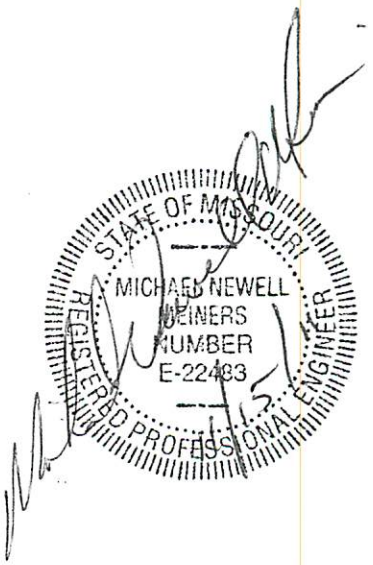
HYDRAULIC SUMMARY REPORT

O'Fallon Center - 2
1300 Highway K
City of O'Fallon, Missouri

Project Number 10-0274



November 15, 2011

801 South Fifth Street, Suite 202 ■ St. Charles, Missouri 63301
Telephone 636.947.0607 ■ Fax 636.947.2448

O'FALLON CENTER
DETENTION BASIN REPORT

October 10, 2011
Revised November 14, 2011

TOTAL AREA OF SITE – 2.118 Acres

Differential Run-off

2 Year/ 20 Min.	2.50 – 1.20 x 2.118 = 2.75 c.f.s.
15 Year/ 20 Min.	3.85 – 1.87 x 2.118 = 4.19 c.f.s.
25 Year/ 20 Min.	7.75 -2.31 x 2.118 = 5.17 c.f.s.
100 Year/ 20 Min.	6.08 -2.95 x 2.118 = 6.63 c.f.s.

Total Q to Basin

2 Year/ 20 Min.	1.98 Ac .x 2.50 = 4.95 c.f.s.
15 Year/ 20 Min.	1.98 Ac. x 3.85 = 7.62 c.f.s.
25 Year/ 20 Min.	1.98 Ac. x 4.75 = 9.41 c.f.s.
100 Year/ 20 Min.	1.98 Ac. x 6.08 = 12.04 c.f.s.

Total Q By-pass Basin

2 Year/ 20 Min.	0.08 Ac. x 2.50 + 0.18 Ac. x 1.20 = 0.42 c.f.s.
15 Year/ 20 Min.	0.08 Ac. x 3.85 + 0.18 Ac. x 1.87 = 0.64 c.f.s.
25 Year/ 20 Min.	0.08 Ac. x 4.75 + 0.18 Ac. x 2.31 = 0.80 c.f.s.
100 Year/ 20 Min.	0.08 Ac. x 6.08 + 0.18 Ac. x 2.95 = 1.02 c.f.s.

Allowable Discharge from Basin

2 Year Storm	4.95 c.f.s. - 2.75 c.f.s. - 0.42 c.f.s. =1.78 c.f.s.
15 Year Storm	7.62 c.f.s. - 4.19 c.f.s. - 0.64 c.f.s. = 2.79 c.f.s.
25 Year Storm	9.41 c.f.s. - 5.17 c.f.s. - 0.80 c.f.s. = 3.44 c.f.s.
100 Year Storm	12.04 c.f.s. - 6.63 c.f.s.- 1.02 c.f.s. = 4.39 c.f.s.

OVERFLOW STRUCTURE
48" Manhole- Top Elevation 543.09, Flow line 538.00
Outlet Pipe 15" RCP – Invert Elevation 538.00 @ 3.00%
Low Flow Opening -5" wide x 7" high @ Elevation 539.50
Weir Opening -0.80 Feet wide @ Elevation 542.20
Overflow – 11.76 Feet Weir @ Elevation 543.09

ROUTING

The POND REPORT attached is the results of routing the proposed run off through the Basin using Hydraflow Hydragraphs.

Tc was determined to be 4 minutes using TR 55 work sheet:
40 feet sheet flow over grass area(n=0.05) at 15 %=0.8 min.
240 feet shallow concentrated flow paved at 1.80%=1.50 min.
340 feet of 15" RCP @ average velocity 4 f.p.s. = 1.50 min.

The results are as follows:
Hyd. No. 4 2 Year Route - 1.74 c.f.s. at Max. Elevation of 542.01 (1.78 c.f.s. allowable)
Hyd. No. 5 15 Year Route – 2.27 c.f.s. at Max. Elevation of 542.46 (2.79 c.f.s. allowable)
Hyd No. 6 25 Year Route – 3.07 c.f.s. at Max. Elevetion of 542.74 (3.44 c.f.s. allowable)
Hyd. No. 8 100 Year Route – 4.38 c.f.s. at Max. Elevation of 543.09 (4.39 c.f.s. allowable)

Low Flow Blocked = 48" Manhole- 12.57 feet of weir at Elevation 543.09

$Q = 3.1(Lw)h2/3$

$12.04 \text{ c.f.s.} = 3.1(12.57)h3/2$

$0.31 = h3/2$

$0.46 = h$

100 Year H.W. = 543.09 + 0.46 =543.54

SEDIMENT STORAGE CALCULATIONS

The attached Annual Sediment Storage graph shows there will be 280 Cu. Ft. of sediment in a two year period. Using the surface area from the Pond Report the total displacement of water can be calculated:
7,347 Sq. Ft. surface area at 544.00
280/7,347= 0.038' Therefore the high water could rise to 543.58

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Nov 14, 2011

Pond No. 1 - New Pond 1

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 539.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	539.50	00	0	0
0.50	540.00	192	48	48
1.50	541.00	1,098	645	693
2.50	542.00	3,793	2,446	3,139
3.50	543.00	6,359	5,076	8,215
4.50	544.00	7,347	6,853	15,068

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	7.00	0:00	0.00
Span (in)	= 15.00	5.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 538.00	539.50	0.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 3.00	0.00	0.00	n/a
N-Value	= .013	.013	.000	n/a
Orifice Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

