FILE

100 NORTH MAIN STREET
O'FALLON, MISSOURI 63366
636.240.2000
FACSIMILE 636.978.4144

August 6, 1999

Elmer Krussel, P.E.
Volz Incorporated
5933 South Highway 94, Suite 201
St. Charles, MO 63304-5611

Re: Winghaven - 10 Acre Lake

Dear Mr. Krussel:

The site plan for the proposed ten acre lake inside the Winghaven development has been reviewed and is not approved. Comments are as follows:

1. Include the detention routing calculations for the 2 and 15 year storms.
2. Provide an overall drainage area map for the Winghaven development outlining the proposed storm water flows for the sites using this lake. Also include calculations showing the existing flow rates for these sites.
3. Add an 8" valve at the bottom of the outfall structure to provide a means for draining the lake.
4. Provide calculations showing the maximum flow from the emergency spillway assuming the outfall structure is blocked.

Please revise and submit three copies of the plans for approval. If you have any questions call me at 379-5563.

Sincerely,

Chris Linneman, EIT,
Engineer III

cc: D. Woods, T. Criswell, file thru F. Godwin

POND-2 Version: 5.21
S/N:

Winghaven
Mastercard, Novus, Commercial Lake

CALCULATED 07-26-1999 10:05:47
DISK FILE: b5930\MC10ACRE.VOL

Planimeter scale: 1 inch = 50 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
535.00	178.03	445,075	0	0	0
536.00	184.15	460,375	1,358,110	452,704	452,704
537.00	*I*	471,570	1,397,884	465,961	918,665
538.00	193.16	482,900	1,414,778	943,185	1,395,889
539.00	*I*	515,614	1,497,503	499,168	1,895,057
540.00	219.76	549,400	1,547,378	1,031,585	2,427,474

I ---> Interpolated area from closest two planimeter readings.

$$IA = (\text{sq.rt}(\text{Area1}) + ((Ei-E1)/(E2-E1))*(\text{sq.rt}(\text{Area2})-\text{sq.rt}(\text{Area1})))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

NEED
- 2 YR DEVELOPED
- 15 YR CONDITIONS

- 2 YR
- 15 YR
- 25 YR
} EXISTING CONDITIONS

LARGE SCALE DRAINAGE MAP

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
ELMER ANTHONY RUSSEL
NUMBER E-16146
7/26/99

Outlet Structure File: MC10ACRE.STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

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Winghaven
Mastercard, Novus, Commercial 10 Acre Lake

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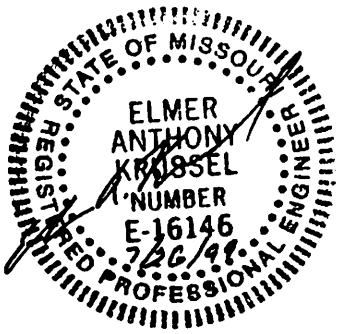
***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
535.00	0.0	1
535.25	9.0	1
535.50	25.5	1
535.75	46.8	1
536.00	72.0	1
536.25	100.6	1
536.50	132.3	1
536.75	166.7	1
537.00	199.5	1
537.25	225.9	1
537.50	252.4	1
537.75	278.9	1
538.00	300.2	1
538.25	312.5	1
538.50	324.3	1
538.75	335.7	1
539.00	346.7	1
539.25	357.3	1
539.50	367.7	1
539.75	377.8	1
540.00	387.6	1



Outlet Structure File: MC10ACRE.STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

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Winghaven
Mastercard, Novus, Commercial 10 Acre Lake
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Outlet Structure File: b5930\MC10ACRE.STR
Planimeter Input File: b5930\MC10ACRE.VOL
Rating Table Output File: b5930\MC10ACRE.PND

Min. Elev.(ft) = 535 Max. Elev.(ft) = 540 Incr.(ft) = .25

Additional elevations (ft) to be included in table:
* *

****
SYSTEM CONNECTIVITY
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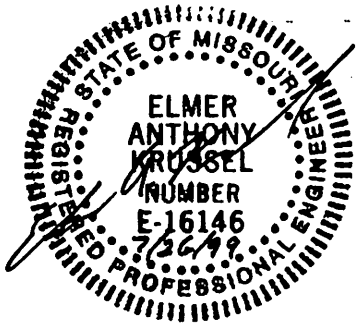
Structure	No.	Q Table		Q Table
INLET BOX	1		->	1

Outflow rating table summary was stored in file:
b5930\MC10ACRE.PND



Outlet Structure File: MC10ACRE.STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

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Winghaven
Mastercard, Novus, Commercial 10 Acre Lake

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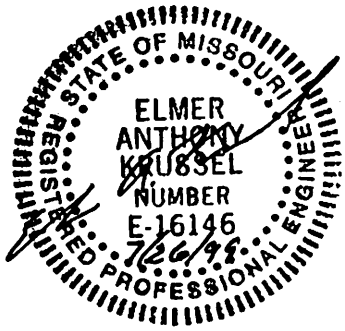
>>>>>> Structure No. 1 <<<<<<
(Input Data)

INLET BOX
Weir & Orifice defined by length and area

E1 elev.(ft)?	535
E2 elev.(ft)?	540.001
Crest elev.(ft)?	535
Weir length (ft)?	24
Weir coefficient?	3
Orifice area (sq.ft)?	36
Orifice coefficient?	.6
Start transition elev.(ft) @ ?	
Transition height (ft)?	1



Outlet Structure File: MC10ACRE.STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

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Winghaven
Mastercard, Novus, Commercial 10 Acre Lake
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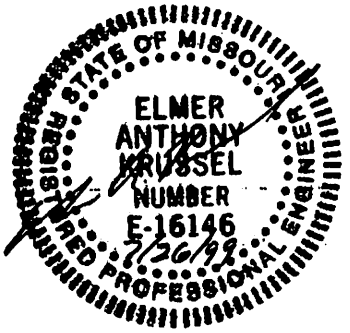
Outflow Rating Table for Structure #1
INLET BOX Weir & Orifice defined by length and area

