2 Primary 900.00' **24.0" x 50.0' long Culvert** Ke= 0.500
Outlet Invert= 899.50' S= 0.0100 '/' n= 0.012 Cc= 0.900

Pond P421: 421P FROM CITY CALCS

Inflow	=	7.52 cfs @	12.35 hrs, Volume=	0.905 af
Outflow	=	1.67 cfs @	13.29 hrs, Volume=	0.864 af, Atten= 78%, Lag= 56.2 min
Primary	=	1.67 cfs @	13.29 hrs, Volume=	0.864 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 903.64' Storage= 0.363 af
Plug-Flow detention time= 223.4 min calculated for 0.864 af (95% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
902.90	0.000	0.000	0.000
904.90	0.980	0.980	0.980
906.90	1.260	2.240	3.220
908.90	1.400	2.660	5.880

Primary OutFlow (Dynamic Tailwater)
↑—1=Culvert
↑—2=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	902.90'	**15.0" x 55.0' long Culvert** Ke= 0.500 Outlet Invert= 902.66' S= 0.0044 '/' n= 0.012 Cc= 0.900
2	Device 1	902.90'	**30.0' long Broad-Crested Rectangular Weir** Head (feet) 0.50 Coef. (English) 3.00

Pond PBY: BACKYARD POND

[86] Warning: Oscillations may require smaller dt

Inflow	=	8.69 cfs @	12.05 hrs, Volume=	0.512 af
Outflow	=	1.57 cfs @	12.22 hrs, Volume=	0.491 af, Atten= 82%, Lag= 10.2 min
Primary	=	1.57 cfs @	12.22 hrs, Volume=	0.491 af

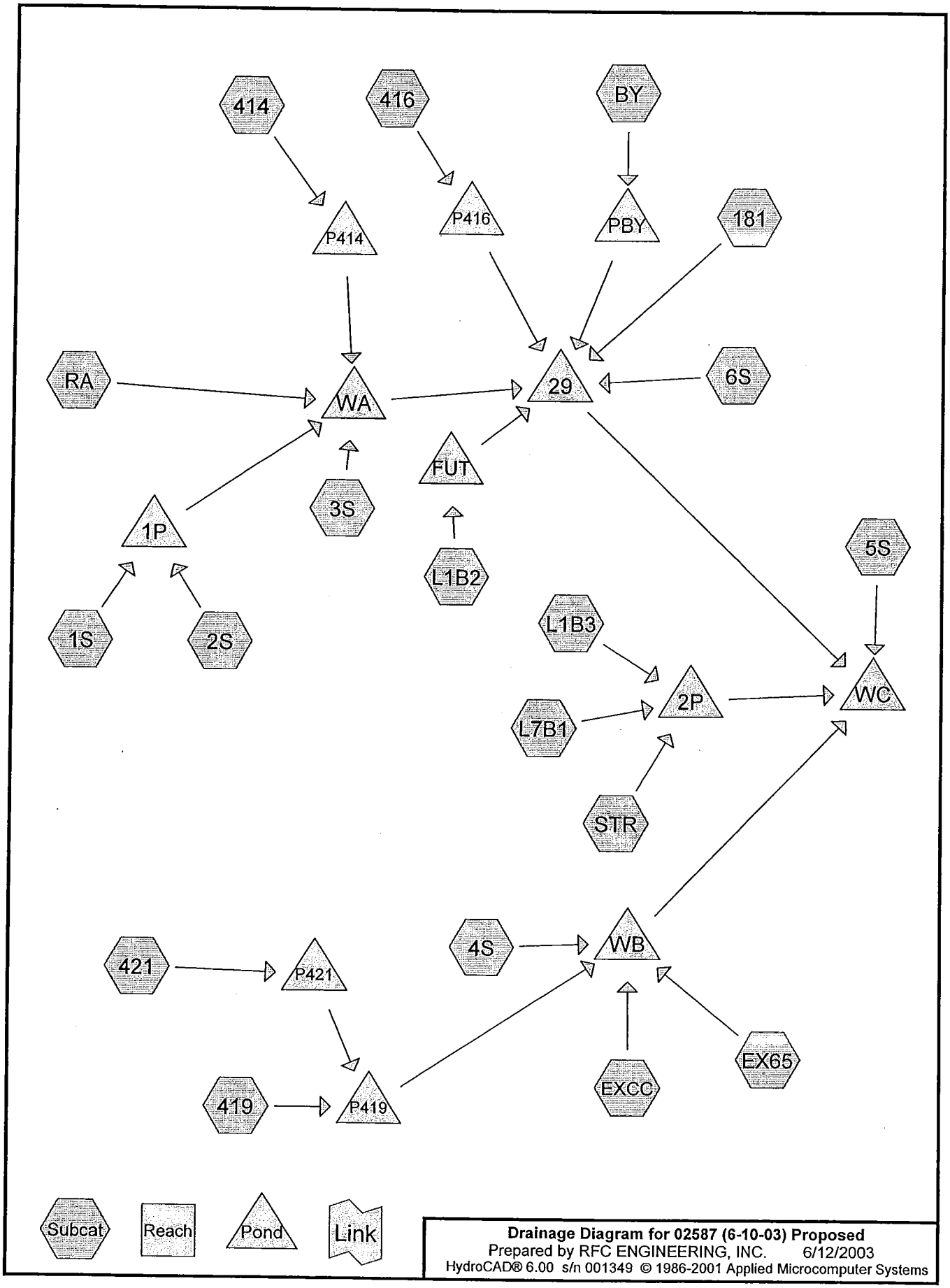
Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 899.00' Storage= 0 cf
Peak Elev= 901.61' Storage= 11,443 cf
Flood Elev= 904.50' Storage= 54,750 cf
Plug-Flow detention time= 215.3 min calculated for 0.490 af (96% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.85	0	0	0
904.50	30,000	54,750	54,750

Primary OutFlow (Dynamic Tailwater)
↑—1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	900.85'	**18.0" x 78.0' long Culvert** Ke= 0.500 Outlet Invert= 899.34' S= 0.0194 '/' n= 0.012 Cc= 0.900



Drainage Diagram for 02587 (6-10-03) Proposed
Prepared by RFC ENGINEERING, INC. 6/12/2003
HydroCAD® 6.00 s/n 001349 © 1986-2001 Applied Microcomputer Systems

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Type II 24-hr Rainfall=2.70"
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 1S: DIRECT RUNOFF TO POND 1
Tc=8.0 min CN=57 Area=92,650 sf Runoff= 0.16 cfs 0.029 af

Subcatchment 2S: AREA TO POND 1
Tc=9.2 min CN=58 Area=142,000 sf Runoff= 0.33 cfs 0.050 af

Subcatchment 3S: DIRECT RUNOFF TO WETLAND A
Tc=11.3 min CN=70 Area=6.132 ac Runoff= 4.38 cfs 0.283 af