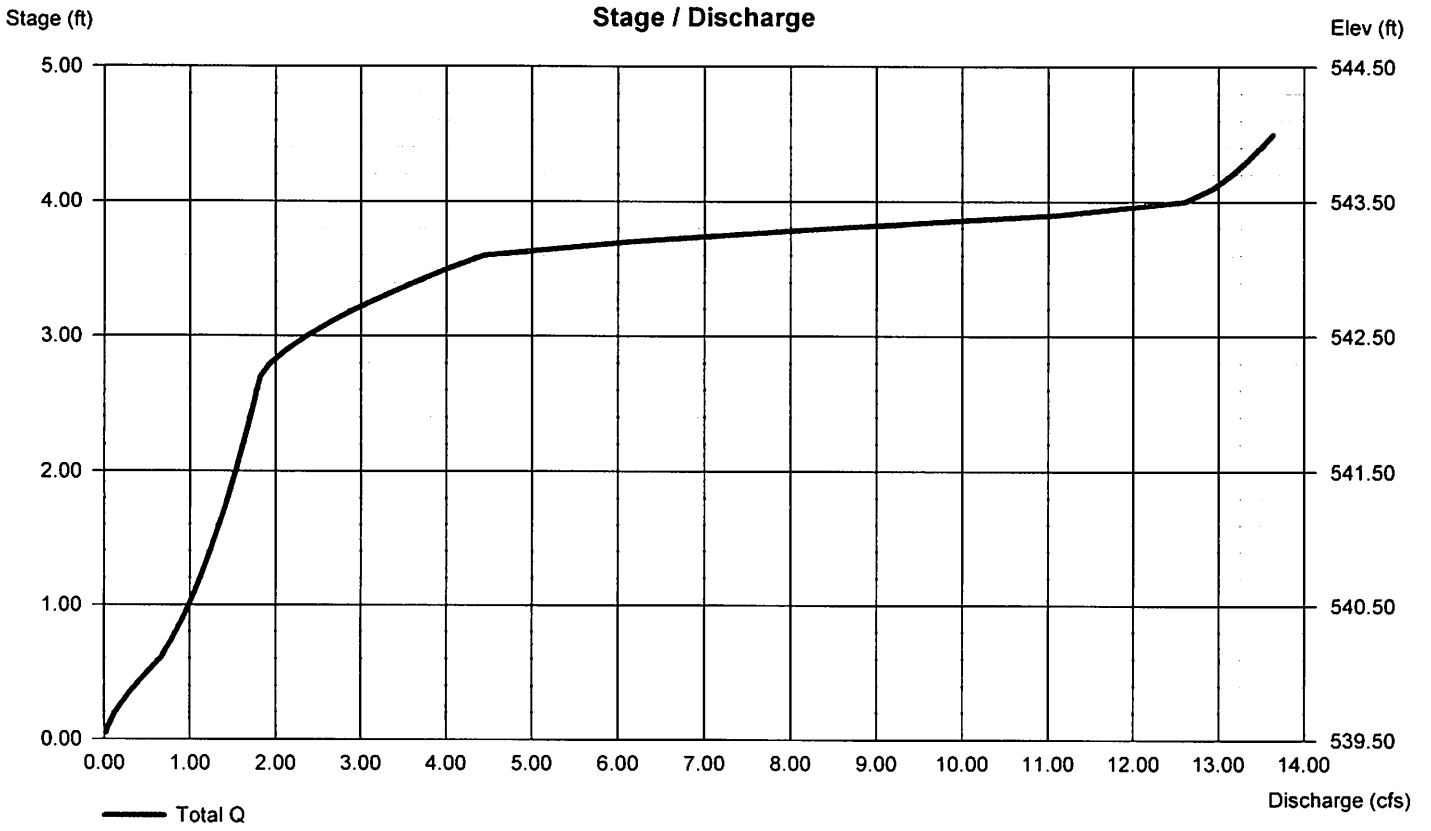
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.80	11.77	0.00	0.00
Crest El. (ft)	= 542.20	543.09	0.00	0.00
Weir Coeff.	= 3.33	3.10	0.00	0.00
Weir Type	= Rect	Broad	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

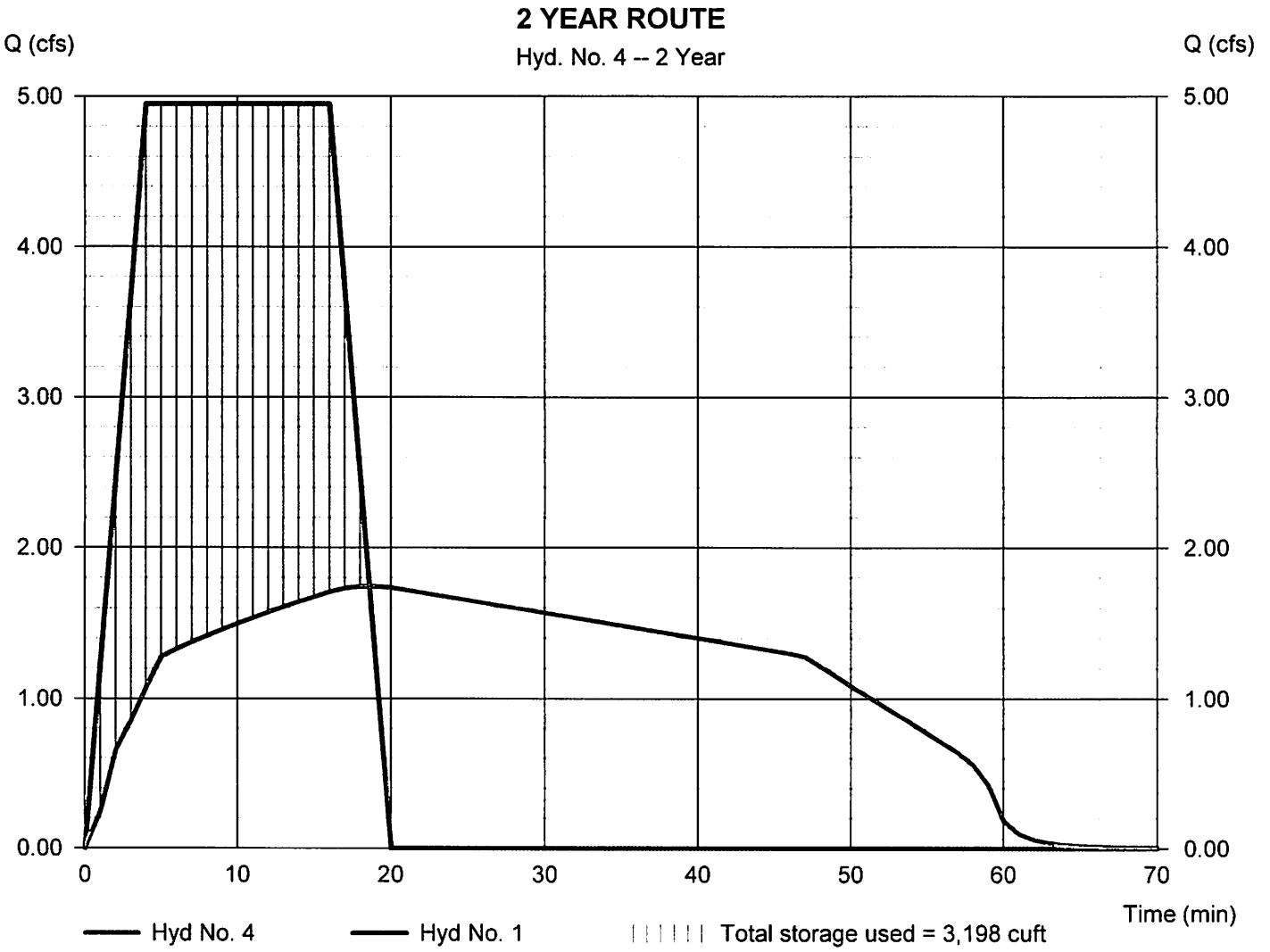
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Nov 14, 2011

Hyd. No. 4

2 YEAR ROUTE

Hydrograph type	= Reservoir	Peak discharge	= 1.744 cfs
Storm frequency	= 2 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 4,752 cuft
Inflow hyd. No.	= 1 - 2 YEAR INFLOW	Max. Elevation	= 542.01 ft
Reservoir name	= New Pond 1	Max. Storage	= 3,198 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Nov 14, 2011

