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Colorado Springs  
Denver

Engineering  
Planning  
Surveying

# **MASTER DEVELOPMENT DRAINAGE PLAN**

## **FOR**

## **PEREGRINE**

## **(THE DRY CREEK DRAINAGE BASIN)**

DECEMBER, 1992

REVISED FEBRUARY, 1993

Job No. 8030.63

Prepared For:

**PEREGRINE JOINT VENTURE**

**7710 North Union Boulevard  
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Prepared by:

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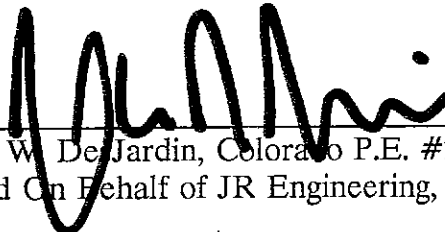


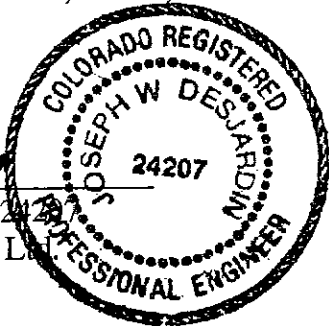
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**MASTER DEVELOPMENT DRAINAGE PLAN FOR PEREGRINE  
(THE DRY CREEK DRAINAGE BASIN)**

**ENGINEER'S STATEMENT:**

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

  
\_\_\_\_\_  
Joseph W. Desjardin, Colorado P.E. #24207  
For and On Behalf of JR Engineering, Ltd.

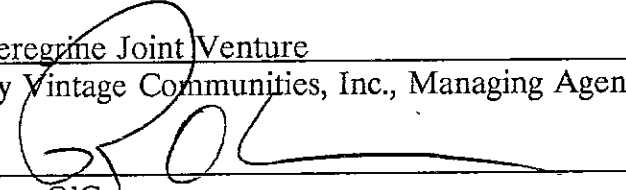


2-18-93  
\_\_\_\_\_  
Date

**DEVELOPER'S STATEMENT:**

I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: Peregrine Joint Venture  
By Vintage Communities, Inc., Managing Agent

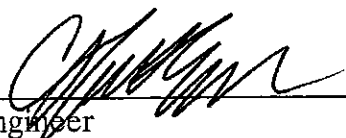
By:   
\_\_\_\_\_  
Ron O'Canna

Title: Development Manager

Address: 7710 North Union Boulevard  
Colorado Springs, CO 80920

**CITY OF COLORADO SPRINGS ONLY:**

Filed in accordance with Section 15-3-906 of the Code of the City of Colorado Springs, 1980, as amended.

  
\_\_\_\_\_  
City Engineer

3/3/93  
\_\_\_\_\_  
Date

Conditions:

# **MASTER DEVELOPMENT DRAINAGE PLAN FOR PEREGRINE (THE DRY CREEK DRAINAGE BASIN)**

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**MASTER DEVELOPMENT DRAINAGE PLAN  
FOR  
PEREGRINE  
(THE DRY CREEK DRAINAGE BASIN)**

**INTRODUCTION:**

The purpose of this report is to present the Master Development Drainage Plan for Peregrine within the Dry Creek drainage basin. The Master Development Drainage Plan illustrates the conceptual level layout and sizing of the major storm drainage improvements planned for Peregrine within the Dry Creek drainage basin including storm sewers, channels, major roadway crossing culverts, and detention ponds. This report describes the storm drainage patterns of the project area, the design criteria used, and the analysis that has been completed. The Master Development Drainage Plan is intended to serve as an overall guide for planning and design of the storm drainage improvements for the Dry Creek drainage basin within Peregrine and as the basis for the more detailed preliminary and final drainage reports that will be done as the various portions of the project are developed in the future.

"A Study of the Dry Creek Drainage Basin" by KKBNA, Inc., revised February 1985 is the approved Drainage Basin Planning Study for Dry Creek. This Master Development Drainage Plan supersedes the approved Drainage Basin Planning Study for the Peregrine project. The major differences in the two studies include 1) the main channel of Dry Creek will not be diverted to improved Woodmen Road through Peregrine; 2) regional detention ponds will be provided for the Peregrine development; and 3) the hydrology has been updated based on current criteria included in the City of Colorado Springs and El Paso County "Drainage Criteria Manual" dated October 1987, revised November 1991.

**GENERAL PROJECT LOCATION & DESCRIPTION:**

Peregrine is a 1,112 acre multi-use planned development within Sections 2, 3, 4, 10, and 11, Township 13 South, Range 67 West of the Sixth Principal Meridian, in the City of Colorado Springs, Colorado. The project is bounded by the United States Air Force Academy on the north, Pike National Forest on the west, Oak Valley Ranch and Ptarmigan Valley on the south, and Mount Woodmen Estates and unplatted unincorporated El Paso County on the east. The main entrance to the project is on Woodmen Road about 2.5 miles west of Interstate Highway 25. The Sisters of Mount Saint Francis Convent has retained ownership of approximately 110 additional acres located in the center of the project. The Vicinity Map included in the Appendix illustrates the general location of Peregrine.

The land uses currently planned for Peregrine include single family residential with densities between 0 and 7 dwelling units per acre, multi-family residential with densities between 7 and 20 dwelling units per acre, office/retail, public schools, and parks and open space. Areas within the project that do not have a land use identification will be open space. The areas planned for these different land uses are shown on the Developed Conditions Basin Map included in the Appendix. This land use information was obtained from the proposed amendment to the Peregrine Master Plan. The "Peregrine Master Plan" was approved by City Council on July 10, 1984 per Resolution 227-84.

**EXISTING DRAINAGE BASIN DESCRIPTION:**

Dry Creek is a west bank tributary that joins Monument Creek about one-half mile south of Woodmen Road. The upper reach of the basin, west of Peregrine, is very steep mountainous terrain. The central reach of the basin consists of moderately sloping valleys and steep foothills. The lower reach of the basin, east of Peregrine, is almost fully developed.

Approximately 750 acres of Peregrine and the approximately 110 acres that have been retained under the ownership of the Sisters of Mount Saint Francis Convent are within the central reach of the Dry Creek basin. The remainder of Peregrine, the northeasterly corner, is within the North Basin. The area included in this study includes only the upper and central reaches of the Dry Creek Basin that are tributary to the easterly boundary of Peregrine near Woodmen Road. The study area includes approximately 2.22 square miles of the Dry Creek Drainage Basin upstream of the east boundary of Peregrine (Design Point 32). The study area slopes generally from west to east, from elevation 9,450 at the westerly basin boundary to elevation 6,605 at the easterly boundary of Peregrine.

The mountainous terrain is a dense forest of Lodgepole Pine, Douglas Fir, and Ponderosa Pine. The foothill areas are covered primarily with Gambel Oak and scattered stands of Ponderosa Pine. The valleys are covered with natural pasture and range grasses. There are many rock outcrops throughout the area. There are two existing abandoned water supply reservoirs, two existing apparent erosion control ponds, and an existing stockpond within the study area. The only existing development within the study area includes old Woodmen Road and Centennial Boulevard, new Woodmen Road, and Dutchrock Road in Peregrine; a few single-family residences in Peregrine; and the roadways and buildings within the Sisters of Mount Saint Francis Convent.

Soils information was obtained from "Soil Survey of El Paso County Area, Colorado", June 1981, prepared by the Soil Conservation Service; and a letter from the National Forest Service to KKBNA, Inc. dated December 20, 1983. The natural soils of the mountainous areas are generally shallow gravels over granite bedrock from the Sphinx and LeGault soil classifications. These soils classifications are in Hydrologic Soil Group D. The natural soils of the foothill and valley areas are generally deeper gravels and sandy loams over sandstone bedrock from the Chaseville-Midway complex, Jarre gravelly sandy loam, Jarre-Tecolote complex, Kettle-rock outcrop complex, Kutch Clay loam, Perrypark gravelly sandy loam, Stapleton sandy loam, Travessilla-rock outcrop complex,

and Ustic Torrfluents loamy soils classifications. The majority of these soils classifications are in Hydrologic Soil Group B, and the remainder (very small portion of study area) are in Hydrologic Soil Groups A, C, and D. The natural soils for the study area are illustrated on the General Soils Map included in the Appendix. A Soils Classification Summary Table is also included in the Appendix.

As mentioned previously, "A Study of The Dry Creek Drainage Basin" by KKBNA, Inc., revised February 1985 is the approved Drainage Basin Planning Study. The floodplain delineated in that previous report has been designated by the Colorado Water Conservation Board for regulation and adopted by the Federal Emergency Management Agency for the flood insurance purposes. The Flood Insurance Rate Maps for Dry Creek dated March 2, 1989 are included in the Appendix. The existing floodplain information from the Flood Insurance Rate Maps is also approximately shown on the Existing Condition Basin Map that is included in the Appendix.

Based on cursory observation, there are no apparent existing wetlands within the project area. A final determination of the existence of wetlands should be made by the Corps of Engineers or consultants specializing in wetlands in the future as Peregrine develops. In the event wetland areas are identified within the project area in the future, any development proposed for those wetland areas will be processed through the U.S. Army Corps of Engineers 404 Permit process for approval.

#### **DESIGN CRITERIA:**

The Master Development Drainage Plan for the Dry Creek Drainage Basin within Peregrine was prepared in general conformance with the City of Colorado Springs and El Paso County "Drainage Criteria Manual" dated October 1987, revised November 1991. The Soil Conservation Service TR-20 "Computer Program for Project Formulation - Hydrology" dated September 1983 was used to model the study area. This edition of TR-20 includes the Soil Conservation Service synthetic unit hydrograph, the modified attenuated-kinematic method for stream reach routing, and the storage-indication

reservoir routing method. The drainage sub-basins and design points used are the same as those in the approved Drainage Basin Planning Study where feasible.

The initial storm, 10-year return frequency, and the major storm, 100-year return frequency, have been analyzed. The 24-hour storm duration was used. Design rainfall depth information was obtained from the National Oceanic & Atmospheric Administration "NOAA Atlas 2, Precipitation-Frequency Atlas of the Western United States, Volume III - Colorado", 1973. The precipitation-frequency maps for the 10-year, 24-hour storm and the 100-year, 24-hour storm are included in the Appendix. The total rainfall depths for the study area are 3.0 inches for the 10-year, 24-hour storm and 4.4 inches for the 100-year, 24-hour storm. The standard Soil Conservation Service 24-hour Type IIA rainfall distribution was used.

Basin parameters for use in the TR-20 modeling were selected or calculated based on Soil Conservation Service criteria and criteria in the Colorado Springs and El Paso County "Drainage Criteria Manual" dated October 1987, revised November 1991. Area, height, and length information for the sub-basins within Peregrine was measured on the Existing Condition Basin Map and Developed Condition Basin Map. This information for the sub-basins outside Peregrine was measured on the Overall Basin Map. These maps are included in the back pockets.

Antecedent Moisture Condition II was used in this study, as recommended by the Soil Conservation Service, for all storm frequencies and durations throughout Colorado. Runoff Curve Numbers were selected from Soil Conservation Service tables based on hydrologic soil group, cover condition, or land use. A time of concentration was calculated for each sub-basin including overland flow and travel time based on normal depth flow for average channel conditions for each sub-basin.

The 2-hour storm duration using Antecedent Moisture Condition III was also analyzed in accordance with the City of Colorado Springs and El Paso County "Drainage Criteria Manual" dated October, 1987. Peak discharges for this condition were unreasonably high



and therefore disregarded. This result was due to the use of Antecedent Moisture Condition III in a "semi-arid" region like Colorado. Antecedent Moisture Condition III is intended for use only in very moist regions like coastal areas.

Stream reach routing coefficients were calculated using Soil Conservation Service criteria for equivalent triangular cross-sections that represent average stream conditions for each sub-basin reach. Stage/storage information for reservoir routing was calculated based on existing and proposed detention pond grading shown on the Existing Condition Basin Map and the Developed Condition Basin Map. Stage/discharge information for reservoir routing was calculated using inlet control for culvert outfalls. The detailed calculations for the basin parameters are included in the Appendix.

Conceptual sizing of the major channel and storm sewer improvements for Peregrine shown on the Developed Condition Basin Map was based on normal depth flow calculations. Conceptual sizing of major culverts was based on inlet control.

#### **HYDROLOGIC ANALYSIS:**

The basic concept of storm drainage improvements for the Dry Creek Drainage Basin of Peregrine is for Peregrine to construct its own drainage facilities that will limit runoff to existing peak discharge rates at the easterly boundary of the Peregrine development. "Existing peak discharge rates" consider existing roadways and existing Sisters of Mount Saint Francis Convent development, but do not include any Peregrine development or improvements. This concept is outlined in the "Drainage Agreement" between Peregrine Joint Venture and North American Homes, Inc. dated August 28, 1987. This "Drainage Agreement" was accepted by the City of Colorado Springs in Resolution No. 136-87 dated September 8, 1987. Both of these documents are included in the Appendix.

The existing condition of the study area was modeled with TR-20 using current design criteria. A 10-year peak discharge of 359 cubic feet per second and a 100-year peak discharge of 1005 cubic feet per second were calculated for existing conditions at Design

Point 32 at the easterly boundary of Peregrine in this analysis. The existing condition analysis included routing runoff through the existing abandoned water storage reservoir at Design Point 12 and the existing erosion control ponds at Design Point 14 and Design Point 24 (see Existing Condition Basin Map). No evidence of major cracking, breaching, settlement, or erosion of the embankments of the existing ponds and reservoir was identified during cursory field observation. The existing abandoned water supply reservoir near Design Point 8 was not used in the hydrologic routing since it is off-channel and the existing stockpond near Design Point 20 was not used in the hydrologic modeling because of its small volume.

The fully developed condition was modeled with regional detention ponds at Design Point 8, at Design Point 12, and Design Point 32. The existing erosion control ponds at Design Point 14 and Design Point 24 were not considered for the fully developed condition because of small storage volumes. These existing erosion control ponds will most likely be removed when the adjacent areas are developed in the future. The regional detention ponds have been sized to reduce fully developed 10-year and 100-year peak discharge rates at the easterly boundary of Peregrine (Design Point 32) to below historic levels. These regional detention ponds decrease the fully developed 10-year peak discharge to 350 cubic feet per second, and the fully developed 100-year peak discharge to 716 cubic feet per second at Design Point 32. Historic peak discharge at Design Point 32 is calculated at 359 cfs and 1005 cfs for the 10-year and 100-year storm events.

The land uses proposed adjacent to the regional detention pond at Design Point 32 do not allow the pond to be large enough to provide all the detention needed for the area directly tributary to it. The regional detention ponds at Design Point 8 and Design Point 12 were sized to reduce developed peak discharge rates to less than existing levels to compensate for this limited storage volume of the regional detention pond at Design Point 32. This results in developed peak discharges being less than existing for channel reaches between these two upper ponds and Design Point 32. The regional detention ponds will be constructed on an as needed basis as Peregrine develops to maintain peak

discharge rates below historic at the east boundary of Peregrine throughout the course of the project. Interim private detention ponds may be required to service individual development areas until the regional detention ponds are constructed.

Preliminary development sequences anticipate that Area 4B will be the first development to be constructed. Woodmen Road will be final designed and constructed to the entrance of Area 4B and will be rough-cut to the connection with Centennial Boulevard. The regional detention pond at Design Point 12 will be final designed and constructed at this time. Regional Detention Pond No. 8 will be graded and an adequate outfall will be constructed. Final construction of Detention Pond No. 8 facilities will occur when Woodmen Road improvements are extended.

Regional Detention Pond No. 32 will be graded and a temporary outfall and spillway will be constructed when Phase I of Planning Area 6C is developed. Planning Area 6C is scheduled to be constructed shortly after Area 4B. Final outfall facilities and the proposed channel to the Woodstone Subdivision will be constructed as development proceeds up the South Valley and Dry Creek Basins. It will be necessary for the Preliminary and Final Drainage Reports for these future developments to analyze and provide recommendations as to when these final improvements will be required.

A summary table of the peak discharges for all the design points is included in the Appendix. The output from the TR-20 hydrology analysis is also included in the Appendix.

**CONCEPTUAL DRAINAGE IMPROVEMENT DESCRIPTION:**

The Developed Condition Basin Map illustrates the conceptual layout and sizing of the regional detention ponds, major storm sewers, major channels, and major culvert crossings. The storm sewers have been conceptually sized for the initial storm discharge (10-year return frequency), with excess flow during the major storm (100-year return frequency) to be conveyed in the roadways. This concept will be verified during future

final design of the storm sewers. The regional detention ponds, the open channels, and the culvert crossings have been conceptually sized for the major storm discharge.

The conceptual sizes of the regional detention ponds and channels consider freeboard. Future final design of these facilities will include more accurate calculation of freeboard requirements. Future final design of the regional detention ponds will also include design of emergency overflow spillways. Adequate stabilization and erosion protection improvements for pond embankments; pond outlets and spillways; and outfalls of storm sewers, culverts, and channels will also be designed in the future.

Drop structures or check dams will be designed to limit peak flow velocities to non-erosive levels for channels which may require stabilization. Where this is not practical, erosion protection will be provided where peak flow velocities are erosive. Improved natural channels will be designed to limit flow velocities to non-erosive levels. Concrete-lined channels (where needed) will be designed to limit peak flow velocities to approximately 20 feet per second. Low flow velocities in channels will also be considered during final design to limit maintenance requirements for sedimentation to practical levels.

It is planned for the regional detention ponds to also serve as open space/recreational facilities. Maintenance access will be provided to the bottom of all detention ponds. It is intended that all regional detention ponds and major channels will be owned and maintained by the City of Colorado Springs. All proposed multi-use facilities such as the regional detention ponds and maintenance accesses will be subject to review and approval of the City of Colorado Springs Public Works Department and Parks Department (and any other appropriate City departments). Easements or right-of-ways will be provided for all regional detention ponds and major channels within Peregrine. Easement widths may be increased for reaches of the major channels that are not improved to compensate for erosion or migration that is anticipated.

Peregrine representatives have discussed the concepts and conceptual drainage improvements proposed in this Master Development Drainage Plan with the Sisters of Mount Saint Francis Convent. Letters that document this discussion are included in the Appendix. The following briefly describes the proposed conceptual major drainage improvements in the Dry Creek Drainage Basin of Peregrine. All conceptual drainage improvements are subject to final design.

*DESIGN POINT 1 TO DESIGN POINT 2*

There will be a 42" culvert crossing of the access roadway to the single-family residential development area. The major storm excess will overtop the access road at this culvert. Flow depth will be limited to 12" at the gutter line of the roadway per City criteria. The natural channel immediately adjacent to the single-family development area may require stabilization to limit flow velocities and control erosion.

*DESIGN POINT 2 TO DESIGN POINT 3*

The natural channel through the single-family residential development area may require stabilization to limit flow velocities and control erosion.

*DESIGN POINT 5 TO DESIGN POINT 6*

The natural channel immediately adjacent to and through the single-family residential development area may require stabilization to limit flow velocities and control erosion.

*DESIGN POINT 8 (DETENTION POND NO. 8)*

The confluence of the main channel and the south fork of Dry Creek occurs at Design Point 8. The proposed alignment of Woodmen Road will cross Dry Creek at this location, which will require the construction of a large roadway embankment. This area will be used as a point of storm water detention (Detention Pond No. 8). This will reduce developed

discharges to levels much below historic, through the downstream channel reaches. It is proposed to excavate materials upstream of Design Point 8 to provide for the necessary material for the road fill, and maximize the detention volume of the proposed pond. Pond improvements will include a 36" RCP principal outlet, emergency spillway over Woodmen Road, and necessary energy dissipators. Pond volume will be approximately 28.6 acre-feet during the 100-year event. All pond improvements are subject to final design.

#### *DESIGN POINT NO. 8 TO DESIGN POINT 9*

No improvements to the natural channel between these design points are proposed since the construction of regional detention pond will reduce developed peak discharges to well below historic levels. However detailed analysis will be required during the Preliminary and Final Drainage Reports to verify stable channel conditions still exist when the adjacent areas develop.

#### *DESIGN POINT 16 TO DESIGN POINT 12*

The natural channel through the single-family residential area will be intercepted and replaced by a storm sewer system for the initial storm with provision for the major storm excess in the roadway. Roadway flow depths will be limited to 12" at the gutter line per City criteria. Alternatively an improved natural channel or other acceptable facility may be utilized to convey developed discharges. The existing abandoned water storage reservoir will be rehabilitated as needed for the regional detention pond at Design Point 12. The pond improvements will include a new outlet and emergency spillway. The new outlet will extend under Woodmen Road. The pond will be designed for a storage volume of approximately 23.1 acre feet during the 100-year peak discharge.

*DESIGN POINT 12 TO DESIGN POINT 15*

No improvement of the natural channel through the Sisters of Mount Saint Francis convent property, between Design Point 12 and Design Point 15, will be necessary since the regional detention pond at Design Point 12 will reduce developed peak discharges well below existing levels. If the Sisters of Mount Saint Francis convent property is developed more in the future, the Sister's will be responsible for increased runoff generated by their development, or the regional detention ponds within Peregrine will be designed to manage this increased runoff at the final design stage. Less than historic discharge will be maintained at the easterly boundary of Peregrine.

*DESIGN POINT 18 TO DESIGN POINT 20*

The natural channel through the multi-family residential area will be intercepted and replaced by a storm sewer system for the initial storm with provision for the major storm excess in the roadway. Roadway flow depths will be limited to 12" at the gutter line per City criteria. Alternatively an improved natural channel or other acceptable facility may be utilized to convey developed discharges.

*DESIGN POINT 20 TO DESIGN POINT 21*

An existing concrete box culvert begins at Design Point 20. It extends under existing Orchard Path Road and Elementary School No. 12. The box culvert will be extended to Design Point 21. Alternatively, a concrete channel or storm sewer to convey the initial storm with provision for major storm excess in roadways may be utilized through this reach to convey developed discharges. A culvert crossing will be required at South Valley Road, either by extension of the existing box culvert or other improved facility.

*DESIGN POINT 22 TO DESIGN POINT 25*

The natural channel will be replaced with a 36" RCP storm sewer system for the initial storm with provision for major storm excesses in South Valley Road. Flow depth will be limited to 12" at the gutter line for the major storm per City criteria. The existing erosion control pond will be removed.

*DESIGN POINT 25 TO DESIGN POINT 26*

The natural channel will be improved with a buried rip-rap channel (or other improved facility). The channel will be located along the south side of Orchard Path Road through the single-family development areas. There will be a regional detention pond at Design Point 32. The pond improvements will include an outlet and emergency spillway. The pond will be designed for a storage volume of approximately 14.9 acre feet during the 100-year peak discharge. All pond improvements are subject to final design.

*DESIGN POINT 27 TO DESIGN POINT 29*

No improvement of the natural channel through the Sisters of Mount Saint Francis convent property is necessary since no Peregrine property to be developed is tributary to this reach of channel.

*DESIGN POINT 29 TO DESIGN POINT 31*

Peregrine has already constructed a storm sewer system in Woodmen Road for a 5-year initial storm. The existing storm sewer was designed based on the "Final Drainage Plan for Woodmen Road in Peregrine Development, Colorado Springs, Filing No. 1" approved by the City of Colorado Springs on June 23, 1987, with a 5-year peak discharge of 48 cubic feet per second at Design Point 31. A 10-year peak discharge of 61 cubic feet per second was calculated in this Master Development Drainage Plan for the initial storm at Design point 31, based on current City criteria. Major storm



excess overflows Orchard Path at Design Point 29, and flows overland across the school site and the neighborhood park site south of Woodmen Road. At Design Point 30 the major storm excess enters Woodmen road and flows in the roadway to Design Point 31. The FEMA Flood Insurance Rate Maps were revised March 2, 1989 based on this overflow condition. At Design Point 31 storm sewer inlets will be provided in the future in Woodmen Road to drain the major storm excesses from the roadway to the proposed regional detention pond at Design Point 32. These improvements and concepts agree with the "Final Drainage Plan for Woodmen Road in Peregrine Development, Colorado Springs, Filing No. 1".

#### *DOWNSTREAM OF DESIGN POINT 32*

The existing minor storm sewer will be replaced with a concrete channel or a culvert between Design Point 32 and the beginning of the existing rip-rap channel through Woodstone. This improvement will be along the south side of Woodmen Road across approximately 525 feet of private property. The design of final improvement of this reach must be coordinated with the owner of this property at the time the improvement is made. If this improvement is constructed as part of the Peregrine project, the developer will acquire a public easement or right-of-way for the improvement from the owner of the private property. The design of this improvement must also be submitted to El Paso County for review and approval since the private property it will cross is currently not within the City of Colorado Springs.

#### **DRAINAGE IMPROVEMENT COST ESTIMATES:**

Cost estimates for the drainage improvements for Peregrine are not included in the Master Development Drainage Plan since Peregrine is responsible to construct its own major drainage improvements and will not be subject to normal drainage fees. This policy is established in the "Drainage Agreement" between Peregrine Joint Venture and

policy is established in the "Drainage Agreement" between Peregrine Joint Venture and North American Homes, Inc. dated August 28, 1987, and accepted by the City of Colorado Springs in Resolution No. 136-87 dated September 8, 1987. Since there will be no drainage fees for Peregrine, there will be no City Reimbursement for construction of public facilities.

**SUMMARY:**

This Master Development Drainage Plan for the Dry Creek Drainage Basin within Peregrine was prepared in general conformance with the City of Colorado Springs and El Paso County "Drainage Criteria Manual" dated October, 1987, revised November, 1991. Regional detention ponds will be provided to limit runoff to below existing peak discharge rates. The drainage improvements (storm sewers, roadways, channels, roadway crossing culverts, and regional detention ponds) for Peregrine will be designed to minimize property damage during the major design storm peak discharge. The drainage improvements will be designed and constructed in conformance with the current (at the time of the improvement) City of Colorado Springs and El Paso County "Drainage Criteria Manual", and City of Colorado Springs Department of Public Works "Standard Specifications".

The proposed drainage improvements identified in this Master Development Drainage Plan are conceptual only, intended to guide future stages of planning and design for the individual development parcels. Final locations, improvement types, and sizes will be determined during preliminary and final design of the individual development parcels. It is anticipated that other more localized drainage improvements will also be identified when the Preliminary and Final Drainage Reports are prepared for the individual development parcels.

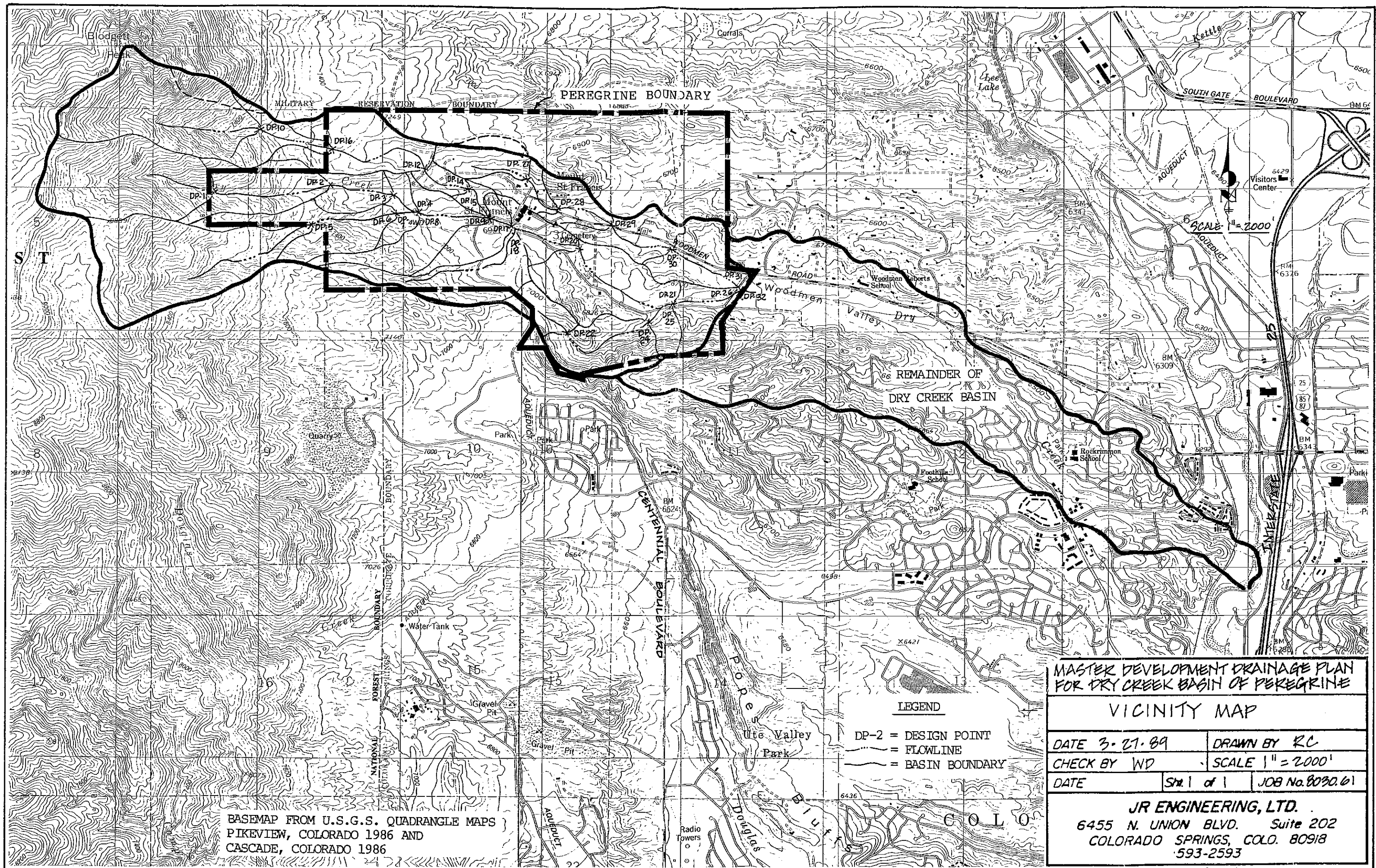
The major channel improvements planned will modify the existing floodplain that has been designated by the Colorado Water Conservation Board for regulation and by the Federal Emergency Management Agency for flood insurance purposes. As the individual

compliance with the Floodplain Management provisions of the City of Colorado Springs Subdivision Ordinance, and will be processed through the Federal Emergency Management Agency to obtain Letters of Map Revision for the modifications of the floodplain.

## **APPENDICES**

## **I. VICINITY MAP**

7  
13



BASEMAP FROM U.S.G.S. QUADRANGLE MAPS }  
PIKEVIEW, COLORADO 1986 AND  
CASCADE, COLORADO 1986

- LEGEND**
- DP-2 = DESIGN POINT
  - = FLOWLINE
  - = BASIN BOUNDARY

**MASTER DEVELOPMENT DRAINAGE PLAN  
FOR DRY CREEK BASIN OF PEREGRINE**

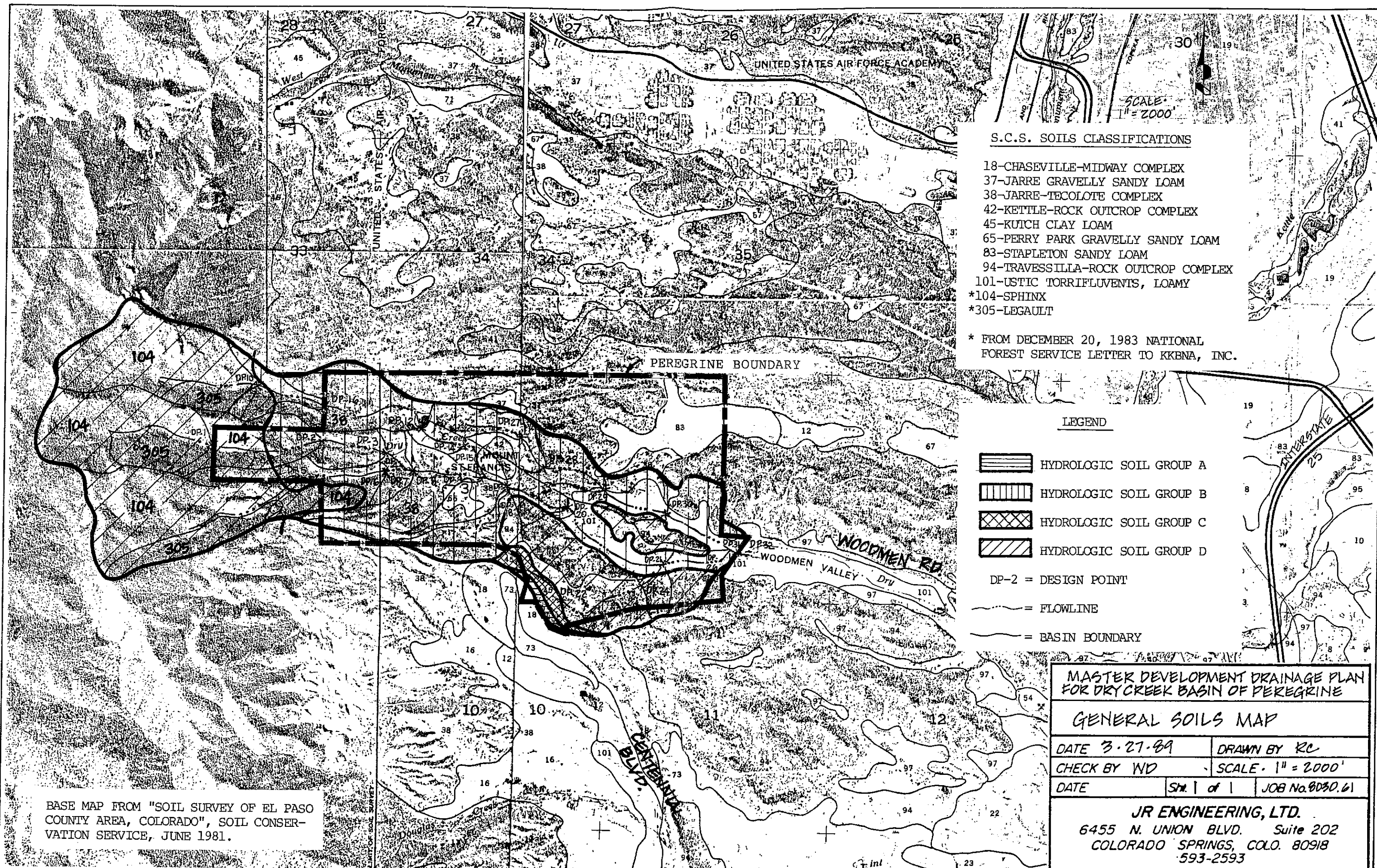
**VICINITY MAP**

DATE 3-21-89	DRAWN BY RC
CHECK BY WD	SCALE 1" = 2000'
DATE	Sheet 1 of 1 JOB No. 8030.61

**JR ENGINEERING, LTD.**  
6455 N. UNION BLVD. Suite 202  
COLORADO SPRINGS, COLO. 80918  
593-2593

## **II. SOILS MAP / SOILS SUMMARY**



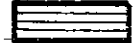







**S.C.S. SOILS CLASSIFICATIONS**

- 18-CHASEVILLE-MIDWAY COMPLEX
- 37-JARRE GRAVELLY SANDY LOAM
- 38-JARRE-TECOLOTE COMPLEX
- 42-KETTLE-ROCK OUTCROP COMPLEX
- 45-KUTCH CLAY LOAM
- 65-PERRY PARK GRAVELLY SANDY LOAM
- 83-STAPLETON SANDY LOAM
- 94-TRAVESSILLA-ROCK OUTCROP COMPLEX
- 101-USTIC TORRIFLUENTS, LOAMY
- \*104-SPHINX
- \*305-LEGAULT

\* FROM DECEMBER 20, 1983 NATIONAL FOREST SERVICE LETTER TO KKBNA, INC.

**LEGEND**

-  HYDROLOGIC SOIL GROUP A
-  HYDROLOGIC SOIL GROUP B
-  HYDROLOGIC SOIL GROUP C
-  HYDROLOGIC SOIL GROUP D
- DP-2 = DESIGN POINT
-  = FLOWLINE
-  = BASIN BOUNDARY

BASE MAP FROM "SOIL SURVEY OF EL PASO COUNTY AREA, COLORADO", SOIL CONSERVATION SERVICE, JUNE 1981.

