

Memo

To: Richard Anderson, P.E. – City of Scottsdale
Chris Stair – Toll Brothers
From: Jorge Garré, P.E.
Date: 5/3/23
Re: The Reserve at Black Mountain Drainage Plan

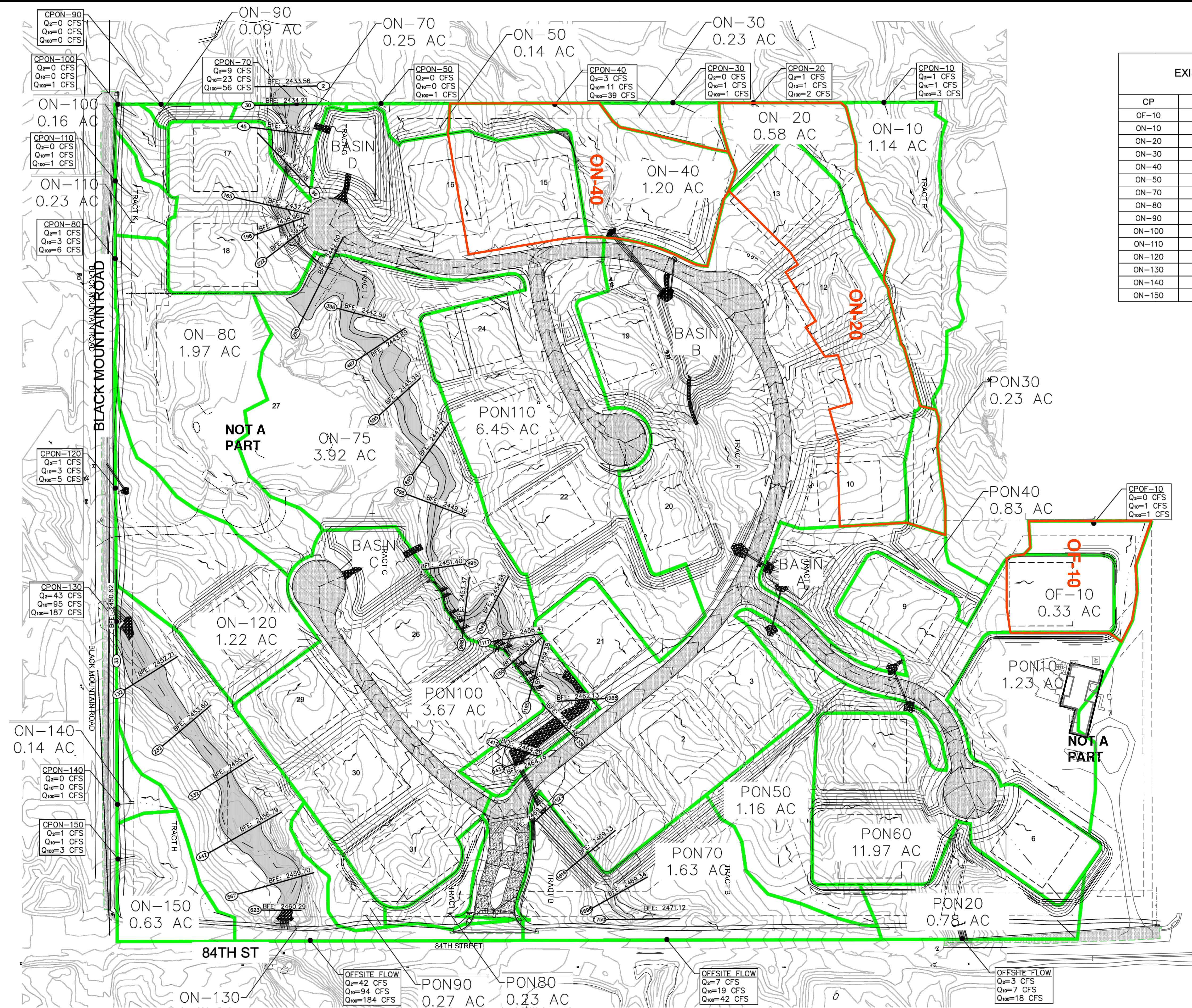
Drainage areas contributing to concentration points OF-10, ON-20 and ON-40, as identified by Kimley-Horn report/analyses, have been modified during site designs. Kimley-Horn drainage report Figure 8, *“Proposed Conditions Drainage Map”*, has been used to show changes to drainage area boundaries due to site designs (red lines). Using the information provided in the HEC-1 models and drainage report prepared by Kimley-Horn, ‘revised’ calculations were prepared to estimate peak flows at identified concentration points (Appendix A).

Drainage data/analyses attached indicates that ‘proposed’ peak flows are expected to be equal or less than the ‘existing’ peak flows during the 2-, 10-, and 100-year storm. Following is a table summarizing these results:

Peak Flow Summary Table

CP	Existing Runoff [cfs]			Proposed Runoff [cfs]		
	2-Year	10-Year	100-Year	2-Year	10-Year	100-Year
OF-10	1	2	5	1	1	2
ON-20	2	5	11	1	2	5
ON-40	8	18	43	2	9	32

Appendix A



RESERVE AT BLACK MOUNTAIN
FIGURE 8
PROPOSED CONDITIONS
DRAINAGE MAP
DATE: 9/19/2017
SCOTTSDALE, ARIZONA



Flood Control District of Maricopa County
 Drainage Design Management System
 SUB BASINS

Page 1

Project Reference: BLACK MTN (ON20)

5/2/2023

Area ID	Sub Basin Parameters						Rainfall Losses						Return Period Parameters					
	Area (sq mi)	Length (mi)	Slope (ft/mi)	Adj Slope	Time-Area	Kb	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)		2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Major Basin ID: 01																		
ON20-R	0.003	0.17	176.5	176.5	HEC1 DEFAULT	0.091	0.23	0.25	5.05	0.368	10	Tc (Hrs)	0.390	0.320	0.288	0.257	0.238	0.221
												Vel (f/s)	0.64	0.78	0.87	0.97	1.05	1.13
												R (Hrs)	0.865	0.693	0.618	0.543	0.499	0.460
ON40-R	0.003	0.13	67.7	67.7	HEC1 DEFAULT	0.100	0.22	0.25	5.05	0.373	9	Tc (Hrs)	0.486	0.397	0.358	0.318	0.295	0.274
												Vel (f/s)	0.39	0.48	0.53	0.60	0.65	0.70
												R (Hrs)	0.890	0.712	0.634	0.557	0.511	0.471
OF-10-	0.001	0.06	83.3	83.3	HEC1 DEFAULT	0.110	0.22	0.25	5.05	0.375	9	Tc (Hrs)	0.326	0.266	0.240	0.213	0.197	0.184
												Vel (f/s)	0.27	0.33	0.37	0.41	0.45	0.48
												R (Hrs)	0.576	0.460	0.410	0.360	0.330	0.304