Subcatchment 4S: DIRECT RUNOFF TO WETLAND B
Tc=13.3 min CN=67 Area=9.894 ac Runoff= 4.68 cfs 0.365 af

Subcatchment 5S: DIRECT RUNOFF TO WETLAND C
Tc=7.1 min CN=53 Area=69,184 sf Runoff= 0.02 cfs 0.012 af

Subcatchment 6S: DIRECT TO 29
Tc=12.0 min CN=49 Area=1.760 ac Runoff= 0.01 cfs 0.005 af

Subcatchment 181: 181ST AVENUE
Tc=3.9 min CN=98 Area=0.790 ac Runoff= 3.21 cfs 0.163 af

Subcatchment 414: 414S FROM CITY CALCS
Tc=43.3 min CN=72 Area=10.000 ac Runoff= 3.57 cfs 0.530 af

Subcatchment 416: 416S FROM CITY CALCS
Tc=40.0 min CN=75 Area=22.760 ac Runoff= 11.19 cfs 1.461 af

Subcatchment 419: 419S FROM CITY CALCS
Tc=85.4 min CN=65 Area=127.000 ac Runoff= 12.86 cfs 3.979 af

Subcatchment 421: 421S FROM CITY CALCS
Tc=36.2 min CN=67 Area=9.000 ac Runoff= 2.13 cfs 0.332 af

Subcatchment BY: STREET & BACKYARDS
Tc=12.4 min CN=77 Area=3.250 ac Runoff= 3.87 cfs 0.235 af

Subcatchment EX65: OFFSITE HWY 65
Tc=6.3 min CN=53 Area=347,918 sf Runoff= 0.10 cfs 0.058 af

Subcatchment EXCC: COUNTRY CREEK 1
Tc=33.9 min CN=70 Area=21.330 ac Runoff= 7.45 cfs 0.985 af

Subcatchment L1B2: COMMERCIAL AREA (L1B2)
Tc=6.0 min CN=83 Area=63,500 sf Runoff= 3.16 cfs 0.147 af

Subcatchment L1B3: COMMERICAL AREA (L1B3)
Tc=5.9 min CN=85 Area=106,408 sf Runoff= 5.87 cfs 0.273 af

Subcatchment L7B1: COMMERCIAL AREA (L7B1)
Tc=5.2 min CN=81 Area=56,500 sf Runoff= 2.61 cfs 0.118 af

Subcatchment RA: RUSTIC ACRES
Tc=19.2 min CN=51 Area=2.500 ac Runoff= 0.02 cfs 0.012 af

Subcatchment STR: FRONTAGE ROAD (TO POND 2)
Tc=5.3 min CN=76 Area=44,500 sf Runoff= 1.52 cfs 0.070 af

Pond 1P: PROPOSED POND 1
Peak Storage= 95,373 cf Inflow= 0.50 cfs 0.079 af
Primary= 0.04 cfs 0.061 af Outflow= 0.04 cfs 0.061 af

Pond 2P: PROPOSED POND 2
Peak Storage= 29,783 cf Inflow= 9.99 cfs 0.460 af
Primary= 1.65 cfs 0.458 af Outflow= 1.65 cfs 0.458 af

Pond 29: Ditch 29
Peak Storage= 8,382 cf Inflow= 6.94 cfs 2.033 af
Primary= 6.90 cfs 1.857 af Outflow= 6.90 cfs 1.857 af

Pond FUT: FUTURE POND (L1B2)
Peak Storage= 11,085 cf Inflow= 3.16 cfs 0.147 af
Primary= 1.28 cfs 0.147 af Outflow= 1.28 cfs 0.147 af

Pond P414: 414P FROM CITY CALCS
Peak Storage= 0.297 af Inflow= 3.57 cfs 0.530 af
Primary= 0.33 cfs 0.413 af Outflow= 0.33 cfs 0.413 af

Pond P416: 416P FROM CITY CALCS
Peak Storage= 0.477 af Inflow= 11.19 cfs 1.461 af
Primary= 6.04 cfs 1.141 af Outflow= 6.04 cfs 1.141 af

Pond P419: 419P FROM CITY CALCS
Peak Storage= 4.271 af Inflow= 13.07 cfs 4.274 af
Primary= 0.06 cfs 0.002 af Outflow= 0.06 cfs 0.002 af

Pond P421: 421P FROM CITY CALCS
Peak Storage= 0.145 af Inflow= 2.13 cfs 0.332 af
Primary= 0.30 cfs 0.295 af Outflow= 0.30 cfs 0.295 af

Pond PBY: BACKYARD POND
Peak Storage= 4,572 cf Inflow= 3.87 cfs 0.235 af
Primary= 0.35 cfs 0.215 af Outflow= 0.35 cfs 0.215 af

Pond WA: WETLAND A
Peak Storage= 0.445 af Inflow= 4.38 cfs 0.770 af
Primary= 0.41 cfs 0.362 af Outflow= 0.41 cfs 0.362 af

Pond WB: WETLAND B
Peak Storage= 0.783 af Inflow= 9.20 cfs 1.411 af
Primary= 5.65 cfs 0.659 af Outflow= 5.65 cfs 0.659 af

Pond WC: WETLAND C
Peak Storage= 59,382 cf Inflow= 9.85 cfs 2.985 af
Primary= 8.41 cfs 2.985 af Outflow= 8.41 cfs 2.985 af

Runoff Area = 235.597 ac Volume = 9.106 af Average Depth = 0.46"

Subcatchment 1S: DIRECT RUNOFF TO POND 1

Runoff = 0.16 cfs @ 12.06 hrs, Volume= 0.029 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
21,587	100	POND NWL
65,363	39	>75% Grass cover, Good, HSG A
5,700	98	Paved parking & roofs
92,650	57	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	120	0.0600	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 2S: AREA TO POND 1

Runoff = 0.33 cfs @ 12.07 hrs, Volume= 0.050 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
109,000	46	2 acre lots, 12% imp, HSG A
33,000	98	BITUMINOUS
142,000	58	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	180	0.0947	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 3S: DIRECT RUNOFF TO WETLAND A

Runoff = 4.38 cfs @ 12.05 hrs, Volume= 0.283 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
2.050	39	>75% Grass cover, Good, HSG A
3.912	85	WETLAND
0.170	98	Paved parking & roofs
6.132	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	195	0.0660	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 4S: DIRECT RUNOFF TO WETLAND B

Runoff = 4.68 cfs @ 12.08 hrs, Volume= 0.365 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
3.960	39	>75% Grass cover, Good, HSG A
5.844	85	WETLAND
0.090	98	Paved parking & roofs
9.894	67	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	180	0.0375	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 5S: DIRECT RUNOFF TO WETLAND C

