



**BLUE IGUANA
O'FALLON, MISSOURI**

**STORMWATER DETENTION
REPORT**

**Prepared For:
Blue Iguana
1640 East Sunshine
Springfield, MO 65804**



June 8, 2017

Prepared By: Mark A. Doering President, P.E.

*"Committed to Providing Services
for the Benefit of the
Client and the Community"*

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TABLE OF CONTENTS

NARRATIVE

HYDROCADD CALCULATIONS

2 YEAR – 20 MINUTE STORM

15 YEAR – 20 MINUTE STORM

25 YEAR – 20 MINUTE STORM

100 YEAR -20 MINUTE STORM

NARRATIVE

The subject tract is consists of 1008 Highway K and the south portion of 914 Highway K in the City of O'Fallon, St. Charles County, Missouri. The 1.41 acre site has an existing commercial building and parking lot which will be removed. The proposed construction will consist of a Blue Iguana Car Wash.

Since the previously developed site had detention, detention and water quality has been proposed for this development.

Since the site is 1.41 acre, the rational method was used for hydraulic calculations. The 2, 15 25 and 100 year storms (20 minute duration) we routed thru the proposed detention basin. The detention basin will consist of "Storm Tech" MC-4500 Chamber with the first two chambers being utilized for water quality.

The detention calculations we completed using HydroCAD Version 10 and have been included in this report.

Since the "Storm Tech" Chambers are also being used for water quality, all of the proposed paved areas on the parcel have been channeled thru the underground area.

The following is a summary of the predevelopment and post development flows.

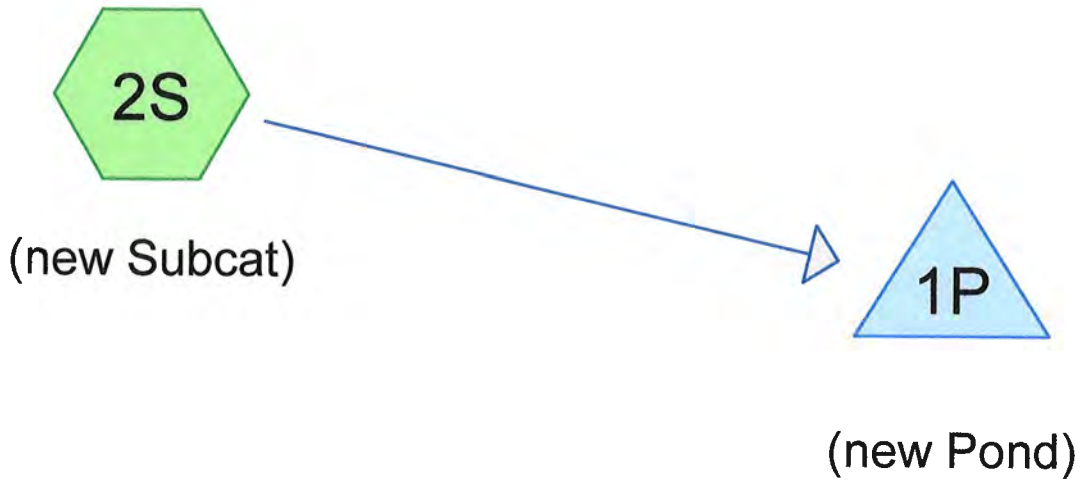
DIFFERENTIAL RUNOFF (ENTIRE SITE)

STORM EVENT (YEAR)	EXISTING FLOW (CFS)	PROPOSED FLOW (CFS)	DIFFERENCE (CFS)
2	1.69	3.05	1.36
15	2.64	4.52	1.88
25	3.26	5.57	2.31
100	4.16	7.14	2.98

ROUTING SUMMARY

STORM EVENT (YEAR)	TO DETENTION (CFS)	MAXIMUM OUTFLOW (CFS)	DETAINED (CFS)	DHW (MSL)
2	2.43	1.06	1.37	550.79
15	3.84	1.82	2.02	551.94
25	4.75	2.30	2.45	552.75
100	6.07	2.95	3.22	554.34

2 YEAR – 20 MINUTE STORM



5-22-17 2 year storm

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Page 2

Area Listing (all nodes)

Area (acres)	C	Description (subcatchment-numbers)
0.080	0.35	GRASS (2S)
0.970	0.60	PVMT (2S)
1.050	0.58	TOTAL AREA

5-22-17 2 year storm

Prepared by Hewlett-Packard

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
1.050	Other	2S
1.050		TOTAL AREA

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Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.080	0.080	GRASS	2S
0.000	0.000	0.000	0.000	0.970	0.970	PVMT	2S
0.000	0.000	0.000	0.000	1.050	1.050	TOTAL AREA	

5-22-17 2 year storm

Rainfall Duration=20 min, Inten=3.96 in/hr

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Page 5

Time span=0.00-3.00 hrs, dt=0.01 hrs, 301 points

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: (new Subcat)

Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=0.78"

Tc=0.0 min C=0.58 Runoff=2.43 cfs 0.068 af

Pond 1P: (new Pond)

Peak Elev=550.79' Storage=0.049 af Inflow=2.43 cfs 0.068 af

Outflow=1.06 cfs 0.067 af

Total Runoff Area = 1.050 ac Runoff Volume = 0.068 af Average Runoff Depth = 0.78"
100.00% Pervious = 1.050 ac 0.00% Impervious = 0.000 ac

5-22-17 2 year storm

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Rainfall Duration=20 min, Inten=3.96 in/hr

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Page 6

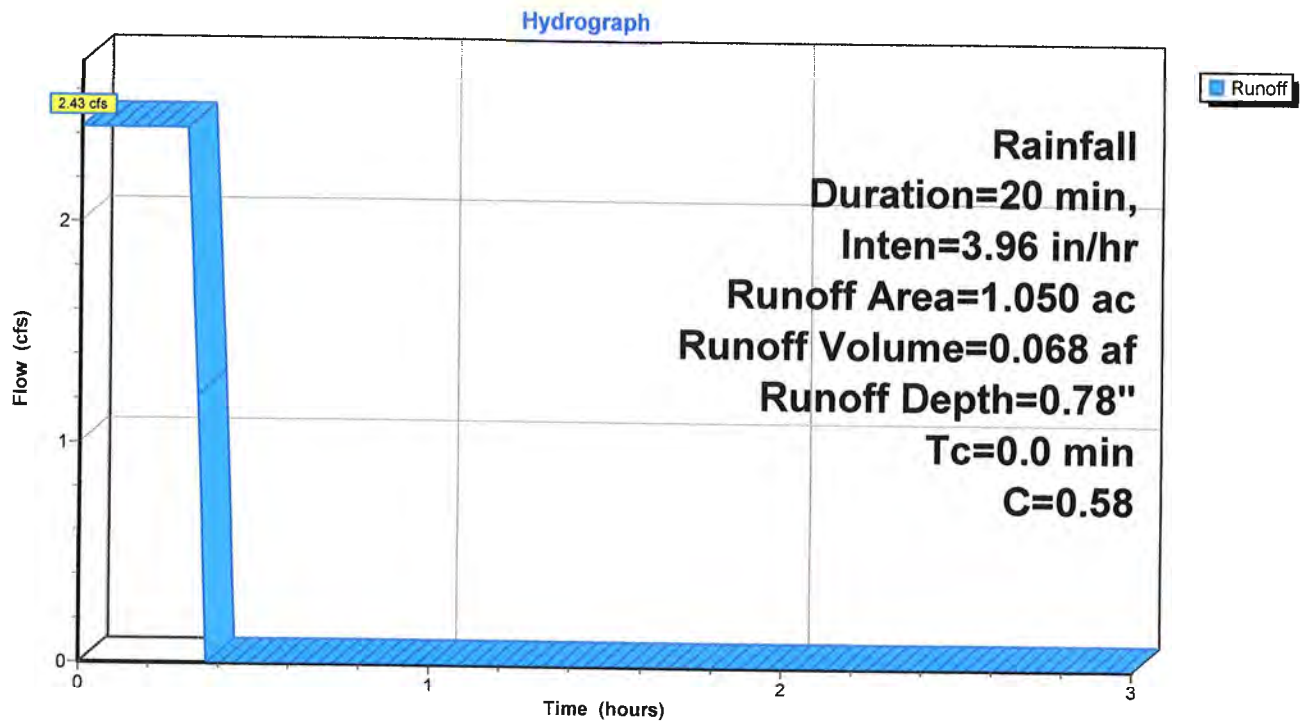
Summary for Subcatchment 2S: (new Subcat)

Runoff = 2.43 cfs @ 0.00 hrs, Volume= 0.068 af, Depth= 0.78"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Rainfall Duration=20 min, Inten=3.96 in/hr

Area (ac)	C	Description
0.080	0.35	GRASS
0.970	0.60	PVMT
1.050	0.58	Weighted Average
1.050		100.00% Pervious Area

Subcatchment 2S: (new Subcat)



5-22-17 2 year storm

Rainfall Duration=20 min, Inten=3.96 in/hr

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Page 7

Hydrograph for Subcatchment 2S: (new Subcat)

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	2.43	1.04	0.00	2.08	0.00
0.02	2.43	1.06	0.00	2.10	0.00
0.04	2.43	1.08	0.00	2.12	0.00
0.06	2.43	1.10	0.00	2.14	0.00
0.08	2.43	1.12	0.00	2.16	0.00
0.10	2.43	1.14	0.00	2.18	0.00
0.12	2.43	1.16	0.00	2.20	0.00
0.14	2.43	1.18	0.00	2.22	0.00
0.16	2.43	1.20	0.00	2.24	0.00
0.18	2.43	1.22	0.00	2.26	0.00
0.20	2.43	1.24	0.00	2.28	0.00
0.22	2.43	1.26	0.00	2.30	0.00
0.24	2.43	1.28	0.00	2.32	0.00
0.26	2.43	1.30	0.00	2.34	0.00
0.28	2.43	1.32	0.00	2.36	0.00
0.30	2.43	1.34	0.00	2.38	0.00
0.32	2.43	1.36	0.00	2.40	0.00
0.34	0.00	1.38	0.00	2.42	0.00
0.36	0.00	1.40	0.00	2.44	0.00
0.38	0.00	1.42	0.00	2.46	0.00
0.40	0.00	1.44	0.00	2.48	0.00
0.42	0.00	1.46	0.00	2.50	0.00
0.44	0.00	1.48	0.00	2.52	0.00
0.46	0.00	1.50	0.00	2.54	0.00
0.48	0.00	1.52	0.00	2.56	0.00
0.50	0.00	1.54	0.00	2.58	0.00
0.52	0.00	1.56	0.00	2.60	0.00
0.54	0.00	1.58	0.00	2.62	0.00
0.56	0.00	1.60	0.00	2.64	0.00
0.58	0.00	1.62	0.00	2.66	0.00
0.60	0.00	1.64	0.00	2.68	0.00
0.62	0.00	1.66	0.00	2.70	0.00
0.64	0.00	1.68	0.00	2.72	0.00
0.66	0.00	1.70	0.00	2.74	0.00
0.68	0.00	1.72	0.00	2.76	0.00
0.70	0.00	1.74	0.00	2.78	0.00
0.72	0.00	1.76	0.00	2.80	0.00
0.74	0.00	1.78	0.00	2.82	0.00
0.76	0.00	1.80	0.00	2.84	0.00
0.78	0.00	1.82	0.00	2.86	0.00
0.80	0.00	1.84	0.00	2.88	0.00
0.82	0.00	1.86	0.00	2.90	0.00
0.84	0.00	1.88	0.00	2.92	0.00
0.86	0.00	1.90	0.00	2.94	0.00
0.88	0.00	1.92	0.00	2.96	0.00
0.90	0.00	1.94	0.00	2.98	0.00
0.92	0.00	1.96	0.00	3.00	0.00
0.94	0.00	1.98	0.00		
0.96	0.00	2.00	0.00		
0.98	0.00	2.02	0.00		
1.00	0.00	2.04	0.00		
1.02	0.00	2.06	0.00		

5-22-17 2 year storm

Rainfall Duration=20 min, Inten=3.96 in/hr

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Page 8

Summary for Pond 1P: (new Pond)

Inflow Area = 1.050 ac, 0.00% Impervious, Inflow Depth = 0.78"
 Inflow = 2.43 cfs @ 0.00 hrs, Volume= 0.068 af
 Outflow = 1.06 cfs @ 0.34 hrs, Volume= 0.067 af, Atten= 56%, Lag= 20.2 min
 Primary = 1.06 cfs @ 0.34 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
 Peak Elev= 550.79' @ 0.34 hrs Surf.Area= 0.034 ac Storage= 0.049 af

Plug-Flow detention time= 27.9 min calculated for 0.066 af (97% of inflow)
 Center-of-Mass det. time= 27.0 min (36.9 - 9.9)