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation	Messages
535.00	0.0	Weir:	H =0.0
535.25	9.0	Weir:	H =.25
535.50	25.5	Weir:	H =.5
535.75	46.8	Weir:	H =.750
536.00	72.0	Weir:	H =1.0
536.25	100.6	Weir:	H =1.25
536.50	132.3	Weir:	H =1.5
536.75	166.7	Weir:	H =1.75
537.00	199.5	Transition:	H =2.0
537.25	225.9	Transition:	H =2.25
537.50	252.4	Transition:	H =2.5
537.75	278.9	Transition:	H =2.75
538.00	300.2	Orifice:	H =3.0
538.25	312.5	Orifice:	H =3.25
538.50	324.3	Orifice:	H =3.5
538.75	335.7	Orifice:	H =3.75
539.00	346.7	Orifice:	H =4.0
539.25	357.3	Orifice:	H =4.25
539.50	367.7	Orifice:	H =4.5
539.75	377.8	Orifice:	H =4.75
540.00	387.6	Orifice:	H =5.0

Weir Cw = 3 Weir length = 24 ft
Orifice Co = .6 Orifice area = 36 sq.ft.
Q (cfs) = (Cw * L * H**1.5) or (Co * A * sqr(2*g*H))
Transition interpolated between elev. 536.9075 and 537.9075 ft
Weir equation = Orifice equation @ elev.= 537.4075 ft



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* Winghaven
* Mastercard, Novus, Commercial 10 Acre Lake
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Inflow Hydrograph: b5930\2A15 .HYD
Rating Table file: b5930\MC10ACRE.PND

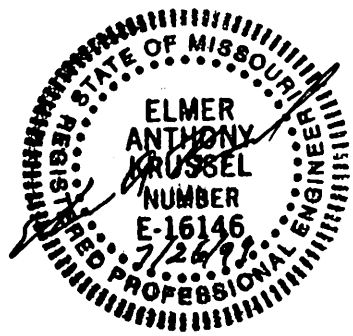
----INITIAL CONDITIONS----
Elevation = 535.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

INTERMEDIATE ROUTING COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
535.00	0.0	0	0.0	0.0
535.25	9.0	111,744	620.8	629.8
535.50	25.5	224,439	1246.9	1272.4
535.75	46.8	338,091	1878.3	1925.1
536.00	72.0	452,703	2515.0	2587.0
536.25	100.6	568,145	3156.4	3257.0
536.50	132.3	684,285	3801.6	3933.9
536.75	166.7	801,124	4450.7	4617.4
537.00	199.5	918,665	5103.7	5303.2
537.25	225.9	1,036,910	5760.6	5986.5
537.50	252.4	1,155,861	6421.4	6673.8
537.75	278.9	1,275,520	7086.2	7365.1
538.00	300.2	1,395,889	7754.9	8055.1
538.25	312.5	1,517,622	8431.2	8743.7
538.50	324.3	1,641,383	9118.8	9443.1
538.75	335.7	1,767,189	9817.7	10153.4
539.00	346.7	1,895,056	10528.1	10874.8
539.25	357.3	2,025,002	11250.0	11607.3
539.50	367.7	2,157,042	11983.6	12351.3
539.75	377.8	2,291,194	12728.9	13106.7
540.00	387.6	2,427,474	13486.0	13873.6

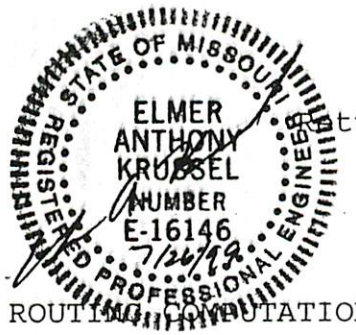
Time increment (t) = 0.100 hrs.



POND-2 Version: 5.21 S/N:
EXECUTED: 07-26-1999 10:07:08

Return Freq: 25 years

Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A15 .HYD
Outflow Hydrograph: b5930\2A25OUT .HYD

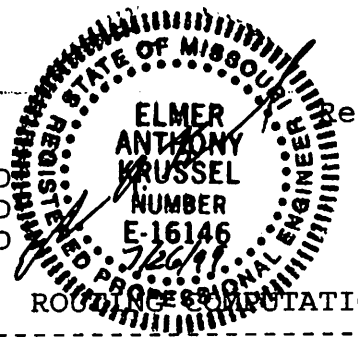


INFLOW HYDROGRAPH — ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
11.000	15.00	-----	0.0	0.0	0.00	535.00
11.100	17.00	32.0	31.1	32.0	0.46	535.01
11.200	19.00	36.0	65.2	67.1	0.96	535.03
11.300	21.00	40.0	102.2	105.2	1.50	535.04
11.400	24.00	45.0	143.0	147.2	2.10	535.06
11.500	27.00	51.0	188.4	194.0	2.77	535.08
11.600	30.00	57.0	238.4	245.4	3.51	535.10
11.700	41.00	71.0	300.6	309.4	4.42	535.12
11.800	53.00	94.0	383.3	394.6	5.64	535.16
11.900	64.00	117.0	486.0	500.3	7.15	535.20
12.000	118.00	182.0	648.0	668.0	9.98	535.26
12.100	227.00	345.0	956.4	993.0	18.33	535.39
12.200	392.00	619.0	1504.6	1575.4	35.39	535.62
12.300	495.00	887.0	2262.5	2391.6	64.56	535.93
12.400	480.00	975.0	3037.9	3237.5	99.77	536.24
12.500	361.00	841.0	3619.5	3878.9	129.73	536.48
12.600	249.00	610.0	3935.1	4229.5	147.18	536.61
12.700	181.00	430.0	4057.1	4365.1	154.00	536.66
12.800	136.00	317.0	4065.2	4374.1	154.46	536.66
12.900	112.00	248.0	4010.4	4313.2	151.39	536.64
13.000	87.00	199.0	3917.1	4209.4	146.17	536.60
13.100	75.00	162.0	3799.9	4079.1	139.61	536.55
13.200	64.00	139.0	3673.8	3938.9	132.55	536.50
13.300	58.00	122.0	3544.1	3795.8	125.83	536.45
13.400	53.00	111.0	3416.6	3655.1	119.24	536.40
13.500	50.00	103.0	3293.8	3519.6	112.90	536.35
13.600	46.00	96.0	3176.2	3389.8	106.82	536.30
13.700	44.00	90.0	3064.1	3266.2	101.03	536.25
13.800	41.00	85.0	2957.1	3149.1	96.00	536.21
13.900	39.00	80.0	2854.7	3037.1	91.21	536.17
14.000	37.00	76.0	2757.3	2930.7	86.67	536.13
14.100	35.00	72.0	2664.7	2829.3	82.35	536.09
14.200	34.00	69.0	2577.1	2733.7	78.26	536.05
14.300	32.00	66.0	2494.3	2643.1	74.40	536.02
14.400	31.00	63.0	2415.6	2557.3	70.87	535.99
14.500	29.00	60.0	2340.1	2475.6	67.76	535.96
14.600	28.00	57.0	2267.5	2397.1	64.77	535.93
14.700	28.00	56.0	2199.6	2323.5	61.97	535.90
14.800	27.00	55.0	2135.9	2254.6	59.35	535.87
14.900	26.00	53.0	2075.2	2188.9	56.84	535.85
15.000	26.00	52.0	2018.2	2127.2	54.50	535.83
15.100	25.00	51.0	1964.7	2069.2	52.29	535.80
15.200	25.00	50.0	1914.2	2014.7	50.21	535.78
15.300	24.00	49.0	1866.7	1963.2	48.25	535.76
15.400	24.00	48.0	1821.8	1914.7	46.46	535.75

