

Existing vs. Future Flows Hydromet 51 24 Hr, 100 Yr

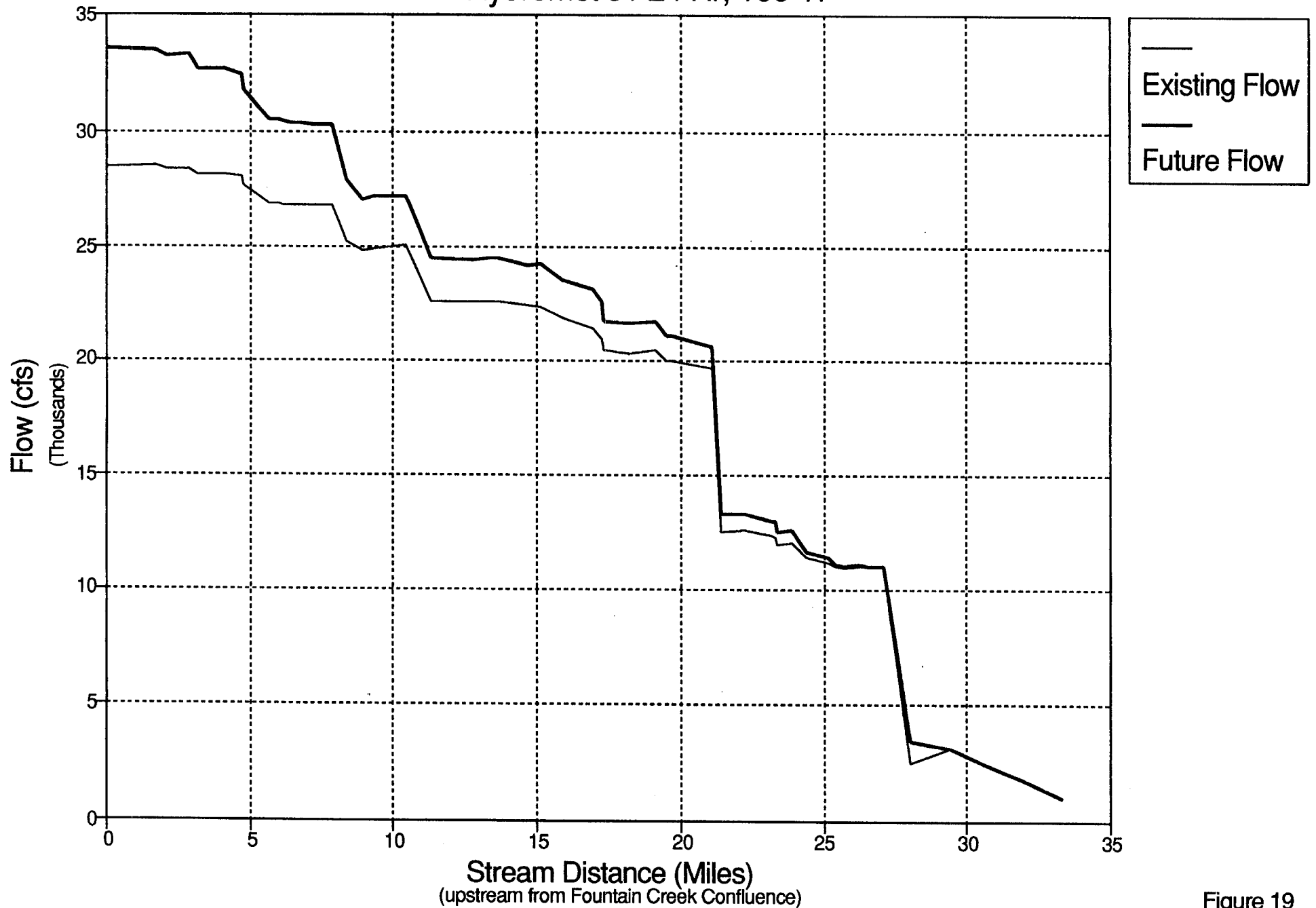


Figure 19

Existing vs. Future Flows HMR 52/PMP 24 Hr, 10 Yr

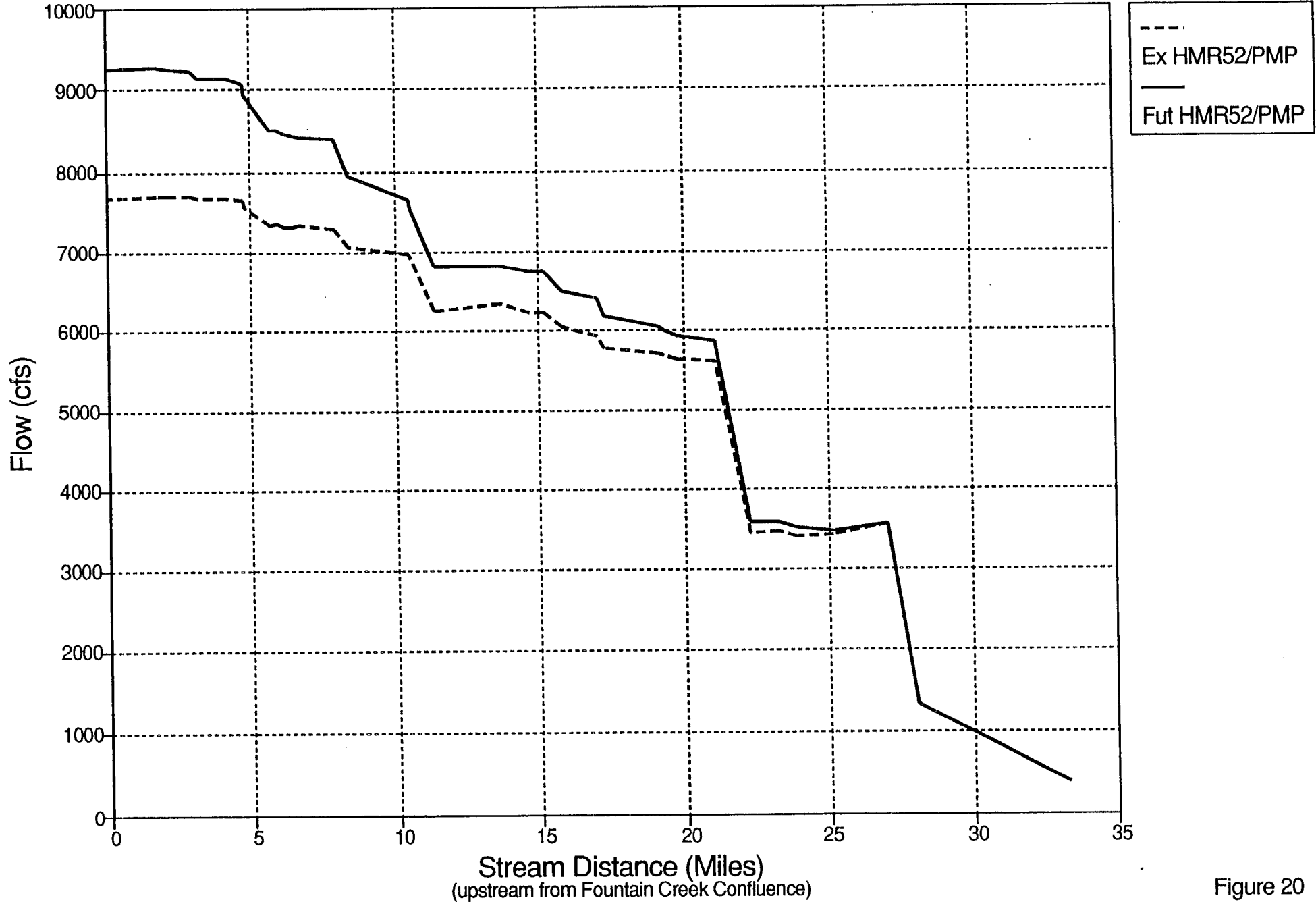


Figure 20

Existing vs. Future Flows HMR 52/PMP 24 Hr, 100 Yr

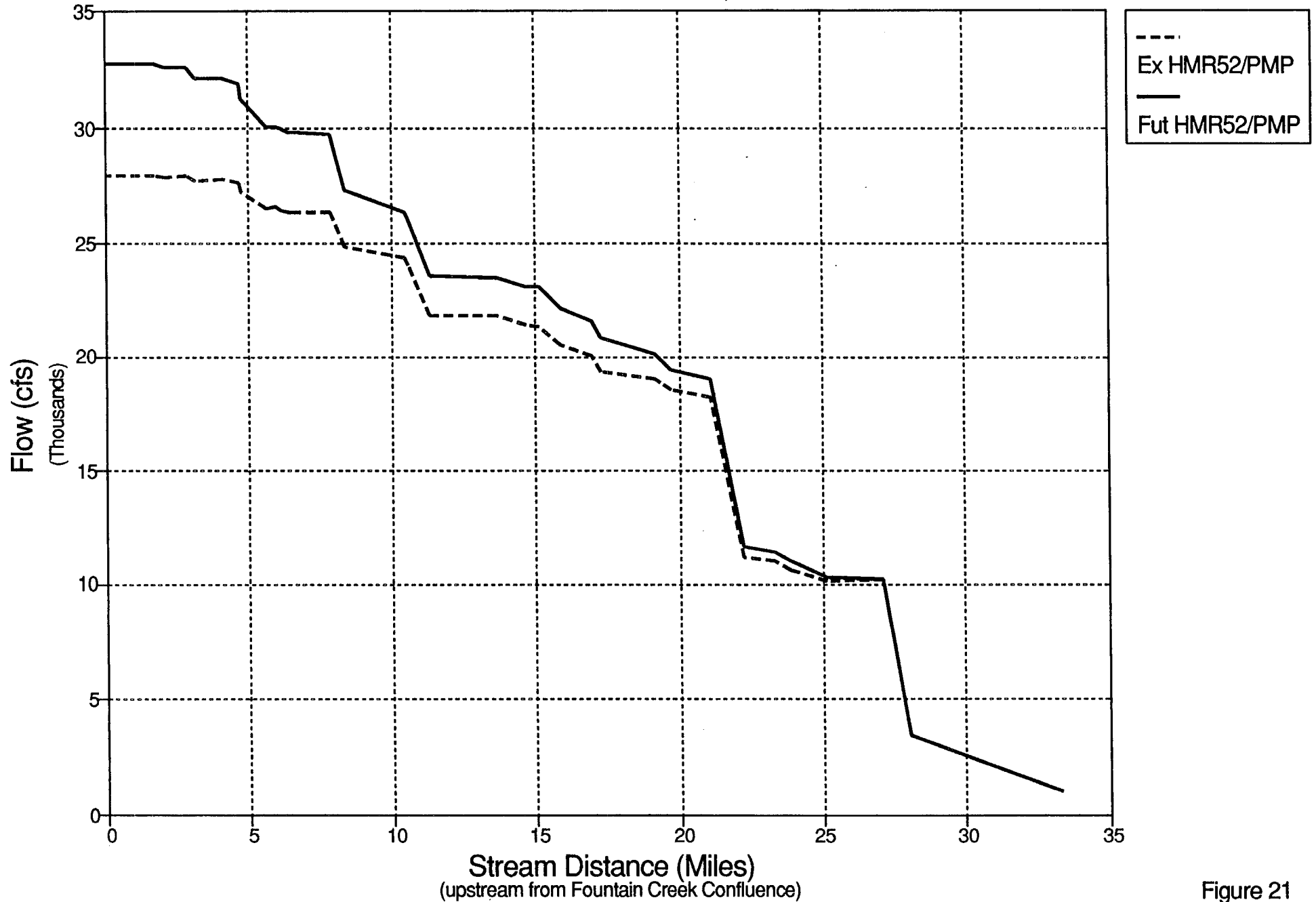


Figure 21

TABLE 11
PROJECTED PEAK DISCHARGES
MONUMENT CREEK
(all flows in cfs)

Design Point	Basin Area (Sq. Mi.)	Distance (Miles)	Existing 24 Hour 100 Year HMR 52 (1)	Future 24 Hour 100 Year HMR 52 (1)	Existing 24 Hour 10 Year HMR 52 (1)	Future 24 Hour 10 Year HMR 52 (1)	Existing 24 Hour 100 Year HMR 52 (2)	Future 24 Hour 100 Year HMR 52 (2)	Existing 24 Hour 10 Year HMR 52 (2)	Future 24 Hour 10 Year HMR 52 (2)
35	1.9	0.7	802	802	255	335	970	970	381	381
45	6.6	2.5	3,166	3,166	960	1,290	3,419	3,419	1,338	1,338
47	23.2	8.8	9,753	9,764	2,996	3,602	10,180	10,180	3,555	3,554
57	28.0	10.6	10,082	10,330	2,945	3,668	10,100	10,278	3,408	3,466
95	35.5	13.4	11,813	10,024	2,587	4,226	10,606	10,981	3,404	3,493
67	39.2	14.8	12,270	10,419	2,718	4,413	10,982	11,401	3,464	3,579
97	42.2	16.0	12,737	10,822	2,834	4,569	11,183	11,681	3,432	3,580
167	69.4	26.3	19,992	16,207	3,682	7,373	18,248	19,015	5,607	5,857
181	74.5	28.2	20,972	17,019	3,972	7,711	18,545	19,457	5,622	5,913
187	78.1	29.6	21,556	17,551	4,069	7,921	18,835	19,890	5,655	5,985
197	80.6	30.5	22,082	18,133	4,405	8,133	19,008	20,137	5,680	6,023
225	87.5	33.1	23,412	20,344	4,975	8,705	19,396	20,826	5,752	6,157
189	93.8	35.5	24,407	22,146	5,638	9,069	20,110	21,558	5,913	6,373
211	99.2	37.6	25,483	23,860	6,185	9,433	20,578	22,183	6,017	6,485
243	105.4	39.9	26,726	25,880	7,121	9,896	21,308	23,024	6,207	6,719
254	116.5	44.1	26,939	26,096	7,093	9,928	21,437	23,063	6,209	6,725
245	120.2	45.5	27,699	27,130	7,602	10,172	21,821	23,490	6,308	6,811
349	124.7	47.2	27,975	27,530	7,535	10,227	21,818	23,593	6,232	6,784
319	149.6	56.7	31,483	32,602	9,827	11,451	24,031	25,997	6,913	7,520
351	166.9	63.2	31,892	32,978	9,933	11,689	24,330	26,365	6,957	7,642
435	179.8	68.1	32,927	34,970	10,173	12,329	24,801	27,345	7,059	7,934
361	203.7	77.2	35,156	39,129	11,128	13,218	26,293	29,723	7,280	8,391
479	205.9	78.0	35,388	39,475	11,231	13,375	26,327	29,830	7,308	8,419
376	207.0	78.4	35,492	39,607	11,246	13,427	26,357	29,868	7,298	8,435
378	208.2	78.9	35,660	39,828	11,344	13,513	26,426	29,978	7,304	8,463
379	209.9	79.5	35,891	40,143	11,478	13,640	26,518	30,134	7,343	8,503
501	210.2	79.6	35,853	40,091	11,421	13,655	26,469	30,117	7,331	8,500
505	220.3	83.4	37,131	42,478	12,239	14,485	27,210	31,287	7,557	8,928
393	227.4	86.1	38,038	44,046	12,853	14,963	27,585	31,907	7,640	9,082
399	230.5	87.3	38,466	44,788	13,066	15,176	27,708	32,165	7,656	9,138
401	231.1	87.6	38,469	44,762	13,009	15,215	27,693	32,169	7,655	9,145
507	234.3	88.8	39,021	45,918	13,362	15,595	27,926	32,654	7,689	9,235
513	235.2	89.1	39,070	46,016	13,387	15,706	27,868	32,673	7,687	9,241
409	237.4	89.9	39,313	46,518	13,546	16,105	27,919	32,793	7,693	9,279
515	238.7	90.4	39,400	46,702	13,583	16,257	27,905	32,793	7,656	9,271

- (1) HMR 51/52 Isohyetal distribution using HMR 51 rainfall values
(2) HMR 52 Isohyetal distribution using modified PMP procedure

Runoff amounts for the elliptical storm cell pattern (HMR 52 w/ HMR 51 rainfall) are greater than those produced by the uniform areally adjusted rainfall (HMR 51). This is due to the concentration of rainfall near the center of the basin and the shorter travel distance from the cell core to the outfall point. Runoff from HMR 52 using the PMP procedure is lower than that generated by HMR 52 using HMR 51 rainfall amounts. This is due to the HMR 52 PMP method essentially applying an adjustment to the HMR 51 rainfall values. The effectively reduces the average amount of rainfall which falls on the basin.

After review by the City and various agencies and discussions with the Fountain Creek DBPS consultant, the HMR 52 method using the PMP procedure has been chosen for planning use in the Monument Creek basin. Consistency between the two basins is essential to the ultimate goal of both studies and this method provides consistent and reasonable results for both basins. **Therefore, it is recommended that the hydrologic results generated by this HMR 52 method be utilized in the Monument Creek Drainage Basin Planning Study.**

Shown on Table 11 is a comparison of 100- and 10-year discharges at various design points along Monument Creek for both the existing and future condition for both HMR 52 method storms. Figures 20 and 21 show the flood discharge profiles for the selected design storms. Figures 22 through 25 show the existing and future condition hydrographs for both the 100- and 10-year storms at the southern boundary of the Air Force Academy and at the confluence with Monument Creek. Figure 26 shows both the Air Force Academy Boundary and the Fountain Creek confluence 100-year hydrographs. The same hydrographs are shown for the 10-year storm on Figure 27.

Comparison of HEC-1 Results to Other Methods

Table 12 shows the peak discharges of Monument Creek at the confluence of Fountain Creek developed in the 1971 COE study, the flood of record, and results of this hydrologic analysis. The table shows that the 100-year discharge of 27,900 cfs projected by this study's HEC-1 model is 13 percent lower than the 32,000 cfs calculated by the COE in 1971, and 7 percent lower than the 30,000 cfs determined from this study's flood frequency analysis.

The 100-year hydrographs in Figure 26 have the typical shape associated with flood hydrographs. The existing peak flows are less than the future peak flows as would be expected. The future condition peak flow occurs quicker than the existing peak flow. This would also be expected due to the increased development and its greater amount of impervious surface area causing quicker travel times for the storm runoff. The ascending and descending leg of the hydrographs are generally the same at each particular location.

The 10-year hydrographs in Figure 27 are comprised of combinations of hydrographs. In reviewing the hydrographs associated with the Air Force Academy boundary, a small peak

discharge is evident at 12 hours and a higher, more sustained peak flow is shown at around 14 hours. The second peak is probably due to the runoff from the upper reaches of the basin which reaches the south boundary of the Academy after the initial peak has begun to recede. In moving from the south boundary of the Academy to the Fountain Creek confluence, the initial peak becomes more pronounced. The second peak remains higher than the initial peak and occurs at

Table 12 Monument Creek Discharge Comparison at Fountain Creek

Description	100-Year Discharge	10-Year Discharge
Intermediate Regional Flood (from regional analysis) COE Floodplain Information Report, 1971	32,000 cfs	
This Study's Flood Frequency Analysis Adjusted from Pikeview Gage to Fountain Creek [(238sq.mi./204ac)X26,000cfs=30,000cfs, 100-Year] [(238sq.mi./204ac)X3,730cfs=4,300cfs, 10-Year]	30,000 cfs	4,300 cfs
Flood of Record May 30-31, 1935	50,000 cfs	
This Study's HEC-1 Model (HMR 51, 24 Hour, Existing Conditions)	28,500 cfs	9,100 cfs
This Study's HEC-1 Model (HMR 51, 24 Hour, Future Conditions)	33,400 cfs	10,950 cfs
This Study's HEC-1 Model (HMR 52 w/ HMR 51, 24 Hour, Existing Conditions)	39,400 cfs	13,550 cfs
This Study's HEC-1 Model (HMR 52 w/ HMR 51, 24 Hour, Future Conditions)	46,700 cfs	16,250 cfs
This Study's HEC-1 Model (HMR 52 PMP procedure, 24 Hour, Existing Conditions)	27,900 cfs	7,600 cfs
This Study's HEC-1 Model (HMR 52 PMP procedure, 24 Hour, Future Conditions)	32,800 cfs	9,250 cfs

around 15 hours as compared to 14 hours at the Academy boundary. The differences between the shapes of the hydrographs at these two locations reflects the impact of the developed areas within the City upon the nature of the peak flows. The developed area within the Monument

Creek basin between the Academy boundary and the confluence with Fountain Creek causes a relatively large and fast responding hydrograph at the confluence. This becomes even more pronounced in the future condition hydrograph when the peak increases and occurs earlier. It appears that there is a significant flow that flows from the upper reaches of the basin. This peak flow appears to attenuate as it travels the length of the basin to the outfall. While this peak travels through the City of Colorado Springs, the effect of the attenuation becomes greater due to the increased runoff volume in the vicinity of the City of Colorado Springs.

The difference between the 10- and 100-year hydrographs is apparent when examining Figures 26 and 27. The reason for the difference in hydrographs pertains to the amounts and locations of runoff volume produced by each storm. Obviously, the runoff from the 100-year storm will be greater than the 10-year storm due to the difference in the rainfall amounts. The 10-year hydrograph indicates that there are two significant peaks in runoff for the basin. One peak is caused by the accumulation of flow over the entire basin as the peak travels from the upper reaches to the outfall. The other peak is associated with the impervious areas of the basin which cause a peak to occur very quickly due to the short travel times. The peak caused by the impervious area of the basin becomes more noticeable in the reach of Monument Creek which passes through Colorado Springs. Runoff from areas outside of Colorado Springs takes longer to travel to the outfall point. Due to the nature of the storm pattern imposed over the basin using HMR 52, less runoff would occur from the basins farthest away from the stream due to the decreased amount of rainfall over these basins. As the rainfall depths become greater for all the basins, as in the case of the 100-year storm, the runoff from the outlying basins becomes more significant.

The flows estimated for existing development conditions using the HEC-1 model compare relatively closely with the gage data analysis developed for Monument Creek at Pikeview. Table 12 indicates the close correlation between the 10- and 100-year HEC-1 results at the Pikeview gage and the Option 3 gage analysis.

The difference between the 10- and 100-year peak flows is quite large. This appears to be the nature of the flood hydrology for this particular basin. Flows on the order of 1,000 to 4,000 cfs occur in about half of the years of record (as indicated by the gage data). However, only one event greater than 4,000 cfs (the 1935 flood) has been documented in the flow record. Using the flood of record as an historic data point in the gage analysis appears to provide a good correlation with the hydrologic computer model. The 10- and 100-year peak discharges predicted for Monument Creek using the HEC-1 model and the HMR 52 rainfall distribution seem reasonable based upon the available historic record.