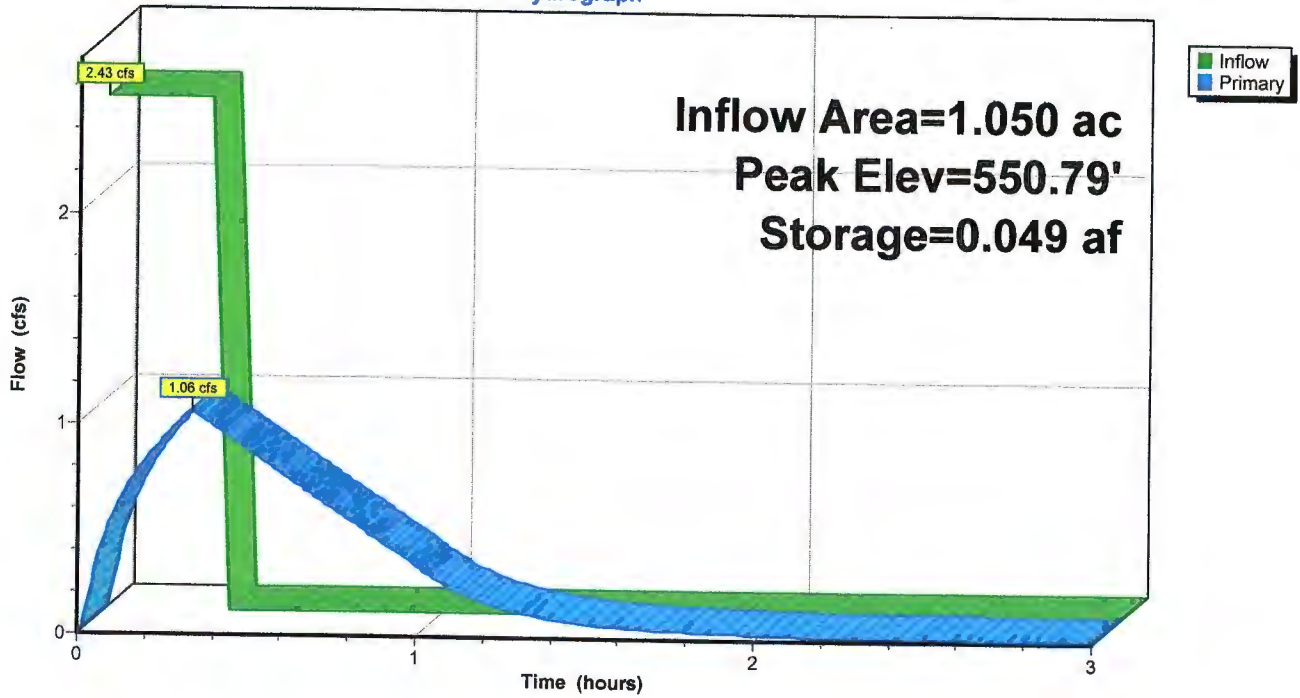
Volume	Invert	Avail.Storage	Storage Description
#1	549.00'	0.058 af	38.18'W x 38.75'L x 6.75'H Prismaoid 0.229 af Overall - 0.085 af Embedded = 0.144 af x 40.0% Voids
#2	549.00'	0.085 af	ADS_StormTech MC-4500 +Cap @ 4.03' L x 32 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 4 Rows of 8 Chambers Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.143 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	549.00'	5.7" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.06 cfs @ 0.34 hrs HW=550.79' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 1.06 cfs @ 5.99 fps)

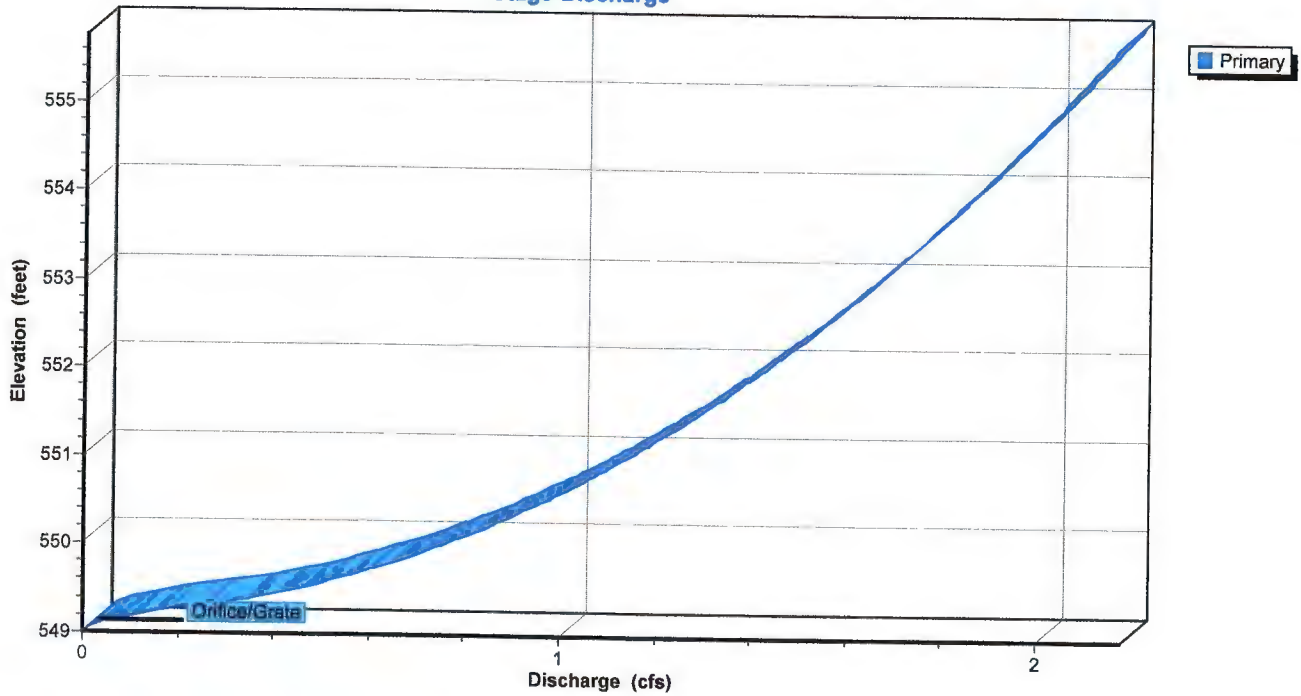
Pond 1P: (new Pond)

Hydrograph



Pond 1P: (new Pond)

Stage-Discharge



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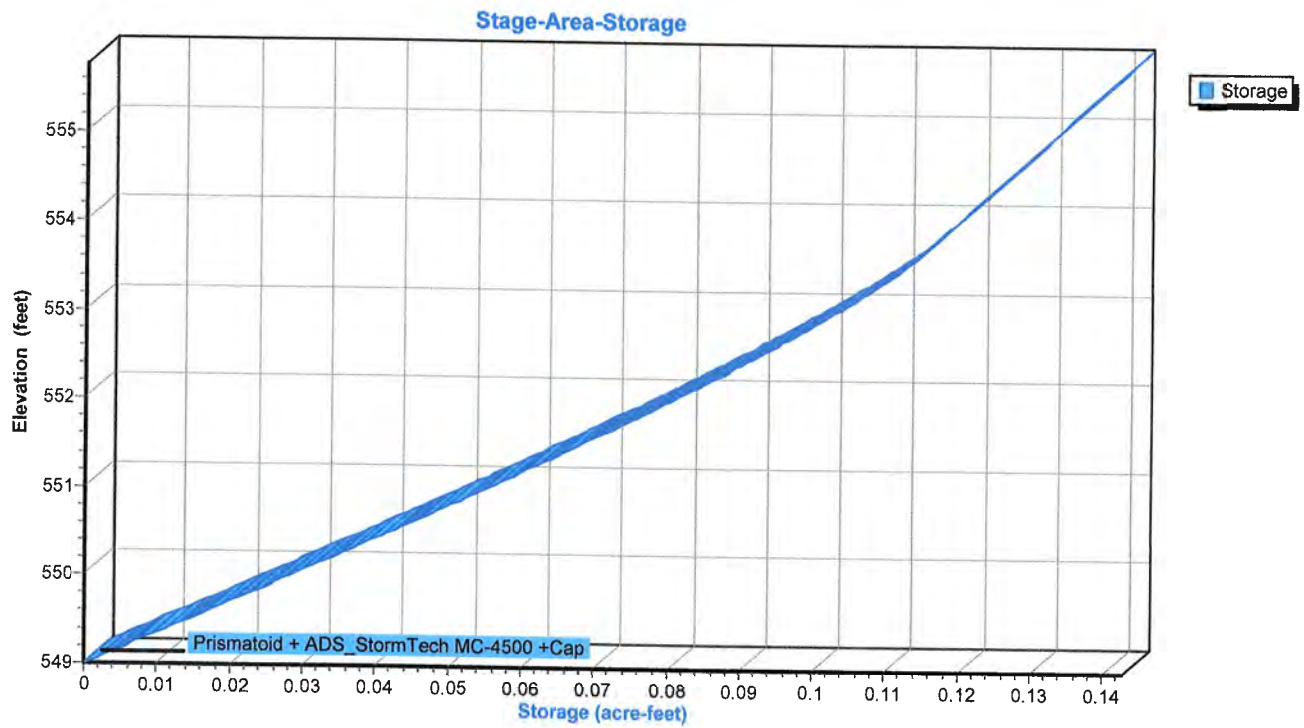
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Rainfall Duration=20 min, Inten=3.96 in/hr

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Page 10

Pond 1P: (new Pond)



5-22-17 2 year storm

Rainfall Duration=20 min, Inten=3.96 in/hr

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Page 11

Hydrograph for Pond 1P: (new Pond)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	2.43	0.001	549.04	0.01
0.10	2.43	0.019	549.67	0.56
0.20	2.43	0.033	550.19	0.83
0.30	2.43	0.045	550.65	1.01
0.40	0.00	0.044	550.60	0.99
0.50	0.00	0.036	550.31	0.88
0.60	0.00	0.029	550.05	0.77
0.70	0.00	0.023	549.84	0.66
0.80	0.00	0.018	549.66	0.55
0.90	0.00	0.014	549.51	0.44
1.00	0.00	0.011	549.39	0.33
1.10	0.00	0.009	549.31	0.23
1.20	0.00	0.007	549.25	0.16
1.30	0.00	0.006	549.21	0.12
1.40	0.00	0.005	549.18	0.09
1.50	0.00	0.004	549.16	0.07
1.60	0.00	0.004	549.14	0.05
1.70	0.00	0.003	549.12	0.05
1.80	0.00	0.003	549.11	0.04
1.90	0.00	0.003	549.10	0.03
2.00	0.00	0.003	549.09	0.03
2.10	0.00	0.002	549.09	0.02
2.20	0.00	0.002	549.08	0.02
2.30	0.00	0.002	549.07	0.02
2.40	0.00	0.002	549.07	0.01
2.50	0.00	0.002	549.07	0.01
2.60	0.00	0.002	549.06	0.01
2.70	0.00	0.002	549.06	0.01
2.80	0.00	0.002	549.06	0.01
2.90	0.00	0.001	549.05	0.01
3.00	0.00	0.001	549.05	0.01

5-22-17 2 year storm

Rainfall Duration=20 min, Inten=3.96 in/hr

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Page 12

Stage-Discharge for Pond 1P: (new Pond)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
549.00	0.00	551.08	1.16	553.16	1.69	555.24	2.09
549.04	0.00	551.12	1.17	553.20	1.70	555.28	2.10
549.08	0.02	551.16	1.18	553.24	1.71	555.32	2.10
549.12	0.04	551.20	1.20	553.28	1.72	555.36	2.11
549.16	0.07	551.24	1.21	553.32	1.72	555.40	2.12
549.20	0.11	551.28	1.22	553.36	1.73	555.44	2.12
549.24	0.15	551.32	1.23	553.40	1.74	555.48	2.13
549.28	0.20	551.36	1.24	553.44	1.75	555.52	2.14
549.32	0.24	551.40	1.25	553.48	1.76	555.56	2.15
549.36	0.29	551.44	1.27	553.52	1.77	555.60	2.15
549.40	0.34	551.48	1.28	553.56	1.77	555.64	2.16
549.44	0.39	551.52	1.29	553.60	1.78	555.68	2.17
549.48	0.42	551.56	1.30	553.64	1.79	555.72	2.17
549.52	0.45	551.60	1.31	553.68	1.80		
549.56	0.48	551.64	1.32	553.72	1.81		
549.60	0.51	551.68	1.33	553.76	1.81		
549.64	0.54	551.72	1.34	553.80	1.82		
549.68	0.57	551.76	1.36	553.84	1.83		
549.72	0.59	551.80	1.37	553.88	1.84		
549.76	0.62	551.84	1.38	553.92	1.85		
549.80	0.64	551.88	1.39	553.96	1.85		
549.84	0.66	551.92	1.40	554.00	1.86		
549.88	0.68	551.96	1.41	554.04	1.87		
549.92	0.70	552.00	1.42	554.08	1.88		
549.96	0.73	552.04	1.43	554.12	1.89		
550.00	0.75	552.08	1.44	554.16	1.89		
550.04	0.76	552.12	1.45	554.20	1.90		
550.08	0.78	552.16	1.46	554.24	1.91		
550.12	0.80	552.20	1.47	554.28	1.92		
550.16	0.82	552.24	1.48	554.32	1.92		
550.20	0.84	552.28	1.49	554.36	1.93		
550.24	0.85	552.32	1.50	554.40	1.94		
550.28	0.87	552.36	1.51	554.44	1.95		
550.32	0.89	552.40	1.52	554.48	1.95		
550.36	0.90	552.44	1.53	554.52	1.96		
550.40	0.92	552.48	1.54	554.56	1.97		
550.44	0.94	552.52	1.55	554.60	1.98		
550.48	0.95	552.56	1.56	554.64	1.98		
550.52	0.97	552.60	1.56	554.68	1.99		
550.56	0.98	552.64	1.57	554.72	2.00		
550.60	1.00	552.68	1.58	554.76	2.01		
550.64	1.01	552.72	1.59	554.80	2.01		
550.68	1.02	552.76	1.60	554.84	2.02		
550.72	1.04	552.80	1.61	554.88	2.03		
550.76	1.05	552.84	1.62	554.92	2.03		
550.80	1.07	552.88	1.63	554.96	2.04		
550.84	1.08	552.92	1.64	555.00	2.05		
550.88	1.09	552.96	1.65	555.04	2.06		
550.92	1.11	553.00	1.66	555.08	2.06		
550.96	1.12	553.04	1.66	555.12	2.07		
551.00	1.13	553.08	1.67	555.16	2.08		
551.04	1.15	553.12	1.68	555.20	2.08		