Runoff = 0.02 cfs @ 12.46 hrs, Volume= 0.012 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
48,384	39	>75% Grass cover, Good, HSG A
20,800	85	WETLAND
69,184	53	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	82	0.0366	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 6S: DIRECT TO 29

Runoff = 0.01 cfs @ 17.72 hrs, Volume= 0.005 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
1.460	39	>75% Grass cover, Good, HSG A
0.300	98	Paved parking & roofs
1.760	49	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	220	0.0682	0.3		**Sheet Flow, sheet** Grass: Short n= 0.150 P2= 2.80"

Subcatchment 181: 181ST AVENUE

Runoff = 3.21 cfs @ 11.94 hrs, Volume= 0.163 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
0.790	98	STREET

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	500	0.0200	2.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps

Subcatchment 414: 414S FROM CITY CALCS

Runoff = 3.57 cfs @ 12.46 hrs, Volume= 0.530 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
2.795	100	POND
7.205	61	OPEN SPACES
10.000	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	500	0.0010	0.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.7	300	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
43.3	800	Total			

Subcatchment 416: 416S FROM CITY CALCS

Runoff = 11.19 cfs @ 12.40 hrs, Volume= 1.461 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
1.390	78	SUB #1 (-3.250 AC)
10.090	74	SUB #2
2.710	78	SUB #3
2.540	81	SUB #4
1.980	82	SUB #5
0.890	76	SUB #6
0.000	98	SUB #7 (-0.790 AC)
0.160	98	SUB #8
3.000	60	OPEN SPACE
22.760	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.0					**Direct Entry,**

Subcatchment 419: 419S FROM CITY CALCS

Runoff = 12.86 cfs @ 13.19 hrs, Volume= 3.979 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
10.160	100	POND
6.350	85	WETLAND
110.490	61	OPEN SPACES
127.000	65	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
59.7	1,700	0.0010	0.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.7	300	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
85.4	2,000	Total			

Subcatchment 421: 421S FROM CITY CALCS

Runoff = 2.13 cfs @ 12.40 hrs, Volume= 0.332 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
1.404	100	POND
7.596	61	OPEN SPACES
9.000	67	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	300	0.0010	0.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.7	300	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
36.2	600	Total			

Subcatchment BY: STREET & BACKYARDS

Runoff = 3.87 cfs @ 12.05 hrs, Volume= 0.235 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
3.250	77	1/8 acre lots, 65% imp, HSG A

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
6.3	800	0.0200	2.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.4	850	Total			

Subcatchment EX65: OFFSITE HWY 65

Runoff = 0.10 cfs @ 12.45 hrs, Volume= 0.058 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
267,598	39	>75% Grass cover, Good, HSG A
80,320	98	HIGHWAY 65
347,918	53	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	800	0.0200	2.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps

Subcatchment EXCC: COUNTRY CREEK 1

Runoff = 7.45 cfs @ 12.35 hrs, Volume= 0.985 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
13.320	61	1/4 acre lots, 38% imp, HSG A
7.510	85	WETLAND
0.500	100	POND
21.330	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.9	300	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment L1B2: COMMERCIAL AREA (L1B2)

Runoff = 3.16 cfs @ 11.98 hrs, Volume= 0.147 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
50,000	90	Commercial
10,000	39	>75% Grass cover, Good, HSG A
3,500	100	POND NWL
63,500	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	110	0.1000	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment L1B3: COMMERICAL AREA (L1B3)

Runoff = 5.87 cfs @ 11.97 hrs, Volume= 0.273 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
96,408	90	Commercial
10,000	39	>75% Grass cover, Good, HSG A
106,408	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	120	0.1250	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment L7B1: COMMERCIAL AREA (L7B1)

Runoff = 2.61 cfs @ 11.97 hrs, Volume= 0.118 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
46,500	90	Commercial
10,000	39	>75% Grass cover, Good, HSG A
56,500	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	30	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.1	100	0.0100	1.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.2	130	Total			

Subcatchment RA: RUSTIC ACRES

Runoff = 0.02 cfs @ 15.08 hrs, Volume= 0.012 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
2.500	51	1 acre lots, 20% imp, HSG A

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	250	0.0288	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment STR: FRONTAGE ROAD (TO POND 2)

Runoff = 1.52 cfs @ 11.97 hrs, Volume= 0.070 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
44,500	76	Street and ROW

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	30	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	150	0.0200	2.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.3	180	Total			

Pond 1P: PROPOSED POND 1

Inflow = 0.50 cfs @ 12.06 hrs, Volume= 0.079 af
Outflow = 0.04 cfs @ 24.03 hrs, Volume= 0.061 af, Atten= 91%, Lag= 717.7 min
Primary = 0.04 cfs @ 24.03 hrs, Volume= 0.061 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 903.50' Storage= 93,386 cf
Peak Elev= 903.59' Storage= 95,373 cf (1,987 cf above starting storage)
Flood Elev= 905.00' Storage= 128,713 cf (35,326 cf above starting storage)
Plug-Flow detention time= (not calculated)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
894.00	3,236	0	0
895.00	4,456	3,846	3,846
896.00	5,668	5,062	8,908
897.00	6,737	6,203	15,111
898.00	8,163	7,450	22,561
899.00	9,650	8,907	31,467
900.00	11,145	10,398	41,865
901.00	12,744	11,945	53,809
902.00	14,400	13,572	67,381
902.50	15,529	7,482	74,863
903.00	18,488	8,504	83,368
903.50	21,587	10,019	93,386
904.00	22,886	11,118	104,505
905.00	25,530	24,208	128,713

Primary OutFlow (Dynamic Tailwater)
└─2=Culvert
└─1=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Device 2	903.50'	**0.50' x 1.38' Vert. Orifice/Grate** C= 0.600
2	Primary	902.30'	**15.0" x 45.0' long Culvert** Ke= 0.500
			Outlet Invert= 902.20' S= 0.0022 '/' n= 0.012 Cc= 0.900

Pond 2P: PROPOSED POND 2

Inflow	=	9.99 cfs @	11.97 hrs, Volume=	0.460 af
Outflow	=	1.65 cfs @	12.18 hrs, Volume=	0.458 af, Atten= 83%, Lag= 12.3 min
Primary	=	1.65 cfs @	12.18 hrs, Volume=	0.458 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 900.75' Storage= 21,725 cf
Peak Elev= 901.53' Storage= 29,783 cf (8,058 cf above starting storage)
Flood Elev= 904.00' Storage= 61,776 cf (40,051 cf above starting storage)
Plug-Flow detention time= (not calculated)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
895.00	827	0	0
896.00	1,671	1,249	1,249
897.00	2,591	2,131	3,380
898.00	3,608	3,100	6,480
899.00	4,689	4,149	10,628
899.75	5,248	3,726	14,354
900.00	6,409	1,457	15,812
900.75	9,361	5,914	21,725
901.00	9,811	2,397	24,122
902.00	11,674	10,743	34,864
903.00	13,554	12,614	47,478
904.00	15,042	14,298	61,776

