-HR     53.27-HR
   203.     12.67      (CFS)      106.         34.         15.         15.
                     (INCHES)    0.725       0.919       0.919       0.919
                      (AC-FT)     53.         67.         67.         67.

PEAK STORAGE  TIME                         MAXIMUM AVERAGE STORAGE
  (AC-FT)    (HR)                 6-HR       24-HR       72-HR     53.27-HR
    56.     12.67                 31.         10.          4.          4.

PEAK STAGE   TIME                          MAXIMUM AVERAGE STAGE
  (FEET)     (HR)                 6-HR       24-HR       72-HR     53.27-HR
 1494.56    12.67              1492.50     1489.60     1488.61     1488.61

                    CUMULATIVE AREA =    1.36 SQ MI


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


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         *            *
896 KK   *     B3ARR  *
         *            *
         **************

897 KO      OUTPUT CONTROL VARIABLES
                 IPRNT          3  PRINT CONTROL
                 IPLOT          0  PLOT CONTROL
                 QSCAL         0.  HYDROGRAPH PLOT SCALE
                    ROUTE FLOW THROUGH DETENTION BASIN NO. 3A
                     SOURCE:  Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design,
                              Preliminary Design Submittal, City of Phoenix Index No. ST-896829,
                              P-901801, September 9, 1991, prepared by NBS Lowry Engineers.

          HYDROGRAPH ROUTING DATA

902 RS      STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       ELEV  TYPE OF INITIAL CONDITION
                RSVRIC    1423.00  INITIAL CONDITION
                    X        0.00 WORKING R AND D COEFFICIENT

903 SV        STORAGE        0.0       0.0       0.3       0.7       1.4       2.5       5.4      11.4      19.5      28.2
                            37.3      46.7      56.7      67.6      79.2      91.4     104.2     117.5

905 SE      ELEVATION     1423.00   1424.00   1425.00   1426.00   1427.00   1428.00   1429.00   1430.00   1431.00   1432.00
                          1433.00   1434.00   1435.00   1436.00   1437.00   1438.00   1439.00   1440.00

907 SQ      DISCHARGE         0.       11.       50.      144.      234.      315.      390.      445.      495.      540.
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585. 625. 660. 690. 720. 755. 795. 840.

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HYDROGRAPH AT STATION B3ARR

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	53.27-HR
713.	12.93	(CFS)	373.	93.	42.	42.
		(INCHES)	1.019	1.019	1.019	1.019
		(AC-FT)	185.	185.	185.	185.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	53.27-HR
77.	12.93	26.	7.	3.	3.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	53.27-HR
1436.77	12.93	1429.73	1424.68	1423.76	1423.76

CUMULATIVE AREA = 3.40 SQ MI

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              *            *
KK            *    B3BRR   *
              *            *
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910 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

ROUTE FLOW THROUGH DETENTION BASIN NO. 3B
SOURCE: Upper East Fork Cave Creek, Detention Basin No. 3A & 3B Design, Preliminary Design Submittal, City of Phoenix Index No. ST-896829, P-901801, September 9, 1991, prepared by NBS Lowry Engineers.

HYDROGRAPH ROUTING DATA

915 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	ELEV	TYPE OF INITIAL CONDITION
RSVRIC	1417.00	INITIAL CONDITION
X	0.00	WORKING R AND D COEFFICIENT

916 SV	STORAGE	0.0	0.0	0.9	5.9	16.5	27.8	39.5	51.6	64.0	76.8
		89.9	103.4	117.3	131.6	146.3	161.3				
918 SE	ELEVATION	1417.00	1418.00	1419.00	1420.00	1421.00	1422.00	1423.00	1424.00	1425.00	1426.00
		1427.00	1428.00	1429.00	1430.00	1431.00	1432.00				
920 SQ	DISCHARGE	0.	4.	18.	54.	89.	121.	150.	175.	200.	220.
		239.	256.	273.	287.	301.	316.				

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                    HYDROGRAPH AT STATION    B3BRR

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                 6-HR       24-HR       72-HR     53.27-HR
   275.       15.60       (CFS)     237.        93.         42.         42.
                        (INCHES)   0.648       1.019       1.019       1.019
                         (AC-FT)    117.       185.        185.        185.

PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
  (AC-FT)      (HR)                 6-HR       24-HR       72-HR     53.27-HR
    120.      15.60                  90.        30.         13.         13.

 PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                 6-HR       24-HR       72-HR     53.27-HR
  1429.18      15.60             1426.98    1421.09     1418.84     1418.84

                    CUMULATIVE AREA =    3.40 SQ MI


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


          **************
          *            *
1214 KK   *     243RR  *
          *            *
          **************

1215 KO        OUTPUT CONTROL VARIABLES
                    IPRNT          3  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE
                         ROUTE FLOW THROUGH DETENTION BASIN NO. 2
                         SOURCE:  HDR Preliminary Design received by the FCDMC on 1-16-91.

            HYDROGRAPH ROUTING DATA

1218 RS        STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       ELEV  TYPE OF INITIAL CONDITION
                   RSVRIC    1389.00  INITIAL CONDITION
                        X       0.00 WORKING R AND D COEFFICIENT

1219 SV          STORAGE        0.0       0.0       1.7       6.7      14.3      23.1      32.8      43.5      55.1      67.7
                               71.0

1221 SQ        DISCHARGE         0.       30.       90.      168.      210.      246.      277.      304.      330.      353.
                               359.

1223 SE        ELEVATION     1389.00   1391.00   1393.00   1395.00   1397.00   1399.00   1401.00   1403.00   1405.00   1407.00
                             1407.50

                                                                  ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       30.
               THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
               THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                    HYDROGRAPH AT STATION    243RR

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                 6-HR       24-HR       72-HR     53.27-HR
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```
    262.     12.80       (CFS)       94.         23.         11.         11.
                      (INCHES)     0.818       0.818       0.818       0.818
                       (AC-FT)       46.         46.         46.         46.

  STORAGE    TIME                          MAXIMUM AVERAGE STORAGE
  (AC-FT)    (HR)                   6-HR       24-HR       72-HR     53.27-HR
     28.     12.80                    7.          2.          1.          1.

 PEAK STAGE   TIME                          MAXIMUM AVERAGE STAGE
  (FEET)     (HR)                   6-HR       24-HR       72-HR     53.27-HR
 1400.04     12.80               1392.77     1389.94     1389.42     1389.42

                       CUMULATIVE AREA =    1.06 SQ MI


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


          **************
          *            *
1270 KK   *     244RR  *
          *            *
          **************

1271 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                           ROUTE FLOW THROUGH DETENTION BASIN NO. 5
                           SOURCE:  NBS Lowry TR-20 diskette submittal of June 27, 1989.
                                    Information provided to KHE by FCDMC.

            HYDROGRAPH ROUTING DATA

1275 RS         STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC     1372.00  INITIAL CONDITION
                          X        0.00 WORKING R AND D COEFFICIENT

1276 SV           STORAGE        0.0       0.0       0.3       2.0       7.0      16.7      31.3      49.4      88.6     129.7


1277 SE         ELEVATION     1372.00   1376.00   1377.00   1378.00   1379.00   1380.00   1381.00   1382.00   1384.00   1386.00


1278 SQ         DISCHARGE         0.       72.       94.      111.      130.      147.      161.      175.      201.      227.


                                                                  ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       72.
               THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
               THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                       HYDROGRAPH AT STATION    244RR

 PEAK FLOW    TIME                          MAXIMUM AVERAGE FLOW
  (CFS)      (HR)                   6-HR       24-HR       72-HR     53.27-HR
    191.     13.53       (CFS)     173.         54.         24.         24.
                      (INCHES)    1.029       1.280       1.280       1.280
                       (AC-FT)       86.        107.        107.        107.
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PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	53.27-HR
73.	13.53	49.	13.	6.	6.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	53.27-HR
1383.23	13.53	1381.92	1375.05	1373.38	1373.38

CUMULATIVE AREA = 1.57 SQ MI

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-----DSS---ZWRITE Unit  71; Vers.    3:  /EAST FORK CAVE CREEK/HC249/FLOW/10OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /EAST FORK CAVE CREEK/HC249/FLOW/11OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /EAST FORK CAVE CREEK/HC249/FLOW/12OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM EF/HC259U/FLOW/10OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM EF/HC259U/FLOW/11OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM EF/HC259U/FLOW/12OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK DOWNSTREAM EF/HC259D/FLOW/10OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK DOWNSTREAM EF/HC259D/FLOW/11OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK DOWNSTREAM EF/HC259D/FLOW/12OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM MV/HC263U/FLOW/10OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM MV/HC263U/FLOW/11OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM MV/HC263U/FLOW/12OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK DOWNSTREAM MV/HC263D/FLOW/10OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK DOWNSTREAM MV/HC263D/FLOW/11OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK DOWNSTREAM MV/HC263D/FLOW/12OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM ACDC/HC266/FLOW/10OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM ACDC/HC266/FLOW/11OCT1992/4MIN/CAVE CREEK FUTURE/
-----DSS---ZWRITE Unit  71; Vers.    3:  /CAVE CREEK UPSTREAM ACDC/HC266/FLOW/12OCT1992/4MIN/CAVE CREEK FUTURE/
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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	200S	720.	12.20	101.	31.	14.	0.58		
ROUTED TO	RM200A	717.	12.27	101.	31.	14.	0.58		
ROUTED TO	RM200B	713.	12.33	101.	31.	14.	0.58		
HYDROGRAPH AT	202S	728.	12.27	117.	37.	17.	0.61		
DIVERSION TO	OR202	7.	12.27	2.	0.	0.	0.61		
HYDROGRAPH AT	DT202	728.	12.27	117.	37.	16.	0.61		
2 COMBINED AT	HC202	1435.	12.27	218.	67.	30.	1.19		
ROUTED TO	RM202	1413.	12.47	218.	67.	30.	1.19		
HYDROGRAPH AT	206S	681.	12.33	119.	37.	17.	0.68		
2 COMBINED AT	HC206	2073.	12.47	337.	104.	47.	1.87		
DIVERSION TO	211D	87.	12.47	76.	39.	18.	1.87		
HYDROGRAPH AT	206RE	1986.	12.47	261.	65.	29.	1.87		
ROUTED TO	RM206	1976.	12.53	261.	65.	29.	1.87		
HYDROGRAPH AT	203S	413.	12.27	67.	21.	9.	0.43		
ROUTED TO	203RR	27.	13.47	26.	20.	9.	0.43	1407.04	13.47
ROUTED TO	RM203	27.	13.73	26.	20.	9.	0.43		
HYDROGRAPH AT	204S	555.	12.20	85.	26.	12.	0.50		
ROUTED TO	204RR	31.	13.40	30.	24.	12.	0.50	1405.15	13.40
ROUTED TO	RM204	31.	13.47	30.	24.	12.	0.50		
HYDROGRAPH AT	205S	402.	12.20	60.	19.	9.	0.32		
DIVERSION TO	OR205	6.	12.20	5.	1.	1.	0.32		
HYDROGRAPH AT	DT205	402.	12.20	60.	18.	8.	0.32		
3 COMBINED AT	HC205	444.	12.20	112.	61.	29.	1.26		
ROUTED TO	RM205	444.	12.27	112.	61.	29.	1.26		
HYDROGRAPH AT	207S	509.	12.47	88.	26.	12.	0.57		
ROUTED TO	207RR	19.	14.00	18.	14.	9.	0.57	1377.13	14.00
ROUTED TO	RM207	19.	14.13	18.	14.	9.	0.57		
HYDROGRAPH AT	216S	516.	12.27	83.	26.	12.	0.44		
DIVERSION TO	OR216	7.	12.27	4.	1.	0.	0.44		

HYDROGRAPH AT	DT216	516.	12.27	83.	25.	11.	0.44
3 COMBINED AT	HC216	964.	12.27	207.	98.	49.	2.27
ROUTED TO	RM216	955.	12.40	207.	98.	49.	2.27
HYDROGRAPH AT	208S	363.	12.27	52.	16.	7.	0.34
3 COMBINED AT	HC208	3169.	12.47	518.	178.	86.	4.48
ROUTED TO	RM208	3149.	12.47	518.	178.	86.	4.48
HYDROGRAPH AT	212S	455.	12.27	75.	24.	11.	0.40
ROUTED TO	RM212	451.	12.53	75.	24.	11.	0.40
HYDROGRAPH AT	211S	272.	12.27	47.	15.	7.	0.23
DIVERSION TO	OR211	3.	12.27	1.	0.	0.	0.23
HYDROGRAPH AT	DT211	272.	12.27	47.	15.	7.	0.23
HYDROGRAPH AT	R211	87.	11.27	76.	39.	18.	0.00
3 COMBINED AT	HC211	777.	12.40	198.	78.	35.	0.63
DIVERSION TO	249D	260.	12.40	146.	65.	29.	0.63
HYDROGRAPH AT	211RE	517.	12.40	52.	13.	6.	0.63
ROUTED TO	RM211	499.	12.80	53.	13.	6.	0.63
HYDROGRAPH AT	209S	242.	13.07	73.	23.	11.	0.39
DIVERSION TO	OR209	8.	13.07	6.	2.	1.	0.39
HYDROGRAPH AT	DT209	242.	13.07	73.	22.	10.	0.39
3 COMBINED AT	HC209	3293.	12.47	643.	213.	101.	5.50
HYDROGRAPH AT	213S	251.	12.27	42.	13.	6.	0.22
2 COMBINED AT	HC213	3502.	12.47	684.	225.	107.	5.72
ROUTED TO	RM213	3469.	12.67	683.	225.	107.	5.72
HYDROGRAPH AT	214S	491.	12.40	97.	32.	14.	0.48
DIVERSION TO	OR214	11.	12.40	8.	2.	1.	0.48
HYDROGRAPH AT	DT214	491.	12.40	97.	30.	13.	0.48
DIVERSION TO	263D	100.	12.40	49.	18.	8.	0.48
HYDROGRAPH AT	214RE	391.	12.40	49.	12.	5.	0.48
ROUTED TO	RM214	388.	12.53	49.	12.	5.	0.48
HYDROGRAPH AT	210S	704.	12.53	150.	47.	21.	0.83
3 COMBINED AT	HC210	4548.	12.60	879.	281.	134.	7.03
ROUTED TO	RM210	4496.	12.73	878.	281.	134.	7.03
HYDROGRAPH AT	215S	375.	12.13	52.	17.	8.	0.27

DIVERSION TO	OR215	4.	12.13	2.	0.	0.	0.27		
HYDROGRAPH AT	DT215	375.	12.13	52.	16.	7.	0.27		
2 COMBINED AT	HC215	4551.	12.73	928.	297.	141.	7.30		
HYDROGRAPH AT	220S	231.	12.13	34.	11.	5.	0.17		
DIVERSION TO	OR220	19.	12.13	7.	2.	1.	0.17		
HYDROGRAPH AT	DT220	231.	12.13	32.	9.	4.	0.17		
DIVERSION TO	222D	27.	12.13	13.	4.	2.	0.17		
HYDROGRAPH AT	220RE	204.	12.13	20.	5.	2.	0.17		
HYDROGRAPH AT	221S	723.	12.40	135.	43.	19.	0.76		
DIVERSION TO	OR221	20.	12.40	13.	4.	2.	0.76		
HYDROGRAPH AT	DT221	723.	12.40	135.	39.	17.	0.76		
2 COMBINED AT	HC221A	849.	12.27	155.	43.	20.	0.92		
ROUTED TO	221RR	93.	13.40	89.	43.	20.	0.92	1468.97	13.40
HYDROGRAPH AT	R220	27.	11.60	13.	4.	2.	0.00		
2 COMBINED AT	HC221B	119.	12.87	100.	48.	21.	0.92		
ROUTED TO	RM221	118.	12.93	100.	48.	21.	0.92		
HYDROGRAPH AT	222S	481.	12.13	69.	23.	10.	0.34		
DIVERSION TO	OR222	11.	12.13	7.	2.	1.	0.34		
HYDROGRAPH AT	DT222	481.	12.13	69.	20.	9.	0.34		
2 COMBINED AT	HC222	581.	12.13	163.	68.	31.	1.27		
DIVERSION TO	FL-2D	345.	12.13	126.	55.	25.	1.27		
HYDROGRAPH AT	222RE	236.	12.13	38.	13.	6.	1.27		
ROUTED TO	RM222	244.	12.33	38.	13.	6.	1.27		
HYDROGRAPH AT	223S	402.	12.47	79.	25.	11.	0.43		
DIVERSION TO	OR223	6.	12.47	3.	1.	0.	0.43		
HYDROGRAPH AT	DT223	402.	12.47	79.	24.	11.	0.43		
2 COMBINED AT	HC223	625.	12.33	115.	37.	17.	1.70		
DIVERSION TO	234D1	159.	12.33	66.	25.	11.	1.70		
HYDROGRAPH AT	223RE	466.	12.33	49.	12.	6.	1.70		
ROUTED TO	RM223A	475.	12.47	51.	13.	6.	1.70		
HYDROGRAPH AT	224S	746.	12.20	129.	43.	20.	0.56		
DIVERSION TO	OR224	21.	12.20	15.	4.	2.	0.56		
HYDROGRAPH AT	DT224	746.	12.20	129.	39.	18.	0.56		

HYDROGRAPH AT	225S	380.	12.27	70.	24.	11.	0.30
DIVERSION TO	OR225	24.	12.27	12.	4.	2.	0.30
HYDROGRAPH AT	DT225	380.	12.27	68.	19.	9.	0.30
DIVERSION TO	D225	285.	11.80	29.	7.	3.	0.30
HYDROGRAPH AT	225RE	95.	11.80	39.	12.	6.	0.30
ROUTED TO	RM225	95.	12.00	39.	12.	5.	0.30
HYDROGRAPH AT	226S	368.	12.33	68.	22.	10.	0.36
DIVERSION TO	OR226	9.	12.33	6.	2.	1.	0.36
HYDROGRAPH AT	DT226	368.	12.33	68.	20.	9.	0.36
4 COMBINED AT	HC226	1415.	12.47	284.	84.	38.	2.92
ROUTED TO	RM226	1336.	12.53	284.	84.	38.	2.92
HYDROGRAPH AT	227S	475.	12.07	66.	22.	10.	0.32
DIVERSION TO	OR227	69.	12.07	15.	5.	2.	0.32
HYDROGRAPH AT	DT227	475.	12.07	61.	17.	8.	0.32
ROUTED TO	RM227	469.	12.13	61.	17.	8.	0.32
HYDROGRAPH AT	228S	409.	12.07	56.	19.	8.	0.28
DIVERSION TO	OR228	360.	12.07	25.	7.	3.	0.28
HYDROGRAPH AT	DT228	409.	12.07	40.	11.	5.	0.28
ROUTED TO	RM228	406.	12.07	40.	11.	5.	0.28
HYDROGRAPH AT	230S	358.	12.07	54.	18.	8.	0.24
DIVERSION TO	OR230	10.	12.07	7.	2.	1.	0.24
HYDROGRAPH AT	DT230	358.	12.07	54.	16.	7.	0.24
ROUTED TO	RM230	353.	12.07	54.	16.	7.	0.24
HYDROGRAPH AT	229S	573.	12.07	87.	30.	13.	0.37
DIVERSION TO	OR229	557.	12.13	46.	14.	6.	0.37
HYDROGRAPH AT	DT229	549.	12.13	55.	16.	7.	0.37
4 COMBINED AT	HC229	1767.	12.13	205.	61.	27.	1.20
HYDROGRAPH AT	231S	240.	12.07	33.	11.	5.	0.16
DIVERSION TO	OR231	155.	12.07	11.	3.	2.	0.16
HYDROGRAPH AT	DT231	240.	12.07	26.	7.	3.	0.16
2 COMBINED AT	HC231A	1989.	12.13	231.	68.	31.	1.36
DIVERSION TO	232D	185.	12.13	97.	35.	16.	1.36
HYDROGRAPH AT	231RE	1804.	12.13	134.	34.	15.	1.36