5-22-17 2 year storm

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Rainfall Duration=20 min, Inten=3.96 in/hr

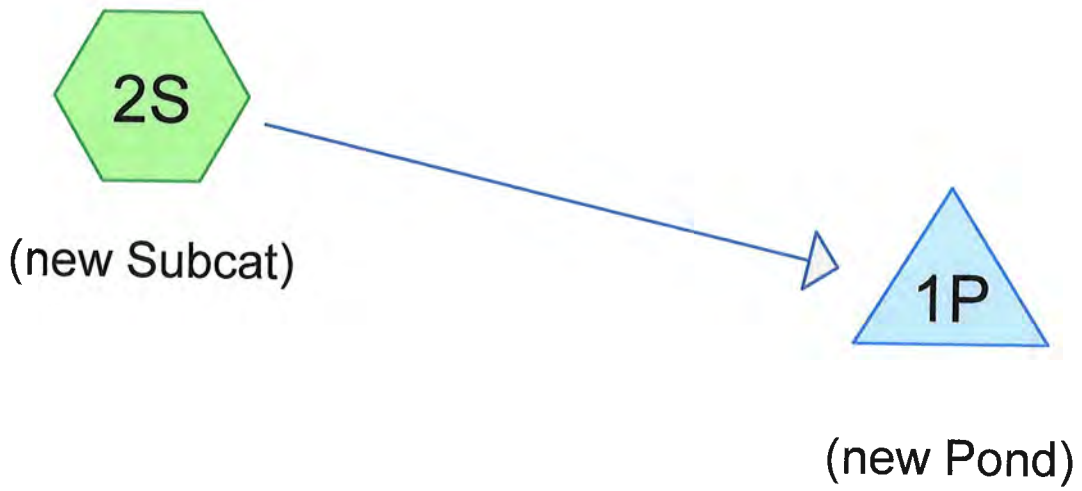
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Page 13

Stage-Area-Storage for Pond 1P: (new Pond)

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
549.00	0.000	554.20	0.122
549.10	0.003	554.30	0.123
549.20	0.006	554.40	0.124
549.30	0.008	554.50	0.126
549.40	0.011	554.60	0.127
549.50	0.014	554.70	0.128
549.60	0.017	554.80	0.130
549.70	0.020	554.90	0.131
549.80	0.022	555.00	0.132
549.90	0.025	555.10	0.134
550.00	0.028	555.20	0.135
550.10	0.030	555.30	0.137
550.20	0.033	555.40	0.138
550.30	0.036	555.50	0.139
550.40	0.039	555.60	0.141
550.50	0.041	555.70	0.142
550.60	0.044		
550.70	0.047		
550.80	0.049		
550.90	0.052		
551.00	0.055		
551.10	0.057		
551.20	0.060		
551.30	0.062		
551.40	0.065		
551.50	0.067		
551.60	0.070		
551.70	0.072		
551.80	0.075		
551.90	0.077		
552.00	0.080		
552.10	0.082		
552.20	0.084		
552.30	0.087		
552.40	0.089		
552.50	0.091		
552.60	0.093		
552.70	0.096		
552.80	0.098		
552.90	0.100		
553.00	0.102		
553.10	0.104		
553.20	0.106		
553.30	0.108		
553.40	0.110		
553.50	0.111		
553.60	0.113		
553.70	0.115		
553.80	0.116		
553.90	0.117		
554.00	0.119		
554.10	0.120		

15 YEAR – 20 MINUTE STORM



5-22-17 15 year storm

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Page 2

Area Listing (all nodes)

Area (acres)	C	Description (subcatchment-numbers)
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0.970	0.60	PVMT (2S)
1.050	0.58	TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
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0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
1.050	Other	2S
1.050		TOTAL AREA

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Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.080	0.080	GRASS	2S
0.000	0.000	0.000	0.000	0.970	0.970	PVMT	2S
0.000	0.000	0.000	0.000	1.050	1.050	TOTAL AREA	

5-22-17 15 year storm

Rainfall Duration=20 min, Inten=6.25 in/hr

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Page 5

Time span=0.00-3.00 hrs, dt=0.01 hrs, 301 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: (new Subcat)

Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=1.23"
Tc=0.0 min C=0.58 Runoff=3.84 cfs 0.108 af

Pond 1P: (new Pond)

Peak Elev=551.94' Storage=0.078 af Inflow=3.84 cfs 0.108 af
Outflow=1.82 cfs 0.106 af

Total Runoff Area = 1.050 ac Runoff Volume = 0.108 af Average Runoff Depth = 1.23"
100.00% Pervious = 1.050 ac 0.00% Impervious = 0.000 ac

5-22-17 15 year storm

Rainfall Duration=20 min, Inten=6.25 in/hr

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Page 6

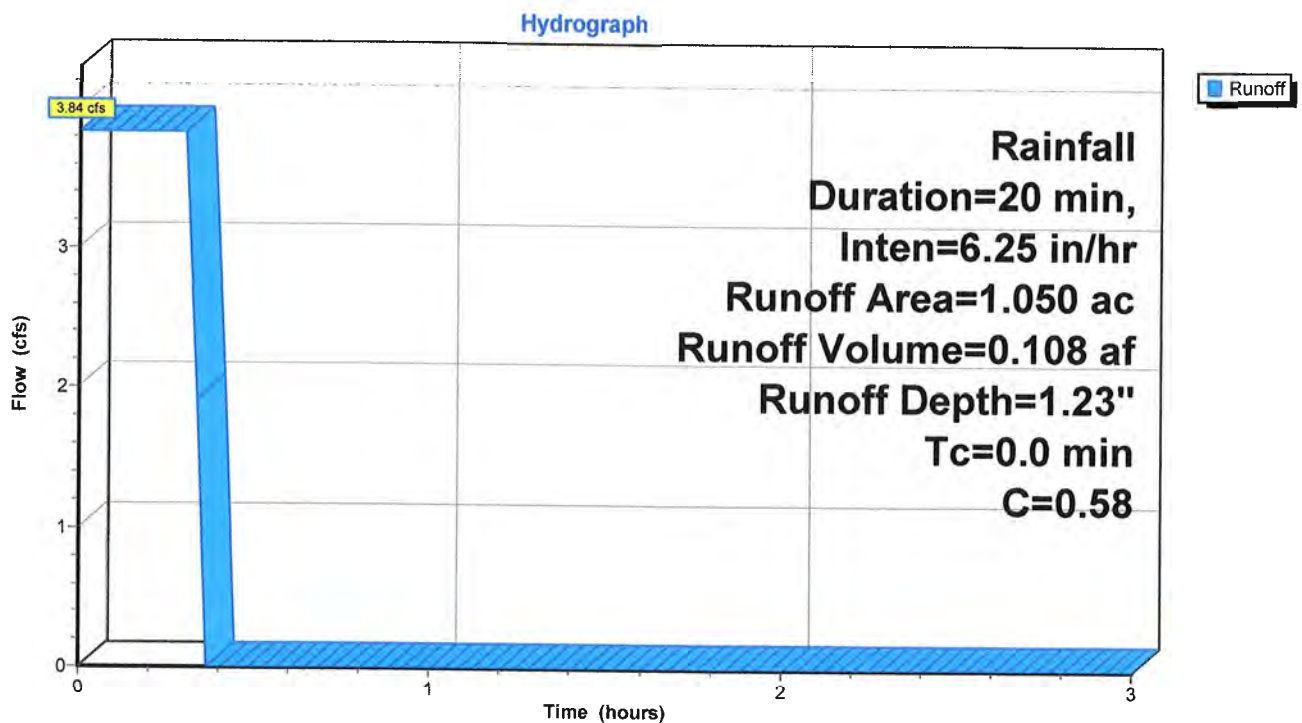
Summary for Subcatchment 2S: (new Subcat)

Runoff = 3.84 cfs @ 0.00 hrs, Volume= 0.108 af, Depth= 1.23"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Rainfall Duration=20 min, Inten=6.25 in/hr

Area (ac)	C	Description
0.080	0.35	GRASS
0.970	0.60	PVMT
1.050	0.58	Weighted Average
1.050		100.00% Pervious Area

Subcatchment 2S: (new Subcat)



5-22-17 15 year storm

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Rainfall Duration=20 min, Inten=6.25 in/hr

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Page 7

Hydrograph for Subcatchment 2S: (new Subcat)

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	3.84	1.04	0.00	2.08	0.00
0.02	3.84	1.06	0.00	2.10	0.00
0.04	3.84	1.08	0.00	2.12	0.00
0.06	3.84	1.10	0.00	2.14	0.00
0.08	3.84	1.12	0.00	2.16	0.00
0.10	3.84	1.14	0.00	2.18	0.00
0.12	3.84	1.16	0.00	2.20	0.00
0.14	3.84	1.18	0.00	2.22	0.00
0.16	3.84	1.20	0.00	2.24	0.00
0.18	3.84	1.22	0.00	2.26	0.00
0.20	3.84	1.24	0.00	2.28	0.00
0.22	3.84	1.26	0.00	2.30	0.00
0.24	3.84	1.28	0.00	2.32	0.00
0.26	3.84	1.30	0.00	2.34	0.00
0.28	3.84	1.32	0.00	2.36	0.00
0.30	3.84	1.34	0.00	2.38	0.00
0.32	3.84	1.36	0.00	2.40	0.00
0.34	0.00	1.38	0.00	2.42	0.00
0.36	0.00	1.40	0.00	2.44	0.00
0.38	0.00	1.42	0.00	2.46	0.00
0.40	0.00	1.44	0.00	2.48	0.00
0.42	0.00	1.46	0.00	2.50	0.00
0.44	0.00	1.48	0.00	2.52	0.00
0.46	0.00	1.50	0.00	2.54	0.00
0.48	0.00	1.52	0.00	2.56	0.00
0.50	0.00	1.54	0.00	2.58	0.00
0.52	0.00	1.56	0.00	2.60	0.00
0.54	0.00	1.58	0.00	2.62	0.00
0.56	0.00	1.60	0.00	2.64	0.00
0.58	0.00	1.62	0.00	2.66	0.00
0.60	0.00	1.64	0.00	2.68	0.00
0.62	0.00	1.66	0.00	2.70	0.00
0.64	0.00	1.68	0.00	2.72	0.00
0.66	0.00	1.70	0.00	2.74	0.00
0.68	0.00	1.72	0.00	2.76	0.00
0.70	0.00	1.74	0.00	2.78	0.00
0.72	0.00	1.76	0.00	2.80	0.00
0.74	0.00	1.78	0.00	2.82	0.00
0.76	0.00	1.80	0.00	2.84	0.00
0.78	0.00	1.82	0.00	2.86	0.00
0.80	0.00	1.84	0.00	2.88	0.00
0.82	0.00	1.86	0.00	2.90	0.00
0.84	0.00	1.88	0.00	2.92	0.00
0.86	0.00	1.90	0.00	2.94	0.00
0.88	0.00	1.92	0.00	2.96	0.00
0.90	0.00	1.94	0.00	2.98	0.00
0.92	0.00	1.96	0.00	3.00	0.00
0.94	0.00	1.98	0.00		
0.96	0.00	2.00	0.00		
0.98	0.00	2.02	0.00		
1.00	0.00	2.04	0.00		
1.02	0.00	2.06	0.00		

5-22-17 15 year storm

Rainfall Duration=20 min, Inten=6.25 in/hr

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Page 8

Summary for Pond 1P: (new Pond)

Inflow Area = 1.050 ac, 0.00% Impervious, Inflow Depth = 1.23"
 Inflow = 3.84 cfs @ 0.00 hrs, Volume= 0.108 af
 Outflow = 1.82 cfs @ 0.34 hrs, Volume= 0.106 af, Atten= 53%, Lag= 20.1 min
 Primary = 1.82 cfs @ 0.34 hrs, Volume= 0.106 af

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
 Peak Elev= 551.94' @ 0.34 hrs Surf.Area= 0.034 ac Storage= 0.078 af

Plug-Flow detention time= 29.2 min calculated for 0.105 af (97% of inflow)
 Center-of-Mass det. time= 28.3 min (38.2 - 9.9)