Air Force Academy Boundary HMR 52 24 Hr, 100 Yr Hydrograph

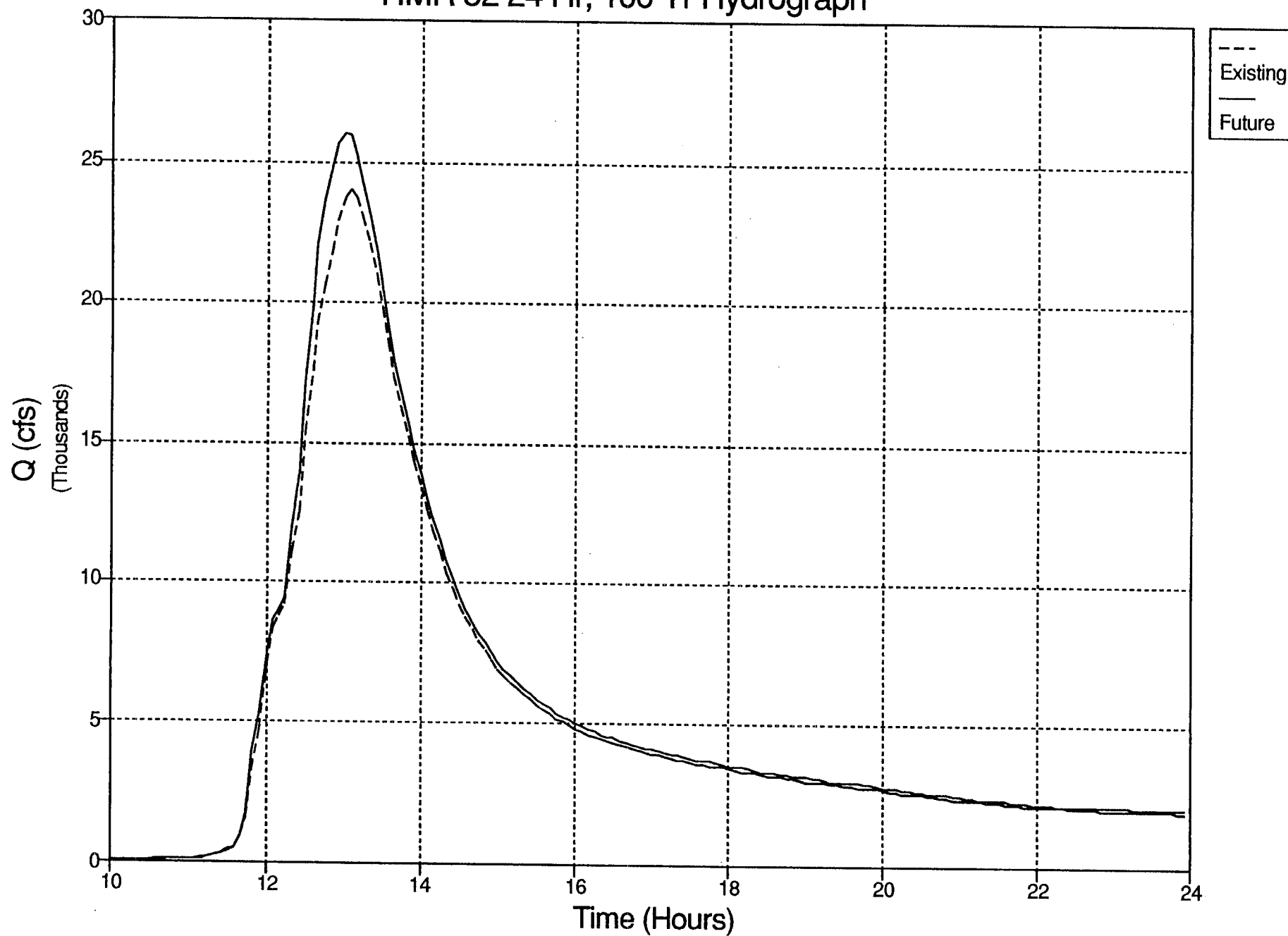


Figure 22

Fountain Creek Confluence HMR 52 24 Hr, 100 Yr Hydrograph

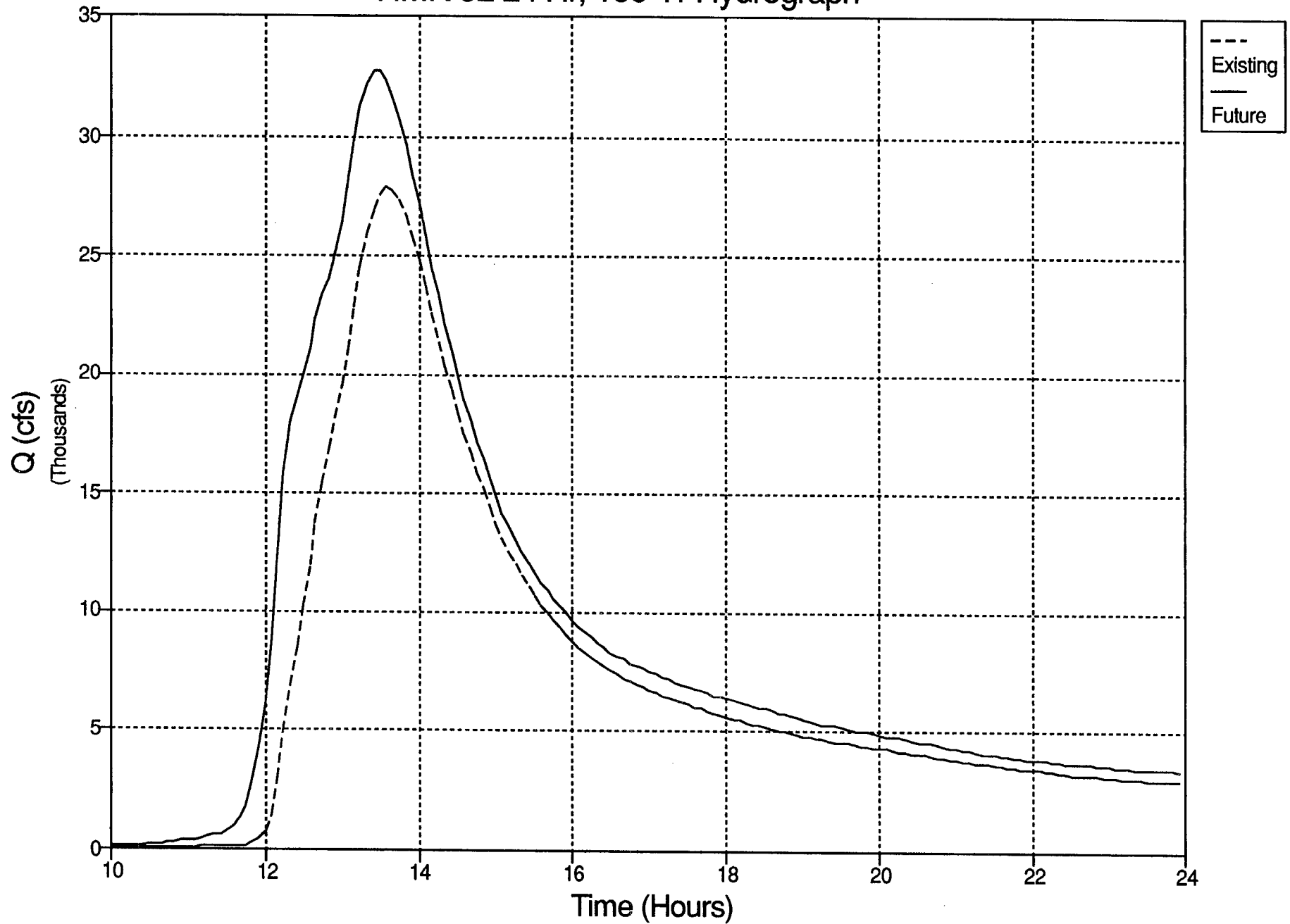


Figure 23

Air Force Academy Boundary HMR 52 24 Hr, 10 Yr Hydrograph

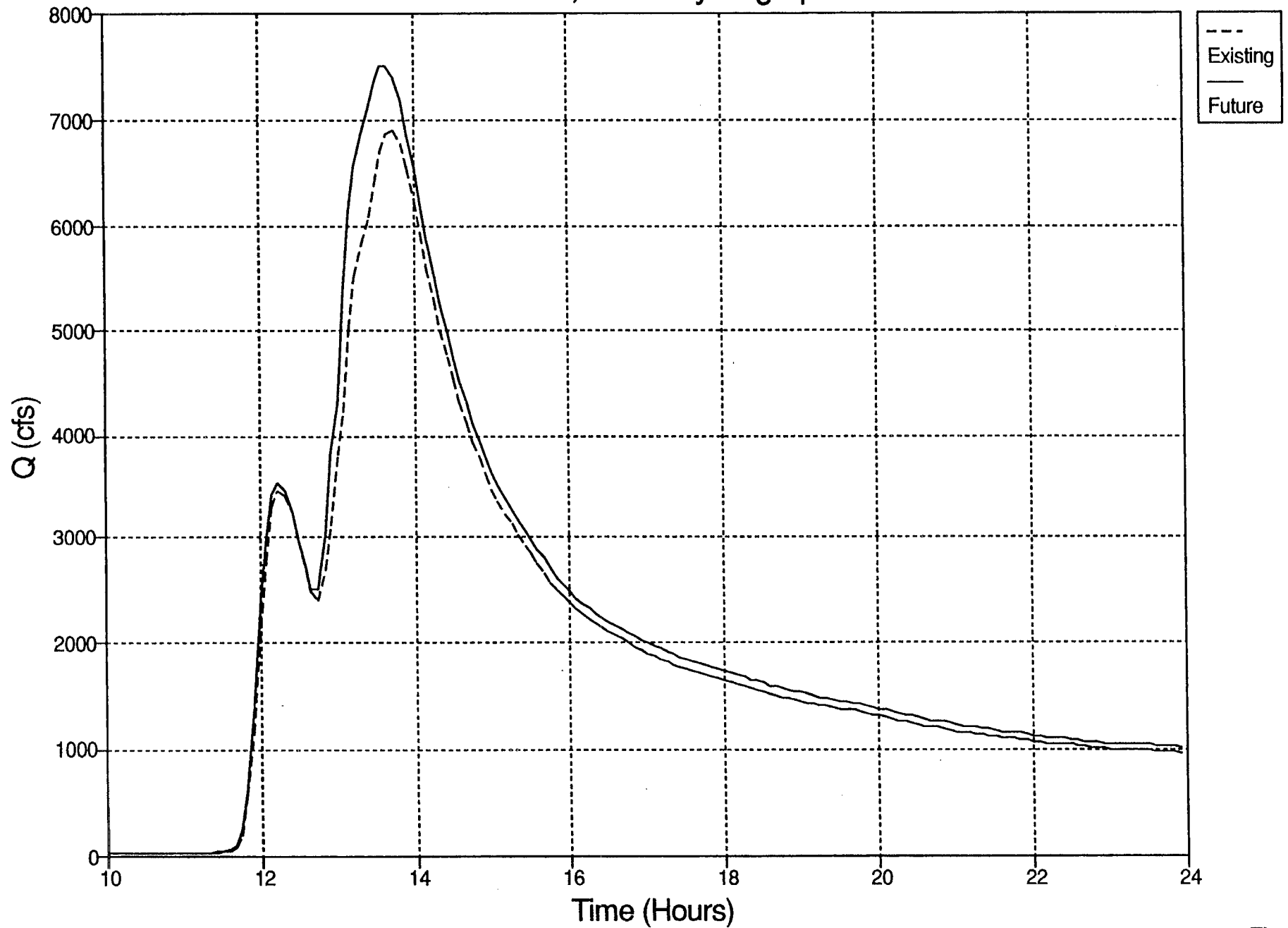


Figure 24

Fountain Creek Confluence HMR 52 24 Hr, 10 Yr Hydrograph

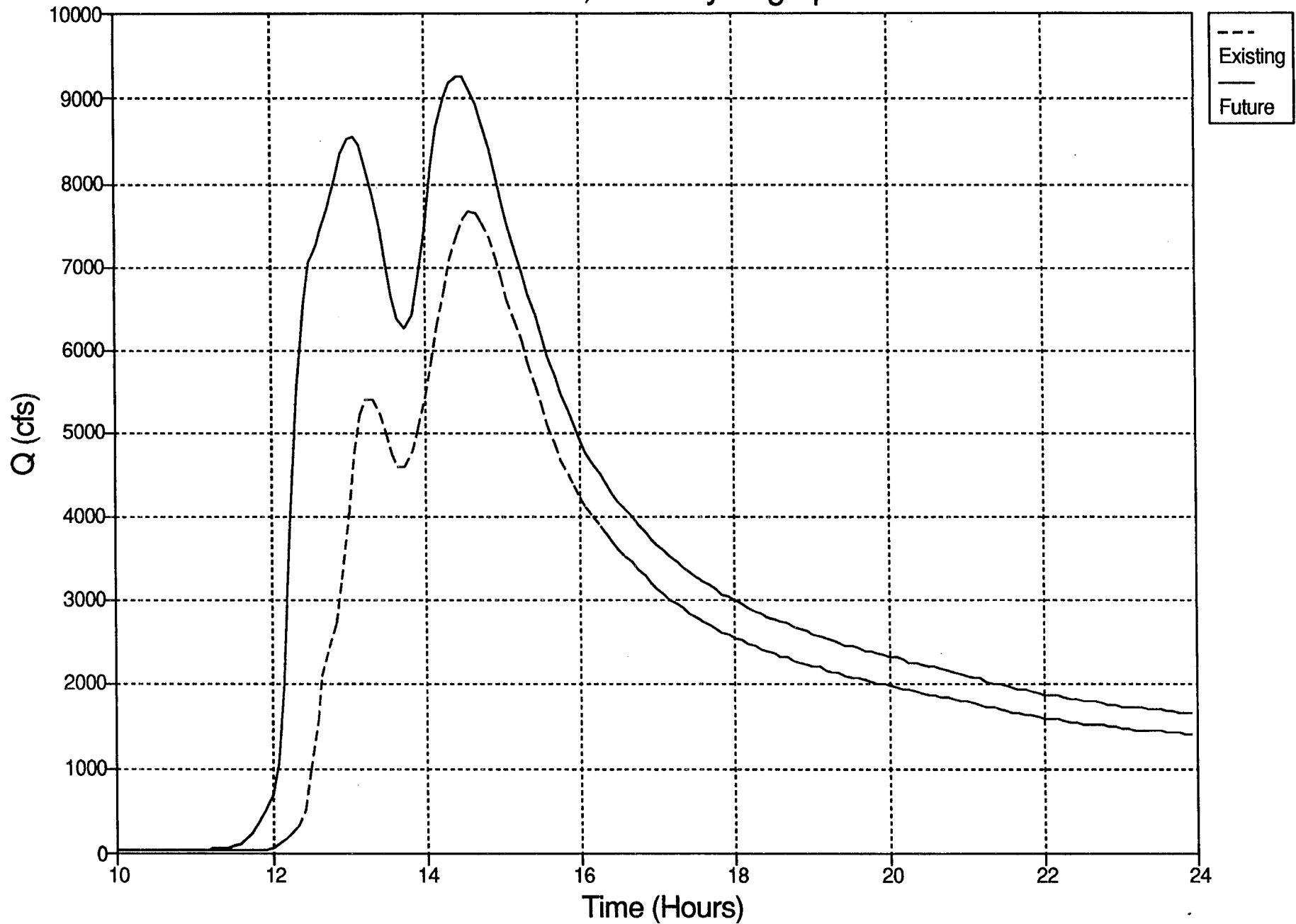


Figure 25

AFA Boundary & Fountain Crk Confluence HMR 52 24 Hr, 100 Yr Hydrographs

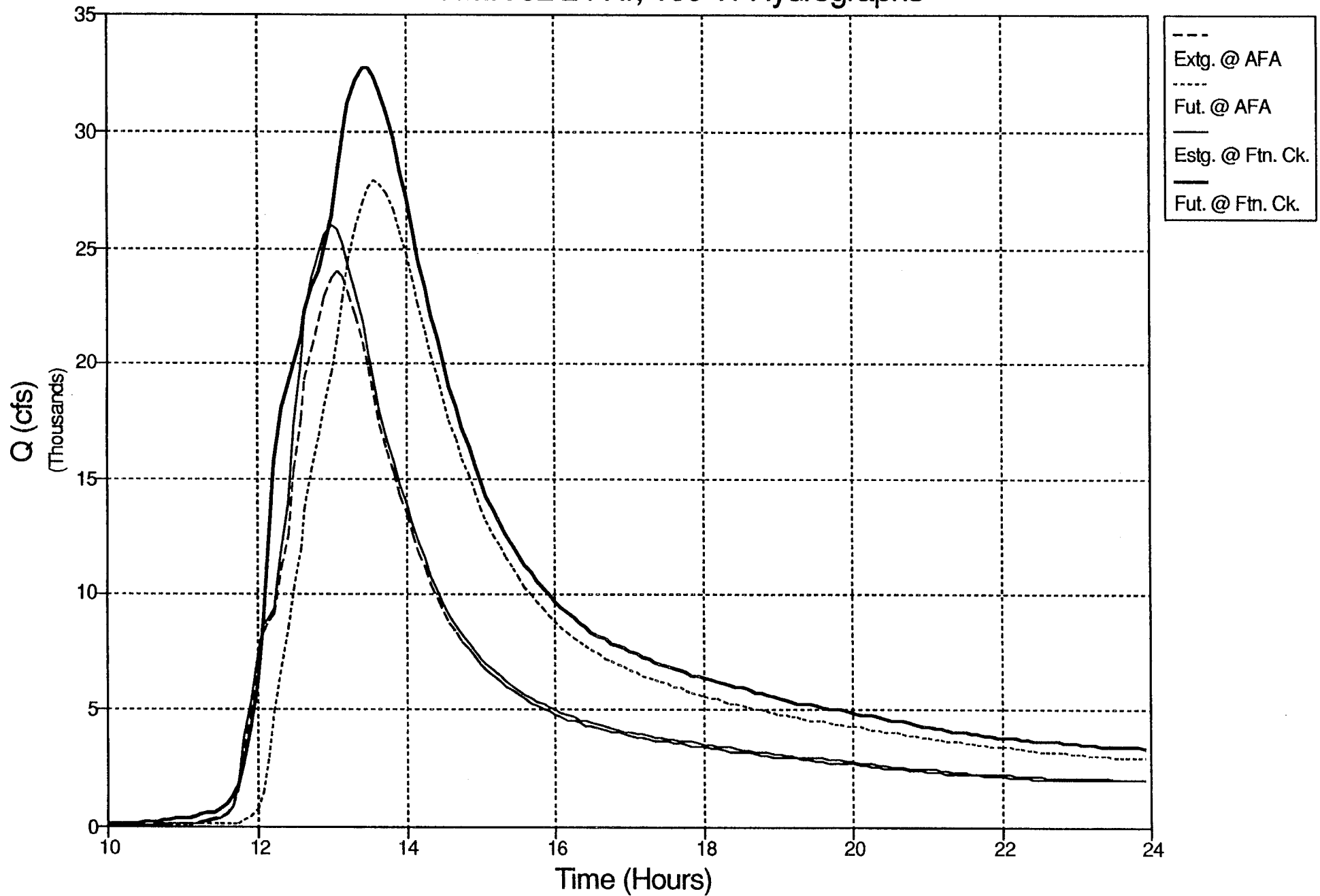


Figure 26

AFA Boundary & Fountain Crk Confluence HMR 52 24 Hr, 10 Yr Hydrographs

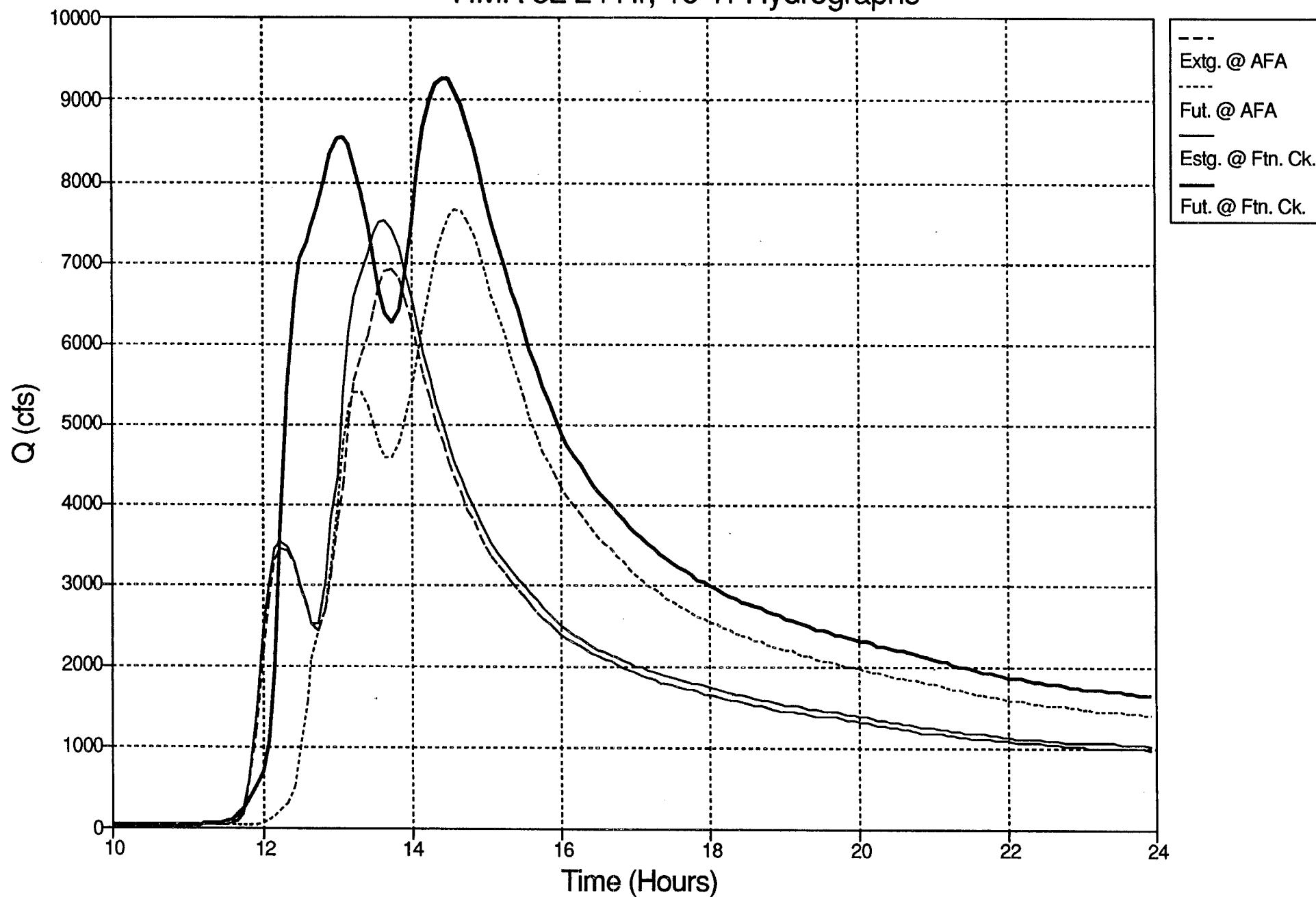


Figure 27

Discussion of Comparison to Other Methods

The accuracy of computer simulations such as the HEC-1 model completed for this study can be highly variable depending on the level of detail in data acquisition and assumptions of key variables. Calibration and/or adjustment to adequate and accurate actual rainfall and runoff data for the watershed under study is also very important. Regression equations such as those used in the COE study are also prone to wide ranges of error unless they have significant rainfall and runoff data from basins that exhibit similar characteristics such as size, shape, slope, conveyance, soils, development percentage, land use, rainfall, and other factors. Flood frequency analysis such as the one completed for this study are dependent on the accuracy of data and number of years of record. Therefore, all methods compared for this study are subject to error.

The degree of error for each method is dependent upon the factors mentioned above and the overall level of effort and associated degree of accuracy. The regional analysis completed for the COE study relied on data from basins outside the Monument Creek region and details on basin characteristics are not available; its accuracy is therefore questionable, but unknown. The flood frequency analysis conducted for this study is based on 25 years of discontinuous data, confidence limits are very broad, and the overall accuracy of the analysis is unknown. The HEC-1 computer model is based on very detailed data and well thought out assumptions for the key variables. The level of effort put into the model was high. Of the key variables, the rainfall distribution and pattern used was given the most attention. Another key variable is the abstraction and infiltration parameters. While various methods exist to determine abstractions, the SCS curve number method was used. This method is accepted engineering practice. The remaining key variables such as channel routing, model construction, and land use estimates were given the best available level of detail and technical attention.

Conclusion

The model results are within accepted levels of accuracy when compared to the other two methods and when recognized that all three methods are within the same range. The 100-year model discharge compares favorably with the 100-year discharges from the COE study and the frequency analysis, however, the 10-year model discharge is larger than the 10-year discharge from the frequency analysis. The detailed nature of the model analysis gives more credence to the models' results at the 100-year discharge level than to the regression analysis results which were based on limited and broken years of record.

Based upon the results of this study, the recommended hydrology for the Monument Creek Drainage Basin Planning Study consists of existing and future development storms of 10- and 100-year recurrence intervals. The hydrology model used is the SCS dimensionless

hydrograph method with kinematic wave routing as developed in the HEC-1 computer model. The hydrology model utilizes an elliptical rainfall distribution pattern based upon HMR 52 using the PMP procedure with a 24 hour storm duration using 10- and 100-year point maximum rainfall amounts of 2.96 inches and 4.32 inches. The maximum point rainfall amounts are based upon the data presented in the *NOAA Atlas 2, Volume III Colorado*.

Attachment 2
Baseline Hydrology
Technical Addendum

**MONUMENT CREEK
DRAINAGE BASIN PLANNING STUDY
BASELINE HYDROLOGY
Technical Addendum**

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MONUMENT CREEK DRAINAGE BASIN PLANNING STUDY

BASELINE HYDROLOGY

Technical Addendum

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**MONUMENT CREEK
DRAINAGE BASIN PLANNING STUDY
BASELINE HYDROLOGY
Technical Addendum**

**Section I
Sub-basin Areas**

BASIN AREAS

Basin	Average Planimeter Reading	Adjusted Planimeter Reading	Area (sq. in.)	Area (sq. mi.)	Sub-basin Area (sq. mi.)
ICC01	300	301.49	6.03	0.865	
ICC03	388.5	390.43	7.81	1.120	
ICC05	369.5	371.34	7.43	1.066	
ICC07	405	407.01	8.14	1.168	
ICC09	364.5	366.31	7.33	1.051	
ICC11	412.5	414.55	8.29	1.190	
NMC13	301	302.50	6.05	0.868	
NMC15	290.5	291.94	5.84	0.838	
NMC17	421	423.09	8.46	1.214	
NMC19	304.5	306.01	6.12	0.878	
NMC21	294	295.46	5.91	0.848	
NMC23	443.5	445.70	8.91	1.279	
NMC25	344	345.71	6.91	0.992	
NMC27	430.5	432.64	8.65	1.242	
NMC29	205.5	206.52	4.13	0.593	
NMC31	238.5	239.69	4.79	0.688	
MC33	486.5	488.92	9.78	1.403	
MC35	159	159.79	3.20	0.459	
MC37	360	361.79	7.24	1.038	
MC39	143	143.71	2.87	0.412	
MC41	375.5	377.37	7.55	1.083	
MC43	477	479.37	9.59	1.376	
MC45	297	298.48	5.97	0.857	
MC47	236	237.17	4.74	0.681	
Upper Monument	8087	8087.00			23.206
RM51	341.5	342.51	6.85	0.983	
RM55	372	373.10	7.46	1.071	
RM59	129	129.38	2.59	0.371	
Raspberry Mtn	845	845.00			2.425
PL49	109	108.97	2.18	0.313	
PL53	330	329.90	6.60	0.947	
PL57	517	516.84	10.34	1.483	
PL61	317	316.90	6.34	0.909	
PL63	344	343.89	6.88	0.987	
Palmer Lake	1616.5	1616.50			4.639
MR65	272.5	272.04	5.44	0.781	
MR67	252.5	252.08	5.04	0.723	
MR69	250	249.58	4.99	0.716	
MR71	335	334.44	6.69	0.960	
MR73	184.5	184.19	3.68	0.529	
MR75	110.5	110.31	2.21	0.317	
MR77	84	83.86	1.68	0.241	

BASIN AREAS

Basin	Average Planimeter Reading	Adjusted Planimeter Reading	Area (sq. in.)	Area (sq. mi.)	Sub-basin Area (sq. mi.)
Monument Rock	1486.5	1486.50			4.266
DWC79	173	173.96	3.48	0.499	
DWC81	228.5	229.77	4.60	0.659	
DWC83	212.5	213.68	4.27	0.613	
DWC85	123.5	124.19	2.48	0.356	
DWC87	228	229.27	4.59	0.658	
DWC89	156.5	157.37	3.15	0.452	
DWC91	271	272.51	5.45	0.782	
DWC93	180.5	181.50	3.63	0.521	
DWC95	227.5	228.77	4.58	0.656	
DWC97	85	85.47	1.71	0.245	
Dirty Woman	1896.5	1896.50			5.442
TC99	164	163.56	3.27	0.469	
TC101	257.5	256.81	5.14	0.737	
TC103	73	72.80	1.46	0.209	
TC105	289	288.23	5.76	0.827	
TC107	152	151.59	3.03	0.435	
Teachout Creek	933	933.00			2.677
EG109	432	431.86	8.64	1.239	
EG111	260	259.92	5.20	0.746	
EG113	340	339.89	6.80	0.975	
EG115	295	294.91	5.90	0.846	
EG117	165.5	165.45	3.31	0.475	
SBC119	638.5	638.30	12.77	1.832	
SBC121	387	386.88	7.74	1.110	
SBC123	315.5	315.40	6.31	0.905	
SBC125	162	161.95	3.24	0.465	
SBC127	241	240.92	4.82	0.691	
SBC129	295.5	295.41	5.91	0.848	
SBC131	241.5	241.42	4.83	0.693	
SBC133	251.5	251.42	5.03	0.721	
SBC135	297	296.91	5.94	0.852	
SBC137	358.5	358.39	7.17	1.028	
SBC139	433	432.86	8.66	1.242	
SBC141	317.5	317.40	6.35	0.911	
SBC143	436.5	436.36	8.73	1.252	
HLC145	203	202.94	4.06	0.582	
NBC147	448	447.86	8.96	1.285	
NBC149	214.5	214.43	4.29	0.615	
NBC151	268	267.92	5.36	0.769	
NBC153	361	360.89	7.22	1.036	
BC155	360.5	360.39	7.21	1.034	

BASIN AREAS

Basin	Average Planimeter Reading	Adjusted Planimeter Reading	Area (sq. in.)	Area (sq. mi.)	Sub-basin Area (sq. mi.)
HYC157	249.5	249.42	4.99	0.716	
HYC159	221.5	221.43	4.43	0.635	
HYC161	255	254.92	5.10	0.732	
HYC163	255	254.92	5.10	0.732	
HYC165	154.5	154.45	3.09	0.443	
HYC167	208	207.93	4.16	0.597	
BC169	267.5	267.42	5.35	0.767	
BC171	137	136.96	2.74	0.393	
Beaver Creek	9467.5	9467.50			27.168
JC173	354.5	352.89	7.06	1.013	
JC175	405	403.16	8.06	1.157	
JC177	490	487.78	9.76	1.400	
JC179	256.5	255.34	5.11	0.733	
JC180	227.5	226.47	4.53	0.650	
JC181	55.5	55.25	1.10	0.159	
JC182	83.5	83.12	1.66	0.239	
Jackson Creek	1864	1864.00			5.349
BF191				0.572	
BF193				0.827	
BF195				0.600	
BF197				0.521	
BF199				0.622	
BF200				0.763	
Black Forest	1360.5	0.00			3.904
SC213	311	308.24	6.16	0.885	
SC215	361	357.80	7.16	1.027	
SC217	291	288.42	5.77	0.828	
SC219	179	177.41	3.55	0.509	
SC221	334	331.03	6.62	0.950	
SC223	308	305.27	6.11	0.876	
SC225	131	129.84	2.60	0.373	
Smith Creek	1898	1898.00			5.447
MB225	331	330.26	6.61	0.948	
MB227	150.5	150.16	3.00	0.431	
MB228	84.5	84.31	1.69	0.242	
MB229	154	153.66	3.07	0.441	
MB230	158.5	158.15	3.16	0.454	
MB231	375	374.16	7.48	1.074	
MB232	91.5	91.30	1.83	0.262	
Monument Branch	1342	1342.00			3.851
MT233	513	513.00	10.26	1.472	
Middle Tributary	513	513.00			1.472

BASIN AREAS

Basin	Average Planimeter Reading	Adjusted Planimeter Reading	Area (sq. in.)	Area (sq. mi.)	Sub-basin Area (sq. mi.)
JV183	399	400.70	8.01	1.150	
JV185	245	246.04	4.92	0.706	
JV187	378	379.61	7.59	1.089	
JV189	380	381.62	7.63	1.095	
DM201	404	405.72	8.11	1.164	
DM203	266.5	267.64	5.35	0.768	
DM205	412	413.75	8.28	1.187	
DM206	246	247.05	4.94	0.709	
DM207	280	281.19	5.62	0.807	
DM209	195	195.83	3.92	0.562	
DM211	535	537.28	10.75	1.542	
LR235	422.5	424.30	8.49	1.218	
LR237	338	339.44	6.79	0.974	
LR239	251	252.07	5.04	0.723	
LR241	386.5	388.15	7.76	1.114	
LR243	248	249.06	4.98	0.715	
LR245	98.5	98.92	1.98	0.284	
DV261	205.5	206.38	4.13	0.592	
DV263	459	460.96	9.22	1.323	
DV265	364.5	366.05	7.32	1.050	
DV267	152.5	153.15	3.06	0.439	
DV269	254	255.08	5.10	0.732	
DV271	374	375.59	7.51	1.078	
WM273	275	276.17	5.52	0.793	
WM275	286	287.22	5.74	0.824	
WM277	286.5	287.72	5.75	0.826	
WM279	171	171.73	3.43	0.493	
WM281	168.5	169.22	3.38	0.486	
WM283	318	319.35	6.39	0.916	
WM285	424	425.81	8.52	1.222	
WM287	240	241.02	4.82	0.692	
WM289	334.5	335.92	6.72	0.964	
WM290	197.5	198.34	3.97	0.569	
WM291	471	473.01	9.46	1.357	
WM293	348	349.48	6.99	1.003	
WM295	470.5	472.50	9.45	1.356	
WM297	388	389.65	7.79	1.118	
WM299	266	267.13	5.34	0.767	
WM301	322.5	323.87	6.48	0.929	
WM303	413.5	415.26	8.31	1.192	
WM305	390	391.66	7.83	1.124	
WM307	379.5	381.12	7.62	1.094	