Hyd. No. 4

2 YEAR ROUTE

Hydrograph type	= Reservoir	Peak discharge	= 1.744 cfs
Storm frequency	= 2 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 4,752 cuft
Inflow hyd. No.	= 1 - 2 YEAR INFLOW	Reservoir name	= New Pond 1
Max. Elevation	= 542.01 ft	Max. Storage	= 3,198 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
1	1.240	539.81	5.527	0.246	-----	-----	-----	-----	-----	-----	-----	0.246
2	2.480	540.10	5.527	0.653	-----	-----	-----	-----	-----	-----	-----	0.653
3	3.710	540.32	5.527	0.851	-----	-----	-----	-----	-----	-----	-----	0.851
4	4.950 <<	540.63	5.527	1.074	-----	-----	-----	-----	-----	-----	-----	1.074
5	4.950 <<	540.99	5.527	1.278	-----	-----	-----	-----	-----	-----	-----	1.278
6	4.950 <<	541.09	5.527	1.331	-----	-----	-----	-----	-----	-----	-----	1.331
7	4.950 <<	541.17	5.527	1.376	-----	-----	-----	-----	-----	-----	-----	1.376
8	4.950 <<	541.26	5.527	1.418	-----	-----	-----	-----	-----	-----	-----	1.418
9	4.950 <<	541.35	5.527	1.459	-----	-----	-----	-----	-----	-----	-----	1.459
10	4.950 <<	541.43	5.527	1.499	-----	-----	-----	-----	-----	-----	-----	1.499
11	4.950 <<	541.52	5.527	1.537	-----	-----	-----	-----	-----	-----	-----	1.537
12	4.950 <<	541.60	5.527	1.574	-----	-----	-----	-----	-----	-----	-----	1.574
13	4.950 <<	541.68	5.527	1.609	-----	-----	-----	-----	-----	-----	-----	1.609
14	4.950 <<	541.76	5.527	1.643	-----	-----	-----	-----	-----	-----	-----	1.643
15	4.950 <<	541.84	5.527	1.677	-----	-----	-----	-----	-----	-----	-----	1.677
16	4.950 <<	541.92	5.527	1.709	-----	-----	-----	-----	-----	-----	-----	1.709
17	3.710	541.99	5.527	1.734	-----	-----	-----	-----	-----	-----	-----	1.734
18	2.480	542.01	5.527	1.743	-----	-----	-----	-----	-----	-----	-----	1.743
19	1.240	542.01 <<	5.527	1.744	-----	-----	-----	-----	-----	-----	-----	1.744

<<

Continues on next page...

2 YEAR ROUTE

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20	0.000	542.00	5.527	1.738	-----	-----	-----	-----	-----	-----	-----	1.738
21	0.000	541.95	5.527	1.721	-----	-----	-----	-----	-----	-----	-----	1.721
22	0.000	541.91	5.527	1.704	-----	-----	-----	-----	-----	-----	-----	1.704
23	0.000	541.87	5.527	1.687	-----	-----	-----	-----	-----	-----	-----	1.687
24	0.000	541.83	5.527	1.671	-----	-----	-----	-----	-----	-----	-----	1.671
25	0.000	541.79	5.527	1.654	-----	-----	-----	-----	-----	-----	-----	1.654
26	0.000	541.75	5.527	1.637	-----	-----	-----	-----	-----	-----	-----	1.637
27	0.000	541.71	5.527	1.620	-----	-----	-----	-----	-----	-----	-----	1.620
28	0.000	541.67	5.527	1.603	-----	-----	-----	-----	-----	-----	-----	1.603
29	0.000	541.63	5.527	1.587	-----	-----	-----	-----	-----	-----	-----	1.587
30	0.000	541.59	5.527	1.570	-----	-----	-----	-----	-----	-----	-----	1.570
31	0.000	541.55	5.527	1.553	-----	-----	-----	-----	-----	-----	-----	1.553
32	0.000	541.51	5.527	1.536	-----	-----	-----	-----	-----	-----	-----	1.536
33	0.000	541.48	5.527	1.519	-----	-----	-----	-----	-----	-----	-----	1.519
34	0.000	541.44	5.527	1.503	-----	-----	-----	-----	-----	-----	-----	1.503
35	0.000	541.40	5.527	1.486	-----	-----	-----	-----	-----	-----	-----	1.486
36	0.000	541.37	5.527	1.469	-----	-----	-----	-----	-----	-----	-----	1.469
37	0.000	541.33	5.527	1.452	-----	-----	-----	-----	-----	-----	-----	1.452
38	0.000	541.30	5.527	1.435	-----	-----	-----	-----	-----	-----	-----	1.435
39	0.000	541.26	5.527	1.419	-----	-----	-----	-----	-----	-----	-----	1.419
40	0.000	541.23	5.527	1.402	-----	-----	-----	-----	-----	-----	-----	1.402
41	0.000	541.19	5.527	1.385	-----	-----	-----	-----	-----	-----	-----	1.385
42	0.000	541.16	5.527	1.368	-----	-----	-----	-----	-----	-----	-----	1.368
43	0.000	541.13	5.527	1.351	-----	-----	-----	-----	-----	-----	-----	1.351
44	0.000	541.09	5.527	1.335	-----	-----	-----	-----	-----	-----	-----	1.335
45	0.000	541.06	5.527	1.318	-----	-----	-----	-----	-----	-----	-----	1.318
46	0.000	541.03	5.527	1.301	-----	-----	-----	-----	-----	-----	-----	1.301

2 YEAR ROUTE

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
47	0.000	540.99	5.527	1.278	-----	-----	-----	-----	-----	-----	-----	1.278
48	0.000	540.87	5.527	1.215	-----	-----	-----	-----	-----	-----	-----	1.215
49	0.000	540.76	5.527	1.151	-----	-----	-----	-----	-----	-----	-----	1.151
50	0.000	540.66	5.527	1.087	-----	-----	-----	-----	-----	-----	-----	1.087
51	0.000	540.56	5.527	1.023	-----	-----	-----	-----	-----	-----	-----	1.023
52	0.000	540.46	5.527	0.960	-----	-----	-----	-----	-----	-----	-----	0.960
53	0.000	540.38	5.527	0.896	-----	-----	-----	-----	-----	-----	-----	0.896
54	0.000	540.30	5.527	0.833	-----	-----	-----	-----	-----	-----	-----	0.833
55	0.000	540.22	5.527	0.768	-----	-----	-----	-----	-----	-----	-----	0.768
56	0.000	540.16	5.527	0.704	-----	-----	-----	-----	-----	-----	-----	0.704
57	0.000	540.09	5.527	0.639	-----	-----	-----	-----	-----	-----	-----	0.639
58	0.000	540.04	5.527	0.557	-----	-----	-----	-----	-----	-----	-----	0.557
59	0.000	539.94	5.527	0.420	-----	-----	-----	-----	-----	-----	-----	0.420
60	0.000	539.76	5.527	0.184	-----	-----	-----	-----	-----	-----	-----	0.184
61	0.000	539.67	5.527	0.098	-----	-----	-----	-----	-----	-----	-----	0.098
62	0.000	539.62	5.527	0.059	-----	-----	-----	-----	-----	-----	-----	0.059
63	0.000	539.59	5.527	0.038	-----	-----	-----	-----	-----	-----	-----	0.038
64	0.000	539.57	5.527	0.026	-----	-----	-----	-----	-----	-----	-----	0.026
65	0.000	539.55	5.527	0.018	-----	-----	-----	-----	-----	-----	-----	0.018

