Appendix A

Hydrologic Analysis

Appendix A1

Hydrology

HEC-HMS Report - XLS stylesheet (Summary_Table)
SIMULATION RUN
- - - - - - - - - - - - - - - - - - - -
Colin McKernan - Michael Baker Jr. Inc.

HYDROLOGIC STUDY

SUMMARY OF RESULTS

Simulation run : "100-Year"
Description : "Basin: Fourmile Canyon Wildfire & Met: 100-year & Control: Control 1"
Basin Model : "Fourmile Canyon Wildfire"
Meteorologic Model : "100-year"
Control Specification : "Control 1"
Simulation Start : "31Dec1999, 24:00"
Simulation End : "04Jan2000, 24:00"

SUBBASINS TABLE

Name	Drainage Area (mi2)	Precipitation (in)	Loss (in)	Excess (in)	Runoff coeff.	Peak Discharge (cfs)	Unit Peak Discharge (cfs/mi2)	Time of Peak	Discharge Volume (ft3)
S-3	0.27	2.39	0.80	1.59	0.67	536.4	1969.89	01Jan2000, 00:40	23.1
S-7	0.45	2.39	1.58	0.81	0.34	393.4	878.71	01Jan2000, 00:45	19.4
S-10	0.45	2.39	0.80	1.59	0.67	654.3	1461.47	01Jan2000, 00:55	38.0
S-11	0.23	2.39	0.80	1.59	0.67	438.4	1948.44	01Jan2000, 00:40	19.1
S-12	0.2	2.39	0.80	1.59	0.67	404.2	2012.95	01Jan2000, 00:40	17.0
S-16	0.17	2.39	0.80	1.59	0.67	353.8	2098.46	01Jan2000, 00:40	14.3
S-18	0.13	2.39	0.80	1.59	0.67	276.8	2081.2	01Jan2000, 00:40	11.3
S-23	0.76	2.39	0.80	1.59	0.67	1061.1	1406.55	01Jan2000, 00:55	64.0
S-2	0.63	2.39	1.88	0.51	0.21	240.5	383.63	01Jan2000, 01:10	17.0
S-4	1.48	2.39	1.72	0.67	0.28	232.7	157.79	01Jan2000, 02:40	52.9
S-5	0.8	2.39	1.58	0.81	0.34	455.2	566.87	01Jan2000, 01:10	34.8

S-6	0.06	2.39	1.58	0.81	0.34	62.0	1029.9	01Jan2000, 00:40	2.6
S-8	0.32	2.39	1.58	0.81	0.34	251.0	777.81	01Jan2000, 00:55	14.0
S-9	0.29	2.39	1.58	0.81	0.34	232.1	792.69	01Jan2000, 00:55	12.7
S-13	1.59	2.39	1.72	0.67	0.28	464.6	293.03	01Jan2000, 01:40	56.9
S-14	0.12	2.39	1.58	0.81	0.34	111.6	902.91	01Jan2000, 00:45	5.4
S-15	0.44	2.39	1.58	0.81	0.34	273.1	629.12	01Jan2000, 01:05	18.8
S-17	0.1	2.39	0.88	1.51	0.63	217.7	2219.16	01Jan2000, 00:35	7.9
S-19	0.17	2.39	1.36	1.03	0.43	176.7	1068.97	01Jan2000, 00:50	9.1
S-20	0.13	2.39	1.63	0.76	0.32	100.0	796.18	01Jan2000, 00:50	5.1
S-21	0.06	2.39	1.03	1.36	0.57	113.2	1871.07	01Jan2000, 00:40	4.4
S-24	0.54	2.39	1.17	1.22	0.51	507.2	933.9	01Jan2000, 01:05	35.3
S-25	0.11	2.39	1.30	1.09	0.46	120.0	1054.48	01Jan2000, 00:50	6.6
S-A	4.32	2.01	1.71	0.30	0.15	301.6	69.89	01Jan2000, 02:40	68.2
S-C	3.5	2.39	1.92	0.47	0.2	339.8	97.05	01Jan2000, 03:00	88.2
S-B	7.41	2.16	1.80	0.36	0.17	488.9	65.96	01Jan2000, 03:20	143.3

JUNCTIONS TABLE

Name	Drainage Area (mi2)	Peak Discharge (cfs)	Unit Peak Discharge (cfs/mi2)	Time of Peak	Discharge Volume (ft3)	Discharge Volume (in)
J-A	4.32	301.6	69.89	01Jan2000, 02:40	68.2	0.30
J-B/13	13.31	817.5	61.41	01Jan2000, 03:25	267.8	0.38
J-16	13.48	816.7	60.58	01Jan2000, 03:40	281.3	0.39
J-10	13.93	960.8	68.98	01Jan2000, 00:50	319.1	0.43
J-17	14.03	1067.9	76.13	01Jan2000, 00:50	327.1	0.44
J-11	14.25	1340.1	94.03	01Jan2000,	345.6	0.45

				00:55		
J-18/19	14.55	1604.7	110.28	01Jan2000, 01:00	365.6	0.47
J-12	14.75	1769.9	119.98	01Jan2000, 01:00	382.2	0.49
J-20	14.88	1834.3	123.3	01Jan2000, 01:05	387.3	0.49
J-21	14.94	1825.7	122.22	01Jan2000, 01:10	390.7	0.49
J-4	18.9	3111.1	164.64	01Jan2000, 01:15	550.4	0.55
J-3	19.17	3196.1	166.73	01Jan2000, 01:15	573.7	0.56
J-24/25	20.45	3805.7	186.07	01Jan2000, 01:20	631.1	0.58
J-23	21.21	4174.6	196.85	01Jan2000, 01:25	694.5	0.61
J-1A	24.71	4213.9	170.55	01Jan2000, 01:40	776.7	0.59
J-15	0.43	273.1	629.12	01Jan2000, 01:05	18.8	0.81
J-9	0.73	399.7	549.87	01Jan2000, 01:10	31.2	0.81
J-8	1.05	575.8	548.59	01Jan2000, 01:10	45.2	0.81
J-14	1.17	607.3	517.64	01Jan2000, 01:15	50.4	0.81
J-7	1.62	876.6	540.81	01Jan2000, 01:00	69.9	0.81
J-5	2.42	1299.0	535.91	01Jan2000, 01:05	104.5	0.81
J-6	2.48	1325.6	533.63	01Jan2000, 01:05	107.3	0.81
J-2	19.8	3399.6	171.73	01Jan2000, 01:20	589.6	0.56