ROUTED TO	231RR	203.	12.67	106.	34.	15.	1.36	1494.56	12.67
HYDROGRAPH AT	R231	185.	11.87	97.	35.	16.	0.00		
2 COMBINED AT	HC231B	388.	12.67	201.	68.	31.	1.36		
ROUTED TO	RM231A	361.	13.00	197.	68.	31.	1.36		
ROUTED TO	RM231B	331.	13.40	192.	68.	31.	1.36		
HYDROGRAPH AT	232S	1593.	12.33	302.	100.	45.	1.44		
DIVERSION TO	OR232	139.	12.33	57.	20.	9.	1.44		
HYDROGRAPH AT	DT232	1593.	12.33	289.	81.	36.	1.44		
2 COMBINED AT	HC232	1642.	12.33	468.	149.	67.	2.80		
ROUTED TO	RM232	1640.	12.40	468.	149.	67.	2.80		
HYDROGRAPH AT	233S	656.	12.27	112.	36.	16.	0.60		
DIVERSION TO	OR233	14.	12.27	10.	3.	1.	0.60		
HYDROGRAPH AT	DT233	656.	12.27	112.	33.	15.	0.60		
2 COMBINED AT	HC233A	2262.	12.40	574.	182.	82.	3.40		
DIVERSION TO	234D2	206.	12.40	201.	89.	40.	3.40		
HYDROGRAPH AT	233RE	2056.	12.40	373.	93.	42.	3.40		
ROUTED TO	B3ARR	713.	12.93	373.	93.	42.	3.40	1436.77	12.93
ROUTED TO	B3BRR	275.	15.60	237.	93.	42.	3.40	1429.18	15.60
HYDROGRAPH AT	R233	206.	11.67	201.	89.	40.	0.00		
2 COMBINED AT	HC233B	481.	15.60	426.	182.	82.	3.40		
ROUTED TO	RM233	481.	15.60	426.	182.	82.	3.40		
DIVERSION TO	239D	313.	15.60	277.	118.	53.	3.40		
HYDROGRAPH AT	B3BRE	168.	15.60	149.	64.	29.	3.40		
HYDROGRAPH AT	R223	159.	12.00	66.	25.	11.	0.00		
ROUTED TO	RM223B	159.	12.73	65.	25.	11.	0.00		
2 COMBINED AT	HC234	290.	13.13	209.	89.	40.	3.40		
ROUTED TO	RM234A	290.	13.13	209.	89.	40.	3.40		
HYDROGRAPH AT	234S	382.	12.13	58.	19.	9.	0.28		
DIVERSION TO	OR234	6.	12.13	3.	1.	0.	0.28		
HYDROGRAPH AT	DT234	382.	12.13	58.	18.	8.	0.28		
ROUTED TO	RM234B	380.	12.27	58.	18.	8.	0.28		
HYDROGRAPH AT	235S	284.	12.33	50.	15.	7.	0.28		
DIVERSION TO	OR235	7.	12.33	5.	2.	1.	0.28		

HYDROGRAPH AT	DT235	284.	12.33	50.	14.	6.	0.28
3 COMBINED AT	HC235	912.	12.33	311.	121.	55.	3.96
HYDROGRAPH AT	236S	809.	12.13	112.	35.	16.	0.63
DIVERSION TO	OR236	7.	12.13	2.	1.	0.	0.63
HYDROGRAPH AT	DT236	809.	12.13	112.	34.	16.	0.63
ROUTED TO	RM236	803.	12.33	112.	34.	16.	0.63
HYDROGRAPH AT	237S	807.	12.20	125.	40.	18.	0.65
4 COMBINED AT	HC237	3666.	12.27	819.	278.	126.	8.17
ROUTED TO	RM237	3632.	12.33	818.	278.	126.	8.17
HYDROGRAPH AT	238S	850.	12.40	171.	56.	25.	0.90
DIVERSION TO	OR238	16.	12.40	10.	2.	1.	0.90
HYDROGRAPH AT	DT238	850.	12.40	171.	54.	24.	0.90
DIVERSION TO	244D	696.	11.73	90.	22.	10.	0.90
HYDROGRAPH AT	238RE	154.	11.73	81.	31.	14.	0.90
ROUTED TO	RM238A	155.	11.93	81.	31.	14.	0.90
HYDROGRAPH AT	R234	313.	15.60	277.	118.	53.	0.00
ROUTED TO	RM234C	313.	15.73	277.	118.	53.	0.00
HYDROGRAPH AT	239S	541.	12.20	92.	31.	14.	0.43
DIVERSION TO	OR239	18.	12.20	12.	4.	2.	0.43
HYDROGRAPH AT	DT239	541.	12.20	92.	27.	12.	0.43
HYDROGRAPH AT	240S	320.	12.27	53.	16.	7.	0.27
5 COMBINED AT	HC240	4794.	12.33	1292.	469.	212.	9.77
ROUTED TO	RM240	4773.	12.40	1291.	469.	212.	9.77
HYDROGRAPH AT	241S	458.	12.53	89.	27.	12.	0.52
DIVERSION TO	OR241	8.	12.53	6.	2.	1.	0.52
HYDROGRAPH AT	DT241	458.	12.53	89.	25.	11.	0.52
2 COMBINED AT	HC241	5215.	12.40	1377.	494.	224.	10.29
ROUTED TO	RM241	5151.	12.47	1376.	494.	224.	10.29
HYDROGRAPH AT	242S	641.	12.33	106.	33.	15.	0.66
DIVERSION TO	247D	154.	12.33	56.	20.	9.	0.66
HYDROGRAPH AT	242RE	487.	12.33	50.	13.	6.	0.66
HYDROGRAPH AT	243S	397.	12.47	79.	25.	12.	0.41
DIVERSION TO	245D	67.	12.47	36.	15.	7.	0.41

HYDROGRAPH AT	243RE	330.	12.47	43.	11.	5.	0.41		
2 COMBINED AT	HC243	805.	12.33	93.	23.	11.	1.06		
ROUTED TO	243RR	262.	12.80	94.	23.	11.	1.06	1400.04	12.80
ROUTED TO	RM243	262.	12.87	94.	23.	11.	1.06		
HYDROGRAPH AT	R238	696.	12.40	90.	22.	10.	0.00		
ROUTED TO	RM238B	690.	12.53	90.	22.	10.	0.00		
HYDROGRAPH AT	244S	696.	12.13	105.	34.	16.	0.50		
DIVERSION TO	OR244	31.	12.13	16.	5.	2.	0.50		
HYDROGRAPH AT	DT244	696.	12.13	103.	29.	13.	0.50		
3 COMBINED AT	HC244A	1293.	12.33	286.	75.	34.	1.57		
DIVERSION TO	246D	104.	12.33	70.	21.	9.	1.57		
HYDROGRAPH AT	244RE	1189.	12.33	216.	54.	24.	1.57		
ROUTED TO	244RR	191.	13.53	173.	54.	24.	1.57	1383.23	13.53
HYDROGRAPH AT	R244	104.	11.67	70.	21.	9.	0.00		
2 COMBINED AT	HC244B	295.	13.53	235.	75.	34.	1.57		
ROUTED TO	RM244	295.	13.60	234.	75.	34.	1.57		
HYDROGRAPH AT	R243	67.	11.73	36.	15.	7.	0.00		
HYDROGRAPH AT	245S	274.	12.13	44.	15.	7.	0.19		
DIVERSION TO	OR245	20.	12.13	9.	3.	1.	0.19		
HYDROGRAPH AT	DT245	274.	12.13	42.	12.	5.	0.19		
2 COMBINED AT	HC245	341.	12.13	77.	27.	12.	0.19		
ROUTED TO	RM245	341.	12.40	77.	27.	12.	0.19		
HYDROGRAPH AT	246S	784.	12.27	138.	46.	21.	0.63		
DIVERSION TO	OR246	31.	12.27	19.	6.	3.	0.63		
HYDROGRAPH AT	DT246	784.	12.27	137.	39.	18.	0.63		
4 COMBINED AT	HC246	6355.	12.47	1814.	635.	287.	12.68		
ROUTED TO	RM246	6341.	12.53	1813.	635.	287.	12.68		
HYDROGRAPH AT	247S	287.	12.13	43.	14.	6.	0.21		
HYDROGRAPH AT	R242	154.	11.80	56.	20.	9.	0.00		
ROUTED TO	RM242	150.	12.87	54.	20.	9.	0.00		
2 COMBINED AT	HC247	415.	12.13	97.	34.	15.	0.21		
DIVERSION TO	256D	178.	12.13	75.	29.	13.	0.21		
HYDROGRAPH AT	247RE	237.	12.13	22.	5.	2.	0.21		

ROUTED TO	RM247	225.	12.60	23.	6.	3.	0.21
HYDROGRAPH AT	248S	973.	12.47	204.	67.	30.	0.96
DIVERSION TO	OR248	27.	12.47	20.	6.	3.	0.96
HYDROGRAPH AT	DT248	973.	12.47	204.	62.	28.	0.96
3 COMBINED AT	HC248	7507.	12.53	2028.	702.	318.	13.86
ROUTED TO	RM248	7365.	12.67	2026.	702.	317.	13.86
HYDROGRAPH AT	R211	260.	12.00	146.	65.	29.	0.00
ROUTED TO	RM211B	265.	12.27	146.	65.	29.	0.00
HYDROGRAPH AT	249S	428.	12.53	90.	29.	13.	0.50
DIVERSION TO	OR249	6.	12.53	1.	0.	0.	0.50
HYDROGRAPH AT	DT249	428.	12.53	90.	28.	13.	0.50
3 COMBINED AT	HC249	8029.	12.67	2243.	793.	360.	14.35
HYDROGRAPH AT	250S	2109.	12.60	735.	506.	459.	2.43
HYDROGRAPH AT	251S	1187.	12.67	252.	75.	34.	1.72
2 COMBINED AT	HC250	3292.	12.67	987.	581.	493.	4.15
ROUTED TO	RM250	3266.	12.87	987.	581.	493.	4.15
HYDROGRAPH AT	252S	547.	12.13	90.	31.	14.	0.38
DIVERSION TO	OR252	531.	12.20	49.	15.	7.	0.38
HYDROGRAPH AT	DT252	530.	12.20	56.	16.	7.	0.38
ROUTED TO	RM252	496.	12.53	55.	16.	7.	0.38
HYDROGRAPH AT	253S	912.	12.93	253.	80.	36.	1.45
DIVERSION TO	OR253	716.	12.93	98.	29.	13.	1.45
HYDROGRAPH AT	DT253	912.	12.93	187.	52.	23.	1.45
3 COMBINED AT	HC253U	4387.	12.87	1219.	650.	524.	5.98
HYDROGRAPH AT	254S	303.	12.20	44.	14.	6.	0.27
DIVERSION TO	OR254	67.	12.20	9.	3.	1.	0.27
HYDROGRAPH AT	DT254	303.	12.20	41.	11.	5.	0.27
HYDROGRAPH AT	255S	596.	12.60	130.	41.	18.	0.76
DIVERSION TO	OR255	313.	12.60	35.	11.	5.	0.76
HYDROGRAPH AT	DT255	596.	12.60	109.	30.	14.	0.76
2 COMBINED AT	HC255	768.	12.40	150.	41.	19.	1.04
2 COMBINED AT	HC253D	4917.	12.80	1369.	691.	542.	7.01
ROUTED TO	RM253	4938.	12.93	1368.	691.	542.	7.01

HYDROGRAPH AT	256S	310.	12.40	53.	16.	7.	0.37
DIVERSION TO	OR256	15.	12.40	7.	2.	1.	0.37
HYDROGRAPH AT	DT256	310.	12.40	52.	14.	6.	0.37
HYDROGRAPH AT	R247	178.	11.80	75.	29.	13.	0.00
3 COMBINED AT	HC256	5215.	12.93	1489.	733.	561.	7.38
ROUTED TO	RM256	5189.	13.13	1489.	733.	561.	7.38
HYDROGRAPH AT	257S	475.	12.20	76.	24.	11.	0.39
DIVERSION TO	OR257	6.	12.20	2.	1.	0.	0.39
HYDROGRAPH AT	DT257	475.	12.20	76.	24.	11.	0.39
ROUTED TO	RM257	474.	12.33	76.	24.	11.	0.39
HYDROGRAPH AT	258S	914.	12.07	128.	42.	19.	0.68
DIVERSION TO	OR258	18.	12.07	13.	4.	2.	0.68
HYDROGRAPH AT	DT258	914.	12.07	128.	38.	17.	0.68
3 COMBINED AT	HC258	5359.	13.13	1684.	795.	589.	8.45
ROUTED TO	RM258	5318.	13.27	1684.	795.	589.	8.45
HYDROGRAPH AT	259S	330.	12.67	76.	24.	11.	0.42
DIVERSION TO	OR259	8.	12.67	6.	2.	1.	0.42
HYDROGRAPH AT	DT259	330.	12.67	76.	23.	10.	0.42
2 COMBINED AT	HC259U	5460.	13.27	1759.	817.	599.	8.87
2 COMBINED AT	HC259D	10561.	12.73	3999.	1610.	959.	23.23
ROUTED TO	RM259	10553.	12.80	3998.	1610.	959.	23.23
HYDROGRAPH AT	260S	1474.	12.33	562.	428.	394.	1.00
DIVERSION TO	OR260	365.	12.33	9.	2.	1.	1.00
HYDROGRAPH AT	DT260	1474.	12.33	562.	428.	393.	1.00
ROUTED TO	RM260	1467.	12.47	562.	428.	391.	1.00
HYDROGRAPH AT	261S	868.	12.40	166.	54.	24.	0.80
DIVERSION TO	OR261	22.	12.40	16.	5.	2.	0.80
HYDROGRAPH AT	DT261	868.	12.40	166.	49.	22.	0.80
2 COMBINED AT	HC261	2335.	12.40	727.	477.	413.	1.80
DIVERSION TO	261D	973.	12.40	268.	170.	146.	1.80
HYDROGRAPH AT	261RE	1362.	12.40	459.	307.	267.	1.80
ROUTED TO	RM261	1361.	12.53	459.	307.	265.	1.80
HYDROGRAPH AT	262S	520.	12.53	113.	36.	16.	0.60

DIVERSION TO	OR262	11.	12.53	8.	2.	1.	0.60		
HYDROGRAPH AT	DT262	520.	12.53	113.	34.	15.	0.60		
3 COMBINED AT	HC262	12231.	12.73	4556.	1950.	1239.	25.62		
ROUTED TO	RM262	11981.	13.00	4549.	1949.	1237.	25.62		
HYDROGRAPH AT	R214	100.	11.80	49.	18.	8.	0.00		
ROUTED TO	RM214B	100.	11.93	49.	18.	8.	0.00		
ROUTED TO	RM214C	100.	12.80	49.	18.	8.	0.00		
HYDROGRAPH AT	263S	725.	12.73	173.	54.	24.	1.04		
DIVERSION TO	OR263	243.	12.73	35.	11.	5.	1.04		
HYDROGRAPH AT	DT263	725.	12.73	158.	43.	19.	1.04		
3 COMBINED AT	HC263U	12649.	13.00	4751.	2009.	1264.	26.66		
2 COMBINED AT	HC263D	16668.	12.87	5663.	2303.	1405.	33.96		
ROUTED TO	263RR	16140.	13.00	5661.	2303.	1404.	33.96	1275.50	13.00
HYDROGRAPH AT	264S	529.	12.27	85.	27.	12.	0.48		
DIVERSION TO	OR264	6.	12.27	2.	1.	0.	0.48		
HYDROGRAPH AT	DT264	529.	12.27	85.	27.	12.	0.48		
2 COMBINED AT	HC264	16219.	13.00	5736.	2329.	1416.	34.44		
ROUTED TO	RM264	16193.	13.07	5736.	2329.	1414.	34.44		
HYDROGRAPH AT	265S	940.	12.33	178.	58.	26.	0.88		
DIVERSION TO	OR265	35.	12.33	22.	7.	3.	0.88		
HYDROGRAPH AT	DT265	940.	12.33	178.	51.	23.	0.88		
2 COMBINED AT	HC265	16401.	13.07	5896.	2381.	1437.	35.32		
ROUTED TO	RM265	16390.	13.07	5896.	2381.	1436.	35.32		
HYDROGRAPH AT	266S	297.	12.13	46.	15.	7.	0.22		
DIVERSION TO	OR266	21.	12.13	9.	3.	1.	0.22		
HYDROGRAPH AT	DT266	297.	12.13	44.	12.	6.	0.22		
2 COMBINED AT	HC266	16418.	13.07	5935.	2393.	1442.	35.53		

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)
RM200A	MANE	4.00	717.07	736.00	1.98	4.00	717.07	736.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6131E+02 EXCESS=0.0000E+00 OUTFLOW=0.6129E+02 BASIN STORAGE=0.6252E-03 PERCENT ERROR= 0.0

RM200B	MANE	1.45	716.94	737.60	1.98	4.00	712.52	740.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6128E+02 EXCESS=0.0000E+00 OUTFLOW=0.6128E+02 BASIN STORAGE=0.2239E-02 PERCENT ERROR= 0.0

RM202	MANE	4.00	1413.45	748.00	2.11	4.00	1413.45	748.00	2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1338E+03 EXCESS=0.0000E+00 OUTFLOW=0.1336E+03 BASIN STORAGE=0.7528E-03 PERCENT ERROR= 0.2

RM206	MANE	4.00	1976.36	752.00	1.30	4.00	1976.36	752.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1294E+03 EXCESS=0.0000E+00 OUTFLOW=0.1293E+03 BASIN STORAGE=0.4623E-03 PERCENT ERROR= 0.1

RM203	MANE	4.00	27.35	824.00	1.79	4.00	27.35	824.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4133E+02 EXCESS=0.0000E+00 OUTFLOW=0.4133E+02 BASIN STORAGE=0.3718E-03 PERCENT ERROR= 0.0

RM204	MANE	4.00	30.75	808.00	1.90	4.00	30.75	808.00	1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5113E+02 EXCESS=0.0000E+00 OUTFLOW=0.5113E+02 BASIN STORAGE=0.3704E-03 PERCENT ERROR= 0.0

RM205	MANE	4.00	444.38	736.00	1.90	4.00	444.38	736.00	1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1275E+03 EXCESS=0.0000E+00 OUTFLOW=0.1275E+03 BASIN STORAGE=0.2311E-03 PERCENT ERROR= 0.0

RM207	MANE	4.00	18.72	852.00	1.29	4.00	18.72	852.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3974E+02 EXCESS=0.0000E+00 OUTFLOW=0.3959E+02 BASIN STORAGE=0.1609E+00 PERCENT ERROR= 0.0

RM216	MANE	4.00	955.43	744.00	1.79	4.00	955.43	744.00	1.79

TINUITY SUMMARY (AC-FT) - INFLOW=0.2168E+03 EXCESS=0.0000E+00 OUTFLOW=0.2166E+03 BASIN STORAGE=0.3458E+00 PERCENT ERROR= 0.0

RM208	MANE	1.86	3157.72	749.92	1.58	4.00	3148.63	748.00	1.58

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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3767E+03 EXCESS=0.0000E+00 OUTFLOW=0.3767E+03 BASIN STORAGE=0.1242E+00 PERCENT ERROR=   0.0

          RM212  MANE        4.00    450.90    752.00      2.27      4.00    450.90    752.00        2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4811E+02 EXCESS=0.0000E+00 OUTFLOW=0.4808E+02 BASIN STORAGE=0.1457E-02 PERCENT ERROR=   0.1