...End

Hydrograph Report

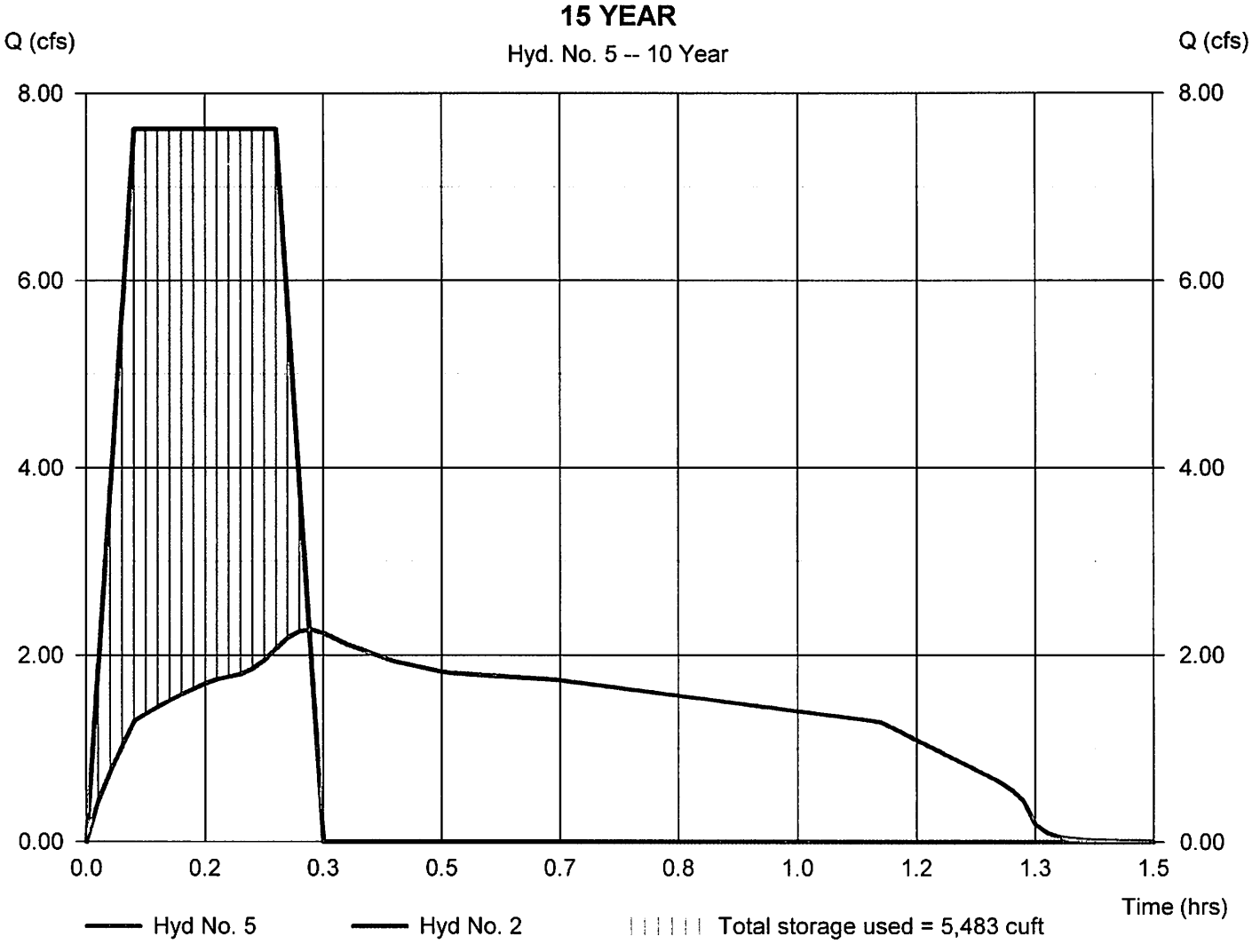
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Nov 14, 2011

Hyd. No. 5

15 YEAR

Hydrograph type	= Reservoir	Peak discharge	= 2.274 cfs
Storm frequency	= 10 yrs	Time to peak	= 0.32 hrs
Time interval	= 1 min	Hyd. volume	= 7,316 cuft
Inflow hyd. No.	= 2 - 15 YEAR INFLOW	Max. Elevation	= 542.46 ft
Reservoir name	= New Pond 1	Max. Storage	= 5,483 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Nov 14, 2011

Hyd. No. 5

15 YEAR

Hydrograph type	= Reservoir	Peak discharge	= 2.274 cfs
Storm frequency	= 10 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 7,316 cuft
Inflow hyd. No.	= 2 - 15 YEAR INFLOW	Reservoir name	= New Pond 1
Max. Elevation	= 542.46 ft	Max. Storage	= 5,483 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
1	1.910	539.96	5.527	0.441	-----	-----	-----	-----	-----	-----	-----	0.441
2	3.810	540.20	5.527	0.752	-----	-----	-----	-----	-----	-----	-----	0.752
3	5.720	540.56	5.527	1.029	-----	-----	-----	-----	-----	-----	-----	1.029
4	7.620 <<	541.02	5.527	1.297	-----	-----	-----	-----	-----	-----	-----	1.297
5	7.620 <<	541.17	5.527	1.376	-----	-----	-----	-----	-----	-----	-----	1.376
6	7.620 <<	541.33	5.527	1.450	-----	-----	-----	-----	-----	-----	-----	1.450
7	7.620 <<	541.48	5.527	1.519	-----	-----	-----	-----	-----	-----	-----	1.519
8	7.620 <<	541.63	5.527	1.585	-----	-----	-----	-----	-----	-----	-----	1.585
9	7.620 <<	541.77	5.527	1.647	-----	-----	-----	-----	-----	-----	-----	1.647
10	7.620 <<	541.92	5.527	1.707	-----	-----	-----	-----	-----	-----	-----	1.707
11	7.620 <<	542.03	5.527	1.751	-----	-----	-----	-----	-----	-----	-----	1.751
12	7.620 <<	542.10	5.527	1.778	-----	-----	-----	-----	-----	-----	-----	1.778
13	7.620 <<	542.17	5.527	1.804	-----	-----	-----	-----	-----	-----	-----	1.804
14	7.620 <<	542.24	5.527	1.830	-----	-----	0.031	-----	-----	-----	-----	1.861
15	7.620 <<	542.30	5.527	1.855	-----	-----	0.092	-----	-----	-----	-----	1.947
16	7.620 <<	542.37	5.527	1.880	-----	-----	0.194	-----	-----	-----	-----	2.073
17	5.720	542.42	5.527	1.899	-----	-----	0.288	-----	-----	-----	-----	2.187
18	3.810	542.45	5.527	1.910	-----	-----	0.347	-----	-----	-----	-----	2.257
19	1.910	542.46 <<	5.527	1.912	-----	-----	0.361	-----	-----	-----	-----	2.274

<<

Continues on next page...

15 YEAR

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20	0.000	542.45	5.527	1.907	-----	-----	0.331	-----	-----	-----	-----	2.238
21	0.000	542.42	5.527	1.897	-----	-----	0.279	-----	-----	-----	-----	2.176
22	0.000	542.39	5.527	1.888	-----	-----	0.230	-----	-----	-----	-----	2.119
23	0.000	542.37	5.527	1.879	-----	-----	0.192	-----	-----	-----	-----	2.072
24	0.000	542.35	5.527	1.870	-----	-----	0.155	-----	-----	-----	-----	2.025
25	0.000	542.32	5.527	1.862	-----	-----	0.119	-----	-----	-----	-----	1.980
26	0.000	542.30	5.527	1.853	-----	-----	0.084	-----	-----	-----	-----	1.937
27	0.000	542.28	5.527	1.845	-----	-----	0.064	-----	-----	-----	-----	1.909
28	0.000	542.25	5.527	1.836	-----	-----	0.046	-----	-----	-----	-----	1.882
29	0.000	542.23	5.527	1.828	-----	-----	0.027	-----	-----	-----	-----	1.855
30	0.000	542.21	5.527	1.820	-----	-----	0.009	-----	-----	-----	-----	1.829
31	0.000	542.19	5.527	1.812	-----	-----	-----	-----	-----	-----	-----	1.812
32	0.000	542.17	5.527	1.804	-----	-----	-----	-----	-----	-----	-----	1.804
33	0.000	542.15	5.527	1.796	-----	-----	-----	-----	-----	-----	-----	1.796
34	0.000	542.12	5.527	1.788	-----	-----	-----	-----	-----	-----	-----	1.788
35	0.000	542.10	5.527	1.780	-----	-----	-----	-----	-----	-----	-----	1.780
36	0.000	542.08	5.527	1.771	-----	-----	-----	-----	-----	-----	-----	1.771
37	0.000	542.06	5.527	1.763	-----	-----	-----	-----	-----	-----	-----	1.763
38	0.000	542.04	5.527	1.755	-----	-----	-----	-----	-----	-----	-----	1.755
39	0.000	542.02	5.527	1.747	-----	-----	-----	-----	-----	-----	-----	1.747
40	0.000	542.00	5.527	1.739	-----	-----	-----	-----	-----	-----	-----	1.739
41	0.000	541.96	5.527	1.722	-----	-----	-----	-----	-----	-----	-----	1.722
42	0.000	541.92	5.527	1.705	-----	-----	-----	-----	-----	-----	-----	1.705
43	0.000	541.87	5.527	1.688	-----	-----	-----	-----	-----	-----	-----	1.688
44	0.000	541.83	5.527	1.672	-----	-----	-----	-----	-----	-----	-----	1.672
45	0.000	541.79	5.527	1.655	-----	-----	-----	-----	-----	-----	-----	1.655
46	0.000	541.75	5.527	1.638	-----	-----	-----	-----	-----	-----	-----	1.638