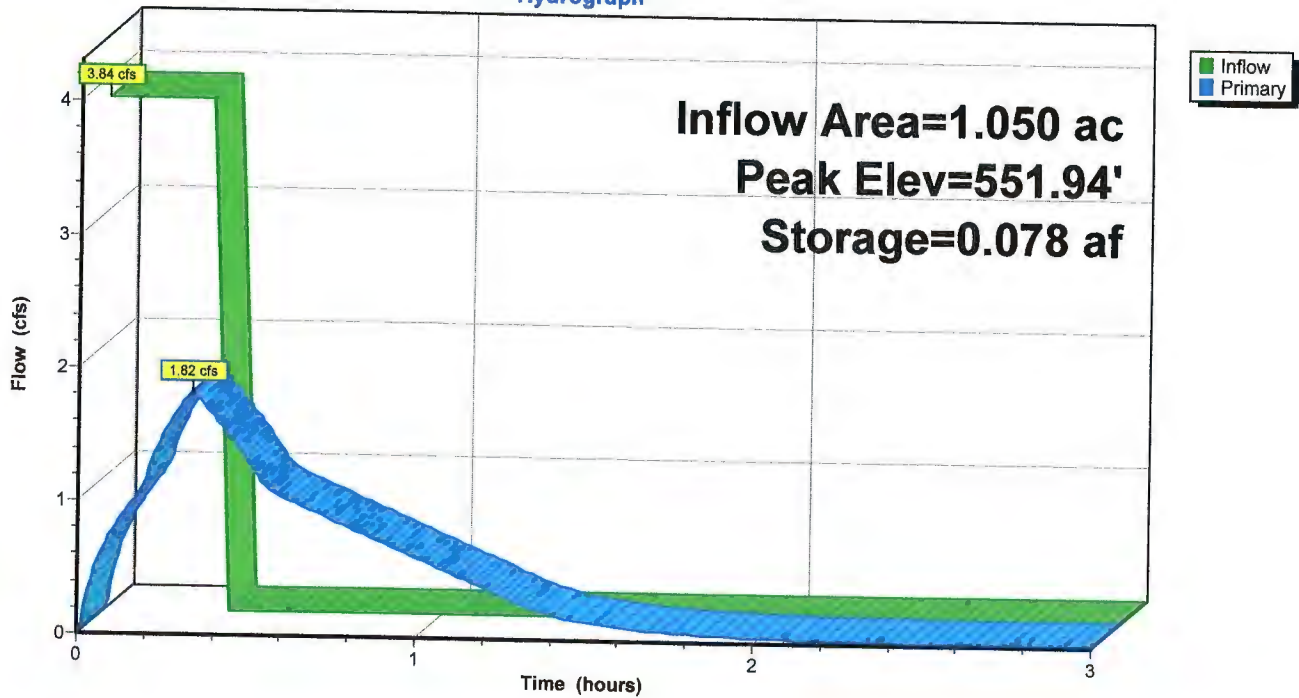
Volume	Invert	Avail.Storage	Storage Description
#1	549.00'	0.058 af	38.18'W x 38.75'L x 6.75'H Prismaoid
#2	549.00'	0.085 af	0.229 af Overall - 0.085 af Embedded = 0.144 af x 40.0% Voids ADS_StormTech MC-4500 +Cap @ 4.03' L x 32 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 4 Rows of 8 Chambers Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.143 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	549.00'	5.7" Vert. Orifice/Grate C= 0.600
#2	Primary	550.80'	4.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.81 cfs @ 0.34 hrs HW=551.93' (Free Discharge)
 1=Orifice/Grate (Orifice Controls 1.40 cfs @ 7.91 fps)
 2=Orifice/Grate (Orifice Controls 0.41 cfs @ 4.73 fps)

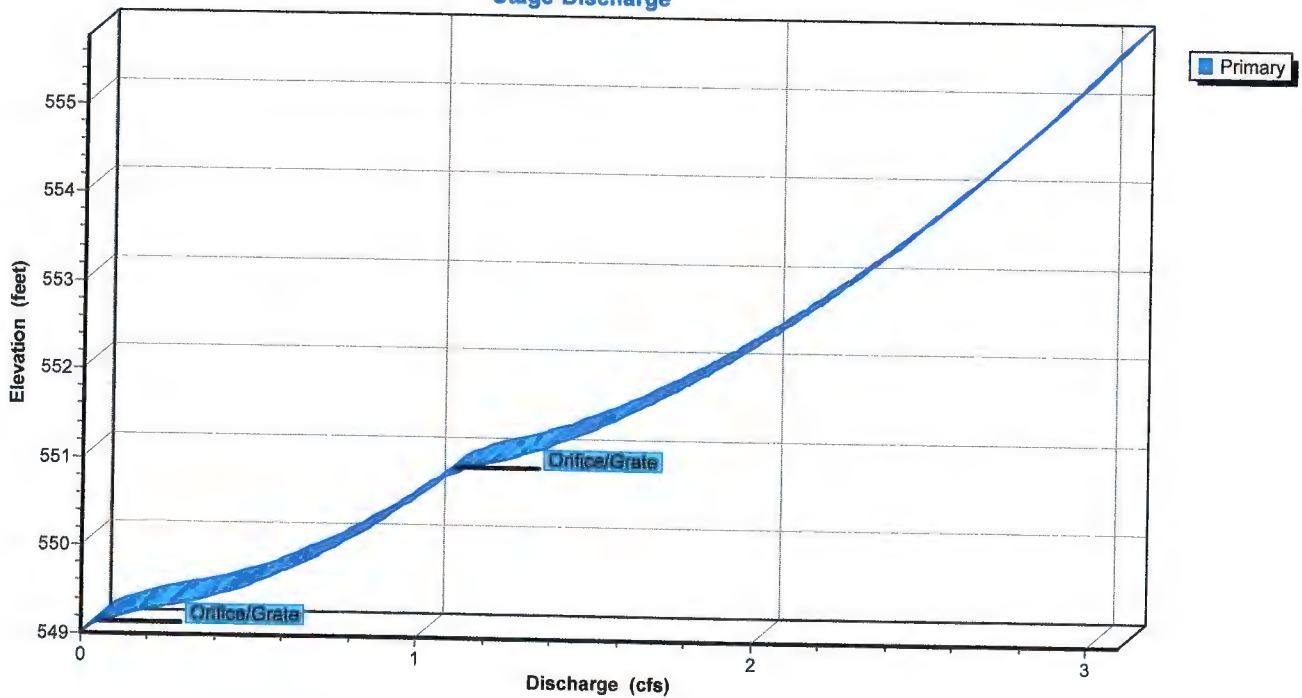
Pond 1P: (new Pond)

Hydrograph



Pond 1P: (new Pond)

Stage-Discharge



5-22-17 15 year storm

Prepared by Hewlett-Packard

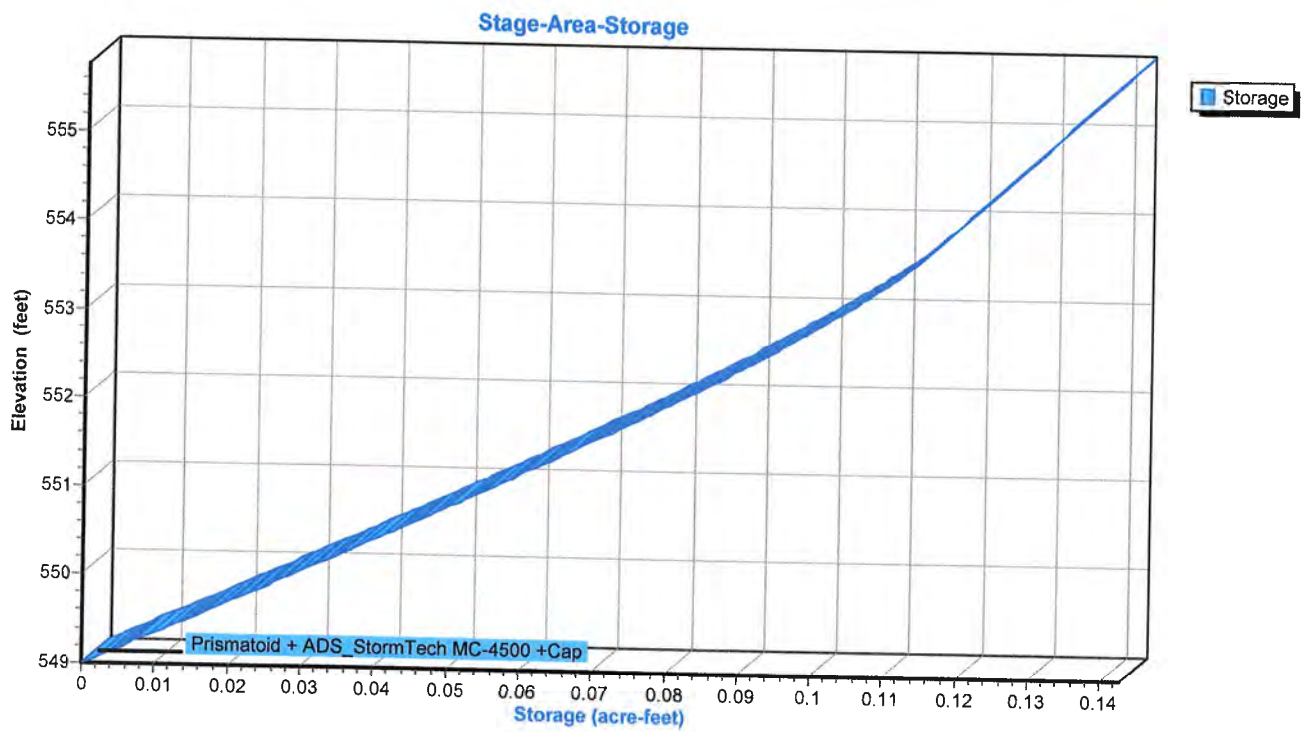
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Rainfall Duration=20 min, Inten=6.25 in/hr

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Page 10

Pond 1P: (new Pond)



5-22-17 15 year storm

Rainfall Duration=20 min, Inten=6.25 in/hr

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Page 11

Hydrograph for Pond 1P: (new Pond)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	3.84	0.002	549.06	0.01
0.10	3.84	0.030	550.07	0.78
0.20	3.84	0.053	550.95	1.17
0.30	3.84	0.073	551.72	1.71
0.40	0.00	0.069	551.59	1.64
0.50	0.00	0.057	551.10	1.32
0.60	0.00	0.048	550.74	1.05
0.70	0.00	0.039	550.43	0.93
0.80	0.00	0.032	550.16	0.82
0.90	0.00	0.026	549.93	0.71
1.00	0.00	0.020	549.74	0.60
1.10	0.00	0.016	549.57	0.49
1.20	0.00	0.012	549.44	0.38
1.30	0.00	0.010	549.34	0.27
1.40	0.00	0.008	549.28	0.19
1.50	0.00	0.006	549.23	0.14
1.60	0.00	0.005	549.19	0.10
1.70	0.00	0.005	549.17	0.08
1.80	0.00	0.004	549.15	0.06
1.90	0.00	0.004	549.13	0.05
2.00	0.00	0.003	549.12	0.04
2.10	0.00	0.003	549.11	0.03
2.20	0.00	0.003	549.10	0.03
2.30	0.00	0.002	549.09	0.02
2.40	0.00	0.002	549.08	0.02
2.50	0.00	0.002	549.08	0.02
2.60	0.00	0.002	549.07	0.02
2.70	0.00	0.002	549.07	0.01
2.80	0.00	0.002	549.06	0.01
2.90	0.00	0.002	549.06	0.01
3.00	0.00	0.002	549.06	0.01

5-22-17 15 year storm

Rainfall Duration=20 min, Inten=6.25 in/hr

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Page 12

Stage-Discharge for Pond 1P: (new Pond)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
549.00	0.00	551.08	1.30	553.16	2.31	555.24	2.96
549.04	0.00	551.12	1.34	553.20	2.33	555.28	2.97
549.08	0.02	551.16	1.37	553.24	2.34	555.32	2.98
549.12	0.04	551.20	1.40	553.28	2.35	555.36	2.99
549.16	0.07	551.24	1.43	553.32	2.37	555.40	3.00
549.20	0.11	551.28	1.45	553.36	2.38	555.44	3.01
549.24	0.15	551.32	1.48	553.40	2.40	555.48	3.02
549.28	0.20	551.36	1.51	553.44	2.41	555.52	3.04
549.32	0.24	551.40	1.53	553.48	2.42	555.56	3.05
549.36	0.29	551.44	1.56	553.52	2.44	555.60	3.06
549.40	0.34	551.48	1.58	553.56	2.45	555.64	3.07
549.44	0.39	551.52	1.60	553.60	2.46	555.68	3.08
549.48	0.42	551.56	1.62	553.64	2.48	555.72	3.09
549.52	0.45	551.60	1.65	553.68	2.49		
549.56	0.48	551.64	1.67	553.72	2.50		
549.60	0.51	551.68	1.69	553.76	2.52		
549.64	0.54	551.72	1.71	553.80	2.53		
549.68	0.57	551.76	1.73	553.84	2.54		
549.72	0.59	551.80	1.75	553.88	2.56		
549.76	0.62	551.84	1.77	553.92	2.57		
549.80	0.64	551.88	1.79	553.96	2.58		
549.84	0.66	551.92	1.81	554.00	2.59		
549.88	0.68	551.96	1.83	554.04	2.61		
549.92	0.70	552.00	1.85	554.08	2.62		
549.96	0.73	552.04	1.86	554.12	2.63		
550.00	0.75	552.08	1.88	554.16	2.64		
550.04	0.76	552.12	1.90	554.20	2.66		
550.08	0.78	552.16	1.92	554.24	2.67		
550.12	0.80	552.20	1.94	554.28	2.68		
550.16	0.82	552.24	1.95	554.32	2.69		
550.20	0.84	552.28	1.97	554.36	2.71		
550.24	0.85	552.32	1.99	554.40	2.72		
550.28	0.87	552.36	2.00	554.44	2.73		
550.32	0.89	552.40	2.02	554.48	2.74		
550.36	0.90	552.44	2.04	554.52	2.75		
550.40	0.92	552.48	2.05	554.56	2.76		
550.44	0.94	552.52	2.07	554.60	2.78		
550.48	0.95	552.56	2.09	554.64	2.79		
550.52	0.97	552.60	2.10	554.68	2.80		
550.56	0.98	552.64	2.12	554.72	2.81		
550.60	1.00	552.68	2.13	554.76	2.82		
550.64	1.01	552.72	2.15	554.80	2.84		
550.68	1.02	552.76	2.16	554.84	2.85		
550.72	1.04	552.80	2.18	554.88	2.86		
550.76	1.05	552.84	2.19	554.92	2.87		
550.80	1.07	552.88	2.21	554.96	2.88		
550.84	1.08	552.92	2.22	555.00	2.89		
550.88	1.11	552.96	2.24	555.04	2.90		
550.92	1.14	553.00	2.25	555.08	2.91		
550.96	1.18	553.04	2.27	555.12	2.93		
551.00	1.22	553.08	2.28	555.16	2.94		
551.04	1.26	553.12	2.30	555.20	2.95		