Primary OutFlow (Dynamic Tailwater)
└─3=Culvert
├─1=Orifice/Grate
└─2=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Device 3	900.75'	**0.75' x 2.35' Vert. Orifice/Grate** C= 0.600
2	Device 3	903.10'	**48.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600
3	Primary	900.00'	**18.0" x 38.0' long Culvert** Ke= 0.500
			Outlet Invert= 899.70' S= 0.0079 '/' n= 0.012 Cc= 0.900

Pond 29: Ditch 29

[86] Warning: Oscillations may require smaller dt
[80] Warning: Exceeded Pond P416 by 1.85' @ 12.02 hrs (16.36 cfs)

Inflow	=	6.94 cfs @	12.76 hrs, Volume=	2.033 af
Outflow	=	6.90 cfs @	12.82 hrs, Volume=	1.857 af, Atten= 1%, Lag= 3.7 min
Primary	=	6.90 cfs @	12.82 hrs, Volume=	1.857 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 900.86' Storage= 8,382 cf
Plug-Flow detention time= 115.3 min calculated for 1.857 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
896.76	0	0	0
898.00	935	580	580
899.00	2,063	1,499	2,079
900.00	3,246	2,655	4,733
901.00	5,200	4,223	8,956
902.00	9,430	7,315	16,271
903.00	17,559	13,495	29,766
904.00	21,675	19,617	49,383

Primary OutFlow (Dynamic Tailwater)
↑—1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	896.76'	**30.0" x 395.0' long Culvert** Ke= 0.610 Outlet Invert= 895.97' S= 0.0020 '/' n= 0.012 Cc= 0.900

Pond FUT: FUTURE POND (L1B2)

Inflow	=	3.16 cfs @	11.98 hrs, Volume=	0.147 af
Outflow	=	1.28 cfs @	12.08 hrs, Volume=	0.147 af, Atten= 59%, Lag= 6.4 min
Primary	=	1.28 cfs @	12.08 hrs, Volume=	0.147 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 902.00' Storage= 9,077 cf
Peak Elev= 902.47' Storage= 11,085 cf (2,008 cf above starting storage)
Flood Elev= 904.00' Storage= 18,690 cf (9,613 cf above starting storage)
Plug-Flow detention time= (not calculated)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	992	0	0
899.00	1,534	1,263	1,263
900.00	2,188	1,861	3,124
901.00	2,951	2,570	5,694
902.00	3,816	3,384	9,077
903.00	4,781	4,299	13,376
904.00	5,848	5,315	18,690

Primary OutFlow (Dynamic Tailwater)
- 1=Culvert
  - 2=Orifice/Grate
  - 3=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	899.00'	**15.0" x 20.0' long Culvert** Ke= 0.500 Outlet Invert= 898.50' S= 0.0250 '/' n= 0.012 Cc= 0.900
2	Device 1	902.00'	**1.25' x 1.25' Vert. Orifice/Grate** C= 0.600
3	Device 1	903.25'	**48.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Pond P414: 414P FROM CITY CALCS

Inflow = 3.57 cfs @ 12.46 hrs, Volume= 0.530 af
Outflow = 0.33 cfs @ 16.51 hrs, Volume= 0.413 af, Atten= 91%, Lag= 242.9 min
Primary = 0.33 cfs @ 16.51 hrs, Volume= 0.413 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 901.30' Storage= 0.297 af
Flood Elev= 906.50' Storage= 11.270 af
Plug-Flow detention time= 527.1 min calculated for 0.413 af (78% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
901.00	0.000	0.000	0.000
902.50	1.960	1.470	1.470
904.50	2.520	4.480	5.950
906.50	2.800	5.320	11.270

Primary OutFlow (Dynamic Tailwater)
- 1=Culvert
  - 2=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	901.00'	**18.0" x 55.0' long Culvert** Ke= 0.500 Outlet Invert= 900.80' S= 0.0036 '/' n= 0.012 Cc= 0.900
2	Device 1	901.00'	**30.0' long Broad-Crested Rectangular Weir** Head (feet) 0.50 Coef. (English) 3.00

Pond P416: 416P FROM CITY CALCS

[86] Warning: Oscillations may require smaller dt

Inflow	=	11.19 cfs @	12.40 hrs, Volume=	1.461 af
Outflow	=	6.04 cfs @	12.79 hrs, Volume=	1.141 af, Atten= 46%, Lag= 23.1 min
Primary	=	6.04 cfs @	12.79 hrs, Volume=	1.141 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 897.87' Storage= 0.061 af
Peak Elev= 900.93' Storage= 0.477 af (0.416 af above starting storage)
Flood Elev= 903.50' Storage= 5.306 af (5.245 af above starting storage)
Plug-Flow detention time= 169.3 min calculated for 1.080 af (74% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
895.70	0.000	0.000	0.000
897.30	0.030	0.024	0.024
899.00	0.100	0.111	0.135
900.50	0.120	0.165	0.300
902.20	0.710	0.706	1.005
902.50	2.830	0.531	1.536
903.50	4.710	3.770	5.306

Primary OutFlow (Dynamic Tailwater)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	897.87'	**30.0" x 68.0' long Culvert** Ke= 0.500 Outlet Invert= 897.68' S= 0.0028 '/' n= 0.012 Cc= 0.900

Pond P419: 419P FROM CITY CALCS

Inflow	=	13.07 cfs @	13.19 hrs, Volume=	4.274 af
Outflow	=	0.06 cfs @	13.29 hrs, Volume=	0.002 af, Atten= 100%, Lag= 6.2 min
Primary	=	0.06 cfs @	13.29 hrs, Volume=	0.002 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 900.67' Storage= 4.271 af
Plug-Flow detention time= 66.8 min calculated for 0.002 af (0% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
900.00	6.300	0.000	0.000
900.40	6.400	2.540	2.540
900.80	6.400	2.560	5.100
901.20	6.500	2.580	7.680
901.60	6.500	2.600	10.280
902.00	6.600	2.620	12.900
902.40	6.700	2.660	15.560
902.80	6.700	2.680	18.240
903.20	6.800	2.700	20.940
903.60	6.800	2.720	23.660
904.00	6.900	2.740	26.400

Primary OutFlow (Dynamic Tailwater)
↑—2=Culvert
↑—1=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Device 2	900.00'	**30.0' long Broad-Crested Rectangular Weir** Head (feet) 0.50 Coef. (English) 3.00
2	Primary	900.00'	**24.0" x 50.0' long Culvert** Ke= 0.500 Outlet Invert= 899.50' S= 0.0100 '/' n= 0.012 Cc= 0.900