Hydrograph Report

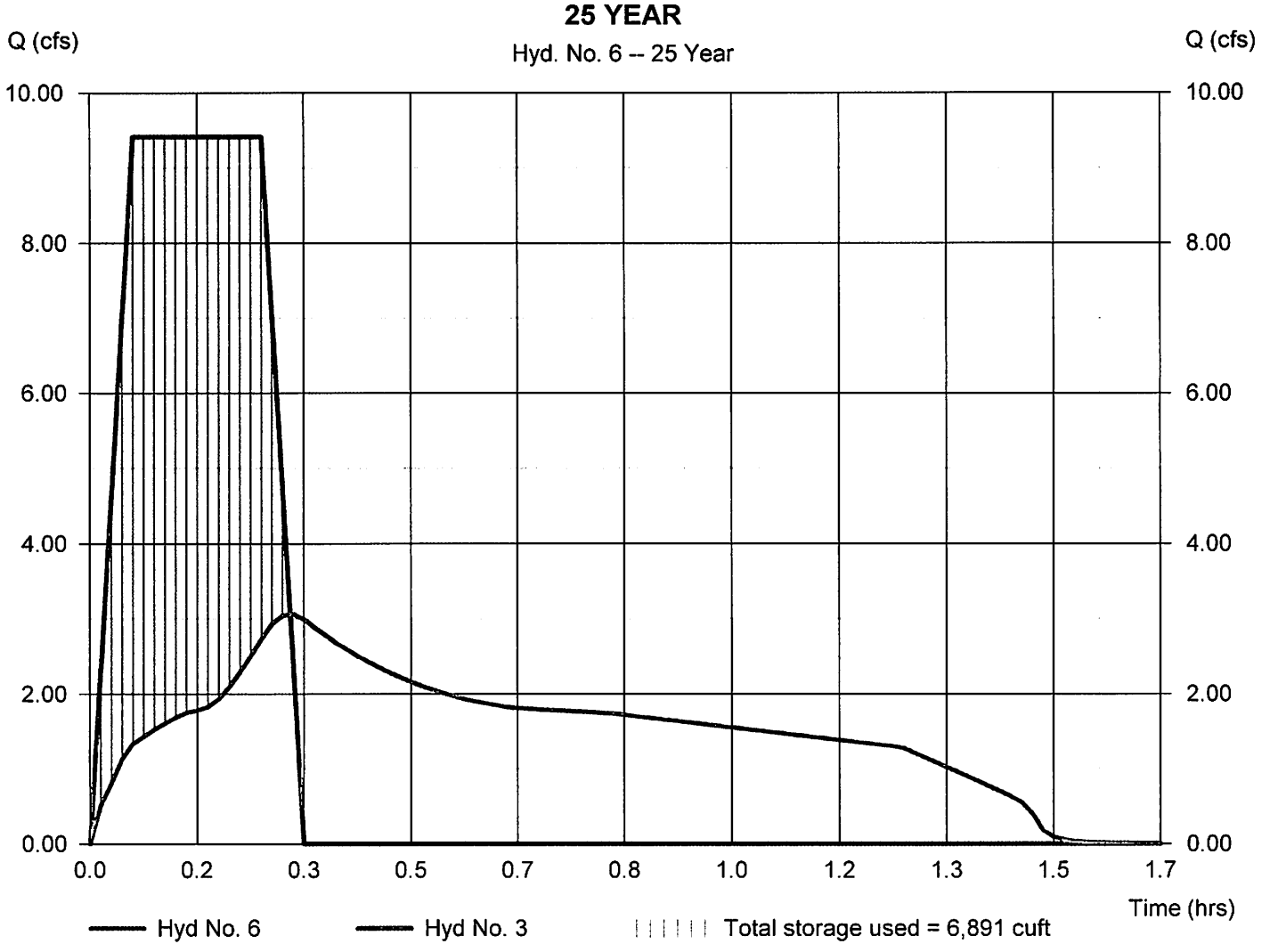
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Nov 14, 2011

Hyd. No. 6

25 YEAR

Hydrograph type	= Reservoir	Peak discharge	= 3.067 cfs
Storm frequency	= 25 yrs	Time to peak	= 0.32 hrs
Time interval	= 1 min	Hyd. volume	= 9,034 cuft
Inflow hyd. No.	= 3 - 25 YEAR INFLOW	Max. Elevation	= 542.74 ft
Reservoir name	= New Pond 1	Max. Storage	= 6,891 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Nov 14, 2011

Hyd. No. 6

25 YEAR

Hydrograph type	= Reservoir	Peak discharge	= 3.067 cfs
Storm frequency	= 25 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 9,034 cuft
Inflow hyd. No.	= 3 - 25 YEAR INFLOW	Reservoir name	= New Pond 1
Max. Elevation	= 542.74 ft	Max. Storage	= 6,891 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
1	2.350	540.01	5.527	0.518	-----	-----	-----	-----	-----	-----	-----	0.518
2	4.710	540.28	5.527	0.815	-----	-----	-----	-----	-----	-----	-----	0.815
3	7.060	540.73	5.527	1.136	-----	-----	-----	-----	-----	-----	-----	1.136
4	9.410 <<	541.10	5.527	1.339	-----	-----	-----	-----	-----	-----	-----	1.339
5	9.410 <<	541.30	5.527	1.436	-----	-----	-----	-----	-----	-----	-----	1.436
6	9.410 <<	541.49	5.527	1.526	-----	-----	-----	-----	-----	-----	-----	1.526
7	9.410 <<	541.69	5.527	1.610	-----	-----	-----	-----	-----	-----	-----	1.610
8	9.410 <<	541.88	5.527	1.689	-----	-----	-----	-----	-----	-----	-----	1.689
9	9.410 <<	542.03	5.527	1.751	-----	-----	-----	-----	-----	-----	-----	1.751
10	9.410 <<	542.12	5.527	1.786	-----	-----	-----	-----	-----	-----	-----	1.786
11	9.410 <<	542.21	5.527	1.820	-----	-----	0.009	-----	-----	-----	-----	1.830
12	9.410 <<	542.30	5.527	1.854	-----	-----	0.084	-----	-----	-----	-----	1.938
13	9.410 <<	542.39	5.527	1.885	-----	-----	0.219	-----	-----	-----	-----	2.104
14	9.410 <<	542.47	5.527	1.916	-----	-----	0.383	-----	-----	-----	-----	2.299
15	9.410 <<	542.56	5.527	1.945	-----	-----	0.568	-----	-----	-----	-----	2.514
16	9.410 <<	542.64	5.527	1.973	-----	-----	0.769	-----	-----	-----	-----	2.742
17	7.060	542.70	5.527	1.996	-----	-----	0.940	-----	-----	-----	-----	2.935
18	4.710	542.73	5.527	2.007	-----	-----	1.041	-----	-----	-----	-----	3.048
19	2.350	542.74 <<	5.527	2.009	-----	-----	1.057	-----	-----	-----	-----	3.067

<<

Continues on next page...