          RM211  MANE        1.60    499.16    766.40      0.78      4.00    498.68    768.00        0.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2597E+02 EXCESS=0.0000E+00 OUTFLOW=0.2609E+02 BASIN STORAGE=0.1914E-02 PERCENT ERROR=  -0.5

          RM213  MANE        4.00   3468.90    760.00      1.55      4.00   3468.90    760.00        1.55

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4729E+03 EXCESS=0.0000E+00 OUTFLOW=0.4725E+03 BASIN STORAGE=0.2852E+00 PERCENT ERROR=   0.0

          RM214  MANE        2.20    388.60    752.40      0.94      4.00    388.08    752.00        0.94

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2411E+02 EXCESS=0.0000E+00 OUTFLOW=0.2419E+02 BASIN STORAGE=0.9476E-03 PERCENT ERROR=  -0.3

          RM210  MANE        4.00   4495.61    764.00      1.57      4.00   4495.61    764.00        1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5908E+03 EXCESS=0.0000E+00 OUTFLOW=0.5898E+03 BASIN STORAGE=0.2020E+00 PERCENT ERROR=   0.1

          RM221  MANE        4.00    118.10    776.00      1.91      4.00    118.10    776.00        1.91

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9424E+02 EXCESS=0.0000E+00 OUTFLOW=0.9424E+02 BASIN STORAGE=0.4676E-03 PERCENT ERROR=   0.0

          RM222  MANE        4.00    243.52    740.00      0.39      4.00    243.52    740.00        0.39

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2600E+02 EXCESS=0.0000E+00 OUTFLOW=0.2608E+02 BASIN STORAGE=0.3144E-02 PERCENT ERROR=  -0.3

         RM223A  MANE        2.80    483.84    747.60      0.28      4.00    474.83    748.00        0.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2442E+02 EXCESS=0.0000E+00 OUTFLOW=0.2497E+02 BASIN STORAGE=0.9706E-03 PERCENT ERROR=  -2.3

          RM225  MANE        3.80     95.03    718.20      1.50      4.00     95.02    720.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2421E+02 EXCESS=0.0000E+00 OUTFLOW=0.2419E+02 BASIN STORAGE=0.9724E-03 PERCENT ERROR=   0.1

          RM226  MANE        4.00   1335.56    752.00      1.07      4.00   1335.56    752.00        1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1669E+03 EXCESS=0.0000E+00 OUTFLOW=0.1669E+03 BASIN STORAGE=0.6513E-03 PERCENT ERROR=   0.0

          RM227  MANE        2.20    470.04    728.20      1.98      4.00    469.27    728.00        1.98
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CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3347E+02 EXCESS=0.0000E+00 OUTFLOW=0.3350E+02 BASIN STORAGE=0.6104E-02 PERCENT ERROR= -0.1

RM228	MANE	1.00	409.49	722.00	1.51	4.00	406.31	724.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2237E+02 EXCESS=0.0000E+00 OUTFLOW=0.2239E+02 BASIN STORAGE=0.1706E-02 PERCENT ERROR= -0.1

RM230	MANE	1.11	356.71	724.97	2.54	4.00	353.45	724.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3243E+02 EXCESS=0.0000E+00 OUTFLOW=0.3243E+02 BASIN STORAGE=0.1497E-03 PERCENT ERROR= 0.0

RM231A	MANE	4.00	360.81	780.00	1.86	4.00	360.81	780.00	1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1353E+03 EXCESS=0.0000E+00 OUTFLOW=0.1347E+03 BASIN STORAGE=0.1067E-02 PERCENT ERROR= 0.4

RM231B	MANE	4.00	331.39	804.00	1.86	4.00	331.39	804.00	1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1347E+03 EXCESS=0.0000E+00 OUTFLOW=0.1351E+03 BASIN STORAGE=0.1451E-02 PERCENT ERROR= -0.3

RM232	MANE	4.00	1639.56	744.00	1.98	4.00	1639.56	744.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2956E+03 EXCESS=0.0000E+00 OUTFLOW=0.2957E+03 BASIN STORAGE=0.4582E-03 PERCENT ERROR= 0.0

RM233	MANE	2.37	481.41	937.45	1.99	4.00	481.36	936.00	1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3611E+03 EXCESS=0.0000E+00 OUTFLOW=0.3611E+03 BASIN STORAGE=0.3745E-03 PERCENT ERROR= 0.0

RM223B	MANE	4.00	159.00	776.00	-1.00	4.00	159.00	776.00	-1.00
RM234A	MANE	3.32	289.88	789.44	0.97	4.00	289.63	788.00	0.97

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1764E+03 EXCESS=0.0000E+00 OUTFLOW=0.1764E+03 BASIN STORAGE=0.3981E-03 PERCENT ERROR= 0.0

RM234B	MANE	4.00	380.44	736.00	2.38	4.00	380.44	736.00	2.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3597E+02 EXCESS=0.0000E+00 OUTFLOW=0.3599E+02 BASIN STORAGE=0.4875E-03 PERCENT ERROR= -0.1

RM236	MANE	4.00	802.56	740.00	2.02	4.00	802.56	740.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6840E+02 EXCESS=0.0000E+00 OUTFLOW=0.6843E+02 BASIN STORAGE=0.1888E-02 PERCENT ERROR= 0.0

RM237	MANE	4.00	3632.04	740.00	1.27	4.00	3632.04	740.00	1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5544E+03 EXCESS=0.0000E+00 OUTFLOW=0.5541E+03 BASIN STORAGE=0.5773E-03 PERCENT ERROR= 0.0

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RM238A  MANE        4.00    154.51    716.00      1.28      4.00    154.51    716.00       1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6172E+02 EXCESS=0.0000E+00 OUTFLOW=0.6169E+02 BASIN STORAGE=0.8107E-03 PERCENT ERROR=   0.0

RM234C  MANE        4.00    312.87    944.00     -1.00      4.00    312.87    944.00      -1.00

 RM240  MANE        4.00   4773.30    744.00      1.79      4.00   4773.30    744.00       1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9354E+03 EXCESS=0.0000E+00 OUTFLOW=0.9352E+03 BASIN STORAGE=0.5708E-03 PERCENT ERROR=   0.0

 RM241  MANE        3.98   5161.44    748.49      1.79      4.00   5151.42    748.00       1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.9853E+03 EXCESS=0.0000E+00 OUTFLOW=0.9850E+03 BASIN STORAGE=0.3773E-03 PERCENT ERROR=   0.0

 RM243  MANE        3.35    261.97    771.22      0.82      4.00    261.77    772.00       0.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4641E+02 EXCESS=0.0000E+00 OUTFLOW=0.4640E+02 BASIN STORAGE=0.4815E-03 PERCENT ERROR=   0.0

RM238B  MANE        2.20    691.65    754.60     -1.00      4.00    690.39    752.00      -1.00

 RM244  MANE        4.00    294.91    816.00      1.77      4.00    294.91    816.00       1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1484E+03 EXCESS=0.0000E+00 OUTFLOW=0.1483E+03 BASIN STORAGE=0.8938E-03 PERCENT ERROR=   0.1

 RM245  MANE        4.00    341.28    744.00      5.08      4.00    341.28    744.00       5.08

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5274E+02 EXCESS=0.0000E+00 OUTFLOW=0.5283E+02 BASIN STORAGE=0.9460E-03 PERCENT ERROR=  -0.2

 RM246  MANE        4.00   6340.52    752.00      1.87      4.00   6340.52    752.00       1.87

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1264E+04 EXCESS=0.0000E+00 OUTFLOW=0.1264E+04 BASIN STORAGE=0.4631E-03 PERCENT ERROR=   0.0

 RM242  MANE        4.00    150.26    772.00     -1.00      4.00    150.26    772.00      -1.00

 RM247  MANE        1.80    245.66    752.40      1.03      4.00    224.93    756.00       1.04

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1087E+02 EXCESS=0.0000E+00 OUTFLOW=0.1135E+02 BASIN STORAGE=0.1378E-02 PERCENT ERROR=  -4.4

 RM248  MANE        4.00   7364.50    760.00      1.89      4.00   7364.50    760.00       1.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1398E+04 EXCESS=0.0000E+00 OUTFLOW=0.1398E+04 BASIN STORAGE=0.7353E-03 PERCENT ERROR=   0.0
```

```
RM211B  MANE        4.00    265.27    736.00     -1.00      4.00    265.27    736.00       -1.00

RM250   MANE        4.00   3265.67    772.00      9.80      4.00   3265.67    772.00        9.80

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2172E+04 EXCESS=0.0000E+00 OUTFLOW=0.2172E+04 BASIN STORAGE=0.2032E-05 PERCENT ERROR=   0.0

RM252   MANE        1.40    501.87    751.80      1.61      4.00    496.46    752.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3254E+02 EXCESS=0.0000E+00 OUTFLOW=0.3250E+02 BASIN STORAGE=0.1769E-01 PERCENT ERROR=   0.1

RM253   MANE        4.00   4937.54    776.00      6.38      4.00   4937.54    776.00        6.38

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2389E+04 EXCESS=0.0000E+00 OUTFLOW=0.2389E+04 BASIN STORAGE=0.7146E-06 PERCENT ERROR=   0.0

RM256   MANE        4.00   5189.14    788.00      6.28      4.00   5189.14    788.00        6.28

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2474E+04 EXCESS=0.0000E+00 OUTFLOW=0.2474E+04 BASIN STORAGE=0.0000E+00 PERCENT ERROR=   0.0

RM257   MANE        4.00    474.24    740.00      2.29      4.00    474.24    740.00        2.29

INUITY SUMMARY (AC-FT) - INFLOW=0.4727E+02 EXCESS=0.0000E+00 OUTFLOW=0.4737E+02 BASIN STORAGE=0.7519E-03 PERCENT ERROR=  -0.2

RM258   MANE        4.00   5318.12    796.00      5.76      4.00   5318.12    796.00        5.76

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2596E+04 EXCESS=0.0000E+00 OUTFLOW=0.2596E+04 BASIN STORAGE=0.0000E+00 PERCENT ERROR=   0.0

RM259   MANE        2.30  10554.93    766.88      3.41      4.00  10552.77    768.00        3.41

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4222E+04 EXCESS=0.0000E+00 OUTFLOW=0.4222E+04 BASIN STORAGE=0.0000E+00 PERCENT ERROR=   0.0

RM260   MANE        4.00   1466.96    748.00     32.34      4.00   1466.96    748.00       32.34

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1729E+04 EXCESS=0.0000E+00 OUTFLOW=0.1721E+04 BASIN STORAGE=0.9741E+01 PERCENT ERROR=  -0.1

RM261   MANE        4.00   1361.39    752.00     12.16      4.00   1361.39    752.00       12.16

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1175E+04 EXCESS=0.0000E+00 OUTFLOW=0.1168E+04 BASIN STORAGE=0.7813E+01 PERCENT ERROR=  -0.1

RM262   MANE        4.00  11980.54    780.00      3.98      4.00  11980.54    780.00        3.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5459E+04 EXCESS=0.0000E+00 OUTFLOW=0.5446E+04 BASIN STORAGE=0.1115E+02 PERCENT ERROR=   0.0
```

```
RM214B  MANE        4.00    100.23    716.00     -1.00      4.00    100.23    716.00       -1.00

RM214C  MANE        4.00    100.00    780.00     -1.00      4.00    100.00    780.00       -1.00

 RM264  MANE        3.68  16201.28    783.85      3.39      4.00  16192.99    784.00        3.39

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6234E+04 EXCESS=0.0000E+00 OUTFLOW=0.6226E+04 BASIN STORAGE=0.1353E+02 PERCENT ERROR=  -0.1

 RM265  MANE        2.43  16390.78    785.71      3.36      4.00  16389.68    784.00        3.36

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6327E+04 EXCESS=0.0000E+00 OUTFLOW=0.6321E+04 BASIN STORAGE=0.8023E+01 PERCENT ERROR=   0.0


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


  -----DSS---ZCLOSE Unit:  71,   File: CC324F.DSS
            Pointer Utilization:  0.25
            Number of Records:     21
            File Size:     53.9  Kbytes
            Percent Inactive:   0.0
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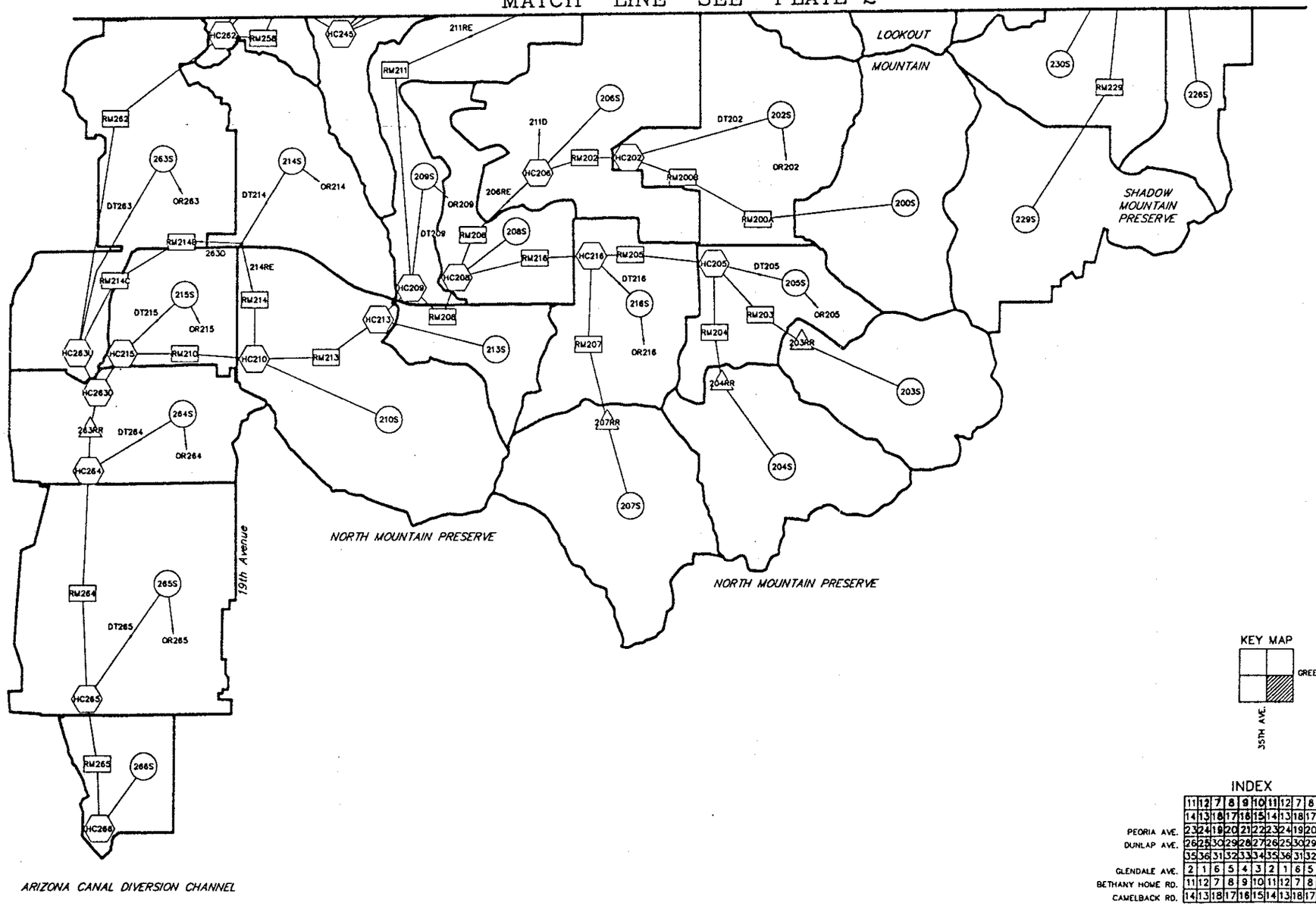
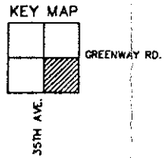
SECTION VIII
Plates 1-24

T.3N., R.2E. | T.3N., R.3E.

MATCH LINE SEE PLATE 2



KEY MAP



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	11	12	7	8	9	10	11	12	7	8		GREENWAY RD.
	14	13	18	17	16	15	14	13	18	17		THUNDERBIRD RD.
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		CACTUS RD.
DUNLAP AVE.	26	25	30	29	28	27	26	25	30	29		SHEA BLVD.
	35	36	31	32	33	34	35	36	31	32		DOUBLE TREE RANCH RD.
GLENDALE AVE.	2	1	6	5	4	3	2	1	6	5		NORTHERN AVE.
BETHANY HOME RD.	11	12	7	8	9	10	11	12	7	8		INDIAN BEND RD.
CAMELBACK RD.	14	13	18	17	16	15	14	13	18	17		MC DONALD DR.
												CHAPARRAL RD.
	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK 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
MAY 21, 1993

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

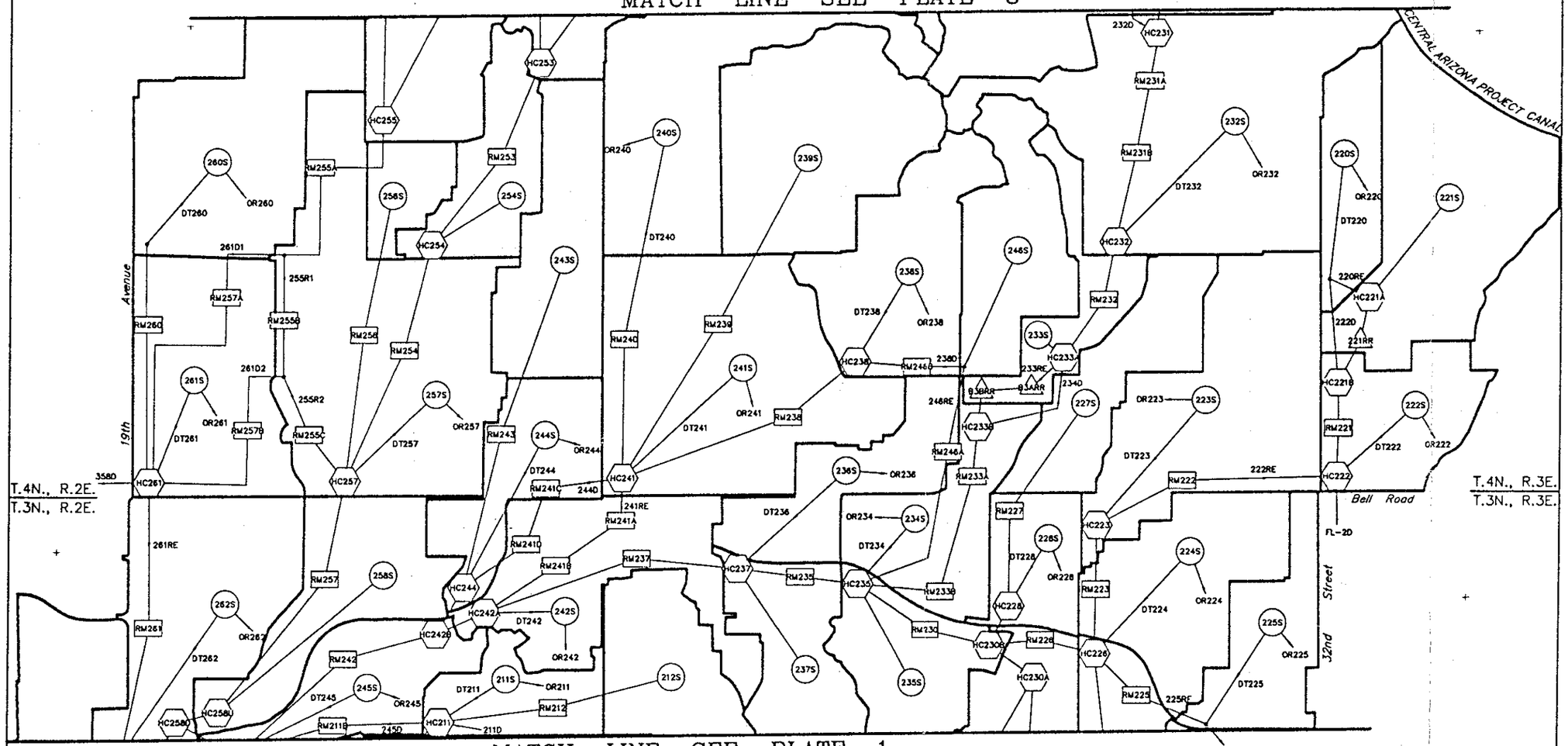
N

SCALE

1200 600 0 1200 2400
FEET

T.4N., R.2E. | T.4N., R.3E.