Pond P421: 421P FROM CITY CALCS

Inflow	=	2.13 cfs @	12.40 hrs, Volume=	0.332 af
Outflow	=	0.30 cfs @	15.10 hrs, Volume=	0.295 af, Atten= 86%, Lag= 161.9 min
Primary	=	0.30 cfs @	15.10 hrs, Volume=	0.295 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 903.20' Storage= 0.145 af
Plug-Flow detention time= 364.7 min calculated for 0.295 af (89% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
902.90	0.000	0.000	0.000
904.90	0.980	0.980	0.980
906.90	1.260	2.240	3.220
908.90	1.400	2.660	5.880

Primary OutFlow (Dynamic Tailwater)
↑—1=Culvert
↑—2=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	902.90'	**15.0" x 55.0' long Culvert** Ke= 0.500 Outlet Invert= 902.66' S= 0.0044 '/' n= 0.012 Cc= 0.900

2 Device 1 902.90' **30.0' long Broad-Crested Rectangular Weir**
Head (feet) 0.50
Coef. (English) 3.00

Pond PBY: BACKYARD POND

[86] Warning: Oscillations may require smaller dt

Inflow = 3.87 cfs @ 12.05 hrs, Volume= 0.235 af
Outflow = 0.35 cfs @ 12.35 hrs, Volume= 0.215 af, Atten= 91%, Lag= 17.9 min
Primary = 0.35 cfs @ 12.35 hrs, Volume= 0.215 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 899.00' Storage= 0 cf
Peak Elev= 901.15' Storage= 4,572 cf
Flood Elev= 904.50' Storage= 54,750 cf
Plug-Flow detention time= 291.2 min calculated for 0.215 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.85	0	0	0
904.50	30,000	54,750	54,750

Primary OutFlow (Dynamic Tailwater)
↑—1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	900.85'	**18.0" x 78.0' long Culvert** Ke= 0.500 Outlet Invert= 899.34' S= 0.0194 '/' n= 0.012 Cc= 0.900

Pond WA: WETLAND A

Inflow = 4.38 cfs @ 12.05 hrs, Volume= 0.770 af
Outflow = 0.41 cfs @ 22.45 hrs, Volume= 0.362 af, Atten= 91%, Lag= 624.0 min
Primary = 0.41 cfs @ 22.45 hrs, Volume= 0.362 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 900.93' Storage= 0.445 af
Flood Elev= 904.50' Storage= 7.433 af
Plug-Flow detention time= 736.9 min calculated for 0.362 af (47% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
900.70	0.000	0.000	0.000
903.35	3.912	5.183	5.183

Primary OutFlow (Dynamic Tailwater)
└─1=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	900.90'	**30.0' long Broad-Crested Rectangular Weir** Head (feet) 0.50 Coef. (English) 3.00

Pond WB: WETLAND B

[86] Warning: Oscillations may require smaller dt
[80] Warning: Exceeded Pond P419 by 0.47' @ 14.06 hrs (2.28 cfs)

Inflow	=	9.20 cfs @	12.31 hrs, Volume=	1.411 af
Outflow	=	5.65 cfs @	14.29 hrs, Volume=	0.659 af, Atten= 39%, Lag= 118.6 min
Primary	=	5.65 cfs @	14.29 hrs, Volume=	0.659 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 900.71' Storage= 0.783 af
Flood Elev= 904.50' Storage= 19.095 af
Plug-Flow detention time= 353.3 min calculated for 0.659 af (47% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
895.00	0.000	0.000	0.000
897.00	0.160	0.160	0.160
900.70	0.160	0.592	0.752
905.00	9.494	20.756	21.508

Primary OutFlow (Dynamic Tailwater)
└─1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	895.18'	**60.0" x 110.0' long Culvert** Ke= 0.500 Outlet Invert= 895.00' S= 0.0016 '/' n= 0.012 Cc= 0.900

Pond WC: WETLAND C

[80] Warning: Exceeded Pond 29 by 3.94' @ 0.00 hrs (27.06 cfs)
[80] Warning: Exceeded Pond WB by 5.70' @ 11.72 hrs (131.15 cfs)

Inflow	=	9.85 cfs @	14.29 hrs, Volume=	2.985 af
Outflow	=	8.41 cfs @	14.30 hrs, Volume=	2.985 af, Atten= 15%, Lag= 0.6 min
Primary	=	8.41 cfs @	14.30 hrs, Volume=	2.985 af

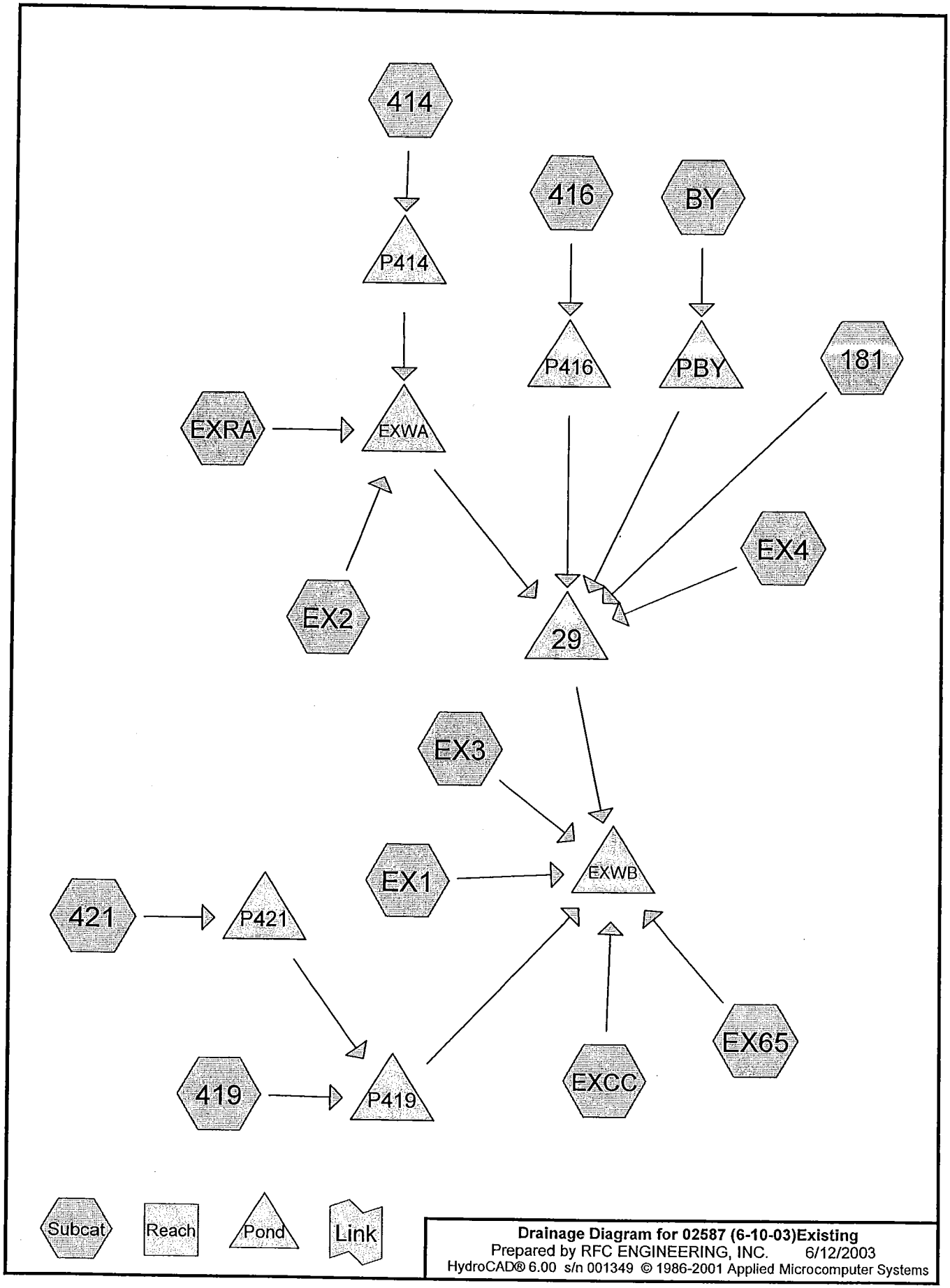
Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 900.70' Storage= 58,998 cf
Peak Elev= 900.72' Storage= 59,382 cf (383 cf above starting storage)
Flood Elev= 904.50' Storage= 184,907 cf (125,908 cf above starting storage)
Plug-Flow detention time= 432.4 min calculated for 1.631 af (55% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
895.00	501	0	0
896.00	4,553	2,527	2,527
897.00	7,604	6,079	8,606
898.00	10,677	9,141	17,746
899.00	13,815	12,246	29,992
900.00	17,004	15,410	45,402
901.00	21,844	19,424	64,826
902.00	31,413	26,629	91,454
903.00	37,525	34,469	125,923
904.00	41,120	39,323	165,246