25 YEAR

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20	0.000	542.72	5.527	2.002	-----	-----	0.993	-----	-----	-----	-----	2.994
21	0.000	542.68	5.527	1.990	-----	-----	0.895	-----	-----	-----	-----	2.884
22	0.000	542.65	5.527	1.978	-----	-----	0.805	-----	-----	-----	-----	2.783
23	0.000	542.62	5.527	1.967	-----	-----	0.718	-----	-----	-----	-----	2.685
24	0.000	542.59	5.527	1.956	-----	-----	0.639	-----	-----	-----	-----	2.595
25	0.000	542.56	5.527	1.945	-----	-----	0.568	-----	-----	-----	-----	2.513
26	0.000	542.53	5.527	1.935	-----	-----	0.499	-----	-----	-----	-----	2.434
27	0.000	542.50	5.527	1.925	-----	-----	0.433	-----	-----	-----	-----	2.358
28	0.000	542.47	5.527	1.915	-----	-----	0.378	-----	-----	-----	-----	2.293
29	0.000	542.44	5.527	1.906	-----	-----	0.325	-----	-----	-----	-----	2.231
30	0.000	542.42	5.527	1.896	-----	-----	0.273	-----	-----	-----	-----	2.169
31	0.000	542.39	5.527	1.887	-----	-----	0.226	-----	-----	-----	-----	2.113
32	0.000	542.37	5.527	1.878	-----	-----	0.188	-----	-----	-----	-----	2.066
33	0.000	542.34	5.527	1.869	-----	-----	0.151	-----	-----	-----	-----	2.020
34	0.000	542.32	5.527	1.861	-----	-----	0.114	-----	-----	-----	-----	1.975
35	0.000	542.30	5.527	1.852	-----	-----	0.081	-----	-----	-----	-----	1.934
36	0.000	542.27	5.527	1.844	-----	-----	0.062	-----	-----	-----	-----	1.906
37	0.000	542.25	5.527	1.835	-----	-----	0.043	-----	-----	-----	-----	1.879
38	0.000	542.23	5.527	1.827	-----	-----	0.025	-----	-----	-----	-----	1.852
39	0.000	542.21	5.527	1.819	-----	-----	0.007	-----	-----	-----	-----	1.826
40	0.000	542.19	5.527	1.811	-----	-----	-----	-----	-----	-----	-----	1.811
41	0.000	542.16	5.527	1.803	-----	-----	-----	-----	-----	-----	-----	1.803
42	0.000	542.14	5.527	1.795	-----	-----	-----	-----	-----	-----	-----	1.795
43	0.000	542.12	5.527	1.787	-----	-----	-----	-----	-----	-----	-----	1.787
44	0.000	542.10	5.527	1.779	-----	-----	-----	-----	-----	-----	-----	1.779
45	0.000	542.08	5.527	1.770	-----	-----	-----	-----	-----	-----	-----	1.770
46	0.000	542.06	5.527	1.762	-----	-----	-----	-----	-----	-----	-----	1.762

Hydrograph Report

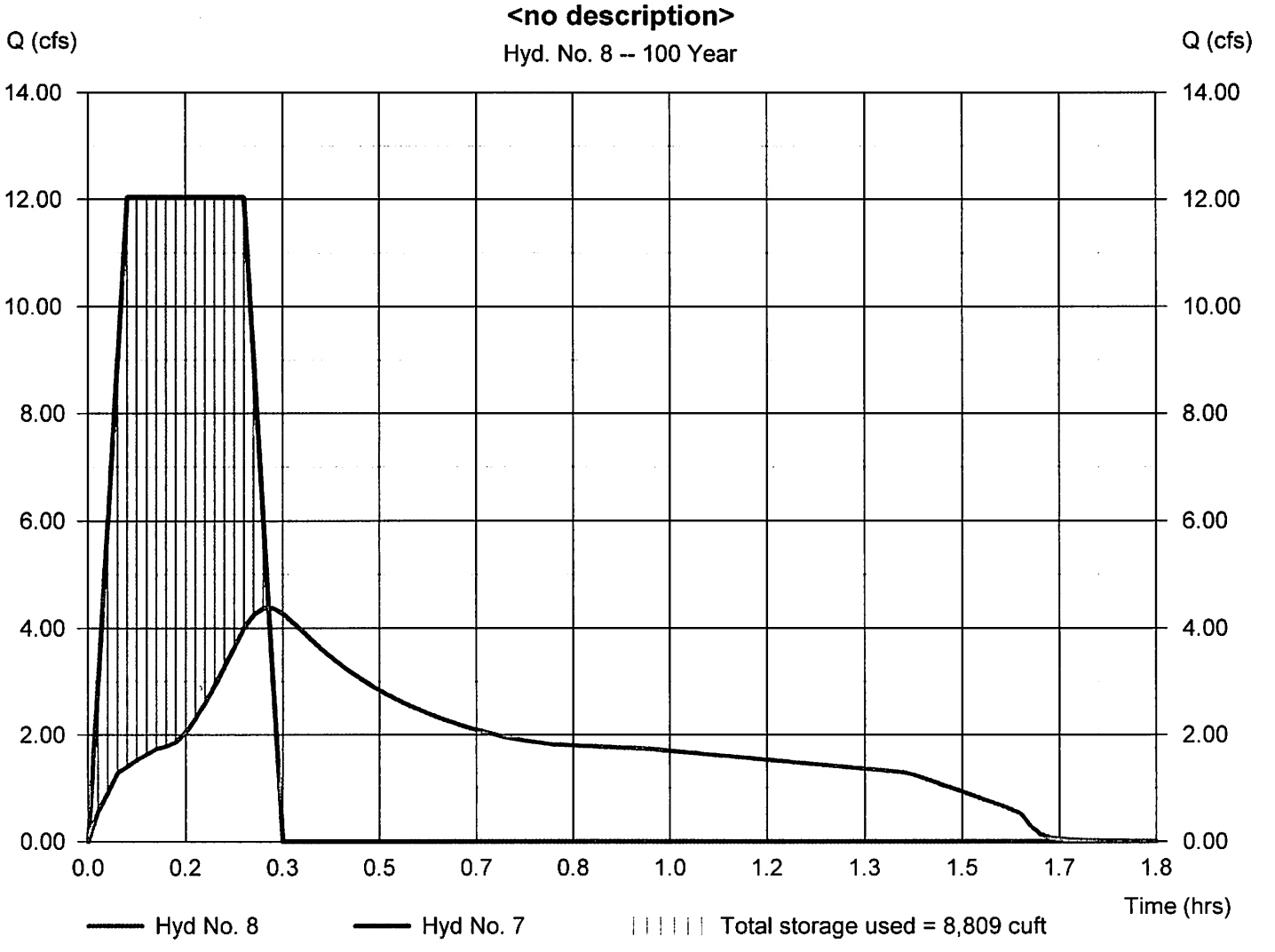
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Nov 14, 2011

Hyd. No. 8

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 4.381 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.32 hrs
Time interval	= 1 min	Hyd. volume	= 11,558 cuft
Inflow hyd. No.	= 7 - 100 year	Max. Elevation	= 543.09 ft
Reservoir name	= New Pond 1	Max. Storage	= 8,809 cuft

Storage Indication method used.