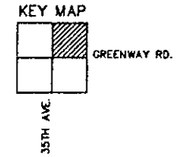
MATCH LINE SEE PLATE 3



MATCH LINE SEE PLATE 1

T.3N., R.2E. | T.3N., R.3E.

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32		DYNAMITE BLVD.
2	1	6	5	4	3	2	1	6	5		JOMAX RD.
11	12	7	8	9	10	11	12	7	8		HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17		PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20		DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29		BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32		UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5		BELL RD.
											GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
MAY 21, 1993

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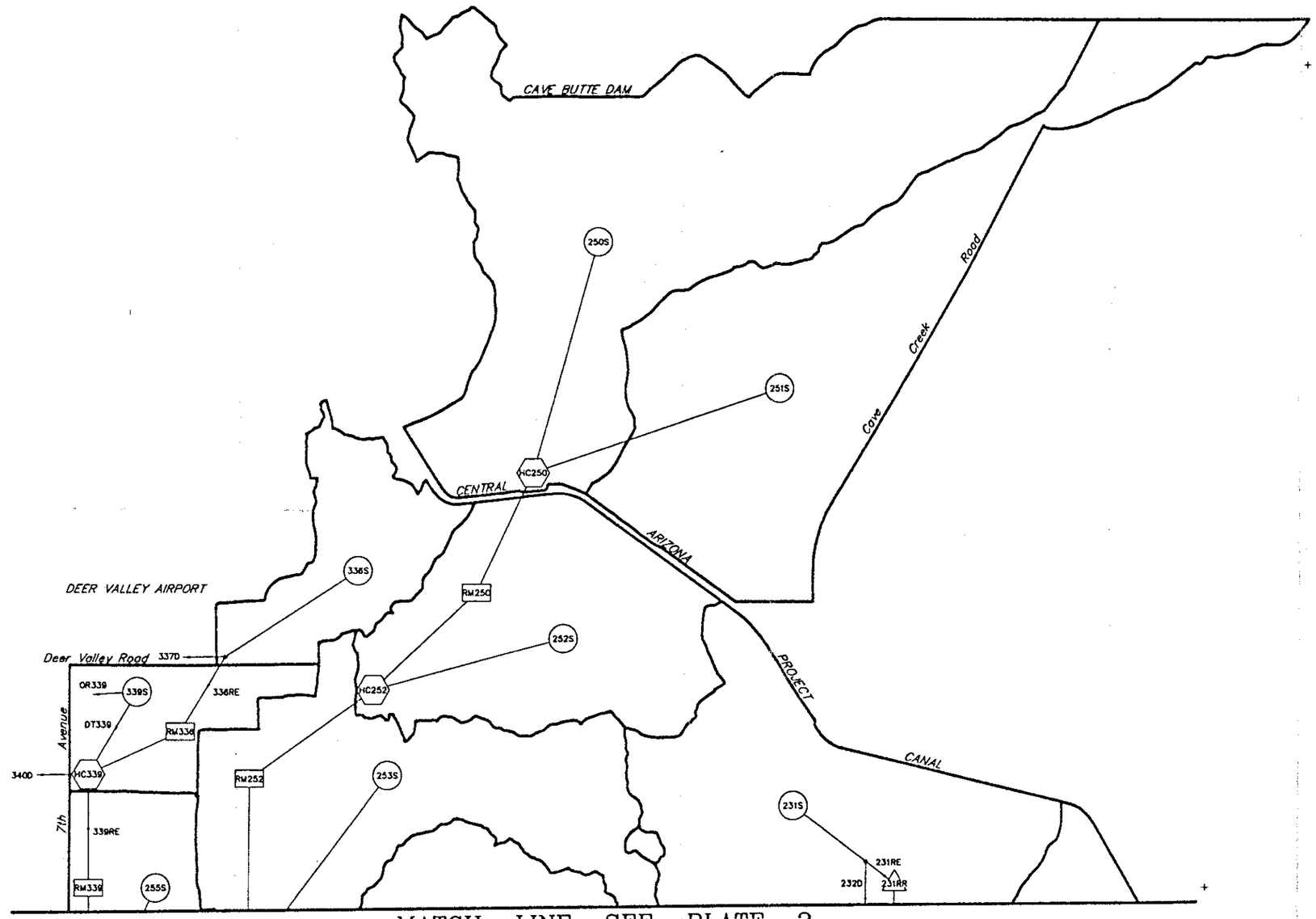
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

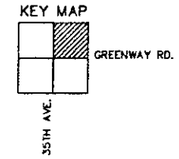
T.3N., R.2E. | T.3N., R.3E.

T.4N., R.3E.



MATCH LINE SEE PLATE 2

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32		DYNAMITE RD.
2	1	6	5	4	3	2	1	6	5		JOMAX RD.
11	12	7	8	9	10	11	12	7	8		HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17		PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20		DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29		BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32		UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5		BELL RD.
											GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 9-7-1990 & 11-15-1990

T.4N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
MAY 21, 1993

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4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

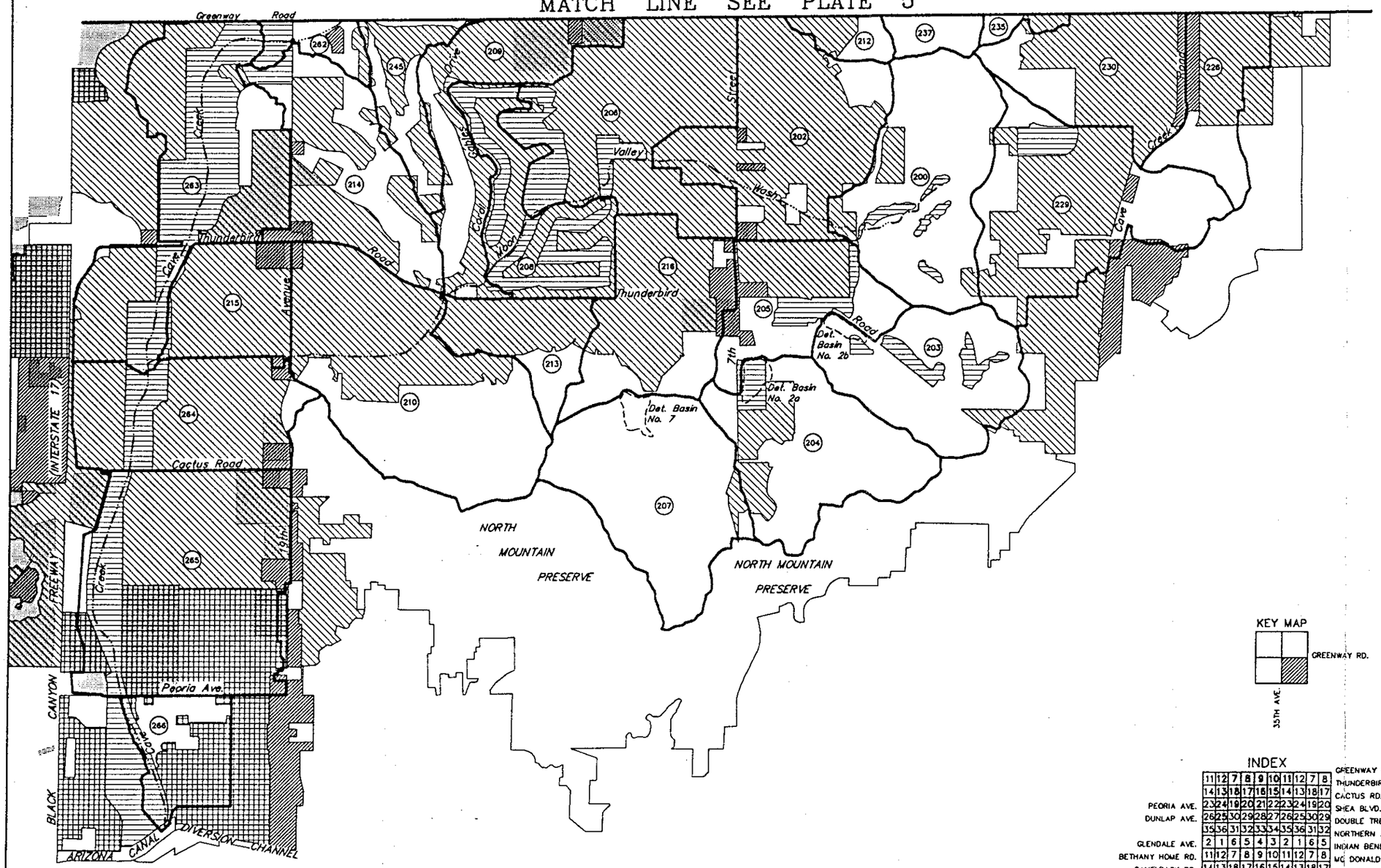
SCALE

1200 600 0 1200 2400

FEET

T.3N., R.2E. | T.3N., R.3E.

MATCH LINE SEE PLATE 5



KEY MAP

INDEX

	11	12	7	8	9	10	11	12	7	8	GREENWAY RD.
	14	13	18	17	18	15	14	13	18	17	THUNDERBIRD RD.
	23	24	19	20	21	22	23	24	19	20	CACTUS RD.
PEORIA AVE.	26	25	30	29	28	27	26	25	30	29	SHEA BLVD.
DUNLAP AVE.	35	36	31	32	33	34	35	36	31	32	DOUBLE TREE RANCH RD.
											NORTHERN AVE.
GLENDALE AVE.	2	1	6	5	4	3	2	1	6	5	INDIAN BEND RD.
BETHANY HOME RD.	11	12	7	8	9	10	11	12	7	8	MC DONALD DR.
CAMELBACK RD.	14	13	18	17	16	15	14	13	18	17	CHAPARRAL RD.
	35TH AVE.	27TH AVE.	19TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK 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 4
MAY 21, 1993

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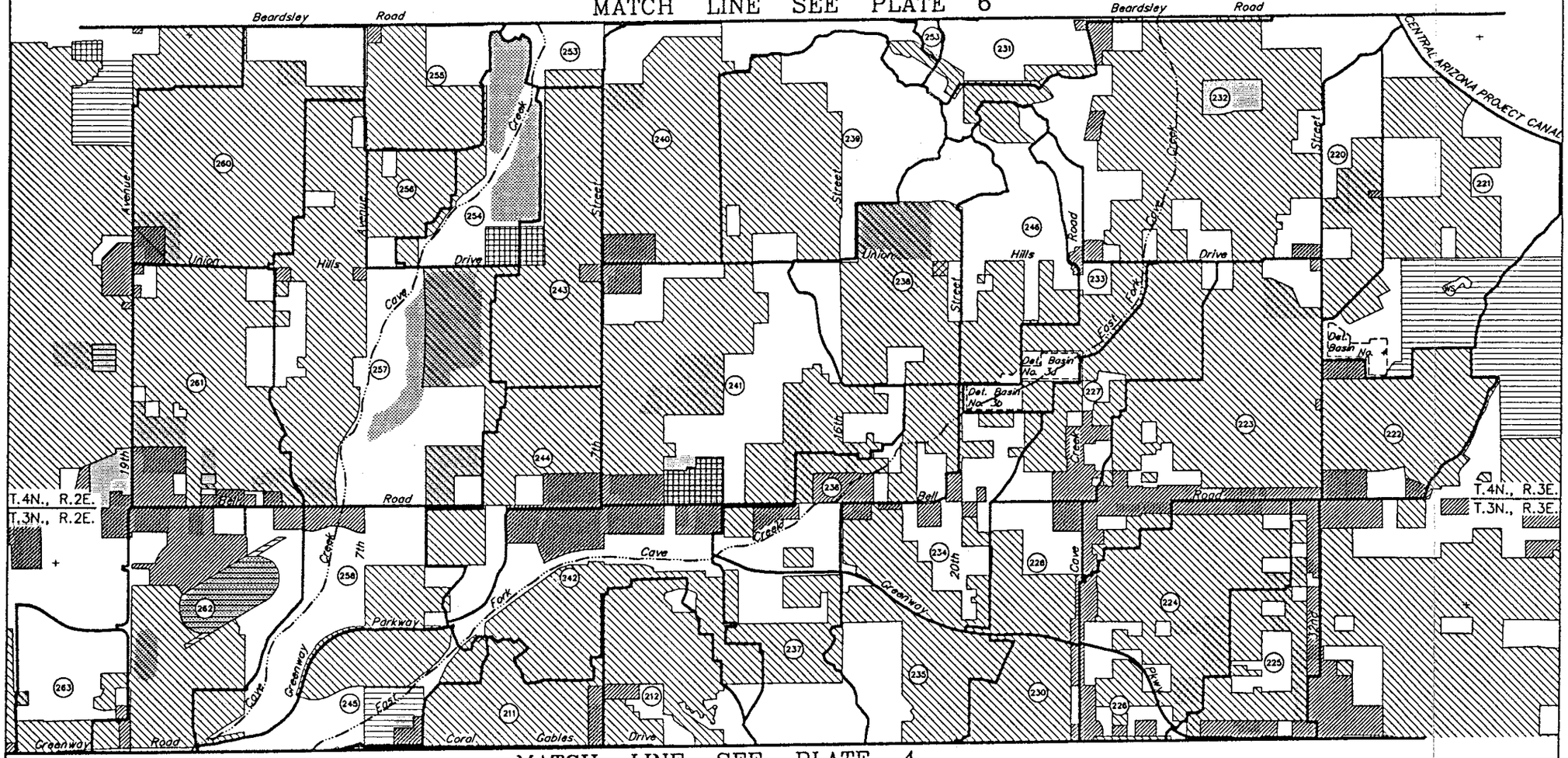
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

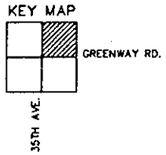
T.4N., R.2E. | T.4N., R.3E.

MATCH LINE SEE PLATE 6



MATCH LINE SEE PLATE 4

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32		DYNAMITE BLVD.
2	1	6	5	4	3	2	1	6	5		JOMAX RD.
11	12	7	8	9	10	11	12	7	8		HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17		PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20		DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29		BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32		UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5		BELL RD.
											GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
- (WS) Water Surface

LAND USE MAP
EXISTING CONDITIONS

PLATE 5
MAY 21, 1993

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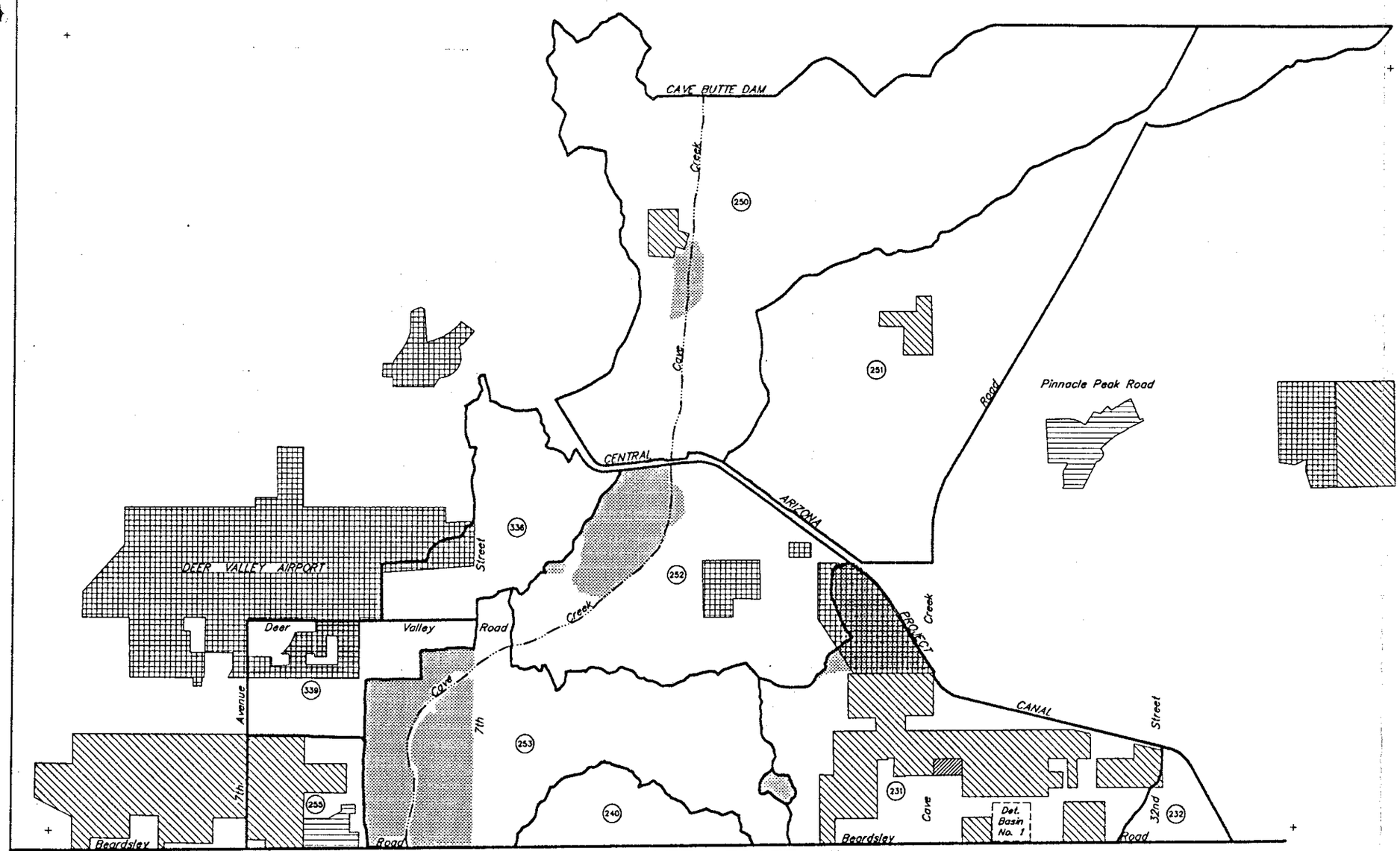
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

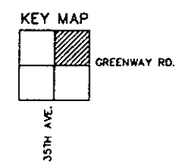
SCALE
1200 600 0 1200 2400
FEET

T.4N., R.3E.



MATCH LINE SEE PLATE 5

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32		DYNAMITE RD.
2	1	6	5	4	3	2	1	6	5		JOMAX RD.
11	12	7	8	9	10	11	12	7	8		HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17		PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20		DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29		BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32		UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5		BELL RD.
											GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

T.4N., R.3E.