<b>MASTER DEVELOPMENT DRAINAGE PLAN FOR DRY CREEK BASIN OF PEREGRINE</b>		
<b>GENERAL SOILS MAP</b>		
DATE 3-27-89	DRAWN BY RC	
CHECK BY WD	SCALE - 1" = 2000'	
DATE	Sht. 1 of 1	JOB No. 8030.61
<b>JR ENGINEERING, LTD.</b>		
6455 N. UNION BLVD. Suite 202 COLORADO SPRINGS, CO. 80918 593-2593		



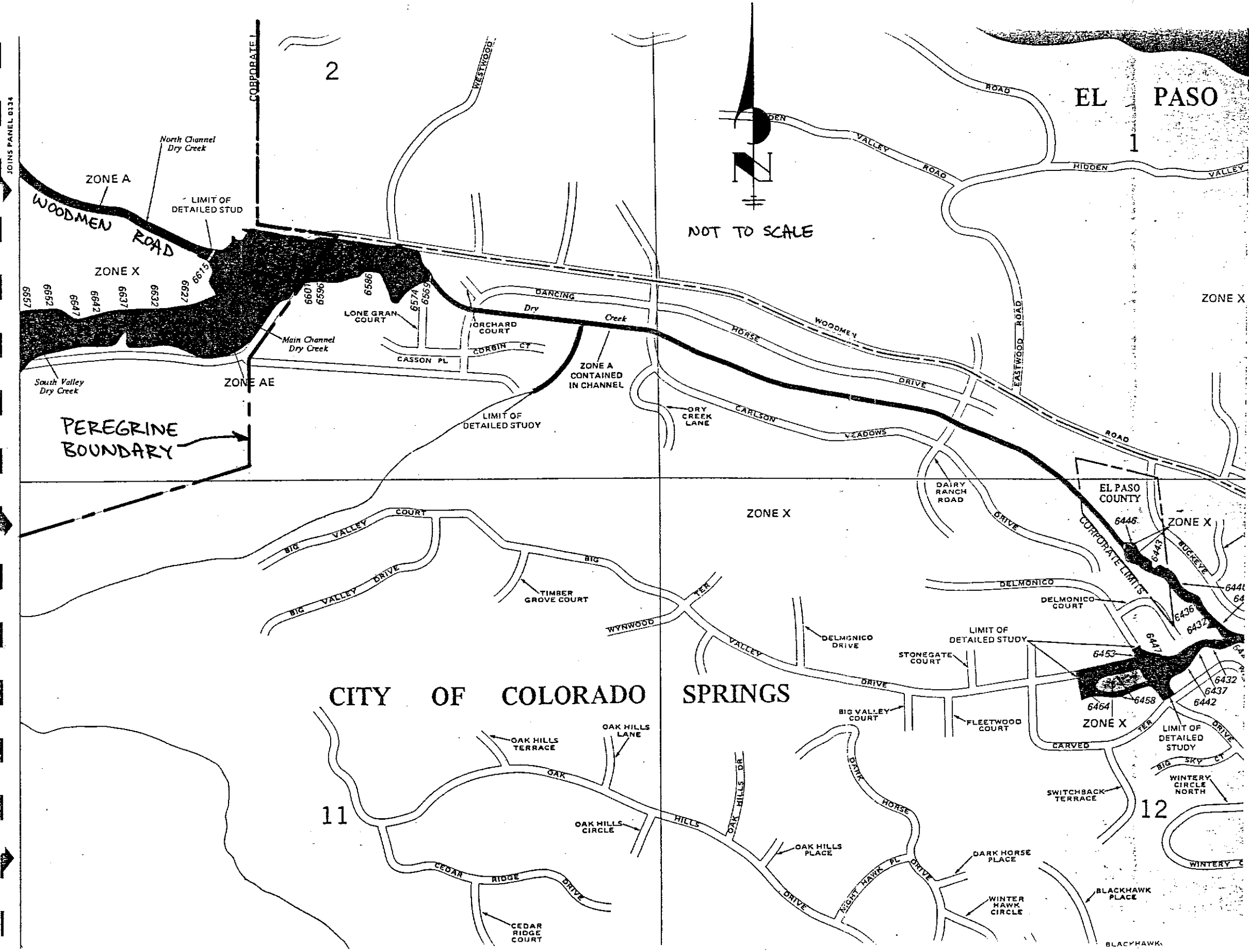
SOILS CLASSIFICATIONS SUMMARY TABLE

<u>S.C.S. Soil Classification</u>	<u>S.C.S Map Symbol</u>	<u>S.C.S. Hydrologic Soil Group</u>
Chaseville-Midway Complex	18	A
Jarre Gravelly Sandy Loam	37	B
Jarre-Tecolote Complex	38	B
Kettle-Rock Outcrop Complex	42	B
Kutch Clay Loam	45	C
Perrypark Gravelly Sandy Loam	65	B
Stapleton Sandy Loam	83	B
Travessilla-Rock Outcrop Complex	94	D
Ustic Torrifluvents, Loamy	101	B
Sphinx	*104	D
LeGault	*305	D

S.C.S. Soils Classifications from "Soil Survey of El Paso County Area, Colorado", June 1981, by the Soil Conservation Service.

\* From December 20, 1983 National Forest Service letter to KKBNA, Inc.

### **III. FLOOD INSURANCE RATE MAP**

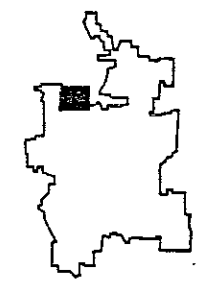


THIS SHEET IS A PORTION OF  
**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM**  
**FLOOD INSURANCE RATE MAP**

CITY OF  
**COLORADO SPRINGS,**  
**COLORADO**  
 EL PASO COUNTY

**PANEL 153 OF 625**  
 (SEE MAP INDEX FOR PANELS NOT PRINTED.)

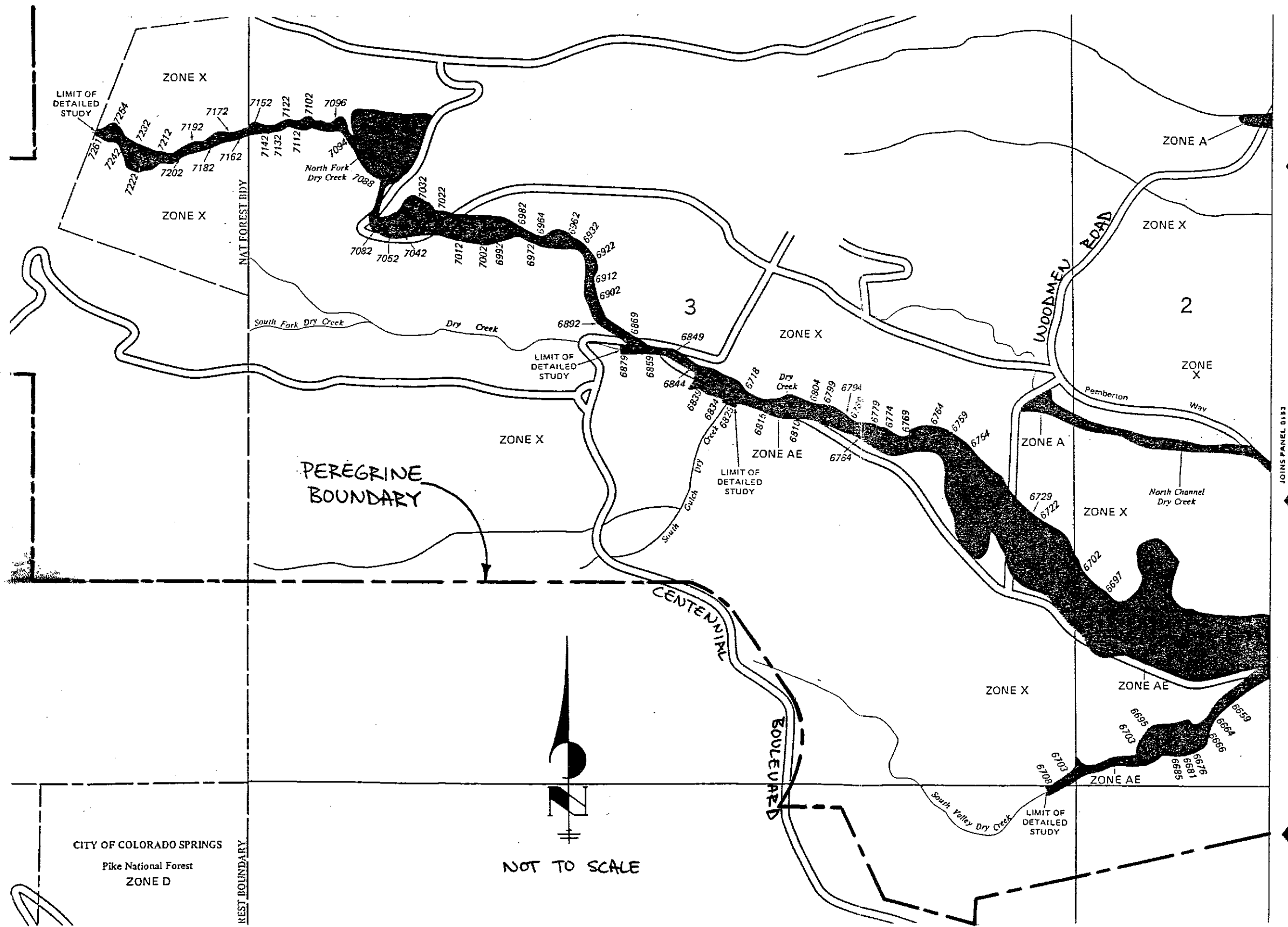


PANEL LOCATION  
**COMMUNITY-PANEL NUMBER**  
**080060 0153 C**

**MAP REVISED:**  
**MARCH 2, 1989**



Federal Emergency Management Agency



CITY OF COLORADO SPRINGS  
 Pike National Forest  
 ZONE D  
 REST BOUNDARY

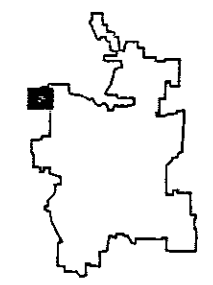
NOT TO SCALE

THIS SHEET IS A PORTION OF  
 NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
 FLOOD INSURANCE RATE MAP

CITY OF  
 COLORADO  
 SPRINGS,  
 COLORADO  
 EL PASO COUNTY

PANEL 134 OF 625  
 (SEE MAP INDEX FOR PANELS NOT PRINTED)



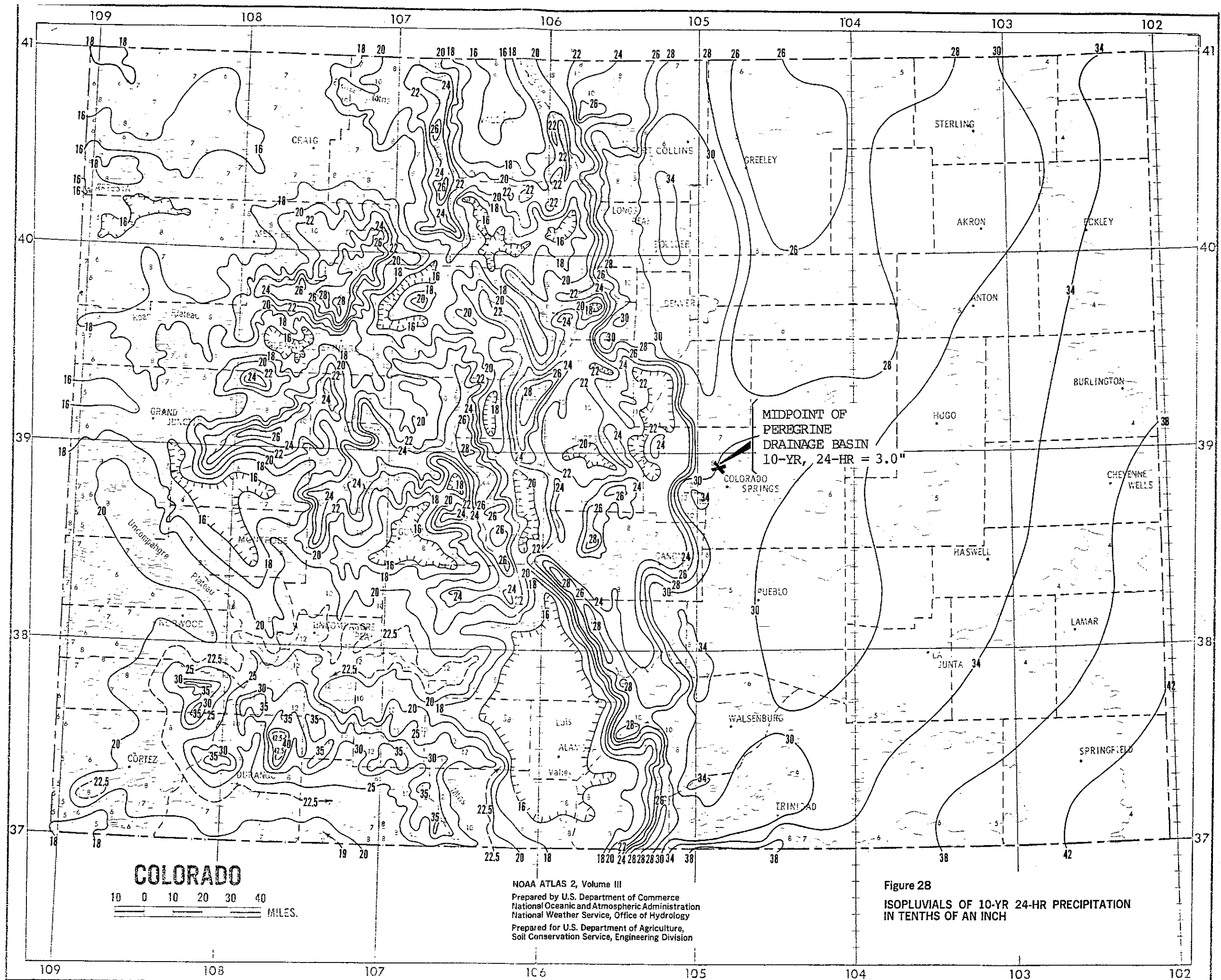
PANEL LOCATION  
 COMMUNITY-PANEL NUMBER  
 080060 0134 C

MAP REVISED:  
 MARCH 2, 1989



Federal Emergency Management Agency

#### **IV. NOAA PRECIPITATION MAPS**



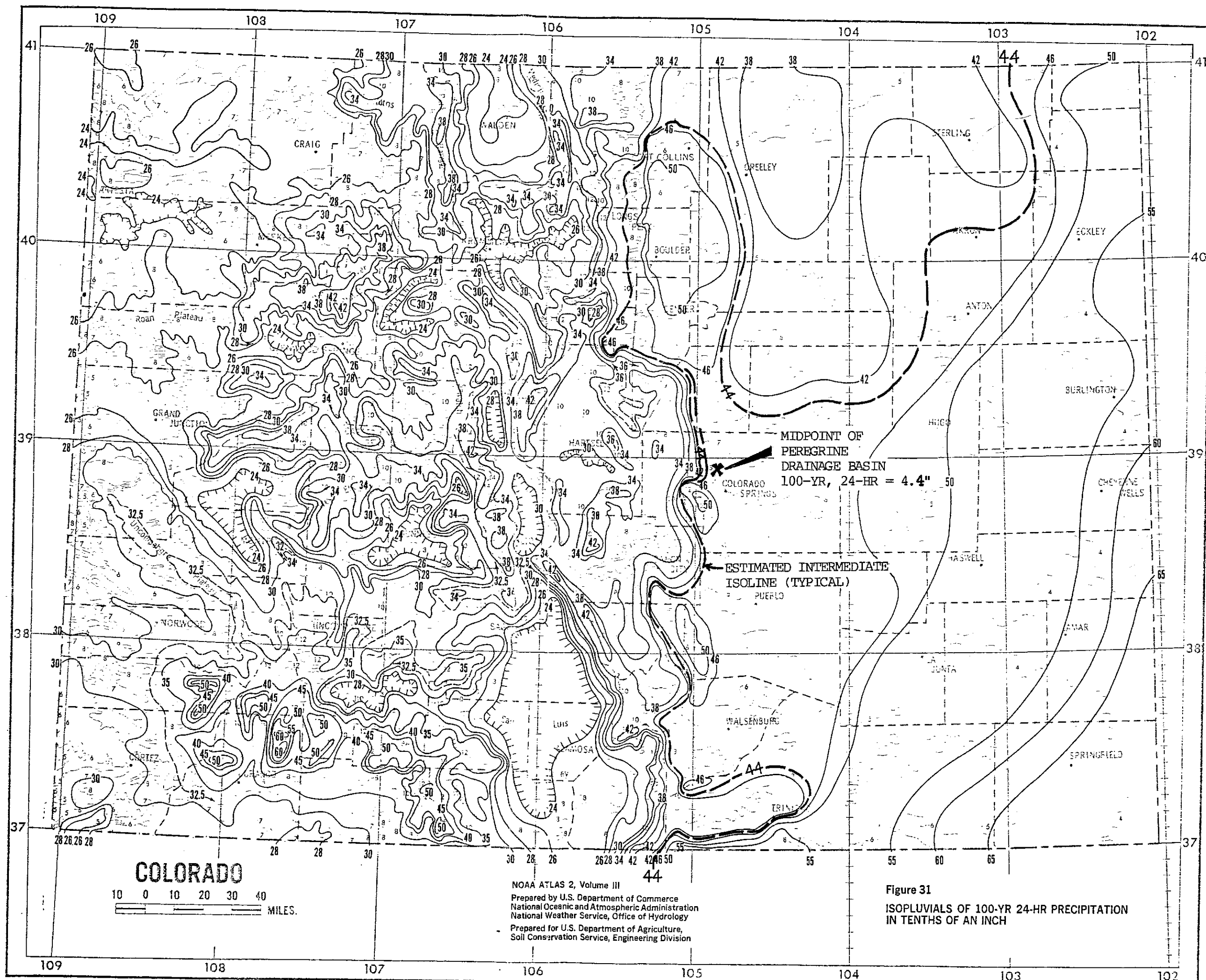
MIDPOINT OF PEREGRINE DRAINAGE BASIN  
 10-YR, 24-HR = 3.0"

**COLORADO**

10 0 10 20 30 40  
 MILES.

NOAA ATLAS 2, Volume III  
 Prepared by U.S. Department of Commerce  
 National Oceanic and Atmospheric Administration  
 National Weather Service, Office of Hydrology  
 Prepared for U.S. Department of Agriculture,  
 Soil Conservation Service, Engineering Division

Figure 28  
 ISOPLUVIALS OF 10-YR 24-HR PRECIPITATION  
 IN TENTHS OF AN INCH



MIDPOINT OF PEREGRINE DRAINAGE BASIN  
100-YR, 24-HR = 4.4"

ESTIMATED INTERMEDIATE ISOLINE (TYPICAL)

**COLORADO**  
10 0 10 20 30 40  
MILES.

NOAA ATLAS 2, Volume III  
Prepared by U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Weather Service, Office of Hydrology  
Prepared for U.S. Department of Agriculture,  
Soil Conservation Service, Engineering Division

Figure 31  
ISOPLUVIALS OF 100-YR 24-HR PRECIPITATION  
IN TENTHS OF AN INCH

## **V. SCS TYPE IIA RAINFALL DISTRIBUTION**



TABLE 5-3

STANDARD SCS 24-HOUR,  
TYPE IIA CUMULATIVE RAINFALL DISTRIBUTION  
 FOR TR-20 INPUT

Minute Intervals				Hour
15	30	45	60	
0.0005	0.0015	0.0030	0.0045	1
0.0060	0.0080	0.0100	0.0120	2
0.0143	0.0165	0.0188	0.0210	3
0.0233	0.0255	0.0278	0.0320	4
0.0390	0.0460	0.0530	0.0600	5
0.0750	0.1000	0.4000	0.7000	6
0.7250	0.7500	0.7650	0.7800	7
0.7900	0.8000	0.8100	0.8200	8
0.8250	0.8300	0.8350	0.8400	9
0.8450	0.8500	0.8550	0.8600	10
0.8638	0.8675	0.8713	0.8750	11
0.8788	0.8825	0.8863	0.8900	12
0.8938	0.8975	0.9013	0.9050	13
0.9083	0.9115	0.9148	0.9180	14
0.9210	0.9240	0.9270	0.9300	15
0.9325	0.9350	0.9375	0.9400	16
0.9425	0.9450	0.9475	0.9500	17
0.9525	0.9550	0.9575	0.9600	18
0.9625	0.9650	0.9675	0.9700	19
0.9725	0.9750	0.9775	0.9800	20
0.9813	0.9825	0.9838	0.9850	21
0.9863	0.9875	0.9888	0.9900	22
0.9913	0.9925	0.9938	0.9950	23
0.9963	0.9975	0.9988	1.0000	24

## **VI. BASIN PARAMETERS**

RAINFALL PARAMETERS:

10 YR - 24 HR. PRECIP. = 3.0" (FROM "NOAA ATLAS 2 -  
VOLUME III")

100 YR - 24 HR. PRECIP = 4.4"

STANDARD SCS 24 HR - TYPE IIA RAINFALL  
DISTRIBUTION

GENERAL PARAMETERS:

TR-20 MAIN TIME INCREMENT = 0.05 HRS.

ANTECEDENT MOISTURE CONDITION = AMC II

CN - FROM COLORADO SPRINGS/EL PASO COUNTY DRAINAGE  
CRITERIA MANUAL, OCT. 1987, REVISED NOV. 1991

OVERLAND TRAVEL TIME - FROM DRAINAGE CRITERIA MANUAL

MANNING'S - FOR TRAVEL TIME IN CHANNELS

ROUTING PARAMETERS - FROM TR-20 USER'S MANUAL

- TRIANGULAR X-SECTS. -  $X = \left(\frac{0.94}{n}\right) \left(\frac{S^{1/2}}{Z^{1/3}}\right)$ ,  $m = 1.33$

$$Z = (0.5) \frac{T_w}{d}$$

ROUGHNESS COEFFICIENTS - FROM CHOW'S "OPEN CHANNEL  
HYDRAULICS" & COLORADO SPRINGS/  
EL PASO COUNTY DRAINAGE CRITERIA  
MANUAL"

$n = 0.013$  (RCP OR CONCL. CHANNEL)

$n = 0.016$  (ROADWAY)

$n = 0.060$  (PLAINSTREAM - TABLE 10-1 OF D.C.M.)

$n = 0.100$  (MOUNTAIN STREAM - TABLE 10-1 OF D.C.M.)

INDIVIDUAL BASIN PARAMETERSDP # 1

$$A = 0.22 \text{ SQ.MI.} \quad CN = 77 \text{ (HSG 'D' - WOODS/1000)}$$

$$1000' \text{ OVERLAND} \quad T = 1.87(1.1 - 0.15)1000^{1/2} 55^{-1/3} = 15 \text{ MIN}$$

$$3200' \text{ NATURAL CHANNEL @ } 32.3\%, Z = 4, n = 0.10,$$

$$V = 8 \text{ FPS}, \quad T = \frac{3200}{8(60)} = 6.7 \text{ MIN}$$

$$T_C = 15 + 6.7 = 21.7 \text{ MIN} = 0.36 \text{ HRS}$$

ROUTING DP # 1 TO DP # 2

$$L = 2800', S = 23\%, Z = 4, n = 0.10$$

$$X = \left(\frac{0.94}{0.10}\right) \left(\frac{1.23^{1/2}}{4^{1/3}}\right) = 2.84 \quad m = 1.33$$

DP # 2

$$A = 0.12 \text{ SQ.MI.} \quad CN = 0.50(55) + .50(77) = 66$$

(50% HSG 'B', 50% HSG 'D' - WOODS/1000)

$$1000' \text{ OVERLAND @ } 55\%, T = 1.87(1.1 - 0.15)1000^{1/2} 55^{-1/3} = 15 \text{ MIN}$$

$$2600' \text{ NAT. CHANNEL @ } 28\%, Z = 4, n = 0.10$$

$$V = 6.6 \text{ FPS}, \quad T = \frac{2600}{6.6(60)} = 6.6 \text{ MIN}$$

$$T_C = 15 + 6.6 = 21.6 = 0.36 \text{ HRS}$$

ROUTING DP # 2 TO DP # 3

$$L = 1800', S = 10.8\%, Z = 4, n = 0.10$$

$$X = \left(\frac{0.94}{0.10}\right) \left(\frac{1.108^{1/2}}{4^{1/3}}\right) = 1.95, \quad m = 1.33$$

DP #3

$$A = 0.06 \text{ SQ MI} \quad CN = 55 \text{ (HSG 'B' - WOODS/GOOD)}$$

$$1000' \text{ OVERLAND @ } 35\% \quad T = 1.87(1.1 - 0.10) 1000^{1/2} 35^{-1/3} = 18.3 \text{ MIN}$$

$$1000' \text{ NAT. CHANNEL @ } 12\%, \quad Z = 6, \quad n = 0.10$$

$$V = 4 \text{ FPS}, \quad T = \frac{1000}{4(60)} = 4.2 \text{ MIN}$$

$$TC = 18.3 + 4.2 = 22.5 = 0.37 \text{ HRS}$$

DP #5

$$A = 0.27 \text{ SQ MI.} \quad CN = 77 \text{ (HSG 'D' - WOODS/GOOD)}$$

$$1000' \text{ OVERLAND @ } 23\%, \quad T = 1.87(1.1 - 0.15) 1000^{1/2} 23^{-1/3} = 20 \text{ MIN}$$

$$5200' \text{ NAT. CHANNEL @ } 27\%, \quad Z = 6, \quad n = 0.10$$

$$V = 7.5 \text{ FPS}, \quad T = \frac{5200}{7.5(60)} = 11.6 \text{ MIN}$$

$$TC = 20 + 11.6 = 31.6 = 0.53 \text{ HRS}$$

ROUTING DP #5 TO DP #6

$$L = 2100', \quad S = 13.5\%, \quad Z = 6, \quad n = 0.10$$

$$X = \frac{0.94}{0.10} \left( \frac{1.135^{1/2}}{6^{1/3}} \right) = 1.91 \quad m = 1.33$$

DP #6

$$A = 0.12 \text{ SQ MI} \quad CN = .50(55) + .50(77) = 66 \\ \text{(50\% HSG 'B' + 50\% HSG 'D' - WOODS/GOOD)}$$

$$1000' \text{ OVERLAND @ } 46\%, \quad T = 1.87(1.1 - 0.15) 1000^{1/2} 46^{-1/3} = 15.8 \text{ MIN}$$

$$4100' \text{ NAT. CHANNEL @ } 23.5\%, \quad Z = 6, \quad n = 0.10$$

$$V = 5.5 \text{ FPS} \quad T = \frac{4100}{(60)5.5} = 12.4 \text{ MIN}$$

$$TC = 15.8 + 12.4 = 28.2 = 0.47 \text{ HRS}$$

ROUTING DP #8 TO DP #9

$$L = 2700', S = 7.9\%, Z = 5, n = 0.10$$

$$X = \frac{0.94}{0.10} \left( \frac{0.079^{1/2}}{5^{1/3}} \right) = 1.55 \quad m = 1.33$$

DP #9

$$A = 0.10 \text{ SQ. MI} \quad CN = 55 \text{ (HSG 'B' - WOODS/1000)}$$

$$1000' \text{ OVERLAND @ } 15.8\% \quad T = 1.87(1.1 - 0.1) 1000^{1/2} 15.8^{-1/3} = 23.8$$

$$3600' \text{ NAT CHANNEL @ } 16.1\%, Z = 5, n = 0.10$$

$$V = 4.9 \text{ FPS}, \quad T = \frac{3600}{4.9(60)} = 12.2 \text{ MIN}$$

$$T_c = 23.8 + 12.2 = 36 = 0.60 \text{ HRS}$$

DP #10

$$A = 0.25 \text{ SQ MI} \quad CN = 77 \text{ (HSG 'D' - WOODS/1000)}$$

$$1000' \text{ OVERLAND @ } 50\%, \quad T = 1.87(1.1 - 0.15) 1000^{1/2} 50^{-1/3} = 15.5 \text{ MIN}$$

$$4000' \text{ NAT. CHANNEL @ } 35\%, Z = 4, n = 0.10$$

$$V = 9.5 \text{ FPS}, \quad T = \frac{4000}{9.5(60)} = 7 \text{ MIN}$$

$$T_c = 15.5 + 7 = 22.5 = 0.38$$

ROUTING DP-10 TO DP-16

$$L = 2000', S = 14.7, Z = 12, n = 0.10$$

$$X = \left( \frac{0.94}{0.10} \right) \left( \frac{14.7^{1/2}}{12^{1/3}} \right) = 1.58 \quad m = 1.33$$

DP #16

$$A = 0.04 \text{ SQ MI}$$

$$CN = .65(55) + .35(77) = 63$$

(65% HSG 'B' + 35% HSG 'D' - WOODS/1000)



$$1000' \text{ OVERLAND @ } 67\% \quad T = 1.87 (1.1 - 0.15) 1000^{1/2} 67^{-1/3} = 14 \text{ MIN}$$

$$2000' \text{ NAT. CHANNEL @ } 26.3\%, \quad Z=12, \quad n=0.10$$

$$V = 4 \text{ FPS} \quad T = \frac{2000}{4(60)} = 8.3 \text{ MIN}$$

$$T_c = 14 + 8.3 = 22.3 = 0.37 \text{ HRS}$$

ROUTING DP#16 TO DP#12

$$L=2500', \quad S=9.6\%, \quad Z=15, \quad n=0.06$$

$$X = \frac{0.99}{0.06} \left( \frac{0.096^{1/2}}{15^{1/3}} \right) = 1.99 \quad m = 1.33$$

DP # 12

$$A = 0.18 \text{ SQ MI} \quad CN = 55 \text{ (HSG 'B' WOODS/GOOD)}$$

$$1000' \text{ OVERLAND @ } 30\%, \quad T = 1.87 (1.1 - 0.10) 1000^{1/2} 30^{-1/3} = 19.2 \text{ MIN}$$

$$3200' \text{ NATURAL CHANNEL @ } 11.4\%, \quad Z=15, \quad n=0.06$$

$$V = 5.3 \text{ FPS} \quad T = \frac{3200}{5.3(60)} = 10.1$$

$$T_c = 19.2 + 10.1 = 29.3 = 0.49 \text{ HRS}$$

DP # 14

$$A = 0.02 \text{ SQ MI} \quad CN = 61 \text{ (HSG 'B' PASTURE/GOOD)}$$

$$1000' \text{ OVERLAND @ } 8.3\% \quad T = 1.87 (1.1 - 0.25) 1000^{1/2} 8.3^{-1/3} = 25 \text{ MIN}$$

$$600' \text{ NAT. CHANNEL @ } 8.2\%, \quad Z=3, \quad n=0.06$$

$$V = 4.3 \text{ FPS} \quad T = \frac{600}{4.3(60)} = 2.3 \text{ MIN}$$

$$T_c = 25 + 2.3 = 27.3 = 0.47 \text{ HRS}$$

ROUTING DP#14 TO DP#15

$$X = \frac{1.99}{1.06} \left( \frac{0.087^{1/2}}{5^{1/3}} \right) = 2.72 \quad m = 1.33$$

DP #15

$$A = 0.01 \text{ SQ. MI} \quad CN = 61 \text{ (HSA 'B' - PASTURE/GOOD)}$$

$$500' \text{ OVERLAND @ } 21.2\% \quad T = 1.87(1.1 - 0.25) 500^{1/2} 21.2^{-1/3} = 13.0 \text{ MIN}$$

$$500' \text{ NAT CHANNEL @ } 12.4\%, \quad Z = 5, \quad n = 0.06$$

$$V = 4.5 \text{ FPS} \quad T = \frac{500}{4.5(60)} = 1.9 \text{ MIN}$$

$$T_c = 13.0 + 1.9 = 14.9 = 0.25 \text{ HRS}$$

DP #17

$$A = 0.04 \text{ SQ MI} \quad CN = 55 \text{ (HSA 'B' - WOODS/GOOD)}$$

$$1000' \text{ OVERLAND @ } 22.7\%, \quad T = 1.87(1.1 - 0.10) 1000^{1/2} 22.7^{-1/3} = 21.1 \text{ MIN}$$

$$1800' \text{ NAT CHANNEL @ } 11.6\%, \quad Z = 5, \quad n = 0.10$$

$$V = 3.9 \text{ FPS}, \quad T = \frac{1800}{3.9(60)} = 7.7 \text{ MIN}$$

$$T_c = 21.1 + 7.7 = 28.8 = 0.48$$

DP #18

$$A = 0.11 \text{ SQ. MI} \quad CN = .75(55) + .25(77) = 61$$

$$1000' \text{ OVERLAND @ } 15.8\%, \quad T = 1.87(1.1 - 0.10) 1000^{1/2} 15.8^{-1/3} = 23.8$$

$$4400' \text{ NAT CHANNEL @ } 14.3\%, \quad Z = 6, \quad n = 0.10$$

$$V = 4 \text{ FPS} \quad T = \frac{4400}{4(60)} = 18.3$$

$$T_c = 23.8 + 18.3 = 42.13 = 0.70$$



DP # 20

$$A = 0.04 \text{ SQ MI} \quad CN = 0.55(61) + .40(80) + .05(98) = 71$$

(55% HSG 'B' + 40% HSG 'D' PASTURE/GOOD, 5% IMPERVIOUS AREA IN SISTERS)

$$1000' \text{ OVERLAND @ } 20.1\% \quad T = 1.87(1.1 - 0.25)1000^{1/2} 20.1^{-1/3} = 18.7 \text{ MIN}$$

$$1400' \text{ NAT CHANNEL, } Z = 8, \quad n = 0.060, \quad S = 6.7\%$$

$$V = 5 \text{ FPS} \quad T = \frac{1400}{5(60)} = 4.7 \text{ MIN}$$

$$T_c = 18.7 + 4.7 = 23.4 = 0.39 \text{ HRS}$$

ROUTING DP #20 TO DP #21

$$L = 2900', \quad S = 3.6\%, \quad Z = 38, \quad n = 0.06$$

$$X = \frac{.94}{.06} \left( \frac{0.036^{1/2}}{38^{1/3}} \right) = 0.89, \quad M = 1.33$$

DP # 21

$$A = 0.14 \text{ SQ MI} \quad CN = .50(61) + .05(55) + .45(77) = 68$$

$$1000' \text{ OVERLAND @ } 34.3\%, \quad T = 1.87(1.1 - 0.15)1000^{1/2} 34.3^{-1/3} = 17.5 \text{ MIN}$$

$$2900' \text{ NAT. CHANNEL @ } 5.2\%, \quad Z = 38, \quad n = 0.06$$

$$V = 3.5 \text{ FPS, } T = \frac{2900}{3.5(60)} = 13.8 \text{ MIN}$$

$$T_c = 17.5 + 13.8 = 31.3 = 0.52$$

DP # 22

$$A = 0.04 \text{ SQ MI} \quad CN = .15(39) + 0.50(74) + .35(77) = 70$$

(15% HSG 'A' + 50% HSG 'C' - PASTURE/GOOD, 35% HSG 'D' WOODS/GOOD)

$$1000' \text{ OVERLAND @ } 17.2\%, \quad T = 1.87(1.1 - 0.25)(1000)^{1/2} 17.2^{-1/3} = 19.7 \text{ MIN}$$

$$900' \text{ NATURAL CHANNEL @ } 9.7\%, \quad Z = 11, \quad n = 0.060$$

$$V = 4.9 \text{ FPS, } T = \frac{900}{60(4.9)} = 3.06 \text{ MIN}$$

$$T_c = 19.7 + 3.1 = 22.8 = 0.38$$

ROUTING DP # 22 TO DP # 24

$$L = 2300', S = 5.39\%, Z = 11, n = 0.060$$

$$X = \frac{0.94}{0.06} \left( \frac{0.053^{1/2}}{11^{1/3}} \right) = 1.63, \quad m = 1.33$$

DP # 24

$$A = 0.10 \text{ SQ MI} \quad CN = .10(25) + .15(70) + .75(77) = 71$$

$$1000' \text{ OVERLAND @ } 17\%, T = 1.87(1.1 - 0.13) 1000^{1/2} 17^{-1/3} = 22.5 \text{ MIN}$$

$$1800' \text{ NATURAL CHANNEL @ } 6.0\%, Z = 11, n = 0.060$$

$$V = 4.1 \text{ FPS} \quad T = \frac{1800}{60(4.1)} = 7.3 \text{ MIN}$$

$$TC = 22.5 + 7.3 = 29.8 = 0.50$$

DP # 25

$$A = 0.02 \text{ SQ MI} \quad CN = .05(55) + .95(77) = 76$$

$$1000' \text{ OVERLAND @ } 20\% \quad T = 1.87(1.1 - 0.15) 1000^{1/2} 20^{-1/3} = 21 \text{ MIN}$$

$$500' \text{ NATURAL CHANNEL @ } 10\%, Z = 30, n = 0.060$$

$$V = 4.9 \text{ FPS}, \quad T = \frac{500}{4.9(60)} = 1.7 \text{ MIN}$$

$$TC = 21 + 1.7 = 22.7 = 0.38$$

ROUTING DP # 21 TO DP # 26

$$L = 1600', S = 2.4\%, Z = 53, n = 0.060$$

$$X = \frac{.94}{0.06} \left( \frac{0.024^{1/2}}{53^{1/3}} \right) = 0.65 \quad m = 1.33$$

DP #27

$$A = 0.04 \text{ SQ MI}$$

$$CN = 55 \text{ (HSG 'B' - WOODS/1000)}$$

$$1000' \text{ OVERLAND @ } 17.5\% , T = 1.87(1.1 - 0.10) 1000^{1/2} (17.5)^{-1/3} = 23.0 \text{ MIN}$$

$$1200' \text{ NAT. CHANNEL, } Z = 3, n = 0.10, S = 5.7\%$$

$$V = 3.2 \text{ FPS} \quad T = \frac{1200}{60(3.2)} = 6.3 \text{ MIN}$$

$$T_c = 23 + 6.3 = 29.3 = 0.49$$

ROUTING DP #27 TO DP #28

$$L = 1200', S = 5.4\%, Z = 3, n = 0.10$$

$$X = \frac{0.99}{0.10} \left( \frac{0.054^{1/2}}{3^{1/3}} \right) = 1.52, \quad M = 1.33$$

DP #28

$$A = 0.09 \text{ SQ. MI} \quad CN = .45(61) + .50(55) + .05(98) = 60$$

$$1000' \text{ OVERLAND @ } 6.5\% , T = 1.87(1.1 - 0.25) 1000^{1/2} 6.5^{1/3} = 27.1 \text{ MIN}$$

$$1400' \text{ NAT CHANNEL @ } 6.2\% , Z = 3, n = 0.10$$

$$V = 3.2 \text{ FPS, } T = \frac{1400}{3.2(60)} = 7.3 \text{ MIN}$$

$$T_c = 27.1 + 7.3 = 34.4 = 0.57 \text{ HRS}$$

ROUTING DP #28 TO DP #29

$$L = 1400', S = 5.8\%, Z = 6, n = 0.10$$

$$X = \frac{0.99}{0.11} \left( \frac{0.058^{1/2}}{6^{1/3}} \right) = 1.3, \quad M = 1.33$$

DP # 29

$$A = 0.04 \text{ SQ MI}$$

$$CN = .45(61) + .50(55) + .05(98) = 60$$

(45% HSG 'B' PASTURE/GOOD + 50% HSG 'B' WOODS/GOOD + 5% IMPERVIOUS IN SISTER'S)

$$1000' \text{ OVERLAND @ } 14\% , T = 1.87(1.1 - 0.10) 1000^{1/2} 14^{-1/3} = 24.8 \text{ min}$$

$$1200' \text{ NAT. CHANNEL @ } 7.9\% , Z = 6 , n = 0.10$$

$$V = 2.8 \text{ FPS} , T = \frac{1200}{2.8(60)} = 7.1 \text{ min}$$

$$T_C = 24.8 + 7.1 = 0.53 \text{ HRS}$$

DP # 30

$$A = 0.06 \text{ SQ MI}$$

$$CN = .85(61) + .05(77) + .05(75) + .05(98) = 64$$

(85% HSG 'B' PASTURE/GOOD) + 5% HSG 'D' WOODS/GOOD + 5% HSG 'B' 1/4 AC RES. + 5% IMPERV. IN SISTER'S)

$$1000' \text{ OVERLAND @ } 7.7\% T = 1.87(1.1 - 0.25) 1000^{1/2} 7.7^{-1/3} = 25.6 \text{ min}$$

$$1700' \text{ NAT. CHANNEL @ } 4\% , Z = 23 , n = 0.06$$

$$V = 4.0 \text{ FPS} - T = \frac{1700}{4(60)} = 7.1 \text{ min}$$

$$T_C = 25.6 + 7.1 = 32.7 = 0.54 \text{ HRS}$$

ROUTING DP#30 TO DP#31

$$L = 2200' , S = 3.3\% , Z = 50 \text{ (ROADWAY)} , n = 0.016$$

$$X = \left( \frac{0.94}{0.016} \right) \left( \frac{0.033^{1/2}}{50^{1/3}} \right) = 3.98 , M = 1.33$$



JR ENGINEERING, LTD.