5-22-17 15 year storm

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Rainfall Duration=20 min, Inten=6.25 in/hr

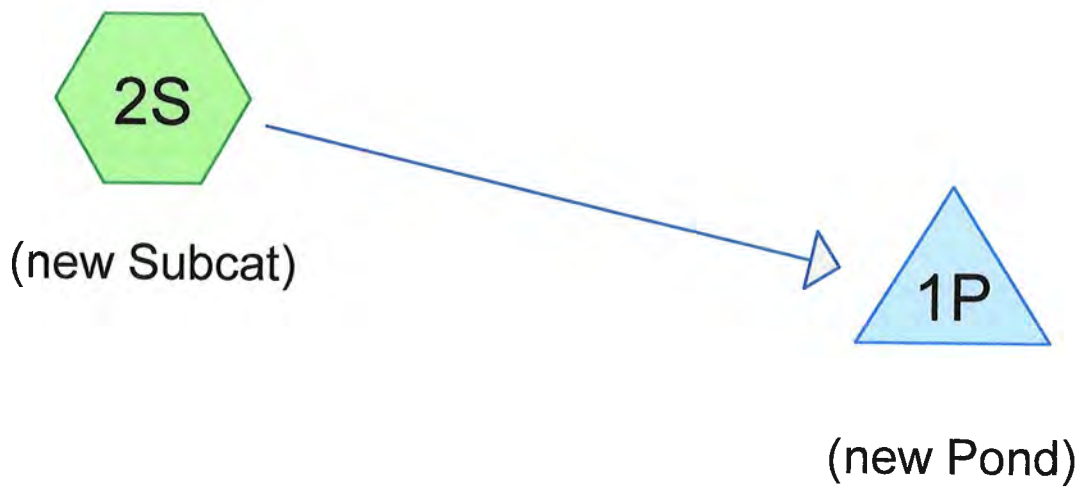
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Page 13

Stage-Area-Storage for Pond 1P: (new Pond)

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
549.00	0.000	554.20	0.122
549.10	0.003	554.30	0.123
549.20	0.006	554.40	0.124
549.30	0.008	554.50	0.126
549.40	0.011	554.60	0.127
549.50	0.014	554.70	0.128
549.60	0.017	554.80	0.130
549.70	0.020	554.90	0.131
549.80	0.022	555.00	0.132
549.90	0.025	555.10	0.134
550.00	0.028	555.20	0.135
550.10	0.030	555.30	0.137
550.20	0.033	555.40	0.138
550.30	0.036	555.50	0.139
550.40	0.039	555.60	0.141
550.50	0.041	555.70	0.142
550.60	0.044		
550.70	0.047		
550.80	0.049		
550.90	0.052		
551.00	0.055		
551.10	0.057		
551.20	0.060		
551.30	0.062		
551.40	0.065		
551.50	0.067		
551.60	0.070		
551.70	0.072		
551.80	0.075		
551.90	0.077		
552.00	0.080		
552.10	0.082		
552.20	0.084		
552.30	0.087		
552.40	0.089		
552.50	0.091		
552.60	0.093		
552.70	0.096		
552.80	0.098		
552.90	0.100		
553.00	0.102		
553.10	0.104		
553.20	0.106		
553.30	0.108		
553.40	0.110		
553.50	0.111		
553.60	0.113		
553.70	0.115		
553.80	0.116		
553.90	0.117		
554.00	0.119		
554.10	0.120		

25 YEAR – 20 MINUTE STORM



5-22-17 25 year storm

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Page 2

Area Listing (all nodes)

Area (acres)	C	Description (subcatchment-numbers)
0.080	0.35	GRASS (2S)
0.970	0.60	PVMT (2S)
1.050	0.58	TOTAL AREA

5-22-17 25 year storm

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
1.050	Other	2S
1.050		TOTAL AREA

5-22-17 25 year storm

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Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.080	0.080	GRASS	2S
0.000	0.000	0.000	0.000	0.970	0.970	PVMT	2S
0.000	0.000	0.000	0.000	1.050	1.050	TOTAL AREA	

5-22-17 25 year storm

Rainfall Duration=20 min, Inten=7.73 in/hr

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Page 5

Time span=0.00-3.00 hrs, dt=0.01 hrs, 301 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: (new Subcat)

Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=1.52"
Tc=0.0 min C=0.58 Runoff=4.75 cfs 0.133 af

Pond 1P: (new Pond)

Peak Elev=552.75' Storage=0.097 af Inflow=4.75 cfs 0.133 af
Outflow=2.30 cfs 0.132 af

Total Runoff Area = 1.050 ac Runoff Volume = 0.133 af Average Runoff Depth = 1.52"
100.00% Pervious = 1.050 ac 0.00% Impervious = 0.000 ac

5-22-17 25 year storm

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Rainfall Duration=20 min, Inten=7.73 in/hr

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Page 6

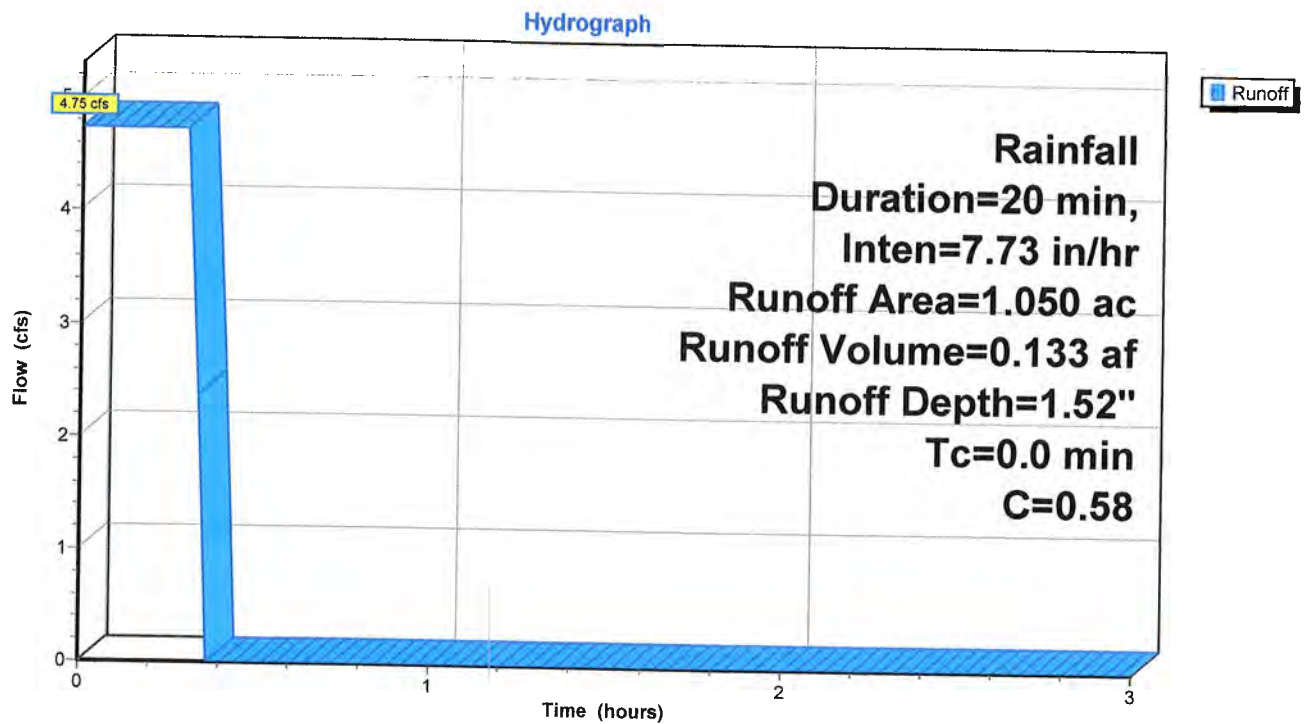
Summary for Subcatchment 2S: (new Subcat)

Runoff = 4.75 cfs @ 0.00 hrs, Volume= 0.133 af, Depth= 1.52"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Rainfall Duration=20 min, Inten=7.73 in/hr

Area (ac)	C	Description
0.080	0.35	GRASS
0.970	0.60	PVMT
1.050	0.58	Weighted Average
1.050		100.00% Pervious Area

Subcatchment 2S: (new Subcat)



5-22-17 25 year storm

Rainfall Duration=20 min, Inten=7.73 in/hr

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Page 7

Hydrograph for Subcatchment 2S: (new Subcat)

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	4.75	1.04	0.00	2.08	0.00
0.02	4.75	1.06	0.00	2.10	0.00
0.04	4.75	1.08	0.00	2.12	0.00
0.06	4.75	1.10	0.00	2.14	0.00
0.08	4.75	1.12	0.00	2.16	0.00
0.10	4.75	1.14	0.00	2.18	0.00
0.12	4.75	1.16	0.00	2.20	0.00
0.14	4.75	1.18	0.00	2.22	0.00
0.16	4.75	1.20	0.00	2.24	0.00
0.18	4.75	1.22	0.00	2.26	0.00
0.20	4.75	1.24	0.00	2.28	0.00
0.22	4.75	1.26	0.00	2.30	0.00
0.24	4.75	1.28	0.00	2.32	0.00
0.26	4.75	1.30	0.00	2.34	0.00
0.28	4.75	1.32	0.00	2.36	0.00
0.30	4.75	1.34	0.00	2.38	0.00
0.32	4.75	1.36	0.00	2.40	0.00
0.34	0.00	1.38	0.00	2.42	0.00
0.36	0.00	1.40	0.00	2.44	0.00
0.38	0.00	1.42	0.00	2.46	0.00
0.40	0.00	1.44	0.00	2.48	0.00
0.42	0.00	1.46	0.00	2.50	0.00
0.44	0.00	1.48	0.00	2.52	0.00
0.46	0.00	1.50	0.00	2.54	0.00
0.48	0.00	1.52	0.00	2.56	0.00
0.50	0.00	1.54	0.00	2.58	0.00
0.52	0.00	1.56	0.00	2.60	0.00
0.54	0.00	1.58	0.00	2.62	0.00
0.56	0.00	1.60	0.00	2.64	0.00
0.58	0.00	1.62	0.00	2.66	0.00
0.60	0.00	1.64	0.00	2.68	0.00
0.62	0.00	1.66	0.00	2.70	0.00
0.64	0.00	1.68	0.00	2.72	0.00
0.66	0.00	1.70	0.00	2.74	0.00
0.68	0.00	1.72	0.00	2.76	0.00
0.70	0.00	1.74	0.00	2.78	0.00
0.72	0.00	1.76	0.00	2.80	0.00
0.74	0.00	1.78	0.00	2.82	0.00
0.76	0.00	1.80	0.00	2.84	0.00
0.78	0.00	1.82	0.00	2.86	0.00
0.80	0.00	1.84	0.00	2.88	0.00
0.82	0.00	1.86	0.00	2.90	0.00
0.84	0.00	1.88	0.00	2.92	0.00
0.86	0.00	1.90	0.00	2.94	0.00
0.88	0.00	1.92	0.00	2.96	0.00
0.90	0.00	1.94	0.00	2.98	0.00
0.92	0.00	1.96	0.00	3.00	0.00
0.94	0.00	1.98	0.00		
0.96	0.00	2.00	0.00		
0.98	0.00	2.02	0.00		
1.00	0.00	2.04	0.00		
1.02	0.00	2.06	0.00		

5-22-17 25 year storm

Rainfall Duration=20 min, Inten=7.73 in/hr

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Page 8

Summary for Pond 1P: (new Pond)

Inflow Area = 1.050 ac, 0.00% Impervious, Inflow Depth = 1.52"
 Inflow = 4.75 cfs @ 0.00 hrs, Volume= 0.133 af
 Outflow = 2.30 cfs @ 0.34 hrs, Volume= 0.132 af, Atten= 52%, Lag= 20.1 min
 Primary = 2.30 cfs @ 0.34 hrs, Volume= 0.132 af

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
 Peak Elev= 552.75' @ 0.34 hrs Surf.Area= 0.034 ac Storage= 0.097 af

Plug-Flow detention time= 29.0 min calculated for 0.129 af (97% of inflow)
 Center-of-Mass det. time= 28.6 min (38.5 - 9.9)

Volume	Invert	Avail.Storage	Storage Description
#1	549.00'	0.058 af	38.18'W x 38.75'L x 6.75'H Prismaoid 0.229 af Overall - 0.085 af Embedded = 0.144 af x 40.0% Voids
#2	549.00'	0.085 af	ADS_StormTech MC-4500 +Cap @ 4.03' L x 32 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 4 Rows of 8 Chambers Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.143 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	549.00'	5.7" Vert. Orifice/Grate C= 0.600
#2	Primary	550.80'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	551.95'	2.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.29 cfs @ 0.34 hrs HW=552.73' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 1.60 cfs @ 9.00 fps)
- 2=Orifice/Grate (Orifice Controls 0.56 cfs @ 6.40 fps)
- 3=Orifice/Grate (Orifice Controls 0.14 cfs @ 3.97 fps)