DATE FLOWN: 9-7-1990 & 11-15-1990

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
MAY 21, 1993

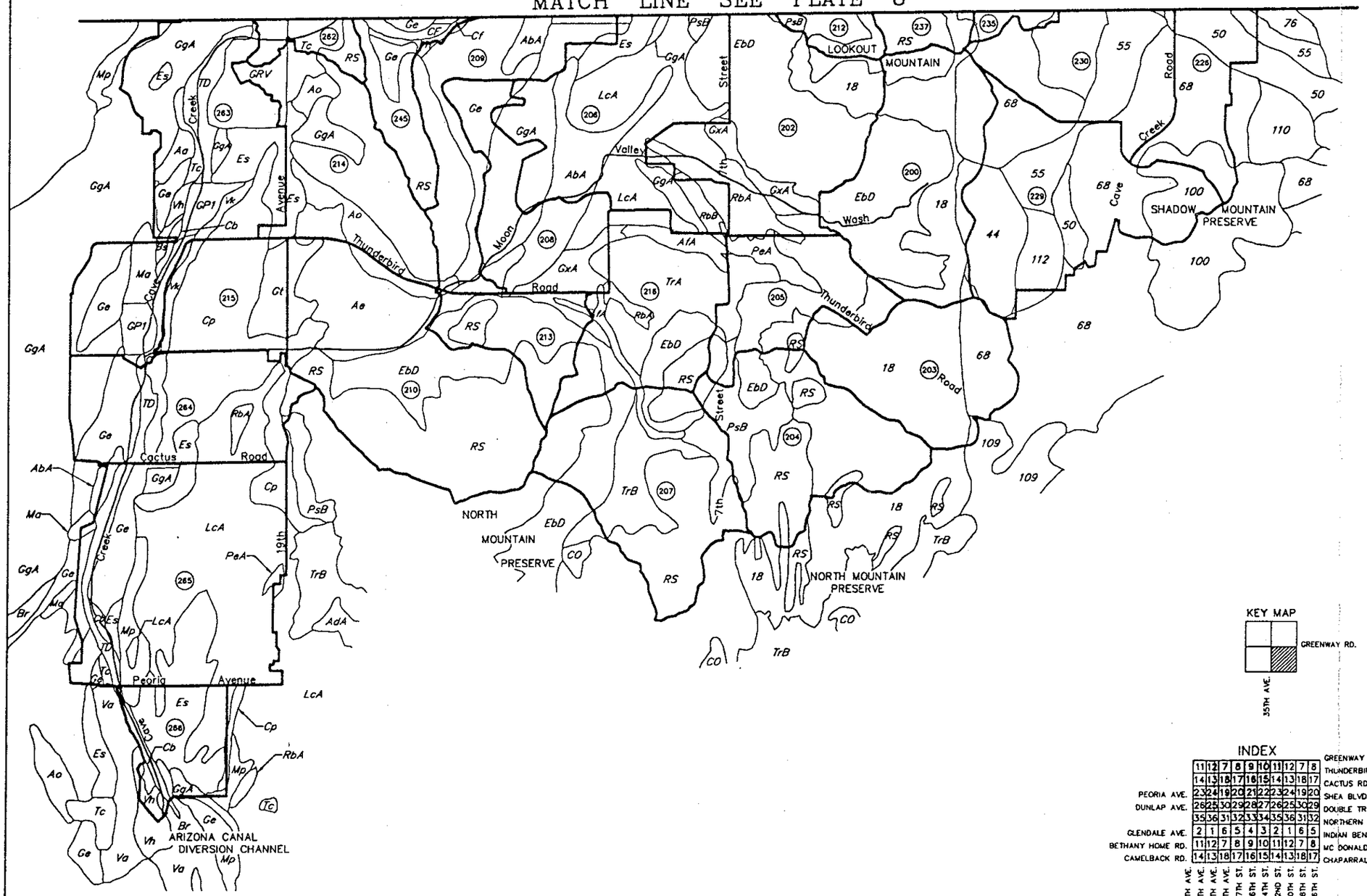
KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

T.3N., R.2E. | T.3N., R.3E.

MATCH LINE SEE PLATE 8



KEY MAP

INDEX

	11	12	7	8	9	10	11	12	7	8	GREENWAY RD.
	14	13	18	17	16	15	14	13	18	17	THUNDERBIRD RD.
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20	CACTUS RD.
DUNLAP AVE.	26	25	30	29	28	27	26	25	30	29	SHEA BLVD.
	35	36	31	32	33	34	35	36	31	32	DOUBLE TREE RANCH RD.
GLENDALE AVE.	2	1	6	5	4	3	2	1	6	5	NORTHERN AVE.
BETHANY HOME RD.	11	12	7	8	9	10	11	12	7	8	INDIAN BEND RD.
CAMELBACK RD.	14	13	18	17	16	15	14	13	18	17	MC DONALD DR.
	35TH AVE.	27TH AVE.	19TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	CHAPARRAL RD.

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK 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
MAY 21, 1993

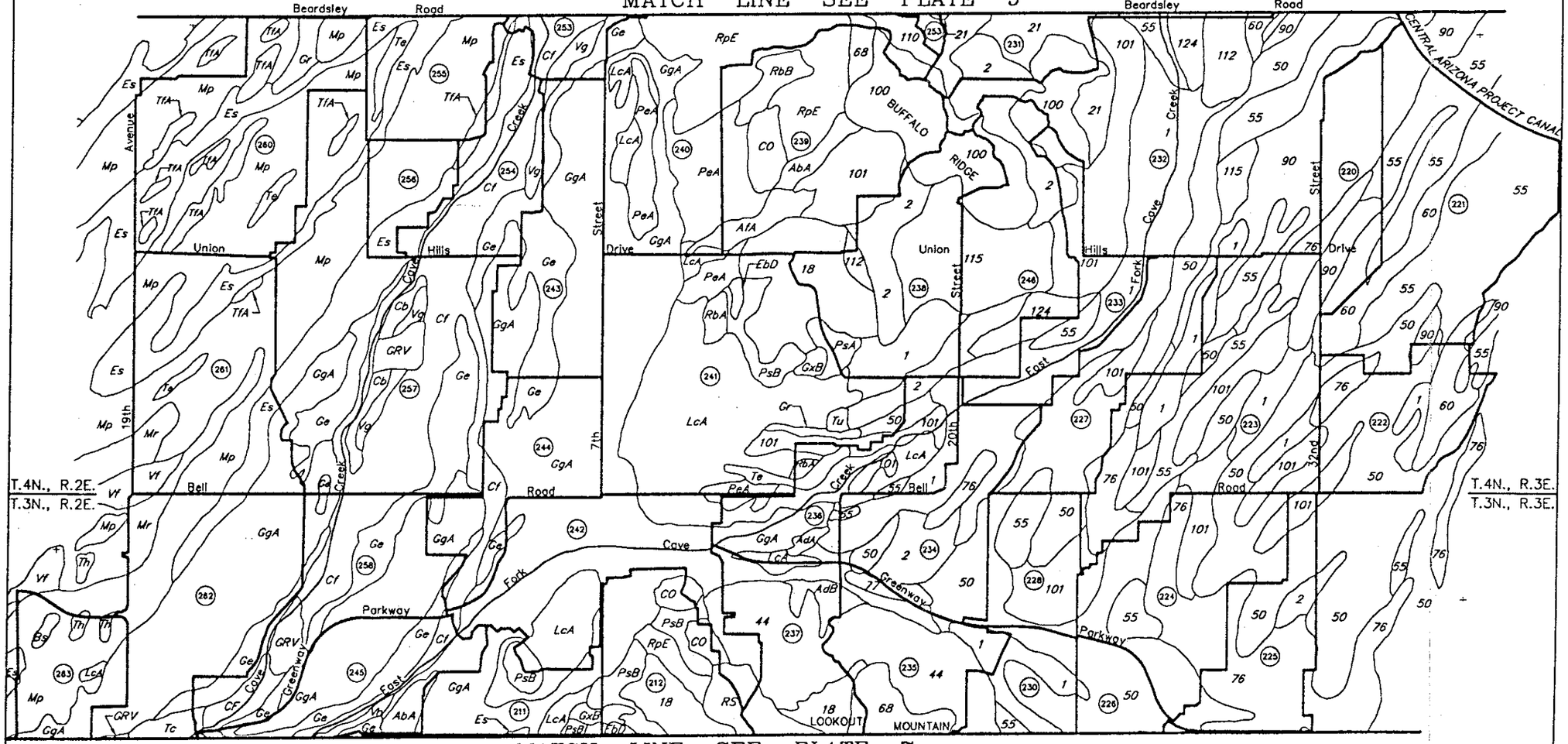
KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

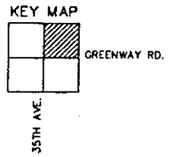
T.4N., R.2E. | T.4N., R.3E.

MATCH LINE SEE PLATE 9



MATCH LINE SEE PLATE 7

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32	DYNAMITE BLVD.
2	1	6	5	4	3	2	1	6	5	JOMAX RD.
11	12	7	8	9	10	11	12	7	8	HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17	PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20	DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29	BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32	UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5	BELL RD.
										GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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

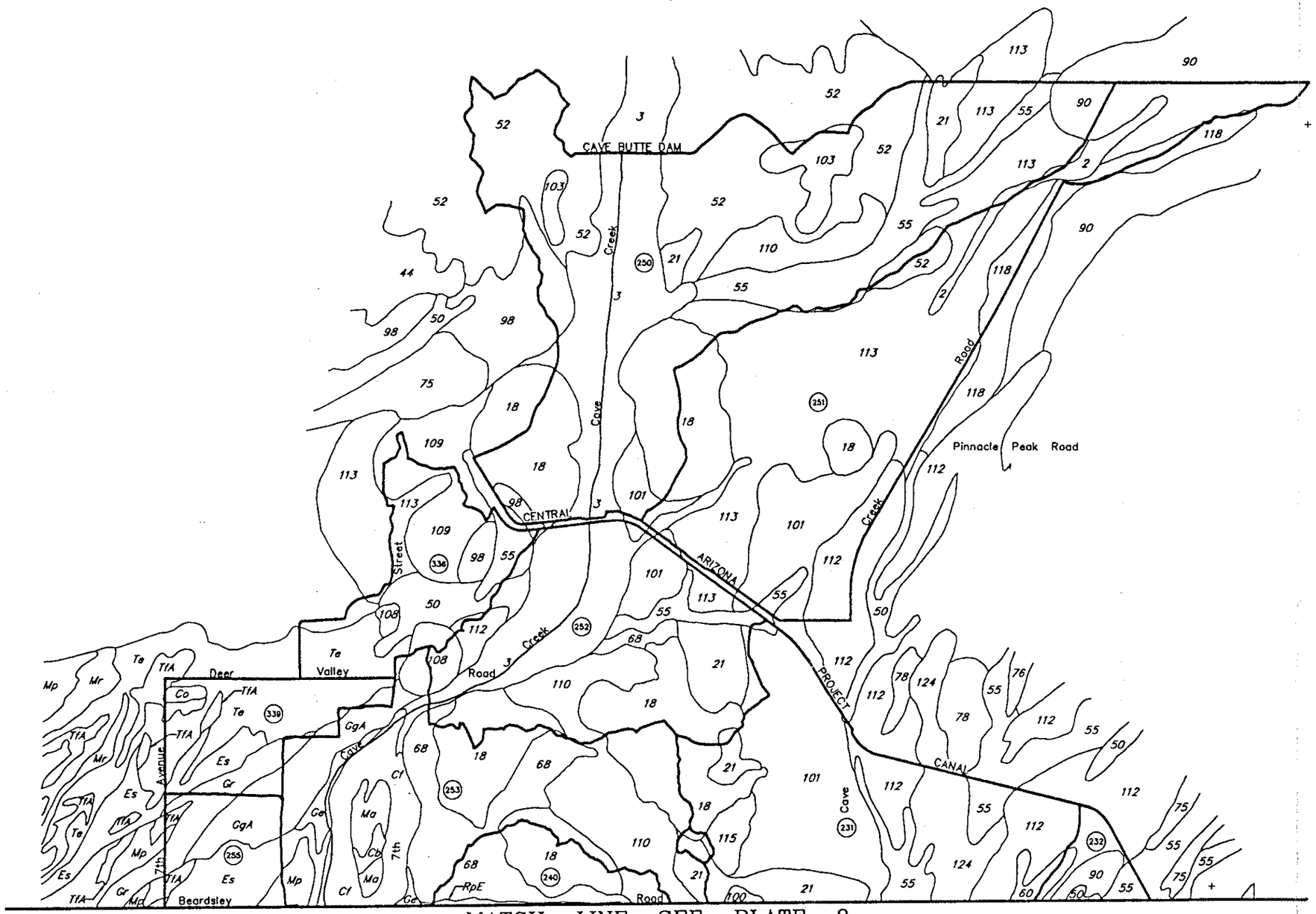
PLATE 8
MAY 21, 1993

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

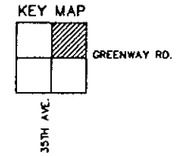
T.4N., R.3E.



MATCH LINE SEE PLATE 8

T.4N., R.3E.

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32		DYNAMITE RD.
2	1	6	5	4	3	2	1	6	5		JOMAX RD.
11	12	7	8	9	10	11	12	7	8		HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17		PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20		DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29		BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32		UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5		BELL RD.
											GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 9-7-1990 & 11-15-1990

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- CrB Soil Unit Boundary
- CO Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part
- 109 Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
EXISTING CONDITIONS

PLATE 9
MAY 21, 1993

KAMINSKI HUBBARD engineering, inc.
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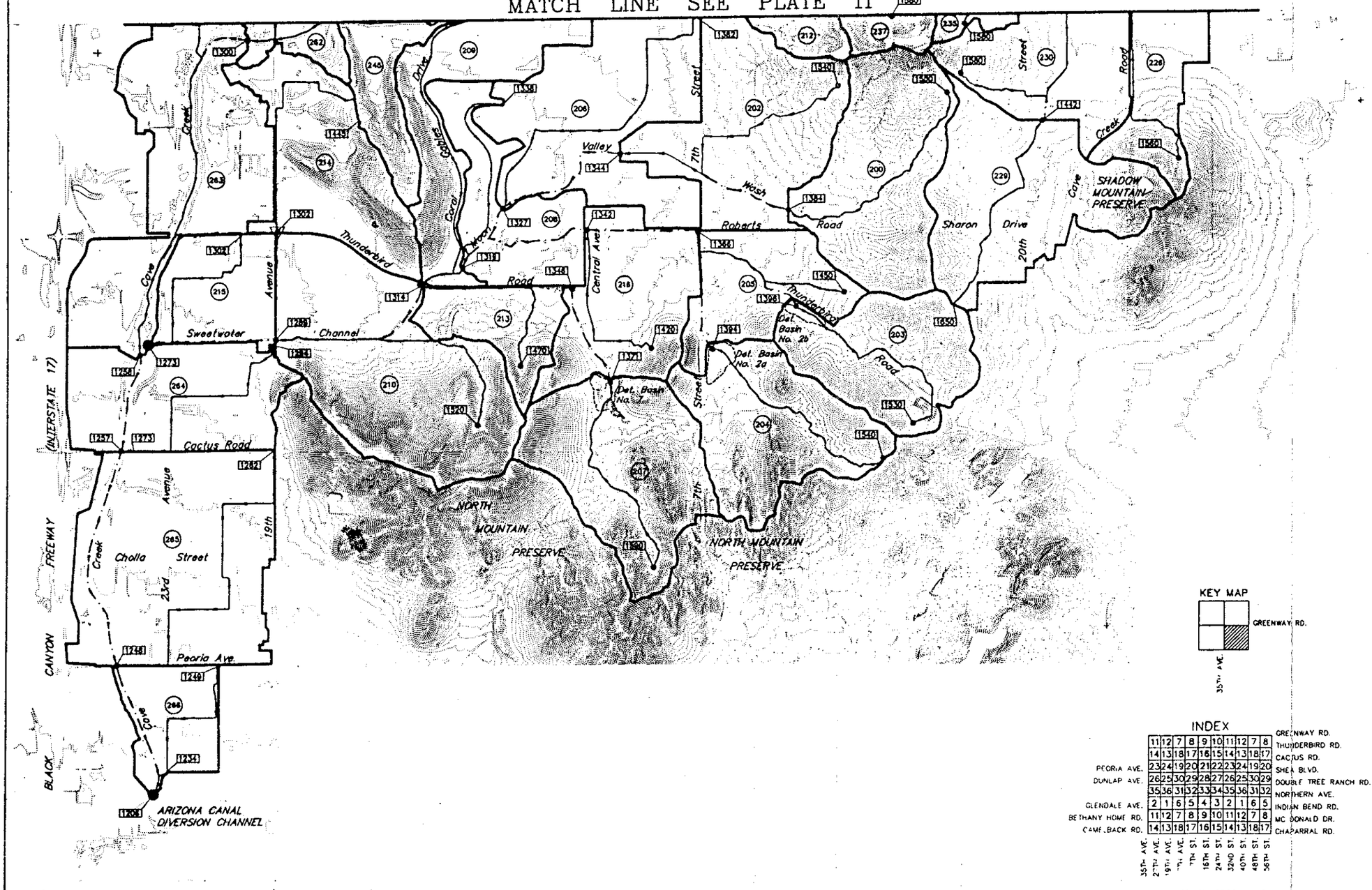
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

T.3N., R.2E. | T.3N., R.3E.

MATCH LINE SEE PLATE 11



KEY MAP

INDEX

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK 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 10
MAY 21, 1993

KAMINSKI HUBBARD engineering, inc.

SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

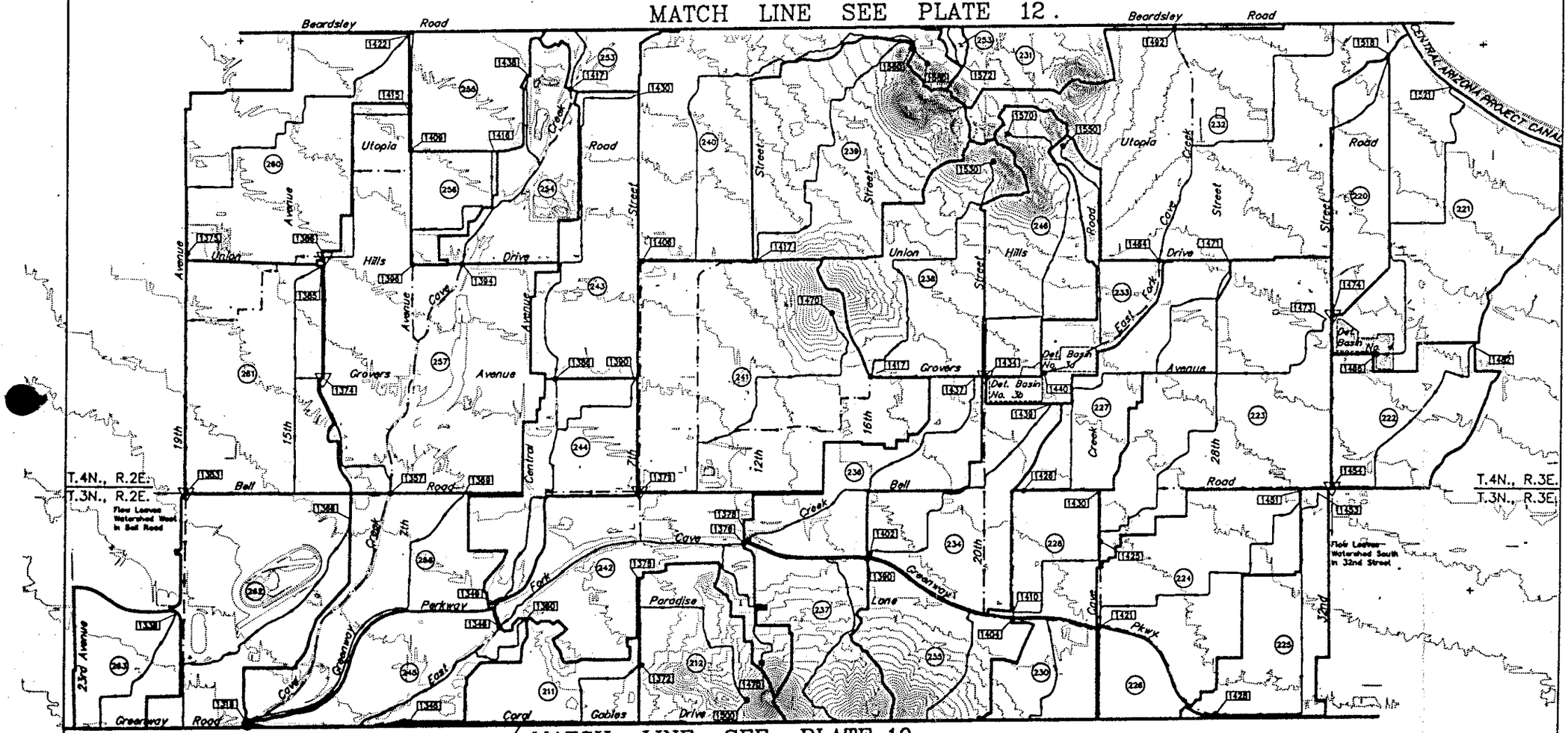
N

SCALE
1200 600 0 1200 2400
FEET

CONTOUR INTERVAL 10 FEET

T.4N., R.2E. | T.4N., R.3E.