BASIN AREAS

Basin	Average Planimeter Reading	Adjusted Planimeter Reading	Area (sq. in.)	Area (sq. mi.)	Sub-basin Area (sq. mi.)
WM309	396.5	398.19	7.96	1.143	
WM310	285.5	286.72	5.73	0.823	
WM311	258	259.10	5.18	0.744	
WM313	138.5	139.09	2.78	0.399	
WM315	378.5	380.11	7.60	1.091	
WM317	415.5	417.27	8.35	1.197	
WM319	178	178.76	3.58	0.513	
AF Academy	15561	15561.00			44.654
BSC246			1.005	1.022	
BSC247			0.619	0.629	
BSC248			1.493	1.518	
BSC249			0.380	0.386	
BSC250			3.305	3.361	
BSC251			1.234	1.255	
BSC252			0.939	0.955	
BSC253			0.866	0.881	
BSC254			1.069	1.087	
Black Squirrel	3866	3866.00	10.910	11.094	11.094
ELK255	465.5	464.53	9.29	1.333	
ELK257	281.5	280.91	5.62	0.806	
ELK259	208	207.56	4.15	0.596	
Elkhorn	953	953.00			2.735
KC321	458	455.67	9.11	1.308	
KC323	586.5	583.51	11.67	1.674	
KC325	396	393.98	7.88	1.131	
KC327	293	291.51	5.83	0.837	
KC329	398	395.97	7.92	1.136	
KC331	236.5	235.30	4.71	0.675	
KC333	477	474.57	9.49	1.362	
KC335	711	707.38	14.15	2.030	
KC337	367.5	365.63	7.31	1.049	
KC339	325	323.34	6.47	0.928	
KC341	348.5	346.72	6.93	0.995	
KC343	372.5	370.60	7.41	1.063	
KC345	347.5	345.73	6.91	0.992	
KC347	387	385.03	7.70	1.105	
KC349	438	435.77	8.72	1.250	
KC351	356	354.19	7.08	1.016	
KC353	372	370.10	7.40	1.062	
Kettle Creek	6835	6835.00			19.614
DRY355	279.5	278.30	5.57	0.799	
DRY357	254.5	253.41	5.07	0.727	

BASIN AREAS

Basin	Average Planimeter Reading	Adjusted Planimeter Reading	Area (sq. in.)	Area (sq. mi.)	Sub-basin Area (sq. mi.)
DRY359	224.5	223.53	4.47	0.641	
DRY361	443.5	441.59	8.83	1.267	
DRY362	418	416.20	8.32	1.194	
DRY363	115.5	115.00	2.30	0.330	
DRY364	240.5	239.47	4.79	0.687	
Dry Creek	1967.5	1967.50			5.646
SPC425		1.6037		1.6066	
SPC427		0.8623		0.8639	
SPC429		0.7644		0.7658	
SPC431		0.3937		0.3944	
SPC433		0.3807		0.3814	
SPC435		0.9362		0.9379	
South Pine	1725	4.9410		4.9501	4.950
CC437		1.0232		1.1830	
CC439		0.4366		0.5048	
CC441		1.4738		1.7039	
CC443		1.2710		1.4694	
CC445		1.0921		1.2626	
CC447		0.8343		0.9646	
CC449		0.9532		1.1020	
CC451		0.6095		0.7047	
CC453		1.0691		1.2360	
CC455		0.8583		0.9923	
CC457		0.7244		0.8375	
CC459		0.8413		0.9727	
CC461		0.9242		1.0685	
CC463		0.9033		1.0443	
CC465		1.4668		1.6958	
CC467		1.0451		1.2083	
CC469		0.7724		0.8930	
CC471		0.6295		0.7278	
CC473		0.4047		0.4679	
CC475		0.2088		0.2414	
CC477		0.1419		0.1641	
Cottonwood	7124.5	17.6835		20.4445	20.445
PC413	285	283.96	5.68	0.815	
PC415	273	272.00	5.44	0.781	
PC417	302.5	301.39	6.03	0.865	
PC419	188.5	187.81	3.76	0.539	
PC421	460	458.32	9.17	1.315	
PC423	131	130.52	2.61	0.375	
Pine Creek	1634	1634.00			4.689

BASIN AREAS

Basin	Average Planimeter Reading	Adjusted Planimeter Reading	Area (sq. in.)	Area (sq. mi.)	Sub-basin Area (sq. mi.)
NR375	397.5	395.44	7.91	1.135	
NR376	372.5	370.56	7.41	1.063	
N Rockrimmon	766	766.00			2.198
SR377	313	276.94	5.54	0.795	
SR378	121	107.06	2.14	0.307	
S Rockrimmon	435.5	435.50			1.250
PR479	384	384.00	7.68	1.102	
Pulpit Rock	384	384.00			1.102
PB379	235	235.00	4.70	0.674	
Popes Bluff	235	235.00			0.674
DGC381	367.5	366.52	7.33	1.052	
DGC383	306	305.19	6.10	0.876	
DGC385	465	463.76	9.28	1.331	
DGC387	348.5	347.57	6.95	0.997	
DGC389	203	202.46	4.05	0.581	
DGC391	373	372.01	7.44	1.068	
DGC393	423	421.88	8.44	1.211	
DGC395	547	545.55	10.91	1.566	
DGC397	178.5	178.03	3.56	0.511	
DGC399	365	364.03	7.28	1.045	
Douglas Creek	3567	3567.00			10.236
TG481	346	343.09	6.86	0.985	
TG483	493.5	489.35	9.79	1.404	
TG485	394.5	391.18	7.82	1.123	
TG487	244.5	242.44	4.85	0.696	
TG489	486	481.91	9.64	1.383	
TG491	387	383.74	7.67	1.101	
TG493	262	259.80	5.20	0.746	
TG495	347	344.08	6.88	0.987	
TG497	313.5	310.86	6.22	0.892	
TG499	124.5	123.45	2.47	0.354	
TG501	118.5	117.50	2.35	0.337	
TG503	345.5	342.59	6.85	0.983	
Templeton Gap	3830	3830.00			10.991
ROS505	145	143.91	2.88	0.413	
ROS507	254	252.09	5.04	0.723	
Roswell	396	396.00			1.136
PAP509	450	450.26	9.01	1.292	
PAP511	408	408.24	8.16	1.171	
Papton	858.5	858.50			2.464
MES401	207.5	208.06	4.16	0.597	
MES403	196	196.53	3.93	0.564	

BASIN AREAS

Basin	Average Planimeter Reading	Adjusted Planimeter Reading	Area (sq. in.)	Area (sq. mi.)	Sub-basin Area (sq. mi.)
MES405	285.5	286.28	5.73	0.822	
MES407	307	307.83	6.16	0.883	
MES409	182	182.49	3.65	0.524	
MES411	293	293.80	5.88	0.843	
Mesa	1475	1475.00			4.233
MVP513	97.5	94.95	1.90	0.272	
MVP515	170	165.55	3.31	0.475	
Monument Valley	260.5	260.50			0.748
TOTAL AREA					238.70236

**MONUMENT CREEK
DRAINAGE BASIN PLANNING STUDY
BASELINE HYDROLOGY
Technical Addendum**

**Section II
Time of Concentration Spreadsheets**

KIOWA ENGINEERING CORPORATION

TIME OF CONCENTRATION CALCULATION SPREADSHEET

DATE: 27-Dec-91
TIME: 09:22 AM

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
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E	GRASSSED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
A	FOREST WITH HEAVY GROUND LITTER & MEADOW	4
B	FALLOW OR MINIMUM TILLAGE CULTIVATION	5
D	NEARLY BARE GROUND	6
N/A	DRAINAGEWAY	7

Basin	Channel Condition	**Slope (ft./ft.)**			**Length (ft.)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Tag (hr)
Number	Fut/Exist	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Total	Total
ICC01	Fut/Exist	0.050	0.043		1000.0	6750.0		4	7		0.55	9.34		0.51	0.20		0.71	0.424
ICC03	Fut/Exist	0.092	0.058	0.045	1000.0	6250.0	4000.0	4	1	7	0.74	3.66	9.60	0.37	0.47	0.12	0.96	0.578
ICC05	Fut/Exist	0.127	0.131	0.050	1000.0	2500.0	4250.0	4	7	7	0.87	15.45	10.13	0.32	0.04	0.12	0.48	0.287
ICC07	Fut/Exist	0.240	0.118	0.053	1000.0	2000.0	7000.0	4	1	7	1.20	5.19	10.43	0.23	0.11	0.19	0.52	0.315
ICC09	Fut/Exist	0.340	0.126	0.067	1000.0	2750.0	4750.0	4	7	7	1.43	15.18	11.74	0.19	0.05	0.11	0.36	0.214
ICC11	Fut/Exist	0.170	0.077	0.073	1000.0	5250.0	3500.0	4	1	7	1.01	4.20	12.21	0.27	0.35	0.08	0.70	0.421
NMC13	Fut/Exist	0.150	0.071	0.026	1000.0	3750.0	4000.0	4	1	7	0.95	4.02	6.92	0.29	0.26	0.16	0.71	0.427
NMC15	Fut/Exist	0.090	0.045	0.047	1000.0	4000.0	3500.0	4	7	7	0.74	9.06	9.82	0.38	0.12	0.10	0.60	0.359
NMC17	Fut/Exist	0.125	0.064	0.026	1000.0	5500.0	3500.0	4	7	7	0.87	10.78	7.26	0.32	0.14	0.13	0.60	0.357
NMC19	Fut/Exist	0.205	0.089	0.027	1000.0	4500.0	1500.0	4	7	7	1.11	12.73	7.38	0.25	0.10	0.06	0.40	0.243
NMC21	Fut/Exist	0.190	0.080	0.050	1000.0	3250.0	8000.0	4	7	7	1.07	12.09	10.12	0.26	0.07	0.22	0.55	0.332
NMC23	Fut/Exist	0.200	0.150	0.040	1000.0	4000.0	3000.0	4	7	7	1.10	16.55	9.05	0.25	0.07	0.09	0.41	0.247
NMC25	Fut/Exist	0.260	0.194	0.059	1000.0	3250.0	4250.0	4	7	7	1.25	18.81	10.98	0.22	0.05	0.11	0.38	0.226
NMC27	Fut/Exist	0.100	0.084	0.121	1000.0	9000.0	4000.0	4	7	7	0.78	12.37	14.88	0.36	0.20	0.07	0.63	0.381
NMC29	Fut/Exist	0.220	0.173	0.006	1000.0	4750.0	900.0	4	7	7	1.15	17.75	5.10	0.24	0.07	0.05	0.36	0.219
NMC31	Fut/Exist	0.190	0.175	0.078	1000.0	3250.0	6250.0	4	7	7	1.07	17.89	12.67	0.26	0.05	0.14	0.45	0.268
MC33	Fut/Exist	0.140	0.063	0.028	1000.0	1750.0	8500.0	4	1	7	0.92	3.79	7.25	0.30	0.13	0.33	0.76	0.454
MC35	Fut/Exist	0.140	0.070	0.048	1000.0	1000.0	2500.0	4	1	7	0.92	4.00	9.36	0.30	0.07	0.07	0.45	0.268
MC37	Fut/Exist	0.110	0.068	0.027	1000.0	4000.0	3000.0	4	7	7	0.81	11.10	7.38	0.34	0.10	0.11	0.55	0.332
MC39	Fut/Exist	0.125	0.058		1000.0	7000.0		4	7		0.87	10.27		0.32	0.19		0.51	0.306
MC41	Fut/Exist	0.135	0.097	0.065	1000.0	1750.0	5500.0	4	1	7	0.90	4.72	11.58	0.31	0.10	0.13	0.54	0.326
MC43	Fut/Exist	0.260	0.266	0.024	1000.0	1750.0	5500.0	4	7	7	1.25	22.03	6.95	0.22	0.02	0.22	0.46	0.278
MC45	Fut/Exist	0.320	0.189	0.083	1000.0	2250.0	6000.0	4	1	7	1.39	6.58	13.00	0.20	0.10	0.13	0.42	0.254
MC47	Fut/Exist	0.560	0.107	0.025	1000.0	6250.0	400.0	4	7	7	1.84	13.99	7.16	0.15	0.12	0.02	0.29	0.175
PL49	Fut/Exist	0.365	0.080	0.022	1000.0	2000.0	2500.0	3	1	7	4.28	4.28	10.66	0.06	0.13	0.07	0.26	0.156
RM51	Fut/Exist	0.420	0.133		1000.0	8750.0		3	7		4.59	15.55		0.06	0.16		0.22	0.130
PL53	Fut/Exist	0.260	0.069	0.015	1000.0	4250.0	4240.0	3	7	7	3.61	11.26	8.89	0.08	0.10	0.13	0.31	0.189
RM55	Fut/Exist	0.480	0.105		1000.0	11500.0		4	7		1.70	13.86		0.16	0.23		0.39	0.236
PL57	Fut/Exist	0.100	0.072	0.023	1000.0	2500.0	11000.0	3	1	7	2.24	4.06	6.51	0.12	0.17	0.47	0.76	0.459
RM59	Fut/Exist	0.030	0.054	0.008	1000.0	3500.0	3250.0	3	1	7	1.23	3.53	6.31	0.23	0.28	0.14	0.65	0.387

KIOWA ENGINEERING CORPORATION

DATE: 27-Dec-91  
TIME: 09:22 AM

TIME OF CONCENTRATION CALCULATION SPREADSHEET

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
E	GRASSED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
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N/A	DRAINAGEWAY	7

Basin	Channel Condition	**Slope (ft./ft.)**			**Length (ft.)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Flag (hr)
Number	Fut/Exist	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Total	Total
PL61	Fut/Exist	0.090	0.037	0.020	1000.0	3250.0	8000.0	3	1	7	2.12	2.91	6.04	0.13	0.31	0.37	0.81	0.485
PL63	Fut/Exist	0.120	0.031		1000.0	15000.0		4	7		0.85	7.47		0.33	0.56		0.88	0.530
MR65	Fut/Exist	0.190	0.080	0.190	1000.0	1750.0	7250.0	4	1	7	1.07	4.28	18.64	0.26	0.11	0.11	0.48	0.289
MR67	Fut/Exist	0.100	0.072	0.024	1000.0	1800.0	9500.0	3	1	7	2.24	4.07	7.04	0.12	0.12	0.37	0.62	0.373
MR69	Fut/Exist	0.640	0.313	0.046	1000.0	3000.0	12500.0	4	1	7	1.96	8.47	9.75	0.14	0.10	0.36	0.60	0.358
MR71	Fut/Exist	0.650	0.450	0.085	1000.0	800.0	10000.0	4	1	7	1.98	10.15	12.46	0.14	0.02	0.22	0.39	0.231
MR73	Fut/Exist	0.035	0.040	0.007	1000.0	6000.0	3000.0	3	7	7	1.32	8.55	10.75	0.21	0.20	0.08	0.48	0.289
MR75	Fut/Exist	0.030	0.044		1000.0	6500.0		3	7		1.23	8.94		0.23	0.20		0.43	0.257
MR77	Fut/Exist	0.090	0.019	0.011	1000.0	1300.0	5000.0	3	1	7	2.12	2.10	13.88	0.13	0.17	0.10	0.40	0.242
DWC79	Fut/Exist	0.100	0.080	0.044	1000.0	500.0	2500.0	4	1	7	0.78	4.28	8.96	0.36	0.03	0.08	0.47	0.281
DWC81	Fut/Exist	0.055	0.055	0.014	1000.0	2750.0	5750.0	4	1	7	0.58	3.53	3.74	0.48	0.22	0.43	1.13	0.676
DWC83	Fut/Exist	0.057	0.045	0.033	1000.0	3000.0	5250.0	4	1	7	0.59	3.21	7.80	0.47	0.26	0.19	0.92	0.552
DWC85	Fut/Exist	0.055	0.042	0.045	1000.0	2750.0	4000.0	4	1	7	0.58	3.09	9.06	0.48	0.25	0.12	0.85	0.511
DWC87	Fut/Exist	0.040	0.044	0.040	1000.0	2300.0	5000.0	4	1	7	0.49	3.16	8.55	0.57	0.20	0.16	0.93	0.558
DWC89	Fut/Exist	0.040	0.057	0.044	1000.0	1500.0	5000.0	4	1	7	0.49	3.60	8.96	0.57	0.12	0.15	0.84	0.502
DWC91	Fut/Exist	0.080	0.066	0.022	1000.0	3500.0	5000.0	4	1	7	0.69	3.88	6.34	0.40	0.25	0.22	0.87	0.522
DWC93	Fut/Exist	0.085	0.041		1000.0	8750.0		3	1		2.06	3.07		0.13	0.79		0.93	0.556
DWC95	Fut/Exist	0.040	0.043	0.016	1000.0	2000.0	5500.0	3	1	7	1.42	3.12	5.46	0.20	0.18	0.28	0.65	0.393
DWC97	Fut/Exist	0.030	0.043	0.006	1000.0	700.0	9000.0	3	1	7	1.23	3.13	10.34	0.23	0.06	0.24	0.53	0.318
TC99	Fut/Exist	0.090	0.059		1000.0	6250.0		4	7		0.74	10.40		0.38	0.17		0.54	0.327
TC101	Fut/Exist	0.095	0.076	0.038	1000.0	2500.0	6000.0	3	1	7	2.18	4.17	8.36	0.13	0.17	0.20	0.49	0.296
TC103	Fut/Exist	0.045	0.022	0.030	1000.0	4250.0	2000.0	3	1	7	1.50	2.26	7.84	0.18	0.52	0.07	0.78	0.467
TC105	Fut/Exist	0.025	0.028	0.017	1000.0	3000.0	5750.0	3	1	7	1.12	2.55	5.81	0.25	0.33	0.27	0.85	0.510
TC107	Fut/Exist	0.045	0.030	0.008	1000.0	7300.0	3750.0	3	7	7	1.50	7.34	11.84	0.18	0.28	0.09	0.55	0.330
EG109	Fut/Exist	0.140	0.073	0.033	1000.0	2000.0	5250.0	4	1	7	0.92	4.08	7.80	0.30	0.14	0.19	0.63	0.375
EG111	Fut/Exist	0.110	0.061	0.027	1000.0	3750.0	3750.0	4	7	7	0.81	10.58	7.38	0.34	0.10	0.14	0.58	0.348
EG113	Fut/Exist	0.110	0.071	0.036	1000.0	2250.0	8250.0	4	1	7	0.81	4.04	8.15	0.34	0.15	0.28	0.78	0.466
EG115	Fut/Exist	0.110	0.040	0.040	1000.0	1000.0	9250.0	4	1	7	0.81	3.03	8.55	0.34	0.09	0.30	0.73	0.440
EG117	Fut/Exist	0.150	0.087	0.044	1000.0	750.0	6750.0	4	1	7	0.95	4.45	8.93	0.29	0.05	0.21	0.55	0.329
SBC119	Fut/Exist	0.110	0.031	0.017	1000.0	6000.0	3750.0	4	1	7	0.81	2.66	4.92	0.34	0.63	0.21	1.18	0.708

KIOWA ENGINEERING CORPORATION

TIME OF CONCENTRATION CALCULATION SPREADSHEET

DATE: 27-Dec-91  
TIME: 09:22 AM

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
E	GRASSSED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
A	FOREST WITH HEAVY GROUND LITTER & MEADOW	4
B	FALLOW OR MINIMUM TILLAGE CULTIVATION	5
D	NEARLY BARE GROUND	6
N/A	DRAINAGEWAY	7

Basin	Channel Condition	**Slope (ft./ft.)**			**Length (ft.)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Tag (hr)
		Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Total	Total
SBC121	Fut/Exist	0.100	0.040	0.024	1000.0	1750.0	5000.0	4	1	7	0.78	3.03	5.79	0.36	0.16	0.24	0.76	0.455
SBC123	Fut/Exist	0.090	0.033	0.013	1000.0	4000.0	4250.0	4	7	7	0.74	7.70	4.50	0.38	0.14	0.26	0.78	0.470
SBC125	Fut/Exist	0.070	0.063	0.019	1000.0	2000.0	4500.0	4	1	7	0.65	3.78	5.43	0.43	0.15	0.23	0.80	0.483
SBC127	Fut/Exist	0.120	0.044	0.017	1000.0	5500.0	1750.0	4	7	7	0.85	8.92	4.62	0.33	0.17	0.11	0.60	0.362
SBC129	Fut/Exist	0.095	0.060	0.043	1000.0	2500.0	8750.0	4	1	7	0.76	3.71	9.43	0.37	0.19	0.26	0.81	0.487
SBC131	Fut/Exist	0.120	0.091	0.032	1000.0	2750.0	4750.0	4	7	7	0.85	12.88	8.05	0.33	0.06	0.16	0.55	0.330
SBC133	Fut/Exist	0.150	0.112	0.076	1000.0	1250.0	3500.0	4	1	7	0.95	5.07	11.76	0.29	0.07	0.08	0.44	0.266
SBC135	Fut/Exist	0.165	0.097	0.071	1000.0	4750.0	2250.0	4	7	7	1.00	14.08	11.39	0.28	0.09	0.05	0.43	0.256
SBC137	Fut/Exist	0.900	0.042		1000.0	6500.0		4	7		2.33	8.79		0.12	0.21		0.32	0.195
SBC139	Fut/Exist	0.145	0.173	0.056	1000.0	1100.0	8000.0	4	1	7	0.93	6.29	10.46	0.30	0.05	0.21	0.56	0.335
SBC141	Fut/Exist	0.170	0.244	0.080	1000.0	2250.0	3000.0	4	7	7	1.01	21.12	12.80	0.27	0.03	0.07	0.37	0.221
SBC143	Fut/Exist	0.365	0.450	0.109	1000.0	800.0	9000.0	4	1	7	1.48	10.15	14.93	0.19	0.02	0.17	0.38	0.226
HLC145	Fut/Exist	0.270	0.140		1000.0	12000		4	7		1.28	16.94		0.22	0.20		0.41	0.249
NBC147	Fut/Exist	0.174	0.086	0.071	1000.0	700	9000	4	1	7	1.02	4.43	11.39	0.27	0.04	0.22	0.53	0.321
NBC149	Fut/Exist	0.173	0.100	0.110	1000.0	900.0	6000.0	4	1	7	1.02	4.79	14.17	0.27	0.05	0.12	0.44	0.265
NBC151	Fut/Exist	0.220	0.095		1000.0	5500.0		4	7		1.15	13.14		0.24	0.12		0.36	0.215
NBC153	Fut/Exist	0.280	0.234	0.085	1000.0	3250.0	8750.0	4	7	7	1.30	20.66	13.17	0.21	0.04	0.18	0.44	0.265
BC155	Fut/Exist	0.300	0.150	0.016	1000.0	1600.0	10250.0	3	1	7	3.88	5.86	6.00	0.07	0.08	0.47	0.62	0.373
HYC157	Fut/Exist	0.160	0.055		1000.0	5250.0		4	7		0.98	10.04		0.28	0.15		0.43	0.257
HYC159	Fut/Exist	0.240	0.233	0.035	1000.0	300.0	8250.0	4	1	7	1.20	7.31	8.02	0.23	0.01	0.29	0.53	0.317
HYC161	Fut/Exist	0.253	0.200	0.191	1000.0	1000.0	7000.0	4	1	7	1.23	6.77	18.69	0.22	0.04	0.10	0.37	0.222
HYC163	Fut/Exist	0.240	0.067	0.033	1000.0	3750.0	5750.0	3	7	7	3.47	11.03	8.22	0.08	0.09	0.19	0.37	0.221
HYC165	Fut/Exist	0.035	0.049	0.026	1000.0	7650.0	3250.0	3	7	7	1.32	9.46	7.31	0.21	0.22	0.12	0.56	0.335
HYC167	Fut/Exist	0.120	0.052	0.020	1000.0	8750.0	4000.0	3	7	7	2.45	9.77	6.40	0.11	0.25	0.17	0.54	0.321
BC169	Fut/Exist	0.050	0.040	0.038	1000.0	12500.0	2500.0	3	7	7	1.58	8.50	8.82	0.18	0.41	0.08	0.66	0.398
BC171	Fut/Exist	0.140	0.073	0.011	1000.0	2250.0	7750.0	3	1	7	2.65	4.10	13.88	0.10	0.15	0.16	0.41	0.247

KIOWA ENGINEERING CORPORATION

TIME OF CONCENTRATION CALCULATION SPREADSHEET

DATE: 27-Dec-91  
TIME: 10:55 AM

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
E	GRASED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
A	FOREST WITH HEAVY GROUND LITTER & MEADOW	4
B	FALLOW OR MINIMUM TILLAGE CULTIVATION	5
D	NEARLY BARE GROUND	6
N/A	DRAINAGEWAY	7

Basin ID	Channel Condition	**Slope (ft/ft)**			**Length (ft)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Tag (hr)
Number	Fut/Exist	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	SEGMENT	Total	Total
JC173	Fut/Exist	0.070	0.062	0.046	1000.0	650.0	5000.0	3	1	7	1.87	3.75	9.16	0.15	0.05	0.15	0.35	0.209
JC175	Fut/Exist	0.040	0.043		1000.0	9750.0		3	7		1.42	9.40		0.20	0.29		0.48	0.291
JC177	Fut/Exist	0.059	0.038	0.024	6500.0	2000.0	4000.0	1	7	7	3.68	8.27	7.14	0.49	0.07	0.16	0.71	0.428
JC179	Fut/Exist	0.060	0.041	0.015	1000.0	3750.0	4250.0	3	1	7	1.73	3.08	5.60	0.16	0.34	0.21	0.71	0.426
JC180	Fut/Exist	0.020	0.030	0.007	1000.0	5750.0	3000.0	3	1	7	1.00	2.60	10.80	0.28	0.61	0.08	0.97	0.581
JC181	Fut/Exist	0.030	0.020	0.017	1000.0	2500.0	3500.0	3	1	7	1.23	2.14	6.20	0.23	0.32	0.16	0.71	0.425
JC182	Fut/Exist	0.090	0.032	0.031	1000.0	1700.0	3750.0	3	1	7	2.12	2.72	7.93	0.13	0.17	0.13	0.44	0.261
BF191	Fut/Exist	0.130	0.054		1000.0	6250.0		3	1		2.55	3.53		0.11	0.49		0.60	0.360
BF193	Fut/Exist	0.080	0.076	0.039	1000.0	4500.0	1800.0	3	1	7	2.00	4.16	8.93	0.14	0.30	0.06	0.50	0.297
BF195	Fut/Exist	0.160	0.055	0.040	1000.0	3750.0	3500.0	3	1	7	2.83	3.54	9.05	0.10	0.29	0.11	0.50	0.300
BF197	Fut/Exist	0.100	0.032	0.035	1000.0	5500.0	3000.0	3	1	7	2.24	2.71	8.81	0.12	0.56	0.09	0.78	0.470
BF199	Fut/Exist	0.080	0.052	0.053	1000.0	1350.0	3750.0	3	1	7	2.00	3.45	10.45	0.14	0.11	0.10	0.35	0.208
BF200	Fut/Exist	0.080	0.043	0.006	1000.0	11250.0	3000.0	3	1	7	2.00	3.13	10.25	0.14	1.00	0.08	1.22	0.732
SC213	Fut/Exist	0.085	0.050	0.049	1000.0	1000.0	8250.0	4	1	7	0.72	3.38	9.47	0.39	0.08	0.24	0.71	0.427
SC215	Fut/Exist	0.075	0.067	0.048	1000.0	900.0	6250.0	4	1	7	0.67	3.91	9.36	0.41	0.06	0.19	0.66	0.398
SC217	Fut/Exist	0.065	0.080	0.044	1000.0	250.0	7500.0	4	1	7	0.63	4.28	8.96	0.44	0.02	0.23	0.69	0.416
SC219	Fut/Exist	0.105	0.063	0.034	1000.0	3500.0	3500.0	4	1	7	0.80	3.80	7.91	0.35	0.26	0.12	0.73	0.437
SC221	Fut/Exist	0.090	0.069	0.033	1000.0	5000.0	5000.0	4	1	7	0.74	3.98	7.75	0.38	0.35	0.18	0.91	0.544
SC223	Fut/Exist	0.140	0.063	0.024	1000.0	4750.0	8500.0	3	1	7	2.65	3.81	6.55	0.10	0.35	0.36	0.81	0.487
SC225	Fut/Exist	0.030	0.029	0.027	1000.0	3500.0	3750.0	3	1	7	1.23	2.56	6.98	0.23	0.38	0.15	0.76	0.453
MB225	Fut/Exist	0.100	0.045	0.029	1000.0	5500.0	3500.0	3	1	7	2.24	3.23	7.66	0.12	0.47	0.13	0.72	0.435
MB227	Fut/Exist	0.060	0.074	0.028	1000.0	2650.0	900.0	3	1	7	1.73	4.11	7.72	0.16	0.18	0.03	0.37	0.223
MB228	Fut/Exist	0.055	0.066	0.027	1000.0	1100.0	5250.0	3	1	7	1.66	3.90	7.73	0.17	0.08	0.19	0.43	0.261
MB229	Fut/Exist	0.035	0.029		1000.0	4500.0		3	1		1.32	2.57		0.21	0.49		0.70	0.417
MB230	Fut/Exist	0.030	0.038	0.028	1000.0	3600.0	6750.0	3	1	7	1.23	2.93	7.93	0.23	0.34	0.24	0.80	0.482
MB231	Fut/Exist	0.058	0.024	0.031	4800.0	4250.0	2400.0	1	7	7	3.66	6.94	8.37	0.36	0.17	0.08	0.61	0.369
MB232	Fut/Exist	0.035	0.073	0.019	1000.0	750.0	4000.0	3	1	7	1.32	4.10	6.20	0.21	0.05	0.18	0.44	0.264
MT233	Fut/Exist	0.050	0.025	0.036	3800.0	7250.0	5000.0	1	7	7	3.38	7.13	8.98	0.31	0.28	0.15	0.75	0.449