5-22-17 25 year storm

Prepared by Hewlett-Packard

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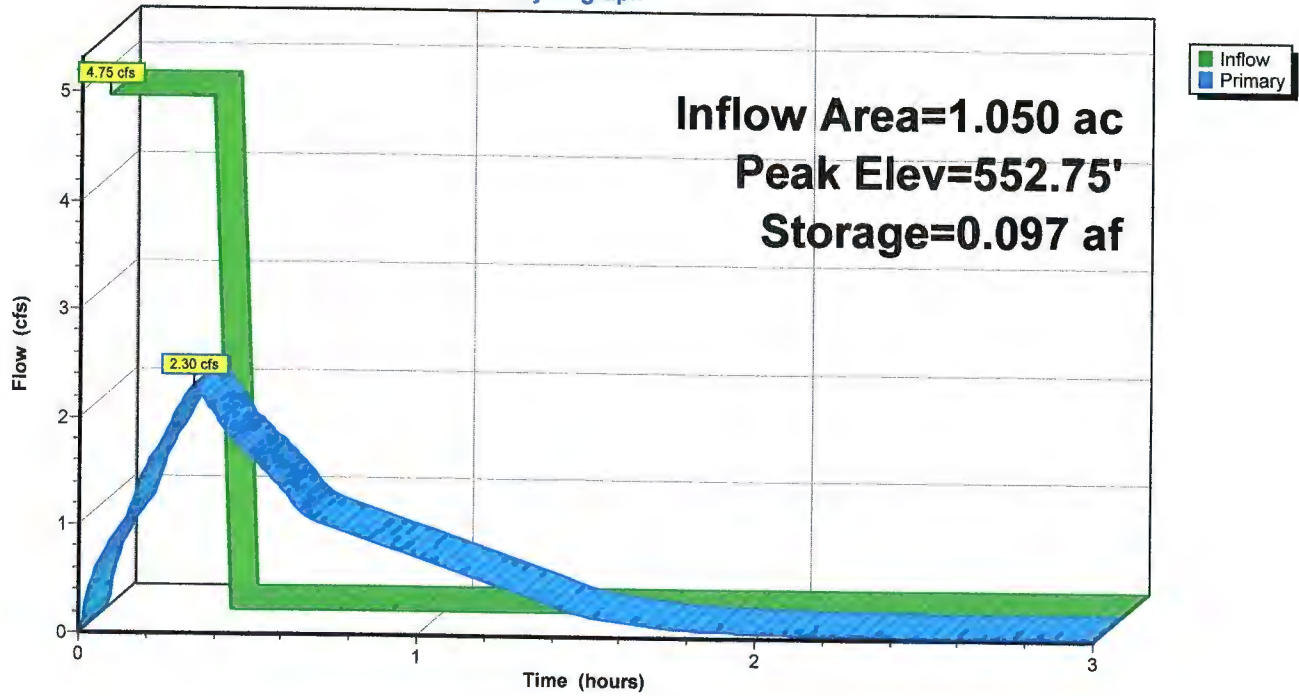
Rainfall Duration=20 min, Inten=7.73 in/hr

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Page 9

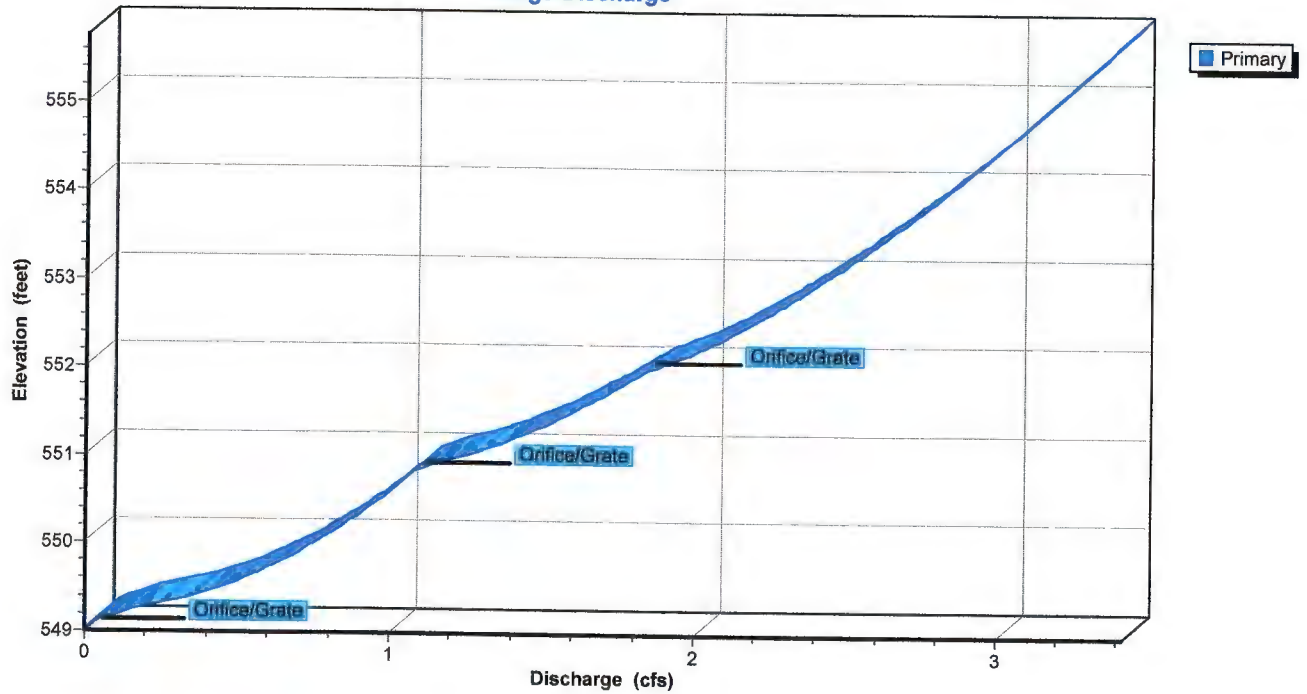
Pond 1P: (new Pond)

Hydrograph



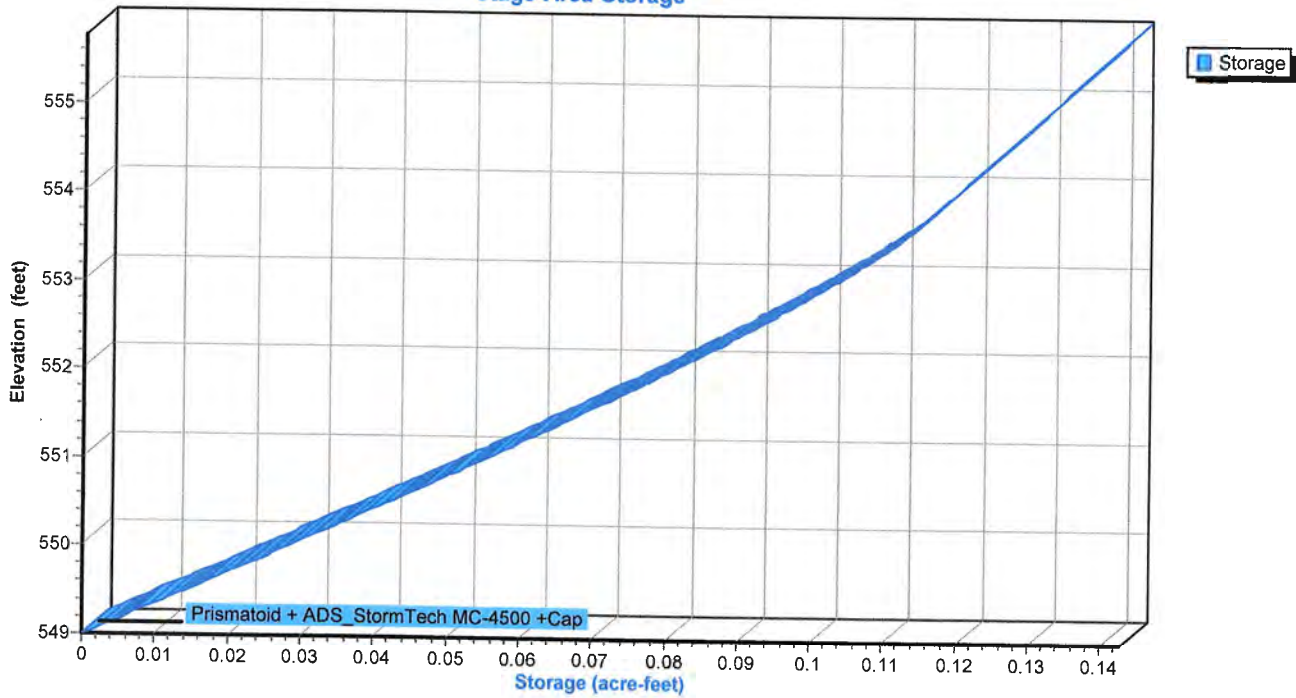
Pond 1P: (new Pond)

Stage-Discharge



Pond 1P: (new Pond)

Stage-Area-Storage



5-22-17 25 year storm

Rainfall Duration=20 min, Inten=7.73 in/hr

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Page 11

Hydrograph for Pond 1P: (new Pond)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	4.75	0.002	549.07	0.01
0.10	4.75	0.037	550.33	0.89
0.20	4.75	0.066	551.45	1.56
0.30	4.75	0.090	552.45	2.14
0.40	0.00	0.086	552.26	2.03
0.50	0.00	0.071	551.63	1.66
0.60	0.00	0.058	551.14	1.35
0.70	0.00	0.048	550.77	1.06
0.80	0.00	0.040	550.46	0.94
0.90	0.00	0.033	550.19	0.83
1.00	0.00	0.026	549.95	0.72
1.10	0.00	0.021	549.75	0.61
1.20	0.00	0.016	549.58	0.50
1.30	0.00	0.013	549.45	0.39
1.40	0.00	0.010	549.35	0.28
1.50	0.00	0.008	549.28	0.20
1.60	0.00	0.006	549.23	0.14
1.70	0.00	0.005	549.20	0.10
1.80	0.00	0.005	549.17	0.08
1.90	0.00	0.004	549.15	0.06
2.00	0.00	0.004	549.13	0.05
2.10	0.00	0.003	549.12	0.04
2.20	0.00	0.003	549.11	0.03
2.30	0.00	0.003	549.10	0.03
2.40	0.00	0.003	549.09	0.02
2.50	0.00	0.002	549.08	0.02
2.60	0.00	0.002	549.08	0.02
2.70	0.00	0.002	549.07	0.02
2.80	0.00	0.002	549.07	0.01
2.90	0.00	0.002	549.06	0.01
3.00	0.00	0.002	549.06	0.01

5-22-17 25 year storm

Rainfall Duration=20 min, Inten=7.73 in/hr

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Page 12

Stage-Discharge for Pond 1P: (new Pond)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
549.00	0.00	551.08	1.30	553.16	2.48	555.24	3.25
549.04	0.00	551.12	1.34	553.20	2.50	555.28	3.26
549.08	0.02	551.16	1.37	553.24	2.52	555.32	3.28
549.12	0.04	551.20	1.40	553.28	2.54	555.36	3.29
549.16	0.07	551.24	1.43	553.32	2.55	555.40	3.30
549.20	0.11	551.28	1.45	553.36	2.57	555.44	3.32
549.24	0.15	551.32	1.48	553.40	2.59	555.48	3.33
549.28	0.20	551.36	1.51	553.44	2.60	555.52	3.34
549.32	0.24	551.40	1.53	553.48	2.62	555.56	3.35
549.36	0.29	551.44	1.56	553.52	2.64	555.60	3.37
549.40	0.34	551.48	1.58	553.56	2.65	555.64	3.38
549.44	0.39	551.52	1.60	553.60	2.67	555.68	3.39
549.48	0.42	551.56	1.62	553.64	2.68	555.72	3.40
549.52	0.45	551.60	1.65	553.68	2.70		
549.56	0.48	551.64	1.67	553.72	2.72		
549.60	0.51	551.68	1.69	553.76	2.73		
549.64	0.54	551.72	1.71	553.80	2.75		
549.68	0.57	551.76	1.73	553.84	2.76		
549.72	0.59	551.80	1.75	553.88	2.78		
549.76	0.62	551.84	1.77	553.92	2.79		
549.80	0.64	551.88	1.79	553.96	2.81		
549.84	0.66	551.92	1.81	554.00	2.82		
549.88	0.68	551.96	1.83	554.04	2.84		
549.92	0.70	552.00	1.85	554.08	2.85		
549.96	0.73	552.04	1.88	554.12	2.87		
550.00	0.75	552.08	1.91	554.16	2.88		
550.04	0.76	552.12	1.94	554.20	2.90		
550.08	0.78	552.16	1.97	554.24	2.91		
550.12	0.80	552.20	2.00	554.28	2.93		
550.16	0.82	552.24	2.02	554.32	2.94		
550.20	0.84	552.28	2.05	554.36	2.95		
550.24	0.85	552.32	2.07	554.40	2.97		
550.28	0.87	552.36	2.09	554.44	2.98		
550.32	0.89	552.40	2.12	554.48	3.00		
550.36	0.90	552.44	2.14	554.52	3.01		
550.40	0.92	552.48	2.16	554.56	3.02		
550.44	0.94	552.52	2.18	554.60	3.04		
550.48	0.95	552.56	2.20	554.64	3.05		
550.52	0.97	552.60	2.22	554.68	3.07		
550.56	0.98	552.64	2.24	554.72	3.08		
550.60	1.00	552.68	2.26	554.76	3.09		
550.64	1.01	552.72	2.28	554.80	3.11		
550.68	1.02	552.76	2.30	554.84	3.12		
550.72	1.04	552.80	2.32	554.88	3.13		
550.76	1.05	552.84	2.34	554.92	3.15		
550.80	1.07	552.88	2.36	554.96	3.16		
550.84	1.08	552.92	2.38	555.00	3.17		
550.88	1.11	552.96	2.40	555.04	3.19		
550.92	1.14	553.00	2.41	555.08	3.20		
550.96	1.18	553.04	2.43	555.12	3.21		
551.00	1.22	553.08	2.45	555.16	3.23		
551.04	1.26	553.12	2.47	555.20	3.24		