* Non default value or value out of range

(stSubBasCG.rpt)

Flood Control District of Maricopa County
 Drainage Design Management System
 SOILS

Page 1

Project Reference: **BLACK MTN (ON20)**

5/2/2023

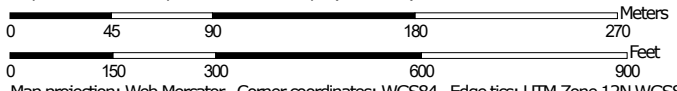
Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)	Comments
Major Basin ID: 01									
OF-10-	645	33	64533	0.001	100.00	0.230	-	100	
ON20-R	645	33	64533	0.004	100.00	0.230	-	100	
ON40-R	645	33	64533	0.003	100.00	0.230	-	100	

Soil Map—Aguila-Carefree Area, Arizona, Parts of Maricopa and Pinal Counties
(BLACK MTN)



Soil Map may not be valid at this scale.

Map Scale: 1:3,360 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

5/2/2023
Page 1 of 3

Soil Map—Aguila-Carefree Area, Arizona, Parts of Maricopa and Pinal Counties
(BLACK MTN)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Aguila-Carefree Area, Arizona, Parts of Maricopa and Pinal Counties

Survey Area Data: Version 17, Aug 26, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2020—May 27, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
33	Eba very gravelly loam, 1 to 8 percent slopes	37.0	93.8%
61	Gran-Wickenburg complex, 1 to 10 percent slopes	1.1	2.8%
93	Nickel-Cave complex, 8 to 30 percent slopes	1.3	3.4%
Totals for Area of Interest		39.4	100.0%

Flood Control District of Maricopa County
Drainage Design Management System
LAND USE
Project Reference: BLACK MTN (ON20)

Page 1

5/2/2023

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetation Cover (%)	DTHETA	Kb	Description
Major Basin ID: 01									
OF-10-	130	0.0007	58.3	0.30	15	50.0	NORMAL	0.041	Large Lot Residential - Single Family (1 du per acre to 2 du
	730	0.0005	41.7	0.10	0	90.0	NORMAL	0.206	Passive Open Space (Includes mountain preserves and washes)
		0.0012	100.0						
ON20-R	130	0.0025	65.8	0.30	15	50.0	NORMAL	0.038	Large Lot Residential - Single Family (1 du per acre to 2 du
	730	0.0013	34.2	0.10	0	90.0	NORMAL	0.192	Passive Open Space (Includes mountain preserves and washes)
		0.0038	100.0						
ON40-R	130	0.0018	60.0	0.30	15	50.0	NORMAL	0.038	Large Lot Residential - Single Family (1 du per acre to 2 du
	730	0.0012	40.0	0.10	0	90.0	NORMAL	0.192	Passive Open Space (Includes mountain preserves and washes)
		0.0030	100.0						

* Non default value

(stLuDataCG.rpt)

Concentration Point

OF-10

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 15:07:08
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

```

      X   X XXXXXXX XXXXX      X
      X   X X      X      X   XX
      X   X X      X      X   X
      XXXXXXX XXXX X      XXXXX X
      X   X X      X      X   X
      X   X X      X      X   X
      X   X XXXXXXX XXXXX      XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1         ID      BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2         ID      2 YEAR
3         ID      6 Hour Storm
4         ID      Unit Hydrograph: Clark
5         ID      Storm: Single
6         ID      12/22/2016
7         *DIAGRAM
8         IT      5 1JAN99      0      2000
9         IO      5
10        IN      15
11        *
12        KK      OF-10 BASIN
13        BA      0.0012
14        PB      1.394
15        PC      0.000 0.008 0.016 0.025 0.033 0.041 0.050 0.058 0.066 0.074
16        PC      0.087 0.099 0.118 0.138 0.216 0.377 0.834 0.911 0.931 0.950
17        PC      0.962 0.972 0.983 0.991 1.000
18        LG      0.22 0.25 5.05 0.375 9
19        UC      0.326 0.576
20        UA      0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
21        UA      100
22        *
23        ZZ

```

1 SCHEMATIC DIAGRAM OF STREAM NETWORK

```

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

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

10      OF-10

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 15:07:08
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
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* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2 YEAR
6 Hour Storm
Unit Hydrograph: Clark
Storm: Single
12/22/2016

```

8 IO      OUTPUT CONTROL VARIABLES
          IPRNT      5 PRINT CONTROL
          IPLOT      0 PLOT CONTROL
          QSCAL      0. HYDROGRAPH PLOT SCALE

```

```

IT      HYDROGRAPH TIME DATA
        NMIN      5 MINUTES IN COMPUTATION INTERVAL
        IDATE      1JAN99 STARTING DATE

```

ITIME 0000 STARTING TIME
NQ 2000 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 7JAN99 ENDING DATE
NDTIME 2235 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 166.58 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-FEET
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
					6-HOUR	24-HOUR	72-HOUR			
+										
+	HYDROGRAPH AT									
		OF-10	0.	4.25	0.	0.	0.	.00		

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

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 15:04:30
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

```

      X   X XXXXXXX XXXXX      X
      X   X X      X      X   XX
      X   X X      X      X
      XXXXXXX XXXX X      XXXXX X
      X   X X      X      X
      X   X X      X      X
      X   X XXXXXXX XXXXX      XXX

```

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NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1         ID          BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2         ID          10 YEAR
3         ID          6 Hour Storm
4         ID          Unit Hydrograph: Clark
5         ID          Storm: Single
6         ID          12/22/2016
7         *DIAGRAM
8         IT          5 1JAN99      0      2000
9         IO          5
10        IN          15
11        *
12        KK          OF-10 BASIN
13        BA          0.0012
14        PB          2.067
15        PC          0.000 0.008 0.016 0.025 0.033 0.041 0.050 0.058 0.066 0.074
16        PC          0.087 0.099 0.118 0.138 0.216 0.377 0.834 0.911 0.931 0.950
17        PC          0.962 0.972 0.983 0.991 1.000
18        LG          0.22 0.25 5.05 0.375 9
19        UC          0.240 0.410
20        UA          0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
21        UA          100
22        *
23        ZZ