Return Freq: 25 years

Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A15 .HYD
Outflow Hydrograph: b5930\2A25OUT .HYD

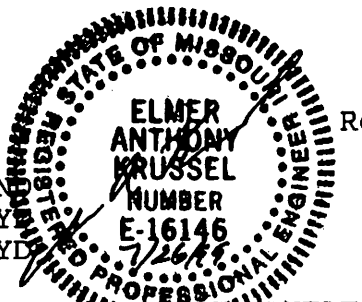


INFLOW HYDROGRAPH — ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
15.500	23.00	47.0	1778.9	1868.8	44.96	535.73
15.600	23.00	46.0	1737.8	1824.9	43.53	535.71
15.700	22.00	45.0	1698.5	1782.8	42.16	535.70
15.800	22.00	44.0	1660.8	1742.5	40.84	535.68
15.900	21.00	43.0	1624.7	1703.8	39.58	535.67
16.000	21.00	42.0	1589.9	1666.7	38.37	535.65
16.100	20.00	41.0	1556.5	1630.9	37.20	535.64
16.200	20.00	40.0	1524.4	1596.5	36.08	535.62
16.300	19.00	39.0	1493.4	1563.4	35.00	535.61
16.400	19.00	38.0	1463.5	1531.4	33.95	535.60
16.500	18.00	37.0	1434.6	1500.5	32.94	535.59
16.600	18.00	36.0	1406.7	1470.6	31.97	535.58
16.700	18.00	36.0	1380.5	1442.7	31.06	535.57
16.800	18.00	36.0	1356.1	1416.5	30.20	535.56
16.900	18.00	36.0	1333.3	1392.1	29.41	535.55
17.000	18.00	36.0	1312.0	1369.3	28.66	535.54
17.100	18.00	36.0	1292.1	1348.0	27.97	535.53
17.200	18.00	36.0	1273.4	1328.1	27.32	535.52
17.300	17.00	35.0	1255.1	1308.4	26.68	535.51
17.400	17.00	34.0	1237.0	1289.1	26.04	535.51
17.500	17.00	34.0	1220.1	1271.0	25.46	535.50
17.600	17.00	34.0	1204.0	1254.1	25.03	535.49
17.700	16.00	33.0	1187.8	1237.0	24.59	535.49
17.800	16.00	32.0	1171.5	1219.8	24.15	535.48
17.900	15.00	31.0	1155.1	1202.5	23.71	535.47
18.000	15.00	30.0	1138.6	1185.1	23.26	535.47
18.100	15.00	30.0	1122.9	1168.6	22.83	535.46
18.200	15.00	30.0	1108.1	1152.9	22.43	535.45
18.300	14.00	29.0	1093.0	1137.1	22.02	535.45
18.400	14.00	28.0	1077.8	1121.0	21.61	535.44
18.500	14.00	28.0	1063.3	1105.8	21.22	535.44
18.600	14.00	28.0	1049.6	1091.3	20.85	535.43
18.700	14.00	28.0	1036.6	1077.6	20.50	535.42
18.800	13.00	27.0	1023.4	1063.6	20.14	535.42
18.900	13.00	26.0	1009.8	1049.4	19.77	535.41
19.000	13.00	26.0	997.0	1035.8	19.43	535.41
19.100	13.00	26.0	984.8	1023.0	19.10	535.40
19.200	13.00	26.0	973.2	1010.8	18.78	535.40
19.300	13.00	26.0	962.2	999.2	18.49	535.39
19.400	13.00	26.0	951.8	988.2	18.20	535.39
19.500	12.00	25.0	941.0	976.8	17.91	535.39
19.600	12.00	24.0	929.8	965.0	17.61	535.38
19.700	12.00	24.0	919.1	953.8	17.32	535.38
19.800	12.00	24.0	909.1	943.1	17.05	535.37
19.900	12.00	24.0	899.5	933.1	16.79	535.37
20.000	12.00	24.0	890.4	923.5	16.54	535.36

POND-2 Version: 5.21 S/N:
EXECUTED: 07-26-1999 10:07:08 Return Freq: 25 years

Pond File: b5930\MC10ACRE.PN
Inflow Hydrograph: b5930\2A15 .HYD
Outflow Hydrograph: b5930\2A25OUT .HYD



INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
20.100	12.00	24.0	881.8	914.4	16.31	535.36
20.200	12.00	24.0	873.6	905.8	16.09	535.36
20.300	12.00	24.0	865.9	897.6	15.88	535.35
20.400	12.00	24.0	858.5	889.9	15.68	535.35
20.500	12.00	24.0	851.5	882.5	15.49	535.35
20.600	11.00	23.0	844.0	874.5	15.28	535.35
20.700	11.00	22.0	835.8	866.0	15.06	535.34
20.800	11.00	22.0	828.1	857.8	14.86	535.34
20.900	11.00	22.0	820.8	850.1	14.66	535.34
21.000	11.00	22.0	813.9	842.8	14.47	535.33
21.100	11.00	22.0	807.3	835.9	14.29	535.33
21.200	11.00	22.0	801.0	829.3	14.12	535.33
21.300	11.00	22.0	795.1	823.0	13.96	535.33
21.400	11.00	22.0	789.5	817.1	13.81	535.32
21.500	10.00	21.0	783.2	810.5	13.64	535.32
21.600	10.00	20.0	776.3	803.2	13.45	535.32
21.700	10.00	20.0	769.8	796.3	13.28	535.31
21.800	10.00	20.0	763.5	789.8	13.11	535.31
21.900	10.00	20.0	757.6	783.5	12.95	535.31
22.000	10.00	20.0	752.1	777.6	12.80	535.31
22.100	10.00	20.0	746.7	772.1	12.65	535.31
22.200	10.00	20.0	741.7	766.7	12.52	535.30
22.300	9.00	19.0	736.0	760.7	12.36	535.30
22.400	9.00	18.0	729.6	754.0	12.19	535.30
22.500	9.00	18.0	723.6	747.6	12.03	535.30
22.600	8.00	17.0	716.9	740.6	11.84	535.29
22.700	8.00	16.0	709.6	732.9	11.65	535.29
22.800	8.00	16.0	702.7	725.6	11.46	535.29
22.900	8.00	16.0	696.1	718.7	11.28	535.28
23.000	8.00	16.0	689.9	712.1	11.11	535.28
23.100	7.00	15.0	683.0	704.9	10.93	535.28
23.200	7.00	14.0	675.6	697.0	10.73	535.28
23.300	7.00	14.0	668.5	689.6	10.53	535.27
23.400	6.00	13.0	660.8	681.5	10.33	535.27
23.500	6.00	12.0	652.6	672.8	10.11	535.27
23.600	6.00	12.0	644.8	664.6	9.89	535.26
23.700	6.00	12.0	637.5	656.8	9.69	535.26
23.800	6.00	12.0	630.4	649.5	9.50	535.26
23.900	5.00	11.0	622.8	641.4	9.30	535.25
24.000	5.00	10.0	614.7	632.8	9.08	535.25
24.100	5.00	10.0	606.8	624.7	8.93	535.25
24.200	4.00	9.0	598.2	615.8	8.80	535.24
24.300	4.00	8.0	588.9	606.2	8.66	535.24
24.400	4.00	8.0	579.8	596.9	8.53	535.24
24.500	4.00	8.0	571.0	587.8	8.40	535.23
24.600	4.00	8.0	562.5	579.0	8.27	535.23

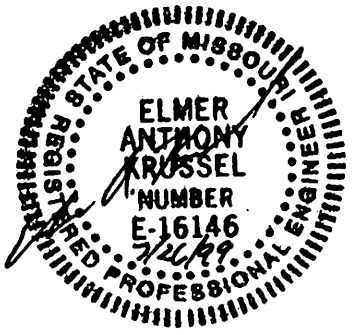
Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A15 .HYD
Outflow Hydrograph: b5930\2A25OUT .HYD

INFLOW HYDROGRAPH

TIME (hrs)	INFLOW (cfs)
24.700	3.00
24.800	3.00
24.900	3.00
25.000	2.00
25.100	2.00
25.200	2.00
25.300	2.00
25.400	2.00
25.500	1.00
25.600	1.00
25.700	1.00
25.800	0.00
25.900	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
7.0	553.2	569.5	8.14	535.23
6.0	543.2	559.2	7.99	535.22
6.0	533.5	549.2	7.85	535.22
5.0	523.1	538.5	7.70	535.21
4.0	512.1	527.1	7.53	535.21
4.0	501.3	516.1	7.37	535.20
4.0	490.9	505.3	7.22	535.20
4.0	480.7	494.9	7.07	535.20
3.0	469.9	483.7	6.91	535.19
2.0	458.4	471.9	6.74	535.19
2.0	447.3	460.4	6.58	535.18
1.0	435.5	448.3	6.41	535.18
0.0	423.0	435.5	6.22	535.17



********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A15 .HYD
Outflow Hydrograph: b5930\2A25OUT .HYD

Starting Pond W.S. Elevation = 535.00 ft

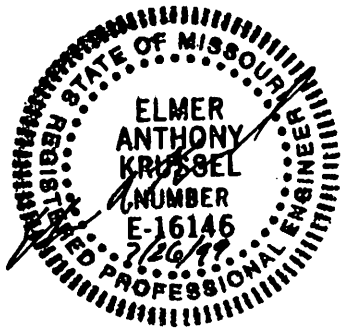
***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	495.00 cfs
Peak Outflow	=	154.46 cfs
Peak Elevation	=	536.66 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	759,534 cu-ft
Total Storage in Pond	=	759,534 cu-ft

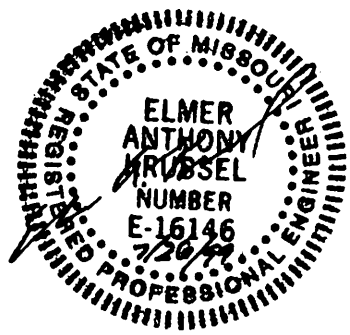
Warning: Inflow hydrograph truncated on left side.