KIOWA ENGINEERING CORPORATION

TIME OF CONCENTRATION CALCULATION SPREADSHEET

DATE: 27-Dec-91  
TIME: 10:55 AM

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
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E	GRASSED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
A	FOREST WITH HEAVY GROUND LITTER & MEADOW	4
B	FALLOW OR MINIMUM TILLAGE CULTIVATION	5
D	NEARLY BARE GROUND	6
N/A	DRAINAGEWAY	7

Basin ID	Channel Condition	**Slope (ft/ft)**			**Length (ft)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Tlag (hr)
Number	Fut/Exist	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-2	Sgmt-3	SEGMEN	Total	Total
JV183	Fut/Exist	0.320	0.444	0.049	1000.0	2750.0	11000.0	4	1	7	1.39	10.09	9.46	0.20	0.08	0.32	0.60	0.359
JV185	Fut/Exist	0.300	0.064	0.045	1000.0	1100.0	8000.0	3	1	7	3.88	3.83	9.06	0.07	0.08	0.25	0.40	0.238
JV187	Fut/Exist	0.205	0.040	0.024	1000.0	8250.0	2750.0	3	1	7	3.21	3.03	6.95	0.09	0.76	0.11	0.95	0.572
JV189	Fut/Exist	0.090	0.061	0.008	500.0	5250.0	8500.0	3	7	7	2.12	10.55	11.99	0.07	0.14	0.20	0.40	0.240
DM201	Fut/Exist	0.160	0.135		1000.0	9750.0		4	7		0.98	15.72		0.28	0.17		0.46	0.273
DM203	Fut/Exist	0.240	0.202		1000.0	9250.0		4	7		1.20	19.21		0.23	0.13		0.36	0.219
DM205	Fut/Exist	0.660	0.514	0.059	1000.0	1400.0	9500.0	4	1	7	1.99	10.85	10.70	0.14	0.04	0.25	0.42	0.253
DM206	Fut/Exist	0.320	0.349	0.059	1000.0	2750.0	12500.0	4	1	7	1.39	8.94	10.72	0.20	0.09	0.32	0.61	0.366
DM207	Fut/Exist	0.341	0.067	0.024	1000.0	450.0	11500.0	3	1	7	4.13	3.91	6.94	0.07	0.03	0.46	0.56	0.336
DM209	Fut/Exist	0.130	0.075	0.031	1000.0	400.0	10500.0	3	1	7	2.55	4.15	7.91	0.11	0.03	0.37	0.50	0.303
DM211	Fut/Exist	0.010	0.095	0.031	1000.0	2000.0	15750.0	3	1	7	0.71	4.67	8.31	0.39	0.12	0.53	1.04	0.623
LR235	Fut/Exist	0.070	0.050	0.160	1000.0	900.0	11750.0	4	1	7	0.65	3.38	18.13	0.43	0.07	0.18	0.68	0.409
LR237	Fut/Exist	0.450	0.288	0.042	1000.0	6250.0	5750.0	3	1	7	4.75	8.12	9.24	0.06	0.21	0.17	0.45	0.267
LR239	Fut/Exist	0.625	0.667	0.206	1000.0	600.0	6250.0	4	1	7	1.94	12.36	20.57	0.14	0.01	0.08	0.24	0.145
LR241	Fut/Exist	0.080	0.088	0.029	1000.0	2500.0	11000.0	3	1	7	2.00	4.49	8.07	0.14	0.15	0.38	0.67	0.403
LR243	Fut/Exist	0.059	0.028	0.006	4250.0	5500.0	2500.0	1	7	7	3.69	7.95	10.25	0.32	0.19	0.07	0.58	0.348
LR245	Fut/Exist	0.165	0.049	0.006	1000.0	3500.0	4000.0	3	1	7	2.88	3.34	10.51	0.10	0.29	0.11	0.49	0.296
DV261	Fut/Exist	0.105	0.151	0.054	1000.0	1750.0	4000.0	4	1	7	0.80	5.89	10.50	0.35	0.08	0.11	0.54	0.323
DV263	Fut/Exist	0.040	0.064	0.026	1000.0	4500.0	6250.0	4	1	7	0.49	3.84	7.24	0.57	0.33	0.24	1.13	0.679
DV265	Fut/Exist	0.100	0.053	0.037	1000.0	3750.0	3750.0	3	1	7	2.24	3.50	8.74	0.12	0.30	0.12	0.54	0.325
DV267	Fut/Exist	0.125	0.080	0.051	1000.0	2250.0	5250.0	4	1	7	0.87	4.28	10.26	0.32	0.15	0.14	0.61	0.365
DV269	Fut/Exist	0.045	0.048	0.060	1000.0	2000.0	5500.0	3	1	7	1.50	3.30	11.09	0.18	0.17	0.14	0.49	0.295
DV271	Fut/Exist	0.153	0.033	0.007	3000.0	9750.0	4750.0	1	7	7	5.93	8.20	11.39	0.14	0.33	0.12	0.59	0.352
WMC273	Fut/Exist	0.120	0.041		1000.0	8250.0		4	7		0.85	9.19		0.33	0.25		0.58	0.346
WMC275	Fut/Exist	0.210	0.044	0.015	1000.0	2750.0	8250.0	4	1	7	1.12	3.16	5.45	0.25	0.24	0.42	0.91	0.545
WMC277	Fut/Exist	0.110	0.057	0.044	1000.0	1400.0	2250.0	4	1	7	0.81	3.62	9.54	0.34	0.11	0.07	0.51	0.309
WMC279	Fut/Exist	0.140	0.088		1000.0	2500.0		4	7		0.92	13.43		0.30	0.05		0.35	0.212
WMC281	Fut/Exist	0.129	0.050		900.0	7250.0		4	7		0.88	10.09		0.28	0.20		0.48	0.290

KIOWA ENGINEERING CORPORATION

TIME OF CONCENTRATION CALCULATION SPREADSHEET

DATE: 27-Dec-91
TIME: 10:55 AM

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
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E	GRASSSED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
A	FOREST WITH HEAVY GROUND LITTER & MEADOW	4
B	FALLOW OR MINIMUM TILLAGE CULTIVATION	5
D	NEARLY BARE GROUND	6
N/A	DRAINAGEWAY	7

Basin ID	Channel Condition	**Slope (ft/ft)**			**Length (ft)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Tag (hr)
Number	Fut/Exist	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-2	Sgmt-3	SEGMEN	Total	Total
WMC283	Fut/Exist	0.000			9000.0			7			1.73			1.45			1.45	0.869
WMC285	Fut/Exist	0.160	0.062		1000.0	3250.0		4	7		0.98	11.23		0.28	0.08		0.36	0.218
WMC287	Fut/Exist	0.160	0.100	0.058	1000.0	400.0	5500.0	4	1	7	0.98	4.79	10.92	0.28	0.02	0.14	0.45	0.268
WMC289	Fut/Exist	0.186	0.046	0.034	700.0	11000.0	3500.0	4	7	7	1.06	9.66	16.39	0.18	0.32	0.06	0.56	0.336
WMC290	Fut/Exist	0.150	0.103	0.037	1000.0	1750.0	6500.0	4	1	7	0.95	4.86	8.70	0.29	0.10	0.21	0.60	0.360
WMC291	Fut/Exist	0.130	0.071	0.035	1000.0	700.0	7500.0	4	1	7	0.89	4.04	8.42	0.31	0.05	0.25	0.61	0.366
WMC293	Fut/Exist	0.180	0.105	0.035	1000.0	2000.0	4250.0	4	1	7	1.04	4.90	11.80	0.27	0.11	0.10	0.48	0.288
WMC295	Fut/Exist	0.165	0.057		1000.0	10500.0		4	7		1.00	10.82		0.28	0.27		0.55	0.329
WMC297	Fut/Exist	0.100	0.068	0.043	1000.0	3250.0	3750.0	4	1	7	0.78	3.94	9.34	0.36	0.23	0.11	0.70	0.419
WMC299	Fut/Exist	0.200	0.174	0.140	500.0	5000.0	1500.0	4	7	7	1.10	18.88	16.94	0.13	0.07	0.02	0.22	0.135
WMC301	Fut/Exist	0.210	0.085	0.083	1000.0	7500.0	6500.0	4	7	7	1.12	13.22	13.64	0.25	0.16	0.13	0.54	0.322
WMC303	Fut/Exist	0.117	0.105	0.130	3000.0	8750.0	2000.0	1	7	7	5.17	14.68	17.06	0.16	0.17	0.03	0.36	0.216
WMC305	Fut/Exist	0.450	0.210	0.157	1000.0	1000.0	11500.0	4	1	7	1.65	6.94	17.96	0.17	0.04	0.18	0.39	0.232
WMC307	Fut/Exist	0.154	0.303	0.100	3000.0	3500.0	9000.0	1	7	7	5.93	24.91	14.97	0.14	0.04	0.17	0.35	0.208
WMC309	Fut/Exist	0.427	0.150	0.141	1000.0	2000.0	8500.0	4	1	7	1.60	5.86	17.01	0.17	0.09	0.14	0.41	0.244
WMC310	Fut/Exist	0.430	0.089	0.044	5000.0	2250.0	1800.0	1	7	7	9.93	13.49	9.97	0.14	0.05	0.05	0.24	0.142
WMC311	Fut/Exist	0.237	0.080	0.040	1350.0	6500.0	1500.0	1	7	7	7.37	12.80	9.47	0.05	0.14	0.04	0.24	0.142
WMC313	Fut/Exist	0.260	0.150	0.053	1000.0	350.0	6000.0	4	1	7	1.25	5.86	10.45	0.22	0.02	0.16	0.40	0.239
WMC315	Fut/Exist	0.740	0.493	0.085	1000.0	1500.0	11250.0	4	1	7	2.11	10.63	13.22	0.13	0.04	0.24	0.41	0.244
WMC317	Fut/Exist	0.340	0.185	0.066	1000.0	650.0	15000.0	4	1	7	1.43	6.50	11.63	0.19	0.03	0.36	0.58	0.348
WMC319	Fut/Exist	0.090	0.072	0.006	1000.0	4500.0	4000.0	4	1	7	0.74	4.07	10.08	0.38	0.31	0.11	0.79	0.477
BSC	Fut/Exist	DATA FROM EXISTING REPO															0.00	0.000
ELK255	Fut/Exist	0.030	0.036	0.025	1000.0	10000.0	3750.0	3	1	7	1.23	2.87	7.16	0.23	0.97	0.15	1.34	0.804
ELK257	Fut/Exist	0.050	0.026		1000.0	15250.0		3	7		1.58	7.29		0.18	0.58		0.76	0.454
ELK259	Fut/Exist	0.035	0.027	0.031	1000.0	5000.0	4750.0	3	1	7	1.32	2.49	7.91	0.21	0.56	0.17	0.94	0.561
KC321	Fut/Exist	0.084	0.065	0.033	1000.0	1000.0	10000.0	4	1	7	0.71	3.86	8.16	0.39	0.07	0.34	0.80	0.482
KC323	Fut/Exist	0.084	0.033		1000.0	10000.0		4	7		0.71	8.22		0.39	0.34		0.73	0.437
KC325	Fut/Exist	0.060	0.028	0.026	1000.0	4000.0	6250.0	4	1	7	0.60	2.51	7.24	0.46	0.44	0.24	1.14	0.687

KIOWA ENGINEERING CORPORATION

TIME OF CONCENTRATION CALCULATION SPREADSHEET

DATE: 27-Dec-91  
TIME: 10:55 AM

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
E	GRASSED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
A	FOREST WITH HEAVY GROUND LITTER & MEADOW	4
B	FALLOW OR MINIMUM TILLAGE CULTIVATION	5
D	NEARLY BARE GROUND	6
N/A	DRAINAGEWAY	7

Basin ID	Channel Condition	**Slope (ft/ft)**			**Length (ft)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Tlag (hr)
Number	Fut/Exist	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-2	Sgmt-3	SEGMENT	Total	Total
KC327	Fut/Exist	0.075	0.048	0.015	1000.0	6250.0	4000.0	4	7	7	0.67	9.36	5.54	0.41	0.19	0.20	0.80	0.479
KC329	Fut/Exist	0.080	0.044	0.038	1000.0	5500.0	6000.0	4	1	7	0.69	3.16	8.77	0.40	0.48	0.19	1.07	0.644
KC331	Fut/Exist	0.085	0.044	0.019	1000.0	4000.0	5750.0	4	1	7	0.72	3.17	6.26	0.39	0.35	0.26	0.99	0.597
KC333	Fut/Exist	0.045	0.043	0.025	1000.0	3000.0	8000.0	4	1	7	0.52	3.15	7.16	0.53	0.26	0.31	1.11	0.665
KC335	Fut/Exist	0.095	0.053	0.015	1000.0	8500.0	5250.0	4	1	7	0.76	3.48	5.83	0.37	0.68	0.25	1.30	0.777
KC337	Fut/Exist	0.110	0.056	0.029	1000.0	5000.0	3500.0	4	1	7	0.81	3.58	8.00	0.34	0.39	0.12	0.85	0.510
KC339	Fut/Exist	0.075	0.046	0.017	4250.0	4500.0	4500.0	1	7	7	4.15	9.66	6.10	0.28	0.13	0.21	0.62	0.371
KC341	Fut/Exist	0.048	0.044	0.016	2500.0	3750.0	10000.0	1	7	7	3.32	9.50	5.34	0.21	0.11	0.52	0.84	0.504
KC343	Fut/Exist	0.045	0.037	0.030	1000.0	11500.0	1350.0	3	7	7	1.50	8.65	7.38	0.18	0.37	0.05	0.61	0.363
KC345	Fut/Exist	0.135	0.058	0.034	1000.0	2150.0	15000.0	3	1	7	2.60	3.65	8.35	0.11	0.16	0.50	0.77	0.462
KC347	Fut/Exist	0.030	0.055	0.017	1000.0	3850.0	7750.0	3	1	7	1.23	3.53	5.56	0.23	0.30	0.39	0.92	0.550
KC349	Fut/Exist	0.020	0.050	0.006	5750.0	2000.0	8500.0	1	7	7	2.14	10.12	10.17	0.75	0.05	0.23	1.03	0.620
KC351	Fut/Exist	0.025	0.022	0.019	1000.0	2250.0	10250.0	3	1	7	1.12	2.26	2.33	0.25	0.28	1.22	1.75	1.047
KC353	Fut/Exist	0.020	0.024	0.006	2250.0	9000.0	2250.0	1	7	7	2.14	7.07	10.25	0.29	0.35	0.06	0.71	0.424
DRY355	Fut/Exist	0.580	0.320	0.220	1000.0	1000.0	7000.0	4	1	7	1.87	8.56	22.20	0.15	0.03	0.09	0.27	0.161
DRY357	Fut/Exist	0.150	0.048	0.043	1200.0	1200.0	6750.0	1	7	7	5.86	9.36	9.39	0.06	0.04	0.20	0.29	0.175
DRY359	Fut/Exist	0.360	0.317	0.149	1000.0	1800.0	8000.0	4	1	7	1.47	8.52	17.46	0.19	0.06	0.13	0.37	0.225
DRY361	Fut/Exist	0.110	0.069	0.025	1000.0	4500.0	12250.0	4	7	7	0.81	11.87	8.00	0.34	0.11	0.43	0.87	0.523
DRY362	Fut/Exist	0.080	0.051	0.032	1000.0	8750.0	5000.0	3	7	7	2.00	10.22	8.10	0.14	0.24	0.17	0.55	0.329
DRY363	Fut/Exist	0.160	0.041	0.034	1000.0	1450.0	5750.0	4	2	7	0.98	4.06	8.33	0.28	0.10	0.19	0.57	0.344
DRY364	Fut/Exist	0.086	0.032	0.010	2200.0	6000.0	4000.0	1	7	7	4.45	8.42	12.90	0.14	0.20	0.09	0.42	0.253
PC413	Fut/Exist	0.900	0.064	0.033	1000.0	1400.0	13000.0	3	2	7	6.72	5.06	8.61	0.04	0.08	0.42	0.54	0.323
PC415	Fut/Exist	0.100	0.042	0.033	1000.0	4250.0	5500.0	3	1	7	2.24	3.12	8.19	0.12	0.38	0.19	0.69	0.414
PC417	Fut/Exist	0.055	0.030	0.031	1000.0	6500.0	4500.0	6	6	7	2.35	1.73	8.35	0.12	1.04	0.15	1.31	0.786
PC419	Fut/Exist	0.045	0.039	0.046	1000.0	1400.0	4750.0	6	6	7	2.12	1.98	9.74	0.13	0.20	0.14	0.46	0.278
PC421	Fut/Exist	0.039	0.020		9750.0	5250.0		6	7		1.96	8.88		1.38	0.16		1.54	0.927
PC423	Fut/Exist	0.026	0.026	0.005	1000.0	9000.0	2250.0	6	1	7	1.60	2.42	8.88	0.17	1.03	0.07	1.28	0.767

KIOWA ENGINEERING CORPORATION

TIME OF CONCENTRATION CALCULATION SPREADSHEET

DATE: 06-Jan-92  
TIME: 02:55 PM

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
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E	GRASSED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
A	FOREST WITH HEAVY GROUND LITTER & MEADOW	4
B	FALLOW OR MINIMUM TILLAGE CULTIVATION	5
D	NEARLY BARE GROUND	6
N/A	DRAINAGEWAY	7

Basin ID	Channel Condition	**Slope (ft/ft)**			**Length (ft)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Tlag (hr)
Number	Fut/Exist	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Total	Total
NR375	Fut/Exist	0.052	0.033	0.028	1000.0	4100.0	2600.0	6	1	7	2.28	2.75	7.57	0.12	0.41	0.10	0.63	0.379
NR376	Fut/Exist	0.031	0.024	0.013	1000.0	2775.0	2600.0	6	1	7	1.76	2.33	5.06	0.16	0.33	0.14	0.63	0.379
SR377	Fut/Exist	0.035	0.030	0.025	1000.0	3500.0	1700.0	6	1	7	1.87	2.62	7.09	0.15	0.37	0.07	0.59	0.352
SR378	Fut/Exist	0.021	0.016		1000.0	3100.0		6	7		1.45	5.67		0.19	0.15		0.34	0.206
PR479	Fut/Exist	0.036	0.031	0.024	1000.0	4750.0	2950.0	6	1	7	1.89	2.66	7.01	0.15	0.50	0.12	0.76	0.456
PB379	Fut/Exist	0.026	0.022	0.018	1000.0	4350.0	2850.0	6	1	7	1.60	2.24	5.99	0.17	0.54	0.13	0.84	0.506
DGC381	Fut/Exist	0.037	0.031	0.024	1000.0	2400.0	1400.0	6	1	7	1.91	2.66	7.01	0.15	0.25	0.06	0.45	0.271
DGC383	Fut/Exist	0.041	0.030	0.021	1000.0	2425.0	1700.0	6	1	7	2.02	2.60	6.56	0.14	0.26	0.07	0.47	0.281
DGC385	Fut/Exist	0.040	0.030	0.022	1000.0	3800.0	2475.0	6	1	7	1.99	2.62	6.64	0.14	0.40	0.10	0.65	0.388
DGC387	Fut/Exist	0.029	0.026	0.017	1000.0	4550.0	1900.0	6	1	7	1.71	2.42	5.90	0.16	0.52	0.09	0.77	0.465
DGC389	Fut/Exist	0.025	0.012	0.011	1000.0	7200.0	4500.0	6	1	7	1.58	1.68	4.81	0.18	1.19	0.26	1.63	0.976
DGC391	Fut/Exist	0.039	0.035	0.028	1000.0	2750.0	1900.0	6	1	7	1.97	2.83	7.57	0.14	0.27	0.07	0.48	0.288
DGC393	Fut/Exist	0.045	0.025	0.017	1000.0	3450.0	1750.0	6	1	7	2.12	2.38	5.90	0.13	0.40	0.08	0.62	0.369
DGC395	Fut/Exist	0.031	0.022	0.018	1000.0	4400.0	2800.0	6	1	7	1.77	2.24	6.07	0.16	0.54	0.13	0.83	0.498
DGC397	Fut/Exist	0.054	0.027	0.037	1000.0	750.0	1350.0	6	1	7	2.33	2.46	8.65	0.12	0.08	0.04	0.25	0.148
DGC399	Fut/Exist	0.026	0.024	0.021	1000.0	3900.0	2500.0	6	1	7	1.61	2.34	6.56	0.17	0.46	0.11	0.74	0.445
TG481	Fut/Exist	0.021	0.016		1000.0	3325.0		6	7		1.46	5.67		0.19	0.16		0.35	0.212
TG483	Fut/Exist	0.043	0.041	0.032	1000.0	3250.0	1650.0	6	1	7	2.08	3.05	8.10	0.13	0.30	0.06	0.49	0.292
TG485	Fut/Exist	0.021	0.011		1000.0	3725.0		6	7		1.45	4.75		0.19	0.22		0.41	0.246
TG487	Fut/Exist	0.051	0.045	0.038	1000.0	2400.0	2550.0	6	1	7	2.26	3.21	8.82	0.12	0.21	0.08	0.41	0.247
TG489	Fut/Exist	0.046	0.036	0.037	1000.0	2800.0	2500.0	6	1	7	2.13	2.87	8.71	0.13	0.27	0.08	0.48	0.288
TG491	Fut/Exist	0.065	0.033	0.034	1000.0	1475.0	1650.0	6	1	7	2.55	2.73	8.35	0.11	0.15	0.05	0.31	0.188
TG493	Fut/Exist	0.026	0.063		875.0	800.0		6	7		1.62	11.36		0.15	0.02		0.17	0.101
TG495	Fut/Exist	0.033	0.024	0.022	1000.0	5100.0	2100.0	6	1	7	1.80	2.34	6.71	0.15	0.60	0.09	0.85	0.507
TG497	Fut/Exist	0.031	0.021	0.018	1000.0	5300.0	3350.0	6	1	7	1.76	2.19	6.07	0.16	0.67	0.15	0.98	0.589
TG499	Fut/Exist	*****	0.036	0.013	1000.0	2300.0	1250.0	6	7	7	316.23	8.54	5.06	0.00	0.07	0.07	0.14	0.087
TG501	Fut/Exist	0.046	0.034	0.030	1000.0	2125.0	1350.0	6	1	7	2.14	2.79	7.81	0.13	0.21	0.05	0.39	0.234
TG503	Fut/Exist	0.023	0.011		1000.0	4825.0		6	7		1.52	4.64		0.18	0.29		0.47	0.283

KIOWA ENGINEERING CORPORATION

DATE: 06-Jan-92
TIME: 02:55 PM

TIME OF CONCENTRATION CALCULATION SPREADSHEET

PROJECT: MONUMENT CREEK HYDROLOGY

CURVE	DESCRIPTION	CONVEYANCE TYPE
E	GRASSED WATERWAY	1
F	PAVED AREA (SHEET FLOW) & SHALLOW GUT. FLOW	2
C	SHORT GRASS PASTURE & LAWNS	3
A	FOREST WITH HEAVY GROUND LITTER & MEADOW	4
B	FALLOW OR MINIMUM TILLAGE CULTIVATION	5
D	NEARLY BARE GROUND	6
N/A	DRAINAGEWAY	7

Basin ID	Channel Condition	**Slope (ft/ft)**			**Length (ft)**			**Conveyance Type**			**Velocity (ft/sec)**			**Time of Concentration (hr)**			Tc (hr)	Tlag (hr)
Number	Fut/Exist	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Sgmt-1	Sgmt-2	Sgmt-3	Total	Total
ROS505	Fut/Exist	0.025	0.011		1000.0	3900.0		6	7		1.59	4.64		0.17	0.23		0.41	0.245
ROS507	Fut/Exist	0.035	0.034	0.026	1000.0	1450.0	1800.0	6	1	7	1.88	2.79	7.24	0.15	0.14	0.07	0.36	0.217
PAP509	Fut/Exist	0.020	0.009	0.010	1000.0	5975.0	3550.0	6	1	7	1.41	1.44	4.53	0.20	1.16	0.22	1.57	0.942
PAP511	Fut/Exist	0.021	0.019	0.016	1000.0	5400.0	3300.0	6	1	7	1.45	2.09	5.64	0.19	0.72	0.16	1.07	0.644
MES401	Fut/Exist	0.025	0.026	0.021	1000.0	3050.0	1150.0	6	1	7	1.57	2.42	6.56	0.18	0.35	0.05	0.58	0.346
MES403	Fut/Exist	0.045	0.032	0.025	1000.0	2150.0	1500.0	6	1	7	2.12	2.71	7.16	0.13	0.22	0.06	0.41	0.246
MES405	Fut/Exist	0.040	0.032	0.028	1000.0	2550.0	1700.0	6	1	7	2.00	2.71	7.57	0.14	0.26	0.06	0.46	0.278
MES407	Fut/Exist	0.020	0.011	0.010	1000.0	4225.0	2625.0	6	1	7	1.41	1.57	4.53	0.20	0.75	0.16	1.10	0.662
MES409	Fut/Exist	0.055	0.061	0.051	1000.0	1025.0	2300.0	6	1	7	2.34	3.74	10.22	0.12	0.08	0.06	0.26	0.155
MES411	Fut/Exist	0.029	0.025	0.013	1000.0	2475.0	3250.0	6	1	7	1.69	2.41	5.06	0.16	0.29	0.18	0.63	0.377
MVP513	Fut/Exist	0.022	0.025	0.017	1000.0	2525.0	2000.0	6	1	7	1.47	2.37	5.88	0.19	0.30	0.09	0.58	0.348
MVP515	Fut/Exist	0.021	0.030	0.024	1000.0	1725.0	2575.0	6	1	7	1.46	2.60	7.01	0.19	0.18	0.10	0.48	0.286