```

1 SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

10 OF-10

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 15:04:30
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
10 YEAR
6 Hour Storm
Unit Hydrograph: Clark
Storm: Single
12/22/2016

8 IO OUTPUT CONTROL VARIABLES

IPRNT 5 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN 5 MINUTES IN COMPUTATION INTERVAL
IDATE 1JAN99 STARTING DATE

ITIME 0000 STARTING TIME
NQ 2000 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 7JAN99 ENDING DATE
NDTIME 2235 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 166.58 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-FEET
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
					6-HOUR	24-HOUR	72-HOUR			
+										
+	HYDROGRAPH AT									
		OF-10	1.	4.17	0.	0.	0.	.00		

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

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 15:02:02
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

```

      X   X  XXXXXXX  XXXXX      X
      X   X  X      X   X      XX
      X   X  X      X           X
      XXXXXXX  XXXX  X      XXXXX  X
      X   X  X      X           X
      X   X  X      X   X      X
      X   X  XXXXXXX  XXXXX      XXX

```

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KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1         ID          BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2         ID          100 YEAR
3         ID          6 Hour Storm
4         ID          Unit Hydrograph: Clark
5         ID          Storm: Single
6         ID          12/22/2016
7         *DIAGRAM
8         IT          5 1JAN99      0      2000
9         IO          5
10        IN          15
11        *
12        KK          OF-10 BASIN
13        BA          0.0012
14        PB          3.143
15        PC          0.000 0.008 0.016 0.025 0.033 0.041 0.050 0.058 0.066 0.074
16        PC          0.087 0.099 0.118 0.138 0.216 0.377 0.834 0.911 0.931 0.950
17        PC          0.962 0.972 0.983 0.991 1.000
18        LG          0.22 0.25 5.05 0.375 9
19        UC          0.184 0.304
20        UA          0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
21        UA          100
22        *
23        ZZ

```

1 SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

10        OF-10

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
*
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* JUN 1998
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*
* RUN DATE 02MAY23 TIME 15:02:02
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*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
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*

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
100 YEAR
6 Hour Storm
Unit Hydrograph: Clark
Storm: Single
12/22/2016

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TEMPERATURE DEGREES FAHRENHEIT

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					6-HOUR	24-HOUR	72-HOUR			
+										
+	HYDROGRAPH AT									
		OF-10	2.	4.08	0.	0.	0.	.00		

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

Concentration Point

ON-20

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 11:22:32
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

```

      X   X XXXXXXX XXXXX      X
      X   X X      X   X      XX
      X   X X      X           X
      XXXXXXX XXXX X      XXXXX X
      X   X X      X           X
      X   X X      X   X      X
      X   X XXXXXXX XXXXX      XXX

```

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KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

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2         ID      2 YEAR
3         ID      6 Hour Stormm
4         ID      Unit Hydrograph: Clark
5         ID      Storm: Single
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7         *DIAGRAM
8         IT      5 1JAN99      0      2000
9         IO      5
10        IN      15
11        *
12        KK      ON-20      BASIN
13        BA      0.0038
14        PB      1.394
15        PC      0.000      0.008      0.016      0.025      0.033      0.041      0.050      0.058      0.066      0.074
16        PC      0.087      0.099      0.118      0.138      0.216      0.377      0.834      0.911      0.931      0.950
17        PC      0.962      0.972      0.983      0.991      1.000
18        LG      0.23      0.25      5.05      0.368      10
19        UC      0.390      0.865
20        UA      0      3.0      5.0      8.0      12.0      20.0      43.0      75.0      90.0      96.0
21        UA      100
22        *
23        ZZ

```

1 SCHEMATIC DIAGRAM OF STREAM NETWORK

```

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

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

10      ON-20

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 11:22:32
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2 YEAR
6 Hour Stormm
Unit Hydrograph: Clark
Storm: Single
12/22/2016

8 IO OUTPUT CONTROL VARIABLES
IPRNT 5 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
NMIN 5 MINUTES IN COMPUTATION INTERVAL
IDATE 1JAN99 STARTING DATE

ITIME 0000 STARTING TIME
NQ 2000 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 7JAN99 ENDING DATE
NDTIME 2235 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 166.58 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-FEET
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
					6-HOUR	24-HOUR	72-HOUR			
+										
+	HYDROGRAPH AT	ON-20	1.	4.33	0.	0.	0.	.00		

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

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 11:19:29
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

```

      X   X XXXXXXX XXXXX      X
      X   X X      X      X   XX
      X   X X      X      X   X
      XXXXXXX XXXX X      XXXXX X
      X   X X      X      X   X
      X   X X      X      X   X
      X   X XXXXXXX XXXXX      XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1          ID          BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2          ID          10 YEAR
3          ID          6 Hour Stormm
4          ID          Unit Hydrograph: Clark
5          ID          Storm: Single
6          ID          12/22/2016
7          *DIAGRAM
8          IT          5 1JAN99      0      2000
9          IO          5
9          IN          15
9          *
10         KK          ON-20      BASIN
11         BA          0.0038
12         PB          2.067
13         PC          0.000      0.008      0.016      0.025      0.033      0.041      0.050      0.058      0.066      0.074
14         PC          0.087      0.099      0.118      0.138      0.216      0.377      0.834      0.911      0.931      0.950
15         PC          0.962      0.972      0.983      0.991      1.000
16         LG          0.23      0.25      5.05      0.368      10
17         UC          0.288      0.618
18         UA          0          3.0      5.0      8.0      12.0      20.0      43.0      75.0      90.0      96.0
19         UA          100
19         *
20         ZZ

```

1 SCHEMATIC DIAGRAM OF STREAM NETWORK

```

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

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

10      ON-20

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 11:19:29
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
10 YEAR
6 Hour Stormm
Unit Hydrograph: Clark
Storm: Single
12/22/2016

```

8 IO      OUTPUT CONTROL VARIABLES
          IPRNT      5 PRINT CONTROL
          IPLOT      0 PLOT CONTROL
          QSCAL      0. HYDROGRAPH PLOT SCALE

```

```

IT      HYDROGRAPH TIME DATA
          NMIN      5 MINUTES IN COMPUTATION INTERVAL
          IDATE      1JAN99 STARTING DATE