CLIENT PEREGRINE JOB NO. 8080.63

PROJECT DRY CREEK MDDP BY TEM CHK. BY \_\_\_\_\_ DATE 12/12/92

SUBJECT EXIST BASIN PARAMETERS SHEET NO. 11 OF 11

D.P # 31

$$A = 0.09 \text{ SQ MI}$$

$$CN = .35(61) + .25(55) + .30(77) + .10(98) = 68$$

(35% HSG 'B' PASTURE/GOOD, 25% HSG 'B' + 30%  
HSG 'D' WOODS/GOOD, 10% IMPERV. IN SISTER'S)

$$1000' \text{ OVERLAND @ } 10\% , T = 1.87(1.1 - 0.10) 1000^{1/2} = 10^{-1/2} = 27.7 \text{ MIN}$$

$$1400' \text{ STREET FLOW @ } 6\% , Z = 50 , n = 0.015$$

$$V = 8 \text{ FPS} , T = \frac{1400}{8(60)} = 2.9 \text{ MIN}$$

$$TC = 27.7 + 2.9 = 30.6 = 0.51 \text{ HRS}$$

RAINFALL PARAMETERS

10 YR - 24 HR = 3.0"

100 YR - 24 HR = 4.4"

SCS 24 HR TYPE II A RAINFALL DISTRIBUTION

GENERAL PARAMETERS

TR-20 MAIN TIME INCREMENT = 0.05 HRS.

ANTECEDENT MOISTURE CONDITION II

CN'S - FROM COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL OCT. 1987, REVISED NOV. 1991

OVERLAND TRAVEL TIME - FROM DRAINAGE CRITERIA MANUAL

MANNING'S EQUATION FOR TRAVEL TIME IN CHANNELS

ROUTING PARAMETERS FROM TR-20 USER MANUAL

FOR TRIANGULAR X-SECTS. -  $X = \left(\frac{0.94}{n}\right) \left(\frac{S^{1/2}}{2T_s}\right)$ ,  $m = 1.33$

FOR TRAP. X-SECTS. -  $X = \left(\frac{1.49}{n}\right) \left(\frac{S^{1/2}}{b^{2/3}}\right)$ ,  $m = \frac{\log \left[ A^{2/3} \left( 1 + \frac{(2X)}{b} \sqrt{1+Z^2} \right) \right]^{2/3}}{\log A}$

ROUGHNESS COEFFICIENTS - FROM CHOW'S "OPEN CHANNEL HYDRAULICS"  
AND COLORADO SPRINGS DRAINAGE CRITERIA MANUAL

$n = 0.013$  (RCP OR CONC CHANNEL)

$n = 0.016$  (ROADWAY)

$n = 0.060$  (PLAIN STREAMS - TABLE 10-1 OF D.C.M.)

$n = 0.10$  (MOUNTAIN STREAMS - TABLE 10-1 OF D.C.M.)

INDIVIDUAL BASIN PARAMETERSDP #1

$$A = 0.22 \text{ SQ.MI.} \quad CN = 77 \text{ (HSG "D" - WOODS GOOD)}$$

$$1000' \text{ OVERLAND} \quad T = 1.87 (1.1 - 0.15) 1000^{1/2} 55^{-0.33} = 15 \text{ MIN}$$

$$3200' \text{ NATURAL CHANNEL - TRI. X-SECT } w/d = 2, z = 4, n = 0.10$$

$$V = 8 \text{ FPS} \quad T_T = \frac{3200}{8(60)} = 6.7 \text{ MIN}$$

$$T_C = 15 + 6.7 \text{ 2/m} = 0.36 \text{ HRS}$$

ROUTING DP#1 TO DP#2

$$L = 2800', S = 23\%, z = 4$$

$$n = 0.10 \text{ (MTN. STRM.)} \times \left( \frac{0.94}{0.10} \right) \left( \frac{1.23^{1/2}}{4^{1/3}} \right) = 2.84, m = 1.33$$

DP #2

$$A = 0.12 \text{ SQ.MI.} \quad CN = 0.45(55) + 0.50(77) + 0.05(68) = 67$$

(45% HSG 'B' - WOODS/GOOD, 50% HSG 'D' - WOODS/GOOD, 5% (4.0 AC) HSG 'B' - 1 AC RES)

$$1000' \text{ OVERLAND} \quad T_T = 1.87(1.1 - 0.15) 1000^{1/2} 55^{-0.33} = 15 \text{ MIN}$$

$$2600' \text{ NATURAL CHANNEL, TRI. SECT. } w/d = 1.9, z = 4, n = 0.10, S = 23\%$$

$$V = 6.6 \text{ FPS} \quad T_T = \frac{2600}{(6.6)60} = 6.6 \text{ MIN}$$

$$T_C = 15 + 6.6 = 21.6 \text{ MIN} = 0.36 \text{ HR}$$

ROUTING DP#2 TO DP#3

$$L = 1800', S = 10.8\% \quad z = 4, n = 0.10 \text{ (MTN. STREAM)}$$

$$X = \left( \frac{0.94}{0.10} \right) \left( \frac{0.108^{1/2}}{4^{1/3}} \right) = 1.95, m = 1.33$$

DP #3

$$A = 0.06 \text{ sq. mi.} \quad CN = 0.55(68) + 0.45(55) = 62$$

(55% HSG 'B' 2AC RES., 45% HSG 'B' WOODS/GOOD)

$$500' \text{ OVERLAND} \quad T_T = 1.87(1.1 - 0.10) 500^{1/2} 38^{-1/3} = 12.6 \text{ MIN}$$

$$1500' \text{ NATURAL CHANNEL, TRI-SECT. } w/d = 1.9, Z = 6, n = 0.10, S = 12\%$$

$$V = 4 \text{ FPS, } T_T = \frac{1500}{4(60)} = 6.3 \text{ MIN}$$

$$T_C = 12.6 + 6.3 = 18.9 \text{ MIN} = 0.31$$

DP #5

$$A = 0.27 \text{ sq. mi.} \quad CN = 77 \text{ (HSG 'D' - WOODS/GOOD)}$$

$$1000' \text{ OVERLAND @ } 23\%, T_T = 1.87(1.1 - 0.15) 1000^{1/2} 23^{-1/3} = 20 \text{ MIN}$$

$$5200' \text{ NATURAL CHANNEL, TRI-SECT. } w/d = 2.0, Z = 6, n = 0.10, S = 27\%$$

$$V = 7.5 \text{ FPS, } T_T = \frac{5200}{7.5(60)} = 11.6 \text{ MIN}$$

$$T_C = 20 + 11.6 = 31.6 \text{ MIN} = 0.53 \text{ HRS}$$

ROUTING, DP #5 TO DP #6

$$L = 2100', S = 13.5\% \quad Z = 6, n = 0.10 \text{ (MTN STREAM)}$$

$$X = \left(\frac{0.94}{0.1}\right) \left(\frac{1135^{1/2}}{6^{1/3}}\right) = 1.91, \quad m = 1.33$$

DP #6

$$A = 0.12 \text{ sq. mi.} \quad CN = .39(55) + .50(77) + .11(68) = 67$$

(39% HSG 'B', 50% HSG 'D' WOODS/GOOD, 11% (8.9ac) HSG 'B'  
1 AC RES.)

$$1000' \text{ OVERLAND @ } 46\%, T = 1.87(1.1 - 0.15) 1000^{1/2} (46)^{-1/3} = 15.8 \text{ MIN}$$

$$4100' \text{ NATURAL CHANNEL, TRI-SECT. } w/d = 1.5'$$

$$V = 5.5 \text{ FPS } T = \frac{4100}{5.5(60)} = 12.4 \text{ MIN, } T_C = 15.8 + 12.4 = 28.2 = 0.47 \text{ HRS}$$



ROUTING DESIGN POINT 8 TO DESIGN PT 9.

$$L = 2400', S = 7.8\%, Z = 5, n = 0.10 \text{ (NATL STREAM)}$$

$$X = \left(\frac{0.94}{0.10}\right) \left(\frac{0.078^{1/3}}{5^{1/3}}\right) = 1.54, m = 1.33$$

DP # 9

$$A = 0.07 \text{ SQ MI}$$

$$CN = .45(55) + .55(70) = 63$$

(45% HSG 'B' WOODS/GOOD, 55% HSG 'B' 1/2 AC RES.)

$$300' \text{ OVERLAND @ } 10\% \quad T = 1.87(1.1 - 0.10) 300^{1/2} 10^{-1.33} = 15.2 \text{ MIN}$$

$$2200' \text{ NATURAL CHANNEL, TRI-SECT, } Z = 5, n = 0.10, S = 8\%$$

$$V = 3.5 \text{ FPS, } T = \frac{2200}{3.5(60)} = 10.5 \text{ MIN}$$

$$T_c = 15.2 + 10.5 = 25.7 \text{ MIN} = 0.43$$

DP # 10

$$A = 0.25$$

$$CN = 77 \text{ (HSG 'D' WOODS/GOOD)}$$

$$1000' \text{ OVERLAND @ } 50\%, T = 1.87(1.1 - 0.15) 1000^{1/2} 50^{-1.33} = 15.5 \text{ MIN}$$

$$4000' \text{ NATURAL CHANNEL, TRI-SECT, } Z = 4, n = 0.10, S = 35\%$$

$$V = 9.5 \text{ FPS, } T = \frac{4000}{9.5(60)} = 7 \text{ MIN}$$

$$T_c = 15.5 + 7 = 22.5 \text{ MIN} = 0.38$$

ROUTING DP-10 TO DP16

$$L = 2000', S = 14.7, Z = 12$$

$$n = 0.10 \quad X = \left(\frac{0.94}{0.10}\right) \left(\frac{0.147^{1/3}}{12^{1/3}}\right) = 1.58, m = 1.33$$

DP # 16

$$A = 0.04 \text{ SQ MI} \quad CN = .65(55) + .35(77) = 63$$

(65% HSG 'B', 35% HSG 'D' - WOODS/1000)

$$1000' \text{ OVERLAND @ } 67\% \quad T = 1.87(1.1 - 0.15)(1000)^{1/2} 67^{-1/3} = 14 \text{ MIN}$$

$$2000' \text{ NATURAL CHANNEL, TRI-SECT, } Z=12, n=0.10, S=26.3\%$$

$$V = 4 \text{ FPS} \quad T = \frac{2000}{4(60)} = 8.3 \text{ MIN}$$

$$T_C = 14 + 8.3 = 22.3 \text{ MIN} = 0.37 \text{ HRS}$$

DP # 12

$$A = 0.18 \text{ SQ MI} \quad CN = .68(55) + .30(72) + 0.02(68) = 60$$

$$1000' \text{ OVERLAND @ } 30\% \quad T = 1.87(1.1 - 0.10)(1000)^{1/2} 30^{-1/3} = 19.2 \text{ MIN}$$

$$700' \text{ NATURAL CHANNEL, TRI SECT, } Z=15, n=0.10, S=13\%$$

$$V = 3.4 \text{ FFST} = \frac{700}{3.4(60)} = 3.4 \text{ MIN}$$

$$2400' \text{ CONC CHANNEL; } V = 17.7 \text{ FPS} \quad T = \frac{2400}{17.7(60)} = 2.3$$

$$T_C = 19.2 + 3.4 + 2.3 = 24.9 \text{ MIN} = 0.42 \text{ HRS}$$

- ROUTING DP #12 TO DP #14

$$L = 1200', S = 12.3\% \quad Z = 3, n = 0.10$$

$$X = \frac{0.94}{0.10} \left( \frac{0.123^{1/2}}{3^{1/3}} \right) = 2.29 \quad m = 1.33$$

DP # 14

$$A = 0.02 \text{ SQ MI} \quad CN = 61 \text{ (HSG 'B' PASTURE/GOOD)}$$

$$1000' \text{ OVERLAND @ } 8.3\% \quad T = 1.87(1.1 - 0.25) 1000^{1/2} 8.3^{-1/3} = 25$$

$$600' \text{ NATURAL CHANNEL, TRI-SECT, } Z=3, n=0.06, S=8.2\%$$

$$V = 4.3 \text{ FPS}, \quad T = \frac{600}{4.3(60)} = 2.3 \text{ MIN}$$

$$T_C = 25 + 2.3 = 27.3 \text{ min} = 0.47 \text{ HR}$$

ROUTING DP 14 TO DP 15

$$L = 1000, S = 8.7\%, Z = 5, n = 0.06$$

$$X = \left(\frac{0.94}{0.06}\right) \left(\frac{0.087^{1/2}}{5^{1/3}}\right) = 2.72, \quad M = 1.33$$

DP # 15

$$A = 0.01 \text{ SQ MI} \quad CN = .90(61) + .10(71) = 62$$

(90% HSG 'B' PASTURE/GOOD, 10% HSG 'B' -  
1/2 AC RES.)

$$300' \text{ OVERLAND @ } 35\%, \quad T = 1.87(1.1 - 0.25) 300^{1/2} 35^{-1/3} = 8.5 \text{ min}$$

$$700' \text{ NATURAL CHANNEL, TRI-SECT, } Z=5, n=0.06, S=12.3\%$$

$$V = 4.1 \text{ FPS}, \quad T = \frac{700}{4(60)} = 2.9 \text{ min}$$

$$T_C = 8.5 + 2.9 = 11.4 \text{ min} = 0.19 \text{ HRS}$$

ROUTING DP #15 TO DP #17

$$L = 700', S = 5.9\%, Z = 6, n = 0.06$$

$$X = \left(\frac{0.94}{0.06}\right) \left(\frac{0.059^{1/2}}{6^{1/3}}\right) = 2.11, \quad M = 1.33$$

DP #17

$$A = 0.09 \text{ SQ MI} \quad CN = .5(55) + .47(70) + 0.03(68) = 62$$

(50% HSG 'B' - WOODS/GOOD, 47% HSG 'B' < 1/2 AC RES.  
3% HSG 'B' 1 AC RES)

$$800' \text{ OVERLAND @ } 15.8\% \quad T = 1.87(1.1 - 0.1) 800^{1/2} (15.8)^{-1/3} = 21.3 \text{ MIN}$$

1900' NATURAL CHANNEL, TRI-SECT, Z=5, n=0.10, S=21.8%

$$V = 4.5 \text{ FPS} \quad T = \frac{1900}{4.5(60)} = 7 \text{ MIN}$$

$$2800 \text{ RCP STORM @ } 17 \text{ FPS} \quad T = 2.8 \text{ MIN}$$

$$T_C = 21.3 + 7 + 2.8 = 31.1 \text{ MIN} = 0.52 \text{ HRS}$$

DP #18

$$A = 0.11 \text{ SQ MI} \quad CN = 0.36(55) + .25(77) + .34(70) + .05(68) = 66$$

(36% HSG 'B' + 25% HSG 'D' WOODS/GOOD, 34%  
HSG 'B' - 1/2 AC RES, 5% HSG 'B' 1 AC RES.)

$$1000' \text{ OVERLAND @ } 15.8\% \quad T = 1.87(1.1 - 0.10)(1000)^{1/2} (15.8)^{-1/3} = 23.8$$

3000' NATURAL CHANNEL, TRI-SECT, Z=6, n=0.10, S=16.5%

$$V = 4 \text{ FPS}, \quad T = \frac{3000}{4(60)} = 12.5$$

$$1600' \text{ RCP STORM @ } 16 \text{ FPS}, \quad T = \frac{1600}{16(60)} = 1.7 \text{ MIN}$$

$$T_C = 23.8 + 12.5 + 1.7 = 38 \text{ MIN} = 0.63 \text{ HRS}$$

DP #20

$$A = 0.04 \text{ SQ MI} \quad CN = .4(61) + .35(80) + .05(98) + .15(90)$$

$$+ .05(92) = 75$$

(40% HSG 'B' + 35% HSG 'D' PASTURE/GOOD,  
5% IMPERV. IN SISTERS, 15% HSG 'B' +  
5% HSG 'D' MULTI-FAMILY RES.)

$$700' \text{ OVERLAND @ } 20\% \quad T = 1.87(1.1 - 0.25) 700^{1/2} 20^{-1/3} = 15.7 \text{ MIN}$$



1100' NATURAL CHANNEL, TRI-SECT,  $Z=8$ ,  $n=0.06$ ,  $S=10\%$

$$V = 4.6 \text{ FPS} \quad T = \frac{1100}{4.6(60)} = 4 \text{ MIN}$$

$$600' \cdot 24" \text{ RCP @ } 3.8\%, \quad V = 13.9, \quad T = \frac{600}{13.9(60)} = 0.7 \text{ MIN}$$

$$T_c = 15.7 + 4 + 0.7 = 20.4 \text{ MIN} = 0.34 \text{ HRS}$$

### DP # 21

$$A = 0.13 \text{ SQ. MI.} \quad CN = .11(61) + .36(77) + .18(75) + .18(92) + .11(71) + .06(90) = 78$$

(11% HSG 'B' - PASTURE/GOOD, 36% HSG 'D' - WOODS/GOOD, 18% HSG 'B' - 1/4 ACRES, 18% HSG 'B' SCHOOL, 11% HSG 'D' > 1/2 ACRES, 6% HSG 'D' - MULTI-FAM. RES)

$$700' \text{ OVERLAND @ } 36.3\%, \quad T = 1.87 (1.1 - 0.15) 700^{1/2} 36.3^{-1/3} = 14.4 \text{ MIN}$$

$$500' \text{ RCP STORM: } V = 20 \text{ FPS} \quad T = \frac{500}{20(60)} = 0.4 \text{ MIN}$$

$$2400' \text{ CONC CHANNEL } V = 20 \text{ FPS (MAX)} \quad T = \frac{2400}{20(60)} = 2.0 \text{ MIN}$$

$$T_c = 14.4 + 0.4 + 2.0 = 16.8 \text{ MIN} = 0.28 \text{ HRS}$$

### DP # 22

$$A = 0.09 \text{ SQ. MI.} \quad CN = .15(39) + .30(74) + .35(77) + .10(92) + .10(94) = 74$$

(15% HSG 'A' - PASTURE/GOOD, 30% HSG 'C' - PASTURE GOOD, 35% HSG 'D' - WOODS/GOOD, 10% HSG 'C' - MULTI-FAM. RES., 10% HSG 'C' - COMMERC.)

$$400' \text{ OVERLAND @ } 28.5\% \quad T = 1.87 (1.1 - 0.25) 400^{1/2} 28.5^{1/3} = 10.5 \text{ MIN}$$

$$1600' \text{ STREET FLOW @ } 8\%, \quad V = 10 \text{ FPS}, \quad T = \frac{1600}{10(60)} = 2.7 \text{ MIN}$$

$$T_c = 10.5 + 2.7 = 13.2 \text{ MIN} = 0.22 \text{ HRS}$$

DP # 25

$$A = 0.10 \text{ SQ. MI.}$$

$$CN = .65(77) + .27(80) + .08(92) = 79$$

(65% HSG 'D' - WOODS/GOOD, 27% HSG 'D' > 1/2 AC. RES., 8% HSG 'D' MULTI-FAM. RES.)

$$400' \text{ OVERLAND @ } 32.5\%, T = 1.87(1.1 - 0.15) 400^{1/2} 32.5^{-1/3} = 11.3 \text{ MIN}$$

$$2000' \text{ STREET FLOW @ } 3\%, V = 10 \text{ FPS}, T = \frac{2000}{10(60)} = 3.3 \text{ MIN}$$

$$600' \text{ CONC CHANNEL } V = 20 \text{ FPS (MAX)} T = \frac{600}{20(60)} = 0.5 \text{ MIN}$$

$$T_c = 11.3 + 3.3 + 0.5 = 15.1 \text{ MIN} = 0.25$$

DP # 26

$$A = 0.08 \text{ SQ. MI.}$$

$$CN = .13(55) + .12(77) + .50(85) + .25(75) = 78$$

(13% HSG 'B' + 12% HSG 'D' - WOODS/GOOD, 50% HSG 'D' > 1/2 AC RES, 25% HSG 'B' - 1/4 AC RES)

$$300' \text{ OVERLAND @ } 35\%, T = 1.87(1.1 - 0.15) 300^{1/2} 35^{-1/3} = 9.5 \text{ MIN}$$

$$800' \text{ NATURAL CHANNEL, } Z = 6, n = 0.10, S = 20\%$$

$$V = 4.2 \text{ FPS}, T = \frac{800}{4.2(60)} = 3.2 \text{ MIN}$$

$$1400' \text{ CONC CHANNEL, } V = 20 \text{ FPS (MAX)} = T = \frac{1400}{20(60)} = 1.2 \text{ MIN}$$

$$T_c = 9.5 + 3.2 + 1.2 = 13.9 = 0.23 \text{ HRS}$$

DP # 27

$$A = 0.09 \text{ SQ MI } CN = 55 \text{ (HSG 'B' WOODS/GOOD)}$$

$$1000' \text{ OVERLAND @ } 17.5\%, T = 1.87(1.1 - 0.10) 1000^{1/2} 17.5^{-1/3} = 23.0 \text{ MIN}$$

$$1200' \text{ NATURAL CHANNEL @ } 5.7\%, Z = 3, n = 0.10$$

$$V = 3.2 \text{ FPS } T = \frac{1200}{3.2(60)} = 6.3$$

$$T_c = 23 + 6.3 = 29.3 = 0.49 \text{ HRS}$$

ROUTING DP #27 TO DP #28

$$L = 1200', S = 5.4\%, Z = 3, n = 0.10$$

$$X = \left(\frac{0.99}{0.10}\right) \left(\frac{.059^{1/2}}{3^{1/3}}\right) = 1.52, m = 1.33$$

DP #28

$$A = 0.04 \text{ sq mi} \quad CN = .45(61) + .5(55) + .05(98) = 60$$

(45% 115G 'B' PASTURE / 1000', 50% 115G 'B' WOODS / 1000',  
5% IMPERVIOUS IN SISTERS)

$$1000' \text{ OVERLAND @ } 6.5\%, T = 1.87(1.1 - 0.25) 1000^{1/2} 6.5^{1/3} = 27.1$$

$$1400' \text{ NATURAL CHANNEL @ } 6.2\%, Z = 3, n = 0.10$$

$$V = 3.5 \text{ FPS}, T = \frac{1400}{3.5(60)} = 6.7 \text{ MIN}$$

$$T_C = 27.1 + 6.7 = 33.8 \text{ MIN} = 0.56 \text{ HRS}$$

ROUTING DP #28 TO DP #29

$$L = 1400', S = 5.8\%, Z = 6, n = 0.10$$

$$X = \left(\frac{0.99}{0.10}\right) \left(\frac{0.058^{1/2}}{6^{1/3}}\right) = 1.25, m = 1.33$$

DP #29

$$A = 0.04 \text{ sq mi} \quad CN = .45(61) + .50(55) + .05(98) = 60$$

(45% 115G 'B' PASTURE / 1000', 50% 115G 'B' WOODS / 1000',  
5% IMPERVIOUS IN SISTERS)

$$1000' \text{ OVERLAND @ } 16.1\% \quad T = 1.87(1.1 - 0.10) 1000^{1/2} 16.1^{1/3} = 23.6 \text{ min}$$

$$1200' \text{ NATURAL CHANNEL @ } 7.9\%, Z = 6, n = 0.10$$

$$V = 2.5 \text{ FPS} \quad T = \frac{1200}{2.5(60)} = 8 \text{ MIN}$$

$$T_C = 23.6 + 8 = 31.6 \text{ MIN} = 0.53 \text{ HRS}$$

DP #30

$$A = 0.06 \text{ sq mi} \quad CN = .45(61) + .05(77) + .05(90) + .05(90) + .05(92) + .15(61) + .20(92) = 72$$

(45% HSG 'B' - PASTURE/GOOD, 5% HSG 'D' WOODS/GOOD, 5% HSG 'B' - MULTI-FAM. RES., 5% HSG 'B' - SCHOOL, 5% HSG 'B' MULTI-FAM RES., 15% PARK, 20% OFFICE / RETAIL)

$$1000' \text{ OVERLAND @ } 7.7\% , \quad T = 1.87(1.1 - 0.23) 1000^{1/2} 7.7^{-1/3} = 25.6$$

$$1700' \text{ NATURAL CHANNEL @ } 3.9\% , \quad Z = 23 \quad n = 0.06$$

$$V = 2.5^{1/3} \quad T = \frac{1700}{2.5(60)} = 11.3 \text{ MIN}$$

$$T_C = 25.6 + 11.3 = 0.62 \text{ HRS}$$

ROUTING DP #30 TO DP #31

$$L = 2200' \quad S = 3.3\% \quad Z = 50 , \quad n = 0.016 \text{ (STREET)}$$

$$X = \left( \frac{0.99}{0.016} \right) \left( \frac{0.033^{1/2}}{50^{1/3}} \right) = 2.90 \quad m = 1.33$$

DP #31

$$A = 0.09 \text{ sq mi} \quad CN = 0.20(61) + .25(55) + .25(77) + .05(72) + .20(90) + .05(92) = 71$$

(20% HSG 'B' - PASTURE/GOOD, 25% HSG 'B' - WOODS/GOOD, 25% HSG 'D' - WOODS/GOOD, 5% HSG 'B' 1/2 AC. RES., 20% HSG 'B' MULTI-FAM RES., 5% HSG 'B' OFFICE / RETAIL)

$$300' \text{ OVERLAND @ } 25\% , \quad T = 1.87(1.1 - 0.10) 300^{1/2} 25^{-1/3} = 11.2 \text{ min}$$

$$1600' \text{ STREET @ } 6\% , \quad Z = 50 , \quad n = 0.016 \quad V = 7.9^{1/3} = T = \frac{1600}{7.9(60)} = 3.4 \text{ min}$$

$$1400' \text{ RCP @ } 2.5\% , \quad V = 13.2^{1/3} \quad T = \frac{1400}{13.2(60)} = 1.8 \text{ min}$$

$$T_C = 11.2 + 3.4 + 1.8 = 16.4 = 0.27 \text{ HRS}$$



## **VII. BASIN SUMMARY AND TR-20 OUTPUT**

EXISTING CONDITION PEAK DISCHARGE SUMMARY TABLE

Design Point *	Sub-Basin Area (SM)	Sub-Basin S.C.S. Curve Number (CN)	Sub-Basin Time Of Conc. (Hrs)	Sub-Basin 10-Year Peak Discharge (CFS) (24 Hour)	Sub-Basin 100-Year Peak Discharge (CFS) (24 Hour)	Cumulative Area (SM)	Cumulative 10-Year Peak Discharge (CFS) (24 Hour)	Cumulative 100-Year Peak Discharge (CFS) (24 Hour)
1	0.22	77	0.36	172	357	0.22	172	357
2	0.12	66	0.36	39	113	0.34	195	448
3	0.06	55	0.37	3	23	0.40	190	456
5	0.27	77	0.53	165	351	0.27	165	351
6	0.12	66	0.47	33	94	0.39	185	426
7	-	-	-	-	-	0.79	374	880
9	0.09	55	0.60	4	24	0.88	350	858
10	0.25	77	0.38	186	389	0.25	186	389
16	0.04	63	0.37	9	30	0.29	180	398
12 In	0.18	55	0.49	8	57	0.47	175	435
12 Out	-	-	-	-	-	0.47	35	42
14 In	0.02	61	0.47	3	11	0.49	35	44
14 Out	-	-	-	-	-	0.49	35	44
15	0.01	61	0.25	2	8	-	-	-
15 Total	-	-	-	-	-	1.38	349	860
17	0.04	55	0.48	2	13	1.42	351	871
18	0.11	61	0.70	12	45	1.53	362	916
20	0.04	71	0.39	19	46	1.57	371	942
21	0.14	68	0.52	43	116	-	-	-
22	0.04	70	0.38	18	45	0.04	18	45
24 In	0.10	71	0.50	41	101	0.14	54	138
24 Out	-	-	-	-	-	0.14	1	10
25	0.02	76	0.38	14	30	0.16	14	30
21 Total	-	-	-	-	-	1.87	347	930
26	0.08	72	0.20	59	131	1.95	334	906
27	0.04	55	0.49	2	13	0.04	2	13
28	0.04	60	0.57	4	18	0.08	6	29
29	0.04	60	0.53	5	19	0.12	8	41
30	0.06	64	0.54	12	37	0.18	19	76
31	0.09	68	0.51	28	75	0.27	41	137
32	-	-	-	-	-	2.22	359	1005

\* Also Sub-Basin Designation

DEVELOPED CONDITION PEAK DISCHARGE SUMMARY TABLE

Design Point *	Sub-Basin Area (SM)	Sub-Basin S.C.S. Curve Number (CN)	Sub-Basin Time Of Conc. (Hrs)	Sub-Basin 10-Year Peak Discharge (CFS) (24 Hour)	Sub-Basin 100-Year Peak Discharge (CFS) (24 Hour)	Cumulative Area (SM)	Cumulative 10-Year Peak Discharge (CFS) (24 Hour)	Cumulative 100-Year Peak Discharge (CFS) (24 Hour)
1	0.22	77	0.36	172	357	0.22	172	357
2	0.12	67	0.36	43	119	0.34	199	454
3	0.06	62	0.31	14	47	0.40	199	475
5	0.27	77	0.53	165	351	0.27	165	351
6	0.12	67	0.47	36	100	0.39	188	431
8 In	-	-	-	-	-	0.79	386	902
8 Out	-	-	-	-	-	0.79	155	210
9	0.07	63	0.43	14	48	0.86	157	210
10	0.25	77	0.38	186	389	0.25	186	389
16	0.04	63	0.37	9	30	0.29	180	398
12 In	0.18	60	0.42	25	100	0.47	204	498
12 Out	-	-	-	-	-	0.47	33	44
14	0.02	61	0.47	3	11	0.49	34	49
15	0.01	62	0.19	3	10	-	-	-
15 Total	-	-	-	-	-	1.36	192	257
17	0.09	62	0.52	14	50	1.45	197	295
18	0.11	66	0.63	24	70	1.56	211	365
20	0.04	75	0.34	28	60	1.60	217	398
21	0.13	78	0.28	120	242	1.73	262	572
22	0.04	74	0.22	32	69	0.04	32	69
25	0.10	79	0.25	103	201	1.87	378	821
26	0.08	78	0.23	80	158	1.95	449	968
27	0.04	55	0.49	2	13	0.04	2	13
28	0.04	60	0.56	4	18	0.08	6	29
29	0.04	60	0.53	5	19	0.12	8	42
30	0.06	72	0.62	23	55	0.18	30	95
31	0.09	71	0.27	53	126	0.27	62	161
32 In	-	-	-	-	-	2.22	511	1127
32 Out	--	-	-	-	-	2.22	350	716

\* Also Sub-Basin Designation

DEVELOPED CONDITION REGIONAL DETENTION POND SUMMARY TABLE

<u>Regional Detention Pond Number</u>	<u>Total Pond Depth (Ft)</u>	<u>Total Pond Surface Acreage (Ac)</u>	<u>Total Pond Storage Volume (Ac/Ft)</u>	<u>Outlet Structure</u>	<u>10-Year Peak Inflow (CFS) (24 Hour)</u>	<u>10-Year Peak Outflow (CFS) (24 Hour)</u>	<u>10-Year Peak Ponding Depth (Ft)</u>	<u>10-Year Peak Storage Volume (Ac/Ft)</u>	<u>100-Year Peak Inflow (CFS) (24 Hour)</u>	<u>100-Year Peak Outflow (CFS) (24 Hour)</u>	<u>100-Year Peak Ponding Depth (Ft)</u>	<u>100-Year Peak Storage Volume (Ac/Ft)</u>
8	30	3.0	30.2	36" RCP	387	155	17.9	8.6	902	202	29.3	28.6
12	30	2.5	33.2	18" RCP	205	33	13.8	6.9	498	44	19.7	23.1
32	10	2.9	18.3	Double 6'x5' RCB	511	350	4.7	5.2	1127	716	8.8	14.9