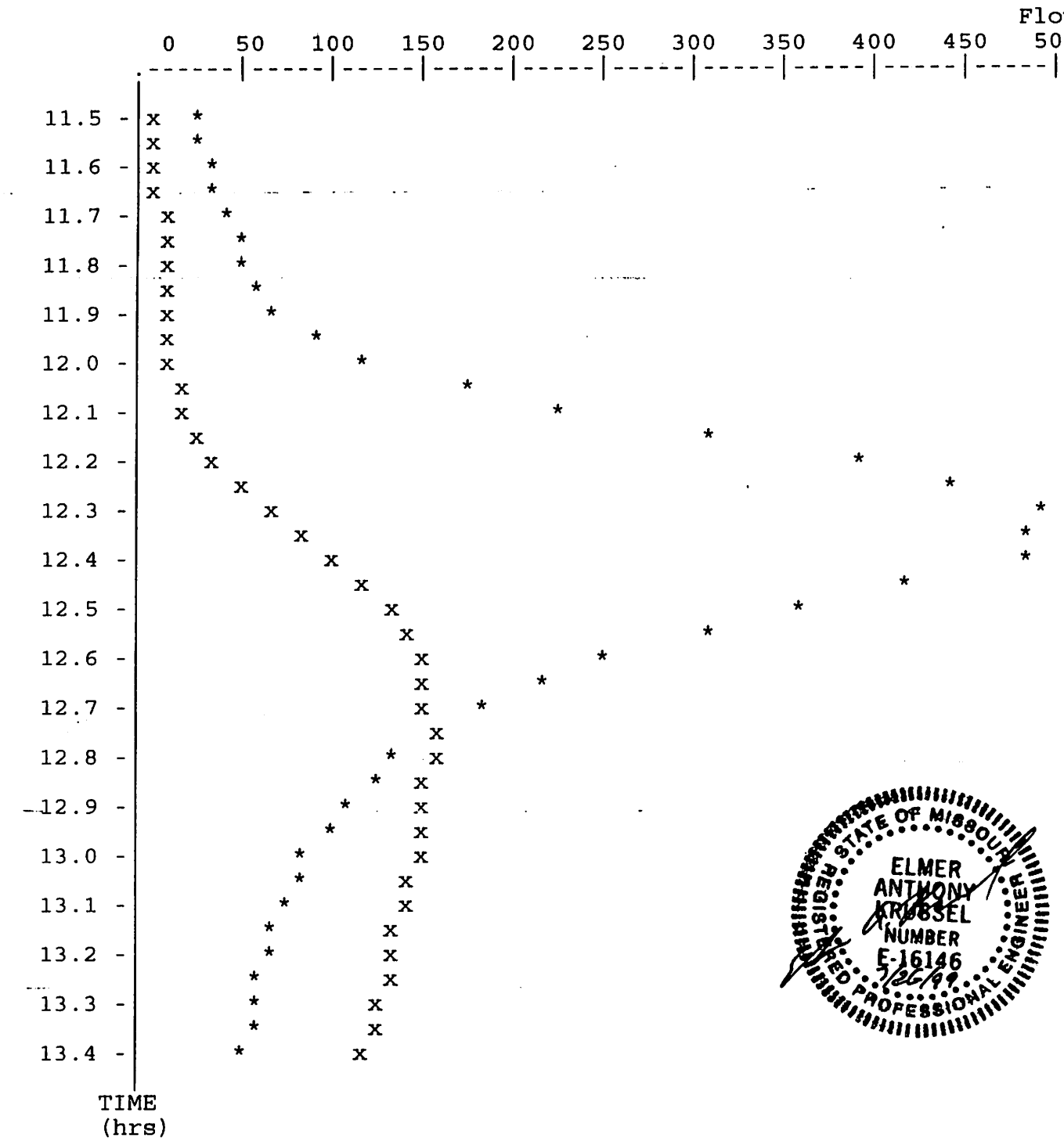


Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A15 .HYD
Outflow Hydrograph: b5930\2A25OUT .HYD

EXECUTED: 07-26-1999
10:07:08

Peak Inflow = 495.00 cfs
Peak Outflow = 154.46 cfs
Peak Elevation = 536.66 ft





* File: b5930\2A15 .HYD Qmax = 495.0 cfs
x File: b5930\2A25OUT .HYD Qmax = 154.5 cfs

****
*
* Winghaven
* Mastercard, Novus, Commercial 10 Acre Lake
*
*
*
****

Inflow Hydrograph: b5930\2A100 .HYD
Rating Table file: b5930\MC10ACRE.PND

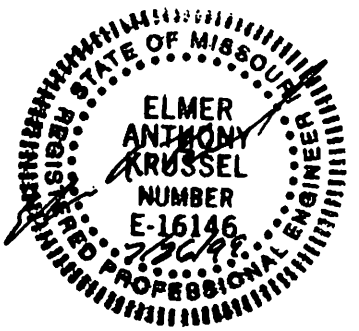
----INITIAL CONDITIONS----
Elevation = 535.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

INTERMEDIATE ROUTING COMPUTATIONS

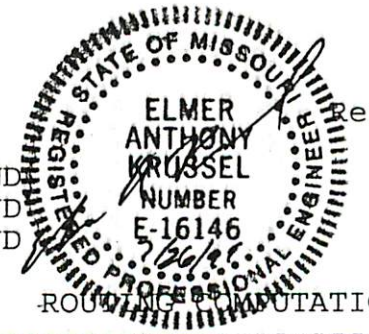
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
535.00	0.0	0	0.0	0.0
535.25	9.0	111,744	620.8	629.8
535.50	25.5	224,439	1246.9	1272.4
535.75	46.8	338,091	1878.3	1925.1
536.00	72.0	452,703	2515.0	2587.0
536.25	100.6	568,145	3156.4	3257.0
536.50	132.3	684,285	3801.6	3933.9
536.75	166.7	801,124	4450.7	4617.4
537.00	199.5	918,665	5103.7	5303.2
537.25	225.9	1,036,910	5760.6	5986.5
537.50	252.4	1,155,861	6421.4	6673.8
537.75	278.9	1,275,520	7086.2	7365.1
538.00	300.2	1,395,889	7754.9	8055.1
538.25	312.5	1,517,622	8431.2	8743.7
538.50	324.3	1,641,383	9118.8	9443.1
538.75	335.7	1,767,189	9817.7	10153.4
539.00	346.7	1,895,056	10528.1	10874.8
539.25	357.3	2,025,002	11250.0	11607.3
539.50	367.7	2,157,042	11983.6	12351.3
539.75	377.8	2,291,194	12728.9	13106.7
540.00	387.6	2,427,474	13486.0	13873.6

Time increment (t) = 0.100 hrs.