```

ITIME 0000 STARTING TIME
NQ 2000 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 7JAN99 ENDING DATE
NDTIME 2235 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 166.58 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-FEET
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
					6-HOUR	24-HOUR	72-HOUR			
+										
+	HYDROGRAPH AT	ON-20	2.	4.25	0.	0.	0.	.00		

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

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 11:11:53
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

```

      X   X  XXXXXXX  XXXXX      X
      X   X  X      X   X      XX
      X   X  X      X           X
      XXXXXXX  XXXX  X      XXXXX  X
      X   X  X      X           X
      X   X  X      X   X      X
      X   X  XXXXXXX  XXXXX      XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
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NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1         ID      BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2         ID      100 YEAR
3         ID      6 Hour Storm
4         ID      Unit Hydrograph: Clark
5         ID      Storm: Single
6         ID      12/22/2016
7         *DIAGRAM
8         IT      5 1JAN99      0      2000
9         IO      5
10        IN      15
11        *
12        KK      ON-20      BASIN
13        BA      0.0038
14        PB      3.143
15        PC      0.000      0.008      0.016      0.025      0.033      0.041      0.050      0.058      0.066      0.074
16        PC      0.087      0.099      0.118      0.138      0.216      0.377      0.834      0.911      0.931      0.950
17        PC      0.962      0.972      0.983      0.991      1.000
18        LG      0.23      0.25      5.05      0.368      10
19        UC      0.221      0.460
20        UA      0      3.0      5.0      8.0      12.0      20.0      43.0      75.0      90.0      96.0
21        UA      100
22        *
23        ZZ

```

1 SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

10 ON-20

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 11:11:53
*

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* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
100 YEAR
6 Hour Storm
Unit Hydrograph: Clark
Storm: Single
12/22/2016

8 IO OUTPUT CONTROL VARIABLES

IPRNT 5 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN 5 MINUTES IN COMPUTATION INTERVAL
IDATE 1JAN99 STARTING DATE

ITIME 0000 STARTING TIME
NQ 2000 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 7JAN99 ENDING DATE
NDTIME 2235 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 166.58 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-FEET
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
					6-HOUR	24-HOUR	72-HOUR			
+										
+	HYDROGRAPH AT	ON-20	5.	4.17	1.	0.	0.	.00		

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

Concentration Point

ON-40

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 13:57:57
*
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

```

X X XXXXXXX XXXXX X
X X X X X XX
X X X X X
XXXXXXX XXXX X XXXXX X
X X X X X
X X X X X
X X XXXXXXX XXXXX XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

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

1 ID BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2 ID 2 YEAR
3 ID 6 Hour Storm
4 ID Unit Hydrograph: Clark
5 ID Storm: Single
6 ID 12/22/2016
7 *DIAGRAM
8 IT 5 1JAN99 0 2000
9 IO 5
IN 15
*

10 KK AON-20 BASIN
11 BA 0.018
12 PB 1.394
13 PC 0.000 0.008 0.016 0.025 0.033 0.041 0.050 0.058 0.066 0.074
14 PC 0.087 0.099 0.118 0.138 0.216 0.377 0.834 0.911 0.931 0.950
15 PC 0.962 0.972 0.983 0.991 1.000
16 LG 0.31 0.28 5.05 0.27 13
17 UC 0.191 0.198
18 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
19 UA 100
*

20 KK ARET20 STORAGE
21 RS 1 STOR
22 SV 0.30 0.46 0.64 0.76 0.84 0.96 1.04
23 SQ 3.62 5.53 9.66 13.16 15.81 20.15 29.72
24 SE 2482.0 2483.00 2483.50 2484.00 2484.30 2484.50 2484.80 2485.00
*

25 KK RAON20 ROUTE
26 RS 1 FLOW
27 RC 0.035 0.035 0.035 141 0.0071 2478.00
28 RX 0.00 5.00 14.00 23.00 37.00 42.00 46.00 51.00
29 RY 2478.0 2477.00 2476.00 2475.00 2475.00 2476.00 2477.00 2478.00
*

30 KK PON20 BASIN
31 BA 0.0012
32 LG 0.10 0.25 5.05 0.44 5
33 UC 0.156 0.220
34 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
35 UA 100
*

36 KK CP020 COMBINE
37 HC 2
*

```

1 HEC-1 INPUT PAGE 2

```

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

38 KK RCP020 ROUTE
39 RS 1 FLOW
40 RC 0.035 0.035 0.035 454 0.0330 2469.00
41 RX 0.00 2.00 3.00 4.00 4.01 5.00 6.00 8.00
42 RY 2469.0 2468.50 2468.25 2468.00 2468.00 2468.25 2468.50 2469.00
*

43 KK PON10 BASIN
44 BA 0.0019

```

45	LG	0.13	0.25	5.05	0.42	7					
46	UC	0.164	0.181								
47	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
48	UA	100									
	*										
49	KK	RPN10	ROUTE								
50	RS	1	FLOW								
51	RC	0.035	0.035	0.035	348	0.0402	2469.00				
52	RX	0.00	2.00	3.00	4.00	4.01	5.00	6.00	8.00		
53	RY	2469.0	2468.50	2468.25	2468.00	2468.00	2468.25	2468.50	2469.00		
	*										
54	KK	PON40	BASIN								
55	BA	0.0013									
56	LG	0.13	0.25	5.05	0.42	7					
57	UC	0.208	0.395								
58	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
59	UA	100									
	*										
60	KK	PON50	BASIN								
61	BA	0.0018									
62	LG	0.16	0.25	5.05	0.41	8					
63	UC	0.209	0.356								
64	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
65	UA	100									
	*										
66	KK	CPP40	COMBINE								
67	HC	4									
	*										
68	KK	DETA									
69	KM	DETENTION BASIN A									
70	RS	1	STOR	-1							
71	SA	0.105	.124	.144	.168	.208					
72	SQ	0	0.3	0.5	20	41					
73	SE	58.0	59.0	60.0	61.0	62.0					
74	ST	62.0	30	2.7	1.5						
	*										