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY\*\*\*\*\*

OB TR-20				SUMMARY	NO PLOTS	
TITLE 001 PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC						20
TITLE 001 RETENTION PONDS 10-YEAR STORM						21
5 RAINFL 7	0.25					30
8	0.0000	0.0005	0.0015	0.0030	0.0045	40
8	0.0060	0.0080	0.0100	0.0120	0.0143	50
8	0.0165	0.0188	0.0210	0.0233	0.0255	60
8	0.0278	0.0320	0.0390	0.0460	0.0530	70
8	0.0600	0.0750	0.1000	0.4000	0.7000	80
8	0.7250	0.7500	0.7650	0.7800	0.7900	90
8	0.8000	0.8100	0.8200	0.8250	0.8300	100
8	0.8350	0.8400	0.8450	0.8500	0.8550	110
8	0.8600	0.8638	0.8675	0.8713	0.8750	120
8	0.8788	0.8825	0.8863	0.8900	0.8938	130
8	0.8975	0.9013	0.9050	0.9083	0.9115	140
8	0.9148	0.9180	0.9210	0.9240	0.9270	150
8	0.9300	0.9325	0.9350	0.9375	0.9400	160
8	0.9425	0.9450	0.9475	0.9500	0.9525	170
8	0.9550	0.9575	0.9600	0.9625	0.9650	180
8	0.9675	0.9700	0.9725	0.9750	0.9775	190
8	0.9800	0.9813	0.9825	0.9838	0.9850	200
8	0.9863	0.9875	0.9888	0.9900	0.9913	210
8	0.9925	0.9938	0.9950	0.9963	0.9975	220
8	0.9988	1.0000	1.0000	1.0000	1.0000	230
9 ENDTBL						235
3 STRUCT	14					236
8		6943.	0.0	0.00		237
8		6950.	0.01	0.29		238
8		6960.	0.02	1.71		239
8		6961.	0.03	1.93		240
8		6962.	90.0	2.20		241
8		6963.	382.0	2.51		242
8		6964.	935.0	2.87		243
9 ENDTBL						250
3 STRUCT	12					255
8		7057.	0.0	0.0		260
8		7060.	17.0	0.12		270
8		7065.	26.0	1.64		280
8		7070.	35.0	6.19		290
8		7075.	41.0	14.34		300
8		7080.	45.0	26.25		302
8		7086.	47.0	45.15		304
8		7087.	93.0	48.73		306
8		7088.	304.0	52.48		308
9 ENDTBL						310
3 STRUCT	24					346

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

8			6686.	0.0	0.00				348	
8			6688.	0.01	0.13				350	
3			6690.	0.02	0.40				352	
8			6692.	0.03	0.88				354	
8			6694.	0.04	1.64				356	
8			6696.	0.05	2.72				358	
8			6698.	0.06	4.17				360	
3			6700.	0.07	5.97				362	
8			6702.	20.0	8.30				364	
8			6704.	187.0	11.18				366	
8			6706.	490.0	14.66				368	
9	ENDTBL								370	
6	RUNOFF	1 001	2	0.22	77.	0.36	1	1	1	445
6	RUNOFF	1 005	6	0.27	77.	0.53	1	1	1	460
6	RUNOFF	1 010	7	0.25	77.	0.38	1	1	1	480
6	REACH	3 002	2 4	2800.00	2.84	1.33	1	1	1	490
6	RUNOFF	1 002	1	0.12	66.	0.36	1	1	1	500
6	ADDHYD	4 002	1 4 3				1	1	1	570
6	REACH	3 003	3 1	1300.00	1.95	1.33	1	1	1	580
6	RUNOFF	1 003	2	0.06	55.	0.37	1	1	1	590
6	ADDHYD	4 003	1 2 3				1	1	1	600
6	REACH	3 006	6 2	2100.00	1.91	1.33	1	1	1	620
6	RUNOFF	1 006	1	0.12	66.	0.47	1	1	1	640
6	ADDHYD	4 006	1 2 4				1	1	1	650
6	ADDHYD	4 008	3 4 1				1	1	1	655
6	REACH	3 009	1 2	2700.00	1.55	1.33	1	1	1	700
6	RUNOFF	1 009	1	0.09	55.	0.60	1	1	1	710
6	ADDHYD	4 009	1 2 3				1	1	1	720
6	REACH	3 016	7 2	2000.00	1.58	1.33	1	1	1	730
6	RUNOFF	1 016	1	0.04	63.	0.37	1	1	1	750
6	ADDHYD	4 016	1 2 4				1	1	1	760
6	REACH	3 012	4 1	2500.00	1.99	1.33	1	1	1	770
6	RUNOFF	1 012	2	0.18	55.	0.49	1	1	1	780
6	ADDHYD	4 012	1 2 4				1	1	1	790
6	RESVOR	2 12 4	1	7057.00			1	1	1	800
6	REACH	3 014	1 2	1200.00	0.91	1.33	1	1	1	810
6	RUNOFF	1 014	1	0.02	61.	0.47	1	1	1	820
6	ADDHYD	4 014	1 2 4				1	1	1	830
6	RESVOR	2 14 4	6	6943.00			1	1	1	835
6	REACH	3 015	6 1	1600.00	2.72	1.33	1	1	1	850
6	RUNOFF	1 015	2	0.01	61.	0.25	1	1	1	860
6	ADDHYD	4 015	1 2 4				1	1	1	870
6	ADDHYD	4 015	3 4 1				1	1	1	880
6	RUNOFF	1 017	2	0.04	55.	0.48	1	1	1	900
6	ADDHYD	4 017	1 2 3				1	1	1	910
6	RUNOFF	1 018	1	0.11	61.	0.70	1	1	1	920

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

6	ADDHYD	4	018	1	3	2				1	1	1	930	
6	RUNOFF	1	020			1	0.04	71.	0.39	1	1	1	950	
6	ADDHYD	4	020	1	2	3				1	1	1	960	
6	REACH	3	021	3		1	2900.00	0.89	1.33	1	1	1	970	
6	RUNOFF	1	021			2	0.14	68.	0.52	1	1	1	980	
6	ADDHYD	4	021	1	2	3				1	1	1	990	
6	RUNOFF	1	022			6	0.04	70.	0.38	1	1	1	992	
6	REACH	3	024	6		7	2300.00	1.63	1.33	1	1	1	996	
6	RUNOFF	1	024			4	0.10	71.	0.50	1	1	1	1000	
6	ADDHYD	4	024	4	7	6				1	1	1	1010	
6	RESVOR	2		24	6	2	6686.00			1	1	1	1020	
6	RUNOFF	1	025			4	0.02	76.	0.38	1	1	1	1038	
6	ADDHYD	4	025	2	4	7				1	1	1	1040	
6	ADDHYD	4	021	3	7	1				1	1	1	1045	
6	REACH	3	026	1		2	1600.00	0.65	1.33	1	1	1	1050	
6	RUNOFF	1	026			1	0.08	72.	0.20	1	1	1	1100	
6	ADDHYD	4	026	1	2	3				1	1	1	1110	
6	RUNOFF	1	027			1	0.04	55.	0.49	1	1	1	1120	
6	REACH	3	028	1		2	1200.00	1.52	1.33	1	1	1	1130	
6	RUNOFF	1	028			1	0.04	60.	0.57	1	1	1	1140	
6	ADDHYD	4	028	1	2	4				1	1	1	1150	
6	REACH	3	029	4		1	1400.00	1.30	1.33	1	1	1	1160	
6	RUNOFF	1	029			2	0.04	60.	0.53	1	1	1	1170	
6	ADDHYD	4	029	1	2	6				1	1	1	1180	
6	RUNOFF	1	030			2	0.06	64.	0.54	1	1	1	1200	
6	ADDHYD	4	030	6	2	4				1	1	1	1210	
6	REACH	3	031	4		1	2200.00	2.90	1.33	1	1	1	1220	
6	RUNOFF	1	031			2	0.09	68.	0.51	1	1	1	1230	
6	ADDHYD	4	031	1	2	4				1	1	1	1240	
6	ADDHYD	4	032	4	3	1				1	1	1	1250	
	ENDATA												1260	
7	INCREM	6					0.05						1270	
7	COMPUT	7	001		032		0.00	3.0	1.0	7	2	1	1	1300
	ENDCMP	1												1310
	ENDJOB	2												1320

\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

EXECUTIVE CONTROL OPERATION INCREM

RECORD ID 1270

MAIN TIME INCREMENT = .05 HOURS

EXECUTIVE CONTROL OPERATION COMPUT

RECORD ID 1300

FROM XSECTION 1

TO XSECTION 32

STARTING TIME = .00 RAIN DEPTH = 3.00 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2  
ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .05 HOURS

OPERATION RUNOFF CROSS SECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.11	171.45	(RUNOFF)
7.95	10.47	(RUNOFF)
9.97	5.41	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 130.65 CFS-HRS, 10.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	164.77	(RUNOFF)
9.99	6.63	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 159.61 CFS-HRS, 13.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.12	185.64	(RUNOFF)
7.98	11.92	(RUNOFF)
9.97	6.15	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 148.24 CFS-HRS, 12.25 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.20	159.11	(NULL)
7.99	10.47	(NULL)
10.03	5.41	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 130.31 CFS-HRS, 10.77 ACRE-FEET; BASEFLOW = .00 CFS



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REV PC 09/83(.2)

PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC  
RETENTION PONDS 10-YEAR STORM

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JOB 1 PASS 1  
PAGE 1

OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.14	39.37	{RUNOFF}
7.98	3.54	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .44 WATERSHED INCHES, 34.27 CFS-HRS, 2.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	195.83	{NULL}
7.98	14.01	{NULL}
10.00	7.29	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .75 WATERSHED INCHES, 164.58 CFS-HRS, 13.60 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.27	187.08	{NULL}
10.07	7.29	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .75 WATERSHED INCHES, 164.17 CFS-HRS, 13.57 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	3.16	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .14 WATERSHED INCHES, 5.40 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.27	190.05	{NULL}
10.05	7.73	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .66 WATERSHED INCHES, 169.57 CFS-HRS, 14.01 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 6

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PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC  
RETENTION PONDS 10-YEAR STORM

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JOB 1 PASS 1  
PAGE 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	156.23	{NULL}
10.07	6.63	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .91 WATERSHED INCHES, 159.18 CFS-HRS, 13.15 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	32.27	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .44 WATERSHED INCHES, 34.12 CFS-HRS, 2.82 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.30	185.18	{NULL}
10.03	8.51	{NULL}
13.01	6.63	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .77 WATERSHED INCHES, 193.30 CFS-HRS, 15.97 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.28	374.17	{NULL}
10.04	16.24	{NULL}
13.01	12.70	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .71 WATERSHED INCHES, 362.87 CFS-HRS, 29.99 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.39	345.11	{NULL}
10.12	16.22	{NULL}
13.10	12.68	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .71 WATERSHED INCHES, 361.63 CFS-HRS, 29.89 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 9

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PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC  
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PAGE 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET) (RUNOFF)
6.40	3.36	

RUNOFF VOLUME ABOVE BASEFLOW = .14 WATERSHED INCHES, 8.02 CFS-HRS, .66 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.39	348.47	(NULL)
10.11	16.89	(NULL)
13.10	13.25	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .65 WATERSHED INCHES, 369.64 CFS-HRS, 30.55 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.22	171.60	(NULL)
10.03	6.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 147.83 CFS-HRS, 12.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET) (RUNOFF)
6.16	9.07	

RUNOFF VOLUME ABOVE BASEFLOW = .34 WATERSHED INCHES, 8.86 CFS-HRS, .73 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.22	180.09	(NULL)
10.03	6.68	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 156.69 CFS-HRS, 12.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	166.59	(NULL)
10.09	6.67	(NULL)

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RUNOFF VOLUME ABOVE BASEFLOW = .83 WATERSHED INCHES, 156.21 CFS-HRS, 12.91 ACRE-FEET; BASEFLOW = .00 CFS

PERATION RUNOFF CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	7.77	(RUNOFF)
8.02	2.33	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .14 WATERSHED INCHES, 16.13 CFS-HRS, 1.33 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	174.36	(NULL)
10.07	8.01	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .57 WATERSHED INCHES, 172.34 CFS-HRS, 14.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.98	34.47	7069.71
13.10	6.31	7058.11

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .05 HOURS	DRAINAGE AREA = .47 SQ.MI.
5.50	DISCHG .00 .00 .00 .00 .01 .09 .45	1.59 4.34 9.81	
5.50	ELEV 7057.00 7057.00 7057.00 7057.00 7057.00 7057.02 7057.08 7057.28 7057.77 7058.73		
6.00	DISCHG 17.11 17.91 19.30 21.33 23.98 26.38 27.54 28.72 29.85 30.87		
6.00	ELEV 7060.06 7060.51 7061.28 7062.40 7063.88 7065.21 7065.86 7066.51 7067.14 7067.70		
6.50	DISCHG 31.73 32.44 33.01 33.46 33.80 34.05 34.23 34.36 34.43 34.47		
6.50	ELEV 7068.18 7068.58 7068.90 7069.14 7069.33 7069.47 7069.57 7069.64 7069.69 7069.71		
7.00	DISCHG 34.47 34.45 34.41 34.35 34.28 34.20 34.11 34.01 33.90 33.78		
7.00	ELEV 7069.71 7069.69 7069.67 7069.64 7069.60 7069.56 7069.50 7069.45 7069.39 7069.32		
7.50	DISCHG 33.66 33.53 33.40 33.26 33.12 32.98 32.84 32.70 32.56 32.42		
7.50	ELEV 7069.26 7069.19 7069.11 7069.04 7068.96 7068.88 7068.80 7068.72 7068.65 7068.57		
8.00	DISCHG 32.28 32.14 32.01 31.87 31.73 31.59 31.45 31.31 31.16 31.01		
8.00	ELEV 7068.49 7068.41 7068.34 7068.26 7068.18 7068.11 7068.03 7067.95 7067.87 7067.78		
8.50	DISCHG 30.85 30.68 30.51 30.34 30.17 29.99 29.82 29.64 29.47 29.30		
8.50	ELEV 7067.69 7067.60 7067.51 7067.41 7067.32 7067.22 7067.12 7067.02 7066.93 7066.83		
9.00	DISCHG 29.12 28.95 28.78 28.61 28.44 28.27 28.11 27.94 27.78 27.62		
9.00	ELEV 7066.73 7066.64 7066.54 7066.45 7066.36 7066.26 7066.17 7066.08 7065.99 7065.90		
9.50	DISCHG 27.46 27.30 27.14 26.99 26.83 26.68 26.52 26.37 26.22 26.08		
9.50	ELEV 7065.81 7065.72 7065.63 7065.55 7065.46 7065.38 7065.29 7065.21 7065.12 7065.04		
10.00	DISCHG 25.79 25.36 24.94 24.53 24.13 23.74 23.35 22.97 22.60 22.22		
10.00	ELEV 7064.88 7064.64 7064.41 7064.18 7063.96 7063.74 7063.53 7063.32 7063.11 7062.90		

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10.50	DISCHG	21.86	21.49	21.14	20.78	20.44	20.10	19.76	19.44	19.12	18.80
10.50	ELEV	7062.70	7062.50	7062.30	7062.10	7061.91	7061.72	7061.53	7061.35	7061.18	7061.00
11.00	DISCHG	18.50	18.20	17.91	17.63	17.35	17.08	13.48	10.16	8.34	7.36
11.00	ELEV	7060.83	7060.67	7060.51	7060.35	7060.19	7060.04	7059.38	7058.79	7058.47	7058.30
11.50	DISCHG	6.82	6.53	6.37	6.28	6.23	6.21	6.19	6.19	6.19	6.20
11.50	ELEV	7058.20	7058.15	7058.12	7058.11	7058.10	7058.10	7058.09	7058.09	7058.09	7058.09
12.00	DISCHG	6.21	6.22	6.22	6.22	6.22	6.22	6.22	6.23	6.23	6.24
12.00	ELEV	7058.10	7058.10	7058.10	7058.10	7058.10	7058.10	7058.10	7058.10	7058.10	7058.10
12.50	DISCHG	6.25	6.26	6.27	6.27	6.27	6.27	6.27	6.27	6.28	6.29
12.50	ELEV	7058.10	7058.10	7058.11	7058.11	7058.11	7058.11	7058.11	7058.11	7058.11	7058.11
13.00	DISCHG	6.30	6.31	6.31	6.31	6.30	6.28	6.24	6.19	6.14	6.07
13.00	ELEV	7058.11	7058.11	7058.11	7058.11	7058.11	7058.11	7058.10	7058.09	7058.08	7058.07
13.50	DISCHG	5.99	5.92	5.85	5.78	5.73	5.68	5.64	5.61	5.59	5.58
13.50	ELEV	7058.06	7058.04	7058.03	7058.02	7058.01	7058.00	7058.00	7057.99	7057.99	7057.99
14.00	DISCHG	5.58	5.57	5.57	5.56	5.55	5.53	5.51	5.48	5.44	5.40
14.00	ELEV	7057.98	7057.98	7057.98	7057.98	7057.98	7057.98	7057.97	7057.97	7057.96	7057.95
14.50	DISCHG	5.37	5.33	5.30	5.27	5.25	5.23	5.21	5.20	5.19	5.19
14.50	ELEV	7057.95	7057.94	7057.93	7057.93	7057.93	7057.92	7057.92	7057.92	7057.92	7057.92

RUNOFF VOLUME ABOVE BASEFLOW = .57 WATERSHED INCHES, 171.88 CFS-HRS, 14.20 ACRE-FEET; BASEFLOW = .00 CFS  
\*\*\* WARNING - REACH 14 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 5.19 CFS, 15.05 % OF PEAK.

OPERATION REACH CROSS SECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.15	34.38	{NULL}
13.21	6.30	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .56 WATERSHED INCHES, 171.17 CFS-HRS, 14.15 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	2.90	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .28 WATERSHED INCHES, 3.66 CFS-HRS, .30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.11	35.03	{NULL}
13.18	6.49	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .55 WATERSHED INCHES, 174.83 CFS-HRS, 14.45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 14

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.16	35.02	6961.39
13.22	6.49	6961.07

TIME(HRS)	DISCHG	ELEV	DISCHG	ELEV	DISCHG	ELEV	DISCHG	ELEV	DISCHG	ELEV	DISCHG	ELEV
6.00	.00	6943.00	.01	6943.00	.02	6943.00	.03	6943.00	.04	6943.00	.05	6943.00
6.50	.01	6954.31	.02	6955.21	.03	6956.13	.04	6957.07	.05	6958.03	.06	6959.01
7.00	34.12	6961.38	34.82	6961.39	34.98	6961.39	35.02	6961.39	35.00	6961.39	34.96	6961.39
7.50	34.50	6961.38	34.39	6961.38	34.27	6961.38	34.14	6961.38	34.01	6961.38	33.88	6961.38
8.00	33.20	6961.37	33.06	6961.37	32.92	6961.37	32.77	6961.36	32.62	6961.36	32.46	6961.36
8.50	31.65	6961.35	31.49	6961.35	31.32	6961.35	31.16	6961.35	30.99	6961.34	30.82	6961.34
9.00	29.95	6961.33	29.78	6961.33	29.61	6961.33	29.43	6961.32	29.26	6961.32	29.09	6961.32
9.50	28.25	6961.31	28.09	6961.31	27.93	6961.31	27.77	6961.31	27.61	6961.30	27.45	6961.30
10.00	26.68	6961.30	26.51	6961.29	26.28	6961.29	25.98	6961.28	25.64	6961.28	25.27	6961.27
10.50	23.35	6961.26	22.97	6961.25	22.59	6961.25	22.22	6961.24	21.86	6961.24	21.50	6961.23
11.00	19.79	6961.22	19.46	6961.21	19.15	6961.21	18.84	6961.20	18.54	6961.20	17.96	6961.19
11.50	11.66	6961.13	10.13	6961.11	8.98	6961.10	8.14	6961.08	7.56	6961.08	7.16	6961.07
12.00	6.46	6961.07	6.44	6961.07	6.42	6961.07	6.41	6961.07	6.41	6961.07	6.41	6961.07
12.50	6.42	6961.07	6.42	6961.07	6.43	6961.07	6.44	6961.07	6.44	6961.07	6.45	6961.07
13.00	6.47	6961.07	6.47	6961.07	6.48	6961.07	6.48	6961.07	6.49	6961.07	6.48	6961.07
13.50	6.36	6961.07	6.31	6961.07	6.25	6961.07	6.18	6961.07	6.12	6961.07	6.05	6961.07
14.00	5.82	6961.06	5.79	6961.06	5.77	6961.06	5.76	6961.06	5.75	6961.06	5.74	6961.06
14.50	5.64	6961.06	5.61	6961.06	5.57	6961.06	5.54	6961.06	5.51	6961.06	5.47	6961.06

RUNOFF VOLUME ABOVE BASEFLOW = .48 WATERSHED INCHES, 151.30 CFS-HRS, 12.50 ACRE-FEET; BASEFLOW = .00 CFS  
 \*\*\* WARNING - REACH 15 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 5.39 CFS, 15.38 % OF PEAK.

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OPERATION REACH CROSS SECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.34	34.87	{NULL}
13.29	6.49	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .48 WATERSHED INCHES, 150.78 CFS-HRS, 12.46 ACRE-FEET; BASEFLOW = .00 CFS

PERATION RUNOFF CROSS SECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	2.34	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .29 WATERSHED INCHES, 1.84 CFS-HRS, .15 ACRE-FEET; BASEFLOW = .00 CFS

PERATION ADDHYD CROSS SECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	2.34	{NULL}
7.34	35.09	{NULL}
13.25	6.57	{NULL}

\* FIRST POINT OF FLAT PEAK

RUNOFF VOLUME ABOVE BASEFLOW = .47 WATERSHED INCHES, 152.62 CFS-HRS, 12.61 ACRE-FEET; BASEFLOW = .00 CFS

PERATION ADDHYD CROSS SECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.39	349.08	{NULL}
7.01	112.28	{NULL}
13.11	19.81	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .59 WATERSHED INCHES, 522.26 CFS-HRS, 43.16 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.30	1.74	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .14 WATERSHED INCHES, 3.58 CFS-HRS, .30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 17



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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.39	350.69	(NULL)
7.01	113.04	(NULL)
13.11	20.06	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .57 WATERSHED INCHES, 525.85 CFS-HRS, 43.46 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.42	11.75	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .28 WATERSHED INCHES, 19.96 CFS-HRS, 1.65 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.39	362.41	(NULL)
7.00	118.43	(NULL)
13.10	21.11	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .55 WATERSHED INCHES, 545.81 CFS-HRS, 45.11 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.15	19.15	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .63 WATERSHED INCHES, 16.39 CFS-HRS, 1.35 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.39	371.35	(NULL)
7.00	120.85	(NULL)
13.09	21.72	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .55 WATERSHED INCHES, 562.20 CFS-HRS, 46.46 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.55	321.62	(NULL)
13.20	21.69	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .55 WATERSHED INCHES, 558.97 CFS-HRS, 46.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	42.59	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .51 WATERSHED INCHES, 46.34 CFS-HRS, 3.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.54	343.58	(NULL)
13.14	23.57	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .55 WATERSHED INCHES, 605.31 CFS-HRS, 50.02 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.14	17.92	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .59 WATERSHED INCHES, 15.32 CFS-HRS, 1.27 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.29	13.93	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .59 WATERSHED INCHES, 15.21 CFS-HRS, 1.26 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	40.95	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .63 WATERSHED INCHES, 40.87 CFS-HRS, 3.38 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 24

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
 6.23                                      54.05                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .62 WATERSHED INCHES,      56.09 CFS-HRS,      4.63 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 24

\*\*\* WARNING-NO PEAK FOUND, MAXIMUM DISCHARGE = .06 CFS.

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
 14.95                                      .06                                      6698.47

TIME(HRS)	FIRST HYDROGRAPH POINT =	.00 HOURS	TIME INCREMENT =	.05 HOURS	DRAINAGE AREA =	.14 SQ.MI.
5.50	DISCHG	.00	.00	.00	.00	.01
5.50	ELEV	6686.00	6686.00	6686.00	6686.00	6687.38
6.00	DISCHG	.01	.02	.02	.03	.04
6.00	ELEV	6688.27	6689.10	6690.13	6691.79	6694.32
6.50	DISCHG	.04	.04	.04	.05	.05
6.50	ELEV	6694.58	6694.80	6695.00	6695.32	6695.88
7.00	DISCHG	.05	.05	.05	.05	.05
7.00	ELEV	6695.96	6696.03	6696.08	6696.18	6696.39
7.50	DISCHG	.05	.05	.05	.05	.05
7.50	ELEV	6696.42	6696.46	6696.49	6696.55	6696.70
8.00	DISCHG	.05	.05	.05	.05	.05
8.00	ELEV	6696.73	6696.76	6696.79	6696.85	6696.97
8.50	DISCHG	.05	.06	.06	.06	.06
8.50	ELEV	6696.98	6697.00	6697.02	6697.06	6697.13
9.00	DISCHG	.06	.06	.06	.06	.06
9.00	ELEV	6697.15	6697.17	6697.18	6697.21	6697.29
9.50	DISCHG	.06	.06	.06	.06	.06
9.50	ELEV	6697.30	6697.32	6697.33	6697.36	6697.44
10.00	DISCHG	.06	.06	.06	.06	.06
10.00	ELEV	6697.45	6697.47	6697.48	6697.51	6697.58
10.50	DISCHG	.06	.06	.06	.06	.06
10.50	ELEV	6697.59	6697.61	6697.62	6697.64	6697.70
11.00	DISCHG	.06	.06	.06	.06	.06
11.00	ELEV	6697.71	6697.72	6697.74	6697.76	6697.82
11.50	DISCHG	.06	.06	.06	.06	.06
11.50	ELEV	6697.83	6697.84	6697.85	6697.87	6697.93
12.00	DISCHG	.06	.06	.06	.06	.06
12.00	ELEV	6697.94	6697.96	6697.97	6697.99	6698.04
12.50	DISCHG	.06	.06	.06	.06	.06
12.50	ELEV	6698.05	6698.06	6698.07	6698.09	6698.13
13.00	DISCHG	.06	.06	.06	.06	.06

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13.00	ELEV	6698.14	6698.15	6698.16	6698.17	6698.18	6698.19	6698.20	6698.21	6698.22	6698.23
13.50	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
13.50	ELEV	6698.24	6698.24	6698.25	6698.26	6698.27	6698.28	6698.29	6698.29	6698.30	6698.31
14.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
14.00	ELEV	6698.32	6698.33	6698.34	6698.34	6698.35	6698.36	6698.37	6698.38	6698.39	6698.39
14.50	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
14.50	ELEV	6698.40	6698.41	6698.42	6698.42	6698.43	6698.44	6698.45	6698.46	6698.46	6698.47

RUNOFF VOLUME ABOVE BASEFLOW = .01 WATERSHED INCHES, .50 CFS-HRS, .04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.12	13.92	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .87 WATERSHED INCHES, 11.19 CFS-HRS, .93 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.13	13.93	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .11 WATERSHED INCHES, 11.69 CFS-HRS, .97 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.53	347.23	(NULL)
13.12	23.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .51 WATERSHED INCHES, 617.01 CFS-HRS, 50.99 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.67	328.34	(NULL)
13.21	23.98	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .51 WATERSHED INCHES, 614.29 CFS-HRS, 50.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 26

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.04	59.11	(RUNOFF)
7.98	3.16	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .68 WATERSHED INCHES, 35.21 CFS-HRS, 2.91 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.66	333.90	(NULL)
13.03	25.21	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .52 WATERSHED INCHES, 649.50 CFS-HRS, 53.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	1.73	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .14 WATERSHED INCHES, 3.58 CFS-HRS, .30 ACRE-FEET; BASEFLOW = .00 CFS  
\*\*\* WARNING - REACH 28 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT .21 CFS, 12.37 % OF PEAK.

OPERATION REACH CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.50	1.43	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .14 WATERSHED INCHES, 3.53 CFS-HRS, .29 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.33	4.30	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .25 WATERSHED INCHES, 6.58 CFS-HRS, .54 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.37	5.50	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .20 WATERSHED INCHES, 10.11 CFS-HRS, .84 ACRE-FEET; BASEFLOW = .00 CFS

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OPERATION REACH CROSS SECTION 29

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)  
6.55 4.75 (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .19 WATERSHED INCHES, 10.00 CFS-HRS, .83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 29

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)  
6.29 4.56 (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .26 WATERSHED INCHES, 6.59 CFS-HRS, .54 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 29

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)  
6.41 8.23 (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .21 WATERSHED INCHES, 16.59 CFS-HRS, 1.37 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 30

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)  
6.27 11.59 (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .37 WATERSHED INCHES, 14.44 CFS-HRS, 1.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 30

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)  
6.32 19.13 (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .27 WATERSHED INCHES, 31.03 CFS-HRS, 2.56 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 31

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)  
6.45 17.90 (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .27 WATERSHED INCHES, 30.85 CFS-HRS, 2.55 ACRE-FEET; BASEFLOW = .00 CFS

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OPERATION RUNOFF CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	27.66	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .51 WATERSHED INCHES, 29.80 CFS-HRS, 2.46 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	41.17	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .35 WATERSHED INCHES, 60.64 CFS-HRS, 5.01 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.65	359.38	{NULL}
13.03	28.08	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .50 WATERSHED INCHES, 710.14 CFS-HRS, 58.69 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD ID 1310

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB

RECORD ID 1320

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
 (A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
 A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	1											
XSECTION	1	RUNOFF	.22	7	2	.05	.0	3.00	24.00	.92	---	6.11	171.45	779.3
XSECTION	5	RUNOFF	.27	7	2	.05	.0	3.00	24.00	.92	---	6.21	164.77	610.3
XSECTION	10	RUNOFF	.25	7	2	.05	.0	3.00	24.00	.92	---	6.12	185.64	742.6
XSECTION	2	REACH	.22	7	2	.05	.0	3.00	24.00	.92	---	6.20	159.11	723.2
XSECTION	2	RUNOFF	.12	7	2	.05	.0	3.00	24.00	.44	---	6.14	39.37	328.1
XSECTION	2	ADDHYD	.34	7	2	.05	.0	3.00	24.00	.75	---	6.19	195.83	576.0
XSECTION	3	REACH	.34	7	2	.05	.0	3.00	24.00	.75	---	6.27	187.08	550.2
XSECTION	3	RUNOFF	.06	7	2	.05	.0	3.00	24.00	.14	---	6.21	3.16	52.7
XSECTION	3	ADDHYD	.40	7	2	.05	.0	3.00	24.00	.66	---	6.27	190.05	475.1
XSECTION	6	REACH	.27	7	2	.05	.0	3.00	24.00	.91	---	6.31	156.23	578.6
XSECTION	6	RUNOFF	.12	7	2	.05	.0	3.00	24.00	.44	---	6.21	32.27	268.9
XSECTION	6	ADDHYD	.39	7	2	.05	.0	3.00	24.00	.77	---	6.30	185.18	474.8
XSECTION	8	ADDHYD	.79	7	2	.05	.0	3.00	24.00	.71	---	6.28	374.17	473.6
XSECTION	9	REACH	.79	7	2	.05	.0	3.00	24.00	.71	---	6.39	345.11	436.8
XSECTION	9	RUNOFF	.09	7	2	.05	.0	3.00	24.00	.14	---	6.40	3.36	37.4
XSECTION	9	ADDHYD	.88	7	2	.05	.0	3.00	24.00	.65	---	6.39	348.47	396.0
XSECTION	16	REACH	.25	7	2	.05	.0	3.00	24.00	.92	---	6.22	171.60	686.4
XSECTION	16	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.34	---	6.16	9.07	226.8
XSECTION	16	ADDHYD	.29	7	2	.05	.0	3.00	24.00	.84	---	6.22	180.09	621.0
XSECTION	12	REACH	.29	7	2	.05	.0	3.00	24.00	.83	---	6.32	166.59	574.5
XSECTION	12	RUNOFF	.18	7	2	.05	.0	3.00	24.00	.14	---	6.31	7.77	43.2
XSECTION	12	ADDHYD	.47	7	2	.05	.0	3.00	24.00	.57	---	6.32	174.36	371.0
STRUCTURE	12	RESVOR	.47	7	2	.05	.0	3.00	24.00	.57	7069.71	6.98	34.47	73.3
XSECTION	14	REACH	.47	7	2	.05	.0	3.00	24.00	.56	---	7.15	34.38	73.1
XSECTION	14	RUNOFF	.02	7	2	.05	.0	3.00	24.00	.28	---	6.24	2.90	145.2
XSECTION	14	ADDHYD	.49	7	2	.05	.0	3.00	24.00	.55	---	7.11	35.03	71.5
STRUCTURE	14	RESVOR	.49	7	2	.05	.0	3.00	24.00	.48	6961.39	7.16	35.02	71.5
XSECTION	15	REACH	.49	7	2	.05	.0	3.00	24.00	.48	---	7.34	34.87	71.2
XSECTION	15	RUNOFF	.01	7	2	.05	.0	3.00	24.00	.29	---	6.10	2.34	234.5
XSECTION	15	ADDHYD	.50	7	2	.05	.0	3.00	24.00	.47	---	7.34	35.09	70.2
XSECTION	15	ADDHYD	1.38	7	2	.05	.0	3.00	24.00	.59	---	6.39	349.08	253.0



SECTION 17	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.14	---	6.30	1.74	43.6
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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN {HR}	AMOUNT {IN}	DURATION {HR}		ELEVATION (FT)	TIME {HR}	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	1											
XSECTION	17	ADDHYD	1.42	7	2	.05	.0	3.00	24.00	.57	---	6.39	350.69	247.0
XSECTION	18	RUNOFF	.11	7	2	.05	.0	3.00	24.00	.28	---	6.42	11.75	106.8
XSECTION	18	ADDHYD	1.53	7	2	.05	.0	3.00	24.00	.55	---	6.39	362.41	236.9
XSECTION	20	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.63	---	6.15	19.15	478.8
XSECTION	20	ADDHYD	1.57	7	2	.05	.0	3.00	24.00	.55	---	6.39	371.35	236.5
XSECTION	21	REACH	1.57	7	2	.05	.0	3.00	24.00	.55	---	6.55	321.62	204.9
XSECTION	21	RUNOFF	.14	7	2	.05	.0	3.00	24.00	.51	---	6.24	42.59	304.2
XSECTION	21	ADDHYD	1.71	7	2	.05	.0	3.00	24.00	.55	---	6.54	343.58	200.9
XSECTION	22	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.59	---	6.14	17.92	447.9
XSECTION	24	REACH	.04	7	2	.05	.0	3.00	24.00	.59	---	6.29	13.93	348.4
XSECTION	24	RUNOFF	.10	7	2	.05	.0	3.00	24.00	.63	---	6.21	40.95	409.5
XSECTION	24	ADDHYD	.14	7	2	.05	.0	3.00	24.00	.62	---	6.23	54.05	386.1
STRUCTURE	24	RESVOR	.14	7	2	.05	.0	3.00	24.00	.01	6698.47	14.95?	.06?	.4
XSECTION	25	RUNOFF	.02	7	2	.05	.0	3.00	24.00	.87	---	6.12	13.92	696.1
XSECTION	25	ADDHYD	.16	7	2	.05	.0	3.00	24.00	.11	---	6.13	13.93	87.1
XSECTION	21	ADDHYD	1.87	7	2	.05	.0	3.00	24.00	.51	---	6.53	347.23	185.7
XSECTION	26	REACH	1.87	7	2	.05	.0	3.00	24.00	.51	---	6.67	328.34	175.6
XSECTION	26	RUNOFF	.08	7	2	.05	.0	3.00	24.00	.68	---	6.04	59.11	738.9
XSECTION	26	ADDHYD	1.95	7	2	.05	.0	3.00	24.00	.52	---	6.66	333.90	171.2
XSECTION	27	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.14	---	6.31	1.73	43.2
XSECTION	28	REACH	.04	7	2	.05	.0	3.00	24.00	.14	---	6.49	1.43	35.7
XSECTION	28	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.25	---	6.33	4.30	107.4
XSECTION	28	ADDHYD	.08	7	2	.05	.0	3.00	24.00	.20	---	6.37	5.50	68.7
XSECTION	29	REACH	.08	7	2	.05	.0	3.00	24.00	.19	---	6.55	4.75	59.4
XSECTION	29	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.26	---	6.29	4.56	113.9
XSECTION	29	ADDHYD	.12	7	2	.05	.0	3.00	24.00	.21	---	6.41	8.23	68.6
XSECTION	30	RUNOFF	.06	7	2	.05	.0	3.00	24.00	.37	---	6.27	11.59	193.2
XSECTION	30	ADDHYD	.18	7	2	.05	.0	3.00	24.00	.27	---	6.32	19.13	106.3
XSECTION	31	REACH	.18	7	2	.05	.0	3.00	24.00	.27	---	6.45	17.80	98.9
XSECTION	31	RUNOFF	.09	7	2	.05	.0	3.00	24.00	.51	---	6.24	27.66	307.4
XSECTION	31	ADDHYD	.27	7	2	.05	.0	3.00	24.00	.35	---	6.31	41.17	152.5