POND-2 Version: 5.21 S/N:
EXECUTED: 07-26-1999 10:07:08 Return Freq: 100 years

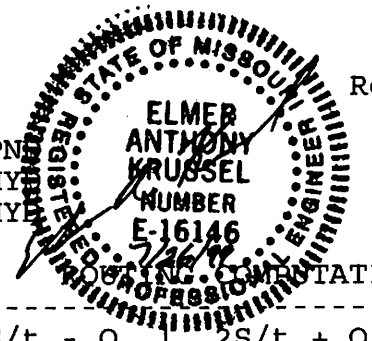
Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A100 .HYD
Outflow Hydrograph: b5930\2A100OUT.HYD



INFLOW HYDROGRAPH ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
11.000	20.00	-----	0.0	0.0	0.00	535.00
11.100	23.00	43.0	41.8	43.0	0.61	535.02
11.200	25.00	48.0	87.2	89.8	1.28	535.04
11.300	28.00	53.0	136.2	140.2	2.00	535.06
11.400	32.00	60.0	190.6	196.2	2.80	535.08
11.500	37.00	69.0	252.2	259.6	3.71	535.10
11.600	41.00	78.0	320.7	330.2	4.72	535.13
11.700	56.00	97.0	405.8	417.7	5.97	535.17
11.800	72.00	128.0	518.5	533.8	7.63	535.21
11.900	87.00	159.0	657.1	677.5	10.23	535.27
12.000	159.00	246.0	871.1	903.1	16.02	535.36
12.100	306.00	465.0	1280.9	1336.1	27.58	535.52
12.200	529.00	835.0	2007.8	2115.9	54.06	535.82
12.300	669.00	1198.0	3008.9	3205.8	98.41	536.23
12.400	648.00	1317.0	4021.9	4325.9	152.03	536.64
12.500	487.00	1135.0	4771.9	5156.9	192.50	536.95
12.600	337.00	824.0	5174.3	5595.9	210.81	537.11
12.700	244.00	581.0	5321.3	5755.3	216.97	537.17
12.800	184.00	428.0	5315.9	5749.3	216.74	537.16
12.900	150.00	334.0	5224.1	5649.9	212.89	537.13
13.000	117.00	267.0	5077.5	5491.1	206.76	537.07
13.100	102.00	219.0	4898.2	5296.5	199.18	537.00
13.200	87.00	189.0	4708.8	5087.2	189.17	536.92
13.300	79.00	166.0	4516.8	4874.8	179.01	536.84
13.400	71.00	150.0	4328.7	4666.8	169.06	536.77
13.500	67.00	138.0	4148.5	4466.7	159.12	536.69
13.600	62.00	129.0	3978.3	4277.5	149.59	536.63
13.700	58.00	120.0	3817.1	4098.3	140.57	536.56
13.800	55.00	113.0	3665.9	3930.1	132.12	536.50
13.900	52.00	107.0	3523.4	3772.9	124.76	536.44
14.000	50.00	102.0	3389.7	3625.4	117.85	536.39
14.100	48.00	98.0	3264.8	3487.7	111.40	536.34
14.200	45.00	93.0	3147.2	3357.8	105.32	536.29
14.300	43.00	88.0	3035.9	3235.2	99.67	536.24
14.400	41.00	84.0	2930.4	3119.9	94.75	536.20
14.500	40.00	81.0	2831.1	3011.4	90.12	536.16
14.600	38.00	78.0	2737.6	2909.1	85.75	536.12
14.700	37.00	75.0	2649.4	2812.6	81.63	536.08
14.800	36.00	73.0	2566.8	2722.4	77.78	536.05
14.900	36.00	72.0	2490.4	2638.8	74.21	536.02
15.000	35.00	71.0	2419.3	2561.4	71.02	535.99
15.100	34.00	69.0	2351.9	2488.3	68.24	535.96
15.200	34.00	68.0	2288.6	2419.9	65.64	535.94
15.300	33.00	67.0	2229.2	2355.6	63.19	535.91
15.400	33.00	66.0	2173.4	2295.2	60.89	535.89

Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A100 .HYD
Outflow Hydrograph: b5930\2A100OUT.HYD