**MONUMENT CREEK
DRAINAGE BASIN PLANNING STUDY
BASELINE HYDROLOGY
Technical Addendum**

**Section III
SCS Curve Number Spreadsheets
Existing Condition**

EXISTING CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				EXISTING LAND USE DISTRIBUTION IN PERCENT					WEIGHTED % IMPERV	CURVE NUMBER
		GROUP A	GROUP B	GROUP C	GROUP D	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5		
		PERV CN:	PERV CN:	PERV CN:	PERV CN:	IMPERV:	IMPERV:	IMPERV:	IMPERV:	IMPERV:		
		39	61	74	80	2	8	27	54	84		
UPPER MONUMENT	ICC 01	0.87	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	03	1.12	0%	4%	0%	96%	100%	0%	0%	0%	2%	80
	05	1.07	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	07	1.17	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	09	1.05	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	11	1.19	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	NMC 13	0.87	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	15	0.84	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	17	1.21	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	19	0.88	0%	14%	0%	85%	100%	0%	0%	0%	2%	78
	21	0.85	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	23	1.28	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	25	0.99	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	27	1.24	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	29	0.59	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	31	0.69	0%	0%	0%	100%	75%	0%	0%	25%	15%	83
	MC 33	1.40	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	35	0.46	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	37	1.04	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	39	0.41	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	41	1.08	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	43	1.38	0%	0%	0%	100%	100%	0%	0%	0%	2%	80
	45	0.86	0%	2%	0%	98%	100%	0%	0%	0%	2%	80
	47	0.68	0%	97%	0%	3%	66%	0%	0%	34%	20%	68
		23.22										
RASBERRY MOUNTAIN	RM 51	0.98	0%	93%	0%	8%	88%	0%	12%	0%	5%	64
	55	1.07	0%	95%	0%	5%	84%	0%	18%	0%	6%	64
	59	0.37	0%	99%	0%	0%	99%	0%	0%	0%	2%	61
		2.42										
	PL 49	0.31	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	53	0.95	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	57	1.48	0%	92%	8%	0%	77%	12%	0%	12%	12%	67
	61	0.91	0%	88%	12%	0%	100%	0%	0%	0%	2%	63
	63	0.99	0%	98%	2%	0%	42%	17%	0%	41%	24%	70

EXISTING CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				EXISTING LAND USE DISTRIBUTION IN PERCENT					WEIGHTED % IMPERV	CURVE NUMBER
		GROUP A	GROUP B	GROUP C	GROUP D	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5		
		PERV CN:	PERV CN:	PERV CN:	PERV CN:	IMPERV:	IMPERV:	IMPERV:	IMPERV:	IMPERV:		
		39	61	74	80	2	9	27	54	84		
PALMER LAKE	4.64											
MR 65	0.78	0%	73%	0%	27%	100%	0%	0%	0%	0%	2%	67
67	0.72	0%	49%	13%	37%	76%	24%	0%	0%	0%	4%	71
69	0.72	0%	70%	0%	29%	100%	0%	0%	0%	0%	2%	67
71	0.96	0%	91%	0%	8%	100%	0%	0%	0%	0%	2%	63
73	0.53	0%	94%	5%	0%	100%	0%	0%	0%	0%	2%	62
75	0.32	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
77	0.24	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
MONUMENT ROCK	4.27											
DWC 79	0.50	0%	87%	13%	0%	0%	100%	0%	0%	0%	9%	66
81	0.66	0%	91%	9%	0%	0%	100%	0%	0%	0%	9%	65
83	0.61	0%	96%	4%	0%	0%	100%	0%	0%	0%	9%	65
85	0.36	0%	92%	8%	0%	69%	32%	0%	0%	0%	4%	64
87	0.66	0%	91%	9%	0%	83%	17%	0%	0%	0%	3%	63
89	0.45	0%	96%	4%	0%	74%	26%	0%	0%	0%	4%	63
91	0.78	0%	90%	10%	0%	15%	63%	22%	0%	0%	12%	67
93	0.52	0%	94%	7%	0%	78%	0%	22%	0%	0%	8%	65
95	0.66	0%	100%	0%	0%	39%	0%	0%	61%	0%	34%	73
97	0.25	0%	64%	37%	0%	32%	69%	0%	0%	0%	7%	69
DIRTY WOMAN CREEK	5.45											
TC 99	0.47	0%	100%	0%	0%	63%	0%	37%	0%	0%	11%	65
101	0.74	0%	100%	0%	0%	85%	0%	16%	0%	0%	6%	63
103	0.21	0%	101%	0%	0%	74%	0%	27%	0%	0%	9%	65
105	0.83	0%	86%	14%	0%	73%	0%	28%	0%	0%	9%	66
107	0.44	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
TEACHOUT CREEK	2.69											
EG 109	1.24	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
111	0.75	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
113	0.98	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
115	0.85	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
117	0.47	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
SBC 119	1.83	0%	37%	0%	63%	100%	0%	0%	0%	0%	2%	73

EXISTING CURVE NUMBERS

[illegible]

EXISTING CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				EXISTING LAND USE DISTRIBUTION IN PERCENT					WEIGHTED % IMPERV	CURVE NUMBER
		GROUP A	GROUP B	GROUP C	GROUP D	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5		
		PERV CN:	PERV CN:	PERV CN:	PERV CN:	IMPERV:	IMPERV:	IMPERV:	IMPERV:	IMPERV:		
		39	61	74	80	2	9	27	54	84		
BLACK FORREST	BF 191	0.57	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	193	0.83	0%	100%	0%	0%	73%	0%	14%	14%	13%	66
	195	0.60	0%	77%	24%	0%	53%	0%	48%	0%	14%	69
	197	0.62	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	199	0.62	0%	100%	0%	0%	81%	0%	19%	0%	7%	63
	200	0.76	0%	100%	0%	0%	47%	0%	53%	0%	15%	67
		3.90										
SMITH CREEK	SC 213	0.89	0%	100%	0%	0%	74%	0%	0%	26%	15%	67
	215	1.03	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	217	0.83	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	219	0.51	0%	89%	11%	0%	0%	100%	0%	0%	9%	66
	221	0.95	0%	100%	0%	0%	12%	88%	0%	0%	8%	64
	223	0.88	0%	100%	0%	0%	61%	39%	0%	0%	5%	63
	225	0.37	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
MONUMENT BRANCH	MB 225	0.95	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	227	0.43	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	228	0.24	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	229	0.44	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	230	0.45	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	231	1.07	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	232	0.26	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
MIDDLE TRIBUTARY	MT 233	1.47	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	JV 183	1.15	0%	87%	0%	13%	100%	0%	0%	0%	2%	64
	185	0.71	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	187	1.09	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	189	1.10	5%	95%	0%	0%	100%	0%	0%	0%	2%	61
	DM 201	1.16	0%	5%	0%	94%	100%	0%	0%	0%	2%	79
	203	0.77	0%	50%	0%	50%	100%	0%	0%	0%	2%	71

EXISTING CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				EXISTING LAND USE DISTRIBUTION IN PERCENT					WEIGHTED % IMPERV	CURVE NUMBER
		GROUP A	GROUP B	GROUP C	GROUP D	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5		
		PERV CN:	PERV CN:	PERV CN:	PERV CN:	IMPERV:	IMPERV:	IMPERV:	IMPERV:	IMPERV:		
		39	61	74	80	2	9	27	54	84		
205	1.19	2%	95%	0%	5%	52%	34%	0%	0%	14%	16%	69
206	0.71	0%	60%	0%	40%	100%	0%	0%	0%	0%	2%	69
207	0.81	0%	91%	9%	0%	100%	0%	0%	0%	0%	2%	63
209	0.56	12%	88%	0%	0%	100%	0%	0%	0%	0%	2%	59
211	1.54	1%	99%	0%	0%	100%	0%	0%	0%	0%	2%	61
LR 235	1.22	0%	10%	0%	90%	100%	0%	0%	0%	0%	2%	79
237	0.97	9%	79%	0%	21%	64%	0%	0%	0%	35%	31%	78
239	0.72	0%	72%	0%	28%	100%	0%	0%	0%	0%	2%	67
241	1.11	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
243	0.72	3%	96%	0%	0%	68%	0%	0%	32%	0%	19%	67
245	0.28	0%	100%	0%	0%	59%	0%	0%	41%	0%	23%	70
DV 261	0.60	0%	100%	0%	0%	33%	0%	67%	0%	0%	19%	68
263	1.32	0%	100%	0%	0%	39%	0%	61%	0%	0%	17%	67
265	1.05	8%	92%	0%	0%	84%	0%	0%	16%	0%	11%	63
267	0.44	0%	100%	0%	0%	61%	0%	0%	0%	39%	34%	74
269	0.73	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
271	1.08	0%	100%	0%	0%	47%	0%	53%	0%	0%	15%	67
WM 273	0.79	0%	86%	0%	14%	100%	0%	0%	0%	0%	2%	64
275	0.82	0%	8%	0%	94%	100%	0%	0%	0%	0%	2%	79
277	0.83	0%	8%	0%	93%	100%	0%	0%	0%	0%	2%	79
279	0.49	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
281	0.49	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
283	0.92	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
285	1.22	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
287	0.69	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
289	0.96	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
290	0.57	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
291	1.36	0%	4%	0%	96%	100%	0%	0%	0%	0%	2%	80
293	1.00	0%	16%	0%	84%	100%	0%	0%	0%	0%	2%	77
295	1.36	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
297	1.12	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
299	0.77	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
301	0.93	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
303	1.20	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
305	1.12	0%	35%	0%	65%	100%	0%	0%	0%	0%	2%	74
307	1.09	0%	8%	5%	87%	100%	0%	0%	0%	0%	2%	79

EXISTING CURVE NUMBERS

BASIN NAMES		AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				EXISTING LAND USE DISTRIBUTION IN PERCENT					WEIGHTED % IMPERV	CURVE NUMBER
			GROUP A	GROUP B	GROUP C	GROUP D	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5		
			PERV CN:	PERV CN:	PERV CN:	PERV CN:	IMPERV:	IMPERV:	IMPERV:	IMPERV:	IMPERV:		
			39	61	74	80	2	9	27	54	84		
AF ACADEMY	309	1.14	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
	310	0.82	0%	0%	0%	100%	100%	0%	0%	0%	0%	2%	80
	311	0.74	0%	68%	32%	0%	100%	0%	0%	0%	0%	2%	68
	313	0.40	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	315	1.09	0%	0%	13%	87%	79%	0%	21%	0%	0%	7%	81
	317	1.20	0%	100%	0%	0%	81%	0%	18%	0%	0%	7%	84
	319	0.51	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
		44.66											
BLACK SQUIRREL CREEK	BS 246	1.02	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	247	0.63	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	248	1.52	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	249	0.39	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	250	3.36	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	251	1.26	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	252	0.96	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	253	0.88	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	254	1.09	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
		11.11											
ELK HORN	ELK 255	1.33	35%	66%	0%	0%	100%	0%	0%	0%	0%	2%	54
	257	0.81	100%	0%	0%	0%	100%	0%	0%	0%	0%	2%	40
	259	0.60	82%	18%	0%	0%	100%	0%	0%	0%	0%	2%	44
		2.74											
KC	321	1.31	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	323	1.67	0%	100%	0%	0%	66%	0%	34%	0%	0%	11%	65
	325	1.13	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	327	0.84	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	329	1.14	0%	100%	0%	0%	75%	25%	0%	0%	0%	4%	62
	331	0.68	0%	100%	0%	0%	7%	93%	0%	0%	0%	8%	64
	333	1.36	0%	100%	0%	0%	21%	79%	0%	0%	0%	8%	64
	335	2.03	0%	100%	0%	0%	45%	55%	0%	0%	0%	6%	63
	337	1.05	0%	100%	0%	0%	22%	78%	0%	0%	0%	7%	64
	339	0.93	0%	100%	0%	0%	31%	69%	0%	0%	0%	7%	64
	341	1.00	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62

EXISTING CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				EXISTING LAND USE DISTRIBUTION IN PERCENT					WEIGHTED % IMPERV	CURVE NUMBER	
		GROUP A	GROUP B	GROUP C	GROUP D	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5			
		PERV CN:	PERV CN:	PERV CN:	PERV CN:	IMPERV:	IMPERV:	IMPERV:	IMPERV:	IMPERV:			
		39	61	74	80	2	9	27	54	84			
KETTLE CREEK	343	1.06	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	345	0.99	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	347	1.11	39%	61%	0%	0%	26%	0%	74%	0%	0%	20%	62
	349	1.25	85%	15%	0%	0%	37%	45%	0%	0%	18%	20%	54
	351	1.02	75%	25%	0%	0%	95%	0%	0%	0%	6%	7%	48
	353	1.06	66%	34%	0%	0%	73%	0%	27%	0%	0%	9%	51
		19.63											
	DC 355	0.80	0%	43%	0%	57%	100%	0%	0%	0%	0%	2%	72
	357	0.73	0%	47%	0%	53%	100%	0%	0%	0%	0%	2%	72
	359	0.64	0%	55%	0%	45%	100%	0%	0%	0%	0%	2%	70
DRY CREEK	361	1.30	18%	9%	34%	40%	44%	56%	0%	0%	0%	6%	71
	362	1.19	0%	100%	0%	0%	0%	100%	0%	0%	0%	9%	64
	363	0.33	0%	100%	0%	0%	0%	101%	0%	0%	0%	9%	64
	364	0.69	17%	75%	0%	8%	0%	100%	0%	0%	0%	9%	62
		5.68											
	425	1.61	100%	0%	0%	0%	38%	0%	0%	62%	0%	34%	59
	427	0.86	67%	33%	0%	0%	0%	0%	0%	73%	27%	62%	78
	429	0.77	100%	0%	0%	0%	50%	0%	0%	50%	0%	28%	55
	431	0.39	100%	0%	0%	0%	0%	0%	0%	100%	0%	54%	71
	433	0.38	15%	69%	0%	16%	0%	0%	0%	100%	0%	54%	81
SOUTH PINE CREEK	435	0.94	33%	55%	0%	12%	0%	0%	0%	100%	0%	54%	79
		4.95											
	437	1.18	0%	100%	0%	0%	37%	63%	0%	0%	0%	6%	63
	439	0.50	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	441	1.70	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	443	1.47	22%	78%	0%	0%	100%	0%	0%	0%	0%	2%	57
	445	1.26	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	447	0.96	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
	449	1.10	21%	79%	0%	0%	100%	0%	0%	0%	0%	2%	57
	451	0.70	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62
453	1.24	0%	100%	0%	0%	100%	0%	0%	0%	0%	2%	62	
455	0.99	50%	50%	0%	0%	100%	0%	0%	0%	0%	2%	51	
457	0.84	61%	38%	0%	0%	100%	0%	0%	0%	0%	2%	48	

EXISTING CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				EXISTING LAND USE DISTRIBUTION IN PERCENT					WEIGHTED % IMPERV	CURVE NUMBER
		GROUP A	GROUP B	GROUP C	GROUP D	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5		
		PERV CN:	PERV CN:	PERV CN:	PERV CN:	IMPERV:	IMPERV:	IMPERV:	IMPERV:	IMPERV:		
		39	61	74	80	2	9	27	54	84		
	459	0.97	59%	41%	0%	0%	100%	0%	0%	0%	2%	49
	461	1.07	54%	46%	0%	0%	100%	0%	0%	0%	2%	50
	463	1.04	61%	39%	0%	0%	100%	0%	0%	0%	2%	49
	465	1.70	30%	51%	0%	19%	59%	0%	0%	41%	23%	67
	467	1.21	19%	62%	0%	19%	0%	0%	0%	100%	54%	81
	469	0.90	70%	30%	0%	0%	0%	0%	0%	100%	54%	74
	471	0.73	78%	24%	0%	0%	0%	0%	0%	100%	54%	73
	473	0.47	85%	15%	0%	0%	0%	0%	0%	100%	54%	72
	475	0.24	48%	29%	0%	25%	0%	0%	0%	100%	54%	79
	477	0.16	72%	29%	0%	0%	0%	0%	0%	100%	54%	74
COTTON WOOD CREEK	20.43											
PULPIT ROCK	PR 479	1.15	20%	15%	15%	50%	65%	0%	0%	35%	20%	74
	PC 413	0.82	7%	86%	0%	7%	100%	0%	0%	0%	2%	62
	415	0.78	0%	100%	0%	0%	100%	0%	0%	0%	2%	62
	417	0.87	34%	66%	0%	0%	100%	0%	0%	0%	2%	55
	419	0.54	100%	0%	0%	0%	100%	0%	0%	0%	2%	40
	421	1.32	87%	0%	13%	0%	100%	0%	0%	0%	2%	45
	423	0.38	30%	69%	0%	0%	100%	0%	0%	0%	2%	55
PINE CREEK	4.71											
	NR 375	1.14	15%	20%	25%	40%	0%	100%	0%	0%	9%	72
	376	1.06	32%	11%	49%	8%	11%	89%	0%	0%	8%	65
NORTH ROCK RIMMON	2.20											
	377	0.90	0%	0%	36%	63%	94%	0%	0%	6%	7%	79
	378	0.35	33%	0%	18%	49%	84%	0%	0%	16%	15%	70
SOUTH ROCK RIMMON	1.25											
POPES BLUFF	379	0.67	0%	15%	0%	85%	100%	0%	0%	0%	2%	78
	0.67											
	381	1.05	7%	44%	0%	49%	100%	0%	0%	0%	2%	69
	383	0.88	36%	29%	0%	34%	87%	13%	0%	0%	3%	60

EXISTING CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				EXISTING LAND USE DISTRIBUTION IN PERCENT					WEIGHTED % IMPERV	CURVE NUMBER
		GROUP A	GROUP B	GROUP C	GROUP D	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5		
		PERV.CN:	PERV.CN:	PERV.CN:	PERV.CN:	IMPERV:	IMPERV:	IMPERV:	IMPERV:	IMPERV:		
		39	81	74	80	2	9	27	54	84		
DOUGLASS CREEK	385	1.33	4%	15%	0%	87%	100%	0%	0%	0%	2%	81
	387	1.00	34%	29%	8%	29%	71%	29%	0%	0%	4%	62
	389	0.58	30%	31%	0%	40%	70%	30%	0%	0%	4%	64
	391	1.07	21%	62%	0%	18%	84%	18%	0%	0%	3%	60
	393	1.21	38%	47%	0%	14%	24%	0%	19%	0%	53%	78
	395	1.57	22%	25%	27%	37%	100%	0%	0%	0%	2%	74
	397	0.51	0%	51%	0%	49%	100%	0%	0%	0%	2%	71
	399	1.05	33%	29%	0%	38%	16%	0%	84%	0%	23%	70
		10.25										
	481	0.99	0%	77%	23%	0%	66%	0%	0%	35%	20%	71
TEMPLETON GAP	483	1.40	18%	41%	41%	0%	0%	0%	0%	100%	54%	82
	485	1.12	82%	0%	0%	18%	28%	0%	0%	74%	40%	67
	487	0.70	8%	92%	0%	0%	0%	0%	0%	100%	54%	80
	489	1.38	33%	12%	46%	8%	0%	0%	0%	100%	54%	81
	491	1.10	78%	0%	0%	22%	0%	0%	0%	100%	54%	75
	493	0.75	0%	39%	0%	61%	77%	0%	0%	23%	14%	76
	495	0.99	13%	41%	0%	46%	89%	0%	0%	12%	8%	70
	497	0.89	0%	64%	0%	35%	0%	0%	0%	87%	58%	85
	499	0.35	33%	33%	0%	34%	33%	0%	0%	67%	37%	74
	501	0.34	32%	0%	0%	68%	66%	34%	0%	0%	4%	68
ROSWELL	503	0.98	1%	0%	12%	88%	100%	0%	0%	0%	2%	80
		10.99										
	505	0.41	15%	28%	28%	28%	0%	0%	0%	0%	99%	83%
PAPTON	507	0.72	44%	56%	0%	0%	0%	0%	0%	0%	100%	84%
		1.13										
	509	1.29	69%	31%	0%	0%	18%	0%	0%	82%	45%	69
	511	1.17	22%	78%	0%	0%	0%	0%	0%	100%	54%	79
		2.46										
	401	0.60	0%	24%	0%	77%	72%	0%	0%	28%	17%	80
	403	0.56	0%	50%	0%	50%	31%	0%	0%	70%	38%	81
	405	0.82	0%	44%	0%	56%	86%	0%	14%	0%	6%	73
	407	0.88	0%	46%	0%	54%	61%	0%	39%	0%	12%	74

EXISTING CURVE NUMBERS

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**MONUMENT CREEK
DRAINAGE BASIN PLANNING STUDY
BASELINE HYDROLOGY
Technical Addendum**

**Section IV
SCS Curve Number Spreadsheets
Future Condition**

PROJECTED CURVE NUMBERS

BASIN NAMES		AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				PROJECTED LAND USE DISTRIBUTION IN PERCENT												WEIGH % IMPERV	CURVE NUMBER	
			GROUP A	GROUP B	GROUP C	GROUP D	ZONE 1	% AREA	IMPERV %	ZONE 2	% AREA	IMPERV %	ZONE 3	% AREA	IMPERV %	ZONE 4	% AREA	IMPERV %			
		39	61	74	80																
ICC	01	0.87	0%	0%	0%	100%	402	100%	2%										2%	80	
	03	1.12	0%	4%	0%	96%	402	100%	2%										2%	80	
	05	1.07	0%	0%	0%	100%	402	100%	2%										2%	80	
	07	1.17	0%	0%	0%	100%	402	100%	2%										2%	80	
	09	1.05	0%	0%	0%	100%	402	100%	2%										2%	80	
	11	1.19	0%	0%	0%	100%	402	100%	2%										2%	80	
	NMC	13	0.87	0%	0%	0%	100%	402	100%	2%										2%	80
		15	0.84	0%	0%	0%	100%	402	100%	2%										2%	80
		17	1.21	0%	0%	0%	100%	402	100%	2%										2%	80
		19	0.88	0%	14%	0%	85%	402	100%	2%										2%	78
21		0.85	0%	0%	0%	100%	402	100%	2%										2%	80	
23		1.28	0%	0%	0%	100%	402	100%	2%										2%	80	
25		0.99	0%	0%	0%	100%	402	100%	2%										2%	80	
27		1.24	0%	0%	0%	100%	402	100%	2%										2%	80	
29		0.59	0%	0%	0%	100%	402	100%	2%										2%	80	
31		0.69	0%	0%	0%	100%	402	67%	2%	213	33%	25%							10%	82	
MC	33	1.40	0%	0%	0%	100%	402	100%	2%										2%	80	
	35	0.46	0%	0%	0%	100%	402	100%	2%										2%	80	
	37	1.04	0%	0%	0%	100%	402	100%	2%										2%	80	
	39	0.41	0%	0%	0%	100%	402	100%	2%										2%	80	
	41	1.08	0%	0%	0%	100%	402	100%	2%										2%	80	
	43	1.38	0%	0%	0%	100%	402	100%	2%										2%	80	
	45	0.86	0%	2%	0%	98%	402	100%	2%										2%	80	
	47	0.68	0%	97%	0%	3%	402	10%	2%	213	90%	25%							23%	70	
UPPER MONUMENT		23.22																			
RM	51	0.98	0%	93%	0%	8%	402	52%	2%	214	25%	21%	213	23%	25%				12%	67	

PROJECTED CURVE NUMBERS

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PROJECTED CURVE NUMBERS

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PROJECTED CURVE NUMBERS

BASIN NAMES		AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				PROJECTED LAND USE DISTRIBUTION IN PERCENT												WEIGH % IMPERV	CURVE NUMBER
			GROUP A	GROUP B	GROUP C	GROUP D	ZONE 1	% AREA	IMPERV %	ZONE 2	% AREA	IMPERV %	ZONE 3	% AREA	IMPERV %	ZONE 4	% AREA	IMPERV %		
PERV CN:	PERV CN:	PERV CN:	PERV CN:	ZONE 1	% AREA	IMPERV %	ZONE 2	% AREA	IMPERV %	ZONE 3	% AREA	IMPERV %	ZONE 4	% AREA	IMPERV %					
39	61	74	80																	
HLC NBC BC HYC BC BEAVER CREEK IC JACKSON CREEK	139	1.24	0%	0%	0%	100%	402	100%	2%										2%	80
	141	0.91	0%	0%	0%	100%	402	100%	2%										2%	80
	143	1.25	19%	16%	0%	65%	402	75%	2%	215	25%	12%							4%	71
	145	0.58	0%	8%	0%	100%	402	60%	2%	215	40%	12%							6%	86
	147	1.29	0%	0%	0%	100%	402	100%	2%										2%	80
	149	0.62	0%	0%	0%	100%	402	100%	2%										2%	80
	151	0.77	0%	0%	0%	100%	402	100%	2%										2%	80
	153	1.04	6%	41%	0%	52%	402	62%	2%	215	38%	12%							6%	71
	155	1.03	0%	97%	3%	0%	215	100%	12%										12%	65
	157	0.72	0%	0%	0%	100%	402	100%	2%										2%	80
	159	0.64	0%	0%	0%	100%	402	100%	2%										2%	80
	161	0.73	0%	34%	0%	66%	402	68%	2%	215	32%	12%							5%	75
	163	0.73	0%	100%	0%	0%	215	100%	12%										12%	65
	165	0.44	0%	100%	0%	0%	215	100%	12%										12%	65
	167	0.60	0%	100%	0%	0%	215	72%	12%	212	28%	12%							12%	66
	169	0.77	0%	92%	7%	0%	215	100%	12%										12%	66
	171	0.39	4%	96%	0%	0%	215	80%	12%	212	20%	12%							12%	65
	BEAVER CREEK		27.19																	
IC JACKSON CREEK	173	1.01	0%	85%	15%	0%	220	100%	10%										10%	66
	175	1.16	0%	79%	20%	0%	220	100%	10%										10%	66
	177	1.40	0%	100%	0%	0%	220	100%	10%										10%	65
	179	0.73	0%	100%	0%	0%	220	100%	10%										10%	65
	180	0.65	0%	100%	0%	0%	215	78%	12%	214	22%	21%							14%	66
	181	0.16	0%	100%	0%	0%	220	20%	10%	219	65%	26%	215	15%	12%				20%	69
	182	0.24	0%	100%	0%	0%	219	60%	26%	215	33%	12%	212	7%	12%				20%	69
	JACKSON CREEK		5.35																	

PROJECTED CURVE NUMBERS

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PROJECTED CURVE NUMBERS

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AF ACADEMY

PROJECTED CURVE NUMBERS

BASIN NAMES		AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				PROJECTED LAND USE DISTRIBUTION IN PERCENT												WEIGH % IMPERV	CURVE NUMBER
			GROUP A	GROUP B	GROUP C	GROUP D	ZONE 1	% AREA	IMPERV %	ZONE 2	% AREA	IMPERV %	ZONE 3	% AREA	IMPERV %	ZONE 4	% AREA	IMPERV %		
PERV CN1	PERV CN1	PERV CN1	PERV CN1																	
39	61	74	80																	
BS	246	1.02	0%	100%	0%	0%	227	48%	8%	222	52%	4%							6%	63
	247	0.63	0%	100%	0%	0%	227	12%	8%	222	88%	4%							4%	63
	248	1.52	0%	100%	0%	0%	227	100%	8%									8%	64	
	249	0.39	0%	100%	0%	0%	227	37%	8%	222	45%	4%	218	18%	24%			9%	64	
	250	3.36	0%	100%	0%	0%	227	100%	8%									8%	64	
	251	1.26	0%	100%	0%	0%	227	100%	8%									8%	64	
	252	0.96	0%	100%	0%	0%	227	100%	8%									8%	64	
	253	0.88	0%	100%	0%	0%	218	100%	24%									24%	70	
	254	1.09	0%	100%	0%	0%	218	80%	24%	212	20%	12%						22%	69	
	BLACK SQUIRREL CREEK	11.11																		
ELK	255	1.33	35%	66%	0%	0%	227	10%	8%	218	50%	24%	212	40%	12%			18%	61	
	257	0.81	100%	0%	0%	0%	227	100%	8%									8%	44	
	259	0.60	82%	18%	0%	0%	218	30%	24%	212	65%	12%	170	5%	41%			15%	52	
ELK HORN	2.74																			
KC	321	1.31	0%	100%	0%	0%	225	100%	14%									14%	66	
	323	1.67	0%	100%	0%	0%	227	43%	8%	225	57%	14%						11%	65	
	325	1.13	0%	100%	0%	0%	226	100%	14%									14%	66	
	327	0.84	0%	100%	0%	0%	227	30%	8%	226	29%	14%	225	41%	14%			12%	66	
	329	1.14	0%	100%	0%	0%	227	78%	8%	225	22%	14%						9%	64	
	331	0.68	0%	100%	0%	0%	225	100%	14%									14%	66	
	333	1.36	0%	100%	0%	0%	227	83%	8%	226	17%	14%						9%	64	
	335	2.03	0%	100%	0%	0%	227	62%	8%	225	38%	14%						10%	65	
	337	1.05	0%	100%	0%	0%	225	100%	14%									14%	66	
	339	0.93	0%	100%	0%	0%	225	100%	14%									14%	66	
	341	1.00	0%	100%	0%	0%	227	92%	8%	225	8%	14%						8%	64	