1

HEC-1 INPUT

PAGE 3

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

75	KK	RDETA	ROUTE								
76	RS	1	FLOW								
77	RC	0.035	0.035	0.035	529	0.0246	2456.00				
78	RX	0.00	4.00	6.00	8.00	8.01	10.00	12.00	16.00		
79	RY	2456.0	2455.00	2454.50	2454.00	2454.00	2454.50	2455.00	2456.00		
	*										
80	KK	PON60	BASIN (DEDUCT NEW AREA ON20)								
81	BA	0.016									
82	LG	0.28	0.25	5.05	0.34	14					
83	UC	0.267	0.287								
84	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
85	UA	100									
	*										
86	KK	CP060	COMBINE								
87	HC	2									
	*										
88	KK	DETB									
89	KM	DETENTION BASIN B									
90	RS	1	STOR	0							
91	SA	0.135	.166	.200	.235						
92	SE	0	1.0	2.0	3.0						
93	SS	2.0	25.4	2.3	1.5						
94	SL	0.83	0.3526	0.6	0.5						
	*										
95	KK	RDETB	ROUTE								
96	RS	1	FLOW								
97	RC	0.035	0.035	0.035	350	0.0229	2449.00				
98	RX	0.00	4.00	8.00	12.00	32.01	36.00	40.00	44.00		
99	RY	2449.0	2447.00	2446.0	2445.00	2445.00	2446.0	2447.00	2449.00		
	*										
100	KK	ON-40	BASIN								
101	BA	0.003									
102	LG	0.22	0.25	5.05	0.373	9					
103	UC	0.486	0.890								
104	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
105	UA	100									
	*										
106	KK	CP040	COMBINE								
107	HC	2									
	*										
108	ZZ										

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

10 AON-20

```

V
V
20  ARET20
V
V
25  RAON20
.
.
30      PON20
.
.
36  CP020.....
V
V
38  RCP020
.
.
43      PON10
.
.
49      RPON10
.
.
54      PON40
.
.
60      PON50
.
.
66  CPP40.....
V
V
68  DETA
V
V
75  RDETA
.
.
80      PON60
.
.
86  CP060.....
V
V
88  DETB
V
V
95  RDETB
.
.
100     ON-40
.
.
106  CP040.....

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
* RUN DATE 02MAY23 TIME 13:57:57
*
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
 2 YEAR
 6 Hour Storm
 Unit Hydrograph: Clark
 Storm: Single
 12/22/2016

```

8 IO      OUTPUT CONTROL VARIABLES
          IPRNT      5  PRINT CONTROL
          IPLOT      0  PLOT CONTROL
          QSCAL      0.  HYDROGRAPH PLOT SCALE

```

```

IT      HYDROGRAPH TIME DATA
          NMIN      5  MINUTES IN COMPUTATION INTERVAL
          IDATE     1JAN99  STARTING DATE
          ITIME     0000  STARTING TIME
          NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
          NDDATE    7JAN99  ENDING DATE
          NDTIME    2235  ENDING TIME
          ICENT     19  CENTURY MARK

```

COMPUTATION INTERVAL .08 HOURS
 TOTAL TIME BASE 166.58 HOURS

ENGLISH UNITS
 DRAINAGE AREA SQUARE MILES
 PRECIPITATION DEPTH INCHES
 LENGTH, ELEVATION FEET
 FLOW CUBIC FEET PER SECOND
 STORAGE VOLUME ACRE-FEET
 SURFACE AREA ACRES

1	TEMPERATURE		DEGREES FAHRENHEIT		RUNOFF SUMMARY						
			FLOW IN CUBIC FEET PER SECOND								
			TIME IN HOURS, AREA IN SQUARE MILES								
	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE	
+					6-HOUR	24-HOUR	72-HOUR				
+	HYDROGRAPH AT	AON-20	11.	4.08	1.	0.	0.	.02			
+	ROUTED TO	ARET20	3.	4.42	1.	0.	0.	.02	2482.86	4.42	
+	ROUTED TO	RAON20	3.	4.50	1.	0.	0.	.02	2475.18	4.50	
+	HYDROGRAPH AT	PON20	1.	4.08	0.	0.	0.	.00			
+	2 COMBINED AT	CP020	3.	4.33	1.	0.	0.	.02			
+	ROUTED TO	RCP020	3.	4.42	1.	0.	0.	.02	2468.49	4.42	
+	HYDROGRAPH AT	PON10	1.	4.08	0.	0.	0.	.00			
+	ROUTED TO	RPON10	1.	4.08	0.	0.	0.	.00	2468.31	4.08	
+	HYDROGRAPH AT	PON40	0.	4.17	0.	0.	0.	.00			
+	HYDROGRAPH AT	PON50	1.	4.17	0.	0.	0.	.00			
+	4 COMBINED AT	CPP40	5.	4.25	1.	0.	0.	.02			
+	ROUTED TO	DETA	3.	5.00	1.	0.	0.	.02	60.10	5.00	
+	ROUTED TO	RDETA	3.	5.00	1.	0.	0.	.02	2454.48	5.00	
+	HYDROGRAPH AT	PON60	7.	4.08	1.	0.	0.	.02			
+	2 COMBINED AT	CP060	7.	4.08	1.	0.	0.	.04			
+	ROUTED TO	DETB	2.	5.50	1.	0.	0.	.04	2.00	5.50	
+	ROUTED TO	RDETB	2.	6.00	1.	0.	0.	.04	2445.04	5.92	
+	HYDROGRAPH AT	ON-40	1.	4.33	0.	0.	0.	.00			
+	2 COMBINED AT	CP040	2.	5.75	1.	0.	0.	.04			
1	SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DETA (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)										

PLAN 1		INITIAL VALUE		SPILLWAY CREST		TOP OF DAM			
	ELEVATION	58.00		62.00		62.00			
	STORAGE	0.		1.		1.			
	OUTFLOW	0.		41.		41.			
	RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS	
	1.00	60.10	.00	0.	3.	.00	5.00	.00	

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 13:55:46
*
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

```

X X XXXXXXX XXXXX X
X X X X X XX
X X X X X
XXXXXXX XXXX X XXXXX X
X X X X X
X X X X X
X X XXXXXXX XXXXX XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

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

1 ID BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
2 ID 10 YEAR
3 ID 6 Hour Storm
4 ID Unit Hydrograph: Clark
5 ID Storm: Single
6 ID 12/22/2016
7 *DIAGRAM
8 IT 5 1JAN99 0 2000
9 IO 5
IN 15
*

10 KK AON-20 BASIN
11 BA 0.018
12 PB 2.067
13 PC 0.000 0.008 0.016 0.025 0.033 0.041 0.050 0.058 0.066 0.074
14 PC 0.087 0.099 0.118 0.138 0.216 0.377 0.834 0.911 0.931 0.950
15 PC 0.962 0.972 0.983 0.991 1.000
16 LG 0.31 0.28 5.05 0.27 13
17 UC 0.191 0.198
18 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
19 UA 100
*