Hydrograph Report

Hyd. No. 8

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 4.381 cfs
Storm frequency	= 100 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 11,558 cuft
Inflow hyd. No.	= 7 - 100 year	Reservoir name	= New Pond 1
Max. Elevation	= 543.09 ft	Max. Storage	= 8,809 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
1	3.010	540.04	5.527	0.560	-----	-----	-----	-----	-----	-----	-----	0.560
2	6.020	540.39	5.527	0.906	-----	-----	-----	-----	-----	-----	-----	0.906
3	9.030	540.99	5.527	1.281	-----	-----	-----	-----	-----	-----	-----	1.281
4	12.04 <<	541.22	5.527	1.400	-----	-----	-----	-----	-----	-----	-----	1.400
5	12.04 <<	541.48	5.527	1.522	-----	-----	-----	-----	-----	-----	-----	1.522
6	12.04 <<	541.74	5.527	1.633	-----	-----	-----	-----	-----	-----	-----	1.633
7	12.04 <<	541.99	5.527	1.736	-----	-----	-----	-----	-----	-----	-----	1.736
8	12.04 <<	542.12	5.527	1.785	-----	-----	-----	-----	-----	-----	-----	1.785
9	12.04 <<	542.24	5.527	1.831	-----	-----	0.033	-----	-----	-----	-----	1.863
10	12.04 <<	542.36	5.527	1.875	-----	-----	0.174	-----	-----	-----	-----	2.048
11	12.04 <<	542.47	5.527	1.917	-----	-----	0.387	-----	-----	-----	-----	2.304
12	12.04 <<	542.59	5.527	1.957	-----	-----	0.645	-----	-----	-----	-----	2.602
13	12.04 <<	542.70	5.527	1.995	-----	-----	0.935	-----	-----	-----	-----	2.930
14	12.04 <<	542.80	5.527	2.031	-----	-----	1.248	-----	-----	-----	-----	3.279
15	12.04 <<	542.90	5.527	2.065	-----	-----	1.576	-----	-----	-----	-----	3.641
16	12.04 <<	543.00	5.527	2.097	-----	-----	1.911	0.000	-----	-----	-----	4.008
17	9.030	543.06	5.527	2.115	-----	-----	2.118	0.021	-----	-----	-----	4.253
18	6.020	543.09	5.527	2.124	-----	-----	2.221	0.031	-----	-----	-----	4.376
19	3.010	543.09 <<	5.527	2.124	-----	-----	2.226	0.031	-----	-----	-----	4.381

<<

Continues on next page...

<no description>

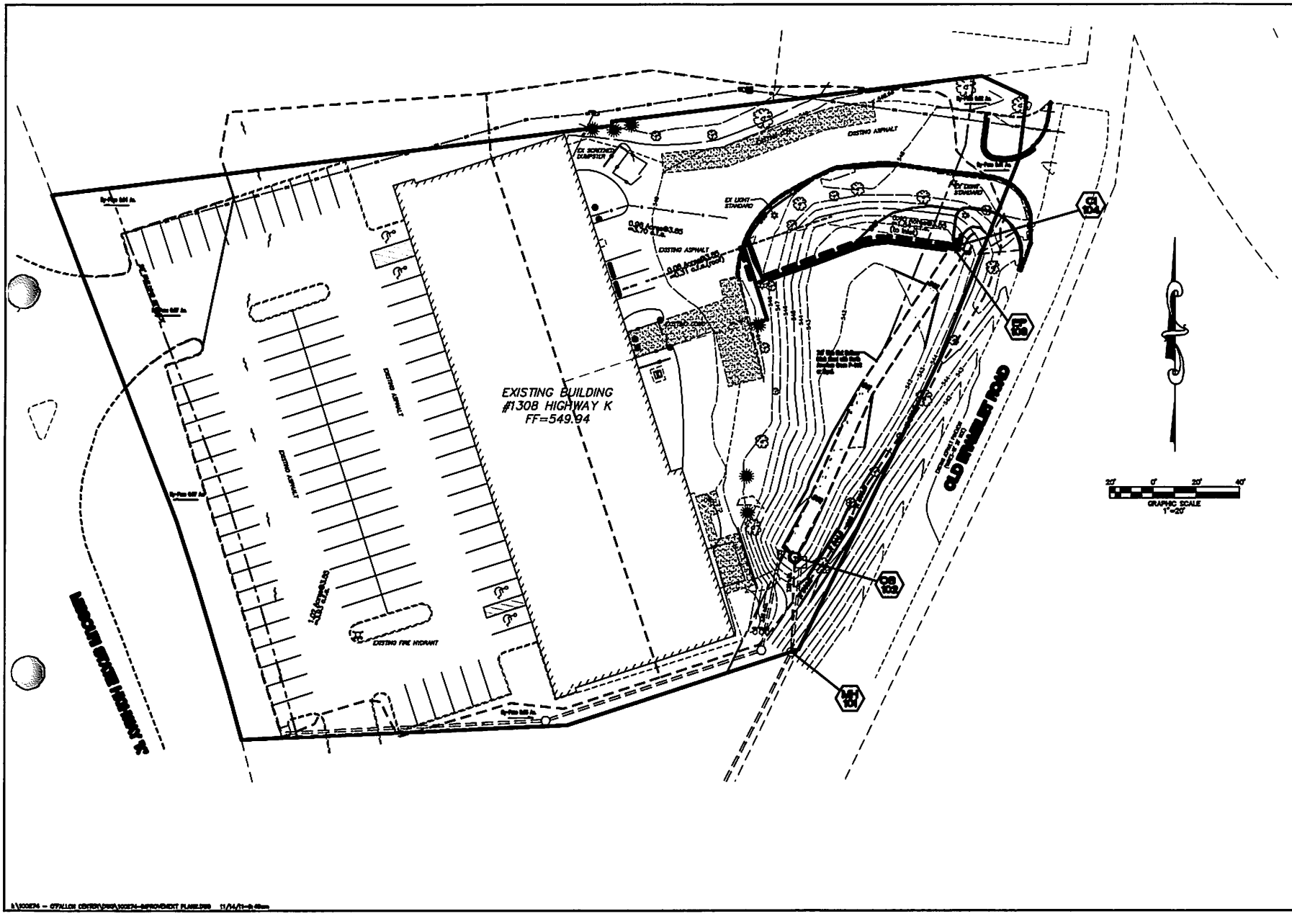
Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20	0.000	543.06	5.527	2.116	-----	-----	2.135	0.022	-----	-----	-----	4.273
21	0.000	543.03	5.527	2.104	-----	-----	1.999	0.009	-----	-----	-----	4.113
22	0.000	542.99	5.527	2.092	-----	-----	1.859	-----	-----	-----	-----	3.951
23	0.000	542.94	5.527	2.077	-----	-----	1.701	-----	-----	-----	-----	3.778
24	0.000	542.90	5.527	2.062	-----	-----	1.550	-----	-----	-----	-----	3.613
25	0.000	542.86	5.527	2.048	-----	-----	1.416	-----	-----	-----	-----	3.464
26	0.000	542.82	5.527	2.035	-----	-----	1.287	-----	-----	-----	-----	3.321
27	0.000	542.78	5.527	2.022	-----	-----	1.169	-----	-----	-----	-----	3.190
28	0.000	542.74	5.527	2.009	-----	-----	1.059	-----	-----	-----	-----	3.068
29	0.000	542.70	5.527	1.997	-----	-----	0.954	-----	-----	-----	-----	2.951
30	0.000	542.67	5.527	1.985	-----	-----	0.861	-----	-----	-----	-----	2.846
31	0.000	542.64	5.527	1.974	-----	-----	0.772	-----	-----	-----	-----	2.746
32	0.000	542.60	5.527	1.963	-----	-----	0.687	-----	-----	-----	-----	2.650
33	0.000	542.57	5.527	1.952	-----	-----	0.613	-----	-----	-----	-----	2.565
34	0.000	542.54	5.527	1.942	-----	-----	0.542	-----	-----	-----	-----	2.484
35	0.000	542.52	5.527	1.931	-----	-----	0.474	-----	-----	-----	-----	2.405
36	0.000	542.49	5.527	1.921	-----	-----	0.412	-----	-----	-----	-----	2.334
37	0.000	542.46	5.527	1.912	-----	-----	0.358	-----	-----	-----	-----	2.270
38	0.000	542.43	5.527	1.902	-----	-----	0.305	-----	-----	-----	-----	2.208
39	0.000	542.41	5.527	1.893	-----	-----	0.254	-----	-----	-----	-----	2.147
40	0.000	542.38	5.527	1.884	-----	-----	0.212	-----	-----	-----	-----	2.096
41	0.000	542.36	5.527	1.875	-----	-----	0.174	-----	-----	-----	-----	2.049
42	0.000	542.33	5.527	1.866	-----	-----	0.137	-----	-----	-----	-----	2.003
43	0.000	542.31	5.527	1.858	-----	-----	0.101	-----	-----	-----	-----	1.959
44	0.000	542.29	5.527	1.849	-----	-----	0.074	-----	-----	-----	-----	1.923
45	0.000	542.27	5.527	1.841	-----	-----	0.055	-----	-----	-----	-----	1.896
46	0.000	542.24	5.527	1.832	-----	-----	0.036	-----	-----	-----	-----	1.869