XSECTION	32	ADDHYD	2.22	7	2	.05	.0	3.00	24.00	.50	---	6.65	359.38	161.9
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SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS  
 (A STAR(\*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK  
 A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

HYDROGRAPH INFORMATION										ROUTING PARAMETERS					PEAK			
REACH	INFLOW		OUTFLOW		INTERV.AREA		BASE-	VOLUME	MAIN	ITER-	Q AND A	PEAK	S/Q	ATT-	TRAVEL TIME			
	LENGTH	PEAK	PEAK	PEAK	PEAK	TIME	FLOW	ABOVE	TIME	ATION	EQUATION	RATIO	@PEAK	KIN	STOR-	KINE-		
ID	(FT)	(CFS)	(CFS)	(CFS)	(CFS)	(HR)	(CFS)	(IN)	(HR)	‡	COEFF	POWER	FACTOR	O/I	(K)	COEFF	AGE	MATIC
		(CFS)	(HR)	(CFS)	(HR)						(X)	(M)	(K <sup>3</sup> )	(Q <sup>*</sup> )	(SEC)	(C)	(HR)	(HR)
	ALTERNATE	1	STORM	1														
2	2800	171	6.1	159	6.2		0	.92	.05	1	2.84	1.33	.066	.930	268	.50	.10	.08
				195	6.2													
+ 3	1800	195	6.2	186	6.3		0	.75	.05	1	1.95	1.33	.045	.951	221	.58	.05	.06
				189	6.3													
+ 6	2100	164	6.2	156	6.3		0	.92	.05	1	1.91	1.33	.049	.949	274	.49	.10	.08
				185	6.3													
+ 9	2700	373	6.3	345	6.4		0	.71	.05	1	1.55	1.33	.065	.926	336	.42	.10	.09
				348	6.4													
+ 16	2000	184	6.1	171	6.2		0	.92	.05	1	1.58	1.33	.069	.927	292	.47	.10	.08
				179	6.2													
+ 12	2500	179	6.2	166	6.3		0	.84	.05	1	1.99	1.33	.067	.924	309	.45	.10	.09
				174	6.3													
+ 14	1200	34	7.0	34	7.2		0	.57*	.05	1	.910	1.33	.009	.997	402	.37	.15	.11
				35	7.1													
+ 15	1600	35	7.2	35	7.3		0	.48*	.05	1	2.72	1.33	.006	.996	235	.55	.20	.07
				35	7.3													
+ 21	2900	371	6.4	322	6.6		0	.55	.05	1	.890	1.33	.069	.867	548	.28	.15	.15
				343	6.6													
24	2300	18	6.2	14	6.3		0	.59	.05	1	1.63	1.33	.160	.778	585	.27	.15	.17
				54	6.3													
											.650							

26	1600	347	6.6	328	6.7		0	.51	.05	1	1.33	.035	.946	390	.38	.10	.11
+						334	6.7										
28	1200	2	6.3	1	6.5		0	.14*	.05	1	1.52						
+						5	6.3				1.33	.048	.829	575	.27	.20	.16
29	1400	5	6.3	5	6.6		0	.20	.05	1	1.30						
						8	6.4				1.33	.055	.866	566	.27	.20	.16
31	2200	19	6.3	18	6.5		0	.27	.05	1	2.90						
						41	6.3				1.33	.035	.934	357	.40	.15	.10

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....
STRUCTURE 24	.14	1
ALTERNATE 1		.06
STRUCTURE 14	.49	
ALTERNATE 1		35.02
STRUCTURE 12	.47	
ALTERNATE 1		34.47
XSECTION 1	.22	
ALTERNATE 1		171.45
XSECTION 2	.34	
ALTERNATE 1		195.83
XSECTION 3	.40	
ALTERNATE 1		190.05
XSECTION 5	.27	
ALTERNATE 1		164.77
XSECTION 6	.39	
ALTERNATE 1		185.18
XSECTION 8	.79	
ALTERNATE 1		374.17
XSECTION 9	.88	
ALTERNATE 1		348.47
XSECTION 10	.25	
ALTERNATE 1		185.64
XSECTION 12	.47	
ALTERNATE 1		174.36
XSECTION 14	.49	
ALTERNATE 1		35.03
XSECTION 15	1.38	
ALTERNATE 1		349.08

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 16	.29	
ALTERNATE 1		180.09
XSECTION 17	1.42	
ALTERNATE 1		350.69
XSECTION 18	1.53	
ALTERNATE 1		362.41
XSECTION 20	1.57	
ALTERNATE 1		371.35
XSECTION 21	1.87	
ALTERNATE 1		347.23
XSECTION 22	.04	
ALTERNATE 1		17.92
XSECTION 24	.14	
ALTERNATE 1		54.05
XSECTION 25	.16	
ALTERNATE 1		13.93
XSECTION 26	1.95	
ALTERNATE 1		333.90
XSECTION 27	.04	
ALTERNATE 1		1.73
XSECTION 28	.08	
ALTERNATE 1		5.50
XSECTION 29	.12	
ALTERNATE 1		8.23
XSECTION 30	.18	
ALTERNATE 1		19.13
XSECTION 31	.27	
ALTERNATE 1		41.17

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PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC  
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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....
		1
0 XSECTION 32	2.22	
<hr/>		
ALTERNATE 1		359.38

END OF 1 JOBS IN THIS RUN



\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY\*\*\*\*\*

JOB TR-20			SUMMARY	NOPLOTS		
TITLE 001 PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC					20	
TITLE 001 RETENTION PONDS 100-YEAR STORM					21	
5 RAINFL 7	0.25				30	
8	0.0000	0.0005	0.0015	0.0030	0.0045	40
8	0.0060	0.0080	0.0100	0.0120	0.0143	50
8	0.0165	0.0188	0.0210	0.0233	0.0255	60
8	0.0278	0.0320	0.0390	0.0460	0.0530	70
8	0.0600	0.0750	0.1000	0.4000	0.7000	80
8	0.7250	0.7500	0.7650	0.7800	0.7900	90
8	0.8000	0.8100	0.8200	0.8250	0.8300	100
8	0.8350	0.8400	0.8450	0.8500	0.8550	110
8	0.8600	0.8638	0.8675	0.8713	0.8750	120
8	0.8788	0.8825	0.8863	0.8900	0.8938	130
8	0.8975	0.9013	0.9050	0.9083	0.9115	140
8	0.9148	0.9180	0.9210	0.9240	0.9270	150
8	0.9300	0.9325	0.9350	0.9375	0.9400	160
8	0.9425	0.9450	0.9475	0.9500	0.9525	170
8	0.9550	0.9575	0.9600	0.9625	0.9650	180
8	0.9675	0.9700	0.9725	0.9750	0.9775	190
8	0.9800	0.9813	0.9825	0.9838	0.9850	200
8	0.9863	0.9875	0.9888	0.9900	0.9913	210
8	0.9925	0.9938	0.9950	0.9963	0.9975	220
8	0.9988	1.0000	1.0000	1.0000	1.0000	230
9 ENDTBL						235
3 STRUCT	14					236
8		6943.	0.0	0.00		237
8		6950.	0.01	0.29		238
8		6960.	0.02	1.71		239
8		6961.	0.03	1.93		240
8		6962.	90.0	2.20		241
8		6963.	382.0	2.51		242
8		6964.	935.0	2.87		243
9 ENDTBL						250
3 STRUCT	12					255
8		7057.	0.0	0.0		260
8		7060.	17.0	0.12		270
8		7065.	26.0	1.64		280
8		7070.	35.0	6.19		290
8		7075.	41.0	14.34		300
8		7080.	45.0	26.25		302
8		7086.	47.0	45.15		304
8		7087.	93.0	48.73		306
8		7088.	304.0	52.48		308
9 ENDTBL						310
3 STRUCT	24					346

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

8		6686.	0.0	0.00					348	
8		6688.	0.01	0.13					350	
8		6690.	0.02	0.40					352	
8		6692.	0.03	0.88					354	
8		6694.	0.04	1.64					356	
8		6696.	0.05	2.72					358	
8		6698.	0.06	4.17					360	
8		6700.	0.07	5.97					362	
8		6702.	20.0	8.30					364	
8		6704.	187.0	11.18					366	
8		6706.	490.0	14.66					368	
9	ENDTBL								370	
6	RUNOFF	1 001	2	0.22	77.	0.36	1	1	1	445
6	RUNOFF	1 005	6	0.27	77.	0.53	1	1	1	460
6	RUNOFF	1 010	7	0.25	77.	0.38	1	1	1	480
6	REACH	3 002	2 4	2800.00	2.84	1.33	1	1	1	490
6	RUNOFF	1 002	1	0.12	66.	0.36	1	1	1	500
6	ADDHYD	4 002	1 4 3				1	1	1	570
6	REACH	3 003	3 1	1800.00	1.95	1.33	1	1	1	580
6	RUNOFF	1 003	2	0.06	55.	0.37	1	1	1	590
6	ADDHYD	4 003	1 2 3				1	1	1	600
6	REACH	3 006	6 2	2100.00	1.91	1.33	1	1	1	620
6	RUNOFF	1 006	1	0.12	66.	0.47	1	1	1	640
6	ADDHYD	4 006	1 2 4				1	1	1	650
6	ADDHYD	4 008	3 4 1				1	1	1	655
6	REACH	3 009	1 2	2700.00	1.55	1.33	1	1	1	700
6	RUNOFF	1 009	1	0.09	55.	0.60	1	1	1	710
6	ADDHYD	4 009	1 2 3				1	1	1	720
6	REACH	3 016	7 2	2000.00	1.58	1.33	1	1	1	730
6	RUNOFF	1 016	1	0.04	63.	0.37	1	1	1	750
6	ADDHYD	4 016	1 2 4				1	1	1	760
6	REACH	3 012	4 1	2500.00	1.99	1.33	1	1	1	770
6	RUNOFF	1 012	2	0.18	55.	0.49	1	1	1	780
6	ADDHYD	4 012	1 2 4				1	1	1	790
6	RESVOR	2	12 4 1	7057.00			1	1	1	800
6	REACH	3 014	1 2	1200.00	0.91	1.33	1	1	1	810
6	RUNOFF	1 014	1	0.02	61.	0.47	1	1	1	820
6	ADDHYD	4 014	1 2 4				1	1	1	830
6	RESVOR	2	14 4 6	6943.00			1	1	1	835
6	REACH	3 015	6 1	1600.00	2.72	1.33	1	1	1	850
6	RUNOFF	1 015	2	0.01	61.	0.25	1	1	1	860
6	ADDHYD	4 015	1 2 4				1	1	1	870
6	ADDHYD	4 015	3 4 1				1	1	1	880
6	RUNOFF	1 017	2	0.04	55.	0.48	1	1	1	900
6	ADDHYD	4 017	1 2 3				1	1	1	910
6	RUNOFF	1 018	1	0.11	61.	0.70	1	1	1	920

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

6	ADDHYD	4	018	1	3	2				1	1	1	930
6	RUNOFF	1	020		1		0.04	71.	0.39	1	1	1	950
6	ADDHYD	4	020	1	2	3				1	1	1	960
6	REACH	3	021	3	1		2900.00	0.89	1.33	1	1	1	970
6	RUNOFF	1	021		2		0.14	68.	0.52	1	1	1	980
6	ADDHYD	4	021	1	2	3				1	1	1	990
6	RUNOFF	1	022		6		0.04	70.	0.38	1	1	1	992
6	REACH	3	024	6	7		2300.00	1.63	1.33	1	1	1	996
6	RUNOFF	1	024		4		0.10	71.	0.50	1	1	1	1000
6	ADDHYD	4	024	4	7	6				1	1	1	1010
6	RESVOR	2		24	6	2	6686.00			1	1	1	1020
6	RUNOFF	1	025		4		0.02	76.	0.38	1	1	1	1038
6	ADDHYD	4	025	2	4	7				1	1	1	1040
6	ADDHYD	4	021	3	7	1				1	1	1	1045
6	REACH	3	026	1	2		1600.00	0.65	1.33	1	1	1	1050
6	RUNOFF	1	026		1		0.08	72.	0.20	1	1	1	1100
6	ADDHYD	4	026	1	2	3				1	1	1	1110
6	RUNOFF	1	027		1		0.04	55.	0.49	1	1	1	1120
6	REACH	3	028	1	2		1200.00	1.52	1.33	1	1	1	1130
6	RUNOFF	1	028		1		0.04	60.	0.57	1	1	1	1140
6	ADDHYD	4	028	1	2	4				1	1	1	1150
6	REACH	3	029	4	1		1400.00	1.30	1.33	1	1	1	1160
6	RUNOFF	1	029		2		0.04	60.	0.53	1	1	1	1170
6	ADDHYD	4	029	1	2	6				1	1	1	1180
6	RUNOFF	1	030		2		0.06	64.	0.54	1	1	1	1200
6	ADDHYD	4	030	6	2	4				1	1	1	1210
6	REACH	3	031	4	1		2200.00	2.90	1.33	1	1	1	1220
6	RUNOFF	1	031		2		0.09	68.	0.51	1	1	1	1230
6	ADDHYD	4	031	1	2	4				1	1	1	1240
6	ADDHYD	4	032	4	3	1				1	1	1	1250
	ENDATA												1260
7	INCREM	6					0.05						1270
7	COMPUT	7	001	032			0.00	4.4	1.0	7	2	1	1300
	ENDCMP	1											1310
	ENDJOB	2											1320

\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

EXECUTIVE CONTROL OPERATION INCREM

RECORD ID 1270

MAIN TIME INCREMENT = .05 HOURS

EXECUTIVE CONTROL OPERATION COMPUT

RECORD ID 1300

FROM XSECTION 1 TO XSECTION 32

STARTING TIME = .00 RAIN DEPTH = 4.40 RAIN DURATION = 1.00 RAIN TABLE NO. = 7 ANT. MOIST. COND = 2  
ALTERNATE NO. = 1 STORM NO. = 1 MAIN TIME INCREMENT = .05 HOURS

OPERATION RUNOFF CROSS SECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	356.87	{RUNOFF}
7.93	18.68	{RUNOFF}
9.95	9.53	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = 1.87 WATERSHED INCHES, 265.60 CFS-HRS, 21.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.20	351.23	{RUNOFF}
9.98	11.69	{RUNOFF}
12.95	8.96	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = 1.86 WATERSHED INCHES, 324.59 CFS-HRS, 26.82 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.11	388.56	{RUNOFF}
9.95	10.83	{RUNOFF}
12.87	8.32	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = 1.87 WATERSHED INCHES, 301.34 CFS-HRS, 24.90 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.18	340.86	{NULL}
10.03	9.53	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.87 WATERSHED INCHES, 265.11 CFS-HRS, 21.91 ACRE-FEET; BASEFLOW = .00 CFS

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PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC  
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OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.12	112.55	{RUNOFF}
7.96	7.49	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = 1.13 WATERSHED INCHES, 87.55 CFS-HRS, 7.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.16	447.94	{NULL}
9.99	13.43	{NULL}
12.92	10.35	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.61 WATERSHED INCHES, 352.66 CFS-HRS, 29.14 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.23	435.78	{NULL}
10.05	13.42	{NULL}
12.99	10.35	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.60 WATERSHED INCHES, 352.02 CFS-HRS, 29.09 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.16	22.97	{RUNOFF}
7.98	2.34	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .56 WATERSHED INCHES, 21.64 CFS-HRS, 1.79 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.23	456.26	{NULL}
10.03	14.68	{NULL}
12.98	11.35	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.45 WATERSHED INCHES, 373.67 CFS-HRS, 30.88 ACRE-FEET; BASEFLOW = .00 CFS

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OPERATION REACH CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.28	339.49	(NULL)
10.05	11.69	(NULL)
13.03	8.95	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.86 WATERSHED INCHES, 323.95 CFS-HRS, 26.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.18	94.25	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.13 WATERSHED INCHES, 87.21 CFS-HRS, 7.21 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.26	425.84	(NULL)
10.01	15.57	(NULL)
12.99	11.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.63 WATERSHED INCHES, 411.16 CFS-HRS, 33.98 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDRYD CROSS SECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	879.69	(NULL)
10.02	30.25	(NULL)
12.99	23.34	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.54 WATERSHED INCHES, 784.83 CFS-HRS, 64.86 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.34	833.79	(NULL)
10.09	30.24	(NULL)
13.07	23.32	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.54 WATERSHED INCHES, 782.92 CFS-HRS, 64.70 ACRE-FEET; BASEFLOW = .00 CFS

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OPERATION RUNOFF CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	24.25	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .55 WATERSHED INCHES, 32.23 CFS-HRS, 2.66 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.34	857.90	{NULL}
10.08	32.11	{NULL}
13.06	24.83	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.44 WATERSHED INCHES, 815.15 CFS-HRS, 67.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	370.10	{NULL}
10.02	10.83	{NULL}
12.95	8.31	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.86 WATERSHED INCHES, 300.71 CFS-HRS, 24.85 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.13	29.93	{RUNOFF}
7.98	2.24	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .96 WATERSHED INCHES, 24.71 CFS-HRS, 2.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	398.14	{NULL}
10.00	12.00	{NULL}
12.95	9.23	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.74 WATERSHED INCHES, 325.42 CFS-HRS, 26.89 ACRE-FEET; BASEFLOW = .00 CFS

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PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC  
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OPERATION REACH CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.28	378.62	{NULL}
10.08	12.00	{NULL}
13.03	9.22	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.73 WATERSHED INCHES, 324.70 CFS-HRS, 26.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	56.47	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .56 WATERSHED INCHES, 64.74 CFS-HRS, 5.35 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.27	434.56	{NULL}
10.03	15.76	{NULL}
13.01	12.23	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.28 WATERSHED INCHES, 389.44 CFS-HRS, 32.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.34	42.15	7076.43



TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .05 HOURS				DRAINAGE AREA = .47 SQ.MI.		
5.50	DISCHG	.00	.00	.00	.03	.26	1.33	4.62	12.44	17.57	19.14	
5.50	ELEV	7057.00	7057.00	7057.00	7057.00	7057.05	7057.23	7057.81	7059.20	7060.31	7061.19	
6.00	DISCHG	21.90	26.02	27.94	30.37	33.25	35.52	36.72	37.88	38.93	39.83	
6.00	ELEV	7062.72	7065.01	7066.08	7067.43	7069.03	7070.43	7071.43	7072.40	7073.27	7074.03	
6.50	DISCHG	40.59	41.09	41.31	41.49	41.64	41.75	41.84	41.92	41.98	42.02	
6.50	ELEV	7074.66	7075.11	7075.39	7075.62	7075.80	7075.94	7076.06	7076.15	7076.22	7076.28	
7.00	DISCHG	42.06	42.08	42.10	42.12	42.13	42.14	42.14	42.15	42.14	42.14	
7.00	ELEV	7076.32	7076.35	7076.38	7076.40	7076.42	7076.42	7076.43	7076.43	7076.43	7076.42	
7.50	DISCHG	42.13	42.12	42.11	42.10	42.08	42.07	42.05	42.04	42.02	42.01	
7.50	ELEV	7076.41	7076.40	7076.39	7076.37	7076.35	7076.34	7076.32	7076.30	7076.28	7076.26	
8.00	DISCHG	41.99	41.98	41.96	41.94	41.93	41.91	41.89	41.87	41.85	41.82	
8.00	ELEV	7076.24	7076.22	7076.20	7076.18	7076.16	7076.14	7076.11	7076.09	7076.06	7076.02	
8.50	DISCHG	41.79	41.76	41.73	41.70	41.66	41.63	41.60	41.56	41.52	41.49	

8.50	ELEV	7075.99	7075.95	7075.91	7075.87	7075.83	7075.79	7075.74	7075.70	7075.66	7075.61
9.00	DISCHG	41.45	41.42	41.38	41.35	41.31	41.28	41.24	41.20	41.17	41.13
9.00	ELEV	7075.57	7075.52	7075.48	7075.43	7075.39	7075.34	7075.30	7075.26	7075.21	7075.17
9.50	DISCHG	41.10	41.06	41.03	40.98	40.91	40.83	40.75	40.68	40.60	40.53
9.50	ELEV	7075.12	7075.08	7075.03	7074.99	7074.92	7074.86	7074.79	7074.73	7074.67	7074.61
10.00	DISCHG	40.45	40.38	40.30	40.23	40.15	40.08	40.00	39.92	39.85	39.77
10.00	ELEV	7074.54	7074.48	7074.42	7074.36	7074.29	7074.23	7074.17	7074.10	7074.04	7073.97
10.50	DISCHG	39.69	39.61	39.53	39.45	39.36	39.28	39.20	39.12	39.04	38.95
10.50	ELEV	7073.91	7073.84	7073.77	7073.71	7073.64	7073.57	7073.50	7073.43	7073.36	7073.29
11.00	DISCHG	38.87	38.79	38.71	38.63	38.55	38.47	38.39	38.31	38.23	38.15
11.00	ELEV	7073.23	7073.16	7073.09	7073.02	7072.96	7072.89	7072.82	7072.75	7072.69	7072.62
11.50	DISCHG	38.07	37.99	37.91	37.83	37.75	37.67	37.60	37.52	37.44	37.36
11.50	ELEV	7072.56	7072.49	7072.42	7072.36	7072.29	7072.23	7072.16	7072.10	7072.03	7071.97
12.00	DISCHG	37.29	37.21	37.13	37.06	36.98	36.91	36.83	36.76	36.68	36.61
12.00	ELEV	7071.91	7071.84	7071.78	7071.72	7071.65	7071.59	7071.53	7071.46	7071.40	7071.34
12.50	DISCHG	36.53	36.46	36.39	36.31	36.24	36.17	36.09	36.02	35.95	35.88
12.50	ELEV	7071.28	7071.22	7071.15	7071.09	7071.03	7070.97	7070.91	7070.85	7070.79	7070.73
13.00	DISCHG	35.80	35.73	35.66	35.59	35.52	35.45	35.38	35.30	35.23	35.16
13.00	ELEV	7070.67	7070.61	7070.55	7070.49	7070.43	7070.37	7070.31	7070.25	7070.19	7070.13
13.50	DISCHG	35.09	35.01	34.84	34.65	34.46	34.26	34.07	33.88	33.69	33.51
13.50	ELEV	7070.07	7070.01	7069.91	7069.80	7069.70	7069.59	7069.48	7069.38	7069.27	7069.17
14.00	DISCHG	33.32	33.14	32.95	32.77	32.59	32.41	32.23	32.06	31.88	31.70
14.00	ELEV	7069.07	7068.96	7068.86	7068.76	7068.66	7068.56	7068.46	7068.37	7068.27	7068.17
14.50	DISCHG	31.53	31.35	31.18	31.01	30.84	30.67	30.50	30.33	30.17	30.00
14.50	ELEV	7068.07	7067.98	7067.88	7067.78	7067.69	7067.59	7067.50	7067.41	7067.31	7067.22

RUNOFF VOLUME ABOVE BASEFLOW = 1.14 WATERSHED INCHES, 345.14 CFS-HRS, 28.52 ACRE-FEET; BASEFLOW = .00 CFS  
 \*\*\* WARNING - REACH 14 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 30.00 CFS, 71.19 % OF PEAK.

OPERATION REACH CROSS SECTION 14

PEAK TIME(HRS) 7.49 PEAK DISCHARGE(CFS) 42.14 PEAK ELEVATION(FEET) (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.12 WATERSHED INCHES, 341.11 CFS-HRS, 28.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 14

PEAK TIME(HRS) 6.20 PEAK DISCHARGE(CFS) 11.13 PEAK ELEVATION(FEET) (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .85 WATERSHED INCHES, 10.93 CFS-HRS, .90 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 14



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RUNOFF VOLUME ABOVE BASEFLOW = 1.04 WATERSHED INCHES, 327.60 CFS-HRS, 27.07 ACRE-FEET; BASEFLOW = .00 CFS  
\*\*\* WARNING - REACH 15 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 30.91 CFS, 70.38 % OF PEAK.

OPERATION REACH CROSS SECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.06	43.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.03 WATERSHED INCHES, 324.86 CFS-HRS, 26.85 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.08	8.25	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .85 WATERSHED INCHES, 5.50 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.08	8.25	(NULL)
7.04	44.50	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.02 WATERSHED INCHES, 330.35 CFS-HRS, 27.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 15

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.34	860.03	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.29 WATERSHED INCHES, 1145.51 CFS-HRS, 94.66 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.23	12.67	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .56 WATERSHED INCHES, 14.38 CFS-HRS, 1.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 17

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PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.33                                      871.15                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.27 WATERSHED INCHES, 1159.89 CFS-HRS, 95.85 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 18

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.36                                      45.36                                      (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 59.79 CFS-HRS, 4.94 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 18

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.34                                      916.28                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 1219.68 CFS-HRS, 100.79 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 20

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.12                                      46.40                                      (RUNOFF)  
7.93                                      2.92                                      (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.44 WATERSHED INCHES, 37.24 CFS-HRS, 3.08 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.33                                      942.27                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 1256.92 CFS-HRS, 103.87 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 21

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.46                                      849.66                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.23 WATERSHED INCHES, 1248.82 CFS-HRS, 103.20 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 21

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	116.17	(RUNOFF)
10.00	4.83	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.25 WATERSHED INCHES, 112.64 CFS-HRS, 9.31 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.45	920.41	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.23 WATERSHED INCHES, 1361.46 CFS-HRS, 112.51 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 22

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.12	44.64	(RUNOFF)
7.97	2.83	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.38 WATERSHED INCHES, 35.56 CFS-HRS, 2.94 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.25	37.85	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.37 WATERSHED INCHES, 35.41 CFS-HRS, 2.93 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	100.95	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.44 WATERSHED INCHES, 92.95 CFS-HRS, 7.68 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 24

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	137.71	(NULL)
10.00	5.21	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.42 WATERSHED INCHES, 128.35 CFS-HRS, 10.61 ACRE-PEET; BASEFLOW = .00 CFS

PERATION RESVOR STRUCTURE 24

PEAK TIME(HRS) 8.16 PEAK DISCHARGE(CFS) 9.80 PEAK ELEVATION(FEET) 6700.98

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .05 HOURS	DRAINAGE AREA = .14 SQ.MI.
5.50	DISCHG .00 .00 .00 .00 .00 .00 .00 .00 .01 .01 .02		
5.50	ELEV 6686.00 6686.00 6686.00 6686.00 6686.00 6686.00 6686.00 6687.96 6688.88 6690.16		
6.00	DISCHG .03 .03 .04 .04 .05 .05 .06 .06 .06 .06 .06		
6.00	ELEV 6691.29 6692.50 6693.68 6694.73 6695.76 6696.60 6697.34 6698.01 6698.49 6698.90		
6.50	DISCHG .07 .07 .07 .31 1.78 3.03 4.08 4.97 5.72 6.35		
6.50	ELEV 6699.25 6699.55 6699.81 6700.02 6700.17 6700.30 6700.40 6700.49 6700.57 6700.63		
7.00	DISCHG 6.90 7.36 7.77 8.12 8.42 8.68 8.90 9.08 9.22 9.34		
7.00	ELEV 6700.69 6700.73 6700.77 6700.81 6700.84 6700.86 6700.89 6700.90 6700.92 6700.93		
7.50	DISCHG 9.43 9.50 9.56 9.60 9.64 9.67 9.69 9.71 9.73 9.75		
7.50	ELEV 6700.94 6700.95 6700.95 6700.96 6700.96 6700.96 6700.97 6700.97 6700.97 6700.97		
8.00	DISCHG 9.77 9.78 9.79 9.80 9.79 9.78 9.74 9.69 9.62 9.54		
8.00	ELEV 6700.97 6700.97 6700.98 6700.98 6700.98 6700.97 6700.97 6700.97 6700.96 6700.95		
8.50	DISCHG 9.44 9.34 9.22 9.11 8.99 8.87 8.76 8.64 8.53 8.41		
8.50	ELEV 6700.94 6700.93 6700.92 6700.91 6700.90 6700.88 6700.87 6700.86 6700.85 6700.84		
9.00	DISCHG 8.30 8.20 8.09 7.99 7.90 7.80 7.71 7.62 7.54 7.46		
9.00	ELEV 6700.83 6700.82 6700.81 6700.80 6700.79 6700.78 6700.77 6700.76 6700.75 6700.74		
9.50	DISCHG 7.38 7.30 7.23 7.16 7.09 7.02 6.96 6.90 6.84 6.78		
9.50	ELEV 6700.73 6700.73 6700.72 6700.71 6700.70 6700.70 6700.69 6700.69 6700.68 6700.67		
10.00	DISCHG 6.73 6.67 6.62 6.57 6.52 6.47 6.41 6.36 6.30 6.23		
10.00	ELEV 6700.67 6700.66 6700.66 6700.65 6700.65 6700.64 6700.64 6700.63 6700.63 6700.62		
10.50	DISCHG 6.17 6.10 6.04 5.97 5.91 5.84 5.78 5.72 5.66 5.60		
10.50	ELEV 6700.61 6700.61 6700.60 6700.59 6700.59 6700.58 6700.57 6700.57 6700.56 6700.56		
11.00	DISCHG 5.54 5.49 5.44 5.39 5.34 5.29 5.24 5.20 5.16 5.11		
11.00	ELEV 6700.55 6700.54 6700.54 6700.53 6700.53 6700.52 6700.52 6700.51 6700.51 6700.51		
11.50	DISCHG 5.08 5.04 5.00 4.96 4.93 4.90 4.86 4.83 4.80 4.78		
11.50	ELEV 6700.50 6700.50 6700.49 6700.49 6700.49 6700.48 6700.48 6700.48 6700.48 6700.47		
12.00	DISCHG 4.75 4.72 4.70 4.67 4.65 4.63 4.60 4.58 4.56 4.54		
12.00	ELEV 6700.47 6700.47 6700.46 6700.46 6700.46 6700.46 6700.46 6700.45 6700.45 6700.45		
12.50	DISCHG 4.52 4.51 4.49 4.47 4.46 4.44 4.43 4.41 4.40 4.39		
12.50	ELEV 6700.45 6700.45 6700.44 6700.44 6700.44 6700.44 6700.44 6700.44 6700.43 6700.43		
13.00	DISCHG 4.37 4.36 4.35 4.34 4.32 4.31 4.30 4.28 4.26 4.24		
13.00	ELEV 6700.43 6700.43 6700.43 6700.43 6700.43 6700.43 6700.42 6700.42 6700.42 6700.42		
13.50	DISCHG 4.22 4.20 4.18 4.16 4.14 4.12 4.10 4.08 4.06 4.04		
13.50	ELEV 6700.42 6700.42 6700.41 6700.41 6700.41 6700.41 6700.40 6700.40 6700.40 6700.40		
14.00	DISCHG 4.03 4.01 3.99 3.98 3.96 3.94 3.92 3.90 3.89 3.87		
14.00	ELEV 6700.40 6700.40 6700.39 6700.39 6700.39 6700.39 6700.39 6700.38 6700.38 6700.38		
14.50	DISCHG 3.85 3.83 3.81 3.79 3.78 3.76 3.74 3.73 3.71 3.70		
14.50	ELEV 6700.38 6700.38 6700.38 6700.37 6700.37 6700.37 6700.37 6700.37 6700.37 6700.36		

RUNOFF VOLUME ABOVE BASEFLOW = .56 WATERSHED INCHES, 50.98 CFS-HRS, 4.21 ACRE-FEET; BASEFLOW = .00 CFS

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OPERATION RUNOFF CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.11	29.76	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.79 WATERSHED INCHES, 23.15 CFS-HRS, 1.91 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.11	29.80	(NULL)
8.03	11.43	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .72 WATERSHED INCHES, 74.13 CFS-HRS, 6.13 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.44	929.88	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.19 WATERSHED INCHES, 1435.59 CFS-HRS, 118.64 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.55	892.27	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.18 WATERSHED INCHES, 1428.63 CFS-HRS, 118.06 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.03	131.37	(RUNOFF)
7.98	6.03	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.52 WATERSHED INCHES, 78.31 CFS-HRS, 6.47 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.55	906.43	(NULL)



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RUNOFF VOLUME ABOVE BASEFLOW = 1.20 WATERSHED INCHES, 1506.94 CFS-HRS, 124.53 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	12.55	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .56 WATERSHED INCHES, 14.39 CFS-HRS, 1.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.36	11.36	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .55 WATERSHED INCHES, 14.31 CFS-HRS, 1.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.27	17.83	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .79 WATERSHED INCHES, 20.47 CFS-HRS, 1.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	28.66	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .67 WATERSHED INCHES, 34.78 CFS-HRS, 2.87 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.44	26.27	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .67 WATERSHED INCHES, 34.61 CFS-HRS, 2.86 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	18.88	(RUNOFF)

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RUNOFF VOLUME ABOVE BASEFLOW = .79 WATERSHED INCHES, 20.50 CFS-HRS, 1.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.36	41.38	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .71 WATERSHED INCHES, 55.11 CFS-HRS, 4.55 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	37.43	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.01 WATERSHED INCHES, 39.06 CFS-HRS, 3.23 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.30	76.09	(NULL)
10.02	4.74	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .81 WATERSHED INCHES, 94.17 CFS-HRS, 7.78 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.40	73.44	(NULL)
10.09	4.73	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .81 WATERSHED INCHES, 93.87 CFS-HRS, 7.76 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	75.33	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.25 WATERSHED INCHES, 72.42 CFS-HRS, 5.98 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 31

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.30	136.69	{NULL}
10.03	7.83	{NULL}
13.01	6.14	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .95 WATERSHED INCHES, 166.29 CFS-HRS, 13.74 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.53	1004.72	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.17 WATERSHED INCHES, 1673.23 CFS-HRS, 138.28 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD ID 1310

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB

RECORD ID 1320

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCRM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	1											
XSECTION	1	RUNOFF	.22	7	2	.05	.0	4.40	24.00	1.87	---	6.10	356.87	1622.1
XSECTION	5	RUNOFF	.27	7	2	.05	.0	4.40	24.00	1.86	---	6.20	351.23	1300.8
XSECTION	10	RUNOFF	.25	7	2	.05	.0	4.40	24.00	1.87	---	6.11	388.56	1554.2
XSECTION	2	REACH	.22	7	2	.05	.0	4.40	24.00	1.87	---	6.18	340.86	1549.3
XSECTION	2	RUNOFF	.12	7	2	.05	.0	4.40	24.00	1.13	---	6.12	112.55	937.9
XSECTION	2	ADDHYD	.34	7	2	.05	.0	4.40	24.00	1.61	---	6.16	447.94	1317.5
XSECTION	3	REACH	.34	7	2	.05	.0	4.40	24.00	1.60	---	6.23	435.78	1281.7
XSECTION	3	RUNOFF	.06	7	2	.05	.0	4.40	24.00	.56	---	6.16	22.97	382.9
XSECTION	3	ADDHYD	.40	7	2	.05	.0	4.40	24.00	1.45	---	6.23	456.26	1140.6
XSECTION	6	REACH	.27	7	2	.05	.0	4.40	24.00	1.86	---	6.28	339.49	1257.4
XSECTION	6	RUNOFF	.12	7	2	.05	.0	4.40	24.00	1.13	---	6.18	94.25	785.4
XSECTION	6	ADDHYD	.39	7	2	.05	.0	4.40	24.00	1.63	---	6.26	425.84	1091.9
XSECTION	8	ADDHYD	.79	7	2	.05	.0	4.40	24.00	1.54	---	6.24	879.69	1113.5
XSECTION	9	REACH	.79	7	2	.05	.0	4.40	24.00	1.54	---	6.34	833.79	1055.4
XSECTION	9	RUNOFF	.09	7	2	.05	.0	4.40	24.00	.55	---	6.31	24.25	269.4
XSECTION	9	ADDHYD	.88	7	2	.05	.0	4.40	24.00	1.44	---	6.34	857.90	974.9
XSECTION	16	REACH	.25	7	2	.05	.0	4.40	24.00	1.86	---	6.19	370.10	1480.4
XSECTION	16	RUNOFF	.04	7	2	.05	.0	4.40	24.00	.96	---	6.13	29.93	748.3
XSECTION	16	ADDHYD	.29	7	2	.05	.0	4.40	24.00	1.74	---	6.19	398.14	1372.9
XSECTION	12	REACH	.29	7	2	.05	.0	4.40	24.00	1.73	---	6.28	378.62	1305.6
XSECTION	12	RUNOFF	.18	7	2	.05	.0	4.40	24.00	.56	---	6.24	56.47	313.7
XSECTION	12	ADDHYD	.47	7	2	.05	.0	4.40	24.00	1.28	---	6.27	434.56	924.6
STRUCTURE	12	RESVOR	.47	7	2	.05	.0	4.40	24.00	1.14	7076.43	7.34	42.15	89.7
XSECTION	14	REACH	.47	7	2	.05	.0	4.40	24.00	1.12	---	7.49	42.14	89.7
XSECTION	14	RUNOFF	.02	7	2	.05	.0	4.40	24.00	.85	---	6.20	11.13	556.6
XSECTION	14	ADDHYD	.49	7	2	.05	.0	4.40	24.00	1.11	---	6.73	43.98	89.7
STRUCTURE	14	RESVOR	.49	7	2	.05	.0	4.40	24.00	1.04	6961.49	6.82	43.94	89.7
XSECTION	15	REACH	.49	7	2	.05	.0	4.40	24.00	1.03	---	7.06	43.76	89.3
XSECTION	15	RUNOFF	.01	7	2	.05	.0	4.40	24.00	.85	---	6.08	8.25	824.7
XSECTION	15	ADDHYD	.50	7	2	.05	.0	4.40	24.00	1.02	---	7.04	44.50	89.0
XSECTION	15	ADDHYD	1.38	7	2	.05	.0	4.40	24.00	1.29	---	6.34	860.03	623.2