Primary OutFlow (Dynamic Tailwater)
↑—2=Special (user-defined)
↑—1=Culvert

#	Routing	Invert	Outlet Devices
1	Device 2	895.00'	**72.0" x 100.0' long Culvert** Ke= 0.500
			Outlet Invert= 895.00' S= 0.0000 '/' n= 0.012 Cc= 0.900
2	Primary	895.00'	**Special (user-defined)**
			Head (feet) 0.00 5.70 5.80 5.90 6.00 6.10 6.20 6.30 6.40 6.50 6.60 6.70 6.80
			Disch. (cfs) 0.00 0.00 42.61 60.66 74.57 86.10 96.27 105.45 113.90 121.77 12



Drainage Diagram for 02587 (6-10-03)Existing
Prepared by RFC ENGINEERING, INC. 6/12/2003
HydroCAD® 6.00 s/n 001349 © 1986-2001 Applied Microcomputer Systems

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Type II 24-hr Rainfall=2.70"
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment 181: 181ST AVENUE
Tc=3.9 min CN=98 Area=0.790 ac Runoff= 3.21 cfs 0.163 af

Subcatchment 414: 414S FROM CITY CALCS
Tc=43.3 min CN=72 Area=10.000 ac Runoff= 3.57 cfs 0.530 af

Subcatchment 416: 416S FROM CITY CALCS
Tc=40.0 min CN=75 Area=22.760 ac Runoff= 11.19 cfs 1.461 af

Subcatchment 419: 419S FROM CITY CALCS
Tc=85.4 min CN=65 Area=127.000 ac Runoff= 12.86 cfs 3.979 af

Subcatchment 421: 421S FROM CITY CALCS
Tc=36.2 min CN=67 Area=9.000 ac Runoff= 2.13 cfs 0.332 af

Subcatchment BY: STREET & BACKYARDS
Tc=12.4 min CN=77 Area=3.250 ac Runoff= 3.87 cfs 0.235 af

Subcatchment EX1: (new node)
Tc=21.9 min CN=44 Area=3.950 ac Runoff= 0.00 cfs 0.001 af

Subcatchment EX2: (new node)
Tc=19.4 min CN=57 Area=8.572 ac Runoff= 0.40 cfs 0.116 af

Subcatchment EX3: (new node)
Tc=15.9 min CN=59 Area=13.950 ac Runoff= 1.37 cfs 0.242 af

Subcatchment EX4: (new node)
Tc=12.3 min CN=50 Area=4.098 ac Runoff= 0.02 cfs 0.016 af

Subcatchment EX65: OFFSITE HWY 65
Tc=6.3 min CN=53 Area=347,918 sf Runoff= 0.10 cfs 0.058 af

Subcatchment EXCC: COUNTRY CREEK 1
Tc=33.9 min CN=70 Area=21.330 ac Runoff= 7.45 cfs 0.985 af

Subcatchment EXRA: RUSTIC ACRES 1
Tc=19.2 min CN=51 Area=2.500 ac Runoff= 0.02 cfs 0.012 af

Pond 29: DITCH TO 24" CULVERT
Peak Storage= 676 cf Inflow= 6.09 cfs 1.749 af
Primary= 6.07 cfs 1.851 af Outflow= 6.07 cfs 1.851 af

Pond EXWA: EXISTING WETLAND A
Peak Storage= 0.350 af Inflow= 0.46 cfs 0.541 af
Primary= 0.30 cfs 0.215 af Outflow= 0.30 cfs 0.215 af

Pond EXWB: EXISTING WETLAND B
Peak Storage= 1.668 af Inflow= 10.62 cfs 3.136 af
Primary= 10.09 cfs 3.135 af Outflow= 10.09 cfs 3.135 af

Pond P414: 414P FROM CITY CALCS
Peak Storage= 0.297 af Inflow= 3.57 cfs 0.530 af
Primary= 0.33 cfs 0.413 af Outflow= 0.33 cfs 0.413 af

Pond P416: 416P FROM CITY CALCS
Peak Storage= 0.493 af Inflow= 11.19 cfs 1.461 af
Primary= 5.65 cfs 1.140 af Outflow= 5.65 cfs 1.140 af

Pond P419: 419P FROM CITY CALCS
Peak Storage= 4.274 af Inflow= 13.07 cfs 4.274 af
Primary= 0.00 cfs 0.000 af Outflow= 0.00 cfs 0.000 af

Pond P421: 421P FROM CITY CALCS
Peak Storage= 0.145 af Inflow= 2.13 cfs 0.332 af
Primary= 0.30 cfs 0.295 af Outflow= 0.30 cfs 0.295 af