<no description>

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
47	0.000	542.22	5.527	1.824	-----	-----	0.018	-----	-----	-----	-----	1.842
48	0.000	542.20	5.527	1.816	-----	-----	-----	-----	-----	-----	-----	1.816
49	0.000	542.18	5.527	1.808	-----	-----	-----	-----	-----	-----	-----	1.808
50	0.000	542.16	5.527	1.800	-----	-----	-----	-----	-----	-----	-----	1.800
51	0.000	542.14	5.527	1.792	-----	-----	-----	-----	-----	-----	-----	1.792
52	0.000	542.11	5.527	1.784	-----	-----	-----	-----	-----	-----	-----	1.784
53	0.000	542.09	5.527	1.776	-----	-----	-----	-----	-----	-----	-----	1.776
54	0.000	542.07	5.527	1.767	-----	-----	-----	-----	-----	-----	-----	1.767
55	0.000	542.05	5.527	1.759	-----	-----	-----	-----	-----	-----	-----	1.759
56	0.000	542.03	5.527	1.751	-----	-----	-----	-----	-----	-----	-----	1.751
57	0.000	542.01	5.527	1.743	-----	-----	-----	-----	-----	-----	-----	1.743
58	0.000	541.98	5.527	1.731	-----	-----	-----	-----	-----	-----	-----	1.731
59	0.000	541.94	5.527	1.714	-----	-----	-----	-----	-----	-----	-----	1.714
60	0.000	541.89	5.527	1.697	-----	-----	-----	-----	-----	-----	-----	1.697
61	0.000	541.85	5.527	1.680	-----	-----	-----	-----	-----	-----	-----	1.680
62	0.000	541.81	5.527	1.664	-----	-----	-----	-----	-----	-----	-----	1.664
63	0.000	541.77	5.527	1.647	-----	-----	-----	-----	-----	-----	-----	1.647
64	0.000	541.73	5.527	1.630	-----	-----	-----	-----	-----	-----	-----	1.630
65	0.000	541.69	5.527	1.613	-----	-----	-----	-----	-----	-----	-----	1.613
66	0.000	541.65	5.527	1.596	-----	-----	-----	-----	-----	-----	-----	1.596
67	0.000	541.61	5.527	1.580	-----	-----	-----	-----	-----	-----	-----	1.580
68	0.000	541.57	5.527	1.563	-----	-----	-----	-----	-----	-----	-----	1.563
69	0.000	541.54	5.527	1.546	-----	-----	-----	-----	-----	-----	-----	1.546
70	0.000	541.50	5.527	1.529	-----	-----	-----	-----	-----	-----	-----	1.529
71	0.000	541.46	5.527	1.512	-----	-----	-----	-----	-----	-----	-----	1.512
72	0.000	541.42	5.527	1.495	-----	-----	-----	-----	-----	-----	-----	1.495
73	0.000	541.39	5.527	1.479	-----	-----	-----	-----	-----	-----	-----	1.479



O'FALLON CENTER, LLC

IMPROVEMENT PLANS

DRAINAGE AREA PLAN

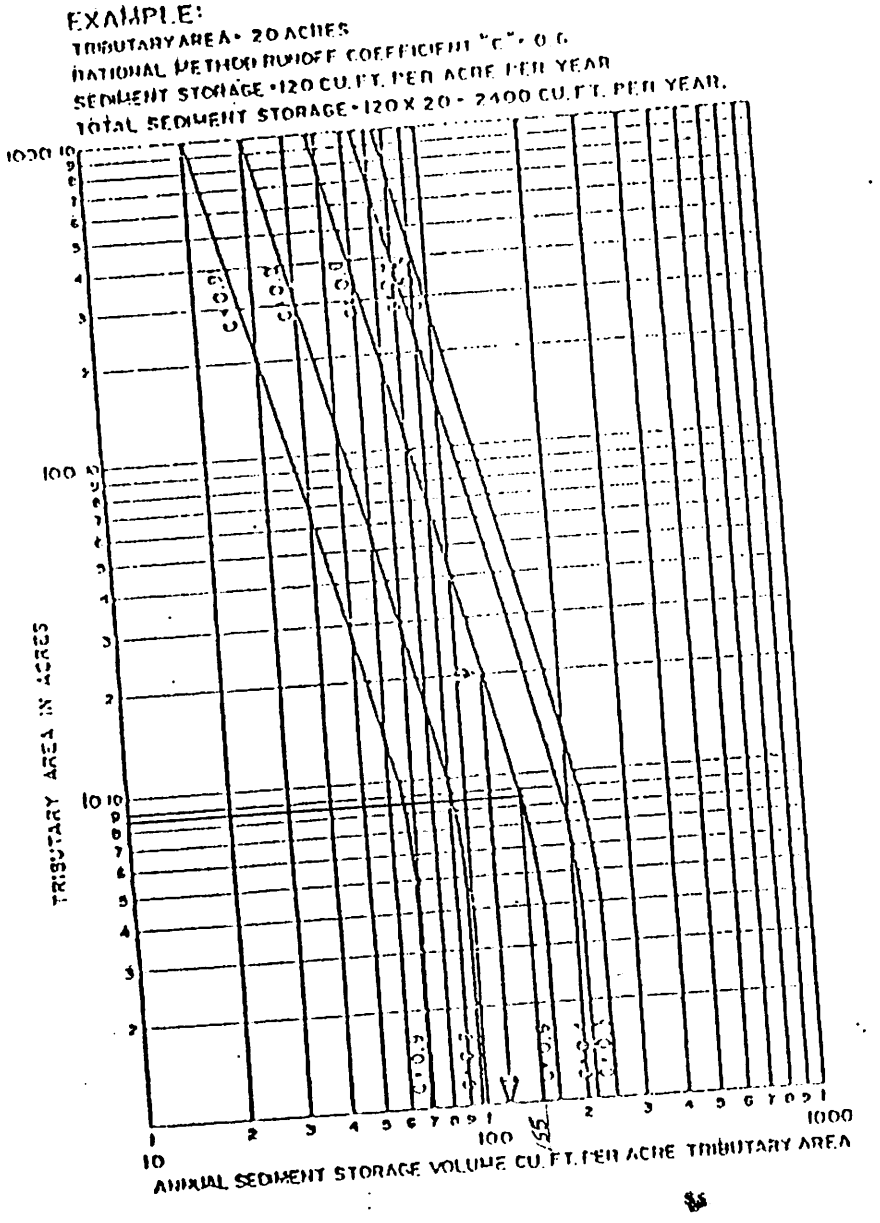
ST. CHARLES ENGINEERING & SURVEYING, INC.
101 S. FIFTH STREET, SUITE 202
ST. CHARLES, MO 63301
TELE: (636) 947-0667 FAX: (636) 947-3440

ORDER NO.
12-029

DATE
10/29/12

7

O'FALLON CENTER



ANNUAL SEDIMENT STORAGE

FIG. 1

Sediment = C = 0.9 D.A. = 2.0 Ac.

= 70 Cu. Ft. (per year) x 2 years x 2 acres

= 280 Cu. Ft.