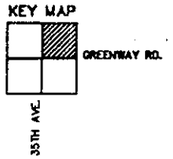
MATCH LINE SEE PLATE 12.



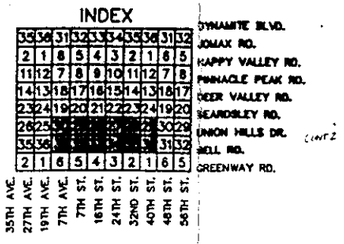
MATCH LINE SEE PLATE 10

T.3N., R.2E. | T.3N., R.3E.

KEY MAP



INDEX



DATE FLOWN: 11-15-1990, 1-18-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
MAY 21, 1993

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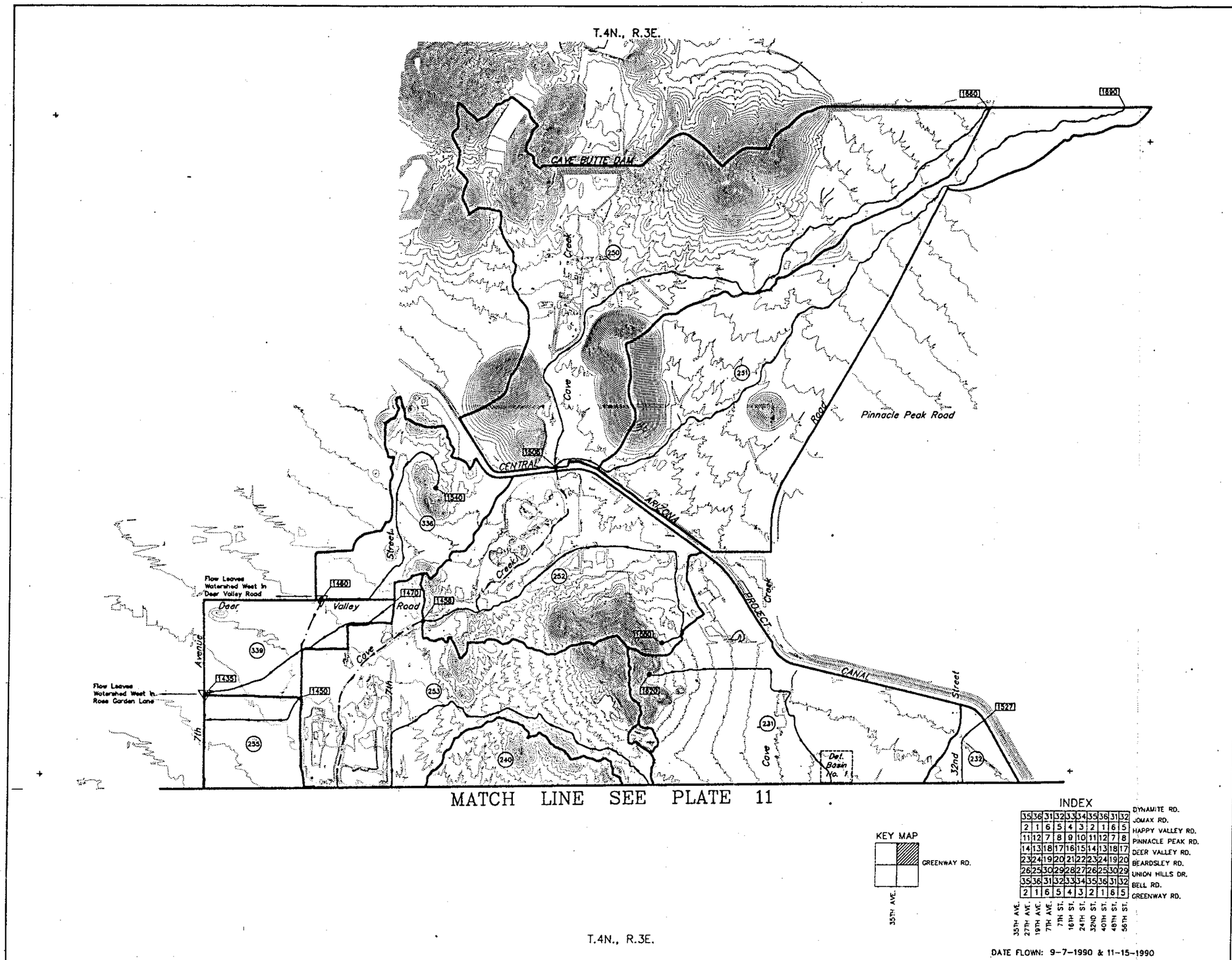
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

CONTOUR INTERVAL 10 FEET



KEY MAP

GREENWAY RD.

35TH AVE.

INDEX

35	36	31	32	33	34	35	36	31	32	DYNAMITE RD.
2	1	6	5	4	3	2	1	6	5	JOMAX RD.
11	12	7	8	9	10	11	12	7	8	HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17	PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20	DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29	BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32	UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5	BELL RD.
										GREENWAY RD.

35TH AVE. 27TH AVE. 19TH AVE. 7TH AVE. 7TH ST. 16TH ST. 24TH ST. 32ND ST. 40TH ST. 48TH ST. 56TH ST.

DATE FLOWN: 9-7-1990 & 11-15-1990

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- ● Major Drainage Basin Concentration Point
- • Drainage Sub-Basin Concentration Point
- ▽ Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- [1514] Elevation Along Flow Path

FLOW ROUTING MAP
EXISTING CONDITIONS

PLATE 12
MAY 21, 1993

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

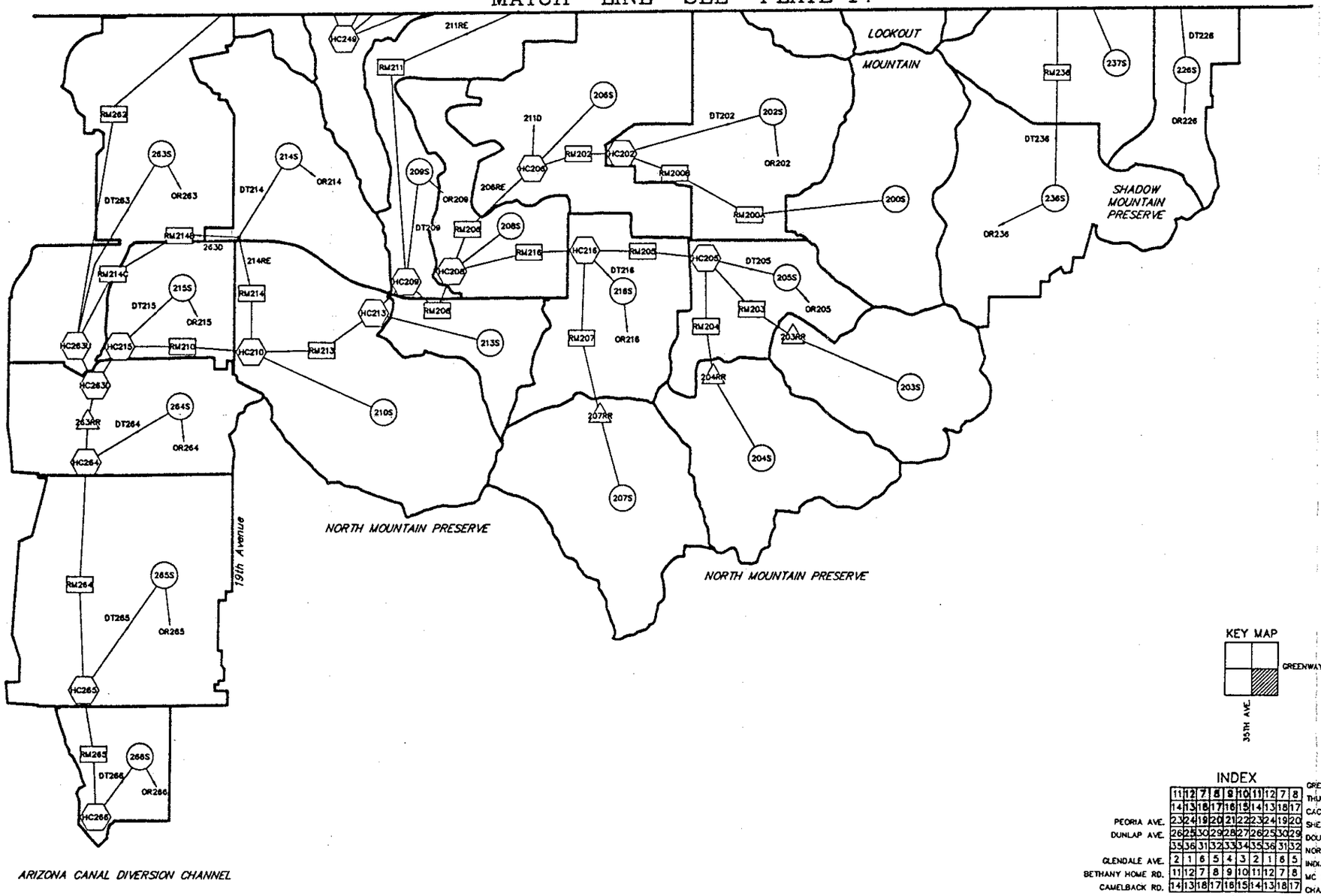
N

SCALE
1200 600 0 1200 2400
FEET

CONTOUR INTERVAL 10 FEET

T.3N., R.2E. | T.3N., R.3E.

MATCH LINE SEE PLATE 14



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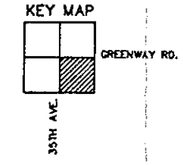


INDEX

	11	12	7	8	9	10	11	12	7	8		GREENWAY RD.
	14	13	18	17	16	15	14	13	18	17		THUNDERBIRD RD.
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		CACTUS RD.
DUNLAP AVE.	26	25	30	29	28	27	26	25	30	29		SHEA BLVD.
	35	36	31	32	33	34	35	36	31	32		DOUBLE TREE RANCH RD.
GLENDALE AVE.	2	1	6	5	4	3	2	1	6	5		NORTHERN AVE.
BETHANY HOME RD.	11	12	7	8	9	10	11	12	7	8		INDIAN BEND RD.
CAMELBACK RD.	14	13	18	17	16	15	14	13	18	17		MC DONALD DR.
												CHAPARRAL RD.
	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK 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
MAY 21, 1993

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

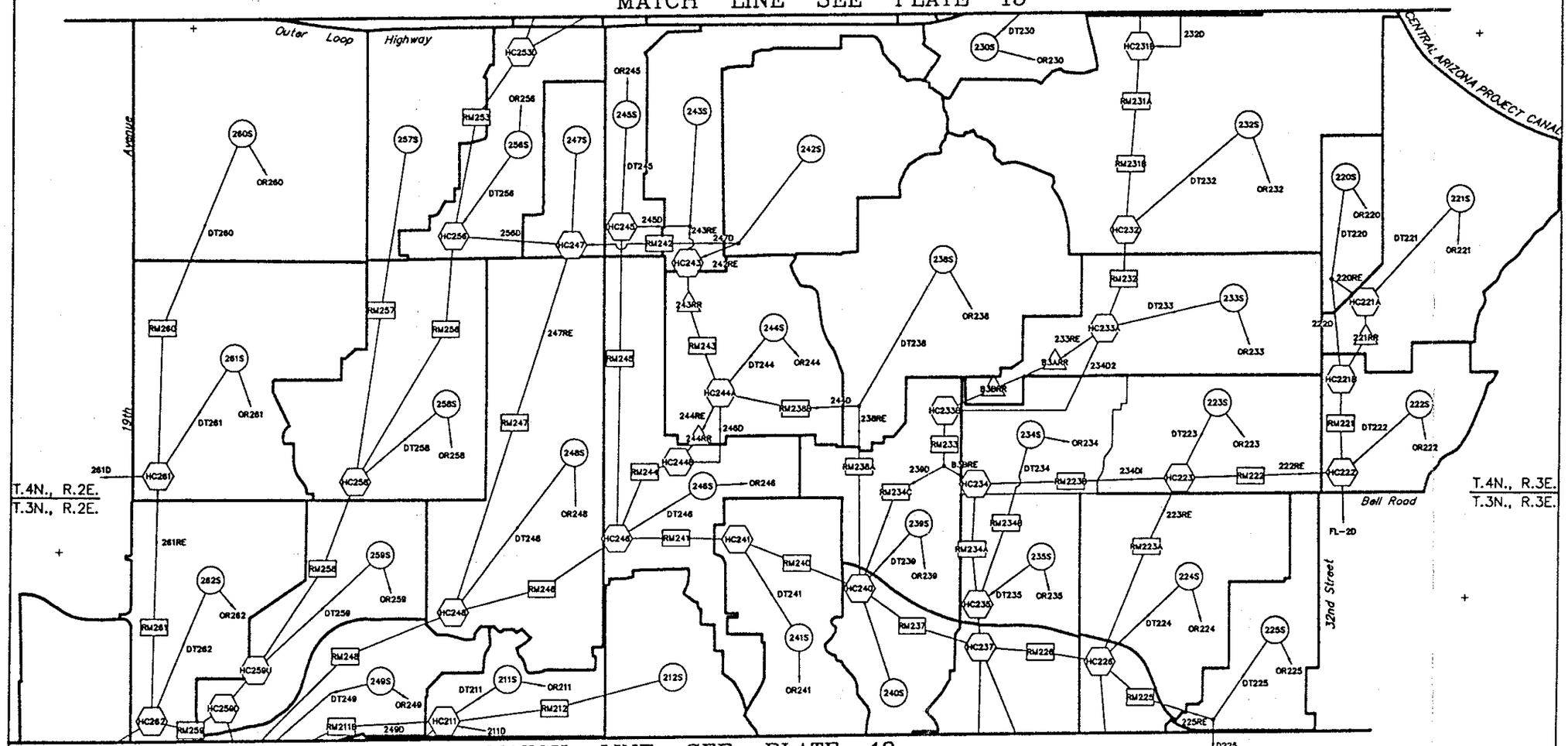
N

SCALE

1200 600 0 1200 2400
FEET

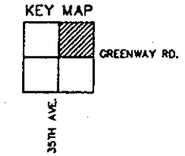
T.4N., R.2E. | T.4N., R.3E.

MATCH LINE SEE PLATE 15



MATCH LINE SEE PLATE 13

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32		DYNAMITE BLVD.
2	1	6	5	4	3	2	1	6	5		JOMAX RD.
11	12	7	8	9	10	11	12	7	8		HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17		PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20		DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29		BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32		UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5		BELL RD.
											GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.		

DATE FLOWN: 11-15-1990, 1-18-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
MAY 21, 1993

KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

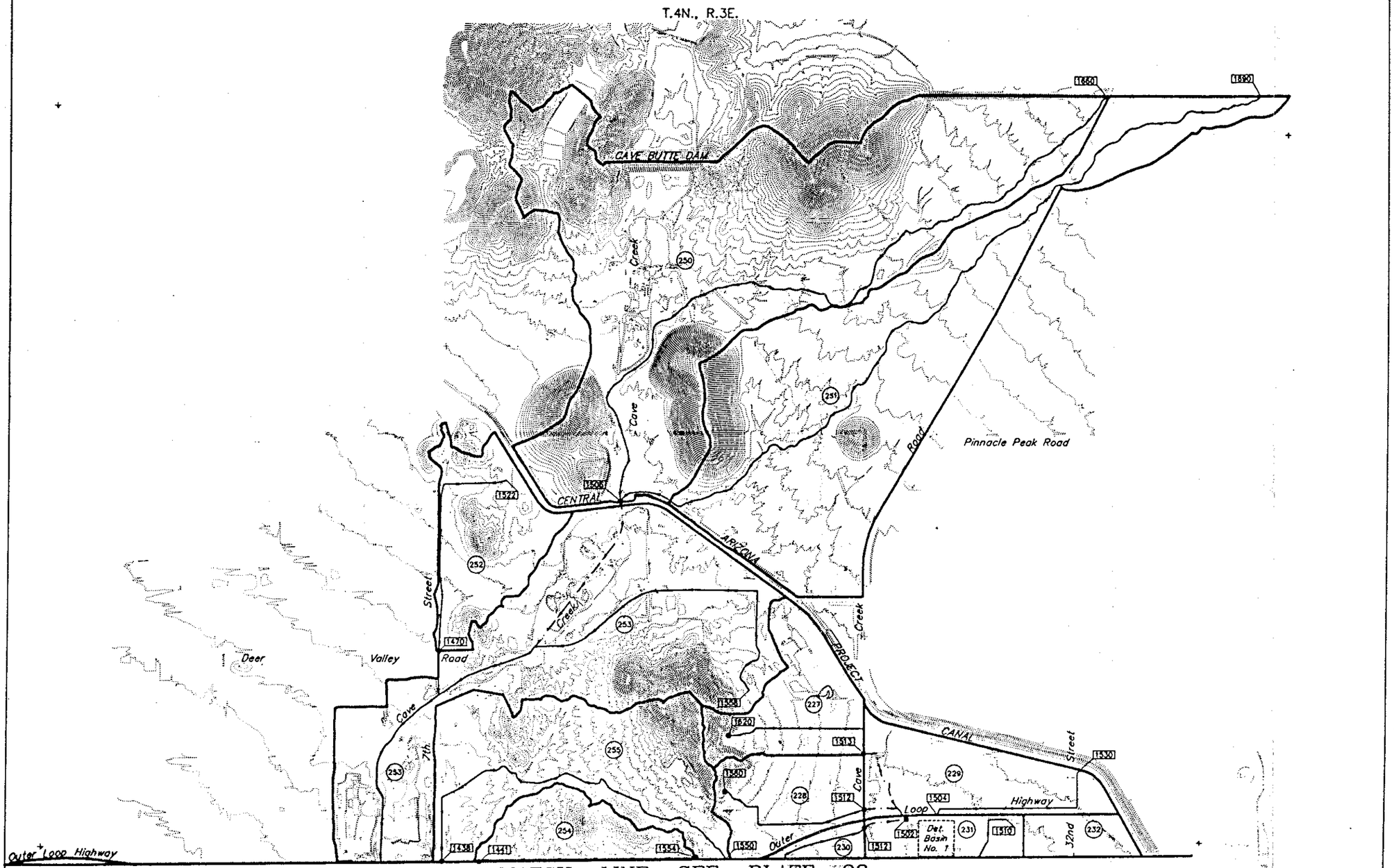
N

SCALE

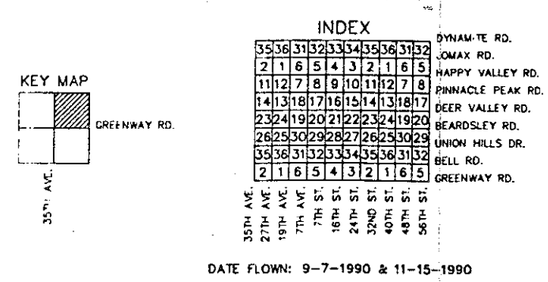
1200 600 0 1200 2400
FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY



MATCH LINE SEE PLATE 23



T.4N., R.3E.