PROJECTED CURVE NUMBERS

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PROJECTED CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				PROJECTED LAND USE DISTRIBUTION IN PERCENT														WEIGH % IMPERV	CURVE NUMBER
		GROUP A	GROUP B	GROUP C	GROUP D	ZONE 1	% AREA	IMPERV %	ZONE 2	% AREA	IMPERV %	ZONE 3	% AREA	IMPERV %	ZONE 4	% AREA	IMPERV %				
		PERV CN:	PERV CN:	PERV CN:	PERV CN:																
		39	61	74	80																
COTTON WOOD CREEK	441	1.70	0%	100%	0%	0%	226	78%	14%	224	22%	2%								12%	65
	443	1.47	22%	78%	0%	0%	224	67%	2%	171	23%	10%								4%	38
	445	1.26	0%	100%	0%	0%	225	48%	14%	171	52%	10%								12%	65
	447	0.96	0%	100%	0%	0%	226	5%	14%	225	10%	14%	224	15%	2%	171	70%	10%		9%	64
	449	1.10	21%	79%	0%	0%	171	100%	10%											10%	60
	451	0.70	0%	100%	0%	0%	225	8%	14%	171	92%	10%								10%	65
	453	1.24	0%	100%	0%	0%	171	100%	10%											10%	65
	455	0.99	50%	50%	0%	0%	171	57%	10%	170	43%	41%								23%	61
	457	0.84	61%	38%	0%	0%	171	100%	10%											10%	52
	459	0.97	59%	41%	0%	0%	240	17%	4%	171	83%	10%								9%	52
	461	1.07	54%	46%	0%	0%	240	10%	4%	172	60%	21%	171	7%	10%	152	23%	75%		31%	64
	463	1.04	61%	39%	0%	0%	172	18%	21%	171	82%	10%								12%	53
	465	1.70	30%	51%	0%	19%	172	44%	21%	171	24%	10%	TYPE 4	31%	77%					35%	72
	467	1.21	19%	62%	0%	19%	TYPE 4	100%	77%											77%	89
	469	0.90	70%	30%	0%	0%	TYPE 4	100%	77%											77%	86
	471	0.73	76%	24%	0%	0%	TYPE 4	100%	77%											77%	86
	473	0.47	85%	15%	0%	0%	TYPE 4	100%	77%											77%	85
	475	0.24	48%	29%	0%	25%	TYPE 4	100%	77%											77%	88
	477	0.16	72%	29%	0%	0%	TYPE 4	100%	77%											77%	86
	COTTON WOOD CREEK		20.43																		
PR	479	1.15	20%	15%	15%	50%	6	100%	38%											38%	79
PULPIT ROCK																					
PC	413	0.82	7%	86%	0%	7%	171	100%	10%											10%	65
	415	0.78	0%	100%	0%	0%	171	100%	10%											10%	65
	417	0.87	34%	66%	0%	0%	171	100%	10%											10%	58

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DOUGLASS CREEK

PROJECTED CURVE NUMBERS

BASIN NAMES	AREA SQ MILES	SOILS DISTRIBUTION IN PERCENT				PROJECTED LAND USE DISTRIBUTION IN PERCENT												WEIGH % IMPERV	CURVE NUMBER
		GROUP A	GROUP B	GROUP C	GROUP D	ZONE 1	% AREA	IMPERV %	ZONE 2	% AREA	IMPERV %	ZONE 3	% AREA	IMPERV %	ZONE 4	% AREA	IMPERV %		
		PERV CN:	PERV CN:	PERV CN:	PERV CN:														
		39	61	74	80														
481	0.99	0%	77%	23%	0%	152	78%	75%	TYPE 4	22%	77%							75%	90
483	1.40	18%	41%	41%	0%	TYPE 4	100%	77%										77%	90
485	1.12	82%	0%	0%	18%	1	18%	86%	TYPE 4	82%	77%							79%	87
487	0.70	8%	92%	0%	0%	TYPE 4	100%	77%										77%	89
489	1.38	33%	12%	46%	8%	TYPE 4	100%	77%										77%	90
491	1.10	78%	0%	0%	22%	TYPE 4	100%	77%										77%	87
493	0.75	0%	39%	0%	61%	13	62%	66%	10	24%	11%	TYPE 4	14%	77%				54%	87
495	0.99	13%	41%	0%	46%	1	86%	86%	TYPE 4	14%	77%							85%	93
497	0.89	0%	64%	0%	35%	TYPE 4	100%	77%										77%	91
499	0.35	33%	33%	0%	34%	14	100%	58%										58%	82
501	0.34	32%	0%	0%	68%	14	27%	58%	6	73%	38%							43%	80
503	0.98	1%	0%	12%	88%	6	100%	38%										38%	86
TEMPLETON GAP	10.99																		
505	0.41	15%	28%	28%	28%	TYPE 4	100%	77%										77%	91
507	0.72	44%	56%	0%	0%	TYPE 4	100%	77%										77%	87
ROSWELL	1.13																		
509	1.29	69%	31%	0%	0%	TYPE 4	100%	77%										77%	86
511	1.17	22%	78%	0%	0%	TYPE 4	100%	77%										77%	88
PAPTON	2.46																		
401	0.60	0%	24%	0%	77%	52	57%	62%	TYPE 4	43%	77%							68%	91
403	0.56	0%	50%	0%	50%	55	22%	44%	54	11%	46%	TYPE 4	67%	77%				66%	89
405	0.82	0%	44%	0%	56%	55	82%	44%	53	18%	71%							49%	85
407	0.88	0%	46%	0%	54%	55	16%	44%	55	23%	44%	52	30%	62%	53	31%	71%	58%	87

PROJECTED CURVE NUMBERS

[illegible]

**MONUMENT CREEK
DRAINAGE BASIN PLANNING STUDY
BASELINE HYDROLOGY
Technical Addendum**

Section V

**HEC-1 Input and Output
100-Year 24-Hour Storm with Hydromet 52 Rainfall Distribution
Existing Condition**

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1,1985
U.S. ARMY CORPS OF ENGINEERS, THE HYDROLOGIC ENGINEERING CENTER, 609 SECOND STREET, DAVIS, CA. 95616

INPUT: MCEX100A
AT: OUT100EX.DOC

THIS HEC-1 VERSION CONTAINS ALL OPTIONS EXCEPT ECONOMICS, AND THE NUMBER OF PLANS ARE REDUCED TO 3

1 HEC-1 INPUT

PAGE 1

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID HEC-1
2 ID MONUMENT CREEK DRAINAGE BASIN
3 ID KICWA ENGINEERING CORPORATION JOB NO. 91.04.11
4 ID HISTORIC HYDROLOGY 100 YEAR, 24 HOUR
5 ID TYPE II STORM DISTRIBUTION WITH HYDROMET 52 DISTRIBUTION AT 311 DEGREES
6 IT 5 0 0 288
7 ID 5

*** 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

* *
* 1766 WX *
* *

1766 WD OUTPUT CONTROL VARIABLES
IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
ISCAL 0 HYDROGRAPH PLOT SCALE

1769 WD HYDROGRAPH COMBINATION
ICOMP 4 NUMBER OF HYDROGRAPHS TO COMBINE

HYDROGRAPH AT STATION 1761P
SUM OF 4 HYDROGRAPHS

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1	0000	1	29	*	1	0600	73	29	*	1	1200	143	7021	*	1	1800	217	3415	
1	0005	2	29	*	1	0605	74	29	*	1	1205	146	8747	*	1	1805	218	3373	
1	0010	3	29	*	1	0610	75	29	*	1	1210	147	8750	*	1	1810	219	3338	
1	0015	4	29	*	1	0615	76	29	*	1	1215	148	8143	*	1	1815	220	3199	
1	0020	5	29	*	1	0620	77	29	*	1	1220	149	11042	*	1	1820	221	3261	
1	0025	6	29	*	1	0625	78	29	*	1	1225	150	12452	*	1	1825	222	3125	
1	0030	7	29	*	1	0630	79	29	*	1	1230	151	15310	*	1	1830	223	3185	
1	0035	8	29	*	1	0635	80	29	*	1	1235	152	17544	*	1	1835	224	3150	
1	0040	9	29	*	1	0640	81	29	*	1	1240	153	19268	*	1	1840	225	3116	
1	0045	10	29	*	1	0645	82	29	*	1	1245	154	20644	*	1	1845	226	3084	
1	0050	11	29	*	1	0650	83	29	*	1	1250	155	21840	*	1	1850	227	3050	

1	0100	13	29.	*	1	0700	85	29.	*	1	1300	157	23710.	*	1	1900	227	2993.
1	0105	14	29.	*	1	0705	86	29.	*	1	1305	158	24031.	*	1	1905	230	2964.
1	0110	15	29.	*	1	0710	87	29.	*	1	1310	159	23733.	*	1	1910	231	2936.
1	0115	16	29.	*	1	0715	88	29.	*	1	1315	160	23081.	*	1	1915	232	2909.
1	0120	17	29.	*	1	0720	89	29.	*	1	1320	161	22117.	*	1	1920	233	2881.
1	0125	18	29.	*	1	0725	90	29.	*	1	1325	162	20978.	*	1	1925	234	2854.
1	0130	19	29.	*	1	0730	91	29.	*	1	1330	163	19742.	*	1	1930	235	2829.
1	0135	20	29.	*	1	0735	92	29.	*	1	1335	164	18535.	*	1	1935	236	2805.
1	0140	21	29.	*	1	0740	93	29.	*	1	1340	165	17350.	*	1	1940	237	2773.
1	0145	22	29.	*	1	0745	94	29.	*	1	1345	166	16244.	*	1	1945	238	2751.
1	0150	23	29.	*	1	0750	95	29.	*	1	1350	167	15228.	*	1	1950	239	2727.
1	0155	24	29.	*	1	0755	96	29.	*	1	1355	168	14292.	*	1	1955	240	2700.
1	0200	25	29.	*	1	0800	97	29.	*	1	1400	169	13420.	*	1	2000	241	2672.
1	0205	26	29.	*	1	0805	98	29.	*	1	1405	170	12594.	*	1	2005	242	2644.
1	0210	27	29.	*	1	0810	99	29.	*	1	1410	171	11834.	*	1	2010	243	2616.
1	0215	28	29.	*	1	0815	100	29.	*	1	1415	172	11079.	*	1	2015	244	2588.
1	0220	29	29.	*	1	0820	101	29.	*	1	1420	173	10343.	*	1	2020	245	2560.
1	0225	30	29.	*	1	0825	102	29.	*	1	1425	174	9692.	*	1	2025	246	2533.
1	0230	31	29.	*	1	0830	103	29.	*	1	1430	175	9157.	*	1	2030	247	2506.
1	0235	32	29.	*	1	0835	104	29.	*	1	1435	176	8708.	*	1	2035	248	2481.
1	0240	33	29.	*	1	0840	105	29.	*	1	1440	177	8305.	*	1	2040	249	2456.
1	0245	34	29.	*	1	0845	106	29.	*	1	1445	178	7931.	*	1	2045	250	2432.
1	0250	35	29.	*	1	0850	107	29.	*	1	1450	179	7581.	*	1	2050	251	2409.
1	0255	36	29.	*	1	0855	108	29.	*	1	1455	180	7250.	*	1	2055	252	2387.
1	0300	37	29.	*	1	0900	109	29.	*	1	1500	181	6945.	*	1	2100	253	2365.
1	0305	38	29.	*	1	0905	110	29.	*	1	1505	182	6675.	*	1	2105	254	2343.
1	0310	39	29.	*	1	0910	111	29.	*	1	1510	183	6442.	*	1	2110	255	2322.
1	0315	40	29.	*	1	0915	112	29.	*	1	1515	184	6215.	*	1	2115	256	2302.
1	0320	41	29.	*	1	0920	113	29.	*	1	1520	185	6008.	*	1	2120	257	2281.
1	0325	42	29.	*	1	0925	114	29.	*	1	1525	186	5816.	*	1	2125	258	2262.
1	0330	43	29.	*	1	0930	115	29.	*	1	1530	187	5639.	*	1	2130	259	2243.
1	0335	44	29.	*	1	0935	116	29.	*	1	1535	188	5475.	*	1	2135	260	2224.
1	0340	45	29.	*	1	0940	117	30.	*	1	1540	189	5323.	*	1	2140	261	2206.
1	0345	46	29.	*	1	0945	118	30.	*	1	1545	190	5182.	*	1	2145	262	2189.
1	0350	47	29.	*	1	0950	119	31.	*	1	1550	191	5053.	*	1	2150	263	2172.
1	0355	48	29.	*	1	0955	120	31.	*	1	1555	192	4933.	*	1	2155	264	2157.
1	0400	49	29.	*	1	1000	121	32.	*	1	1600	193	4823.	*	1	2200	265	2142.
1	0405	50	29.	*	1	1005	122	33.	*	1	1605	194	4721.	*	1	2205	266	2127.
1	0410	51	29.	*	1	1010	123	34.	*	1	1610	195	4628.	*	1	2210	267	2113.
1	0415	52	29.	*	1	1015	124	35.	*	1	1615	196	4540.	*	1	2215	268	2100.
1	0420	53	29.	*	1	1020	125	36.	*	1	1620	197	4459.	*	1	2220	269	2087.
1	0425	54	29.	*	1	1025	126	39.	*	1	1625	198	4385.	*	1	2225	270	2075.
1	0430	55	29.	*	1	1030	127	41.	*	1	1630	199	4314.	*	1	2230	271	2064.
1	0435	56	29.	*	1	1035	128	45.	*	1	1635	200	4245.	*	1	2235	272	2054.
1	0440	57	29.	*	1	1040	129	50.	*	1	1640	201	4177.	*	1	2240	273	2045.
1	0445	58	29.	*	1	1045	130	57.	*	1	1645	202	4111.	*	1	2245	274	2037.
1	0450	59	29.	*	1	1050	131	66.	*	1	1650	203	4048.	*	1	2250	275	2030.
1	0455	60	29.	*	1	1055	132	78.	*	1	1655	204	3988.	*	1	2255	276	2023.
1	0500	61	29.	*	1	1100	133	95.	*	1	1700	205	3931.	*	1	2300	277	2017.
1	0505	62	29.	*	1	1105	134	117.	*	1	1705	206	3877.	*	1	2305	278	2012.
1	0510	63	29.	*	1	1110	135	145.	*	1	1710	207	3825.	*	1	2310	279	2007.
1	0515	64	29.	*	1	1115	136	180.	*	1	1715	208	3776.	*	1	2315	280	2003.
1	0520	65	29.	*	1	1120	137	224.	*	1	1720	209	3730.	*	1	2320	281	1999.
1	0525	66	29.	*	1	1125	138	284.	*	1	1725	210	3687.	*	1	2325	282	1996.
1	0530	67	29.	*	1	1130	139	375.	*	1	1730	211	3646.	*	1	2330	283	1993.
1	0535	68	29.	*	1	1135	140	523.	*	1	1735	212	3608.	*	1	2335	284	1991.
1	0540	69	29.	*	1	1140	141	865.	*	1	1740	213	3571.	*	1	2340	285	1988.
1	0545	70	29.	*	1	1145	142	1579.	*	1	1745	214	3535.	*	1	2345	286	1984.
1	0550	71	29.	*	1	1150	143	3334.	*	1	1750	215	3498.	*	1	2350	287	1978.
1	0555	72	29.	*	1	1155	144	4776.	*	1	1755	216	3459.	*	1	2355	288	1967.
			*					*					*					

PEAK FLOW TIME MAXIMUM AVERAGE FLOW
6-HR 24-HR 72-HR 23,92-HR

ICFS:

+	24031.	13.08	9706.	3108.	3108.	3108.
		(INCHES)	.603	.770	.770	.770
		(AC-FT)	4813.	6143.	6143.	6143.

CUMULATIVE AREA = 149.58 SQ MI

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2634 KK *   DP515 *
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2636 KD      OUTPUT CONTROL VARIABLES
          IPRINT      1  PRINT CONTROL
          IPLBT       0  PLOT CONTROL
          ESCAL       0.  HYDROGRAPH PLOT SCALE

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2637 HD      HYDROGRAPH COMBINATION
          ICOMP       3  NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION DP515 SUM OF 3 HYDROGRAPHS

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1	0000	1	29.	*	1	0600	73	29.	*	1	1200	145	735.	*	1	1800	217	5611.	
1	0005	2	29.	*	1	0605	74	29.	*	1	1205	146	1449.	*	1	1805	218	5541.	
1	0010	3	29.	*	1	0610	75	29.	*	1	1210	147	2945.	*	1	1810	219	5470.	
1	0015	4	29.	*	1	0615	76	29.	*	1	1215	148	4966.	*	1	1815	220	5358.	
1	0020	5	29.	*	1	0620	77	29.	*	1	1220	149	5636.	*	1	1820	221	5329.	
1	0025	6	29.	*	1	0625	78	29.	*	1	1225	150	8376.	*	1	1825	222	5265.	
1	0030	7	29.	*	1	0630	79	29.	*	1	1230	151	10261.	*	1	1830	223	5205.	
1	0035	8	29.	*	1	0635	80	29.	*	1	1235	152	11937.	*	1	1835	224	5146.	
1	0040	9	29.	*	1	0640	81	29.	*	1	1240	153	13656.	*	1	1840	225	5089.	
1	0045	10	29.	*	1	0645	82	29.	*	1	1245	154	15381.	*	1	1845	226	5033.	
1	0050	11	29.	*	1	0650	83	29.	*	1	1250	155	16890.	*	1	1850	227	4976.	
1	0055	12	29.	*	1	0655	84	29.	*	1	1255	156	18180.	*	1	1855	228	4913.	
1	0100	13	29.	*	1	0700	85	29.	*	1	1300	157	19518.	*	1	1900	229	4851.	
1	0105	14	29.	*	1	0705	86	30.	*	1	1305	158	21099.	*	1	1905	230	4795.	
1	0110	15	29.	*	1	0710	87	30.	*	1	1310	159	22851.	*	1	1910	231	4743.	
1	0115	16	29.	*	1	0715	88	30.	*	1	1315	160	24530.	*	1	1915	232	4694.	
1	0120	17	29.	*	1	0720	89	30.	*	1	1320	161	26931.	*	1	1920	233	4648.	
1	0125	18	29.	*	1	0725	90	30.	*	1	1325	162	28970.	*	1	1925	234	4601.	
1	0130	19	29.	*	1	0730	91	30.	*	1	1330	163	27628.	*	1	1930	235	4558.	
1	0135	20	29.	*	1	0735	92	30.	*	1	1335	164	27905.	*	1	1935	236	4516.	
1	0140	21	29.	*	1	0740	93	31.	*	1	1340	165	27814.	*	1	1940	237	4476.	
1	0145	22	29.	*	1	0745	94	31.	*	1	1345	166	27389.	*	1	1945	238	4437.	
1	0150	23	29.	*	1	0750	95	31.	*	1	1350	167	26691.	*	1	1950	239	4398.	
1	0155	24	29.	*	1	0755	96	31.	*	1	1355	168	25794.	*	1	1955	240	4360.	
1	0200	25	29.	*	1	0800	97	31.	*	1	1400	169	24767.	*	1	2000	241	4322.	
1	0205	26	29.	*	1	0805	98	32.	*	1	1405	170	23671.	*	1	2005	242	4284.	
1	0210	27	29.	*	1	0810	99	32.	*	1	1410	171	22654.	*	1	2010	243	4245.	
1	0215	28	29.	*	1	0815	100	32.	*	1	1415	172	21453.	*	1	2015	244	4206.	
1	0220	29	29.	*	1	0820	101	32.	*	1	1420	173	20391.	*	1	2020	245	4168.	

1	0230	31	29.	*	1	0830	103	33.	*	1	1430	176	15434.	*	1	2030	247	4085.
1	0235	32	29.	*	1	0835	104	33.	*	1	1435	176	15539.	*	1	2035	248	4041.
1	0240	33	29.	*	1	0840	105	34.	*	1	1440	177	16696.	*	1	2040	249	3999.
1	0245	34	29.	*	1	0845	106	34.	*	1	1445	178	15898.	*	1	2045	250	3958.
1	0250	35	29.	*	1	0850	107	34.	*	1	1450	179	15143.	*	1	2050	251	3916.
1	0255	36	29.	*	1	0855	108	35.	*	1	1455	180	14427.	*	1	2055	252	3875.
1	0300	37	29.	*	1	0900	109	35.	*	1	1500	181	13731.	*	1	2100	253	3835.
1	0305	38	29.	*	1	0905	110	36.	*	1	1505	182	13121.	*	1	2105	254	3796.
1	0310	39	29.	*	1	0910	111	36.	*	1	1510	183	12538.	*	1	2110	255	3757.
1	0315	40	29.	*	1	0915	112	37.	*	1	1515	184	12005.	*	1	2115	256	3719.
1	0320	41	29.	*	1	0920	113	37.	*	1	1520	185	11521.	*	1	2120	257	3683.
1	0325	42	29.	*	1	0925	114	38.	*	1	1525	186	11081.	*	1	2125	258	3647.
1	0330	43	29.	*	1	0930	115	38.	*	1	1530	187	10678.	*	1	2130	259	3612.
1	0335	44	29.	*	1	0935	116	39.	*	1	1535	188	10307.	*	1	2135	260	3580.
1	0340	45	29.	*	1	0940	117	39.	*	1	1540	189	9962.	*	1	2140	261	3548.
1	0345	46	29.	*	1	0945	118	40.	*	1	1545	190	9639.	*	1	2145	262	3517.
1	0350	47	29.	*	1	0950	119	40.	*	1	1550	191	9339.	*	1	2150	263	3486.
1	0355	48	29.	*	1	0955	120	41.	*	1	1555	192	9065.	*	1	2155	264	3458.
1	0400	49	29.	*	1	1000	121	42.	*	1	1600	193	8791.	*	1	2200	265	3433.
1	0405	50	29.	*	1	1005	122	43.	*	1	1605	194	8546.	*	1	2205	266	3394.
1	0410	51	29.	*	1	1010	123	43.	*	1	1610	195	8316.	*	1	2210	267	3369.
1	0415	52	29.	*	1	1015	124	44.	*	1	1615	196	8103.	*	1	2215	268	3335.
1	0420	53	29.	*	1	1020	125	45.	*	1	1620	197	7905.	*	1	2220	269	3306.
1	0425	54	29.	*	1	1025	126	46.	*	1	1625	198	7720.	*	1	2225	270	3278.
1	0430	55	29.	*	1	1030	127	47.	*	1	1630	199	7547.	*	1	2230	271	3250.
1	0435	56	29.	*	1	1035	128	48.	*	1	1635	200	7386.	*	1	2235	272	3223.
1	0440	57	29.	*	1	1040	129	49.	*	1	1640	201	7234.	*	1	2240	273	3197.
1	0445	58	29.	*	1	1045	130	51.	*	1	1645	202	7092.	*	1	2245	274	3174.
1	0450	59	29.	*	1	1050	131	52.	*	1	1650	203	6959.	*	1	2250	275	3152.
1	0455	60	29.	*	1	1055	132	54.	*	1	1655	204	6833.	*	1	2255	276	3132.
1	0500	61	29.	*	1	1100	133	55.	*	1	1700	205	6714.	*	1	2300	277	3113.
1	0505	62	29.	*	1	1105	134	56.	*	1	1705	206	6601.	*	1	2305	278	3096.
1	0510	63	29.	*	1	1110	135	60.	*	1	1710	207	6494.	*	1	2310	279	3079.
1	0515	64	29.	*	1	1115	136	63.	*	1	1715	208	6392.	*	1	2315	280	3063.
1	0520	65	29.	*	1	1120	137	67.	*	1	1720	209	6294.	*	1	2320	281	3048.
1	0525	66	29.	*	1	1125	138	71.	*	1	1725	210	6201.	*	1	2325	282	3032.
1	0530	67	29.	*	1	1130	139	77.	*	1	1730	211	6112.	*	1	2330	283	3018.
1	0535	68	29.	*	1	1135	140	97.	*	1	1735	212	6028.	*	1	2335	284	3005.
1	0540	69	29.	*	1	1140	141	109.	*	1	1740	213	5942.	*	1	2340	285	2992.
1	0545	70	29.	*	1	1145	142	139.	*	1	1745	214	5862.	*	1	2345	286	2981.
1	0550	71	29.	*	1	1150	143	254.	*	1	1750	215	5784.	*	1	2350	287	2971.
1	0555	72	29.	*	1	1155	144	418.	*	1	1755	216	5694.	*	1	2355	288	2960.

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	23.92-HR
(CFS)	(HR)				
27915.	17.55	13299.	4308.	4708.	4708.
(INCHES)		.518	.669	.669	.669
(40-FT)		6595.	8515.	9515.	9515.