SECTION 17 RUNOFF	.04	7	2	.05	.0	4.40	24.00	.56	---	6.23	12.67	316.7
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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE ‡	ANTEC MOIST COND	MAIN TIME INCRM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE 1 STORM 1														
XSECTION	17	ADDHYD	1.42	7	2	.05	.0	4.40	24.00	1.27	---	6.33	871.15	613.5
XSECTION	18	RUNOFF	.11	7	2	.05	.0	4.40	24.00	.84	---	6.36	45.36	412.4
XSECTION	18	ADDHYD	1.53	7	2	.05	.0	4.40	24.00	1.24	---	6.34	916.28	598.9
XSECTION	20	RUNOFF	.04	7	2	.05	.0	4.40	24.00	1.44	---	6.12	46.40	1159.9
XSECTION	20	ADDHYD	1.57	7	2	.05	.0	4.40	24.00	1.24	---	6.33	942.27	600.2
XSECTION	21	REACH	1.57	7	2	.05	.0	4.40	24.00	1.23	---	6.46	849.66	541.2
XSECTION	21	RUNOFF	.14	7	2	.05	.0	4.40	24.00	1.25	---	6.21	116.17	829.8
XSECTION	21	ADDHYD	1.71	7	2	.05	.0	4.40	24.00	1.23	---	6.45	920.41	538.3
XSECTION	22	RUNOFF	.04	7	2	.05	.0	4.40	24.00	1.38	---	6.12	44.64	1116.1
XSECTION	24	REACH	.04	7	2	.05	.0	4.40	24.00	1.37	---	6.25	37.85	946.2
XSECTION	24	RUNOFF	.10	7	2	.05	.0	4.40	24.00	1.44	---	6.19	100.95	1009.5
XSECTION	24	ADDHYD	.14	7	2	.05	.0	4.40	24.00	1.42	---	6.21	137.71	983.7
STRUCTURE	24	RESVOR	.14	7	2	.05	.0	4.40	24.00	.56	6700.98	8.16	9.80	70.0
XSECTION	25	RUNOFF	.02	7	2	.05	.0	4.40	24.00	1.79	---	6.11	29.76	1488.2
XSECTION	25	ADDHYD	.16	7	2	.05	.0	4.40	24.00	.72	---	6.11	29.80	186.3
XSECTION	21	ADDHYD	1.87	7	2	.05	.0	4.40	24.00	1.19	---	6.44	929.88	497.3
XSECTION	26	REACH	1.87	7	2	.05	.0	4.40	24.00	1.18	---	6.55	892.27	477.2
XSECTION	26	RUNOFF	.08	7	2	.05	.0	4.40	24.00	1.52	---	6.03	131.37	1642.1
XSECTION	26	ADDHYD	1.95	7	2	.05	.0	4.40	24.00	1.20	---	6.55	906.43	464.8
XSECTION	27	RUNOFF	.04	7	2	.05	.0	4.40	24.00	.56	---	6.24	12.55	313.7
XSECTION	28	REACH	.04	7	2	.05	.0	4.40	24.00	.55	---	6.36	11.36	284.0
XSECTION	28	RUNOFF	.04	7	2	.05	.0	4.40	24.00	.79	---	6.27	17.83	445.8
XSECTION	28	ADDHYD	.08	7	2	.05	.0	4.40	24.00	.67	---	6.31	28.66	358.2
XSECTION	29	REACH	.08	7	2	.05	.0	4.40	24.00	.67	---	6.44	26.27	328.4
XSECTION	29	RUNOFF	.04	7	2	.05	.0	4.40	24.00	.79	---	6.24	18.88	472.0
XSECTION	29	ADDHYD	.12	7	2	.05	.0	4.40	24.00	.71	---	6.36	41.38	344.9
XSECTION	30	RUNOFF	.06	7	2	.05	.0	4.40	24.00	1.01	---	6.24	37.43	623.8
XSECTION	30	ADDHYD	.18	7	2	.05	.0	4.40	24.00	.81	---	6.30	76.09	422.7
XSECTION	31	REACH	.18	7	2	.05	.0	4.40	24.00	.81	---	6.40	73.44	408.0
XSECTION	31	RUNOFF	.09	7	2	.05	.0	4.40	24.00	1.25	---	6.21	75.33	837.0
XSECTION	31	ADDHYD	.27	7	2	.05	.0	4.40	24.00	.95	---	6.30	136.69	506.3

XSECTION	32	ADDHYD	2.22	7	2	.05	.0	4.40	24.00	1.17	---	6.53	1004.72	452.6
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SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS  
 (A STAR(\*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK  
 A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION								ROUTING PARAMETERS						PEAK			
		OUTFLOW+				VOLUME		MAIN	ITER-	Q AND A		PEAK	S/Q	ATT-	TRAVEL TIME				
XSEC	REACH	INFLOW		OUTFLOW		INTERV.AREA		BASE-	ABOVE	TIME	ATION	EQUATION	LENGTH	RATIO	@PEAK	KIN	STOR-	KINE-	
ID	LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	FLOW (CFS)	BASE (IN)	INCR (HR)	#	COEFF (X)	POWER (M)	FACTOR (K*)	O/I (Q*)	(K) (SEC)	COEPP (C)	AGE (HR)	MATIC (HR)
ALTERNATE		1	STORM	1															
2	2800	357	6.1	338	6.2			0	1.87	.05	1	2.84	1.33	.054	.947	223	.57	.10	.06
						447	6.2												
* 3	1800	447	6.2	434	6.3			0	1.61	.05	1	1.95	1.33	.037	.970	180	.67	.10	.05
						453	6.3												
+ 6	2100	351	6.2	338	6.3			0	1.86	.05	1	1.91	1.33	.041	.964	227	.57	.10	.06
						426	6.3												
+ 9	2700	879	6.3	832	6.3			0	1.54	.05	1	1.55	1.33	.055	.947	272	.50	.10	.08
						856	6.3												
+ 16	2000	388	6.1	370	6.2			0	1.87	.05	1	1.58	1.33	.057	.952	243	.54	.10	.07
						397	6.2												
+ 12	2500	397	6.2	376	6.3			0	1.74	.05	1	1.99	1.33	.056	.947	254	.52	.10	.07
						432	6.3												
+ 14	1200	42	7.3	42	7.5			0	1.14*	.05	1	.910	1.33	.005	1.000	383	.38	.15	.11
						44	6.8												
+ 15	1600	44	6.8	44	7.1			0	1.04*	.05	1	2.72	1.33	.002	.996	222	.58	.25	.06
						45	7.1												
+ 21	2900	938	6.3	848	6.5			0	1.24	.05	1	.890	1.33	.060	.904	436	.34	.10	.12
						920	6.5												
+ 24	2300	44	6.1	38	6.3			0	1.38	.05	1	1.63	1.33	.130	.854	468	.32	.15	.13
						138	6.2												
												.650							





SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....
STRUCTURE 24	.14	1
ALTERNATE 1		9.80
STRUCTURE 14	.49	
ALTERNATE 1		43.94
STRUCTURE 12	.47	
ALTERNATE 1		42.15
XSECTION 1	.22	
ALTERNATE 1		356.87
XSECTION 2	.34	
ALTERNATE 1		447.94
XSECTION 3	.40	
ALTERNATE 1		456.26
XSECTION 5	.27	
ALTERNATE 1		351.23
XSECTION 6	.39	
ALTERNATE 1		425.84
XSECTION 8	.79	
ALTERNATE 1		879.69
XSECTION 9	.88	
ALTERNATE 1		857.90
XSECTION 10	.25	
ALTERNATE 1		388.56
XSECTION 12	.47	
ALTERNATE 1		434.56
XSECTION 14	.49	
ALTERNATE 1		43.98
XSECTION 15	1.38	
ALTERNATE 1		860.03

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

SECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 16	.29	
<hr/>		
ALTERNATE 1		398.14
XSECTION 17	1.42	
<hr/>		
ALTERNATE 1		871.15
XSECTION 18	1.53	
<hr/>		
ALTERNATE 1		916.28
XSECTION 20	1.57	
<hr/>		
ALTERNATE 1		942.27
XSECTION 21	1.87	
<hr/>		
ALTERNATE 1		929.88
XSECTION 22	.04	
<hr/>		
ALTERNATE 1		44.64
XSECTION 24	.14	
<hr/>		
ALTERNATE 1		137.71
XSECTION 25	.16	
<hr/>		
ALTERNATE 1		29.80
XSECTION 26	1.95	
<hr/>		
ALTERNATE 1		906.43
XSECTION 27	.04	
<hr/>		
ALTERNATE 1		12.55
XSECTION 28	.08	
<hr/>		
ALTERNATE 1		28.66
XSECTION 29	.12	
<hr/>		
ALTERNATE 1		41.38
XSECTION 30	.18	
<hr/>		
ALTERNATE 1		76.09
XSECTION 31	.27	
<hr/>		
ALTERNATE 1		136.69

120 XEQ 02-04-93 14:56  
REV PC 09/83(.2)

PEREGRINE DRY CREEK MDDP HISTORIC CONDITIONS WITH HISTORIC  
RETENTION PONDS 100-YEAR STORM

20  
21

JOB 1 SUMMARY  
PAGE 20

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 32	2.22	
<hr/>		
ALTERNATE 1		1004.72

END OF 1 JOBS IN THIS RUN

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY\*\*\*\*\*

JOB TR-20	SUMMARY				NO PLOTS	
TITLE 001 PEREGRINE DRY CREEK MDDP DEVELOPED	CONDITIONS	WITH	REWORKED			10
TITLE 001 DETENTION POND AT 12 AND NEW PONDS AT 8 & 32				10-YEAR STORM		20
5 RAINPL 7	0.25					2
8	0.0000	0.0005	0.0015	0.0030	0.0045	30
8	0.0060	0.0080	0.0100	0.0120	0.0143	40
8	0.0165	0.0188	0.0210	0.0233	0.0255	50
8	0.0278	0.0320	0.0390	0.0460	0.0530	60
8	0.0600	0.0750	0.1000	0.4000	0.7000	70
8	0.7250	0.7500	0.7650	0.7800	0.7900	80
8	0.8000	0.8100	0.8200	0.8250	0.8300	90
8	0.8350	0.8400	0.8450	0.8500	0.8550	100
8	0.8600	0.8638	0.8675	0.8713	0.8750	110
8	0.8788	0.8825	0.8863	0.8900	0.8938	120
8	0.8975	0.9013	0.9050	0.9083	0.9115	130
8	0.9148	0.9180	0.9210	0.9240	0.9270	140
8	0.9300	0.9325	0.9350	0.9375	0.9400	150
8	0.9425	0.9450	0.9475	0.9500	0.9525	160
8	0.9550	0.9575	0.9600	0.9625	0.9650	170
8	0.9675	0.9700	0.9725	0.9750	0.9775	180
8	0.9800	0.9813	0.9825	0.9838	0.9850	190
8	0.9863	0.9875	0.9888	0.9900	0.9913	200
8	0.9925	0.9938	0.9950	0.9963	0.9975	210
8	0.9988	1.0000	1.0000	1.0000	1.0000	220
9 ENDTBL						230
3 STRUCT	08					235
8		7050.	0.0	0.00		236
8		7055.	71.0	0.63		237
8		7060.	110.0	1.98		238
8		7065.	140.0	5.41		239
8		7070.	165.0	10.95		240
8		7075.	185.0	19.03		241
8		7080.	205.0	30.15		242
9 ENDTBL						243
3 STRUCT	12					250
8		7050.	0.0	0.0		255
8		7055.	19.0	0.91		260
8		7060.	28.0	3.38		270
8		7065.	35.0	8.00		280
8		7070.	41.0	14.30		290
8		7075.	45.0	22.78		300
8		7080.	49.0	33.17		302
8		7082.	200.0	38.00		304
9 ENDTBL						306
3 STRUCT	32					310
8		6607.	0.0	0.00		360
						370

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

8			6608.	60.0	0.19				380	
8			6610.	220.0	1.95				390	
8			6612.	340.0	5.53				400	
8			6614.	650.0	10.19				410	
8			6616.	720.0	15.42				420	
8			6617.	800.0	18.30				421	
8			6620.	1100.0	23.00				422	
9	ENDTBL								425	
6	RUNOFF	1 001	2	0.22	77.	0.36	1	1	1	445
6	RUNOFF	1 005	6	0.27	77.	0.53	1	1	1	460
6	RUNOFF	1 010	7	0.25	77.	0.38	1	1	1	480
6	REACH	3 002	2 4	2800.00	2.84	1.33	1	1	1	490
6	RUNOFF	1 002	1	0.12	67.	0.36	1	1	1	500
6	ADDHYD	4 002	1 4 3				1	1	1	570
6	REACH	3 003	3 1	1800.00	1.95	1.33	1	1	1	580
6	RUNOFF	1 003	2	0.06	62.	0.31	1	1	1	590
6	ADDHYD	4 003	1 2 3				1	1	1	600
6	REACH	3 006	6 2	2100.00	1.91	1.33	1	1	1	620
6	RUNOFF	1 006	1	0.12	67.	0.47	1	1	1	640
6	ADDHYD	4 006	1 2 4				1	1	1	650
6	ADDHYD	4 008	3 4 2				1	1	1	655
6	RESVOR	2 08	2 3	7050.00			1 1 1	1	1	680
6	REACH	3 009	3 2	2400.00	1.54	1.33	1	1	1	700
6	RUNOFF	1 009	1	0.07	63.	0.43	1	1	1	710
6	ADDHYD	4 009	1 2 3				1	1	1	720
6	REACH	3 016	7 2	2000.00	1.58	1.33	1	1	1	730
6	RUNOFF	1 016	1	0.04	63.	0.37	1	1	1	750
6	ADDHYD	4 016	1 2 4				1	1	1	760
6	RUNOFF	1 012	2	0.18	60.	0.42	1	1	1	780
6	ADDHYD	4 012	4 2 6				1	1	1	790
6	RESVOR	2 12	6 1	7050.00			1 1 1	1	1	800
6	RUNOFF	1 014	2	0.02	61.	0.47	1	1	1	820
6	ADDHYD	4 014	1 2 4				1	1	1	830
6	REACH	3 015	4 1	1000.00	2.72	1.33	1	1	1	850
6	RUNOFF	1 015	2	0.01	62.	0.19	1	1	1	860
6	ADDHYD	4 015	1 2 4				1	1	1	870
6	ADDHYD	4 015	3 4 1				1	1	1	880
6	RUNOFF	1 017	2	0.09	62.	0.52	1	1	1	900
6	ADDHYD	4 017	1 2 3				1	1	1	910
6	RUNOFF	1 018	1	0.11	66.	0.63	1	1	1	920
6	ADDHYD	4 018	1 3 2				1	1	1	930
6	RUNOFF	1 020	1	0.04	75.	0.34	1	1	1	950
6	ADDHYD	4 020	1 2 3				1	1	1	960
6	RUNOFF	1 021	2	0.13	78.	0.28	1	1	1	980
6	ADDHYD	4 021	2 3 6				1	1	1	990
6	RUNOFF	1 022	1	0.04	74.	0.22	1	1	1	1000

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

6	REACH	3	025	1	2	3200.00	6.90	1.38	1	1	1	1050	
6	RUNOFF	1	025		1	0.10	79.	0.25	1	1	1	1060	
6	ADDHYD	4	025	1	2	4			1	1	1	1070	
6	ADDHYD	4	025	6	4	2			1	1	1	1080	
6	RUNOFF	1	026		1	0.08	78.	0.23	1	1	1	1100	
6	ADDHYD	4	026	1	2	3			1	1	1	1110	
6	RUNOFF	1	027		1	0.04	55.	0.49	1	1	1	1120	
6	REACH	3	028	1	2	1200.00	1.52	1.33	1	1	1	1130	
6	RUNOFF	1	028		1	0.04	60.	0.56	1	1	1	1140	
6	ADDHYD	4	028	1	2	4			1	1	1	1150	
6	REACH	3	029	4	1	1400.00	1.25	1.33	1	1	1	1160	
6	RUNOFF	1	029		2	0.04	60.	0.53	1	1	1	1170	
6	ADDHYD	4	029	1	2	6			1	1	1	1180	
6	RUNOFF	1	030		2	0.06	72.	0.62	1	1	1	1200	
6	ADDHYD	4	030	6	2	4			1	1	1	1210	
6	REACH	3	031	4	1	2200.00	2.90	1.33	1	1	1	1220	
6	RUNOFF	1	031		2	0.09	71.	0.27	1	1	1	1230	
6	ADDHYD	4	031	1	2	4			1	1	1	1240	
6	ADDHYD	4	032	4	3	1			1	1	1	1250	
6	RESVOR	2	32	1	5	6607.00			1	1	1	1255	
	ENDATA											1260	
7	INCREM	6				0.05						1270	
7	COMPUT	7	001		32	0.00	3.0	1.0	7	2	1	1	1300
	ENDCMP	1										1310	
	ENDJOB	2										1320	

\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

EXECUTIVE CONTROL OPERATION INCREM

RECORD ID 1270

MAIN TIME INCREMENT = .05 HOURS

EXECUTIVE CONTROL OPERATION COMPUT

RECORD ID 1300

FROM XSECTION 1

TO STRUCTURE 32

STARTING TIME = .00 RAIN DEPTH = 3.00 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2  
ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .05 HOURS

OPERATION RUNOFF CROSS SECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.11	171.45	(RUNOFF)
7.95	10.47	(RUNOFF)
9.97	5.41	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 130.65 CFS-HRS, 10.80 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	164.77	(RUNOFF)
9.99	6.63	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 159.61 CFS-HRS, 13.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.12	185.64	(RUNOFF)
7.98	11.92	(RUNOFF)
9.97	6.15	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 148.24 CFS-HRS, 12.25 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.20	159.11	{NULL}
7.99	10.47	{NULL}
10.03	5.41	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 130.31 CFS-HRS, 10.77 ACRE-FEET; BASEFLOW = .00 CFS



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OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.14	43.43	{RUNOFF}
7.98	3.73	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .48 WATERSHED INCHES, 37.04 CFS-HRS, 3.06 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	199.44	{NULL}
7.98	14.20	{NULL}
10.00	7.38	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .76 WATERSHED INCHES, 167.35 CFS-HRS, 13.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.27	190.65	{NULL}
10.07	7.38	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .76 WATERSHED INCHES, 166.94 CFS-HRS, 13.80 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.13	13.59	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .31 WATERSHED INCHES, 12.15 CFS-HRS, 1.00 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.26	199.40	{NULL}
10.03	8.14	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .69 WATERSHED INCHES, 179.08 CFS-HRS, 14.80 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 6

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	156.23	{NULL}
10.07	6.63	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .91 WATERSHED INCHES, 159.18 CFS-HRS, 13.15 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	35.71	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .48 WATERSHED INCHES, 36.88 CFS-HRS, 3.05 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.29	188.06	{NULL}
10.03	8.60	{NULL}
13.01	6.70	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .78 WATERSHED INCHES, 196.06 CFS-HRS, 16.20 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.27	386.45	{NULL}
10.03	16.74	{NULL}
13.00	13.07	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .74 WATERSHED INCHES, 375.14 CFS-HRS, 31.00 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 8

		PEAK TIME(HRS)		PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)					
		6.66		154.54		7067.91					
		10.08		16.72		7051.18					
		13.07		13.05		7050.92					
TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .05 HOURS			DRAINAGE AREA = .79 SQ.MI.		
5.50	DISCHG	.00	.00	.00	.00	.06	.42	1.75	5.50	13.96	29.99
5.50	ELEV	7050.00	7050.00	7050.00	7050.00	7050.00	7050.03	7050.12	7050.39	7050.98	7052.11
6.00	DISCHG	56.10	77.69	93.61	111.55	119.55	128.51	137.56	143.07	146.81	149.79
6.00	ELEV	7053.95	7055.86	7057.90	7060.26	7061.59	7063.08	7064.59	7065.61	7066.36	7066.96
6.50	DISCHG	151.98	153.44	154.25	154.53	154.40	153.92	153.17	152.20	151.04	149.74

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6.50	ELEV	7067.40	7067.69	7067.85	7067.91	7067.88	7067.78	7067.63	7067.44	7067.21	7066.95
7.00	DISCHG	148.34	146.84	145.29	143.69	142.05	140.39	137.53	134.30	131.10	127.93
7.00	ELEV	7066.67	7066.37	7066.06	7065.74	7065.41	7065.08	7064.59	7064.05	7063.52	7062.99
7.50	DISCHG	124.79	121.71	118.69	115.73	112.85	110.04	101.49	93.78	86.90	80.79
7.50	ELEV	7062.47	7061.95	7061.45	7060.96	7060.47	7060.01	7058.91	7057.92	7057.04	7056.25
8.00	DISCHG	75.35	69.35	55.34	46.51	40.81	36.93	34.04	31.67	29.57	27.63
8.00	ELEV	7055.56	7054.88	7053.90	7053.28	7052.87	7052.60	7052.40	7052.23	7052.08	7051.95
8.50	DISCHG	25.84	24.21	22.77	21.54	20.50	19.64	18.95	18.40	17.97	17.63
8.50	ELEV	7051.82	7051.71	7051.60	7051.52	7051.44	7051.38	7051.33	7051.30	7051.27	7051.24
9.00	DISCHG	17.37	17.16	17.01	16.89	16.80	16.74	16.69	16.66	16.64	16.63
9.00	ELEV	7051.22	7051.21	7051.20	7051.19	7051.18	7051.18	7051.18	7051.17	7051.17	7051.17
9.50	DISCHG	16.62	16.62	16.62	16.62	16.63	16.64	16.65	16.66	16.67	16.69
9.50	ELEV	7051.17	7051.17	7051.17	7051.17	7051.17	7051.17	7051.17	7051.17	7051.17	7051.18
10.00	DISCHG	16.70	16.71	16.72	16.70	16.64	16.52	16.34	16.08	15.76	15.41
10.00	ELEV	7051.18	7051.18	7051.18	7051.18	7051.17	7051.16	7051.15	7051.13	7051.11	7051.08
10.50	DISCHG	15.03	14.67	14.32	14.01	13.75	13.53	13.35	13.21	13.11	13.04
10.50	ELEV	7051.06	7051.03	7051.01	7050.99	7050.97	7050.95	7050.94	7050.93	7050.92	7050.92
11.00	DISCHG	12.98	12.94	12.90	12.86	12.83	12.81	12.80	12.80	12.81	12.82
11.00	ELEV	7050.91	7050.91	7050.91	7050.91	7050.90	7050.90	7050.90	7050.90	7050.90	7050.90
11.50	DISCHG	12.82	12.83	12.83	12.83	12.83	12.83	12.83	12.84	12.86	12.87
11.50	ELEV	7050.90	7050.90	7050.90	7050.90	7050.90	7050.90	7050.90	7050.90	7050.91	7050.91
12.00	DISCHG	12.89	12.90	12.90	12.90	12.90	12.90	12.91	12.92	12.93	12.95
12.00	ELEV	7050.91	7050.91	7050.91	7050.91	7050.91	7050.91	7050.91	7050.91	7050.91	7050.91
12.50	DISCHG	12.96	12.97	12.98	12.98	12.98	12.98	12.98	12.99	13.01	13.03
12.50	ELEV	7050.91	7050.91	7050.91	7050.91	7050.91	7050.91	7050.91	7050.92	7050.92	7050.92
13.00	DISCHG	13.04	13.05	13.05	13.04	13.00	12.95	12.86	12.76	12.63	12.49
13.00	ELEV	7050.92	7050.92	7050.92	7050.92	7050.92	7050.91	7050.91	7050.90	7050.89	7050.88
13.50	DISCHG	12.34	12.20	12.06	11.93	11.82	11.72	11.65	11.60	11.57	11.55
13.50	ELEV	7050.87	7050.86	7050.85	7050.84	7050.83	7050.83	7050.82	7050.82	7050.81	7050.81
14.00	DISCHG	11.53	11.51	11.50	11.47	11.44	11.39	11.34	11.27	11.20	11.12
14.00	ELEV	7050.81	7050.81	7050.81	7050.81	7050.81	7050.80	7050.80	7050.79	7050.79	7050.78
14.50	DISCHG	11.04	10.97	10.91	10.85	10.81	10.77	10.74	10.72	10.70	10.69
14.50	ELEV	7050.78	7050.77	7050.77	7050.76	7050.76	7050.76	7050.76	7050.75	7050.75	7050.75

RUNOFF VOLUME ABOVE BASEFLOW = .73 WATERSHED INCHES, 374.09 CFS-HRS, 30.91 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.81	153.42	(NULL)
10.17	16.70	(NULL)
13.17	13.04	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .73 WATERSHED INCHES, 372.58 CFS-HRS, 30.79 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 9

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.20	14.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .34 WATERSHED INCHES, 15.48 CFS-HRS, 1.28 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.77	157.11	(NULL)
10.10	17.62	(NULL)
13.13	13.78	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .70 WATERSHED INCHES, 388.06 CFS-HRS, 32.07 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.22	171.60	(NULL)
10.03	6.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 147.83 CFS-HRS, 12.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.16	9.07	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .34 WATERSHED INCHES, 8.86 CFS-HRS, .73 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.22	180.09	(NULL)
10.03	6.68	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 156.69 CFS-HRS, 12.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	24.59	(RUNOFF)
7.99	3.64	(RUNOFF)

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RUNOFF VOLUME ABOVE BASEFLOW = .26 WATERSHED INCHES, 29.81 CFS-HRS, 2.46 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.22	204.67	{NULL}
7.98	16.54	{NULL}
10.01	8.67	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .61 WATERSHED INCHES, 186.50 CFS-HRS, 15.41 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.92	33.30	7063.79

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .05 HOURS	DRAINAGE AREA = .47 SQ.MI.
5.50	DISCHG .00 .00 .00 .00	.03 .18 .62	1.68 3.82 7.53
5.50	ELEV 7050.00 7050.00 7050.00 7050.00	7050.01 7050.05 7050.16	7050.44 7051.00 7051.98
6.00	DISCHG 13.28 19.43 21.34 23.67	26.27 28.38 29.41	30.31 31.05 31.64
6.00	ELEV 7053.50 7055.24 7056.30 7057.60	7059.04 7060.27 7061.00	7061.65 7062.18 7062.60
6.50	DISCHG 32.10 32.45 32.72 32.92	33.07 33.18 33.25	33.29 33.30 33.30
6.50	ELEV 7062.93 7063.18 7063.37 7063.51	7063.62 7063.70 7063.75	7063.78 7063.79 7063.79
7.00	DISCHG 33.28 33.25 33.21 33.17	33.12 33.06 32.99	32.91 32.83 32.75
7.00	ELEV 7063.77 7063.75 7063.73 7063.69	7063.65 7063.61 7063.56	7063.51 7063.45 7063.39
7.50	DISCHG 32.66 32.56 32.47 32.37	32.28 32.18 32.08	31.99 31.89 31.79
7.50	ELEV 7063.33 7063.26 7063.19 7063.12	7063.05 7062.99 7062.92	7062.85 7062.78 7062.71
8.00	DISCHG 31.70 31.60 31.51 31.41	31.32 31.21 31.11	31.00 30.88 30.76
8.00	ELEV 7062.64 7062.57 7062.51 7062.44	7062.37 7062.30 7062.22	7062.14 7062.06 7061.97
8.50	DISCHG 30.63 30.50 30.37 30.24	30.11 29.98 29.84	29.71 29.58 29.45
8.50	ELEV 7061.88 7061.79 7061.69 7061.60	7061.51 7061.41 7061.32	7061.22 7061.13 7061.03
9.00	DISCHG 29.32 29.19 29.06 28.93	28.80 28.68 28.55	28.43 28.30 28.18
9.00	ELEV 7060.94 7060.85 7060.76 7060.67	7060.57 7060.48 7060.39	7060.31 7060.22 7060.13
9.50	DISCHG 28.06 27.85 27.56 27.28	27.00 26.72 26.45	26.19 25.93 25.67
9.50	ELEV 7060.04 7059.92 7059.76 7059.60	7059.44 7059.29 7059.14	7058.99 7058.85 7058.70
10.00	DISCHG 25.41 25.16 24.92 24.67	24.43 24.19 23.95	23.71 23.47 23.23
10.00	ELEV 7058.56 7058.42 7058.29 7058.15	7058.02 7057.88 7057.75	7057.62 7057.48 7057.35
10.50	DISCHG 22.99 22.75 22.51 22.28	22.04 21.81 21.59	21.37 21.15 20.93
10.50	ELEV 7057.21 7057.08 7056.95 7056.82	7056.69 7056.56 7056.44	7056.31 7056.19 7056.07
11.00	DISCHG 20.72 20.51 20.30 20.09	19.89 19.69 19.50	19.31 19.12 18.63
11.00	ELEV 7055.95 7055.84 7055.72 7055.61	7055.50 7055.39 7055.28	7055.17 7055.07 7054.90
11.50	DISCHG 17.64 16.73 15.90 15.13	14.43 13.79 13.20	12.67 12.17 11.72
11.50	ELEV 7054.64 7054.40 7054.18 7053.98	7053.80 7053.63 7053.47	7053.33 7053.20 7053.08
12.00	DISCHG 11.31 10.93 10.58 10.26	9.97 9.70 9.45	9.23 9.03 8.84
12.00	ELEV 7052.98 7052.88 7052.78 7052.70	7052.62 7052.55 7052.49	7052.43 7052.38 7052.33
12.50	DISCHG 8.67 8.51 8.37 8.23	8.11 8.00 7.90	7.81 7.72 7.65

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12.50	ELEV	7052.28	7052.24	7052.20	7052.17	7052.13	7052.10	7052.08	7052.05	7052.03	7052.01
13.00	DISCHG	7.58	7.52	7.46	7.40	7.34	7.28	7.22	7.16	7.09	7.02
13.00	ELEV	7052.00	7051.98	7051.96	7051.95	7051.93	7051.92	7051.90	7051.88	7051.87	7051.85
13.50	DISCHG	6.96	6.89	6.82	6.75	6.69	6.63	6.58	6.53	6.49	6.45
13.50	ELEV	7051.83	7051.81	7051.79	7051.78	7051.76	7051.75	7051.73	7051.72	7051.71	7051.70
14.00	DISCHG	6.41	6.38	6.34	6.31	6.28	6.24	6.21	6.17	6.13	6.09
14.00	ELEV	7051.69	7051.68	7051.67	7051.66	7051.65	7051.64	7051.63	7051.62	7051.61	7051.60
14.50	DISCHG	6.06	6.02	5.99	5.95	5.92	5.90	5.87	5.84	5.82	5.80
14.50	ELEV	7051.59	7051.58	7051.58	7051.57	7051.56	7051.55	7051.54	7051.54	7051.53	7051.53

RUNOFF VOLUME ABOVE BASEFLOW = .60 WATERSHED INCHES, 183.16 CFS-HRS, 15.14 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 14

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
 6.24    2.90    (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .28 WATERSHED INCHES, 3.66 CFS-HRS, .30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 14

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
 6.75    34.20    (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .59 WATERSHED INCHES, 186.81 CFS-HRS, 15.44 ACRE-FEET; BASEFLOW = .00 CFS

\*\*\* WARNING REACH 15 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*  
 \*\*\* WARNING - REACH 15 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 5.96 CFS, 17.43 % OF PEAK.

OPERATION REACH CROSS SECTION 15

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
 6.82    34.19    (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .59 WATERSHED INCHES, 186.38 CFS-HRS, 15.40 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 15

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
 6.06    3.11    (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .32 WATERSHED INCHES, 2.03 CFS-HRS, .17 ACRE-FEET; BASEFLOW = .00 CFS

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OPERATION ADDHYD CROSS SECTION 15

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.81                                      34.52                                      {NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .58 WATERSHED INCHES, 188.42 CFS-HRS, 15.57 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 15

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.77                                      191.62                                      {NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .66 WATERSHED INCHES, 576.47 CFS-HRS, 47.64 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 17

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.27                                      13.95                                      {RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .31 WATERSHED INCHES, 18.10 CFS-HRS, 1.50 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 17

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.72                                      197.20                                      {NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .64 WATERSHED INCHES, 594.57 CFS-HRS, 49.14 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 18

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.33                                      23.67                                      {RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .44 WATERSHED INCHES, 31.17 CFS-HRS, 2.58 ACRE-PEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 18

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.57                                      211.25                                      {NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .62 WATERSHED INCHES, 625.75 CFS-HRS, 51.71 ACRE-PEET; BASEFLOW = .00 CFS



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OPERATION RUNOFF CROSS SECTION 20

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.11    27.79    (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .82 WATERSHED INCHES,      21.10 CFS-HRS,      1.74 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.51    217.21    (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .63 WATERSHED INCHES,      646.84 CFS-HRS,      53.46 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 21

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.87    120.28    (RUNOFF)  
7.97    6.41    (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .97 WATERSHED INCHES,      81.74 CFS-HRS,      6.75 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 21

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.17    261.75    (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .65 WATERSHED INCHES,      728.58 CFS-HRS,      60.21 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 22

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.85    32.04    (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .77 WATERSHED INCHES,      19.94 CFS-HRS,      1.65 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 25

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.12    29.76    (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .77 WATERSHED INCHES,      19.88 CFS-HRS,      1.64 ACRE-FEET;      BASEFLOW = .00 CFS

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OPERATION RUNOFF CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.05	102.81	(RUNOFF)
7.98	5.12	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.03 WATERSHED INCHES, 66.48 CFS-HRS, 5.49 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.07	129.44	(NULL)
7.98	6.82	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .96 WATERSHED INCHES, 86.36 CFS-HRS, 7.14 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.11	377.72	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .68 WATERSHED INCHES, 814.94 CFS-HRS, 67.35 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.05	79.90	(RUNOFF)
7.98	3.96	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .98 WATERSHED INCHES, 50.35 CFS-HRS, 4.16 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	449.17	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .69 WATERSHED INCHES, 865.29 CFS-HRS, 71.51 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	1.73	(RUNOFF)

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RUNOFF VOLUME ABOVE BASEFLOW = .14 WATERSHED INCHES, 3.58 CFS-HRS, .30 ACRE-FEET; BASEFLOW = .00 CFS  
\*\*\* WARNING - REACH 28 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT .21 CFS, 12.37 % OF PEAK.