REACHS TABLE

Name	Drainage Area (mi2)	Peak Discharge IN (cfs)	Time of Peak IN	Peak Discharge OUT (cfs)	Time of Peak OUT	Reduction Coeff.	Discharge Volume (ft3)	Discharge Volume (in)
Reach-1U,13	4.32	301.6	01Jan2000, 02:40	301.3	01Jan2000, 03:45	1	67.7	0.29
Reach-13,16	13.31	817.5	01Jan2000, 03:25	816.7	01Jan2000, 03:40	1	267.0	0.38
Reach-16,10	13.48	816.7	01Jan2000, 03:40	816.1	01Jan2000, 03:45	1	281.1	0.39

Reach-10,17	13.93	960.8	01Jan2000, 00:50	949.0	01Jan2000, 00:50	0.99	319.2	0.43
Reach-17,11	14.03	1067.9	01Jan2000, 00:50	1054.1	01Jan2000, 00:55	0.99	326.5	0.44
Reach-11,18/19	14.25	1340.1	01Jan2000, 00:55	1327.5	01Jan2000, 01:00	0.99	345.2	0.45
Reach-18,12	14.55	1604.7	01Jan2000, 01:00	1588.9	01Jan2000, 01:05	0.99	365.1	0.47
Reach-12,20	14.75	1769.9	01Jan2000, 01:00	1758.1	01Jan2000, 01:05	0.99	382.2	0.49
Reach-20,21	14.88	1834.3	01Jan2000, 01:05	1804.3	01Jan2000, 01:10	0.98	386.3	0.49
Reach-21,4	14.94	1825.7	01Jan2000, 01:10	1791.4	01Jan2000, 01:15	0.98	390.2	0.49
Reach-4,3	18.9	3111.1	01Jan2000, 01:15	3105.6	01Jan2000, 01:15	1	550.6	0.55
Reach-3,2	19.17	3196.1	01Jan2000, 01:15	3181.9	01Jan2000, 01:20	1	572.6	0.56
Reach-24/25, 23	20.45	3805.7	01Jan2000, 01:20	3779.8	01Jan2000, 01:25	0.99	630.5	0.58
Reach-23,1A	21.21	4174.6	01Jan2000, 01:25	4080.5	01Jan2000, 01:40	0.98	688.5	0.61
Reach-15,9	0.43	273.1	01Jan2000, 01:05	271.6	01Jan2000, 01:20	0.99	18.5	0.80
Reach-9,8	0.73	399.7	01Jan2000, 01:10	395.7	01Jan2000, 01:15	0.99	31.2	0.81
Reach-8,14	1.05	575.8	01Jan2000, 01:10	571.3	01Jan2000, 01:15	0.99	45.0	0.80
Reach-14,7	1.17	607.3	01Jan2000, 01:15	606.1	01Jan2000, 01:15	1	50.4	0.81
Reach-7,5	1.62	876.6	01Jan2000, 01:00	867.6	01Jan2000, 01:05	0.99	69.7	0.81
Reach-5,6	2.42	1299.0	01Jan2000, 01:05	1295.8	01Jan2000, 01:05	1	104.6	0.81
Reach-6,4	2.48	1325.6	01Jan2000, 01:05	1312.7	01Jan2000, 01:10	0.99	107.3	0.81
Reach-2, 24/25	19.8	3399.6	01Jan2000, 01:20	3371.2	01Jan2000, 01:20	0.99	589.2	0.56

Simulation Period

from: 31Dec1999, 24:00
to : 04Jan2000, 24:00

HEC-HMS Report - XLS stylesheet (Summary_Table)
SIMULATION RUN
- - - - - - - - - - - - - - - - - - - -
Colin McKernan - Michael Baker Jr. Inc.

HYDROLOGIC STUDY

SUMMARY OF RESULTS

Simulation run : "25-Year"
Description : "Basin: Fourmile Canyon Wildfire & Met: 25-Year & Control: Control 1"
Basin Model : "Fourmile Canyon Wildfire"
Meteorologic Model : "25-Year"
Control Specification : "Control 1"
Simulation Start : "31Dec1999, 24:00"
Simulation End : "04Jan2000, 24:00"

SUBBASINS TABLE

Name	Drainage Area (mi2)	Precipitation (in)	Loss (in)	Excess (in)	Runoff coeff.	Peak Discharge (cfs)	Unit Peak Discharge (cfs/mi2)	Time of Peak	Discharge Volume (ft3)
S-3	0.27	1.69	0.73	0.96	0.57	327.9	1204.19	01Jan2000, 00:40	14.0
S-7	0.45	1.69	1.31	0.38	0.22	185.8	415.01	01Jan2000, 00:50	9.2
S-10	0.45	1.69	0.73	0.96	0.57	399.3	891.89	01Jan2000, 00:55	23.0
S-11	0.23	1.69	0.73	0.96	0.57	268.0	1191.11	01Jan2000, 00:40	11.6
S-12	0.2	1.69	0.73	0.96	0.57	247.1	1230.58	01Jan2000, 00:40	10.3
S-16	0.17	1.69	0.73	0.96	0.57	216.2	1282.33	01Jan2000, 00:40	8.7
S-18	0.13	1.69	0.73	0.96	0.57	169.1	1271.43	01Jan2000, 00:40	6.8
S-23	0.76	1.69	0.73	0.96	0.57	647.0	857.64	01Jan2000, 00:55	38.8
S-2	0.63	1.69	1.50	0.19	0.11	93.0	148.35	01Jan2000, 01:15	6.5
S-4	1.48	1.69	1.40	0.29	0.17	101.3	68.69	01Jan2000, 02:40	23.0
S-5	0.8	1.69	1.31	0.38	0.22	217.2	270.49	01Jan2000, 01:15	16.4