20 KK ARET20 STORAGE
21 RS 1 STOR
22 SV 0.30 0.46 0.64 0.76 0.84 0.96 1.04
23 SQ 3.62 5.53 9.66 13.16 15.81 20.15 29.72
24 SE 2482.0 2483.00 2483.50 2484.00 2484.30 2484.50 2484.80 2485.00
*

25 KK RAON20 ROUTE
26 RS 1 FLOW
27 RC 0.035 0.035 0.035 141 0.0071 2478.00
28 RX 0.00 5.00 14.00 23.00 37.00 42.00 46.00 51.00
29 RY 2478.0 2477.00 2476.00 2475.00 2475.00 2476.00 2477.00 2478.00
*

30 KK PON20 BASIN
31 BA 0.0012
32 LG 0.10 0.25 5.05 0.44 5
33 UC 0.134 0.185
34 UA 0 3.0 5.0 8.0 12.0 20.0 43.0 75.0 90.0 96.0
35 UA 100
*

36 KK CP020 COMBINE
37 HC 2
*

```

1 HEC-1 INPUT PAGE 2

```

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

38 KK RCP020 ROUTE
39 RS 1 FLOW
40 RC 0.035 0.035 0.035 454 0.0330 2469.00
41 RX 0.00 2.00 3.00 4.00 4.01 5.00 6.00 8.00
42 RY 2469.0 2468.50 2468.25 2468.00 2468.00 2468.25 2468.50 2469.00
*

43 KK PON10 BASIN
44 BA 0.0019

```

45	LG	0.13	0.25	5.05	0.42	7					
46	UC	0.141	0.152								
47	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
48	UA	100									
	*										
49	KK	RPN10	ROUTE								
50	RS	1	FLOW								
51	RC	0.035	0.035	0.035	348	0.0402	2469.00				
52	RX	0.00	2.00	3.00	4.00	4.01	5.00	6.00	8.00		
53	RY	2469.0	2468.50	2468.25	2468.00	2468.00	2468.25	2468.50	2469.00		
	*										
54	KK	PON40	BASIN								
55	BA	0.0013									
56	LG	0.13	0.25	5.05	0.42	7					
57	UC	0.178	0.334								
58	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
59	UA	100									
	*										
60	KK	PON50	BASIN								
61	BA	0.0018									
62	LG	0.16	0.25	5.05	0.41	8					
63	UC	0.179	0.301								
64	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
65	UA	100									
	*										
66	KK	CPP40	COMBINE								
67	HC	4									
	*										
68	KK	DETA									
69	KM	DETENTION BASIN A									
70	RS	1	STOR	-1							
71	SA	0.105	.124	.144	.168	.208					
72	SQ	0	0.3	0.5	20	41					
73	SE	58.0	59.0	60.0	61.0	62.0					
74	ST	62.0	30	2.7	1.5						
	*										

1

HEC-1 INPUT

PAGE 3

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

75	KK	RDETA	ROUTE								
76	RS	1	FLOW								
77	RC	0.035	0.035	0.035	529	0.0246	2456.00				
78	RX	0.00	4.00	6.00	8.00	8.01	10.00	12.00	16.00		
79	RY	2456.0	2455.00	2454.50	2454.00	2454.00	2454.50	2455.00	2456.00		
	*										

80	KK	PON60	BASIN (DEDUCT NEW AREA ON20)								
81	BA	0.016									
82	LG	0.28	0.25	5.05	0.34	14					
83	UC	0.231	0.244								
84	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
85	UA	100									
	*										

86	KK	CP060	COMBINE								
87	HC	2									
	*										

88	KK	DETB									
89	KM	DETENTION BASIN B									
90	RS	1	STOR	0							
91	SA	0.135	.166	.200	.235						
92	SE	0	1.0	2.0	3.0						
93	SS	2.0	25.4	2.3	1.5						
94	SL	0.83	0.3526	0.6	0.5						
	*										

95	KK	RDETB	ROUTE								
96	RS	1	FLOW								
97	RC	0.035	0.035	0.035	350	0.0229	2449.00				
98	RX	0.00	4.00	8.00	12.00	32.01	36.00	40.00	44.00		
99	RY	2449.0	2447.00	2446.0	2445.00	2445.00	2446.0	2447.00	2449.00		
	*										

100	KK	ON-40	BASIN								
101	BA	0.003									
102	LG	0.22	0.25	5.05	0.373	9					
103	UC	0.358	0.634								
104	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
105	UA	100									
	*										

106	KK	CP040	COMBINE								
107	HC	2									
	*										
108	ZZ										

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
LINE		
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
10	AON-20	

```

V
V
20  ARET20
V
V
25  RAON20
.
.
30  .      PON20
.
.
36  CP020.....
V
V
38  RCP020
.
.
43  .      PON10
.      V
.      V
49  .      RPON10
.
.
54  .      .      PON40
.      .
60  .      .      .      PON50
.      .
66  CPP40.....
V
V
68  DETA
V
V
75  RDETA
.
.
80  .      PON60
.      .
86  CP060.....
V
V
88  DETB
V
V
95  RDETB
.
.
100 .      ON-40
.      .
106 CP040.....

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
* RUN DATE 02MAY23 TIME 13:55:46
*
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
 10 YEAR
 6 Hour Storm
 Unit Hydrograph: Clark
 Storm: Single
 12/22/2016

```

8 IO      OUTPUT CONTROL VARIABLES
          IPRNT      5  PRINT CONTROL
          IPLOT      0  PLOT CONTROL
          QSCAL      0.  HYDROGRAPH PLOT SCALE

```

```

IT      HYDROGRAPH TIME DATA
          NMIN      5  MINUTES IN COMPUTATION INTERVAL
          IDATE     1JAN99  STARTING DATE
          ITIME     0000  STARTING TIME
          NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
          NDDATE    7JAN99  ENDING DATE
          NDTIME    2235  ENDING TIME
          ICENT     19  CENTURY MARK

```

COMPUTATION INTERVAL .08 HOURS
 TOTAL TIME BASE 166.58 HOURS

ENGLISH UNITS
 DRAINAGE AREA SQUARE MILES
 PRECIPITATION DEPTH INCHES
 LENGTH, ELEVATION FEET
 FLOW CUBIC FEET PER SECOND
 STORAGE VOLUME ACRE-FEET
 SURFACE AREA ACRES