Pond PBY: BACKYARD POND
Peak Storage= 4,681 cf Inflow= 3.87 cfs 0.235 af
Primary= 0.34 cfs 0.215 af Outflow= 0.34 cfs 0.215 af

Runoff Area = 235.187 ac Volume = 8.129 af Average Depth = 0.41"

Subcatchment 181: 181ST AVENUE

Runoff = 3.21 cfs @ 11.94 hrs, Volume= 0.163 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
0.790	98	STREET

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	500	0.0200	2.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps

Subcatchment 414: 414S FROM CITY CALCS

Runoff = 3.57 cfs @ 12.46 hrs, Volume= 0.530 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
2.795	100	POND
7.205	61	OPEN SPACES
10.000	72	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	500	0.0010	0.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.7	300	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
43.3	800	Total			

Subcatchment 416: 416S FROM CITY CALCS

Runoff = 11.19 cfs @ 12.40 hrs, Volume= 1.461 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
1.390	78	SUB #1 (-3.250 AC)
10.090	74	SUB #2
2.710	78	SUB #3
2.540	81	SUB #4
1.980	82	SUB #5
0.890	76	SUB #6
0.000	98	SUB #7 (-0.790 AC)
0.160	98	SUB #8
3.000	61	OPEN SPACE
22.760	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.0					**Direct Entry,**

Subcatchment 419: 419S FROM CITY CALCS

Runoff = 12.86 cfs @ 13.19 hrs, Volume= 3.979 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
10.160	100	POND
6.350	85	WETLAND
110.490	61	OPEN SPACES
127.000	65	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
59.7	1,700	0.0010	0.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.7	300	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
85.4	2,000	Total			

Subcatchment 421: 421S FROM CITY CALCS

Runoff = 2.13 cfs @ 12.40 hrs, Volume= 0.332 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
1.404	100	POND
7.596	61	OPEN SPACES
9.000	67	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	300	0.0010	0.5		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
25.7	300	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
36.2	600	Total			

Subcatchment BY: STREET & BACKYARDS

Runoff = 3.87 cfs @ 12.05 hrs, Volume= 0.235 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
3.250	77	1/8 acre lots, 65% imp, HSG A

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
6.3	800	0.0200	2.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.4	850	Total			

Subcatchment EX1: (new node)

Runoff = 0.00 cfs @ 24.06 hrs, Volume= 0.001 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
3.550	39	>75% Grass cover, Good, HSG A
0.400	85	WETLAND
3.950	44	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.9	300	0.0299	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment EX2: (new node)

Runoff = 0.40 cfs @ 12.26 hrs, Volume= 0.116 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
5.232	39	>75% Grass cover, Good, HSG A
3.160	85	WETLAND
0.180	98	Paved roads w/curbs & sewers
8.572	57	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4	300	0.0405	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment EX3: (new node)

Runoff = 1.37 cfs @ 12.16 hrs, Volume= 0.242 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
0.285	98	Paved parking & roofs
7.945	39	>75% Grass cover, Good, HSG A
5.720	85	WETLAND
13.950	59	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	260	0.0500	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment EX4: (new node)

Runoff = 0.02 cfs @ 15.32 hrs, Volume= 0.016 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
3.368	39	>75% Grass cover, Good, HSG A
0.250	98	PAVEMENT
0.480	100	POND
4.098	50	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	217	0.0661	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment EX65: OFFSITE HWY 65

Runoff = 0.10 cfs @ 12.45 hrs, Volume= 0.058 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (sf)	CN	Description
267,598	39	>75% Grass cover, Good, HSG A
80,320	98	HIGHWAY 65
347,918	53	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	800	0.0200	2.1		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps

Subcatchment EXCC: COUNTRY CREEK 1

Runoff = 7.45 cfs @ 12.35 hrs, Volume= 0.985 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
13.320	61	1/4 acre lots, 38% imp, HSG A
7.510	85	WETLAND
0.500	100	POND
21.330	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.9	300	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment EXRA: RUSTIC ACRES 1

Runoff = 0.02 cfs @ 15.08 hrs, Volume= 0.012 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type II 24-hr Rainfall=2.70"

Area (ac)	CN	Description
2.500	51	1 acre lots, 20% imp, HSG A

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	250	0.0288	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Pond 29: DITCH TO 24" CULVERT

[86] Warning: Oscillations may require smaller dt
[80] Warning: Exceeded Pond EXWA by 0.20' @ 12.85 hrs (0.10 cfs)
[80] Warning: Exceeded Pond P416 by 2.83' @ 11.38 hrs (24.43 cfs)

Inflow	=	6.09 cfs @	12.82 hrs, Volume=	1.749 af
Outflow	=	6.07 cfs @	12.86 hrs, Volume=	1.851 af, Atten= 0%, Lag= 2.8 min
Primary	=	6.07 cfs @	12.86 hrs, Volume=	1.851 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 900.91' Storage= 676 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.70	0	0	0
901.00	6,418	963	963
902.00	13,306	9,862	10,825
904.00	41,456	54,762	65,587
905.00	65,300	53,378	118,965

Primary OutFlow (Dynamic Tailwater)
1=Culvert
2=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	899.04'	**24.0" x 37.0' long Culvert** Ke= 0.500 Outlet Invert= 898.39' S= 0.0176 '/' n= 0.012 Cc= 0.900
2	Primary	903.74'	**30.0' long Broad-Crested Rectangular Weir** Head (feet) 0.50 Coef. (English) 3.00

Pond EXWA: EXISTING WETLAND A

Inflow	=	0.46 cfs @	15.33 hrs, Volume=	0.541 af
Outflow	=	0.30 cfs @	24.19 hrs, Volume=	0.215 af, Atten= 35%, Lag= 531.5 min
Primary	=	0.30 cfs @	24.19 hrs, Volume=	0.215 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 900.92' Storage= 0.350 af
Flood Elev= 904.50' Storage= 5.977 af
Plug-Flow detention time= 791.5 min calculated for 0.215 af (40% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
900.70	0.000	0.000	0.000
903.35	3.146	4.168	4.168

Primary OutFlow (Dynamic Tailwater)
↑—1=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	900.90'	**30.0' long Broad-Crested Rectangular Weir** Head (feet) 0.50 Coef. (English) 3.00

Pond EXWB: EXISTING WETLAND B

[80] Warning: Exceeded Pond 29 by 0.00' @ 20.13 hrs (0.67 cfs)
[80] Warning: Exceeded Pond P419 by 0.71' @ 12.33 hrs (2.85 cfs)