S-6	0.06	1.69	1.31	0.38	0.22	28.1	466.78	01Jan2000, 00:40	1.2
S-8	0.32	1.69	1.31	0.38	0.22	118.5	367.21	01Jan2000, 00:55	6.6
S-9	0.29	1.69	1.31	0.38	0.22	110.3	376.71	01Jan2000, 00:55	6.0
S-13	1.59	1.69	1.40	0.29	0.17	202.6	127.78	01Jan2000, 01:40	24.7
S-14	0.12	1.69	1.31	0.38	0.22	51.7	418.28	01Jan2000, 00:50	2.5
S-15	0.44	1.69	1.31	0.38	0.22	129.9	299.24	01Jan2000, 01:10	8.9
S-17	0.1	1.69	0.79	0.90	0.53	131.2	1337.41	01Jan2000, 00:35	4.7
S-19	0.17	1.69	1.16	0.53	0.31	91.3	552.33	01Jan2000, 00:50	4.7
S-20	0.13	1.69	1.34	0.35	0.21	45.4	361.46	01Jan2000, 00:50	2.4
S-21	0.06	1.69	0.91	0.78	0.46	65.0	1074.38	01Jan2000, 00:40	2.5
S-24	0.54	1.69	1.02	0.67	0.4	280.6	516.66	01Jan2000, 01:05	19.4
S-25	0.11	1.69	1.11	0.58	0.34	63.7	559.75	01Jan2000, 00:55	3.5
S-A	4.32	1.49	1.38	0.11	0.07	112.3	26.02	01Jan2000, 02:45	25.4
S-C	3.5	1.69	1.52	0.17	0.1	124.7	35.61	01Jan2000, 03:00	32.4
S-B	7.41	1.54	1.42	0.12	0.08	168.6	22.75	01Jan2000, 03:20	49.4

JUNCTIONS TABLE

Name	Drainage Area (mi2)	Peak Discharge (cfs)	Unit Peak Discharge (cfs/mi2)	Time of Peak	Discharge Volume (ft3)	Discharge Volume (in)
J-A	4.32	112.3	26.02	01Jan2000, 02:45	25.4	0.11
J-B/13	13.31	276.8	20.79	01Jan2000, 03:45	99.3	0.14
J-16	13.48	275.0	20.4	01Jan2000, 04:10	107.6	0.15
J-10	13.93	591.8	42.49	01Jan2000, 00:50	130.4	0.18
J-17	14.03	652.0	46.48	01Jan2000, 00:50	135.1	0.18
J-11	14.25	793.4	55.67	01Jan2000,	146.1	0.19

				00:55		
J-18/19	14.55	936.2	64.34	01Jan2000, 01:00	157.5	0.20
J-12	14.75	989.8	67.1	01Jan2000, 01:05	167.5	0.21
J-20	14.88	1014.4	68.18	01Jan2000, 01:10	169.7	0.21
J-21	14.94	985.4	65.97	01Jan2000, 01:20	171.7	0.22
J-4	18.9	1536.0	81.28	01Jan2000, 01:20	245.1	0.24
J-3	19.17	1545.4	80.62	01Jan2000, 01:20	259.3	0.25
J-24/25	20.45	1729.2	84.55	01Jan2000, 01:30	287.5	0.26
J-23	21.21	1816.6	85.66	01Jan2000, 01:35	325.7	0.29
J-1A	24.71	1869.1	75.65	01Jan2000, 01:55	355.6	0.27
J-15	0.43	129.9	299.24	01Jan2000, 01:10	8.9	0.38
J-9	0.73	172.1	236.76	01Jan2000, 01:20	14.7	0.38
J-8	1.05	236.6	225.42	01Jan2000, 01:15	21.3	0.38
J-14	1.17	263.3	224.43	01Jan2000, 01:05	23.6	0.38
J-7	1.62	398.1	245.6	01Jan2000, 01:00	32.8	0.38
J-5	2.42	608.7	251.12	01Jan2000, 01:10	49.1	0.38
J-6	2.48	616.7	248.26	01Jan2000, 01:10	50.4	0.38
J-2	19.8	1592.4	80.44	01Jan2000, 01:30	264.9	0.25

REACHS TABLE

Name	Drainage Area (mi2)	Peak Discharge IN (cfs)	Time of Peak IN	Peak Discharge OUT (cfs)	Time of Peak OUT	Reduction Coeff.	Discharge Volume (ft3)	Discharge Volume (in)
Reach-1U,13	4.32	112.3	01Jan2000, 02:45	112.0	01Jan2000, 04:10	1	25.2	0.11
Reach-13,16	13.31	276.8	01Jan2000, 03:45	275.0	01Jan2000, 04:10	0.99	98.9	0.14
Reach-16,10	13.48	275.0	01Jan2000, 04:10	274.6	01Jan2000, 04:15	1	107.4	0.15