CUMULATIVE AREA = 218.71 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			

+	ROUTED TO	RT01	403.	12.17	86.	26.	26.	.87
+	HYDROGRAPH AT	ICD03	431.	12.25	110.	34.	34.	1.12
+	2 COMBINED AT	DP03	825.	12.17	195.	50.	50.	1.99
+	ROUTED TO	RT03	815.	12.25	195.	50.	50.	1.99
+	HYDROGRAPH AT	ICD05	529.	11.92	105.	32.	32.	1.27
+	2 COMBINED AT	DP05	1257.	12.09	300.	92.	92.	3.05
+	ROUTED TO	RT05	1248.	12.09	300.	91.	91.	3.05
+	HYDROGRAPH AT	ICD07	550.	12.00	115.	35.	35.	1.17
+	2 COMBINED AT	DP07	1375.	12.09	414.	127.	127.	4.12
+	ROUTED TO	RT07	1315.	12.09	415.	125.	125.	4.22
+	HYDROGRAPH AT	ICD09	626.	11.83	91.	28.	28.	1.05
+	2 COMBINED AT	DP09	2179.	12.09	505.	154.	154.	5.27
-	ROUTED TO	RT09	2165.	12.09	505.	154.	154.	5.27
+	HYDROGRAPH AT	NMC13	459.	12.08	94.	29.	29.	.89
+	HYDROGRAPH AT	NMC15	482.	12.00	91.	29.	29.	.84
+	2 COMBINED AT	DP15	915.	12.00	185.	56.	56.	1.71
+	ROUTED TO	RT15	915.	12.08	188.	57.	57.	1.71
+	HYDROGRAPH AT	NMC17	701.	12.00	131.	40.	40.	1.21
+	2 COMBINED AT	DP17	1569.	12.08	317.	97.	97.	2.92
+	ROUTED TO	RT17	1548.	12.17	315.	96.	96.	2.90
+	HYDROGRAPH AT	NMC19	558.	11.92	86.	26.	26.	.88
	ROUTED TO							

+	HYDROGRAPH AT	NMC21	511.	12.00	92.	28.	28.	.85
+	ROUTED TO	RT21	489.	12.08	92.	28.	28.	.85
+	HYDROGRAPH AT	NMC23	906.	11.92	139.	42.	42.	1.25
+	4 COMBINED AT	DF23	3674.	12.08	632.	193.	193.	5.92
+	ROUTED TO	RT23	3673.	12.08	637.	194.	194.	5.92
+	HYDROGRAPH AT	NMC25	651.	11.92	98.	30.	30.	.79
-	HYDROGRAPH AT	NMC27	620.	12.08	122.	37.	37.	1.24
+	3 COMBINED AT	DF25	4099.	12.08	837.	261.	261.	8.16
+	ROUTED TO	RT25	4103.	12.25	873.	261.	261.	8.16
+	HYDROGRAPH AT	NMC29	395.	11.93	55.	18.	18.	.59
+	2 COMBINED AT	DF29	4243.	12.25	923.	279.	279.	8.75
+	ROUTED TO	RT29	4239.	12.25	923.	279.	279.	8.75
+	HYDROGRAPH AT	MC11	489.	12.08	103.	31.	31.	1.19
-	3 COMBINED AT	DF11	6655.	12.17	1329.	464.	464.	13.21
+	ROUTED TO	RT11	6650.	12.25	1329.	464.	464.	13.21
-	HYDROGRAPH AT	MC33	697.	12.08	152.	46.	46.	1.40
+	HYDROGRAPH AT	MC35	745.	11.92	53.	17.	17.	.48
+	2 COMBINED AT	DF35	970.	12.00	206.	63.	63.	1.64
+	ROUTED TO	RT35	959.	12.08	206.	63.	63.	1.66
+	HYDROGRAPH AT	MC37	625.	12.00	112.	34.	34.	1.04
+	HYDROGRAPH AT	MC39	284.	11.92	49.	15.	15.	.41
	3 COMBINED AT							

+	ROUTED TO	RT39	1796.	12.08	367.	112.	112.	3.31
+	HYDROGRAPH AT	MC41	658.	12.00	117.	35.	35.	1.08
+	2 COMBINED AT	BP41	2397.	12.08	484.	148.	148.	4.39
+	ROUTED TO	RT41	2366.	12.08	485.	148.	148.	4.39
+	HYDROGRAPH AT	MC43	912.	11.92	149.	46.	46.	1.38
+	2 COMBINED AT	BP43	3091.	12.08	633.	193.	193.	5.77
+	ROUTED TO	RT43	3031.	12.08	635.	193.	193.	5.77
+	HYDROGRAPH AT	MC45	544.	11.92	24.	26.	26.	.84
+	2 COMBINED AT	BP45	3419.	12.08	712.	219.	219.	6.63
+	ROUTED TO	RT45	3389.	12.17	721.	219.	219.	6.63
+	HYDROGRAPH AT	MC31	443.	11.92	70.	22.	22.	.69
+	HYDROGRAPH AT	MC47	205.	11.83	31.	10.	10.	.68
+	4 COMBINED AT	BP47	10180.	12.25	2348.	714.	714.	23.21
+	ROUTED TO	RT47	10088.	12.25	2349.	713.	713.	23.21
+	HYDROGRAPH AT	PL49	31.	11.83	7.	2.	2.	.31
+	2 COMBINED AT	BP49	10102.	12.25	2335.	713.	713.	23.22
+	ROUTED TO	RT49	10036.	12.25	2335.	713.	713.	23.22
+	HYDROGRAPH AT	RM51	216.	11.83	32.	11.	11.	.98
+	2 COMBINED AT	BP51	10297.	12.25	2337.	723.	723.	24.30
+	ROUTED TO	RT51	10008.	12.53	2337.	723.	723.	24.30
+	HYDROGRAPH AT	PL53	88.	11.92	20.	7.	7.	.95
+	2 COMBINED AT							

+	ROUTED TO	RT53	9982.	12.33	2406.	729.	729.	25.45
+	HYDROGRAPH AT	RM55	169.	11.92	35.	11.	11.	1.07
+	2 COMBINED AT	DP55	10061.	12.33	2441.	741.	741.	26.52
-	ROUTED TO	RT55	9954.	12.33	2441.	740.	740.	26.52
+	HYDROGRAPH AT	PL57	176.	12.17	30.	16.	16.	1.43
+	2 COMBINED AT	DP57	10100.	12.33	2492.	756.	756.	28.00
+	ROUTED TO	RT57	10065.	12.42	2499.	750.	750.	28.00
+	HYDROGRAPH AT	RM59	28.	12.17	9.	3.	3.	.37
+	HYDROGRAPH AT	PL61	59.	12.25	21.	7.	7.	.81
+	HYDROGRAPH AT	PL63	151.	12.25	43.	14.	14.	.99
-	4 COMBINED AT	DP59	10284.	12.42	2582.	773.	773.	30.27
+	ROUTED TO	RT59	10154.	12.42	2550.	772.	772.	30.27
+	HYDROGRAPH AT	DWC79	71.	12.00	16.	5.	5.	.50
+	ROUTED TO	RT79	66.	12.17	15.	5.	5.	.50
+	HYDROGRAPH AT	DWC81	47.	12.50	16.	6.	6.	.66
+	2 COMBINED AT	DP81	102.	12.25	34.	11.	11.	1.15
+	ROUTED TO	RT81	101.	12.25	34.	11.	11.	1.15
+	HYDROGRAPH AT	DWC83	50.	12.33	17.	6.	6.	.61
+	HYDROGRAPH AT	DWC85	26.	12.33	9.	3.	3.	.35
-	HYDROGRAPH AT	DWC87	39.	12.42	15.	5.	5.	.66
+	HYDROGRAPH AT	DWC89	29.	12.33	10.	4.	4.	.45
	4 COMBINED AT							

+	ROUTED TO	RT89	141.	12.50	51.	17.	17.	2.08
+	HYDROGRAPH AT	DWC91	86.	12.25	26.	9.	9.	.78
+	3 COMBINED AT	BP91	312.	12.42	110.	37.	37.	4.02
+	ROUTED TO	RT91	310.	12.42	110.	37.	37.	4.02
+	HYDROGRAPH AT	DWC92	86.	12.30	23.	6.	6.	.82
+	2 COMBINED AT	BP93	188.	12.41	128.	43.	43.	4.34
+	ROUTED TO	RT93	187.	12.38	127.	42.	42.	4.34
+	HYDROGRAPH AT	DWC95	190.	11.98	43.	13.	13.	.68
+	3 COMBINED AT	BP95	10606.	12.41	2716.	828.	828.	35.47
+	ROUTED TO	RT95	10575.	12.30	2721.	827.	827.	35.47
+	HYDROGRAPH AT	W293	88.	12.00	14.	5.	5.	.53
+	2 COMBINED AT	BP93	10607.	12.30	2724.	831.	831.	35.00
+	ROUTED TO	RT93	10593.	12.30	2734.	831.	831.	35.00
+	HYDROGRAPH AT	W295	150.	12.00	38.	12.	12.	.78
+	ROUTED TO	RT95	158.	12.17	57.	11.	11.	.78
+	HYDROGRAPH AT	W287	218.	12.08	46.	13.	13.	.72
+	HYDROGRAPH AT	W271	158.	11.92	50.	11.	11.	.75
+	ROUTED TO	RT91	164.	12.00	53.	11.	11.	.78
+	HYDROGRAPH AT	W269	153.	12.08	53.	11.	11.	.72
+	ROUTED TO	RT69	158.	12.07	53.	11.	11.	.72
+	5 COMBINED AT	BP67	10982.	12.50	2873.	879.	879.	37.18
+	ROUTED TO							

+	HYDROGRAPH AT	HR75	45.	12.00	10.	3.	3.	.32
+	2 COMBINED AT	DP75	10949.	12.50	2882.	882.	882.	39.49
+	ROUTED TO	RT75	10940.	12.58	2882.	878.	878.	39.49
+	HYDROGRAPH AT	HR77	55.	11.90	8.	3.	3.	.24
+	HYDROGRAPH AT	DP97	69.	11.70	14.	4.	4.	.28
+	HYDROGRAPH AT	TC99	87.	12.18	17.	5.	5.	.47
+	ROUTED TO	RT99	89.	12.08	17.	5.	5.	.47
+	HYDROGRAPH AT	TD101	98.	11.90	22.	7.	7.	.74
+	2 COMBINED AT	DP101	155.	12.08	28.	13.	13.	1.21
+	ROUTED TO	RT101	154.	12.08	28.	13.	13.	1.21
+	HYDROGRAPH AT	TD103	25.	11.28	7.	2.	2.	.21
+	2 COMBINED AT	DP103	177.	12.08	43.	15.	15.	1.42
+	ROUTED TO	RT103	169.	12.28	43.	15.	15.	1.42
+	HYDROGRAPH AT	TD105	127.	12.18	34.	12.	12.	.87
+	2 COMBINED AT	DP97	11183.	12.50	2978.	911.	911.	42.21
-	ROUTED TO	RT97	11121.	12.57.	2988.	911.	911.	42.21
+	HYDROGRAPH AT	TD107	53.	12.48	14.	5.	5.	.44
-	2 COMBINED AT	DP107	11048.	12.57	2999.	913.	913.	42.68
+	ROUTED TO	RT107	11038.	12.57	2998.	913.	913.	42.68
+	HYDROGRAPH AT	EB109	894.	12.50	174.	41.	41.	1.24
+	ROUTED TO	RT109	884.	12.47	174.	41.	41.	1.24
	HYDROGRAPH AT							

+	HYDROGRAPH AT	EG113	475.	12.08	105.	32.	32.	.98
+	ROUTED TO	RT113	474.	12.17	105.	32.	32.	.98
+	HYDROGRAPH AT	EG115	430.	12.08	91.	28.	28.	.85
+	4 COMBINED AT	DP111	2012.	12.08	416.	128.	128.	3.81
+	ROUTED TO	RT111	1988.	12.17	410.	128.	128.	3.81
+	HYDROGRAPH AT	EG117	317.	12.00	86.	17.	17.	.47
+	HYDROGRAPH AT	EGC119	372.	12.42	117.	37.	37.	1.83
+	ROUTED TO	RT119	371.	12.50	117.	36.	36.	1.83
+	HYDROGRAPH AT	EGC121	551.	12.08	120.	37.	37.	1.11
+	2 COMBINED AT	DP121	521.	12.25	235.	73.	73.	2.94
+	ROUTED TO	RT121	514.	12.25	235.	73.	73.	2.94
+	HYDROGRAPH AT	EGC123	438.	12.08	98.	30.	30.	.90
+	2 COMBINED AT	DP123	1227.	12.25	333.	103.	103.	3.55
+	ROUTED TO	RT123	1214.	12.25	332.	102.	102.	3.55
+	HYDROGRAPH AT	EGC125	222.	12.17	50.	15.	15.	.45
+	HYDROGRAPH AT	EGC127	394.	12.00	75.	23.	23.	.69
+	3 COMBINED AT	DP127	1711.	12.25	455.	140.	140.	5.00
+	ROUTED TO	RT127	1707.	12.25	457.	140.	140.	5.00
+	HYDROGRAPH AT	EGC129	403.	12.17	92.	28.	28.	.85
+	4 COMBINED AT	DP117	4234.	12.17	1024.	313.	313.	10.13
+	ROUTED TO	RT117	4195.	12.17	1024.	313.	313.	10.13
+	HYDROGRAPH AT							

+	2 COMBINED AT	BP131	4553.	12.17	1105.	338.	338.	10.82
+	ROUTED TO	RT131	4502.	12.25	1105.	338.	338.	10.82
+	HYDROGRAPH AT	9BC133	546.	11.92	35.	26.	26.	.72
+	2 COMBINED AT	BP135	4757.	12.17	1190.	364.	364.	11.55
+	ROUTED TO	RT135	4768.	12.25	1190.	364.	364.	11.55
+	HYDROGRAPH AT	9BC135	656.	11.92	101.	31.	31.	.85
+	HYDROGRAPH AT	9BC137	904.	11.93	122.	38.	38.	1.03
+	ROUTED TO	RT137	844.	11.92	122.	37.	37.	1.03
+	HYDROGRAPH AT	9BC139	915.	12.00	164.	50.	50.	1.24
+	4 COMBINED AT	BP135	4220.	12.17	1574.	482.	482.	14.67
+	ROUTED TO	RT135	4214.	12.17	1574.	481.	481.	14.67
+	HYDROGRAPH AT	9BC141	920.	11.93	120.	37.	37.	.91
+	2 COMBINED AT	BP141	4591.	12.17	1692.	518.	518.	15.58
+	ROUTED TO	RT141	4583.	12.17	1693.	517.	517.	15.58
+	HYDROGRAPH AT	9BC143	536.	11.92	86.	27.	27.	1.25
+	HYDROGRAPH AT	HLB145	530.	11.92	95.	29.	29.	.38
+	2 COMBINED AT	BP143	7127.	12.17	1870.	573.	573.	17.41
+	ROUTED TO	RT143	7122.	12.17	1870.	573.	573.	17.41
+	HYDROGRAPH AT	9BC147	863.	12.00	153.	47.	47.	1.29
+	ROUTED TO	RT147	858.	12.00	153.	47.	47.	1.29
+	HYDROGRAPH AT	NBC149	466.	11.92	73.	22.	22.	.62

	ROUTED TO						
+		RT149	1275.	12.00	226.	69.	69.
							1.90
	HYDROGRAPH AT						
+		NBC151	574.	11.83	83.	26.	26.
							.77
	2 COMBINED AT						
+		DP151	1751.	11.92	309.	95.	95.
							2.57
	ROUTED TO						
+		RT151	1738.	12.00	310.	94.	94.
							2.57
	HYDROGRAPH AT						
+		NBC153	409.	11.92	71.	22.	22.
							1.04
	3 COMBINED AT						
+		DP153	9022.	12.08	2251.	690.	690.
							21.12
	ROUTED TO						
+		RT153	8736.	12.17	2242.	681.	681.
							21.12
	HYDROGRAPH AT						
+		BC155	146.	12.08	35.	13.	13.
							1.63
	HYDROGRAPH AT						
+		HYD157	550.	11.92	85.	26.	26.
							.72
	ROUTED TO						
+		RT157	814.	12.00	55.	26.	26.
							.72
	HYDROGRAPH AT						
+		HYD159	475.	12.00	84.	26.	26.
							.64
	2 COMBINED AT						
+		DP159	592.	12.00	159.	52.	52.
							1.35
	ROUTED TO						
+		RT159	963.	12.08	165.	52.	52.
							1.35
	HYDROGRAPH AT						
+		HYD161	473.	11.92	72.	22.	22.
							.73
	2 COMBINED AT						
+		DP161	1344.	12.00	241.	74.	74.
							2.08
	ROUTED TO						
+		RT161	1307.	12.08	241.	73.	73.
							2.08
	HYDROGRAPH AT						
+		HYD163	179.	11.92	33.	11.	11.
							.73
	2 COMBINED AT						
+		DP163	1435.	12.08	273.	84.	84.
							2.81
	ROUTED TO						
+		RT163	1412.	12.08	273.	84.	84.
							2.81
	HYDROGRAPH AT						
+		HYD165	67.	12.08	16.	5.	5.
							.44
	4 COMBINED AT						
+		DP165	10333.	12.17	2571.	783.	783.
							25.41
	ROUTED TO						

+	HYDROGRAPH AT	BC169	113.	12.17	31.	10.	10.	.77
+	HYDROGRAPH AT	HVC167	116.	12.00	26.	9.	9.	.60
+	4 COMBINED AT	DP167	18248.	12.58	5588.	1717.	1717.	88.43
+	ROUTED TO	RT167	18150.	12.57	5562.	1709.	1709.	88.43
+	HYDROGRAPH AT	BC170	127.	11.72	28.	9.	9.	1.01
+	ROUTED TO	RT173	118.	12.30	29.	9.	9.	1.01
+	HYDROGRAPH AT	BC175	161.	12.00	37.	12.	12.	1.16
+	2 COMBINED AT	CP173	277.	12.00	63.	21.	21.	2.17
+	ROUTED TO	RT173	253.	12.57	62.	21.	21.	2.17
+	HYDROGRAPH AT	BC177	146.	12.17	44.	15.	15.	1.40
+	2 COMBINED AT	CP177	400.	12.17	108.	35.	35.	3.57
+	ROUTED TO	RT177	391.	12.25	105.	35.	35.	3.57
+	HYDROGRAPH AT	BC179	77.	12.17	23.	9.	9.	.73
+	2 COMBINED AT	CP179	466.	12.23	123.	43.	43.	4.30
+	ROUTED TO	RT179	466.	12.33	123.	43.	43.	4.30
+	HYDROGRAPH AT	BC181	21.	12.17	5.	2.	2.	.12
+	HYDROGRAPH AT	BC180	70.	12.33	24.	8.	8.	.63
+	4 COMBINED AT	DP181	18545.	12.57	5720.	1781.	1781.	74.34
+	ROUTED TO	RT181	18514.	12.57	5720.	1780.	1780.	74.34
+	HYDROGRAPH AT	BC171	61.	12.10	13.	4.	4.	.39
+	HYDROGRAPH AT	BC182	42.	12.00	9.	3.	3.	.24
+	3 COMBINED AT							

+	ROUTED TO	RT171	18507.	12.67	5740.	1765.	1765.	75.17
+	HYDROGRAPH AT	JV183	261.	12.08	60.	19.	19.	1.15
+	HYDROGRAPH AT	JV185	200.	11.92	37.	12.	12.	.71
+	2 COMBINED AT	DP185	439.	12.00	96.	31.	31.	1.36
+	ROUTED TO	RT185	391.	12.17	94.	30.	30.	1.96
+	HYDROGRAPH AT	JV187	148.	12.33	40.	16.	16.	1.09
+	3 COMBINED AT	DP187	16873.	12.67	5881.	1811.	1811.	78.12
+	ROUTED TO	RT187	18772.	12.67	5878.	1809.	1809.	78.12
+	HYDROGRAPH AT	BF191	93.	12.08	22.	7.	7.	.37
+	ROUTED TO	RT191	91.	12.17	22.	7.	7.	.37
+	HYDROGRAPH AT	BF193	180.	12.00	37.	12.	12.	.83
+	2 COMBINED AT	DP193	256.	12.08	59.	19.	19.	1.40
+	ROUTED TO	RT193	254.	12.08	59.	19.	19.	1.40
+	HYDROGRAPH AT	BF195	162.	12.00	32.	10.	10.	.60
+	2 COMBINED AT	DP195	403.	12.08	91.	29.	29.	1.00
+	ROUTED TO	RT195	394.	12.17	90.	29.	29.	2.00
+	HYDROGRAPH AT	BF197	85.	12.25	24.	8.	8.	.31
+	3 COMBINED AT	DP197	18008.	12.67	5990.	1846.	1846.	80.64
+	ROUTED TO	RT197	18928.	12.75	5999.	1843.	1843.	80.64
+	HYDROGRAPH AT	BF199	185.	11.92	31.	10.	10.	.62
+	2 COMBINED AT	DP199	18967.	12.75	6023.	1853.	1853.	81.28
	ROUTED TO							

+	HYDROGRAPH AT	BF200	140.	12.50	47.	15.	15.	.76
+	2 COMBINED AT	DF200	18953.	12.75	6068.	1863.	1863.	82.02
+	ROUTED TO	RT200	18943.	12.83	6065.	1862.	1862.	82.02
+	HYDROGRAPH AT	BC215	59.	12.17	27.	9.	9.	1.03
+	HYDROGRAPH AT	BC217	70.	12.17	12.	7.	7.	.83
+	2 COMBINED AT	DF217	159.	12.17	49.	16.	16.	1.83
+	ROUTED TO	RT217	157.	12.25	49.	16.	16.	1.86
+	HYDROGRAPH AT	BC218	142.	12.17	37.	12.	12.	.88
+	HYDROGRAPH AT	BC219	72.	12.17	19.	6.	6.	.56
+	3 COMBINED AT	DF219	367.	12.17	104.	35.	35.	3.23
+	ROUTED TO	RT219	357.	12.33	104.	34.	34.	3.25
+	HYDROGRAPH AT	BC221	111.	12.33	35.	12.	12.	.93
+	1 COMBINED AT	DF221	468.	12.33	139.	46.	46.	4.20
+	ROUTED TO	RT221	442.	12.50	138.	45.	45.	4.21
+	HYDROGRAPH AT	BC223	119.	12.35	35.	11.	11.	.59
+	2 COMBINED AT	DF223	549.	12.42	171.	57.	57.	5.07
+	ROUTED TO	RT223	547.	12.50	172.	57.	57.	5.07
+	HYDROGRAPH AT	BC225	38.	12.35	12.	4.	4.	.37
+	3 COMBINED AT	DF225	19396.	12.75	6250.	1923.	1923.	87.47
+	ROUTED TO	RT225	19359.	12.83	6247.	1921.	1921.	87.47
+	HYDROGRAPH AT	BC2201	919.	11.92	147.	45.	45.	1.13
+	ROUTED TO							

+	HYDROGRAPH AT	DMC203	467.	11.92	72.	22.	22.	.77
+	2 COMBINED AT	DP203	1315.	11.92	219.	67.	67.	1.93
+	ROUTED TO	RT203	1301.	12.00	219.	67.	67.	1.93
+	HYDROGRAPH AT	DMC205	600.	11.92	99.	31.	31.	1.19
+	HYDROGRAPH AT	DMC206	283.	12.00	59.	18.	18.	.71
+	3 COMBINED AT	DP205	2135.	12.00	376.	116.	116.	3.93
+	ROUTED TO	RT205	2108.	12.08	380.	116.	116.	3.93
+	HYDROGRAPH AT	DMC207	203.	12.00	43.	14.	14.	.81
+	2 COMBINED AT	DP207	2311.	12.08	425.	130.	130.	4.64
+	ROUTED TO	RT207	2276.	12.08	425.	130.	130.	4.64
+	HYDROGRAPH AT	DMC209	96.	12.00	23.	7.	7.	.56
+	HYDROGRAPH AT	IV189	224.	11.92	43.	15.	15.	1.10
+	4 COMBINED AT	DP189	20110.	12.83	6666.	2074.	2074.	93.76
+	ROUTED TO	RT189	20024.	12.83	6680.	2068.	2068.	93.76
+	HYDROGRAPH AT	DMC211	215.	12.42	72.	24.	24.	1.54
+	HYDROGRAPH AT	MB225	179.	12.17	43.	15.	15.	.95
+	ROUTED TO	RT225	177.	12.25	43.	15.	15.	.95
+	HYDROGRAPH AT	MB227	144.	11.92	24.	8.	8.	.43
+	2 COMBINED AT	DP227	258.	12.08	69.	22.	22.	1.38
+	ROUTED TO	RT227	250.	12.25	69.	22.	22.	1.38
+	HYDROGRAPH AT	MB228	89.	11.92	16.	5.	5.	.24
	HYDROGRAPH AT							

+	ROUTED TO	RT228	94.	12.33	24.	8.	8.	.44
+	HYDROGRAPH AT	MB230	95.	12.17	25.	9.	3.	.45
+	4 COMBINED AT	DP230	483.	12.25	133.	42.	42.	2.52
+	ROUTED TO	RT230	482.	12.25	133.	42.	42.	2.52
+	HYDROGRAPH AT	MB231	317.	12.08	59.	22.	22.	1.07
+	HYDROGRAPH AT	MB232	111.	11.92	19.	5.	5.	.25
+	3 COMBINED AT	DP211	20575.	12.83	5751.	2181.	2181.	99.16
+	ROUTED TO	RT211	20526.	12.82	5752.	2157.	2157.	99.16
+	HYDROGRAPH AT	LR203	755.	12.08	153.	47.	47.	1.22
+	ROUTED TO	RT203	744.	12.08	153.	47.	47.	1.22
+	HYDROGRAPH AT	LR207	515.	11.92	129.	39.	39.	.97
+	HYDROGRAPH AT	LR209	359.	11.83	47.	15.	15.	.72
+	ROUTED TO	RT209	352.	11.92	47.	15.	15.	.72
+	3 COMBINED AT	DP237	1700.	12.00	328.	101.	101.	2.81
+	ROUTED TO	RT237	1648.	12.00	328.	100.	100.	2.81
+	HYDROGRAPH AT	LR241	227.	12.17	57.	18.	18.	1.11
+	2 COMBINED AT	DP241	1874.	12.06	354.	119.	119.	4.03
+	ROUTED TO	RT241	1850.	12.13	326.	118.	118.	4.03
+	HYDROGRAPH AT	LR243	234.	12.00	52.	16.	16.	.71
+	HYDROGRAPH AT	RT253	341.	12.17	57.	28.	28.	1.47
+	4 COMBINED AT	DP243	21308.	12.92	7433.	2320.	2320.	105.37
	ROUTED TO							

+	HYDROGRAPH AT	BSC246	179.	11.92	33.	11.	11.	1.92
+	ROUTED TO	RT246	167.	12.00	33.	11.	11.	1.92
+	HYDROGRAPH AT	BSC247	70.	12.00	17.	6.	6.	.53
+	HYDROGRAPH AT	BSC248	173.	12.25	52.	17.	17.	1.52
+	3 COMBINED AT	DP248	343.	12.08	101.	34.	34.	3.17
+	ROUTED TO	RT248	351.	12.08	102.	34.	34.	3.17
+	HYDROGRAPH AT	BSC249	81.	12.00	17.	5.	5.	.39
+	HYDROGRAPH AT	BSC250	257.	12.17	84.	28.	28.	3.36
+	ROUTED TO	RT250	259.	12.33	83.	28.	28.	3.36
+	HYDROGRAPH AT	BSC251	199.	12.00	46.	15.	15.	1.23
+	4 COMBINED AT	DP251	817.	12.17	246.	82.	82.	8.17
+	ROUTED TO	RT251	789.	12.25	245.	81.	81.	8.17
+	HYDROGRAPH AT	BSC252	241.	12.00	50.	16.	16.	.95
+	2 COMBINED AT	DP252	940.	12.25	292.	97.	97.	9.13
+	ROUTED TO	RT252	722.	13.00	278.	92.	92.	9.13
+	HYDROGRAPH AT	BSC253	389.	11.92	45.	20.	20.	.88
+	2 COMBINED AT	DP253	787.	13.00	326.	112.	112.	10.01
+	ROUTED TO	RT253	815.	14.17	310.	102.	102.	10.01
+	HYDROGRAPH AT	BSC254	350.	12.17	85.	26.	26.	1.05
+	3 COMBINED AT	DP254	21437.	12.92	7759.	2444.	2444.	116.47
+	ROUTED TO	RT254	21385.	13.00	7793.	2434.	2434.	116.47
+	HYDROGRAPH AT							

+	HYDROGRAPH AT	DV261	240.	12.00	46.	14.	14.	.59
+	ROUTED TO	RT261	229.	12.17	46.	14.	14.	.39
+	HYDROGRAPH AT	DV263	304.	12.42	55.	30.	30.	1.32
+	HYDROGRAPH AT	DV267	246.	12.00	48.	15.	15.	.44
+	3 COMBINED AT	DP263	699.	12.17	186.	59.	59.	2.37
+	ROUTED TO	RT263	688.	12.15	188.	58.	58.	2.35
+	HYDROGRAPH AT	DV265	170.	12.00	33.	15.	19.	1.03
+	4 COMBINED AT	DP245	21301.	13.00	8033.	2519.	2519.	120.15
+	ROUTED TO	RT245	21773.	13.00	8032.	1515.	2513.	120.15
+	HYDROGRAPH AT	ELK255	62.	12.87	31.	11.	11.	1.33
+	1 COMBINED AT	DP255	21872.	13.00	5057.	1525.	1526.	121.45
+	ROUTED TO	RT255	21723.	13.00	5058.	1522.	1522.	121.45
+	HYDROGRAPH AT	ELK257	1.	23.55	1.	0.	0.	.81
+	ROUTED TO	RT257	1.	23.52	0.	0.	0.	.81
+	HYDROGRAPH AT	ELK259	3.	14.33	1.	1.	1.	.80
+	HYDROGRAPH AT	DV269	183.	12.00	38.	12.	12.	.73
+	4 COMBINED AT	DP259	21771.	13.00	8088.	1535.	2533.	123.62
+	ROUTED TO	RT259	21740.	13.08	8062.	2514.	2514.	123.62
+	HYDROGRAPH AT	DV271	326.	12.00	69.	22.	22.	1.43
+	2 COMBINED AT	DP349	21815.	13.08	8110.	2536.	2536.	124.70
+	ROUTED TO	RT349	21684.	13.08	8115.	2533.	2533.	124.70
	HYDROGRAPH AT							

+	HYDROGRAPH AT	WMC275	314.	12.25	55.	17.	17.	.82		
+	HYDROGRAPH AT	WMC277	359.	12.00	65.	20.	20.	.83		
+	HYDROGRAPH AT	WMC279	337.	11.83	49.	15.	15.	.49		
+	HYDROGRAPH AT	WMC281	385.	11.92	48.	15.	15.	.49		
-	HYDROGRAPH AT	WMC283	518.	12.50	157.	69.	69.	.92		
+	HYDROGRAPH AT	WMC285	904.	11.83	132.	41.	41.	1.22		
+	7 COMBINED AT	DP283	2362.	11.92	566.	185.	185.	5.56		
-	ROUTED TO	RT283	29.	.08	29.	29.	29.	5.56	3999.10	23.92
+	ROUTED TO	RT283	29.	.08	29.	29.	29.	5.56.		
+	HYDROGRAPH AT	WMC287	372.	11.92	60.	18.	18.	.69		
+	ROUTED TO	RT287	366.	12.00	60.	18.	18.	.69		
+	HYDROGRAPH AT	WMC289	533.	12.00	95.	29.	29.	.96		
+	HYDROGRAPH AT	WMC290	327.	12.00	62.	19.	19.	.57		
+	HYDROGRAPH AT	WMC293	743.	12.00	134.	41.	41.	1.36		
+	8 COMBINED AT	DP295	1938.	12.00	379.	136.	136.	9.14		
+	ROUTED TO	RT295	1743.	12.00	379.	136.	136.	9.14		
+	HYDROGRAPH AT	WMC293	634.	11.92	109.	33.	33.	1.00		
+	2 COMBINED AT	DP293	2573.	12.00	488.	169.	169.	10.14		
-	ROUTED TO	RT293	2328.	12.08	489.	170.	170.	10.14		
+	HYDROGRAPH AT	WMC299	661.	11.83	83.	26.	26.	.77		
+	HYDROGRAPH AT	WMC301	513.	12.00	92.	28.	28.	.73		