OPERATION REACH CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.50	1.43	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .14 WATERSHED INCHES, 3.53 CFS-HRS, .29 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	4.37	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .26 WATERSHED INCHES, 6.59 CFS-HRS, .54 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.36	5.53	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .20 WATERSHED INCHES, 10.12 CFS-HRS, .84 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.54	4.73	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .19 WATERSHED INCHES, 10.00 CFS-HRS, .83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 29

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.29	4.56	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .26 WATERSHED INCHES, 6.59 CFS-HRS, .54 ACRE-FEET; BASEFLOW = .00 CFS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.41	8.26	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .21 WATERSHED INCHES, 16.60 CFS-HRS, 1.37 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(PEET)
6.29	22.69	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .67 WATERSHED INCHES, 26.13 CFS-HRS, 2.16 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 30

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	30.39	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .37 WATERSHED INCHES, 42.73 CFS-HRS, 3.53 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.44	28.77	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .37 WATERSHED INCHES, 42.54 CFS-HRS, 3.52 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.08	53.41	{RUNOFF}
7.98	3.39	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .64 WATERSHED INCHES, 37.00 CFS-HRS, 3.06 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	61.98	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = .46 WATERSHED INCHES, 79.54 CFS-HRS, 6.57 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 32

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 DETENTION POND AT 12 AND NEW PONDS AT 8 & 32 10-YEAR STORM

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PEAK TIME(HRS) 6.10  
 PEAK DISCHARGE(CFS) 511.14  
 PEAK ELEVATION(FEET) (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .66 WATERSHED INCHES, 944.83 CFS-HRS, 78.08 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS) 6.32  
 PEAK DISCHARGE(CFS) 349.50  
 PEAK ELEVATION(FEET) 6612.06

TIME(HRS)	DISCHG	FIRST HYDROGRAPH POINT = .00 HOURS										TIME INCREMENT = .05 HOURS	DRAINAGE AREA = 2.22 SQ.MI.		
5.50	DISCHG	.00	.00	.16	2.19	10.53	31.35	63.46	86.41	123.90	173.80				
5.50	ELEV	6607.00	6607.00	6607.00	6607.04	6607.18	6607.52	6608.04	6608.33	6608.80	6609.42				
6.00	DISCHG	225.76	254.10	285.51	312.89	331.62	342.96	349.15	347.61	342.61	337.96				
6.00	ELEV	6610.10	6610.57	6611.09	6611.55	6611.86	6612.02	6612.06	6612.05	6612.02	6611.97				
6.50	DISCHG	334.08	329.83	325.26	320.28	314.87	309.15	303.33	297.56	291.96	286.57				
6.50	ELEV	6611.90	6611.83	6611.75	6611.67	6611.58	6611.49	6611.39	6611.29	6611.20	6611.11				
7.00	DISCHG	281.42	276.50	271.72	266.97	262.20	257.43	252.73	248.12	243.60	239.15				
7.00	ELEV	6611.02	6610.94	6610.86	6610.78	6610.70	6610.62	6610.55	6610.47	6610.39	6610.32				
7.50	DISCHG	234.77	230.45	226.21	222.04	215.00	206.18	199.11	192.91	186.83	180.62				
7.50	ELEV	6610.25	6610.17	6610.10	6610.03	6609.94	6609.83	6609.74	6609.66	6609.59	6609.51				
8.00	DISCHG	174.31	167.93	161.39	153.93	145.17	135.76	126.47	117.85	110.16	103.44				
8.00	ELEV	6609.43	6609.35	6609.27	6609.17	6609.06	6608.95	6608.83	6608.72	6608.63	6608.54				
8.50	DISCHG	97.64	92.65	88.34	84.61	81.37	78.56	76.13	74.03	72.22	70.67				
8.50	ELEV	6608.47	6608.41	6608.35	6608.31	6608.27	6608.23	6608.20	6608.18	6608.15	6608.13				
9.00	DISCHG	69.35	68.23	67.29	66.49	65.82	65.25	64.77	64.37	64.03	63.73				
9.00	ELEV	6608.12	6608.10	6608.09	6608.08	6608.07	6608.07	6608.06	6608.05	6608.05	6608.05				
9.50	DISCHG	63.48	63.26	63.06	62.85	62.62	62.38	62.13	61.88	61.63	61.39				
9.50	ELEV	6608.04	6608.04	6608.04	6608.04	6608.03	6608.03	6608.03	6608.02	6608.02	6608.02				
10.00	DISCHG	61.15	60.89	60.58	60.15	59.01	57.88	57.03	56.30	55.59	54.89				
10.00	ELEV	6608.01	6608.01	6608.01	6608.00	6607.98	6607.96	6607.95	6607.94	6607.93	6607.92				
10.50	DISCHG	54.17	53.46	52.76	52.09	51.47	50.88	50.33	49.81	49.31	48.84				
10.50	ELEV	6607.90	6607.89	6607.88	6607.87	6607.86	6607.85	6607.84	6607.83	6607.82	6607.81				
11.00	DISCHG	48.41	48.03	47.70	47.42	47.17	46.95	46.74	46.52	46.30	46.06				
11.00	ELEV	6607.81	6607.80	6607.79	6607.79	6607.79	6607.78	6607.78	6607.78	6607.77	6607.77				
11.50	DISCHG	45.74	45.16	44.35	43.52	42.73	42.01	41.34	40.72	40.12	39.56				
11.50	ELEV	6607.76	6607.75	6607.74	6607.73	6607.71	6607.70	6607.69	6607.68	6607.67	6607.66				
12.00	DISCHG	39.04	38.58	38.17	37.82	37.52	37.24	36.99	36.74	36.49	36.25				
12.00	ELEV	6607.65	6607.64	6607.64	6607.63	6607.63	6607.62	6607.62	6607.61	6607.61	6607.60				
12.50	DISCHG	36.03	35.83	35.67	35.54	35.45	35.36	35.28	35.20	35.10	34.99				
12.50	ELEV	6607.60	6607.60	6607.59	6607.59	6607.59	6607.59	6607.59	6607.59	6607.58	6607.58				
13.00	DISCHG	34.89	34.78	34.65	34.45	34.20	33.92	33.66	33.41	33.15	32.88				
13.00	ELEV	6607.58	6607.58	6607.58	6607.57	6607.57	6607.57	6607.56	6607.56	6607.55	6607.55				
13.50	DISCHG	32.60	32.32	32.06	31.83	31.63	31.45	31.27	31.10	30.93	30.77				
13.50	ELEV	6607.54	6607.54	6607.53	6607.53	6607.53	6607.52	6607.52	6607.52	6607.52	6607.51				
14.00	DISCHG	30.62	30.49	30.36	30.21	30.04	29.87	29.71	29.56	29.42	29.28				
14.00	ELEV	6607.51	6607.51	6607.51	6607.50	6607.50	6607.50	6607.50	6607.49	6607.49	6607.49				

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14.50	DISCHG	29.15	29.01	28.89	28.76	28.65	28.54	28.45	28.37	28.30	28.24
14.50	ELEV	6607.49	6607.48	6607.48	6607.48	6607.48	6607.48	6607.47	6607.47	6607.47	6607.47

RUNOFF VOLUME ABOVE BASEFLOW = .66 WATERSHED INCHES, 943.59 CFS-HRS, 77.98 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD ID 1310

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB

RECORD ID 1320

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	1											
XSECTION	1	RUNOFF	.22	7	2	.05	.0	3.00	24.00	.92	---	6.11	171.45	779.3
XSECTION	5	RUNOFF	.27	7	2	.05	.0	3.00	24.00	.92	---	6.21	164.77	610.3
XSECTION	10	RUNOFF	.25	7	2	.05	.0	3.00	24.00	.92	---	6.12	185.64	742.6
XSECTION	2	REACH	.22	7	2	.05	.0	3.00	24.00	.92	---	6.20	159.11	723.2
XSECTION	2	RUNOFF	.12	7	2	.05	.0	3.00	24.00	.48	---	6.14	43.43	361.9
XSECTION	2	ADDHYD	.34	7	2	.05	.0	3.00	24.00	.76	---	6.19	199.44	586.6
XSECTION	3	REACH	.34	7	2	.05	.0	3.00	24.00	.76	---	6.27	190.65	560.7
XSECTION	3	RUNOFF	.06	7	2	.05	.0	3.00	24.00	.31	---	6.13	13.59	226.5
XSECTION	3	ADDHYD	.40	7	2	.05	.0	3.00	24.00	.69	---	6.26	199.40	498.5
XSECTION	6	REACH	.27	7	2	.05	.0	3.00	24.00	.91	---	6.31	156.23	578.6
XSECTION	6	RUNOFF	.12	7	2	.05	.0	3.00	24.00	.48	---	6.21	35.71	297.6
XSECTION	6	ADDHYD	.39	7	2	.05	.0	3.00	24.00	.78	---	6.29	188.06	482.2
XSECTION	8	ADDHYD	.79	7	2	.05	.0	3.00	24.00	.74	---	6.27	386.45	489.2
STRUCTURE	8	RESVOR	.79	7	2	.05	.0	3.00	24.00	.73	7067.91	6.66	154.54	195.6
XSECTION	9	REACH	.79	7	2	.05	.0	3.00	24.00	.73	---	6.81	153.42	194.2
XSECTION	9	RUNOFF	.07	7	2	.05	.0	3.00	24.00	.34	---	6.20	14.26	203.7
XSECTION	9	ADDHYD	.86	7	2	.05	.0	3.00	24.00	.70	---	6.77	157.11	182.7
XSECTION	16	REACH	.25	7	2	.05	.0	3.00	24.00	.92	---	6.22	171.60	686.4
XSECTION	16	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.34	---	6.16	9.07	226.8
XSECTION	16	ADDHYD	.29	7	2	.05	.0	3.00	24.00	.84	---	6.22	180.09	621.0
XSECTION	12	RUNOFF	.18	7	2	.05	.0	3.00	24.00	.26	---	6.21	24.59	136.6
XSECTION	12	ADDHYD	.47	7	2	.05	.0	3.00	24.00	.61	---	6.22	204.67	435.5
STRUCTURE	12	RESVOR	.47	7	2	.05	.0	3.00	24.00	.60	7063.79	6.92	33.30	70.9
XSECTION	14	RUNOFF	.02	7	2	.05	.0	3.00	24.00	.28	---	6.24	2.90	145.2
XSECTION	14	ADDHYD	.49	7	2	.05	.0	3.00	24.00	.59	---	6.75	34.20	69.8
XSECTION	15	REACH	.49	7	2	.05	.0	3.00	24.00	.59	---	6.82	34.19	69.8
XSECTION	15	RUNOFF	.01	7	2	.05	.0	3.00	24.00	.32	---	6.06	3.11	310.6
XSECTION	15	ADDHYD	.50	7	2	.05	.0	3.00	24.00	.58	---	6.81	34.52	69.0
XSECTION	15	ADDHYD	1.36	7	2	.05	.0	3.00	24.00	.66	---	6.77	191.62	140.9
XSECTION	17	RUNOFF	.09	7	2	.05	.0	3.00	24.00	.31	---	6.27	13.95	155.0
XSECTION	17	ADDHYD	1.45	7	2	.05	.0	3.00	24.00	.64	---	6.72	197.20	136.0

SECTION 18	RUNOFF	.11	7	2	.05	.0	3.00	24.00	.44	---	6.33	23.67	215.2
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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	1											
XSECTION	18	ADDHYD	1.56	7	2	.05	.0	3.00	24.00	.62	---	6.57	211.25	135.4
XSECTION	20	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.82	---	6.11	27.79	694.8
XSECTION	20	ADDHYD	1.60	7	2	.05	.0	3.00	24.00	.63	---	6.51	217.21	135.8
XSECTION	21	RUNOFF	.13	7	2	.05	.0	3.00	24.00	.97	---	6.07	120.28	925.2
XSECTION	21	ADDHYD	1.73	7	2	.05	.0	3.00	24.00	.65	---	6.17	261.75	151.3
XSECTION	22	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.77	---	6.05	32.04	801.0
XSECTION	25	REACH	.04	7	2	.05	.0	3.00	24.00	.77	---	6.12	29.76	744.1
XSECTION	25	RUNOFF	.10	7	2	.05	.0	3.00	24.00	1.03	---	6.05	102.81	1028.1
XSECTION	25	ADDHYD	.14	7	2	.05	.0	3.00	24.00	.96	---	6.07	129.44	924.6
XSECTION	25	ADDHYD	1.87	7	2	.05	.0	3.00	24.00	.68	---	6.11	377.72	202.0
XSECTION	26	RUNOFF	.08	7	2	.05	.0	3.00	24.00	.98	---	6.05	79.90	998.8
XSECTION	26	ADDHYD	1.95	7	2	.05	.0	3.00	24.00	.69	---	6.10	449.17	230.3
XSECTION	27	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.14	---	6.31	1.73	43.2
XSECTION	28	REACH	.04	7	2	.05	.0	3.00	24.00	.14	---	6.49	1.43	35.7
XSECTION	28	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.26	---	6.32	4.37	109.1
XSECTION	28	ADDHYD	.08	7	2	.05	.0	3.00	24.00	.20	---	6.36	5.53	69.1
XSECTION	29	REACH	.08	7	2	.05	.0	3.00	24.00	.19	---	6.54	4.73	59.2
XSECTION	29	RUNOFF	.04	7	2	.05	.0	3.00	24.00	.26	---	6.29	4.56	113.9
XSECTION	29	ADDHYD	.12	7	2	.05	.0	3.00	24.00	.21	---	6.41	8.26	68.9
XSECTION	30	RUNOFF	.06	7	2	.05	.0	3.00	24.00	.67	---	6.29	22.69	378.2
XSECTION	30	ADDHYD	.18	7	2	.05	.0	3.00	24.00	.37	---	6.32	30.39	168.9
XSECTION	31	REACH	.18	7	2	.05	.0	3.00	24.00	.37	---	6.44	28.77	159.8
XSECTION	31	RUNOFF	.09	7	2	.05	.0	3.00	24.00	.64	---	6.08	53.41	593.5
XSECTION	31	ADDHYD	.27	7	2	.05	.0	3.00	24.00	.46	---	6.10	61.98	229.6
XSECTION	32	ADDHYD	2.22	7	2	.05	.0	3.00	24.00	.66	---	6.10	511.14	230.2
STRUCTURE	32	RESVOR	2.22	7	2	.05	.0	3.00	24.00	.66	6612.06	6.32	349.50	157.4



SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
STRUCTURE 32	2.22	
ALTERNATE 1		349.50
STRUCTURE 12	.47	
ALTERNATE 1		33.30
STRUCTURE 8	.79	
ALTERNATE 1		154.54
XSECTION 1	.22	
ALTERNATE 1		171.45
XSECTION 2	.34	
ALTERNATE 1		199.44
XSECTION 3	.40	
ALTERNATE 1		199.40
XSECTION 5	.27	
ALTERNATE 1		164.77
XSECTION 6	.39	
ALTERNATE 1		188.06
XSECTION 8	.79	
ALTERNATE 1		386.45
XSECTION 9	.86	
ALTERNATE 1		157.11
XSECTION 10	.25	
ALTERNATE 1		185.64
XSECTION 12	.47	
ALTERNATE 1		204.67
XSECTION 14	.49	
ALTERNATE 1		34.20
XSECTION 15	1.36	
ALTERNATE 1		191.62

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

SECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 16	.29	
ALTERNATE 1		180.09
XSECTION 17	1.45	
ALTERNATE 1		197.20
XSECTION 18	1.56	
ALTERNATE 1		211.25
XSECTION 20	1.60	
ALTERNATE 1		217.21
XSECTION 21	1.73	
ALTERNATE 1		261.75
XSECTION 22	.04	
ALTERNATE 1		32.04
XSECTION 25	1.87	
ALTERNATE 1		377.72
XSECTION 26	1.95	
ALTERNATE 1		449.17
XSECTION 27	.04	
ALTERNATE 1		1.73
XSECTION 28	.08	
ALTERNATE 1		5.53
XSECTION 29	.12	
ALTERNATE 1		8.26
XSECTION 30	.18	
ALTERNATE 1		30.39
XSECTION 31	.27	
ALTERNATE 1		61.98
XSECTION 32	2.22	
ALTERNATE 1		511.14

END OF 1 JOBS IN THIS RUN

\*\*\*\*\*80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY\*\*\*\*\*

JOB TR-20	SUMMARY	NO PLOTS				
TITLE 001 PEREGRINE DRY CREEK MDDP DEVELOPED	CONDITIONS WITH	REWORKED			20	
TITLE 001 DETENTION POND AT 12 AND NEW PONDS AT 8 & 32		100-YEAR STORM				
5 RAINFL 7	0.25				30	
8	0.0000	0.0005	0.0015	0.0030	0.0045	40
8	0.0060	0.0080	0.0100	0.0120	0.0143	50
8	0.0165	0.0188	0.0210	0.0233	0.0255	60
8	0.0278	0.0320	0.0390	0.0460	0.0530	70
8	0.0600	0.0750	0.1000	0.4000	0.7000	80
8	0.7250	0.7500	0.7650	0.7800	0.7900	90
8	0.8000	0.8100	0.8200	0.8250	0.8300	100
8	0.8350	0.8400	0.8450	0.8500	0.8550	110
8	0.8600	0.8638	0.8675	0.8713	0.8750	120
8	0.8788	0.8825	0.8863	0.8900	0.8938	130
8	0.8975	0.9013	0.9050	0.9083	0.9115	140
8	0.9148	0.9180	0.9210	0.9240	0.9270	150
8	0.9300	0.9325	0.9350	0.9375	0.9400	160
8	0.9425	0.9450	0.9475	0.9500	0.9525	170
8	0.9550	0.9575	0.9600	0.9625	0.9650	180
8	0.9675	0.9700	0.9725	0.9750	0.9775	190
8	0.9800	0.9813	0.9825	0.9838	0.9850	200
8	0.9863	0.9875	0.9888	0.9900	0.9913	210
8	0.9925	0.9938	0.9950	0.9963	0.9975	220
8	0.9988	1.0000	1.0000	1.0000	1.0000	230
9 ENDTBL						235
3 STRUCT	08					236
8		7050.	0.0	0.00		237
8		7055.	71.0	0.63		238
8		7060.	110.0	1.98		239
8		7065.	140.0	5.41		240
8		7070.	165.0	10.95		241
8		7075.	185.0	19.03		242
8		7080.	205.0	30.15		243
9 ENDTBL						250
3 STRUCT	12					255
8		7050.	0.0	0.0		260
8		7055.	19.0	0.91		270
8		7060.	28.0	3.38		280
8		7065.	35.0	8.00		290
8		7070.	41.0	14.30		300
8		7075.	45.0	22.78		302
8		7080.	49.0	33.17		304
8		7082.	200.0	38.00		306
9 ENDTBL						310
3 STRUCT	32					360
8		6607.	0.0	0.00		370

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

8			6608.	60.0	0.19				380	
8			6610.	220.0	1.95				390	
8			6612.	340.0	5.53				400	
8			6614.	650.0	10.19				410	
8			6616.	720.0	15.42				420	
8			6617.	800.0	18.30				421	
8			6620.	1100.0	23.00				422	
9	ENDTBL								425	
6	RUNOFF	1 001	2	0.22	77.	0.36	1	1	1	445
6	RUNOFF	1 005	6	0.27	77.	0.53	1	1	1	460
6	RUNOFF	1 010	7	0.25	77.	0.38	1	1	1	480
6	REACH	3 002	2 4	2800.00	2.84	1.33	1	1	1	490
6	RUNOFF	1 002	1	0.12	67.	0.36	1	1	1	500
6	ADDHYD	4 002	1 4 3				1	1	1	570
6	REACH	3 003	3 1	1800.00	1.95	1.33	1	1	1	580
6	RUNOFF	1 003	2	0.06	62.	0.31	1	1	1	590
6	ADDHYD	4 003	1 2 3				1	1	1	600
6	REACH	3 006	6 2	2100.00	1.91	1.33	1	1	1	620
6	RUNOFF	1 006	1	0.12	67.	0.47	1	1	1	640
6	ADDHYD	4 006	1 2 4				1	1	1	650
6	ADDHYD	4 008	3 4 2				1	1	1	655
6	RESVOR	2 08 2 3	7050.00				1	1	1	680
6	REACH	3 009	3 2	2400.00	1.54	1.33	1	1	1	700
6	RUNOFF	1 009	1	0.07	63.	0.43	1	1	1	710
6	ADDHYD	4 009	1 2 3				1	1	1	720
6	REACH	3 016	7 2	2000.00	1.58	1.33	1	1	1	730
6	RUNOFF	1 016	1	0.04	63.	0.37	1	1	1	750
6	ADDHYD	4 016	1 2 4				1	1	1	760
6	RUNOFF	1 012	2	0.18	60.	0.42	1	1	1	780
6	ADDHYD	4 012	4 2 6				1	1	1	790
6	RESVOR	2 12 6 1	7050.00				1	1	1	800
6	RUNOFF	1 014	2	0.02	61.	0.47	1	1	1	820
6	ADDHYD	4 014	1 2 4				1	1	1	830
6	REACH	3 015	4 1	1000.00	2.72	1.33	1	1	1	850
6	RUNOFF	1 015	2	0.01	62.	0.19	1	1	1	860
6	ADDHYD	4 015	1 2 4				1	1	1	870
6	ADDHYD	4 015	3 4 1				1	1	1	880
6	RUNOFF	1 017	2	0.09	62.	0.52	1	1	1	900
6	ADDHYD	4 017	1 2 3				1	1	1	910
6	RUNOFF	1 018	1	0.11	66.	0.63	1	1	1	920
6	ADDHYD	4 018	1 3 2				1	1	1	930
6	RUNOFF	1 020	1	0.04	75.	0.34	1	1	1	950
6	ADDHYD	4 020	1 2 3				1	1	1	960
6	RUNOFF	1 021	2	0.13	78.	0.28	1	1	1	980
6	ADDHYD	4 021	2 3 6				1	1	1	990
6	RUNOFF	1 022	1	0.04	74.	0.22	1	1	1	1000

\*\*\*\*\*80-80 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

6	REACH	3	025	1	2	3200.00	6.90	1.38	1	1	1	1050	
6	RUNOFF	1	025		1	0.10	79.	0.25	1	1	1	1060	
6	ADDHYD	4	025	1	2	4			1	1	1	1070	
6	ADDHYD	4	025	6	4	2			1	1	1	1080	
6	RUNOFF	1	026		1	0.08	78.	0.23	1	1	1	1100	
6	ADDHYD	4	026	1	2	3			1	1	1	1110	
6	RUNOFF	1	027		1	0.04	55.	0.49	1	1	1	1120	
6	REACH	3	028	1	2	1200.00	1.52	1.33	1	1	1	1130	
6	RUNOFF	1	028		1	0.04	60.	0.56	1	1	1	1140	
6	ADDHYD	4	028	1	2	4			1	1	1	1150	
6	REACH	3	029	4	1	1400.00	1.25	1.33	1	1	1	1160	
6	RUNOFF	1	029		2	0.04	60.	0.53	1	1	1	1170	
6	ADDHYD	4	029	1	2	6			1	1	1	1180	
6	RUNOFF	1	030		2	0.06	72.	0.62	1	1	1	1200	
6	ADDHYD	4	030	6	2	4			1	1	1	1210	
6	REACH	3	031	4	1	2200.00	2.90	1.33	1	1	1	1220	
6	RUNOFF	1	031		2	0.09	71.	0.27	1	1	1	1230	
6	ADDHYD	4	031	1	2	4			1	1	1	1240	
6	ADDHYD	4	032	4	3	1			1	1	1	1250	
6	RESVOR	2		32	1	5	6607.00		1	1	1	1	1255
	ENDATA												1260
7	INCREM	6				0.05							1270
7	CCOMPUT	7	001		32	0.00	4.4	1.0	7	2	1	1	1300
	ENDCMP	1											1310
	ENDJOB	2											1320

\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

EXECUTIVE CONTROL OPERATION INCREM

RECORD ID 1270

MAIN TIME INCREMENT = .05 HOURS

EXECUTIVE CONTROL OPERATION COMPUT

RECORD ID 1300

FROM XSECTION 1  
TO STRUCTURE 32

STARTING TIME = .00 RAIN DEPTH = 4.40 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2  
ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .05 HOURS

OPERATION RUNOFF CROSS SECTION 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	356.87	(RUNOFF)
7.93	18.68	(RUNOFF)
9.95	9.53	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.87 WATERSHED INCHES, 265.60 CFS-HRS, 21.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 5

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.20	351.23	(RUNOFF)
9.98	11.69	(RUNOFF)
12.95	8.96	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.86 WATERSHED INCHES, 324.59 CFS-HRS, 26.82 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.11	388.56	(RUNOFF)
9.95	10.83	(RUNOFF)
12.87	8.32	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.87 WATERSHED INCHES, 301.34 CFS-HRS, 24.90 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.18	340.86	(NULL)
10.03	9.53	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.87 WATERSHED INCHES, 265.11 CFS-HRS, 21.91 ACRE-FEET; BASEFLOW = .00 CFS



'R20 XEQ 02-04-93 15:29  
REV PC 09/83(.2)

PEREGRINE DRY CREEK MDDP DEVELOPED CONDITIONS WITH REWORKED  
DETENTION POND AT 12 AND NEW PONDS AT 8 & 32 100-YEAR STORM

20

JOB 1 PASS 1  
PAGE 1

OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.12	119.33	{RUNOFF}
7.96	7.74	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = 1.19 WATERSHED INCHES, 92.21 CFS-HRS, 7.62 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.16	454.14	{NULL}
9.99	13.55	{NULL}
12.91	10.45	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.63 WATERSHED INCHES, 357.32 CFS-HRS, 29.53 ACRE-FEET; BASEFLOW = .00 CFS

\*\*\* WARNING REACH 3 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*

OPERATION REACH CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.23	441.94	{NULL}
10.05	13.55	{NULL}
12.99	10.44	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.63 WATERSHED INCHES, 356.68 CFS-HRS, 29.48 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	46.86	{RUNOFF}
7.98	3.24	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = .90 WATERSHED INCHES, 35.00 CFS-HRS, 2.89 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 3

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.22	475.23	{NULL}
10.01	15.24	{NULL}
12.97	11.77	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.52 WATERSHED INCHES, 391.68 CFS-HRS, 32.37 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.28	339.49	{NULL}
10.05	11.69	{NULL}
13.03	8.95	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.86 WATERSHED INCHES, 323.95 CFS-HRS, 26.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.18	100.17	{RUNOFF}

RUNOFF VOLUME ABOVE BASEFLOW = 1.19 WATERSHED INCHES, 91.86 CFS-HRS, 7.59 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.26	430.96	{NULL}
10.01	15.70	{NULL}
12.99	12.08	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.65 WATERSHED INCHES, 415.81 CFS-HRS, 34.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.23	901.80	{NULL}
10.01	30.94	{NULL}
12.98	23.85	{NULL}

RUNOFF VOLUME ABOVE BASEFLOW = 1.58 WATERSHED INCHES, 807.49 CFS-HRS, 66.73 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.80	202.22	7079.31
13.05	23.82	7051.68

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .05 HOURS DRAINAGE AREA = .79 SQ.MI.

5.50	DISCHG	.00	.00	.01	.22	1.39	5.57	16.74	40.46	74.36	94.24
5.50	ELEV	7050.00	7050.00	7050.00	7050.02	7050.10	7050.39	7051.18	7052.85	7055.43	7057.98
6.00	DISCHG	114.98	129.09	143.97	155.59	166.97	174.38	181.54	187.20	191.22	194.49

6.00	ELEV	7060.83	7063.18	7065.79	7068.12	7070.49	7072.34	7074.13	7075.55	7076.56	7077.37
6.50	DISCHG	197.03	198.92	200.28	201.21	201.81	202.12	202.22	202.13	201.89	201.52
6.50	ELEV	7078.01	7078.48	7078.82	7079.05	7079.20	7079.28	7079.31	7079.28	7079.22	7079.13
7.00	DISCHG	201.05	200.50	199.88	199.22	198.51	197.77	196.99	196.18	195.33	194.46
7.00	ELEV	7079.01	7078.87	7078.72	7078.56	7078.38	7078.19	7078.00	7077.79	7077.58	7077.37
7.50	DISCHG	193.57	192.66	191.73	190.80	189.87	188.93	187.99	187.06	186.13	185.20
7.50	ELEV	7077.14	7076.91	7076.68	7076.45	7076.22	7075.98	7075.75	7075.51	7075.28	7075.05
8.00	DISCHG	184.01	182.76	181.51	180.27	179.04	177.79	176.53	175.25	173.95	172.64
8.00	ELEV	7074.75	7074.44	7074.13	7073.82	7073.51	7073.20	7072.88	7072.56	7072.24	7071.91
8.50	DISCHG	171.30	169.96	168.61	167.25	165.90	164.19	161.77	159.37	157.02	154.70
8.50	ELEV	7071.58	7071.24	7070.90	7070.56	7070.23	7069.84	7069.35	7068.88	7068.40	7067.94
9.00	DISCHG	152.42	150.19	147.99	145.82	143.70	141.62	139.17	135.33	131.62	128.04
9.00	ELEV	7067.48	7067.04	7066.60	7066.16	7065.74	7065.32	7064.86	7064.22	7063.60	7063.01
9.50	DISCHG	124.59	121.26	118.05	114.95	111.96	107.09	98.50	90.89	84.13	78.13
9.50	ELEV	7062.43	7061.88	7061.34	7060.82	7060.33	7059.63	7058.53	7057.55	7056.68	7055.91
10.00	DISCHG	72.81	61.27	49.79	42.61	38.03	35.01	32.89	31.29	29.99	28.87
10.00	ELEV	7055.23	7054.31	7053.51	7053.00	7052.68	7052.47	7052.32	7052.20	7052.11	7052.03
10.50	DISCHG	27.90	27.05	26.32	25.70	25.19	24.79	24.47	24.24	24.07	23.94
10.50	ELEV	7051.96	7051.90	7051.85	7051.81	7051.77	7051.75	7051.72	7051.71	7051.69	7051.69
11.00	DISCHG	23.84	23.76	23.69	23.63	23.58	23.54	23.52	23.51	23.52	23.54
11.00	ELEV	7051.68	7051.67	7051.67	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66
11.50	DISCHG	23.56	23.56	23.56	23.55	23.53	23.53	23.53	23.55	23.57	23.60
11.50	ELEV	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66
12.00	DISCHG	23.62	23.64	23.64	23.63	23.62	23.61	23.62	23.64	23.66	23.69
12.00	ELEV	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66	7051.66	7051.67	7051.67
12.50	DISCHG	23.72	23.73	23.73	23.72	23.71	23.71	23.71	23.73	23.76	23.78
12.50	ELEV	7051.67	7051.67	7051.67	7051.67	7051.67	7051.67	7051.67	7051.67	7051.67	7051.67
13.00	DISCHG	23.81	23.82	23.81	23.77	23.69	23.57	23.40	23.18	22.93	22.66
13.00	ELEV	7051.68	7051.68	7051.68	7051.67	7051.67	7051.66	7051.65	7051.63	7051.61	7051.60
13.50	DISCHG	22.38	22.10	21.85	21.62	21.42	21.26	21.14	21.06	21.01	20.97
13.50	ELEV	7051.58	7051.56	7051.54	7051.52	7051.51	7051.50	7051.49	7051.48	7051.48	7051.48
14.00	DISCHG	20.94	20.92	20.88	20.83	20.76	20.67	20.55	20.42	20.28	20.13
14.00	ELEV	7051.48	7051.47	7051.47	7051.47	7051.46	7051.46	7051.45	7051.44	7051.43	7051.42
14.50	DISCHG	19.99	19.86	19.74	19.65	19.57	19.50	19.45	19.41	19.38	19.36
14.50	ELEV	7051.41	7051.40	7051.39	7051.38	7051.38	7051.37	7051.37	7051.37	7051.37	7051.36

RUNOFF VOLUME ABOVE BASEFLOW = 1.58 WATERSHED INCHES, 805.27 CFS-HRS, 66.55 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.95	201.77	(NULL)
13.14	23.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.58 WATERSHED INCHES, 803.07 CFS-HRS, 66.37 ACRE-FEET; BASEFLOW = .00 CFS

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OPERATION RUNOFF CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.17	47.82	(RUNOFF)
7.93	3.93	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .96 WATERSHED INCHES, 43.17 CFS-HRS, 3.57 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.75	210.08	(NULL)
13.10	25.39	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.52 WATERSHED INCHES, 846.24 CFS-HRS, 69.93 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	370.10	(NULL)
10.02	10.83	(NULL)
12.95	8.31	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.86 WATERSHED INCHES, 300.71 CFS-HRS, 24.85 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.13	29.93	(RUNOFF)
7.98	2.24	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .96 WATERSHED INCHES, 24.71 CFS-HRS, 2.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 16

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	398.14	(NULL)
10.00	12.00	(NULL)
12.95	9.23	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.74 WATERSHED INCHES, 325.42 CFS-HRS, 26.89 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.17	100.20	(RUNOFF)
7.97	8.94	(RUNOFF)
9.99	4.72	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .80 WATERSHED INCHES, 92.57 CFS-HRS, 7.65 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.18	497.89	(NULL)
9.99	16.72	(NULL)
12.94	12.95	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.38 WATERSHED INCHES, 417.99 CFS-HRS, 34.54 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 12

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.28	43.48	7073.10

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .05 HOURS	DRAINAGE AREA = .47 SQ.MI.
5.50	DISCHG .80 .00 .01 .09 .46 1.59 4.31 9.68 18.80 21.45		
5.50	ELEV 7050.00 7050.00 7050.00 7050.02 7050.12 7050.42 7051.13 7052.55 7054.95 7056.36		
6.00	DISCHG 25.04 28.74 31.15 33.88 36.10 37.85 39.44 40.79 41.44 41.87		
6.00	ELEV 7058.35 7060.53 7062.25 7064.20 7065.92 7067.38 7068.70 7069.83 7070.55 7071.09		
6.50	DISCHG 42.21 42.48 42.70 42.87 43.01 43.12 43.21 43.28 43.33 43.37		
6.50	ELEV 7071.52 7071.85 7072.12 7072.34 7072.51 7072.65 7072.76 7072.85 7072.91 7072.97		
7.00	DISCHG 43.40 43.43 43.45 43.46 43.47 43.48 43.48 43.48 43.47 43.45		
7.00	ELEV 7073.01 7073.04 7073.06 7073.08 7073.09 7073.10 7073.10 7073.09 7073.08 7073.07		
7.50	DISCHG 43.44 43.42 43.40 43.39 43.37 43.34 43.32 43.30 43.28 43.26		
7.50	ELEV 7073.05 7073.03 7073.01 7072.98 7072.96 7072.93 7072.90 7072.88 7072.85 7072.83		
8.00	DISCHG 43.24 43.22 43.20 43.17 43.15 43.12 43.09 43.06 43.02 42.98		
8.00	ELEV 7072.80 7072.77 7072.75 7072.72 7072.69 7072.65 7072.62 7072.57 7072.52 7072.47		
8.50	DISCHG 42.93 42.89 42.84 42.79 42.74 42.69 42.64 42.59 42.54 42.49		
8.50	ELEV 7072.42 7072.36 7072.30 7072.24 7072.18 7072.11 7072.05 7071.99 7071.93 7071.86		
9.00	DISCHG 42.44 42.39 42.34 42.29 42.24 42.19 42.14 42.09 42.04 41.99		
9.00	ELEV 7071.80 7071.74 7071.67 7071.61 7071.55 7071.49 7071.42 7071.36 7071.30 7071.24		
9.50	DISCHG 41.94 41.89 41.84 41.79 41.74 41.70 41.65 41.60 41.55 41.50		
9.50	ELEV 7071.18 7071.11 7071.05 7070.99 7070.93 7070.87 7070.81 7070.75 7070.69 7070.63		
10.00	DISCHG 41.45 41.40 41.36 41.31 41.26 41.21 41.16 41.11 41.06 41.00		
10.00	ELEV 7070.57 7070.51 7070.45 7070.39 7070.32 7070.26 7070.20 7070.14 7070.07 7070.01		
10.50	DISCHG 40.90 40.79 40.68 40.58 40.47 40.36 40.25 40.14 40.03 39.93		

10.50	ELEV	7069.92	7069.83	7069.74	7069.65	7069.56	7069.47	7069.38	7069.29	7069.20	7069.11
11.00	DISCHG	39.82	39.71	39.61	39.50	39.40	39.29	39.19	39.08	38.98	38.88
11.00	ELEV	7069.02	7068.93	7068.84	7068.75	7068.66	7068.58	7068.49	7068.40	7068.32	7068.23
11.50	DISCHG	38.77	38.67	38.57	38.47	38.37	38.27	38.17	38.07	37.97	37.87
11.50	ELEV	7068.15	7068.06	7067.98	7067.89	7067.81	7067.72	7067.64	7067.56	7067.47	7067.39
12.00	DISCHG	37.77	37.67	37.58	37.48	37.38	37.28	37.19	37.09	37.00	36.90
12.00	ELEV	7067.31	7067.23	7067.15	7067.07	7066.98	7066.90	7066.82	7066.74	7066.67	7066.59
12.50	DISCHG	36.81	36.71	36.62	36.53	36.43	36.34	36.25	36.16	36.07	35.98
12.50	ELEV	7066.51	7066.43	7066.35	7066.27	7066.20	7066.12	7066.04	7065.97	7065.89	7065.81
13.00	DISCHG	35.89	35.80	35.71	35.62	35.53	35.44	35.34	35.25	35.16	35.07
13.00	ELEV	7065.74	7065.66	7065.59	7065.51	7065.44	7065.36	7065.29	7065.21	7065.14	7065.06
13.50	DISCHG	34.97	34.82	34.67	34.53	34.38	34.24	34.10	33.96	33.81	33.67
13.50	ELEV	7064.98	7064.87	7064.77	7064.66	7064.56	7064.46	7064.36	7064.25	7064.15	7064.05
14.00	DISCHG	33.53	33.40	33.26	33.12	32.98	32.85	32.71	32.57	32.44	32.30
14.00	ELEV	7063.95	7063.85	7063.76	7063.66	7063.56	7063.46	7063.36	7063.27	7063.17	7063.07
14.50	DISCHG	32.17	32.03	31.90	31.76	31.63	31.50	31.37	31.24	31.11	30.98
14.50	ELEV	7062.98	7062.88	7062.78	7062.69	7062.59	7062.50	7062.41	7062.31	7062.22	7062.13

RUNOFF VOLUME ABOVE BASEFLOW = 1.16 WATERSHED INCHES, 353.26 CFS-HRS, 29.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 14

PEAK TIME(HRS) 6.20  
 PEAK DISCHARGE(CFS) 11.13  
 PEAK ELEVATION(FEET) (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .85 WATERSHED INCHES, 10.93 CFS-HRS, .90 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 14

PEAK TIME(HRS) 6.33  
 PEAK DISCHARGE(CFS) 49.38  
 PEAK ELEVATION(FEET) (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.15 WATERSHED INCHES, 364.19 CFS-HRS, 30.10 ACRE-FEET; BASEFLOW = .00 CFS

\*\*\* WARNING REACH 15 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*  
 \*\*\* WARNING - REACH 15 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 31.33 CFS, 63.50 % OF PEAK.