Reach-10,17	13.93	591.8	01Jan2000, 00:50	580.3	01Jan2000, 00:50	0.98	130.4	0.18
Reach-17,11	14.03	652.0	01Jan2000, 00:50	639.9	01Jan2000, 01:00	0.98	134.6	0.18
Reach-11,18/19	14.25	793.4	01Jan2000, 00:55	781.9	01Jan2000, 01:05	0.99	146.0	0.19
Reach-18,12	14.55	936.2	01Jan2000, 01:00	915.3	01Jan2000, 01:10	0.98	157.2	0.20
Reach-12,20	14.75	989.8	01Jan2000, 01:05	984.3	01Jan2000, 01:10	0.99	167.4	0.21
Reach-20,21	14.88	1014.4	01Jan2000, 01:10	983.0	01Jan2000, 01:20	0.97	169.2	0.21
Reach-21,4	14.94	985.4	01Jan2000, 01:20	961.4	01Jan2000, 01:20	0.98	171.7	0.22
Reach-4,3	18.9	1536.0	01Jan2000, 01:20	1517.1	01Jan2000, 01:20	0.99	245.3	0.24
Reach-3,2	19.17	1545.4	01Jan2000, 01:20	1527.7	01Jan2000, 01:30	0.99	258.5	0.25
Reach-24/25, 23	20.45	1729.2	01Jan2000, 01:30	1696.4	01Jan2000, 01:40	0.98	287.0	0.26
Reach-23,1A	21.21	1816.6	01Jan2000, 01:35	1800.2	01Jan2000, 01:55	0.99	323.3	0.29
Reach-15,9	0.43	129.9	01Jan2000, 01:10	127.8	01Jan2000, 01:25	0.98	8.7	0.37
Reach-9,8	0.73	172.1	01Jan2000, 01:20	171.6	01Jan2000, 01:20	1	14.6	0.38
Reach-8,14	1.05	236.6	01Jan2000, 01:15	233.9	01Jan2000, 01:20	0.99	21.1	0.38
Reach-14,7	1.17	263.3	01Jan2000, 01:05	262.2	01Jan2000, 01:05	1	23.6	0.38
Reach-7,5	1.62	398.1	01Jan2000, 01:00	397.8	01Jan2000, 01:05	1	32.7	0.38
Reach-5,6	2.42	608.7	01Jan2000, 01:10	607.9	01Jan2000, 01:10	1	49.2	0.38
Reach-6,4	2.48	616.7	01Jan2000, 01:10	613.0	01Jan2000, 01:10	0.99	50.3	0.38
Reach-2, 24/25	19.8	1592.4	01Jan2000, 01:30	1570.9	01Jan2000, 01:30	0.99	264.6	0.25

Simulation Period

from: 31Dec1999, 24:00
to : 04Jan2000, 24:00

HEC-HMS Report - XLS stylesheet (Summary_Table)
SIMULATION RUN
- - - - - - - - - - - - - - - - - - - -
Colin McKernan - Michael Baker Jr. Inc.

HYDROLOGIC STUDY

SUMMARY OF RESULTS

Simulation run : "10-Year"
Description : "Basin: Fourmile Canyon Wildfire & Met: 10-Year & Control: Control 1"
Basin Model : "Fourmile Canyon Wildfire"
Meteorologic Model : "10-Year"
Control Specification : "Control 1"
Simulation Start : "31Dec1999, 24:00"
Simulation End : "04Jan2000, 24:00"

SUBBASINS TABLE

Name	Drainage Area (mi2)	Precipitation (in)	Loss (in)	Excess (in)	Runoff coeff.	Peak Discharge (cfs)	Unit Peak Discharge (cfs/mi2)	Time of Peak	Discharge Volume (ft3)
S-3	0.27	1.47	0.69	0.78	0.53	265.6	975.39	01Jan2000, 00:35	11.3
S-7	0.45	1.47	1.20	0.27	0.18	119.4	266.7	01Jan2000, 00:45	6.5
S-10	0.45	1.47	0.69	0.78	0.53	308.8	689.75	01Jan2000, 00:50	18.5
S-11	0.23	1.47	0.69	0.78	0.53	216.9	964	01Jan2000, 00:35	9.3
S-12	0.2	1.47	0.69	0.78	0.53	200.5	998.51	01Jan2000, 00:35	8.3
S-16	0.17	1.47	0.69	0.78	0.53	175.9	1043.3	01Jan2000, 00:35	7.0
S-18	0.13	1.47	0.69	0.78	0.53	137.5	1033.83	01Jan2000, 00:35	5.5
S-23	0.76	1.47	0.69	0.78	0.53	501.1	664.24	01Jan2000, 00:50	31.2
S-2	0.63	1.47	1.35	0.12	0.08	54.3	86.62	01Jan2000, 01:10	4.0
S-4	1.48	1.47	1.27	0.20	0.14	68.0	46.11	01Jan2000, 02:40	15.5
S-5	0.8	1.47	1.20	0.27	0.18	145.0	180.57	01Jan2000, 01:10	11.6

S-6	0.06	1.47	1.20	0.27	0.18	18.7	310.63	01Jan2000, 00:35	0.9
S-8	0.32	1.47	1.20	0.27	0.18	75.9	235.2	01Jan2000, 00:50	4.7
S-9	0.29	1.47	1.20	0.27	0.18	70.5	240.78	01Jan2000, 00:50	4.2
S-13	1.59	1.47	1.27	0.20	0.14	134.1	84.58	01Jan2000, 01:40	16.7
S-14	0.12	1.47	1.20	0.27	0.18	33.4	270.23	01Jan2000, 00:40	1.8
S-15	0.44	1.47	1.20	0.27	0.18	85.6	197.19	01Jan2000, 01:05	6.3
S-17	0.1	1.47	0.75	0.72	0.49	106.9	1089.7	01Jan2000, 00:30	3.7
S-19	0.17	1.47	1.07	0.40	0.27	63.6	384.75	01Jan2000, 00:45	3.5
S-20	0.13	1.47	1.23	0.24	0.16	28.6	227.71	01Jan2000, 00:45	1.6
S-21	0.06	1.47	0.86	0.61	0.41	50.8	839.67	01Jan2000, 00:35	2.0
S-24	0.54	1.47	0.96	0.51	0.35	202.5	372.86	01Jan2000, 01:00	14.9
S-25	0.11	1.47	1.04	0.43	0.29	44.6	391.92	01Jan2000, 00:45	2.6
S-A	4.32	1.33	1.26	0.07	0.05	69.7	16.15	01Jan2000, 02:40	15.8
S-C	3.5	1.47	1.37	0.10	0.07	75.1	21.45	01Jan2000, 03:00	19.5
S-B	7.41	1.42	1.33	0.09	0.06	122.7	16.55	01Jan2000, 03:20	36.0