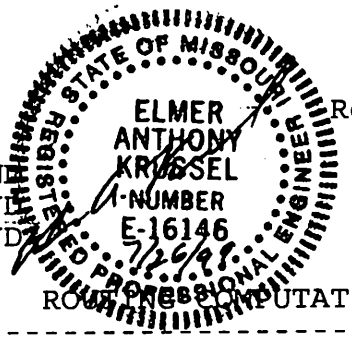


INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
15.500	32.00	65.0	2121.0	2238.4	58.73	535.87
15.600	31.00	63.0	2070.7	2184.0	56.66	535.85
15.700	30.00	61.0	2022.3	2131.7	54.66	535.83
15.800	30.00	60.0	1976.8	2082.3	52.79	535.81
15.900	29.00	59.0	1933.7	2035.8	51.01	535.79
16.000	28.00	57.0	1892.1	1990.7	49.30	535.77
16.100	27.00	55.0	1851.9	1947.1	47.64	535.76
16.200	27.00	54.0	1813.5	1905.9	46.17	535.74
16.300	26.00	53.0	1776.7	1866.5	44.89	535.73
16.400	26.00	52.0	1741.4	1828.7	43.66	535.71
16.500	25.00	51.0	1707.5	1792.4	42.47	535.70
16.600	25.00	50.0	1674.8	1757.5	41.33	535.69
16.700	25.00	50.0	1644.3	1724.8	40.26	535.67
16.800	24.00	49.0	1614.8	1693.3	39.24	535.66
16.900	24.00	48.0	1586.3	1662.8	38.24	535.65
17.000	24.00	48.0	1559.7	1634.3	37.31	535.64
17.100	24.00	48.0	1534.8	1607.7	36.44	535.63
17.200	24.00	48.0	1511.6	1582.8	35.63	535.62
17.300	23.00	47.0	1488.9	1558.6	34.84	535.61
17.400	23.00	46.0	1466.8	1534.9	34.07	535.60
17.500	23.00	46.0	1446.1	1512.8	33.34	535.59
17.600	22.00	45.0	1425.8	1491.1	32.64	535.58
17.700	22.00	44.0	1405.9	1469.8	31.94	535.58
17.800	21.00	43.0	1386.4	1448.9	31.26	535.57
17.900	21.00	42.0	1367.2	1428.4	30.59	535.56
18.000	20.00	41.0	1348.3	1408.2	29.93	535.55
18.100	20.00	40.0	1329.8	1388.3	29.28	535.54
18.200	20.00	40.0	1312.4	1369.8	28.68	535.54
18.300	19.00	39.0	1295.3	1351.4	28.08	535.53
18.400	19.00	38.0	1278.3	1333.3	27.49	535.52
18.500	19.00	38.0	1262.4	1316.3	26.93	535.52
18.600	19.00	38.0	1247.6	1300.4	26.41	535.51
18.700	19.00	38.0	1233.7	1285.6	25.93	535.51
18.800	18.00	37.0	1219.8	1270.7	25.46	535.50
18.900	18.00	36.0	1205.7	1255.8	25.07	535.49
19.000	18.00	36.0	1192.2	1241.7	24.71	535.49
19.100	18.00	36.0	1179.5	1228.2	24.37	535.48
19.200	18.00	36.0	1167.4	1215.5	24.04	535.48
19.300	17.00	35.0	1155.0	1202.4	23.70	535.47
19.400	17.00	34.0	1142.3	1189.0	23.36	535.47
19.500	17.00	34.0	1130.2	1176.3	23.03	535.46
19.600	17.00	34.0	1118.8	1164.2	22.72	535.46
19.700	17.00	34.0	1107.9	1152.8	22.43	535.45
19.800	16.00	33.0	1096.7	1140.9	22.12	535.45
19.900	16.00	32.0	1085.1	1128.7	21.81	535.44
20.000	16.00	32.0	1074.0	1117.1	21.51	535.44

Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A100 .HYD
Outflow Hydrograph: b5930\2A100OUT.HYD



INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
20.100	16.00	32.0	1063.6	1106.0	21.23	535.44
20.200	16.00	32.0	1053.7	1095.6	20.96	535.43
20.300	16.00	32.0	1044.3	1085.7	20.71	535.43
20.400	16.00	32.0	1035.3	1076.3	20.46	535.42
20.500	16.00	32.0	1026.9	1067.3	20.23	535.42
20.600	15.00	31.0	1017.9	1057.9	19.99	535.42
20.700	15.00	30.0	1008.4	1047.9	19.74	535.41
20.800	15.00	30.0	999.4	1038.4	19.49	535.41
20.900	15.00	30.0	990.9	1029.4	19.26	535.41
21.000	15.00	30.0	982.8	1020.9	19.04	535.40
21.100	15.00	30.0	975.1	1012.8	18.83	535.40
21.200	15.00	30.0	967.9	1005.1	18.64	535.40
21.300	15.00	30.0	961.0	997.9	18.45	535.39
21.400	15.00	30.0	954.4	991.0	18.27	535.39
21.500	14.00	29.0	947.3	983.4	18.08	535.39
21.600	14.00	28.0	939.5	975.3	17.87	535.38
21.700	14.00	28.0	932.2	967.5	17.67	535.38
21.800	14.00	28.0	925.2	960.2	17.48	535.38
21.900	14.00	28.0	918.6	953.2	17.30	535.38
22.000	14.00	28.0	912.3	946.6	17.13	535.37
22.100	14.00	28.0	906.4	940.3	16.97	535.37
22.200	13.00	27.0	899.8	933.4	16.80	535.37
22.300	13.00	26.0	892.6	925.8	16.60	535.37
22.400	13.00	26.0	885.8	918.6	16.42	535.36
22.500	12.00	25.0	878.3	910.8	16.21	535.36
22.600	12.00	24.0	870.3	902.3	16.00	535.36
22.700	12.00	24.0	862.7	894.3	15.79	535.35
22.800	11.00	23.0	854.6	885.7	15.57	535.35
22.900	11.00	22.0	845.9	876.6	15.34	535.35
23.000	10.00	21.0	836.8	866.9	15.09	535.34
23.100	10.00	20.0	827.1	856.8	14.83	535.34
23.200	10.00	20.0	817.9	847.1	14.58	535.33
23.300	9.00	19.0	808.3	836.9	14.32	535.33
23.400	9.00	18.0	798.2	826.3	14.05	535.33
23.500	9.00	18.0	788.6	816.2	13.79	535.32
23.600	8.00	17.0	778.6	805.6	13.52	535.32
23.700	8.00	16.0	768.1	794.6	13.23	535.31
23.800	8.00	16.0	758.2	784.1	12.96	535.31
23.900	7.00	15.0	747.9	773.2	12.68	535.31
24.000	7.00	14.0	737.1	761.9	12.39	535.30
24.100	7.00	14.0	726.8	751.1	12.11	535.30
24.200	6.00	13.0	716.2	739.8	11.83	535.29
24.300	6.00	12.0	705.1	728.2	11.53	535.29
24.400	6.00	12.0	694.7	717.1	11.24	535.28
24.500	5.00	11.0	683.8	705.7	10.95	535.28
24.600	5.00	10.0	672.5	693.8	10.64	535.27

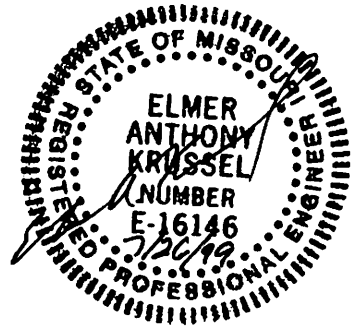
Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A100 .HYD
Outflow Hydrograph: b5930\2A100OUT.HYD