OPERATION REACH CROSS SECTION 15

PEAK TIME(HRS) 6.39  
 PEAK DISCHARGE(CFS) 49.28  
 PEAK ELEVATION(FEET) (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.15 WATERSHED INCHES, 362.27 CFS-HRS, 29.94 ACRE-FEET; BASEFLOW = .00 CFS

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OPERATION RUNOFF CROSS SECTION 15

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.04    9.93    (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .91 WATERSHED INCHES,      5.85 CFS-HRS,      .48 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 15

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.38    50.69    (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.14 WATERSHED INCHES,      368.13 CFS-HRS,      30.42 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 15

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.69    257.35    (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.38 WATERSHED INCHES,      1214.37 CFS-HRS,      100.36 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 17

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.23    50.26    (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .90 WATERSHED INCHES,      52.23 CFS-HRS,      4.32 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 17

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.32    294.62    (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.35 WATERSHED INCHES,      1266.60 CFS-HRS,      104.67 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 18

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.29    70.40    (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.12 WATERSHED INCHES,      79.76 CFS-HRS,      6.59 ACRE-FEET;      BASEFLOW = .00 CFS

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OPERATION ADDHYD CROSS SECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	364.73	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.34 WATERSHED INCHES, 1346.36 CFS-HRS, 111.26 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.09	60.25	(RUNOFF)
7.94	3.24	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.72 WATERSHED INCHES, 44.40 CFS-HRS, 3.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.26	398.42	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.35 WATERSHED INCHES, 1390.76 CFS-HRS, 114.93 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.06	241.75	(RUNOFF)
7.95	11.28	(RUNOFF)
9.97	5.76	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.95 WATERSHED INCHES, 163.38 CFS-HRS, 13.50 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.13	571.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.39 WATERSHED INCHES, 1554.14 CFS-HRS, 128.43 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 22



PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.04	68.64	(RUNOFF)
7.97	3.16	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.65 WATERSHED INCHES, 42.69 CFS-HRS, 3.53 ACRE-FEET; BASEFLOW = .00 CFS

\*\*\* WARNING REACH 25 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*

OPERATION REACH CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	66.11	(NULL)
8.03	3.17	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.65 WATERSHED INCHES, 42.62 CFS-HRS, 3.52 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.04	200.98	(RUNOFF)
7.98	8.90	(RUNOFF)
9.98	4.52	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 130.75 CFS-HRS, 10.80 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.06	262.49	(NULL)
7.98	12.06	(NULL)
9.98	6.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.92 WATERSHED INCHES, 173.37 CFS-HRS, 14.33 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 25

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	821.16	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.43 WATERSHED INCHES, 1727.51 CFS-HRS, 142.76 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 26

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.04	158.33	(RUNOFF)
7.98	6.97	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.95 WATERSHED INCHES, 100.62 CFS-HRS, 8.31 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 26

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.08	967.54	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.45 WATERSHED INCHES, 1828.12 CFS-HRS, 151.08 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 27

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.24	12.55	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .56 WATERSHED INCHES, 14.39 CFS-HRS, 1.19 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.36	11.36	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .55 WATERSHED INCHES, 14.31 CFS-HRS, 1.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.27	18.07	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .79 WATERSHED INCHES, 20.49 CFS-HRS, 1.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 28

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.31	28.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .67 WATERSHED INCHES, 34.80 CFS-HRS, 2.88 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 29

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PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.44                                      26.25                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .67 WATERSHED INCHES,      34.63 CFS-HRS,      2.86 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION RUNOFF      CROSS SECTION      29

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.24                                      18.88                                      (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .79 WATERSHED INCHES,      20.50 CFS-HRS,      1.69 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION ADDHYD      CROSS SECTION      29

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.36                                      41.49                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .71 WATERSHED INCHES,      55.13 CFS-HRS,      4.56 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION RUNOFF      CROSS SECTION      30

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.26                                      55.12                                      (RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES,      58.26 CFS-HRS,      4.81 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION ADDHYD      CROSS SECTION      30

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.31                                      94.86                                      (NULL)  
10.02                                      5.22                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .98 WATERSHED INCHES,      113.38 CFS-HRS,      9.37 ACRE-FEET;      BASEFLOW = .00 CFS

OPERATION REACH      CROSS SECTION      31

PEAK TIME(HRS)                      PEAK DISCHARGE(CFS)                      PEAK ELEVATION(FEET)  
6.40                                      92.07                                      (NULL)  
10.09                                      5.22                                      (NULL)

RUNOFF VOLUME ABOVE BASEFLOW = .97 WATERSHED INCHES,      113.07 CFS-HRS,      9.34 ACRE-FEET;      BASEFLOW = .00 CFS

TR20 XEQ 02-04-93 15:29  
REV PC 09/83(.2)

PEREGRINE DRY CREEK MDDP DEVELOPED CONDITIONS WITH REWORKED  
DETENTION POND AT 12 AND NEW PONDS AT 8 & 32 100-YEAR STORM

20

JOB 1 PASS 1  
PAGE 12

OPERATION RUNOFF CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.06	125.63	(RUNOFF)
7.98	6.57	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.45 WATERSHED INCHES, 84.03 CFS-HRS, 6.94 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 31

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.10	160.63	(NULL)
9.98	8.60	(NULL)
12.84	6.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.13 WATERSHED INCHES, 197.10 CFS-HRS, 16.29 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 32

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.09	1127.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 2025.22 CFS-HRS, 167.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 32

PEAK TIME(HRS)  
6.30

PEAK DISCHARGE(CFS)  
715.52

PEAK ELEVATION(FEET)  
6615.87

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .05 HOURS				DRAINAGE AREA = 2.22 SQ.MI.		
5.50	DISCHG	.00	.38	4.22	21.57	62.18	94.30	153.58	227.45	272.45	332.93	
5.50	ELEV	6607.00	6607.01	6607.07	6607.36	6608.03	6608.43	6609.17	6610.12	6610.87	6611.88	
6.00	DISCHG	464.57	603.97	667.08	689.40	704.92	713.14	715.50	713.84	709.49	703.22	
6.00	ELEV	6612.80	6613.70	6614.49	6615.13	6615.57	6615.80	6615.87	6615.82	6615.70	6615.52	
6.50	DISCHG	695.53	686.76	677.09	666.58	655.34	621.08	572.22	531.80	498.44	470.92	
6.50	ELEV	6615.30	6615.05	6614.77	6614.47	6614.15	6613.81	6613.50	6613.24	6613.02	6612.84	
7.00	DISCHG	448.19	429.32	413.34	399.35	386.76	375.38	365.18	356.18	348.30	341.42	
7.00	ELEV	6612.70	6612.58	6612.47	6612.38	6612.30	6612.23	6612.16	6612.10	6612.05	6612.01	
7.50	DISCHG	337.55	334.48	331.49	328.60	325.82	323.18	320.67	318.29	316.04	313.92	
7.50	ELEV	6611.96	6611.91	6611.86	6611.81	6611.76	6611.72	6611.68	6611.64	6611.60	6611.57	
8.00	DISCHG	311.92	309.97	307.92	305.55	302.75	299.57	296.16	292.65	289.12	285.64	
8.00	ELEV	6611.53	6611.50	6611.47	6611.43	6611.38	6611.33	6611.27	6611.21	6611.15	6611.09	
8.50	DISCHG	282.24	278.94	275.76	272.69	269.74	266.92	264.22	261.59	259.00	256.43	
8.50	ELEV	6611.04	6610.98	6610.93	6610.88	6610.83	6610.78	6610.74	6610.69	6610.65	6610.61	

9.00	DISCHG	253.87	251.33	248.80	246.29	243.81	241.35	238.91	236.50	234.06	231.53
9.00	ELEV	6610.56	6610.52	6610.48	6610.44	6610.40	6610.36	6610.32	6610.27	6610.23	6610.19
9.50	DISCHG	228.89	226.15	223.32	220.41	213.79	207.66	202.35	197.19	191.70	185.86
9.50	ELEV	6610.15	6610.10	6610.06	6610.01	6609.92	6609.85	6609.78	6609.71	6609.65	6609.57
10.00	DISCHG	179.80	173.68	167.11	159.55	151.16	142.60	134.51	127.25	120.95	115.62
10.00	ELEV	6609.50	6609.42	6609.34	6609.24	6609.14	6609.03	6608.93	6608.84	6608.76	6608.70
10.50	DISCHG	111.15	107.43	104.34	101.77	99.65	97.89	96.43	95.20	94.16	93.27
10.50	ELEV	6608.64	6608.59	6608.55	6608.52	6608.50	6608.47	6608.46	6608.44	6608.43	6608.42
11.00	DISCHG	92.51	91.87	91.33	90.90	90.56	90.28	90.05	89.85	89.66	89.47
11.00	ELEV	6608.41	6608.40	6608.39	6608.39	6608.38	6608.38	6608.38	6608.37	6608.37	6608.37
11.50	DISCHG	89.28	89.11	88.97	88.85	88.75	88.68	88.62	88.55	88.46	88.36
11.50	ELEV	6608.37	6608.36	6608.36	6608.36	6608.36	6608.36	6608.36	6608.36	6608.36	6608.35
12.00	DISCHG	88.25	88.13	88.03	87.94	87.88	87.83	87.79	87.74	87.66	87.57
12.00	ELEV	6608.35	6608.35	6608.35	6608.35	6608.35	6608.35	6608.35	6608.35	6608.35	6608.34
12.50	DISCHG	87.46	87.36	87.26	87.18	87.13	87.08	87.05	87.00	86.93	86.84
12.50	ELEV	6608.34	6608.34	6608.34	6608.34	6608.34	6608.34	6608.34	6608.34	6608.34	6608.34
13.00	DISCHG	86.74	86.62	86.47	86.24	85.94	85.57	85.17	84.74	84.29	83.82
13.00	ELEV	6608.33	6608.33	6608.33	6608.33	6608.32	6608.32	6608.31	6608.31	6608.30	6608.30
13.50	DISCHG	83.33	82.84	82.34	81.86	81.40	80.97	80.56	80.18	79.80	79.44
13.50	ELEV	6608.29	6608.29	6608.28	6608.27	6608.27	6608.26	6608.26	6608.25	6608.25	6608.24
14.00	DISCHG	79.09	78.76	78.44	78.10	77.75	77.38	77.01	76.64	76.28	75.93
14.00	ELEV	6608.24	6608.23	6608.23	6608.23	6608.22	6608.22	6608.21	6608.21	6608.20	6608.20
14.50	DISCHG	75.58	75.24	74.91	74.58	74.27	73.97	73.69	73.43	73.19	72.97
14.50	ELEV	6608.19	6608.19	6608.19	6608.18	6608.18	6608.17	6608.17	6608.17	6608.17	6608.16

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHRD INCHES, 2021.07 CPS-HRS, 167.02 ACRE-FEET; BASEFLOW = .00 CPS

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD ID 1310

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB

RECORD ID 1320

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE ‡	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	1											
XSECTION	1	RUNOFF	.22	7	2	.05	.0	4.40	24.00	1.87	---	6.10	356.87	1622.1
XSECTION	5	RUNOFF	.27	7	2	.05	.0	4.40	24.00	1.86	---	6.20	351.23	1300.8
XSECTION	10	RUNOFF	.25	7	2	.05	.0	4.40	24.00	1.87	---	6.11	388.56	1554.2
XSECTION	2	REACH	.22	7	2	.05	.0	4.40	24.00	1.87	---	6.18	340.86	1549.3
XSECTION	2	RUNOFF	.12	7	2	.05	.0	4.40	24.00	1.19	---	6.12	119.33	994.5
XSECTION	2	ADDHYD	.34	7	2	.05	.0	4.40	24.00	1.63	---	6.16	454.14	1335.7
XSECTION	3	REACH	.34	7	2	.05	.0	4.40	24.00	1.63	---	6.23	441.94	1299.8
XSECTION	3	RUNOFF	.06	7	2	.05	.0	4.40	24.00	.90	---	6.10	46.86	780.9
XSECTION	3	ADDHYD	.40	7	2	.05	.0	4.40	24.00	1.52	---	6.22	475.23	1188.1
XSECTION	6	REACH	.27	7	2	.05	.0	4.40	24.00	1.86	---	6.28	339.49	1257.4
XSECTION	6	RUNOFF	.12	7	2	.05	.0	4.40	24.00	1.19	---	6.18	100.17	834.8
XSECTION	6	ADDHYD	.39	7	2	.05	.0	4.40	24.00	1.65	---	6.26	430.96	1105.0
XSECTION	8	ADDHYD	.79	7	2	.05	.0	4.40	24.00	1.58	---	6.23	901.80	1141.5
STRUCTURE	8	RESVOR	.79	7	2	.05	.0	4.40	24.00	1.58	7079.31	6.80	202.22	256.0
XSECTION	9	REACH	.79	7	2	.05	.0	4.40	24.00	1.58	---	6.95	201.77	255.4
XSECTION	9	RUNOFF	.07	7	2	.05	.0	4.40	24.00	.96	---	6.17	47.82	683.1
XSECTION	9	ADDHYD	.86	7	2	.05	.0	4.40	24.00	1.52	---	6.75	210.08	244.3
XSECTION	16	REACH	.25	7	2	.05	.0	4.40	24.00	1.86	---	6.19	370.10	1480.4
XSECTION	16	RUNOFF	.04	7	2	.05	.0	4.40	24.00	.96	---	6.13	29.93	748.3
XSECTION	16	ADDHYD	.29	7	2	.05	.0	4.40	24.00	1.74	---	6.19	398.14	1372.9
XSECTION	12	RUNOFF	.18	7	2	.05	.0	4.40	24.00	.80	---	6.17	100.20	556.7
XSECTION	12	ADDHYD	.47	7	2	.05	.0	4.40	24.00	1.38	---	6.18	497.89	1059.3
STRUCTURE	12	RESVOR	.47	7	2	.05	.0	4.40	24.00	1.16	7073.10	7.28	43.48	92.5
XSECTION	14	RUNOFF	.02	7	2	.05	.0	4.40	24.00	.85	---	6.20	11.13	556.6
XSECTION	14	ADDHYD	.49	7	2	.05	.0	4.40	24.00	1.15	---	6.33	49.38	100.8
XSECTION	15	REACH	.49	7	2	.05	.0	4.40	24.00	1.15	---	6.39	49.28	100.6
XSECTION	15	RUNOFF	.01	7	2	.05	.0	4.40	24.00	.91	---	6.04	9.93	992.9
XSECTION	15	ADDHYD	.50	7	2	.05	.0	4.40	24.00	1.14	---	6.38	50.69	101.4
XSECTION	15	ADDHYD	1.36	7	2	.05	.0	4.40	24.00	1.38	---	6.69	257.35	189.2
XSECTION	17	RUNOFF	.09	7	2	.05	.0	4.40	24.00	.90	---	6.23	50.26	558.4
SECTION	17	ADDHYD	1.45	7	2	.05	.0	4.40	24.00	1.35	---	6.32	294.62	203.2

SECTION 18	RUNOFF	.11	7	2	.05	.0	4.40	24.00	1.12	---	6.29	70.40	640.0
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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
 (A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
 A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE ‡	ANTEC MOIST COND	MAIN TIME INCREM {HR}	PRECIPITATION			RUNOFF AMOUNT {IN}	PEAK DISCHARGE			
						BEGIN {HR}	AMOUNT {IN}	DURATION {HR}		ELEVATION {FT}	TIME {HR}	RATE {CFS}	RATE {CSM}
ALTERNATE	1	STORM	1										
SECTION 18	ADDHYD	1.56	7	2	.05	.0	4.40	24.00	1.34	---	6.31	364.73	233.8
XSECTION 20	RUNOFF	.04	7	2	.05	.0	4.40	24.00	1.72	---	6.09	60.25	1506.3
SECTION 20	ADDHYD	1.60	7	2	.05	.0	4.40	24.00	1.35	---	6.26	398.42	249.0
SECTION 21	RUNOFF	.13	7	2	.05	.0	4.40	24.00	1.95	---	6.06	241.75	1859.6
XSECTION 21	ADDHYD	1.73	7	2	.05	.0	4.40	24.00	1.39	---	6.13	571.99	330.6
SECTION 22	RUNOFF	.04	7	2	.05	.0	4.40	24.00	1.65	---	6.04	68.64	1715.9
XSECTION 25	REACH	.04	7	2	.05	.0	4.40	24.00	1.65	---	6.10	66.11	1652.8
XSECTION 25	RUNOFF	.10	7	2	.05	.0	4.40	24.00	2.03	---	6.04	200.98	2009.8
SECTION 25	ADDHYD	.14	7	2	.05	.0	4.40	24.00	1.92	---	6.06	262.49	1874.9
SECTION 25	ADDHYD	1.87	7	2	.05	.0	4.40	24.00	1.43	---	6.10	821.16	439.1
SECTION 26	RUNOFF	.08	7	2	.05	.0	4.40	24.00	1.95	---	6.04	158.33	1979.1
SECTION 26	ADDHYD	1.95	7	2	.05	.0	4.40	24.00	1.45	---	6.08	967.54	496.2
XSECTION 27	RUNOFF	.04	7	2	.05	.0	4.40	24.00	.56	---	6.24	12.55	313.7
SECTION 28	REACH	.04	7	2	.05	.0	4.40	24.00	.55	---	6.36	11.36	284.0
SECTION 28	RUNOFF	.04	7	2	.05	.0	4.40	24.00	.79	---	6.27	18.07	451.9
XSECTION 28	ADDHYD	.08	7	2	.05	.0	4.40	24.00	.67	---	6.31	28.76	359.5
SECTION 29	REACH	.08	7	2	.05	.0	4.40	24.00	.67	---	6.44	26.25	328.1
SECTION 29	RUNOFF	.04	7	2	.05	.0	4.40	24.00	.79	---	6.24	18.88	472.0
XSECTION 29	ADDHYD	.12	7	2	.05	.0	4.40	24.00	.71	---	6.36	41.49	345.8
SECTION 30	RUNOFF	.06	7	2	.05	.0	4.40	24.00	1.50	---	6.26	55.12	918.6
XSECTION 30	ADDHYD	.18	7	2	.05	.0	4.40	24.00	.98	---	6.31	94.86	527.0
SECTION 31	REACH	.18	7	2	.05	.0	4.40	24.00	.97	---	6.40	92.07	511.5
SECTION 31	RUNOFF	.09	7	2	.05	.0	4.40	24.00	1.45	---	6.06	125.63	1395.9
XSECTION 31	ADDHYD	.27	7	2	.05	.0	4.40	24.00	1.13	---	6.10	160.63	594.9
XSECTION 32	ADDHYD	2.22	7	2	.05	.0	4.40	24.00	1.41	---	6.09	1127.14	507.7
STRUCTURE 32	RESVOR	2.22	7	2	.05	.0	4.40	24.00	1.41	6615.87	6.30	715.52	322.3

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS  
(A STAR(\*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK  
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION								ROUTING PARAMETERS						PEAK				
SEC	REACH	INFLOW		OUTFLOW		INTERV.AREA		BASE-FLOW	VOLUME ABOVE BASE	MAIN INCR	ITER-#	Q AND A EQUATION		PEAK RATIO	S/Q (K)	ATT-KIN COEFF	TRAVEL TIME			
		PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)					COEFF (X)	POWER (M)				LENGTH FACTOR (K <sup>2</sup> )	O/I (Q <sup>2</sup> )	STOR-AGE (HR)	KINE-MATIC (HR)
	ALTERNATE	1	STORM	1																
2	2800	357	6.1	338	6.2	454	6.2	0	1.87	.05	1	2.84	1.33	.054	.947	223	.57	.10	.06	
+	3	1800	454	6.2	440	6.3	473	6.2	0	1.63	.05	1	1.95	1.33	.037	.969	180	.67?	.10	.05
+	6	2100	351	6.2	338	6.3	431	6.3	0	1.86	.05	1	1.91	1.33	.041	.964	227	.57	.10	.06
+	9	2400	202	6.8	202	7.0	210	6.8	0	1.58	.05	1	1.54	1.33	.010	.998	349	.41	.15	.10
+	16	2000	388	6.1	370	6.2	397	6.2	0	1.87	.05	1	1.58	1.33	.057	.952	243	.54	.10	.07
+	15	1000	49	6.3	49	6.4	51	6.4	0	1.15*	.05	1	2.72	1.33	.001	.999	135	.80?	.05	.04
+	25	3200	68	6.1	66	6.1	262	6.1	0	1.65	.05	1	6.90	1.38	.047	.967	179	.67?	.05	.05
+	28	1200	13	6.3	11	6.3	29	6.3	0	.56	.05	1	1.52	1.33	.055	.905	352	.41	.10	.10
+	29	1400	29	6.3	26	6.5	41	6.3	0	.67	.05	1	1.25	1.33	.058	.912	387	.38	.15	.11
+	31	2200	95	6.3	92	6.4	161	6.1	0	.98	.05	1	2.90	1.33	.031	.971	240	.55	.10	.07

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
STRUCTURE 32	2.22	
ALTERNATE 1		715.52
STRUCTURE 12	.47	
ALTERNATE 1		43.48
STRUCTURE 8	.79	
ALTERNATE 1		202.22
XSECTION 1	.22	
ALTERNATE 1		356.87
XSECTION 2	.34	
ALTERNATE 1		454.14
XSECTION 3	.40	
ALTERNATE 1		475.23
XSECTION 5	.27	
ALTERNATE 1		351.23
XSECTION 6	.39	
ALTERNATE 1		430.96
XSECTION 8	.79	
ALTERNATE 1		901.80
XSECTION 9	.86	
ALTERNATE 1		210.08
XSECTION 10	.25	
ALTERNATE 1		388.56
XSECTION 12	.47	
ALTERNATE 1		497.89
XSECTION 14	.49	
ALTERNATE 1		49.38
XSECTION 15	1.36	
ALTERNATE 1		257.35

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 16	.29	
ALTERNATE 1		398.14
XSECTION 17	1.45	
ALTERNATE 1		294.62
XSECTION 18	1.56	
ALTERNATE 1		364.73
XSECTION 20	1.60	
ALTERNATE 1		398.42
XSECTION 21	1.73	
ALTERNATE 1		571.99
XSECTION 22	.04	
ALTERNATE 1		68.64
XSECTION 25	1.87	
ALTERNATE 1		821.16
XSECTION 26	1.95	
ALTERNATE 1		967.54
XSECTION 27	.04	
ALTERNATE 1		12.55
XSECTION 28	.08	
ALTERNATE 1		28.76
XSECTION 29	.12	
ALTERNATE 1		41.49
XSECTION 30	.18	
ALTERNATE 1		94.86
XSECTION 31	.27	
ALTERNATE 1		160.63
XSECTION 32	2.22	
ALTERNATE 1		1127.14

END OF 1 JOBS IN THIS RUN

**VIII. DRY CREEK DRAINAGE AGREEMENT**

EXHIBIT A

DRAINAGE AGREEMENT  
(Dry Creek)

This Agreement dated this 28 day of AUGUST, 1987, is between the PEREGRINE JOINT VENTURE, a Colorado general partnership ("Peregrine") and NORTH AMERICAN HOMES, INC., a Colorado corporation ("North American").

Peregrine and North American have master-planned real estate developments known, respectively, as Peregrine and Woodstone, within the City of Colorado Springs (the "City"). Woodstone and portions of Peregrine are within the Dry Creek Drainage Basin (the "Basin"). The Basin drainage study is in the process of being up-dated by the City pursuant to its drainage ordinances. The parties would like to resolve differences they have in connection with the re-study of the Basin and consequently, in consideration of the covenants contained herein, agree:

1. Re-Study. The parties will use their best efforts to support and cause the City to exclude Peregrine from the Basin so that no City drainage fees will be required in connection with the platting or development of Peregrine. Peregrine will be responsible for constructing its own drainage facilities sufficient to maintain historic rates of discharge for storm runoff and drainage from Peregrine.

2. Payments. If the City adopts a re-study of the Basin in conformance with Section 1 above, Peregrine will:

a. Initial Payment. Upon the Basin's re-study being finally approved by the City and becoming effective, Peregrine will make a cash payment to North American and/or assigns of:

i) \$50,000.00, together with;

ii) \$500.00 for each platted lot within Peregrine which is also within the hydrologic drainage area of Dry Creek and for which a final plat has been placed of record.

b. Deferred Payment. \$500.00 for each platted lot within the hydrologic drainage area of Dry Creek until a total of 800 such lots (including those mentioned in paragraph 2(a)(ii)) have been platted.

This \$500.00 will increase each 12 months after the date of this Agreement at the rate of 10% per annum, compounded. This payment will be made at the time the plat involved is placed of record. The Colorado Springs Public Works Department will collect this payment as a condition to recording plats of Peregrine's.

c. Excluded Lots. No payments under subsections 2(a)(ii) or 2(b) will be required for platted lots for:

i) school, park, open space, or service uses or where Peregrine is required to dedicate land without compensation for other similar public uses; or

ii) lots which are only partially within the hydrologic Dry Creek Basin so long as no portion of building area as shown and restricted on the plat is within the hydrologic Dry Creek Basin.

Also, if in the future, the City requires drainage fees to be paid on all or any portion of Peregrine within the hydrologic Dry Creek Basin, this will not affect the payments Peregrine is required to make under this agreement, but North American will promptly pay to Peregrine all drainage reimbursements it receives from the Basin fund which resulted from any such drainage fees paid by Peregrine.

3. Settlement. This Agreement is a final settlement between Peregrine and North American with respect to any claims they may have against each other related to drainage matters, installation of drainage facilities, and/or the implementation and enforcement of the City's applicable drainage ordinances.

4. Determinations. If there is any dispute between the parties as to hydrologic matters in connection with this Agreement, the determination of the City as to such matters will be final and conclusive upon the parties.

5. Effective Date. If a re-study, in compliance with the requirements of Section 1 above, has not been adopted by the City by September 30, 1987, this Agreement will automatically terminate and be of no further effect.

6. Map. A map showing Woodstone, Peregrine and the Basin's boundaries is attached hereto as Exhibit A.

7. Miscellaneous.

a. Costs. In any action to enforce this Agreement, or to collect damages on account of any breach of warranty or indemnity provided for herein, the prevailing party shall also be entitled to collect all its costs in such action, including costs of investigation, settlement, reasonable attorneys' fees and all such additional costs of collection any judgment rendered in such action.


b. Term. This Agreement shall commence on the date of its execution and continue in full force and effect until such time as all obligations of the parties to each other hereunder have been fulfilled.

c. Effect of Agreement. All negotiations relative to the matters contemplated by this Agreement are merged herein and there are no other understandings or agreements relating to the matters and things herein set forth other than those incorporated in this Agreement. This instrument sets forth the entire agreement between the parties. No provision of this Agreement shall be altered, amended, revoked or waived except by an instrument in writing signed by the party to be charged with such amendment, revocation or waiver. This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective personal representatives, heirs, successors and assigns.

PEREGRINE:

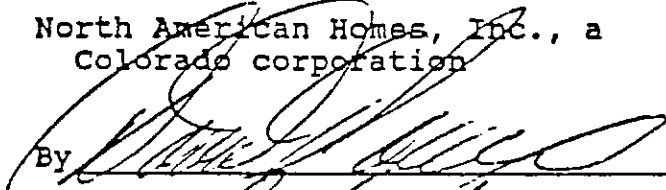
Peregrine Joint Venture, a Colorado  
general partnership

By: Vintage Communities, Inc.,  
its managing agent

By   
C. Lewis Christensen, President

NORTH AMERICAN:

North American Homes, Inc., a  
Colorado corporation

By   
Its President

Revised: 8/25/87



A RESOLUTION ADOPTING THE TECHNICAL PORTIONS OF THE DRY CREEK DRAINAGE BASIN REPORT AS PREPARED BY KKBNA DATED FEBRUARY, 1985; AN AMENDMENT TO THE DRY CREEK MASTER DRAINAGE PLAN AS PREPARED BY JR ENGINEERING, LTD. DATED MAY, 1987 (EXCLUDING PORTIONS OF SAID AMENDMENT APPLYING TO THE NORTH BASIN); AND ACCEPTING THE DRAINAGE AGREEMENT FOR DRY CREEK BETWEEN PEREGRINE JOINT VENTURE, A COLORADO GENERAL PARTNERSHIP, AND NORTH AMERICAN HOMES, INC., A COLORADO CORPORATION; AND ACCEPTING THE DRY CREEK PLATTING AGREEMENT BETWEEN THE CITY, NORTH AMERICAN HOMES, INC., A COLORADO CORPORATION, AND PEREGRINE JOINT VENTURE, A COLORADO GENERAL PARTNERSHIP

WHEREAS, the City of Colorado Springs' Department of Public Works has reviewed the hydrologic study of the Dry Creek Drainage Basin prepared by KKBNA and dated February, 1985; and

WHEREAS, the City of Colorado Springs' Department of Public Works has reviewed the hydrologic amendment to the Dry Creek Master Report prepared by JR Engineering, Ltd. and dated May, 1987; and

WHEREAS, the principal landowners in the Upper Dry Creek Basin Region have agreed to a specific payment plan between the two parties; and

WHEREAS, the City/County Drainage Board has approved all of the above documents;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF COLORADO SPRINGS:

Section 1. That the hydrologic study of the Dry Creek Drainage Basin prepared by KKBNA and dated February, 1985, be accepted without fee determination.

Section 2. That the amendment to the Dry Creek Drainage Basin Study prepared by JR Engineering, Ltd. dated May, 1987, be accepted except the portion applicable to the North Basin contained therein be accepted without fee determination.

Section 3. That the drainage agreement dated the 28th day of August, 1987, between Peregrine Joint Venture, a Colorado General Partnership; and North American Homes, a Colorado Corporation, be accepted as the terms for payment of drainage costs between the two parties.

Section 4. That the Dry Creek platting agreement between the City of Colorado Springs; North American Homes, Inc., a Colorado Corporation; and Peregrine Joint Venture, a Colorado General Partnership, be accepted.

Section 5. That the current Dry Creek Drainage Basin fee remain in effect for other parties within the Dry Creek Drainage Basin.

Dated at Colorado Springs, Colorado, this 8th day of September, 1987.



Mayor

ATTEST:

  
City Clerk

## **IX. DRY CREEK CORRESPONDENCE**



June 13, 1989

Sister Frances  
Mount Saint Francis  
7665 Assisi Heights  
Colorado Springs, CO 80919

Dear Sister Frances:

Peregrine Joint Venture has been working with the City of Colorado Springs on a Master Development Drainage Plan ("MDDP"). This MDDP is required under the present City drainage ordinances.

In the course of the study, it was determined that the existing upper north reservoir would be used as a regional detention pond. This pond would detain the developed flows of Peregrine and release at a historic rate. The outlet of the pond will direct the flow across your property and back into Peregrine. For your information I have attached a reduced map showing this routing.

This proposed routing is keeping with the historic pattern of drainage across your property. The City has requested that I notify you of the MDDP and the routing that is proposed.

Both Peregrine and the Sisters of St. Francis will require detailed studies and construction plans when the areas develop. These studies and plans will address the issues of channel design, final routing, and flow quantities.

If there are any questions, please call me.

Sincerely,

Tom Taylor  
Operations Manager

TT/so

Enclosure

*Peregrine*

June 20, 1989

Sister Frances  
Mount Saint Francis  
7665 Assisi Heights  
Colorado Springs, CO 80919

Re: Peregrine Master Development Drainage Plan

Dear Sister Frances:

The last time we talked about future drainage, you brought up some good questions. The Master Development Drainage Plan ("MDDP") is a document that Peregrine prepares for the City of Colorado Springs.

This document is the concept plan by which Peregrine will develop and how the major drainage will be handled. The engineers examine the existing conditions, i.e., the reservoirs, the topography, any development activity, and the approved Master Plan.

After this examination, the engineers divide the property into segments called basins and sub-basins. Each of these basins contribute runoff into the Dry Creek Channel. On the enclosed plan are X's called Design Points ("DP"). These DP's are where calculations are made as to the flow of water from the basins upstream, in both an existing condition and a developed condition.

As I indicated in my last letter, the north reservoir is being planned as a regional detention pond capable of detaining developed runoff and releasing at an existing rate. In our calculations, existing conditions were used in determining the quantities.

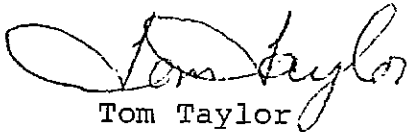
The MDDP report indicates that during a one hundred year event storm, the flow from the detention pond will be approximately 45 C.F.S. (cubic feet per second). This amount of water is equal to the existing release rate.

Sister Frances  
June 20, 1989  
Page Two

Peregrine and or the Sisters will need to abide by this report when specific land planning takes place upon these parcels that contribute flow. It is Peregrine's intention to honor the existing flow conditions and routes as it affects the Sisters of Saint Francis' property. Likewise, Peregrine expects the Sisters to honor the existing runoff from their future developed property back into Peregrine. Both Peregrine and the Sisters have the right to treat the flows across their respective properties in whatever manner is most appropriate for their developments. For example, if you desire to route the flows across your property through a storm sewer pipe, then you have the right to make this decision. What Peregrine agrees to do is to release from its property onto your property at an existing rate as shown in the MDDP.

If there are any questions about this, please call. Peregrine desires to reach an understanding with the Sisters on how the future drainage will be handled.

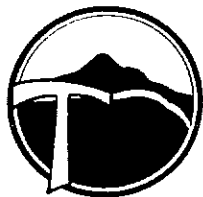
Sincerely,

A handwritten signature in cursive script that reads "Tom Taylor". The signature is written in black ink and is positioned above the typed name.

Tom Taylor

TT/cs

Enclosure



# Mount St. Francis

Sisters of St. Francis

July 6, 1989

Mr. Tom Taylor  
Operations Manager  
PEREGRINE  
7710 North Union  
Colorado Springs, CO 80918

Dear Mr. Taylor:

I have reviewed your letters of June 13th and 20th explaining the concept of the Master Development Drainage Plan. I appreciate your work and explanation of this situation. I realize that more detailed and extensive planning will be necessary as either Peregrine or we further develop the area that is involved.

Sincerely,

*Sister Frances Sedlacek*  
Sister Frances Sedlacek  
Provincial Treasurer