JUNCTIONS TABLE

Name	Drainage Area (mi2)	Peak Discharge (cfs)	Unit Peak Discharge (cfs/mi2)	Time of Peak	Discharge Volume (ft3)	Discharge Volume (in)
J-A	4.32	69.7	16.15	01Jan2000, 02:40	15.8	0.07
J-B/13	13.31	177.8	13.36	01Jan2000, 01:55	68.3	0.10
J-16	13.48	177.5	13.17	01Jan2000, 02:15	75.0	0.10
J-10	13.93	467.3	33.55	01Jan2000, 00:45	93.4	0.13
J-17	14.03	508.6	36.26	01Jan2000, 00:45	97.1	0.13
J-11	14.25	605.4	42.48	01Jan2000,	106.0	0.14

				00:55		
J-18/19	14.55	694.0	47.69	01Jan2000, 01:00	114.9	0.15
J-12	14.75	736.1	49.9	01Jan2000, 01:05	122.9	0.16
J-20	14.88	741.4	49.83	01Jan2000, 01:10	124.4	0.16
J-21	14.94	723.8	48.45	01Jan2000, 01:20	126.0	0.16
J-4	18.9	1077.4	57.02	01Jan2000, 01:20	177.0	0.18
J-3	19.17	1078.5	56.26	01Jan2000, 01:20	188.3	0.18
J-24/25	20.45	1189.8	58.17	01Jan2000, 01:35	209.1	0.19
J-23	21.21	1241.9	58.56	01Jan2000, 01:40	239.8	0.21
J-1A	24.71	1273.3	51.53	01Jan2000, 02:00	257.6	0.20
J-15	0.43	85.6	197.19	01Jan2000, 01:05	6.3	0.27
J-9	0.73	119.4	164.26	01Jan2000, 01:15	10.4	0.27
J-8	1.05	159.5	151.96	01Jan2000, 01:15	15.1	0.27
J-14	1.17	169.2	144.22	01Jan2000, 01:00	16.7	0.27
J-7	1.62	258.1	159.23	01Jan2000, 01:00	23.2	0.27
J-5	2.42	396.7	163.66	01Jan2000, 01:05	34.7	0.27
J-6	2.48	401.9	161.79	01Jan2000, 01:05	35.7	0.27
J-2	19.8	1113.7	56.26	01Jan2000, 01:30	191.8	0.18

REACHS TABLE

Name	Drainage Area (mi2)	Peak Discharge IN (cfs)	Time of Peak IN	Peak Discharge OUT (cfs)	Time of Peak OUT	Reduction Coeff.	Discharge Volume (ft3)	Discharge Volume (in)
Reach-1U,13	4.32	69.7	01Jan2000, 02:40	69.7	01Jan2000, 04:20	1	15.7	0.07
Reach-13,16	13.31	177.8	01Jan2000, 01:55	177.5	01Jan2000, 02:15	1	68.0	0.10
Reach-16,10	13.48	177.5	01Jan2000, 02:15	177.1	01Jan2000, 02:20	1	74.9	0.10

Reach-10,17	13.93	467.3	01Jan2000, 00:45	457.6	01Jan2000, 00:45	0.98	93.4	0.13
Reach-17,11	14.03	508.6	01Jan2000, 00:45	500.1	01Jan2000, 00:55	0.98	96.7	0.13
Reach-11,18/19	14.25	605.4	01Jan2000, 00:55	595.8	01Jan2000, 01:00	0.98	105.9	0.14
Reach-18,12	14.55	694.0	01Jan2000, 01:00	669.7	01Jan2000, 01:05	0.96	114.6	0.15
Reach-12,20	14.75	736.1	01Jan2000, 01:05	722.7	01Jan2000, 01:10	0.98	122.8	0.16
Reach-20,21	14.88	741.4	01Jan2000, 01:10	722.1	01Jan2000, 01:20	0.97	124.0	0.16
Reach-21,4	14.94	723.8	01Jan2000, 01:20	711.7	01Jan2000, 01:25	0.98	125.9	0.16
Reach-4,3	18.9	1077.4	01Jan2000, 01:20	1062.6	01Jan2000, 01:25	0.99	177.0	0.18
Reach-3,2	19.17	1078.5	01Jan2000, 01:20	1075.5	01Jan2000, 01:30	1	187.8	0.18
Reach-24/25, 23	20.45	1189.8	01Jan2000, 01:35	1180.8	01Jan2000, 01:40	0.99	208.6	0.19
Reach-23,1A	21.21	1241.9	01Jan2000, 01:40	1225.9	01Jan2000, 02:00	0.99	238.1	0.21
Reach-15,9	0.43	85.6	01Jan2000, 01:05	84.1	01Jan2000, 01:20	0.98	6.2	0.27
Reach-9,8	0.73	119.4	01Jan2000, 01:15	115.7	01Jan2000, 01:20	0.97	10.4	0.27
Reach-8,14	1.05	159.5	01Jan2000, 01:15	156.3	01Jan2000, 01:25	0.98	15.0	0.27
Reach-14,7	1.17	169.2	01Jan2000, 01:00	166.6	01Jan2000, 01:00	0.98	16.7	0.27
Reach-7,5	1.62	258.1	01Jan2000, 01:00	256.1	01Jan2000, 01:05	0.99	23.1	0.27
Reach-5,6	2.42	396.7	01Jan2000, 01:05	394.4	01Jan2000, 01:10	0.99	34.8	0.27
Reach-6,4	2.48	401.9	01Jan2000, 01:05	401.0	01Jan2000, 01:10	1	35.6	0.27
Reach-2, 24/25	19.8	1113.7	01Jan2000, 01:30	1105.3	01Jan2000, 01:35	0.99	191.5	0.18

Simulation Period

from: 31Dec1999, 24:00
to : 04Jan2000, 24:00

HEC-HMS Report - XLS stylesheet (Summary_Table)
SIMULATION RUN
- - - - - - - - - - - - - - - - - - - -
Colin McKernan - Michael Baker Jr. Inc.