INFLOW HYDROGRAPH

TIME (hrs)	INFLOW (cfs)
24.700	5.00
24.800	4.00
24.900	4.00
25.000	4.00
25.100	3.00
25.200	3.00
25.300	2.00
25.400	2.00
25.500	2.00
25.600	1.00
25.700	1.00
25.800	1.00
25.900	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
10.0	661.8	682.5	10.35	535.27
9.0	650.7	670.8	10.05	535.27
8.0	639.2	658.7	9.74	535.26
8.0	628.3	647.2	9.45	535.26
7.0	617.0	635.3	9.14	535.25
6.0	605.2	623.0	8.90	535.25
5.0	592.8	610.2	8.72	535.24
4.0	579.7	596.8	8.53	535.24
4.0	567.0	583.7	8.34	535.23
3.0	553.7	570.0	8.15	535.23
2.0	539.8	555.7	7.94	535.22
2.0	526.4	541.8	7.74	535.22
1.0	512.3	527.4	7.54	535.21



********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A100 .HYD
Outflow Hydrograph: b5930\2A100OUT.HYD

Starting Pond W.S. Elevation = 535.00 ft

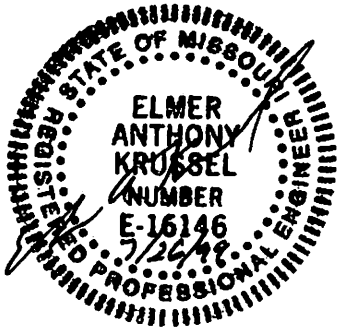
***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	669.00 cfs
Peak Outflow	=	216.97 cfs
Peak Elevation	=	537.17 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	996,898 cu-ft
Total Storage in Pond	=	996,898 cu-ft

Warning: Inflow hydrograph truncated on left side.



POND-2 Version: 5.21 S/N:

Return Freq: 100 years

Pond File: b5930\MC10ACRE.PND
Inflow Hydrograph: b5930\2A100 .HYD
Outflow Hydrograph: b5930\2A100OUT.HYD

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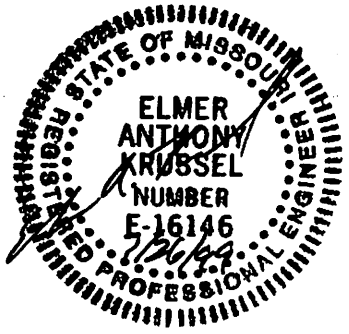
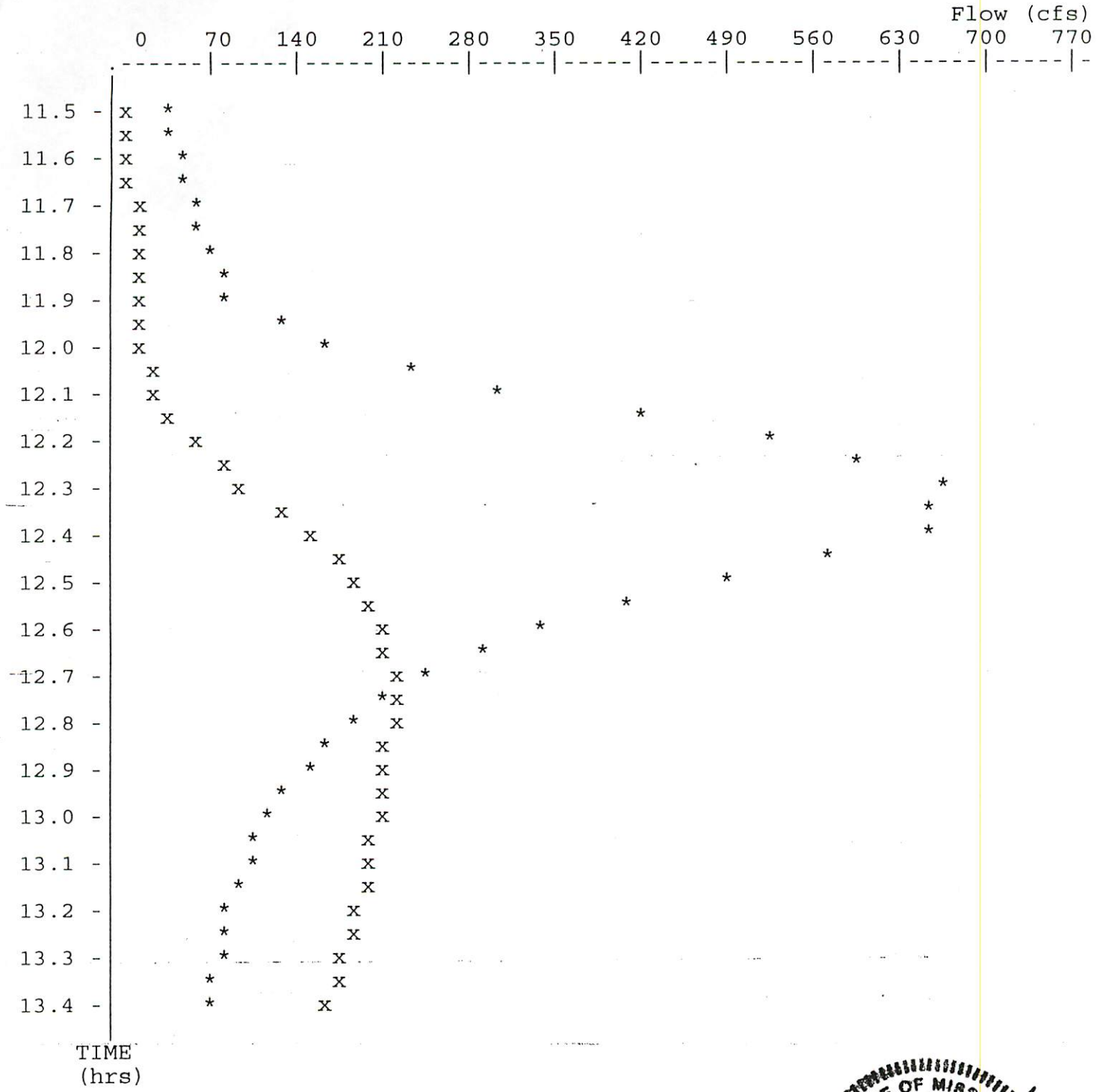
10:07:08

Peak Inflow = 669.00 cfs
Peak Outflow = 216.97 cfs
Peak Elevation = 537.17 ft





* File: b5930\2A100 .HYD Qmax = 669.0 cfs
x File: b5930\2A100OUT.HYD Qmax = 217.0 cfs