1	TEMPERATURE		DEGREES FAHRENHEIT		RUNOFF SUMMARY						
			FLOW IN CUBIC FEET PER SECOND								
			TIME IN HOURS, AREA IN SQUARE MILES								
	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE	
+					6-HOUR	24-HOUR	72-HOUR				
+	HYDROGRAPH AT	AON-20	22.	4.08	2.	0.	0.	.02			
+	ROUTED TO	ARET20	7.	4.42	2.	0.	0.	.02	2483.66	4.42	
+	ROUTED TO	RAON20	7.	4.42	2.	0.	0.	.02	2475.29	4.42	
+	HYDROGRAPH AT	PON20	1.	4.08	0.	0.	0.	.00			
+	2 COMBINED AT	CP020	7.	4.42	2.	0.	0.	.02			
+	ROUTED TO	RCP020	7.	4.42	2.	0.	0.	.02	2468.66	4.42	
+	HYDROGRAPH AT	PON10	2.	4.08	0.	0.	0.	.00			
+	ROUTED TO	RPON10	2.	4.08	0.	0.	0.	.00	2468.42	4.08	
+	HYDROGRAPH AT	PON40	1.	4.08	0.	0.	0.	.00			
+	HYDROGRAPH AT	PON50	2.	4.08	0.	0.	0.	.00			
+	4 COMBINED AT	CPP40	10.	4.17	2.	1.	0.	.02			
+	ROUTED TO	DETA	8.	4.50	2.	1.	0.	.02	60.39	4.50	
+	ROUTED TO	RDETA	8.	4.58	2.	1.	0.	.02	2454.73	4.58	
+	HYDROGRAPH AT	PON60	17.	4.08	2.	0.	0.	.02			
+	2 COMBINED AT	CP060	17.	4.08	3.	1.	0.	.04			
+	ROUTED TO	DETB	13.	4.25	3.	1.	0.	.04	2.32	4.25	
+	ROUTED TO	RDETB	9.	4.83	3.	1.	0.	.04	2445.19	4.83	
+	HYDROGRAPH AT	ON-40	2.	4.25	0.	0.	0.	.00			
+	2 COMBINED AT	CP040	9.	4.75	3.	1.	0.	.04			
1	SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DETA (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)										

PLAN 1		INITIAL VALUE		SPILLWAY CREST		TOP OF DAM			
	ELEVATION	58.00		62.00		62.00			
	STORAGE	0.		1.		1.			
	OUTFLOW	0.		41.		41.			
	RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS	
	1.00	60.39	.00	0.	8.	.00	4.50	.00	

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 02MAY23 TIME 13:56:24
*

*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*

```

      X   X  XXXXXXX  XXXXX      X
      X   X  X      X   X      XX
      X   X  X      X           X
      XXXXXXX XXXX  X      XXXXX X
      X   X  X      X           X
      X   X  X      X   X      X
      X   X  XXXXXXX  XXXXX      XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

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

 1      ID      BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
 2      ID      100 YEAR
 3      ID      6 Hour Storm
 4      ID      Unit Hydrograph: Clark
 5      ID      Storm: Single
 6      ID      12/22/2016
 7      *DIAGRAM
 8      IT      5 1JAN99      0      2000
 9      IO      5
10      IN      15
11      *
12      KK      AON-20      BASIN
13      BA      0.018
14      PB      3.143
15      PC      0.000      0.008      0.016      0.025      0.033      0.041      0.050      0.058      0.066      0.074
16      PC      0.087      0.099      0.118      0.138      0.216      0.377      0.834      0.911      0.931      0.950
17      PC      0.962      0.972      0.983      0.991      1.000
18      LG      0.31      0.28      5.05      0.27      13
19      UC      0.191      0.198
20      UA      0      3.0      5.0      8.0      12.0      20.0      43.0      75.0      90.0      96.0
21      UA      100
22      *
23      KK      ARET20      STORAGE
24      RS      1      STOR
25      SV      0.30      0.46      0.64      0.76      0.84      0.96      1.04
26      SQ      3.62      5.53      9.66      13.16      15.81      20.15      29.72
27      SE      2482.0 2483.00 2483.50 2484.00 2484.30 2484.50 2484.80 2485.00
28      *
29      KK      RAON20      ROUTE
30      RS      1      FLOW
31      RC      0.035      0.035      0.035      141      0.0071 2478.00
32      RX      0.00      5.00      14.00      23.00      37.00      42.00      46.00      51.00
33      RY      2478.0 2477.00 2476.00 2475.00 2475.00 2476.00 2477.00 2478.00
34      *
35      KK      PON20      BASIN
36      BA      0.0012
37      LG      0.10      0.25      5.05      0.44      5
38      UC      0.102      0.137
39      UA      0      3.0      5.0      8.0      12.0      20.0      43.0      75.0      90.0      96.0
40      UA      100
41      *
42      KK      CP020      COMBINE
43      HC      2
44      *

```

1 HEC-1 INPUT PAGE 2

```

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

38      KK      RCP020      ROUTE
39      RS      1      FLOW
40      RC      0.035      0.035      0.035      454      0.0330 2469.00
41      RX      0.00      2.00      3.00      4.00      4.01      5.00      6.00      8.00
42      RY      2469.0 2468.50 2468.25 2468.00 2468.00 2468.25 2468.50 2469.00
43      *
44      KK      PON10      BASIN
45      BA      0.0019

```

45	LG	0.13	0.25	5.05	0.42	7					
46	UC	0.108	0.114								
47	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
48	UA	100									
	*										
49	KK	RPN10	ROUTE								
50	RS	1	FLOW								
51	RC	0.035	0.035	0.035	348	0.0402	2469.00				
52	RX	0.00	2.00	3.00	4.00	4.01	5.00	6.00	8.00		
53	RY	2469.0	2468.50	2468.25	2468.00	2468.00	2468.25	2468.50	2469.00		
	*										
54	KK	PON40	BASIN								
55	BA	0.0013									
56	LG	0.13	0.25	5.05	0.42	7					
57	UC	0.137	0.249								
58	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
59	UA	100									
	*										
60	KK	PON50	BASIN								
61	BA	0.0018									
62	LG	0.16	0.25	5.05	0.41	8					
63	UC	0.138	0.224								
64	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
65	UA	100									
	*										
66	KK	CPP40	COMBINE								
67	HC	4									
	*										
68	KK	DETA									
69	KM	DETENTION BASIN A									
70	RS	1	STOR	-1							
71	SA	0.105	.124	.144	.168	.208					
72	SQ	0	0.3	0.5	20	41					
73	SE	58.0	59.0	60.0	61.0	62.0					
74	ST	62.0	30	2.7	1.5						
	*										