HYDROLOGIC STUDY

SUMMARY OF RESULTS

Simulation run : "2-Year"
Description : "Basin: Fourmile Canyon Wildfire & Met: 2-Year & Control: Control 1"
Basin Model : "Fourmile Canyon Wildfire"
Meteorologic Model : "2-Year"
Control Specification : "Control 1"
Simulation Start : "31Dec1999, 24:00"
Simulation End : "04Jan2000, 24:00"

SUBBASINS TABLE

Name	Drainage Area (mi2)	Precipitation (in)	Loss (in)	Excess (in)	Runoff coeff.	Peak Discharge (cfs)	Unit Peak Discharge (cfs/mi2)	Time of Peak	Discharge Volume (ft3)
S-3	0.27	1.13	0.63	0.50	0.44	109.8	403.23	01Jan2000, 00:40	7.3
S-7	0.45	1.13	1.00	0.13	0.12	24.6	54.95	01Jan2000, 00:50	3.0
S-10	0.45	1.13	0.63	0.50	0.44	134.8	301.09	01Jan2000, 00:50	12.0
S-11	0.23	1.13	0.63	0.50	0.44	90.6	402.67	01Jan2000, 00:40	6.0
S-12	0.2	1.13	0.63	0.50	0.44	81.7	406.87	01Jan2000, 00:35	5.4
S-16	0.17	1.13	0.63	0.50	0.44	73.2	434.16	01Jan2000, 00:35	4.5
S-18	0.13	1.13	0.63	0.50	0.44	57.0	428.57	01Jan2000, 00:35	3.6
S-23	0.76	1.13	0.63	0.50	0.44	215.1	285.13	01Jan2000, 00:50	20.1
S-2	0.63	1.13	1.09	0.04	0.04	12.2	19.46	01Jan2000, 02:05	1.2
S-4	1.48	1.13	1.05	0.08	0.07	25.9	17.56	01Jan2000, 03:20	6.3
S-5	0.8	1.13	1.00	0.13	0.12	38.1	47.45	01Jan2000, 02:00	5.4

S-6	0.06	1.13	1.00	0.13	0.12	3.7	61.46	01Jan2000, 00:45	0.4
S-8	0.32	1.13	1.00	0.13	0.12	16.8	52.06	01Jan2000, 01:05	2.2
S-9	0.29	1.13	1.00	0.13	0.12	15.4	52.6	01Jan2000, 01:05	2.0
S-13	1.59	1.13	1.05	0.08	0.07	43.4	27.37	01Jan2000, 02:25	6.8
S-14	0.12	1.13	1.00	0.13	0.12	6.9	55.83	01Jan2000, 00:50	0.8
S-15	0.44	1.13	1.00	0.13	0.12	20.9	48.15	01Jan2000, 02:00	2.9
S-17	0.1	1.13	0.68	0.45	0.4	41.1	418.96	01Jan2000, 00:35	2.4
S-19	0.17	1.13	0.92	0.21	0.19	17.7	107.08	01Jan2000, 00:50	1.9
S-20	0.13	1.13	1.02	0.11	0.1	5.8	46.18	01Jan2000, 01:05	0.7
S-21	0.06	1.13	0.76	0.37	0.33	18.5	305.79	01Jan2000, 00:35	1.2
S-24	0.54	1.13	0.83	0.30	0.27	70.6	129.99	01Jan2000, 01:05	8.6
S-25	0.11	1.13	0.89	0.24	0.21	13.5	118.63	01Jan2000, 00:50	1.4
S-A	4.32	0.83	0.83	0.00	0	0.7	0.16	01Jan2000, 02:55	0.2
S-C	3.5	1.13	1.10	0.03	0.03	20.4	5.83	01Jan2000, 03:45	5.5
S-B	7.41	0.88	0.88	0.00	0	3.5	0.47	01Jan2000, 03:30	1.0

JUNCTIONS TABLE

Name	Drainage Area (mi2)	Peak Discharge (cfs)	Unit Peak Discharge (cfs/mi2)	Time of Peak	Discharge Volume (ft3)	Discharge Volume (in)
J-A	4.32	0.7	0.16	01Jan2000, 02:55	0.2	0.00
J-B/13	13.31	45.7	3.43	01Jan2000, 02:25	8.1	0.01
J-16	13.48	73.2	5.43	01Jan2000, 00:35	12.5	0.02
J-10	13.93	201.8	14.49	01Jan2000, 00:50	24.5	0.03
J-17	14.03	219.2	15.63	01Jan2000, 00:50	26.8	0.04
J-11	14.25	253.2	17.77	01Jan2000,	32.8	0.04