5-22-17 25 year storm

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Rainfall Duration=20 min, Inten=7.73 in/hr

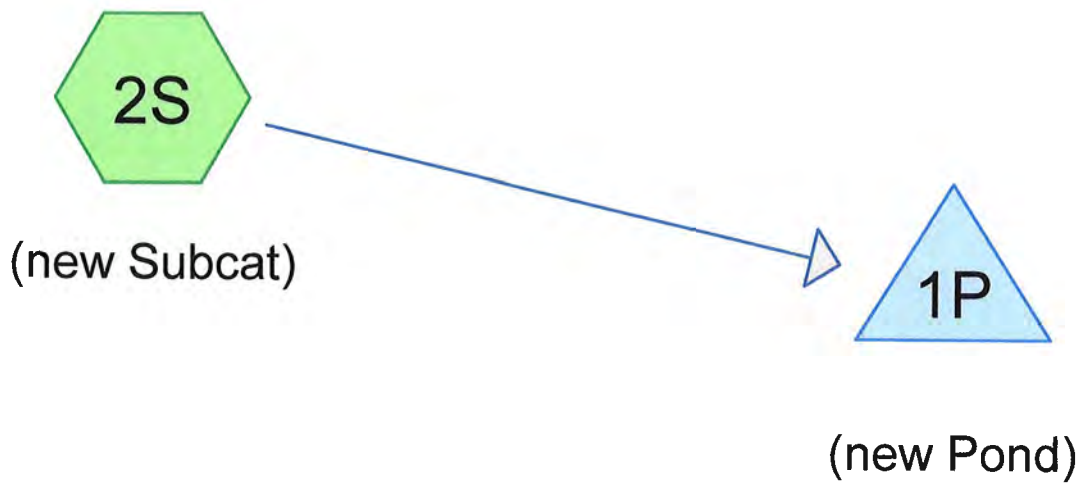
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Page 13

Stage-Area-Storage for Pond 1P: (new Pond)

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
549.00	0.000	554.20	0.122
549.10	0.003	554.30	0.123
549.20	0.006	554.40	0.124
549.30	0.008	554.50	0.126
549.40	0.011	554.60	0.127
549.50	0.014	554.70	0.128
549.60	0.017	554.80	0.130
549.70	0.020	554.90	0.131
549.80	0.022	555.00	0.132
549.90	0.025	555.10	0.134
550.00	0.028	555.20	0.135
550.10	0.030	555.30	0.137
550.20	0.033	555.40	0.138
550.30	0.036	555.50	0.139
550.40	0.039	555.60	0.141
550.50	0.041	555.70	0.142
550.60	0.044		
550.70	0.047		
550.80	0.049		
550.90	0.052		
551.00	0.055		
551.10	0.057		
551.20	0.060		
551.30	0.062		
551.40	0.065		
551.50	0.067		
551.60	0.070		
551.70	0.072		
551.80	0.075		
551.90	0.077		
552.00	0.080		
552.10	0.082		
552.20	0.084		
552.30	0.087		
552.40	0.089		
552.50	0.091		
552.60	0.093		
552.70	0.096		
552.80	0.098		
552.90	0.100		
553.00	0.102		
553.10	0.104		
553.20	0.106		
553.30	0.108		
553.40	0.110		
553.50	0.111		
553.60	0.113		
553.70	0.115		
553.80	0.116		
553.90	0.117		
554.00	0.119		
554.10	0.120		

100 YEAR -20 MINUTE STORM



Subcat



Reach



Pond



Link

Routing Diagram for 5-22-17 100 year storm
Prepared by Hewlett-Packard, Printed 6/5/2017
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5-22-17 100 year storm

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Page 2

Area Listing (all nodes)

Area (acres)	C	Description (subcatchment-numbers)
0.080	0.35	GRASS (2S)
0.970	0.60	PVMT (2S)
1.050	0.58	TOTAL AREA

5-22-17 100 year storm

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
1.050	Other	2S
1.050		TOTAL AREA

5-22-17 100 year storm

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Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.080	0.080	GRASS	2S
0.000	0.000	0.000	0.000	0.970	0.970	PVMT	2S
0.000	0.000	0.000	0.000	1.050	1.050	TOTAL AREA	

5-22-17 100 year storm

Rainfall Duration=20 min, Inten=9.88 in/hr

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Page 5

Time span=0.00-3.00 hrs, dt=0.01 hrs, 301 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: (new Subcat)

Runoff Area=1.050 ac 0.00% Impervious Runoff Depth=1.95"
Tc=0.0 min C=0.58 Runoff=6.07 cfs 0.170 af

Pond 1P: (new Pond)

Peak Elev=554.34' Storage=0.124 af Inflow=6.07 cfs 0.170 af
Outflow=2.95 cfs 0.169 af

Total Runoff Area = 1.050 ac Runoff Volume = 0.170 af Average Runoff Depth = 1.95"
100.00% Pervious = 1.050 ac 0.00% Impervious = 0.000 ac

5-22-17 100 year storm

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Rainfall Duration=20 min, Inten=9.88 in/hr

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Page 6

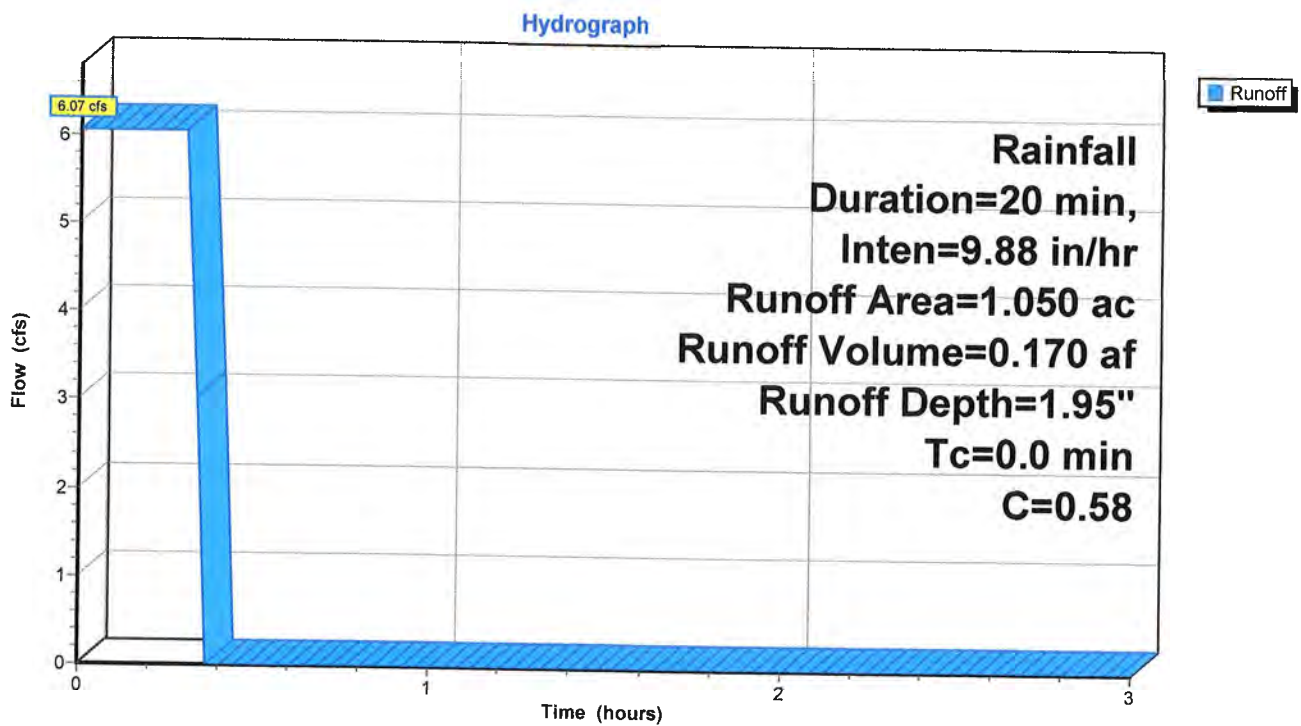
Summary for Subcatchment 2S: (new Subcat)

Runoff = 6.07 cfs @ 0.00 hrs, Volume= 0.170 af, Depth= 1.95"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Rainfall Duration=20 min, Inten=9.88 in/hr

Area (ac)	C	Description
0.080	0.35	GRASS
0.970	0.60	PVMT
1.050	0.58	Weighted Average
1.050		100.00% Pervious Area

Subcatchment 2S: (new Subcat)



5-22-17 100 year storm

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Rainfall Duration=20 min, Inten=9.88 in/hr

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Page 7

Hydrograph for Subcatchment 2S: (new Subcat)

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	6.07	1.04	0.00	2.08	0.00
0.02	6.07	1.06	0.00	2.10	0.00
0.04	6.07	1.08	0.00	2.12	0.00
0.06	6.07	1.10	0.00	2.14	0.00
0.08	6.07	1.12	0.00	2.16	0.00
0.10	6.07	1.14	0.00	2.18	0.00
0.12	6.07	1.16	0.00	2.20	0.00
0.14	6.07	1.18	0.00	2.22	0.00
0.16	6.07	1.20	0.00	2.24	0.00
0.18	6.07	1.22	0.00	2.26	0.00
0.20	6.07	1.24	0.00	2.28	0.00
0.22	6.07	1.26	0.00	2.30	0.00
0.24	6.07	1.28	0.00	2.32	0.00
0.26	6.07	1.30	0.00	2.34	0.00
0.28	6.07	1.32	0.00	2.36	0.00
0.30	6.07	1.34	0.00	2.38	0.00
0.32	6.07	1.36	0.00	2.40	0.00
0.34	0.00	1.38	0.00	2.42	0.00
0.36	0.00	1.40	0.00	2.44	0.00
0.38	0.00	1.42	0.00	2.46	0.00
0.40	0.00	1.44	0.00	2.48	0.00
0.42	0.00	1.46	0.00	2.50	0.00
0.44	0.00	1.48	0.00	2.52	0.00
0.46	0.00	1.50	0.00	2.54	0.00
0.48	0.00	1.52	0.00	2.56	0.00
0.50	0.00	1.54	0.00	2.58	0.00
0.52	0.00	1.56	0.00	2.60	0.00
0.54	0.00	1.58	0.00	2.62	0.00
0.56	0.00	1.60	0.00	2.64	0.00
0.58	0.00	1.62	0.00	2.66	0.00
0.60	0.00	1.64	0.00	2.68	0.00
0.62	0.00	1.66	0.00	2.70	0.00
0.64	0.00	1.68	0.00	2.72	0.00
0.66	0.00	1.70	0.00	2.74	0.00
0.68	0.00	1.72	0.00	2.76	0.00
0.70	0.00	1.74	0.00	2.78	0.00
0.72	0.00	1.76	0.00	2.80	0.00
0.74	0.00	1.78	0.00	2.82	0.00
0.76	0.00	1.80	0.00	2.84	0.00
0.78	0.00	1.82	0.00	2.86	0.00
0.80	0.00	1.84	0.00	2.88	0.00
0.82	0.00	1.86	0.00	2.90	0.00
0.84	0.00	1.88	0.00	2.92	0.00
0.86	0.00	1.90	0.00	2.94	0.00
0.88	0.00	1.92	0.00	2.96	0.00
0.90	0.00	1.94	0.00	2.98	0.00
0.92	0.00	1.96	0.00	3.00	0.00
0.94	0.00	1.98	0.00		
0.96	0.00	2.00	0.00		
0.98	0.00	2.02	0.00		
1.00	0.00	2.04	0.00		
1.02	0.00	2.06	0.00		

5-22-17 100 year storm

Rainfall Duration=20 min, Inten=9.88 in/hr

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Page 8

Summary for Pond 1P: (new Pond)

Inflow Area = 1.050 ac, 0.00% Impervious, Inflow Depth = 1.95"
 Inflow = 6.07 cfs @ 0.00 hrs, Volume= 0.170 af
 Outflow = 2.95 cfs @ 0.34 hrs, Volume= 0.169 af, Atten= 51%, Lag= 20.1 min
 Primary = 2.95 cfs @ 0.34 hrs, Volume= 0.169 af

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
 Peak Elev= 554.34' @ 0.34 hrs Surf.Area= 0.034 ac Storage= 0.124 af

Plug-Flow detention time= 29.3 min calculated for 0.166 af (97% of inflow)
 Center-of-Mass det. time= 28.9 min (38.8 - 9.9)

Volume	Invert	Avail.Storage	Storage Description
#1	549.00'	0.058 af	38.18'W x 38.75'L x 6.75'H Prismaoid
#2	549.00'	0.085 af	0.229 af Overall - 0.085 af Embedded = 0.144 af x 40.0% Voids ADS_StormTech MC-4500 +Cap @ 4.03' L x 32 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 4 Rows of 8 Chambers Cap Storage= +35.7 cf x 2 x 4 rows = 285.6 cf
		0.143 af	Total Available Storage