DATE FLOWN: 9-7-1990 & 11-15-1990

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- Major Drainage Basin Concentration Point
- Drainage Sub-Basin Concentration Point
- Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- 1514 Elevation Along Flow Path

FLOW ROUTING MAP
FUTURE CONDITIONS

PLATE 24
MAY 21, 1993

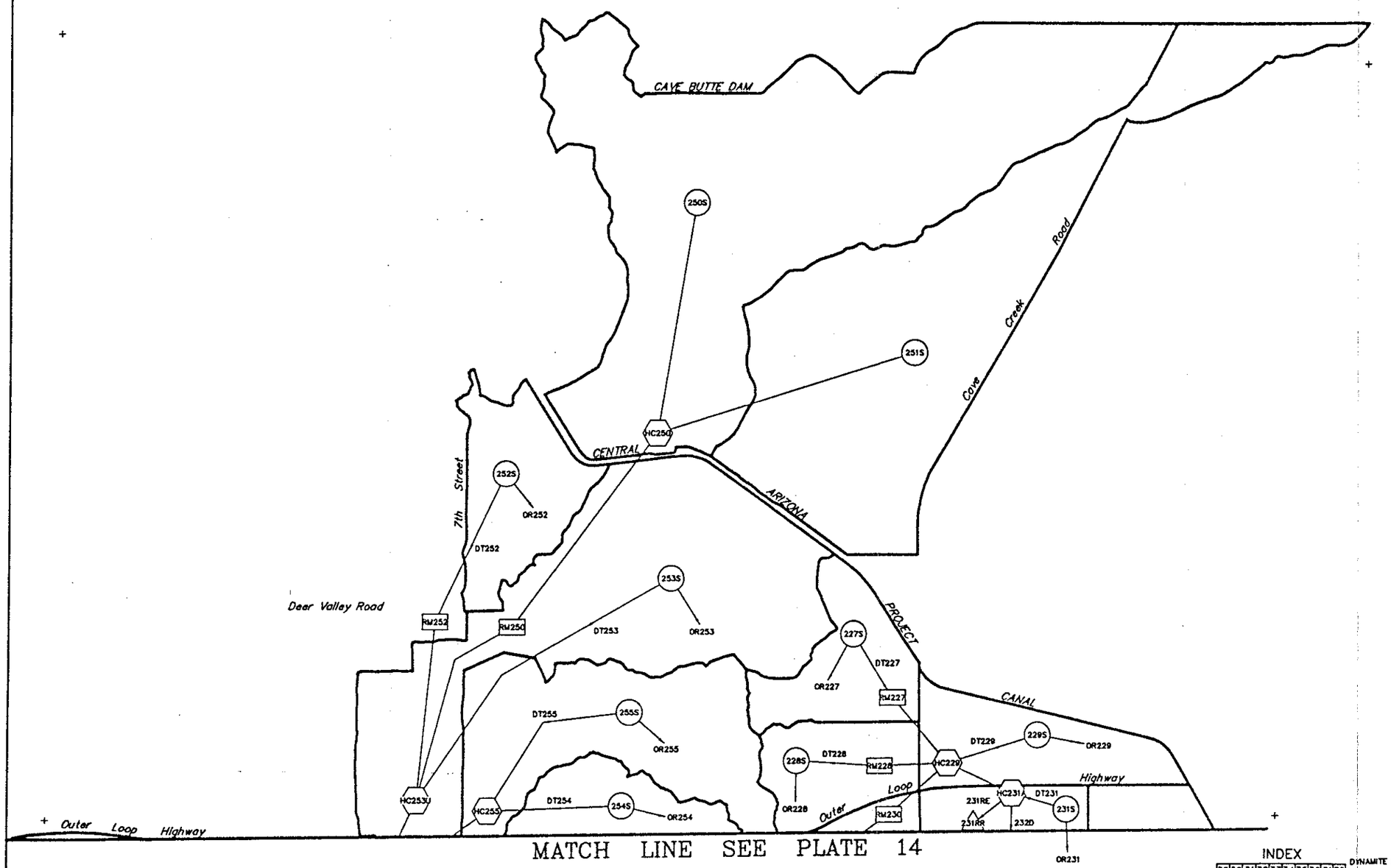
KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. PARADISE VALLEY HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5586

N

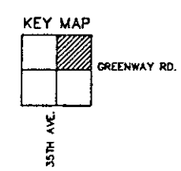
SCALE
1200 600 0 1200 2400
FEET

CONTOUR INTERVAL 10 FEET

T.4N., R.3E.



KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32		DYNAMITE RD.
2	1	6	5	4	3	2	1	6	5		JOMAX RD.
11	12	7	8	9	10	11	12	7	8		HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17		PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20		DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29		BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32		UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5		BELL RD.
											GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.		

DATE FLOWN: 9-7-1990 & 11-15-1990

T.4N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
MAY 21, 1993

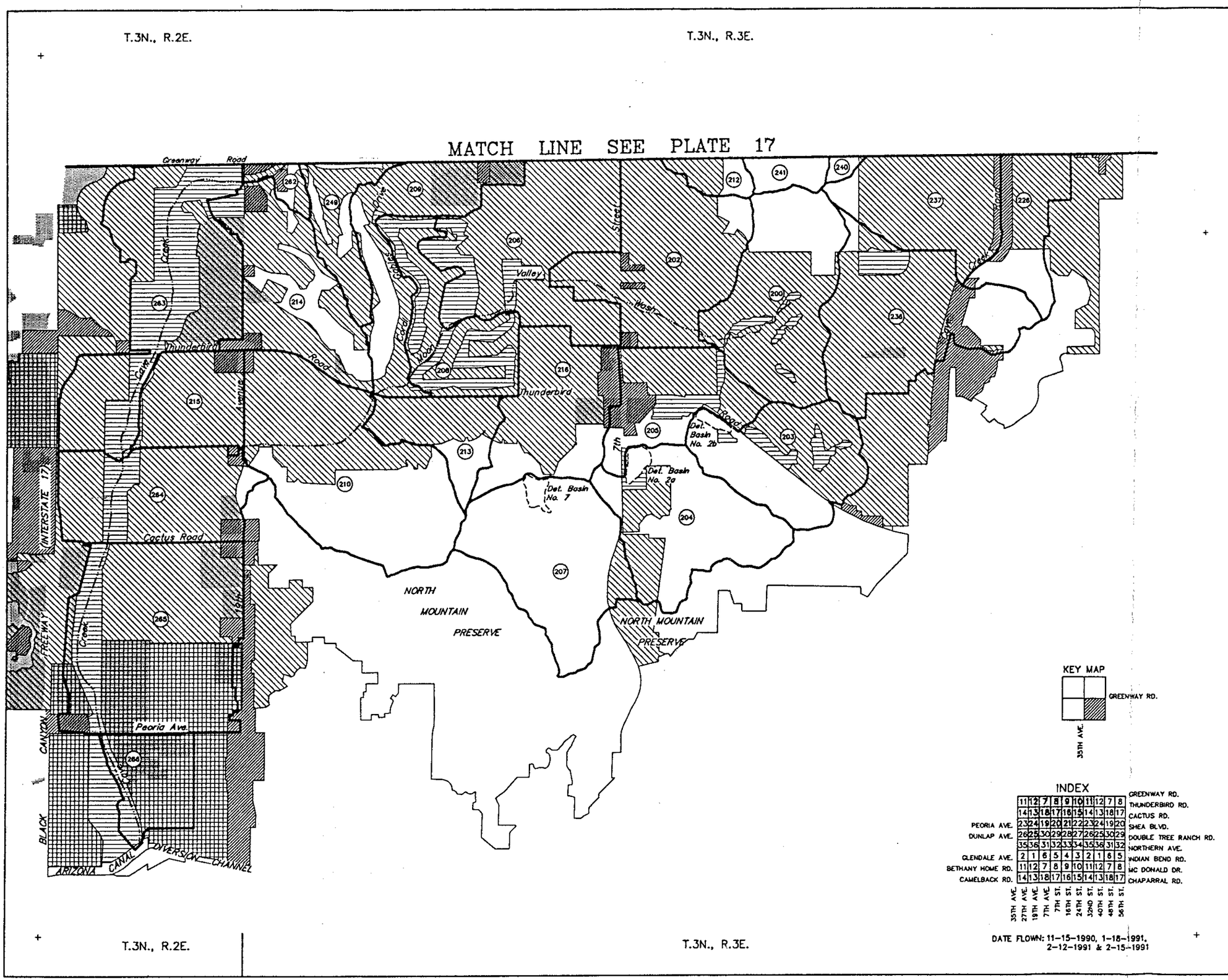
KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE

1200 600 0 1200 2400

FEET



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
FUTURE CONDITIONS

PLATE 16
MAY 21, 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.4N., R.2E. T.4N., R.3E.

MATCH LINE SEE PLATE 18

Outer Loop Highway

Beardsley Road

CENTRAL ARIZONA PROJECT CANAL

Union Hills Drive

Bell Road

Greenway Parkway

Coral Gables Drive

16th Street

Cave Creek

Detention Basin No. 5

Det. Basin No. 3a

Det. Basin No. 3b

Det. Basin No. 3c

T.4N., R.2E.
T.3N., R.2E.

T.4N., R.3E.
T.3N., R.3E.

MATCH LINE SEE PLATE 16

T.3N., R.2E. T.3N., R.3E.

KEY MAP

GREENWAY RD.

35TH AVE.

INDEX

35	36	31	32	33	34	35	36	31	32	DYNAMITE BLVD.
2	1	6	5	4	3	2	1	6	5	JOMAX RD.
11	12	7	8	9	10	11	12	7	8	HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17	PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20	DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29	BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32	UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5	BELL RD.
										GREENWAY RD.

35TH AVE. 27TH AVE. 19TH AVE. 7TH AVE. 7TH ST. 16TH ST. 24TH ST. 32ND ST. 40TH ST. 48TH ST. 56TH ST.

DATE FLOWN: 11-15-1990, 1-18-1991 & 2-15-1991

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Right-of-Way
- Significant Onsite Retention Area
- Noncontributing Area
- Vacant Land Use
- (140) Drainage Sub-Basin Number
- (WS) Water Surface

LAND USE MAP
FUTURE CONDITIONS

PLATE 17
MAY 21, 1993

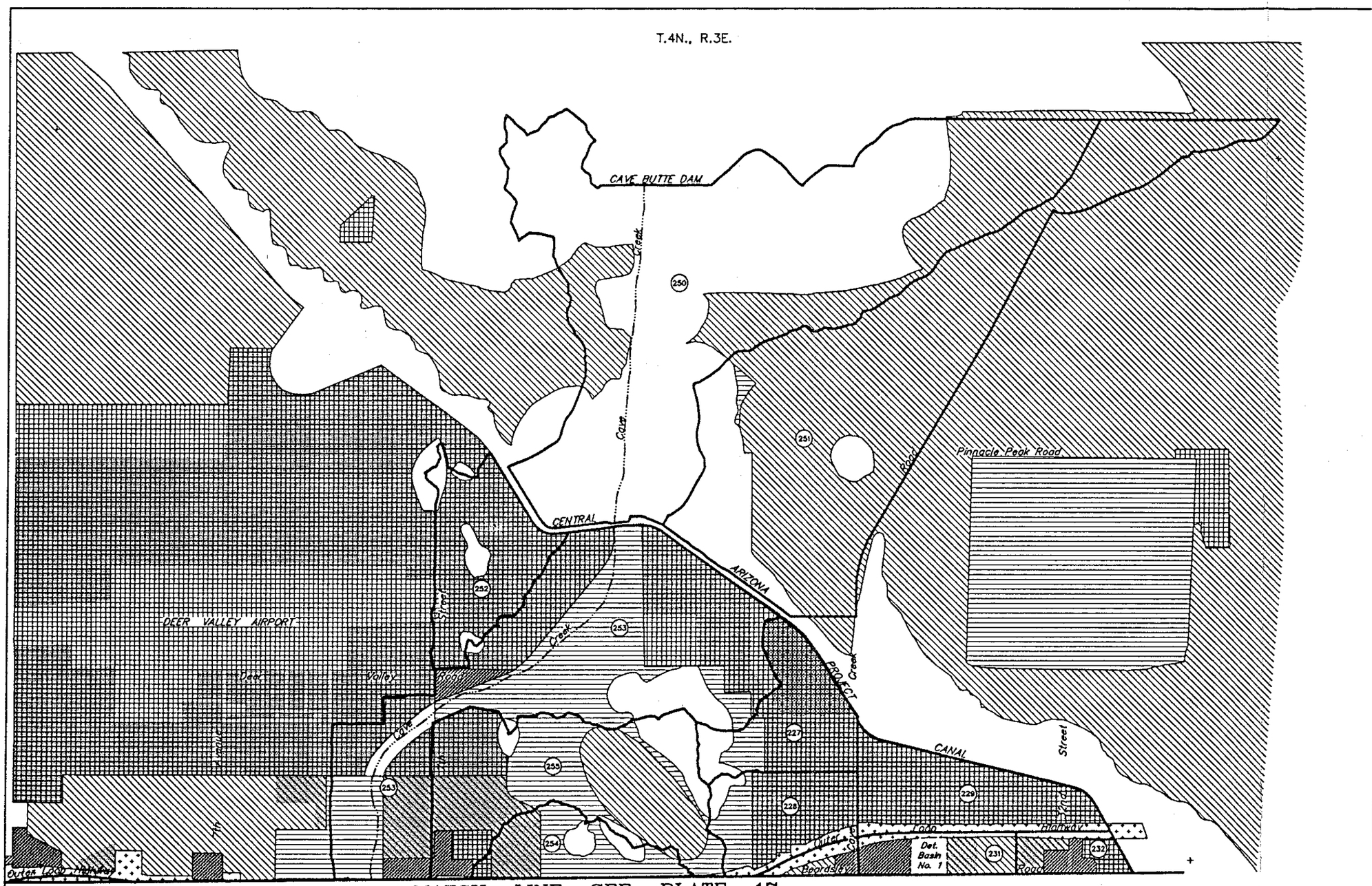
KAMINSKI HUBBARD engineering, inc.
SURVEYING • CIVIL • HYDROLOGY
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

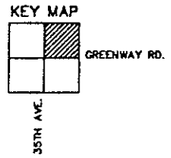
SCALE

1200 600 0 1200 2400

FEET



KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32	DYNAMITE RD.
2	1	6	5	4	3	2	1	6	5	JOMAX RD.
11	12	7	8	9	10	11	12	7	8	HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17	PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20	DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29	BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32	UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5	BELL RD.
										GREENWAY RD.

35TH AVE. 27TH AVE. 19TH AVE. 7TH AVE. 7TH ST. 16TH ST. 24TH ST. 32ND ST. 40TH ST. 48TH ST. 56TH ST.

DATE FLOWN: 9-7-1990 & 11-15-1990

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- Residential Land Use
- Commercial Land Use
- Golf Course/Park
- Utility Land Use
- Industrial Land Use
- Right-of-Way
- Significant Onsite Retention Area
- Noncontributing Area
- Vacant Land Use
- (140) Drainage Sub-Basin Number

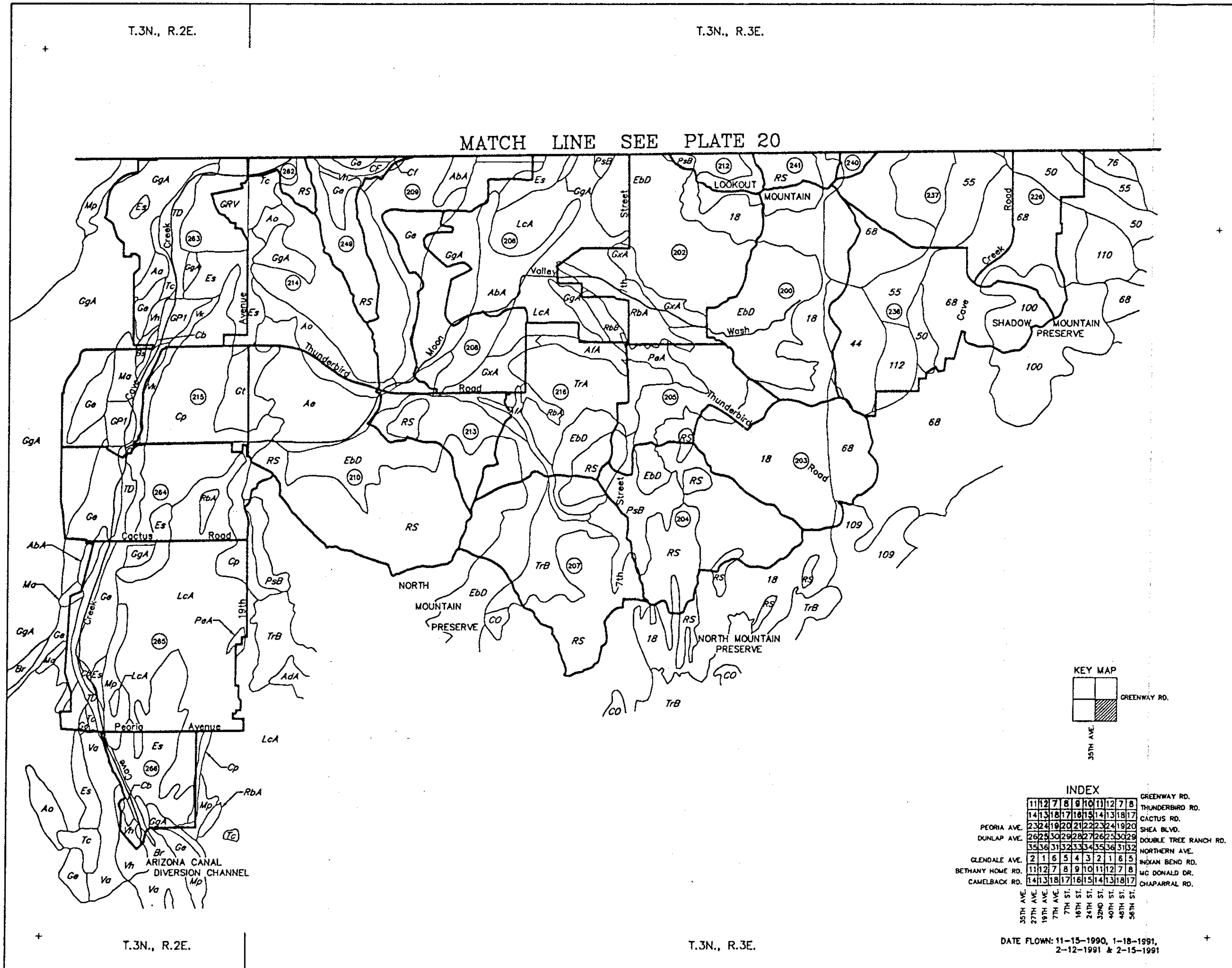
LAND USE MAP
FUTURE CONDITIONS

PLATE 18
MAY 21, 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



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- CrB Soil Unit Boundary
- CO Soil Unit Identification Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part
- 109 Soil Unit Identification Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
FUTURE CONDITIONS