				01:00		
J-18/19	14.55	285.2	19.6	01Jan2000, 01:10	38.2	0.05
J-12	14.75	296.6	20.11	01Jan2000, 01:20	43.6	0.06
J-20	14.88	299.7	20.14	01Jan2000, 01:25	44.3	0.06
J-21	14.94	299.9	20.08	01Jan2000, 01:40	45.2	0.06
J-4	18.9	398.3	21.08	01Jan2000, 01:45	68.3	0.07
J-3	19.17	425.7	22.21	01Jan2000, 01:50	75.5	0.07
J-24/25	20.45	481.6	23.55	01Jan2000, 02:05	87.7	0.08
J-23	21.21	537.5	25.35	01Jan2000, 02:15	107.6	0.10
J-1A	24.71	545.0	22.06	01Jan2000, 02:45	114.3	0.09
J-15	0.43	20.9	48.15	01Jan2000, 02:00	2.9	0.13
J-9	0.73	35.1	48.29	01Jan2000, 01:55	4.9	0.13
J-8	1.05	51.1	48.69	01Jan2000, 01:55	7.1	0.13
J-14	1.17	55.8	47.56	01Jan2000, 02:00	7.8	0.13
J-7	1.62	75.6	46.64	01Jan2000, 02:00	10.9	0.13
J-5	2.42	111.6	46.04	01Jan2000, 02:10	16.3	0.13
J-6	2.48	112.6	45.33	01Jan2000, 02:10	16.7	0.13
J-2	19.8	433.0	21.87	01Jan2000, 02:00	77.2	0.07

REACHS TABLE

Name	Drainage Area (mi2)	Peak Discharge IN (cfs)	Time of Peak IN	Peak Discharge OUT (cfs)	Time of Peak OUT	Reduction Coeff.	Discharge Volume (ft3)	Discharge Volume (in)
Reach-1U,13	4.32	0.7	01Jan2000, 02:55	0.7	01Jan2000, 08:40	1	0.2	0.00
Reach-13,16	13.31	45.7	01Jan2000, 02:25	45.4	01Jan2000, 03:00	0.99	8.0	0.01
Reach-16,10	13.48	73.2	01Jan2000, 00:35	70.1	01Jan2000, 00:45	0.96	12.5	0.02

Reach-10,17	13.93	201.8	01Jan2000, 00:50	200.4	01Jan2000, 00:50	0.99	24.4	0.03
Reach-17,11	14.03	219.2	01Jan2000, 00:50	209.5	01Jan2000, 01:00	0.96	26.7	0.04
Reach-11,18/19	14.25	253.2	01Jan2000, 01:00	251.4	01Jan2000, 01:10	0.99	32.8	0.04
Reach-18,12	14.55	285.2	01Jan2000, 01:10	271.8	01Jan2000, 01:20	0.95	38.3	0.05
Reach-12,20	14.75	296.6	01Jan2000, 01:20	294.5	01Jan2000, 01:25	0.99	43.5	0.06
Reach-20,21	14.88	299.7	01Jan2000, 01:25	294.1	01Jan2000, 01:40	0.98	44.1	0.06
Reach-21,4	14.94	299.9	01Jan2000, 01:40	293.0	01Jan2000, 01:45	0.98	45.3	0.06
Reach-4,3	18.9	398.3	01Jan2000, 01:45	393.9	01Jan2000, 01:50	0.99	68.3	0.07
Reach-3,2	19.17	425.7	01Jan2000, 01:50	421.1	01Jan2000, 02:00	0.99	76.0	0.07
Reach-24/25, 23	20.45	481.6	01Jan2000, 02:05	477.5	01Jan2000, 02:20	0.99	87.5	0.08
Reach-23,1A	21.21	537.5	01Jan2000, 02:15	532.1	01Jan2000, 02:45	0.99	108.9	0.10
Reach-15,9	0.43	20.9	01Jan2000, 02:00	20.9	01Jan2000, 02:25	1	2.9	0.13
Reach-9,8	0.73	35.1	01Jan2000, 01:55	35.1	01Jan2000, 01:55	1	4.9	0.13
Reach-8,14	1.05	51.1	01Jan2000, 01:55	50.8	01Jan2000, 02:05	0.99	7.0	0.13
Reach-14,7	1.17	55.8	01Jan2000, 02:00	55.7	01Jan2000, 02:05	1	7.8	0.13
Reach-7,5	1.62	75.6	01Jan2000, 02:00	74.9	01Jan2000, 02:10	0.99	10.8	0.13
Reach-5,6	2.42	111.6	01Jan2000, 02:10	111.6	01Jan2000, 02:10	1	16.3	0.13
Reach-6,4	2.48	112.6	01Jan2000, 02:10	112.5	01Jan2000, 02:10	1	16.7	0.13
Reach-2, 24/25	19.8	433.0	01Jan2000, 02:00	429.8	01Jan2000, 02:10	0.99	77.7	0.07

Simulation Period

from: 31Dec1999, 24:00
to : 04Jan2000, 24:00

Composite _c_ Calculations

Project Name	**Boulder County TO5 Salina Junction**	Baker Project No.	**138601**
Revised Date	**3/23/2015**	Calculated by	**JLW**
Method	**C Value**		

Michael Baker INTERNATIONAL

Land Use	**Pond**	**Landscape (A/B Soils)**	**Landscape (C/D Soils)**	**Paved**	**Roof**	**Gravel**	**Walks**
Imperviousness	**100%**	**2%**	**2%**	**100%**	**90%**	**13%**	**96%**
C_2	**0.87**	**0.00**	**0.05**	**0.87**	**0.80**	**0.15**	**0.87**
C_5	**0.88**	**0.01**	**0.10**	**0.88**	**0.85**	**0.25**	**0.87**
C_{10}	**0.90**	**0.05**	**0.20**	**0.90**	**0.90**	**0.35**	**0.88**
C_{100}	**0.93**	**0.20**	**0.40**	**0.93**	**0.90**	**0.65**	**0.89**