Inflow	=	10.62 cfs @ 12.56 hrs, Volume=	3.136 af
Outflow	=	10.09 cfs @ 12.81 hrs, Volume=	3.135 af, Atten= 5%, Lag= 14.8 min
Primary	=	10.09 cfs @ 12.81 hrs, Volume=	3.135 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 900.70' Storage= 1.551 af
Peak Elev= 900.72' Storage= 1.668 af (0.117 af above starting storage)
Flood Elev= 904.50' Storage= 20.376 af (18.825 af above starting storage)
Plug-Flow detention time= 486.4 min calculated for 1.584 af (51% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
895.00	0.000	0.000	0.000
897.00	0.330	0.330	0.330
900.70	0.330	1.221	1.551
905.00	9.578	21.302	22.853

Primary OutFlow (Dynamic Tailwater)
↑—2=Special (user-defined)
↑—1=Culvert

#	Routing	Invert	Outlet Devices
1	Device 2	895.00'	**72.0" x 100.0' long Culvert** Ke= 0.500 Outlet Invert= 895.00' S= 0.0000 '/' n= 0.012 Cc= 0.900
2	Primary	895.00'	**Special (user-defined)** Head (feet) 0.00 5.70 5.80 5.90 6.00 6.10 6.20 6.30 6.40 6.50 6.60 6.70 6.80 Disch. (cfs) 0.00 0.00 42.61 60.66 74.57 86.10 96.27 105.45 113.90 121.77 12

Pond P414: 414P FROM CITY CALCS

Inflow	=	3.57 cfs @	12.46 hrs, Volume=	0.530 af
Outflow	=	0.33 cfs @	16.51 hrs, Volume=	0.413 af, Atten= 91%, Lag= 242.9 min
Primary	=	0.33 cfs @	16.51 hrs, Volume=	0.413 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 901.30' Storage= 0.297 af
Flood Elev= 906.50' Storage= 11.270 af
Plug-Flow detention time= 527.4 min calculated for 0.413 af (78% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
901.00	0.000	0.000	0.000
902.50	1.960	1.470	1.470
904.50	2.520	4.480	5.950
906.50	2.800	5.320	11.270

Primary OutFlow (Dynamic Tailwater)
└─2=Culvert
└─1=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Device 2	901.00'	**30.0' long Broad-Crested Rectangular Weir** Head (feet) 0.50 Coef. (English) 3.00
2	Primary	901.00'	**18.0" x 55.0' long Culvert** Ke= 0.500 Outlet Invert= 900.80' S= 0.0036 '/' n= 0.012 Cc= 0.900

Pond P416: 416P FROM CITY CALCS

[86] Warning: Oscillations may require smaller dt

Inflow	=	11.19 cfs @	12.40 hrs, Volume=	1.461 af
Outflow	=	5.65 cfs @	12.82 hrs, Volume=	1.140 af, Atten= 50%, Lag= 25.0 min
Primary	=	5.65 cfs @	12.82 hrs, Volume=	1.140 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 897.87' Storage= 0.061 af
Peak Elev= 900.97' Storage= 0.493 af (0.432 af above starting storage)
Flood Elev= 903.50' Storage= 5.306 af (5.245 af above starting storage)
Plug-Flow detention time= 170.9 min calculated for 1.078 af (74% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
895.70	0.000	0.000	0.000
897.30	0.030	0.024	0.024
899.00	0.100	0.111	0.135
900.50	0.120	0.165	0.300
902.20	0.710	0.706	1.005
902.50	2.830	0.531	1.536
903.50	4.710	3.770	5.306

Primary OutFlow (Dynamic Tailwater)
↑—1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	897.87'	**30.0" x 68.0' long Culvert** Ke= 0.500 Outlet Invert= 897.68' S= 0.0028 '/' n= 0.012 Cc= 0.900

Pond P419: 419P FROM CITY CALCS

Inflow	=	13.07 cfs @	13.19 hrs, Volume=	4.274 af
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 100%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 900.67' Storage= 4.274 af
Plug-Flow detention time= (not calculated)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
900.00	6.300	0.000	0.000
900.40	6.400	2.540	2.540
900.80	6.400	2.560	5.100
901.20	6.500	2.580	7.680
901.60	6.500	2.600	10.280
902.00	6.600	2.620	12.900
902.40	6.700	2.660	15.560
902.80	6.700	2.680	18.240
903.20	6.800	2.700	20.940
903.60	6.800	2.720	23.660
904.00	6.900	2.740	26.400

Primary OutFlow (Dynamic Tailwater)
↑—2=Culvert
↑—1=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Device 2	900.00'	**30.0' long Broad-Crested Rectangular Weir** Head (feet) 0.50 Coef. (English) 3.00

2 Primary 900.00' **24.0" x 50.0' long Culvert** Ke= 0.500
Outlet Invert= 899.50' S= 0.0100 '/' n= 0.012 Cc= 0.900

Pond P421: 421P FROM CITY CALCS

Inflow	=	2.13 cfs @	12.40 hrs, Volume=	0.332 af
Outflow	=	0.30 cfs @	15.10 hrs, Volume=	0.295 af, Atten= 86%, Lag= 161.9 min
Primary	=	0.30 cfs @	15.10 hrs, Volume=	0.295 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Peak Elev= 903.20' Storage= 0.145 af
Plug-Flow detention time= 364.7 min calculated for 0.295 af (89% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
902.90	0.000	0.000	0.000
904.90	0.980	0.980	0.980
906.90	1.260	2.240	3.220
908.90	1.400	2.660	5.880

Primary OutFlow (Dynamic Tailwater)
↑—1=Culvert
↑—2=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	902.90'	**15.0" x 55.0' long Culvert** Ke= 0.500
			Outlet Invert= 902.66' S= 0.0044 '/' n= 0.012 Cc= 0.900
2	Device 1	902.90'	**30.0' long Broad-Crested Rectangular Weir**
			Head (feet) 0.50
			Coef. (English) 3.00

Pond PBY: BACKYARD POND

[86] Warning: Oscillations may require smaller dt

Inflow	=	3.87 cfs @	12.05 hrs, Volume=	0.235 af
Outflow	=	0.34 cfs @	13.66 hrs, Volume=	0.215 af, Atten= 91%, Lag= 96.5 min
Primary	=	0.34 cfs @	13.66 hrs, Volume=	0.215 af

Routing by Sim-Route method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

Starting Elev= 899.00' Storage= 0 cf
Peak Elev= 901.16' Storage= 4,681 cf
Flood Elev= 904.50' Storage= 54,750 cf
Plug-Flow detention time= 294.6 min calculated for 0.215 af (91% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
900.85	0	0	0
904.50	30,000	54,750	54,750

Primary OutFlow (Dynamic Tailwater)
↑—1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	900.85'	**18.0" x 78.0' long Culvert** Ke= 0.500 Outlet Invert= 899.34' S= 0.0194 '/' n= 0.012 Cc= 0.900