PLATE 19
MAY 21, 1993

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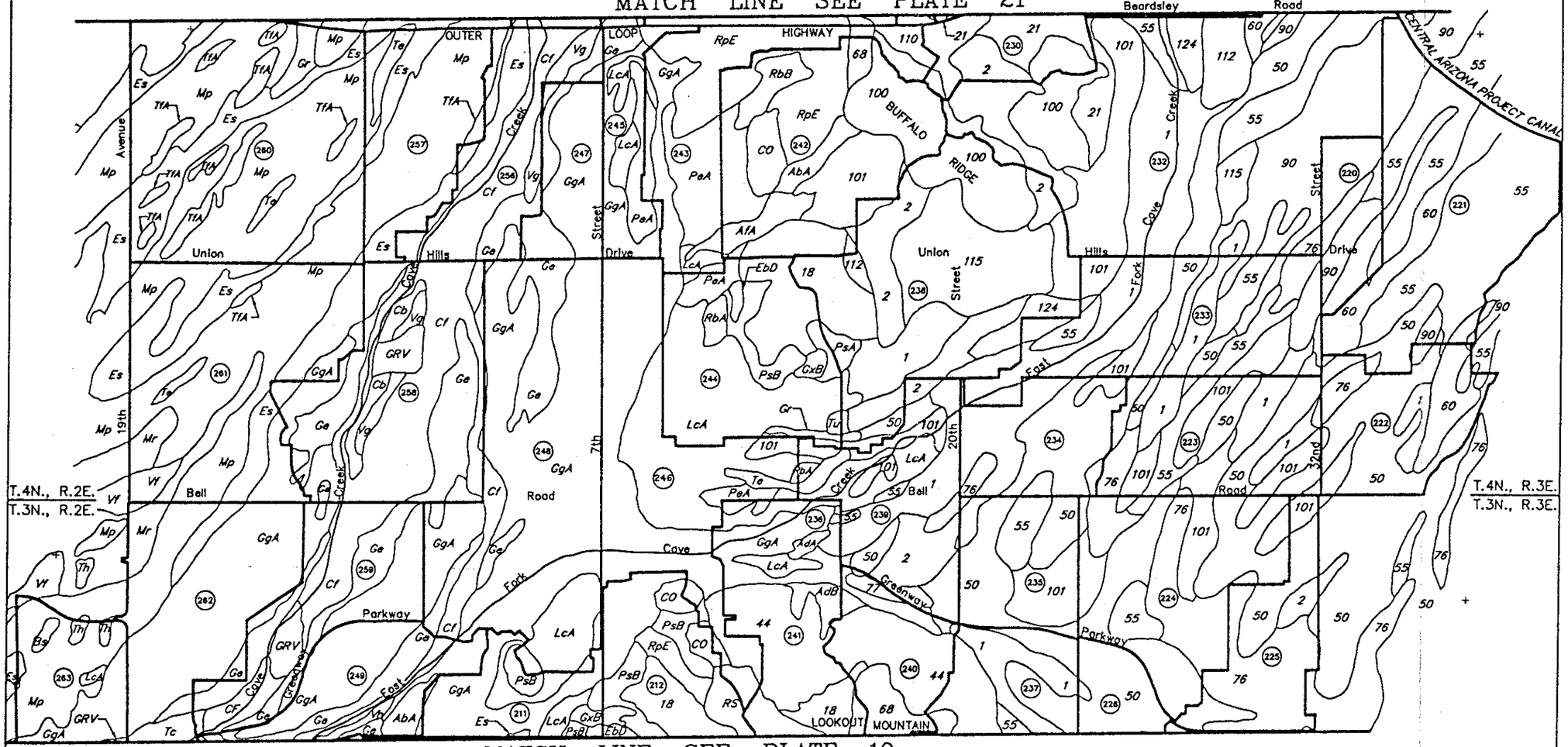
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

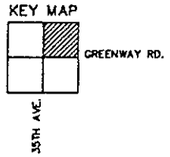
T.4N., R.2E. | T.4N., R.3E.

MATCH LINE SEE PLATE 21



MATCH LINE SEE PLATE 19

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32	DYNAMITE BLVD.
2	1	6	5	4	3	2	1	6	5	JOMAX RD.
11	12	7	8	9	10	11	12	7	8	HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17	PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20	DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29	BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32	UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5	BELL RD.
										GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	

DATE FLOWN: 11-15-1990, 1-18-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- CrB Soil Unit Boundary
- CO Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part
- 109 Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
FUTURE CONDITIONS

PLATE 20
MAY 21, 1993

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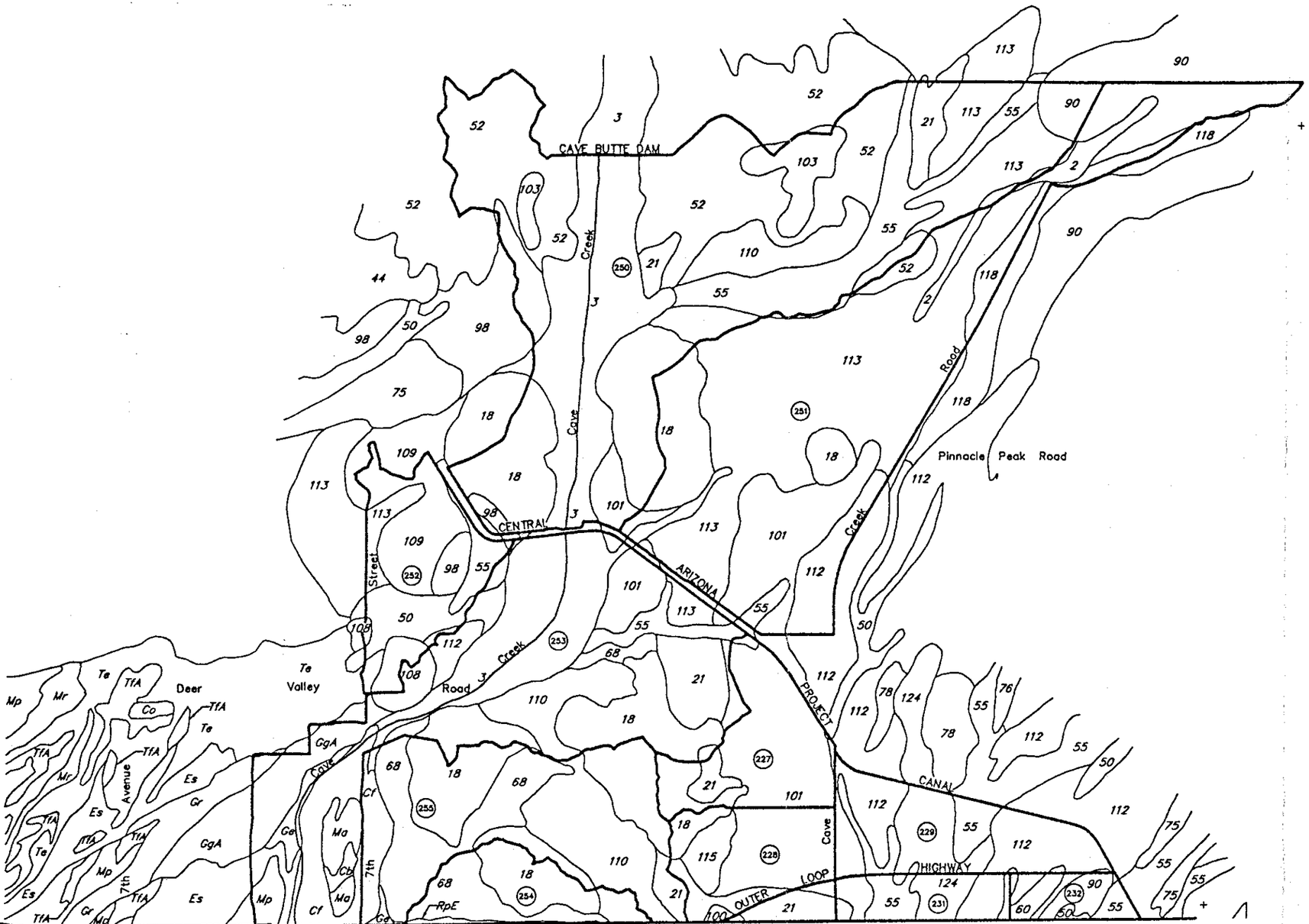
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

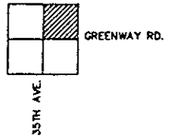
T.4N., R.3E.



MATCH LINE SEE PLATE 20

T.4N., R.3E.

KEY MAP



INDEX

35	36	31	32	33	34	35	36	31	32	DYNAMITE RD.
2	1	6	5	4	3	2	1	6	5	JOMAX RD.
11	12	7	8	9	10	11	12	7	8	HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17	PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20	DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29	BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32	UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5	BELL RD.
										GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.

DATE FLOWN: 9-7-1990 & 11-15-1990

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- CrB Soil Unit Boundary
- CO Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Maricopa County, Arizona Central Part
- 109 Soil Unit Identification — Reference: USDA, Soil Conservation Service, Soil Survey of Aguila-Carefree Area Parts of Maricopa and Pinal Counties, Arizona

SOILS MAP
FUTURE CONDITIONS

PLATE 21
MAY 21, 1993

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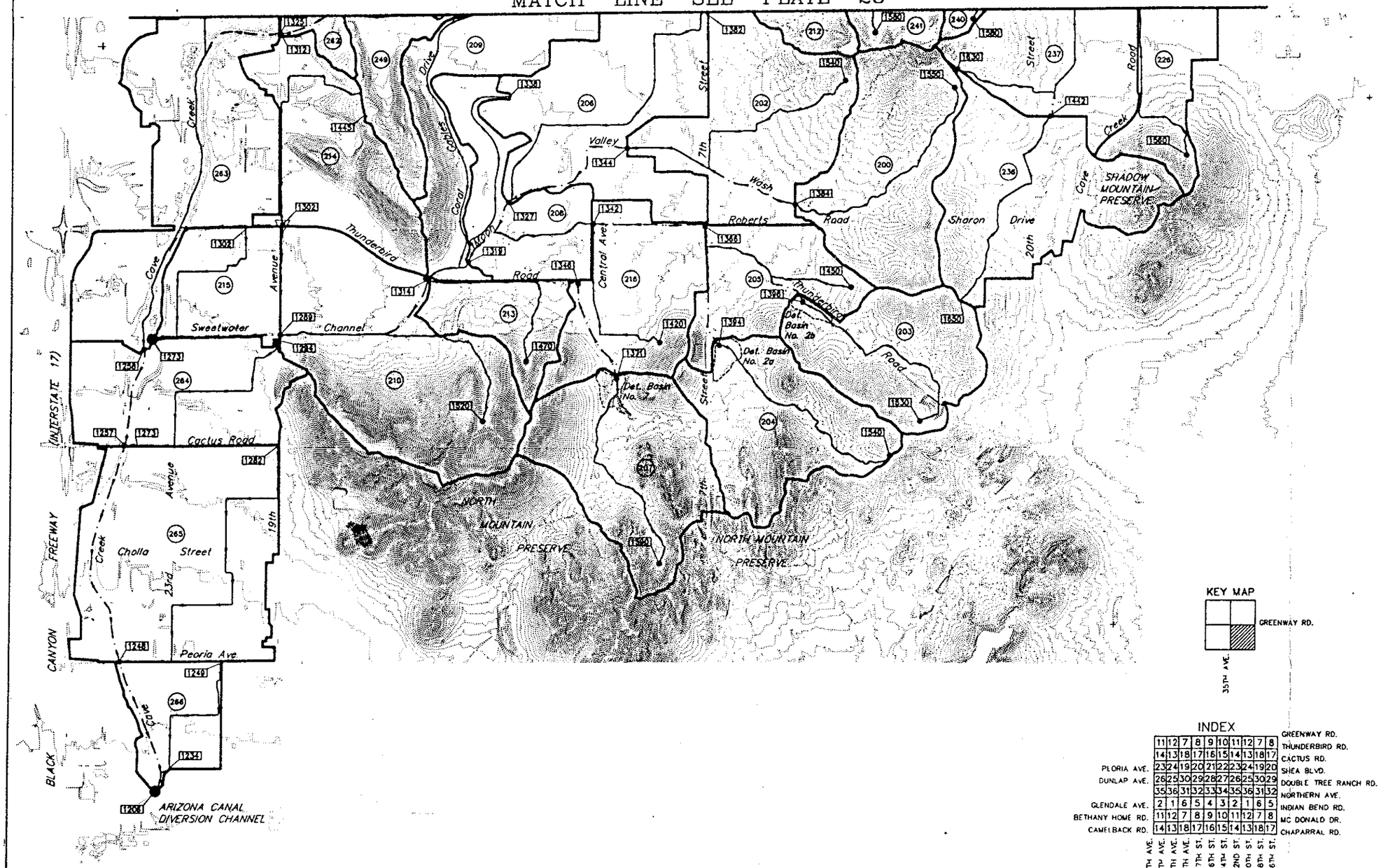
PHOENIX, ARIZONA 85017
(602) 242-5588

N

SCALE
1200 600 0 1200 2400
FEET

T.3N., R.2E. | T.3N., R.3E.

MATCH LINE SEE PLATE 23



INDEX

	35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.	
	11	12	7	8	9	10	11	12	7	8		GREENWAY RD.
	14	13	18	17	16	15	14	13	18	17		THUNDERBIRD RD.
PEORIA AVE.	23	24	19	20	21	22	23	24	19	20		CACTUS RD.
DUNLAP AVE.	26	25	30	29	28	27	26	25	30	29		SHEA BLVD.
	35	36	31	32	33	34	35	36	31	32		DOUBLE TREE RANCH RD.
GLENDALE AVE.	2	1	6	5	4	3	2	1	6	5		NORTHERN AVE.
BETHANY HOME RD.	11	12	7	8	9	10	11	12	7	8		INDIAN BEND RD.
CAMELBACK RD.	14	13	18	17	16	15	14	13	18	17		MC DONALD DR.
												CHAPARRAL RD.

DATE FLOWN: 11-15-1990, 1-18-1991, 2-12-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE CREEK HYDROLOGY STUDY

LEGEND

- Drainage Basin Boundary
- (140) Drainage Sub-Basin Number
- Major Drainage Basin Concentration Point
- Drainage Sub-Basin Concentration Point
- Flow Diversion Point
- Routing Flow Path
- Length of Longest Watercourse
- [1514] Elevation Along Flow Path

FLOW ROUTING MAP
FUTURE CONDITIONS

PLATE 22
MAY 21, 1993

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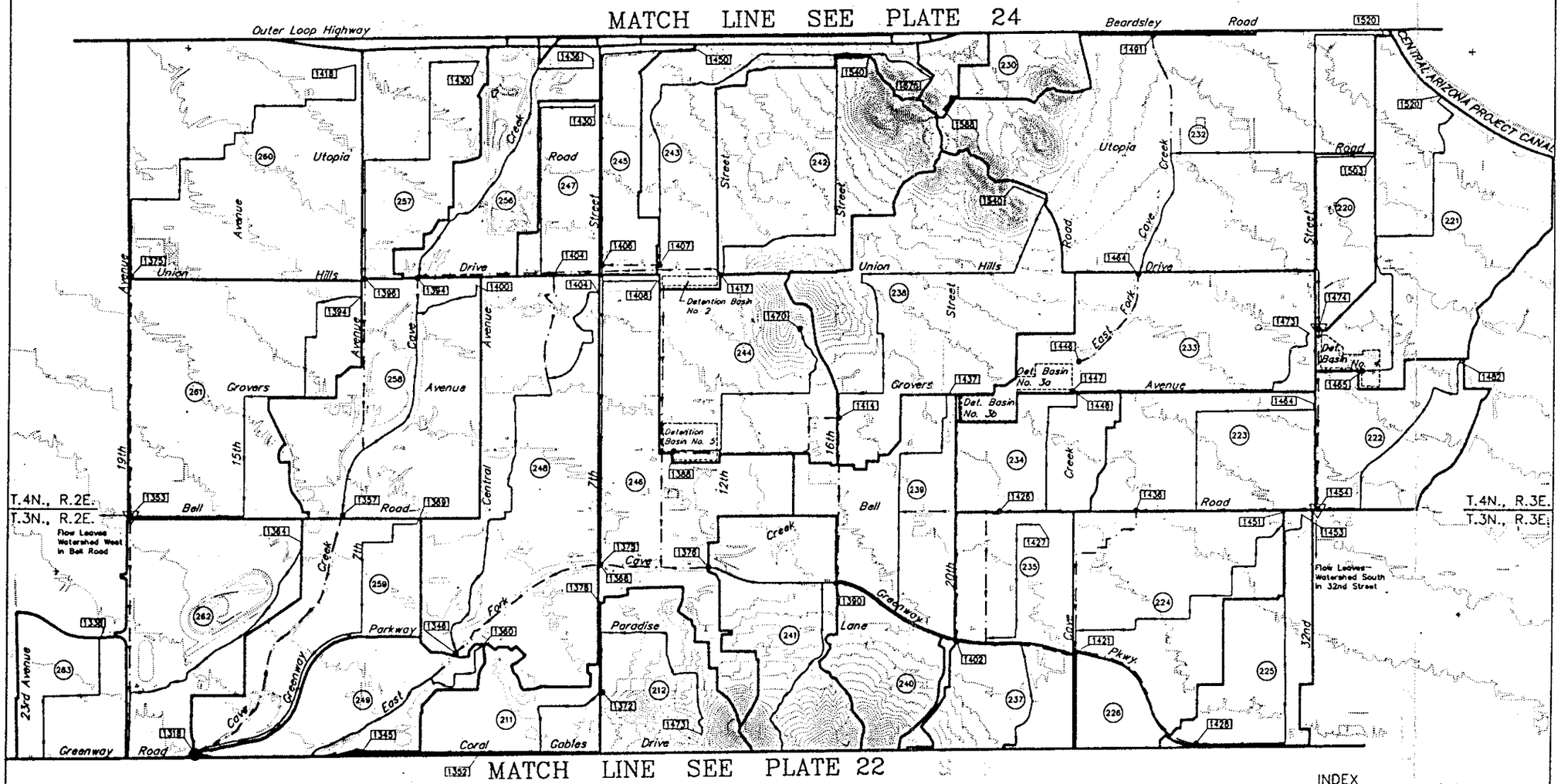
4550 N. BLACK CANYON HWY., SUITE C
PHOENIX, ARIZONA 85017
(602) 242 5588

N

SCALE
1200 600 0 1200 2400
FEET

CONTOUR INTERVAL 10 FEET

T.4N., R.2E. | T.4N., R.3E.



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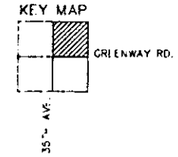

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35	36	31	32	33	34	35	36	31	32	DYNAMITE BLVD.
2	1	6	5	4	3	2	1	6	5	JOMAX RD.
11	12	7	8	9	10	11	12	7	8	HAPPY VALLEY RD.
14	13	18	17	16	15	14	13	18	17	PINNACLE PEAK RD.
23	24	19	20	21	22	23	24	19	20	DEER VALLEY RD.
26	25	30	29	28	27	26	25	30	29	BEARDSLEY RD.
35	36	31	32	33	34	35	36	31	32	UNION HILLS DR.
2	1	6	5	4	3	2	1	6	5	BELL RD.
										GREENWAY RD.
35TH AVE.	27TH AVE.	19TH AVE.	7TH AVE.	7TH ST.	16TH ST.	24TH ST.	32ND ST.	40TH ST.	48TH ST.	56TH ST.

DATE FLOWN: 11-15-1990, 1-18-1991 & 2-15-1991

T.3N., R.2E. | T.3N., R.3E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ACDC/ADMS PHASE 1 CAVE 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
MAY 21, 1993

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PHOENIX, ARIZONA 85017
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SCALE
1200 600 0 1200 2400
FEET

CONTOUR INTERVAL 10 FEET

SECTION IX

HEC-1 Data Files on Computer Diskette