Basin Designation	**Soil Type**	**A_{Pond} (ft^2)**	**$A_{Landscape}$ (ft^2)**	**A_{Paved} (ft^2)**	**A_{Roof} (ft^2)**	**A_{Gravel} (ft^2)**	**A_{Walks} (ft^2)**	**A_{total} (acres)**	**Impervious %**	**C 02 yr**	**C 05 yr**	**C 10 yr**	**C 100 yr**
A1	D	0	15,460	2,104	0	436	0	0.41	14%	0.15	0.19	0.29	0.47

Time of Concentration

Project Name **Boulder County TO5 Salina Junction**
Revised Date **3/23/2015**

$t_i = 0.395(1.1 - C_5)L^{1/2} / S^{1/3}$

$t_t = (L/v)/60$

t_c check: $t_c = (L/180) + 10$

Baker Project No. **138601**
Calculated by **JLW**

Michael Baker INTERNATIONAL

SUB-BASIN DATA			INITIAL/OVERLAND TIME (t_i)			TRAVEL TIME (t_t)						$t_i + t_t$	Basin Type	t_c CHECK (urbanized basins)		FINAL t_c USED
Basin Designation	**Area**	**C_{CD}**	**length**	slope	**t_i**	length	slope	**Type of land Surface**	**Conveyance Coeff,**	**velocity**	**t_t**	**t_c**	**Urbanized?**	**Total Length**	**t_c**	**t_c**
	(acres)	**05 yr**	**(ft)**	%	**(min)**	(ft)	%		**Cv**	**(ft/sec)**	**(min)**	**(min)**		**(ft)**	**(min)**	**(min)**
A1	0.41	0.19	142.00	48.17%	5.44	225.70	9.04%	Paved areas and shallow paved swales	20.00	6.01	0.63	6.06	Non-Urbanized	368	12.04	**10.00**

Runoff Calculations (Rational Method)

Project Name **Boulder County TO5 Salina Junction**
Revised Date **3/23/2015**

Baker Project No. **138601**
Calculated by **JLW**

Michael Baker INTERNATIONAL

Basin	Area (ac.)	'c'	cA	t_c (min)	intensity (in/hr)	Q (cfs)	Storm Event
A1	0.41	0.15	0.06	10.00	2.51	0.15	02 YR
		0.19	0.08		3.51	0.28	05 YR
		0.29	0.12		4.21	0.50	10 YR
		0.47	0.19		6.59	1.27	100 YR

Concrete Gutter

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.09040	ft/ft
Left Side Slope	0.17	ft/ft (V:H)
Right Side Slope	0.17	ft/ft (V:H)
Discharge	0.28	ft^3/s

Results

Normal Depth	0.10	ft
Flow Area	0.06	ft^2
Wetted Perimeter	1.22	ft
Hydraulic Radius	0.05	ft
Top Width	1.21	ft
Critical Depth	0.17	ft
Critical Slope	0.00572	ft/ft
Velocity	4.62	ft/s
Velocity Head	0.33	ft
Specific Energy	0.43	ft
Froude Number	3.63	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.10	ft
Critical Depth	0.17	ft
Channel Slope	0.09040	ft/ft
Critical Slope	0.00572	ft/ft

INLET HYDRAULIC CALCULATIONS (5 & 10-YEAR STORM)

Project: **Boulder County - TO5**
Location: **Boulder County, CO**
Designed by: **JLW**

INLET					GRATE INLETS		CROSS SLOPE	LONG. SLOPE	DRAINAGE AREA	Q	PONDED DEPTH	PONDED WIDTH		BYPASS FLOW FROM	CLOG FACTOR %	COMMENTS
					GRATE LENGTH	GRATE WIDTH					COMPUTED	MAX. ALLOW.	COMPUTED	Q		
STORM EVENT	ID	DESCRIPTION	TYPE	PROFILE TYPE	(FT)	(FT)	%	(%)	(ACRE)	(CFS)	(FT)	(FT)	(FT)	(CFS)		
5 YR	IN1	TYPE 13	Grate	On-Grade	2.98	1.58	16.66	2.10	0.41	0.28	0.12	2.50	1.48	0.06	50.00	
10 YR	IN1	TYPE 13	Grate	On-Grade	2.98	1.58	16.66	2.10	0.41	0.50	0.15	2.50	1.83	0.14	50.00	

STORM SEWER HYDRAULIC CALCULATIONS (5 & 10-YEAR STORM)

Project: **Boulder County - TO5**
Location: **Boulder County, CO**
Designed by: **JLW**

STORM EVENT	LINK ID	UPSTRM NODE	DWNSTRM NODE	SHAPE	MATERIAL	LENGTH	N VALUE	SLOPE	RISE	SPAN	Q	CRITICAL DEPTH	ACTUAL DEPTH	ACTUAL VELOCITY	CAPACITY	INV UPSTRM	INV DWNSTRM	HGL UPSTRM	HGL DWNSTRM	EGL UPSTRM	EGL DWNSTRM
						(FT)		(%)	(IN)	(IN)	(CFS)	(FT)	(FT)	(FT/SEC)	(CFS)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)
5 YR	P1	IN1	FES	Circular	RCP	26.71	0.013	2.23	18.00	18.00	0.22	0.17	0.12	3.15	15.67	6615.19	6614.59	6616.02	6615.37	6616.18	6615.53
10 YR	P1	IN1	FES	Circular	RCP	26.71	0.013	2.23	18.00	18.00	0.36	0.22	0.16	3.66	15.67	6615.19	6614.59	6616.05	6615.45	6616.25	6615.66

STRUCTURE HYDRAULIC CALCULATIONS (5 & 10-YEAR STORM)

Project: **Boulder County - TO5**
Location: **Boulder County, CO**
Designed by: **JLW**

STORM EVENT	STRUCTURE	Q	RIM ELEVATION	HGL	EGL
	ID	(CFS)	(FT)	(FT)	(FT)
5 YR	IN1	0.22	6618.22	6616.02	6616.18
10 YR	IN1	0.36	6618.22	6616.05	6616.25