ROUTED TO	RT301	3230.	12.00	664.	223.	223.	11.34
HYDROGRAPH AT	WMC303	888.	11.83	129.	40.	40.	1.19
HYDROGRAPH AT	WMC309	812.	11.92	124.	38.	38.	1.14
3 COMBINED AT	DP309	4637.	12.00	916.	301.	301.	14.18
ROUTED TO	RT309	4623.	12.00	916.	300.	300.	14.18
HYDROGRAPH AT	WMC292	852.	12.00	181.	49.	49.	1.36
ROUTED TO	RT291	851.	12.08	182.	49.	49.	1.36
HYDROGRAPH AT	WMC197	847.	12.08	133.	41.	41.	1.12
2 COMBINED AT	DP297	1498.	12.08	295.	90.	90.	2.47
ROUTED TO	RT297	1469.	12.17	294.	90.	90.	2.47
HYDROGRAPH AT	WMC305	833.	11.92	98.	30.	30.	1.12
HYDROGRAPH AT	WMC307	734.	11.93	107.	33.	33.	1.09
HYDROGRAPH AT	WMC310	600.	11.83	98.	30.	30.	.92
5 COMBINED AT	DP310	7428.	12.00	1313.	463.	463.	16.89
ROUTED TO	RT310	7309.	12.00	1314.	462.	462.	16.89
HYDROGRAPH AT	WMC311	287.	11.93	39.	12.	12.	.74
HYDROGRAPH AT	WMC313	73.	11.91	18.	6.	6.	.41
7 COMBINED AT	DP313	7848.	12.00	1870.	500.	500.	20.65
ROUTED TO	RT313	7497.	12.08	1871.	500.	500.	20.65
HYDROGRAPH AT	WMC315	699.	11.92	138.	42.	42.	1.09
2 COMBINED AT	DP315	8105.	12.08	1703.	542.	542.	21.93

+		A 318	8.88,	11.08	1.03,	84.1,	84.1,	11.88
		HYDROGRAPH AT						
+		WMC317	225,	12.08	53,	17,	17,	1.20
		2 COMBINED AT						
+		DP317	8291,	12.08	1755,	538,	538,	23.12
		ROUTED TO						
+		RT317	8209,	12.27	1788,	559,	559,	23.12
		HYDROGRAPH AT						
+		WMC319	12,	12.28	19,	8,	8,	1.81
		HYDROGRAPH AT						
+		WMC319	12,	12.58	30,	10,	10,	1.23
		4 COMBINED AT						
+		DP319	24001,	13.08	9704,	3108,	3108,	149.58
		ROUTED TO						
+		RT319	24010,	13.08	9704,	3107,	3107,	149.58
		HYDROGRAPH AT						
+		WMC323	157,	12.17	47,	16,	16,	1.67
		ROUTED TO						
+		RT323	158,	12.33	47,	16,	16,	1.67
		HYDROGRAPH AT						
+		WMC321	72,	12.33	27,	9,	9,	1.31
		HYDROGRAPH AT						
+		WMC327	42,	12.33	17,	6,	6,	1.84
		3 COMBINED AT						
+		DP327	272,	12.33	90,	31,	31,	3.82
		ROUTED TO						
+		RT327	263,	12.42	90,	30,	30,	3.82
		HYDROGRAPH AT						
+		WMC321	61,	12.42	21,	7,	7,	1.65
		HYDROGRAPH AT						
+		WMC328	81,	12.58	23,	8,	8,	1.18
		ROUTED TO						
+		RT328	80,	12.83	31,	9,	9,	1.13
		HYDROGRAPH AT						
+		WMC333	113,	12.50	43,	14,	14,	1.38
		4 COMBINED AT						
+		DP331	470,	12.50	175,	59,	59,	8.99
		ROUTED TO						
+		RT331	470,	12.58	176,	59,	59,	8.99
		HYDROGRAPH AT						
+		WMC329	74,	12.50	29,	10,	10,	1.14
		2 COMBINED AT						
+		DP329	543,	12.58	208,	69,	69,	8.12

+		RT325	842.	12.58	208.	88.	88.	8.12	
	HYDROGRAPH AT								
+		KD337	104.	12.25	33.	11.	11.	1.85	
	2 COMBINED AT								
+		DP337	624.	12.58	237.	80.	80.	9.17	
	ROUTED TO								
+		RT337	610.	12.75	205.	79.	79.	9.17	
	HYDROGRAPH AT								
+		KD338	155.	12.67	68.	23.	23.	2.93	
	HYDROGRAPH AT								
+		KD339	138.	12.08	35.	11.	11.	.90	
	3 COMBINED AT								
+		DP339	842.	12.67	333.	113.	113.	12.13	
	ROUTED TO								
+		RT339	800.	12.92	329.	110.	110.	12.13	
	HYDROGRAPH AT								
+		KD341	117.	12.25	35.	12.	12.	1.00	
	HYDROGRAPH AT								
+		KD343	133.	12.98	39.	13.	13.	1.03	
	HYDROGRAPH AT								
+		KD345	127.	12.25	36.	12.	12.	.99	
	4 COMBINED AT								
+		DP345	984.	12.92	431.	147.	147.	13.18	
	ROUTED TO								
+		RT345	956.	13.08	419.	145.	145.	13.18	
	HYDROGRAPH AT								
+		KD347	154.	12.33	48.	16.	16.	1.11	
	2 COMBINED AT								
+		DP347	1034.	13.08	472.	161.	161.	13.23	
	ROUTED TO								
+		RE347	538.	14.53	135.	159.	159.	12.33	6539.92 14.33
+									
	ROUTED TO								
+		RT347	536.	14.58	134.	158.	158.	12.28	
	HYDROGRAPH AT								
+		KD351	9.	14.17	7.	3.	3.	1.02	
	3 COMBINED AT								
+		DP351	24330.	13.08	10099.	3263.	3263.	168.89	
	ROUTED TO								
+		RT351	24297.	13.08	10099.	3263.	3263.	168.89	
	HYDROGRAPH AT								
+		DRY362	231.	12.00	33.	17.	17.	1.19	
	2 COMBINED AT								
+		DP362	24739.	13.08	10148.	3280.	3280.	168.08	

+	ROUTED TO	RT362	24240.	13.17	10147.	3276.	3276.	168.08		
+	HYDROGRAPH AT	DRY363	52.	12.08	12.	4.	4.	.33		
+	2 COMBINED AT	DP363	24255.	13.17	10159.	3280.	3280.	168.41		
+	ROUTED TO	RT363	24248.	13.17	10154.	3275.	3275.	168.41		
+	HYDROGRAPH AT	RD363	24.	12.50	13.	5.	5.	1.06		
+	2 COMBINED AT	DP363	24268.	13.17	10167.	3280.	3280.	169.47		
+	ROUTED TO	RT363	24206.	13.17	10165.	3274.	3274.	169.47		
+	HYDROGRAPH AT	PD423	42.	12.38	16.	5.	5.	.38		
+	2 COMBINED AT	DP423	24236.	13.17	10181.	3280.	3280.	169.85		
+	ROUTED TO	RT423	24160.	13.25	10179.	3274.	3274.	169.85		
+	HYDROGRAPH AT	DRY364	95.	12.00	22.	7.	7.	.59		
+	HYDROGRAPH AT	SFC425	60.	12.42	26.	10.	10.	1.61		
+	ROUTED TO	RES425	28.	14.08	24.	9.	9.	1.61	6605.32	14.08
+	ROUTED TO	RT425	28.	14.08	24.	9.	9.	1.61		
-	HYDROGRAPH AT	SFC427	230.	12.17	34.	16.	16.	.30		
+	ROUTED TO	RES427	95.	12.83	33.	16.	16.	.30	1550.67	12.83
+	ROUTED TO	RT427	95.	12.92	33.	16.	16.	.30		
+	HYDROGRAPH AT	SFC428	159.	12.17	39.	12.	12.	.37		
+	HYDROGRAPH AT	SFC429	29.	12.42	13.	5.	5.	.77		
+	HYDROGRAPH AT	SFC430	3.	12.50	2.	1.	1.	.14		
+	ROUTED TO	RES430	2.	14.67	1.	1.	1.	.14	6578.66	14.67

+	ALL 25	RT430	2.	14.67	1.	1.	1.	.14
+	HYDROGRAPH AT							
+		SPC431	74.	12.17	19.	6.	6.	.26
+	6 COMBINED AT							
+		DP427	349.	12.25	147.	49.	49.	3.63
+	ROUTED TO							
+		RT427	347.	12.25	147.	48.	48.	3.67
+	HYDROGRAPH AT							
+		PC413	264.	12.00	32.	13.	13.	.81
+	HYDROGRAPH AT							
+		PC413	138.	12.08	44.	14.	14.	.78
+	ROUTED TO							
+		RT413	131.	12.15	43.	14.	14.	.78
+	HYDROGRAPH AT							
+		PC417	77.	12.67	31.	10.	10.	.87
+	3 COMBINED AT							
+		DP417	434.	12.17	125.	40.	40.	2.46
+	ROUTED TO							
+		RT417	429.	12.25	125.	40.	40.	2.46
+	HYDROGRAPH AT							
+		PC419	2.	13.85	1.	1.	1.	.54
+	1 COMBINED AT							
+		DP419	429.	12.23	127.	41.	41.	3.00
+	ROUTED TO							
+		RT419	427.	12.25	128.	41.	41.	3.00
+	HYDROGRAPH AT							
+		PC421	30.	13.17	19.	7.	7.	1.32
+	2 COMBINED AT							
+		DP421	436.	12.25	146.	48.	48.	4.32
+	ROUTED TO							
+		RT421	433.	12.33	145.	48.	48.	4.32
+	HYDROGRAPH AT							
+		SPC433	208.	12.17	47.	15.	15.	.75
+	3 COMBINED AT							
+		DP433	962.	12.33	337.	111.	111.	8.33
+	ROUTED TO							
+		RT433	958.	12.33	336.	110.	110.	8.33
+	HYDROGRAPH AT							
+		SPC435	459.	12.17	106.	32.	32.	.94
+	4 COMBINED AT							
+		DP435	24801.	13.25	10614.	3423.	3423.	179.80
+	ROUTED TO							
+		RT435	24788.	13.25	10613.	3417.	3417.	179.80

+	HYDROGRAPH AT	DRY355	419.	11.83	55.	17.	17.	.80
	ROUTED TO							
+		RT355	383.	11.83	55.	17.	17.	.80
	HYDROGRAPH AT							
+		DRY359	239.	11.92	39.	12.	12.	.64
	2 COMBINED AT							
+		DP359	421.	11.92	94.	29.	29.	1.44
	ROUTED TO							
+		RT359	412.	11.92	93.	29.	29.	1.44
	HYDROGRAPH AT							
+		DRY367	365.	11.83	50.	16.	16.	.73
	2 COMBINED AT							
+		DP367	625.	11.92	143.	45.	45.	2.17
	ROUTED TO							
+		RT367	787.	12.38	141.	44.	44.	2.17
	HYDROGRAPH AT							
+		DRY361	307.	12.25	81.	26.	26.	1.27
	HYDROGRAPH AT							
+		DD437	76.	12.33	27.	9.	9.	1.16
	ROUTED TO							
+		RT437	73.	12.42	27.	9.	9.	1.18
	HYDROGRAPH AT							
+		DD439	58.	12.33	13.	4.	4.	.50
	2 COMBINED AT							
+		DP439	113.	12.33	40.	14.	14.	1.59
	ROUTED TO							
+		RT439	112.	12.42	40.	13.	13.	1.59
	HYDROGRAPH AT							
+		DD441	129.	12.33	44.	15.	15.	1.70
	2 COMBINED AT							
+		DP441	236.	12.33	84.	29.	29.	2.29
	ROUTED TO							
+		RT441	193.	12.83	51.	28.	28.	2.75
	HYDROGRAPH AT							
+		DD443	60.	12.42	26.	9.	9.	1.47
	HYDROGRAPH AT							
+		DD445	120.	12.25	39.	13.	13.	1.26
	ROUTED TO							
+		RT445	115.	12.42	39.	13.	13.	1.26
	HYDROGRAPH AT							
+		DD447	92.	12.25	30.	10.	10.	.96
	4 COMBINED AT							
+		DP443	745.	12.67	174.	50.	50.	7.19

+	ROUTE TO	RT443	403.	12.75	174.	59.	59.	7.09
	HYDROGRAPH AT							
+		DP449	45.	12.42	20.	7.	7.	1.10
	2 COMBINED AT							
+		DP449	443.	12.67	194.	56.	56.	8.19
	ROUTED TO							
-		RT449	443.	12.75	193.	56.	56.	8.18
	HYDROGRAPH AT							
+		DP451	57.	12.25	22.	7.	7.	.70
	ROUTED TO							
+		RT451	57.	12.33	22.	7.	7.	.70
	HYDROGRAPH AT							
+		DP453	117.	12.55	39.	13.	13.	1.24
	3 COMBINED AT							
+		DP453	374.	12.67	251.	36.	36.	10.17
	ROUTED TO							
+		RT453	370.	12.75	250.	35.	35.	10.13
	HYDROGRAPH AT							
+		DP455	14.	12.52	9.	4.	4.	.99
	ROUTED TO							
+		RT455	14.	12.60	9.	4.	4.	.99
	HYDROGRAPH AT							
+		DP457	5.	13.87	4.	2.	2.	.84
	3 COMBINED AT							
+		DP457	353.	12.75	263.	91.	91.	11.95
	ROUTED TO							
+		RT457	353.	12.83	261.	90.	90.	11.95
	HYDROGRAPH AT							
+		DP459	5.	13.73	4.	2.	2.	.97
	ROUTED TO							
+		RT459	5.	13.83	4.	2.	2.	.97
	HYDROGRAPH AT							
+		DP461	8.	13.42	4.	2.	2.	1.07
	2 COMBINED AT							
+		DP461	12.	13.55	10.	4.	4.	2.04
	ROUTED TO							
+		RT461	12.	13.75	10.	4.	4.	2.04
	HYDROGRAPH AT							
+		DP463	5.	13.75	3.	1.	2.	1.04
	2 COMBINED AT							
+		DP463	18.	13.75	13.	6.	6.	3.09
	ROUTED TO							
+		RT463	18.	13.82	13.	6.	6.	3.09

+	HYDROGRAPH AT	CC465	346.	12.25	93.	30.	30.	1.70
+	3 COMBINED AT	DP465	782.	12.67	358.	125.	125.	16.74
+	ROUTED TO	RT465	780.	12.75	357.	124.	124.	16.74
+	HYDROGRAPH AT	CC467	599.	12.17	137.	42.	42.	1.21
+	2 COMBINED AT	DP467	1086.	12.58	485.	166.	166.	17.55
+	ROUTED TO	RT467	1083.	12.67	485.	166.	166.	17.55
+	HYDROGRAPH AT	CC469	320.	12.17	77.	24.	24.	.89
+	2 COMBINED AT	DP469	1272.	12.58	561.	189.	189.	18.84
+	ROUTED TO	RT469	1268.	12.67	561.	189.	189.	18.84
+	HYDROGRAPH AT	CC471	243.	12.17	55.	18.	18.	.73
+	2 COMBINED AT	DP471	1458.	12.33	620.	207.	207.	19.57
+	ROUTED TO	RT471	1453.	12.42	621.	207.	207.	19.57
+	HYDROGRAPH AT	CC473	127.	12.17	32.	10.	10.	.47
+	2 COMBINED AT	DP473	1560.	12.42	652.	217.	217.	20.04
+	ROUTED TO	RT473	1557.	12.42	652.	216.	216.	20.04
+	HYDROGRAPH AT	CC475	107.	12.17	25.	8.	8.	.24
+	2 COMBINED AT	DP475	1642.	12.42	676.	223.	223.	20.25
+	ROUTED TO	RT475	1640.	12.50	677.	223.	223.	20.25
+	HYDROGRAPH AT	CC477	52.	12.17	13.	4.	4.	.16
+	5 COMBINED AT	DP361	26293.	13.25	11493.	3713.	3713.	203.63
+	ROUTED TO	RT361	26243.	13.25	11490.	3705.	3705.	203.68
+	HYDROGRAPH AT	CC375	368.	12.09	79.	24.	24.	1.13

+	1 COMBINED AT	DP375	26321.	13.25	11552.	3729.	3729.	204.81
	ROUTED TO							
+		RT375	26242.	13.33	11547.	3721.	3721.	204.81
	HYDROGRAPH AT							
+		PR479	369.	12.17	85.	26.	26.	1.10
	2 COMBINED AT							
+		DP479	26327.	13.33	11513.	3747.	3747.	205.91
	ROUTED TO							
+		RT479	15316.	13.33	11514.	3742.	3742.	205.91
	HYDROGRAPH AT							
+		NR376	144.	12.38	37.	12.	12.	1.06
	2 COMBINED AT							
+		DP376	26367.	13.33	11544.	3754.	3754.	206.98
	ROUTED TO							
+		RT376	26336.	13.33	11543.	3750.	3750.	206.98
	HYDROGRAPH AT							
+		BR377	447.	12.00	84.	26.	26.	.90
	ROUTED TO							
+		RT377	435.	12.08	84.	26.	26.	.90
	HYDROGRAPH AT							
+		BR378	115.	11.92	18.	6.	6.	.35
	3 COMBINED AT							
+		DP378	26426.	13.33	11716.	3782.	3782.	208.23
	ROUTED TO							
+		RT378	26355.	13.33	11713.	3776.	3776.	208.23
	HYDROGRAPH AT							
+		TS503	585.	11.92	97.	30.	30.	.93
	ROUTED TO							
+		RT503	574.	12.00	97.	30.	30.	.93
	HYDROGRAPH AT							
+		FB379	249.	12.17	59.	18.	18.	.67
	3 COMBINED AT							
+		DP379	26518.	13.33	11517.	3824.	3824.	209.36
	ROUTED TO							
+		RT379	24455.	13.33	11515.	3819.	3819.	209.36
	HYDROGRAPH AT							
+		TS501	36.	11.92	15.	5.	5.	.34
	2 COMBINED AT							
+		DP501	26469.	13.33	11525.	3823.	3823.	210.22
	ROUTED TO							
+		RT501	24445.	13.42	11525.	3813.	3813.	210.22
	HYDROGRAPH AT							
+		TS495	130.	11.75	25.	8.	8.	.33

+	ROUTED TO	RT499	210.	11.92	26.	8.	8.	.35
+	HYDROGRAPH AT	TS481	353.	11.92	56.	18.	18.	.99
+	ROUTED TO	RT481	346.	11.92	57.	18.	18.	.99
+	HYDROGRAPH AT	TS483	922.	11.92	153.	47.	47.	1.40
+	2 COMBINED AT	DP483	1258.	11.92	209.	65.	65.	2.39
+	ROUTED TO	RT483	1245.	12.00	209.	65.	65.	2.39
+	HYDROGRAPH AT	TS485	253.	11.92	47.	15.	15.	1.12
+	ROUTED TO	RT485	248.	11.92	47.	15.	15.	1.12
+	HYDROGRAPH AT	TS487	493.	11.92	75.	23.	23.	.70
+	ROUTED TO	RT487	483.	12.00	75.	23.	23.	.70
+	HYDROGRAPH AT	TS489	665.	11.92	144.	44.	44.	1.38
+	4 COMBINED AT	DP489	2803.	12.00	476.	147.	147.	5.59
+	ROUTED TO	RT489	2753.	12.00	476.	147.	147.	5.59
+	HYDROGRAPH AT	TS491	585.	11.83	82.	25.	25.	1.10
+	ROUTED TO	RT491	556.	11.92	82.	25.	25.	1.10
+	HYDROGRAPH AT	TS493	522.	11.75	59.	18.	18.	.75
+	3 COMBINED AT	DP493	3442.	11.92	616.	190.	190.	7.44
+	ROUTED TO	RT493	3437.	12.00	619.	190.	190.	7.44
+	HYDROGRAPH AT	TS495	156.	12.25	43.	14.	14.	.99
+	2 COMBINED AT	DP495	3553.	12.00	662.	204.	204.	9.42
+	ROUTED TO	RT495	3394.	12.08	656.	201.	201.	9.42
+	HYDROGRAPH AT	TS497	151.	12.25	42.	14.	14.	.99

+	2 COMBINED AT	DP497	3807.	12.08	769.	236.	236.	9.32
+	ROUTED TO	RT497	3779.	12.17	769.	236.	236.	9.32
+	HYDROGRAPH AT	RO9305	488.	11.92	74.	23.	23.	.41
+	4 COMBINED AT	DP505	27210.	13.42	12495.	4080.	4080.	220.30
+	ROUTED TO	RT505	27202.	13.42	12498.	4078.	4078.	220.30
+	HYDROGRAPH AT	RO9381	274.	11.92	82.	16.	16.	1.05
+	ROUTED TO	RT381	272.	12.00	81.	16.	16.	1.05
+	HYDROGRAPH AT	RO9385	695.	12.00	136.	42.	42.	1.33
+	ROUTED TO	RT385	695.	12.08	136.	42.	42.	1.33
+	HYDROGRAPH AT	RO9383	84.	12.00	19.	6.	6.	.38
+	2 COMBINED AT	DP383	1014.	12.08	208.	65.	65.	3.26
+	ROUTED TO	RT383	997.	12.06	208.	65.	65.	3.26
+	HYDROGRAPH AT	RO9387	79.	12.26	16.	9.	9.	1.00
+	2 COMBINED AT	DP387	1065.	12.08	234.	74.	74.	4.26
+	ROUTED TO	RT387	1060.	12.17	234.	74.	74.	4.26
+	HYDROGRAPH AT	RO9389	39.	12.92	18.	6.	6.	.68
+	2 COMBINED AT	DP389	1075.	12.17	231.	80.	80.	4.34
+	ROUTED TO	RT389	1061.	12.26	233.	80.	80.	4.64
+	HYDROGRAPH AT	RO9391	51.	12.08	17.	6.	6.	1.07
+	2 COMBINED AT	DP391	1104.	12.26	270.	86.	86.	5.80
+	ROUTED TO	RT391	1099.	12.26	272.	86.	86.	5.80
+	HYDROGRAPH AT	RO9397	545.	12.00	167.	77.	77.	6.71

+	3 COMBINED AT	DP393	27585.	13.42	12847.	4197.	4197.	227.42
	ROUTED TO							
+		RT393	27535.	13.42	12844.	4188.	4188.	227.42
	HYDROGRAPH AT							
+		D6C395	366.	12.17	92.	29.	29.	1.57
	ROUTED TO							
+		RT395	365.	12.25	92.	29.	29.	1.57
	HYDROGRAPH AT							
+		D6C397	134.	11.83	25.	8.	8.	.51
	2 COMBINED AT							
+		DP397	412.	12.23	117.	36.	36.	2.08
	ROUTED TO							
+		RT397	410.	12.33	116.	36.	36.	2.08
	HYDROGRAPH AT							
+		D6C399	180.	12.17	46.	15.	15.	1.04
	3 COMBINED AT							
+		DP399	27708.	13.42	12894.	4239.	4239.	230.54
	ROUTED TO							
+		RT399	27637.	13.50	12935.	4227.	4227.	230.54
	HYDROGRAPH AT							
+		MEB401	277.	12.00	52.	15.	15.	.60
	2 COMBINED AT							
+		DP401	27653.	13.50	13031.	4242.	4242.	231.14
	ROUTED TO							
+		RT401	27676.	13.50	13030.	4235.	4235.	231.14
	HYDROGRAPH AT							
+		PAP509	122.	12.75	51.	16.	16.	1.29
	ROUTED TO							
+		RT509	121.	12.83	50.	16.	16.	1.29
	HYDROGRAPH AT							
+		PAP511	340.	12.33	95.	29.	29.	1.17
	2 COMBINED AT							
+		DP511	425.	12.42	144.	45.	45.	2.46
	ROUTED TO							
+		RT511	422.	12.42	144.	45.	45.	2.46
	HYDROGRAPH AT							
+		R08507	738.	11.83	104.	32.	32.	.72
	3 COMBINED AT							
+		DP507	27926.	13.50	13219.	4315.	4315.	234.32
	ROUTED TO							
+		RT507	27846.	13.50	13220.	4304.	4304.	234.32
	HYDROGRAPH AT							
+		MEB403	193.	11.92	31.	10.	10.	.56

+	HYDROGRAPH AT	MVP513	1.	13.25	1.	0.	0.	.27
+	3 COMBINED AT	DP513	27868.	13.50	13241.	4314.	4314.	235.16
+	ROUTED TO	RT513	27851.	13.58	13238.	4307.	4307.	235.16
+	HYDROGRAPH AT	MEB405	111.	12.00	23.	7.	7.	.82
+	HYDROGRAPH AT	MEB407	79.	12.42	27.	9.	9.	.88
+	2 COMBINED AT	DP407	152.	12.08	50.	18.	18.	1.71
+	ROUTED TO	RT407	150.	12.17	49.	18.	18.	1.71
+	HYDROGRAPH AT	MEB409	152.	11.83	18.	6.	6.	.82
+	3 COMBINED AT	DP409	27919.	13.58	13283.	4328.	4328.	237.39
+	ROUTED TO	RT409	27879.	13.58	13277.	4299.	4299.	237.39
+	HYDROGRAPH AT	MEB411	127.	12.08	28.	9.	9.	.84
+	HYDROGRAPH AT	MVP515	2.	13.17	2.	1.	1.	.47
+	3 COMBINED AT	DP515	27943.	13.58	13299.	4308.	4308.	238.71

*** NORMAL END OF REC-1 ***

ENDWORDS>type a:out100xxddcc

**MONUMENT CREEK
DRAINAGE BASIN PLANNING STUDY**

BASELINE HYDROLOGY

Technical Addendum

Section VI

**HEC-1 Input and Output
10-Year 24-Hour Storm with Hydromet 52 Rainfall Distribution
Existing Condition**

INPUT : MCEX_10A
OUTPUT : OUT10EX

174L-V:IAAAC:\NHED\NORMAL.8TYPOSTBCRF58#0F\1751

FLOOD HYDROGRAPH PACKAGE HED-1 (IBM XT 512K VERSION) -FEB 1,1985
U.S. ARMY CORPS OF ENGINEERS, THE HYDROLOGIC ENGINEERING CENTER, 809 SECOND STREET, DAVIS, CA. 95616

HED-1 INPUT

PAGE 1

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

1 ID HED-1
2 ID MONUMENT CREEK DRAINAGE BASIN
3 ID WICHA ENGINEERING CORPORATION JOB NO. 91.04.11
4 ID HISTORIC HYDROLOGY 10 YEAR, 24 HOUR
5 ID TYPE II STORM DISTRIBUTION WITH HYDROMET 52 DISTRIBUTION AT 311 DEGREES
6 IT 5 0 0 288
7 ID 5

*** THE END OF THE INPUT DATA ***

1766 XK

* *
* DF31P *
* *

1768 XD

OUTPUT CONTROL VARIABLES

IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
GBCAL 0. HYDROGRAPH PLOT SCALE

1769 XC

HYDROGRAPH COMBINATION

ICOMB 4 NUMBER OF HYDROGRAPHS TO COMBINE

HYDROGRAPH AT STATION DF31P
SUM OF 4 HYDROGRAPHS

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*
1	0000	1	27.	*	1	0000	73	28.	*	1	1200	145	2151.	*	1	1800	217	1840.					
1	0005	2	28.	*	1	0005	74	29.	*	1	1205	146	2779.	*	1	1805	218	1841.					
1	0010	3	29.	*	1	0010	75	29.	*	1	1210	147	3293.	*	1	1810	219	1842.					
1	0015	4	29.	*	1	0015	76	29.	*	1	1215	148	3453.	*	1	1815	220	1843.					
1	0020	5	29.	*	1	0020	77	29.	*	1	1220	149	3415.	*	1	1820	221	1844.					
1	0025	6	29.	*	1	0025	78	29.	*	1	1225	150	3718.	*	1	1825	222	1845.					
1	0030	7	29.	*	1	0030	79	29.	*	1	1230	151	2957.	*	1	1830	223	1846.					
1	0035	8	29.	*	1	0035	80	29.	*	1	1235	152	3682.	*	1	1835	224	1847.					
1	0040	9	29.	*	1	0040	81	29.	*	1	1240	153	2497.	*	1	1840	225	1848.					
1	0045	10	29.	*	1	0045	82	29.	*	1	1245	154	2408.	*	1	1845	226	1849.					
1	0050	11	29.	*	1	0050	83	29.	*	1	1250	155	2686.	*	1	1850	227	1850.					