1

HEC-1 INPUT

PAGE 3

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

75	KK	RDETA	ROUTE								
76	RS	1	FLOW								
77	RC	0.035	0.035	0.035	529	0.0246	2456.00				
78	RX	0.00	4.00	6.00	8.00	8.01	10.00	12.00	16.00		
79	RY	2456.0	2455.00	2454.50	2454.00	2454.00	2454.50	2455.00	2456.00		
	*										
80	KK	PON60	BASIN (DEDUCT NEW AREA ON20)								
81	BA	0.016									
82	LG	0.28	0.25	5.05	0.34	14					
83	UC	0.179	0.184								
84	UA	0	5.0	16.0	30.0	65.0	77.0	84.0	90.0	94.0	97.0
85	UA	100									
	*										
86	KK	CP060	COMBINE								
87	HC	2									
	*										
88	KK	DETB									
89	KM	DETENTION BASIN B									
90	RS	1	STOR	0							
91	SA	0.135	.166	.200	.235						
92	SE	0	1.0	2.0	3.0						
93	SS	2.0	25.4	2.3	1.5						
94	SL	0.83	0.3526	0.6	0.5						
	*										
95	KK	RDETB	ROUTE								
96	RS	1	FLOW								
97	RC	0.035	0.035	0.035	350	0.0229	2449.00				
98	RX	0.00	4.00	8.00	12.00	32.01	36.00	40.00	44.00		
99	RY	2449.0	2447.00	2446.0	2445.00	2445.00	2446.0	2447.00	2449.00		
	*										
100	KK	ON-40	BASIN								
101	BA	0.003									
102	LG	0.22	0.25	5.05	0.373	9					
103	UC	0.274	0.471								
104	UA	0	3.0	5.0	8.0	12.0	20.0	43.0	75.0	90.0	96.0
105	UA	100									
	*										
106	KK	CP040	COMBINE								
107	HC	2									
	*										
108	ZZ										

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

10 AON-20

```

V
V
20  ARET20
V
V
25  RAON20
.
.
30  .      PON20
.
.
36  CP020.....
V
V
38  RCP020
.
.
43  .      PON10
.      V
.      V
49  .      RPON10
.
.
54  .      .      PON40
.      .
60  .      .      .      PON50
.      .
66  CPP40.....
V
V
68  DETA
V
V
75  RDETA
.
.
80  .      PON60
.      .
86  CP060.....
V
V
88  DETB
V
V
95  RDETB
.
.
100 .      ON-40
.      .
106 CP040.....

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
* RUN DATE 02MAY23 TIME 13:56:24
*
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

BLACK MOUNTAIN_PROP - BLACK MOUNTAIN PROPOSED CONDITIONS
 100 YEAR
 6 Hour Storm
 Unit Hydrograph: Clark
 Storm: Single
 12/22/2016

```

8 IO      OUTPUT CONTROL VARIABLES
          IPRNT      5  PRINT CONTROL
          IPLOT      0  PLOT CONTROL
          QSCAL      0.  HYDROGRAPH PLOT SCALE

```

```

IT      HYDROGRAPH TIME DATA
          NMIN      5  MINUTES IN COMPUTATION INTERVAL
          IDATE     1JAN99  STARTING DATE
          ITIME     0000  STARTING TIME
          NQ        2000  NUMBER OF HYDROGRAPH ORDINATES
          NDDATE    7JAN99  ENDING DATE
          NDTIME    2235  ENDING TIME
          ICENT     19  CENTURY MARK

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COMPUTATION INTERVAL .08 HOURS
 TOTAL TIME BASE 166.58 HOURS

ENGLISH UNITS
 DRAINAGE AREA SQUARE MILES
 PRECIPITATION DEPTH INCHES
 LENGTH, ELEVATION FEET
 FLOW CUBIC FEET PER SECOND
 STORAGE VOLUME ACRE-FEET
 SURFACE AREA ACRES

1	TEMPERATURE		DEGREES FAHRENHEIT		RUNOFF SUMMARY						
			FLOW IN CUBIC FEET PER SECOND								
			TIME IN HOURS, AREA IN SQUARE MILES								
	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE	
+					6-HOUR	24-HOUR	72-HOUR				
+	HYDROGRAPH AT	AON-20	41.	4.08	3.	1.	0.	.02			
+	ROUTED TO	ARET20	18.	4.33	3.	1.	0.	.02	2484.67	4.33	
+	ROUTED TO	RAON20	18.	4.33	3.	1.	0.	.02	2475.51	4.33	
+	HYDROGRAPH AT	PON20	3.	4.00	0.	0.	0.	.00			
+	2 COMBINED AT	CP020	19.	4.33	4.	1.	0.	.02			
+	ROUTED TO	RCP020	19.	4.33	4.	1.	0.	.02	2468.95	4.33	
+	HYDROGRAPH AT	PON10	5.	4.00	0.	0.	0.	.00			
+	ROUTED TO	RPON10	5.	4.00	0.	0.	0.	.00	2468.55	4.00	
+	HYDROGRAPH AT	PON40	2.	4.08	0.	0.	0.	.00			
+	HYDROGRAPH AT	PON50	4.	4.08	0.	0.	0.	.00			
+	4 COMBINED AT	CPP40	22.	4.33	4.	1.	0.	.02			
+	ROUTED TO	DETA	21.	4.42	4.	1.	0.	.02	61.05	4.42	
+	ROUTED TO	RDETA	21.	4.42	4.	1.	0.	.02	2455.04	4.42	
+	HYDROGRAPH AT	PON60	35.	4.00	3.	1.	0.	.02			
+	2 COMBINED AT	CP060	40.	4.17	7.	2.	1.	.04			
+	ROUTED TO	DETB	40.	4.17	7.	2.	1.	.04	2.74	4.17	
+	ROUTED TO	RDETB	29.	4.42	7.	2.	1.	.04	2445.40	4.42	
+	HYDROGRAPH AT	ON-40	4.	4.17	1.	0.	0.	.00			
+	2 COMBINED AT	CP040	32.	4.42	7.	2.	1.	.04			
1	SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DETA										
	(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)										

PLAN 1		INITIAL VALUE		SPILLWAY CREST		TOP OF DAM				
	ELEVATION	58.00		62.00		62.00				
	STORAGE	0.		1.		1.				
	OUTFLOW	0.		41.		41.				
	RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS		
	1.00	61.05	.00	0.	21.	.00	4.42	.00		