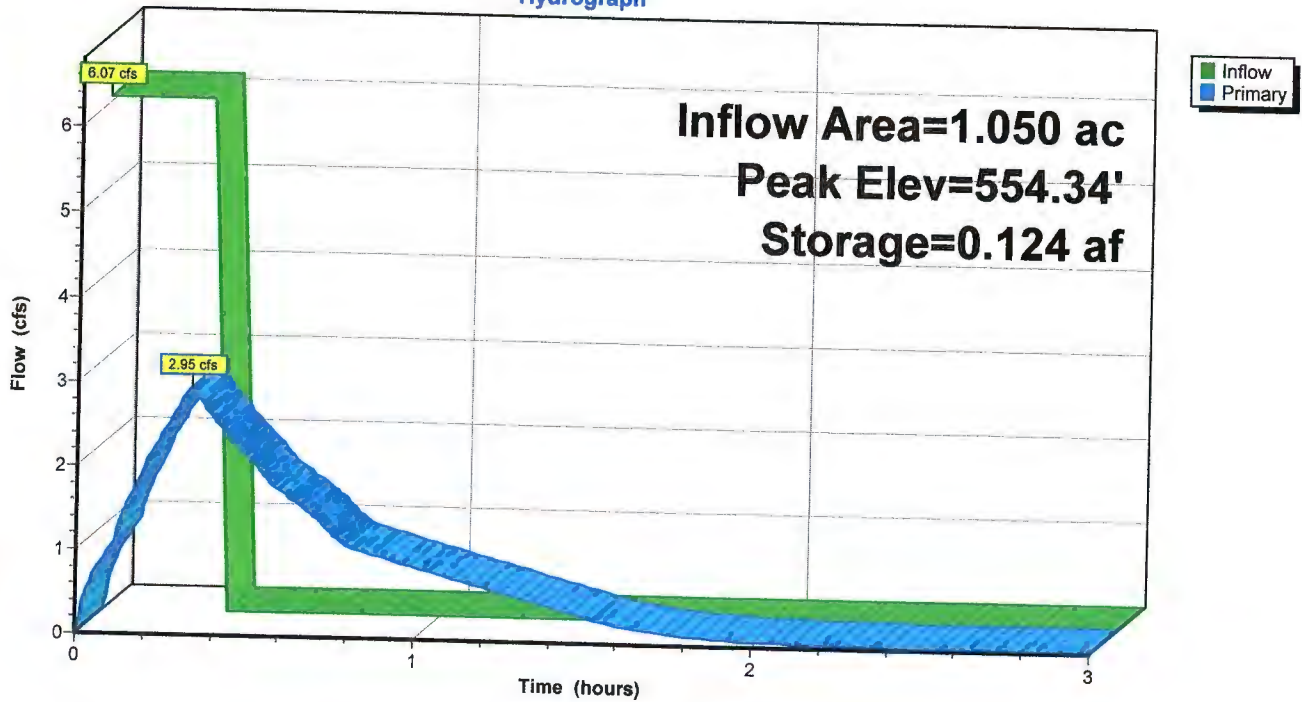
Device	Routing	Invert	Outlet Devices
#1	Primary	549.00'	5.7" Vert. Orifice/Grate C= 0.600
#2	Primary	550.80'	4.0" Vert. Orifice/Grate C= 0.600
#3	Primary	551.95'	2.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.94 cfs @ 0.34 hrs HW=554.32' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 1.92 cfs @ 10.85 fps)
- 2=Orifice/Grate (Orifice Controls 0.77 cfs @ 8.82 fps)
- 3=Orifice/Grate (Orifice Controls 0.25 cfs @ 7.25 fps)

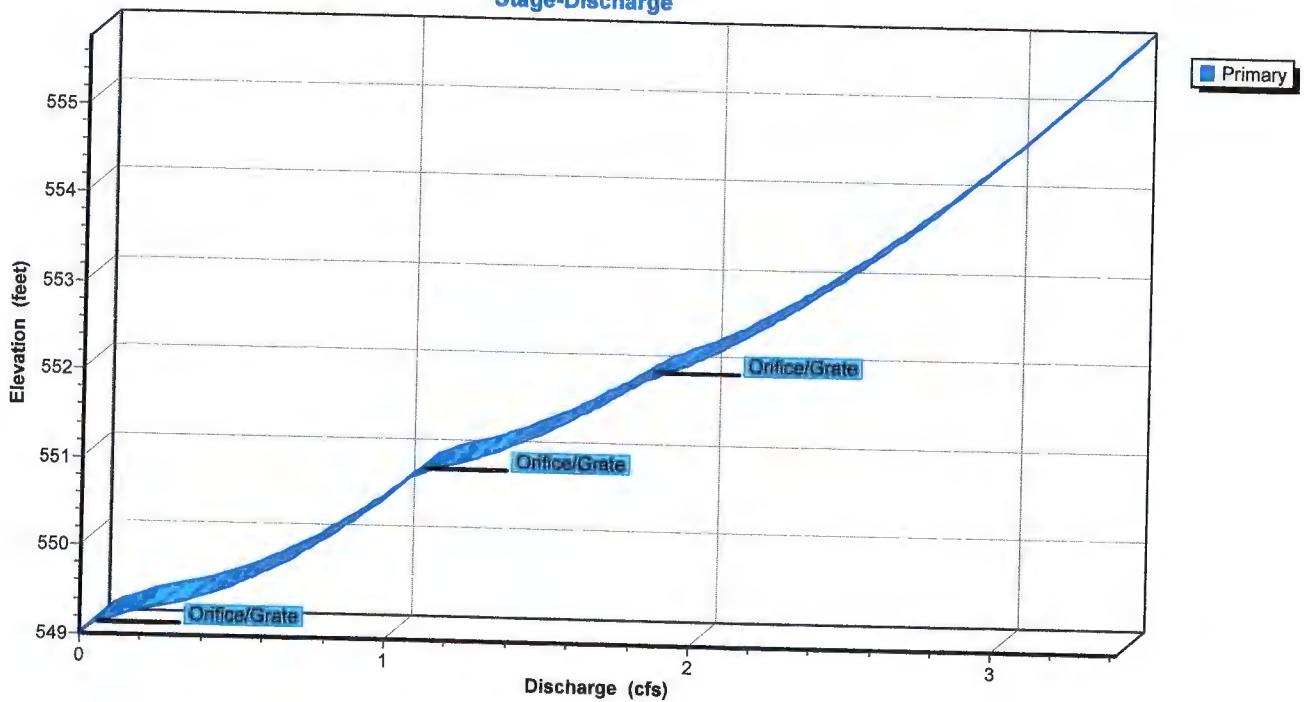
Pond 1P: (new Pond)

Hydrograph



Pond 1P: (new Pond)

Stage-Discharge



5-22-17 100 year storm

Prepared by Hewlett-Packard

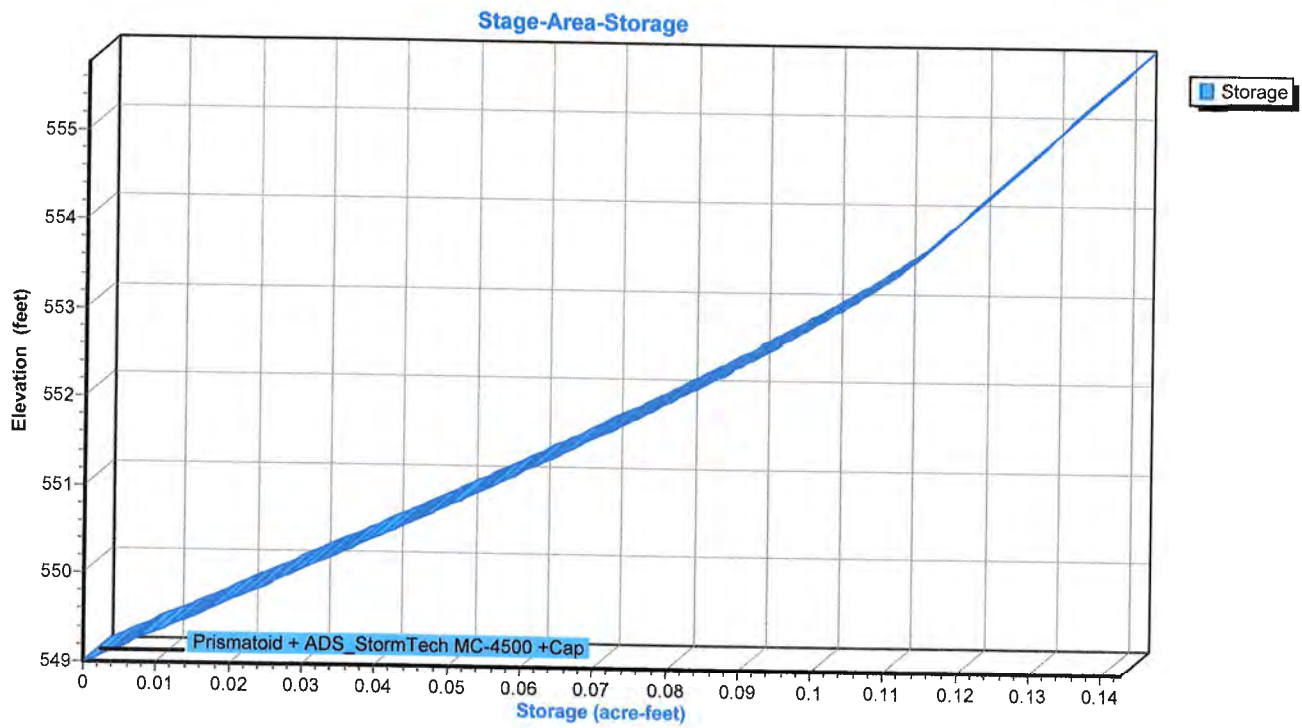
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Rainfall Duration=20 min, Inten=9.88 in/hr

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Page 10

Pond 1P: (new Pond)



5-22-17 100 year storm

Rainfall Duration=20 min, Inten=9.88 in/hr

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Page 11

Hydrograph for Pond 1P: (new Pond)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	6.07	0.002	549.09	0.02
0.10	6.07	0.047	550.72	1.04
0.20	6.07	0.085	552.21	2.01
0.30	6.07	0.115	553.74	2.72
0.40	0.00	0.110	553.39	2.58
0.50	0.00	0.090	552.45	2.14
0.60	0.00	0.074	551.78	1.74
0.70	0.00	0.061	551.25	1.44
0.80	0.00	0.051	550.85	1.09
0.90	0.00	0.042	550.53	0.97
1.00	0.00	0.035	550.25	0.86
1.10	0.00	0.028	550.01	0.75
1.20	0.00	0.022	549.80	0.64
1.30	0.00	0.017	549.62	0.53
1.40	0.00	0.013	549.48	0.42
1.50	0.00	0.010	549.37	0.31
1.60	0.00	0.008	549.30	0.22
1.70	0.00	0.007	549.24	0.15
1.80	0.00	0.006	549.20	0.11
1.90	0.00	0.005	549.17	0.08
2.00	0.00	0.004	549.15	0.07
2.10	0.00	0.004	549.14	0.05
2.20	0.00	0.003	549.12	0.04
2.30	0.00	0.003	549.11	0.04
2.40	0.00	0.003	549.10	0.03
2.50	0.00	0.003	549.09	0.03
2.60	0.00	0.002	549.08	0.02
2.70	0.00	0.002	549.08	0.02
2.80	0.00	0.002	549.07	0.02
2.90	0.00	0.002	549.07	0.01
3.00	0.00	0.002	549.07	0.01

5-22-17 100 year storm

Rainfall Duration=20 min, Inten=9.88 in/hr

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Page 12

Stage-Discharge for Pond 1P: (new Pond)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
549.00	0.00	551.08	1.30	553.16	2.48	555.24	3.25
549.04	0.00	551.12	1.34	553.20	2.50	555.28	3.26
549.08	0.02	551.16	1.37	553.24	2.52	555.32	3.28
549.12	0.04	551.20	1.40	553.28	2.54	555.36	3.29
549.16	0.07	551.24	1.43	553.32	2.55	555.40	3.30
549.20	0.11	551.28	1.45	553.36	2.57	555.44	3.32
549.24	0.15	551.32	1.48	553.40	2.59	555.48	3.33
549.28	0.20	551.36	1.51	553.44	2.60	555.52	3.34
549.32	0.24	551.40	1.53	553.48	2.62	555.56	3.35
549.36	0.29	551.44	1.56	553.52	2.64	555.60	3.37
549.40	0.34	551.48	1.58	553.56	2.65	555.64	3.38
549.44	0.39	551.52	1.60	553.60	2.67	555.68	3.39
549.48	0.42	551.56	1.62	553.64	2.68	555.72	3.40
549.52	0.45	551.60	1.65	553.68	2.70		
549.56	0.48	551.64	1.67	553.72	2.72		
549.60	0.51	551.68	1.69	553.76	2.73		
549.64	0.54	551.72	1.71	553.80	2.75		
549.68	0.57	551.76	1.73	553.84	2.76		
549.72	0.59	551.80	1.75	553.88	2.78		
549.76	0.62	551.84	1.77	553.92	2.79		
549.80	0.64	551.88	1.79	553.96	2.81		
549.84	0.66	551.92	1.81	554.00	2.82		
549.88	0.68	551.96	1.83	554.04	2.84		
549.92	0.70	552.00	1.85	554.08	2.85		
549.96	0.73	552.04	1.88	554.12	2.87		
550.00	0.75	552.08	1.91	554.16	2.88		
550.04	0.76	552.12	1.94	554.20	2.90		
550.08	0.78	552.16	1.97	554.24	2.91		
550.12	0.80	552.20	2.00	554.28	2.93		
550.16	0.82	552.24	2.02	554.32	2.94		
550.20	0.84	552.28	2.05	554.36	2.95		
550.24	0.85	552.32	2.07	554.40	2.97		
550.28	0.87	552.36	2.09	554.44	2.98		
550.32	0.89	552.40	2.12	554.48	3.00		
550.36	0.90	552.44	2.14	554.52	3.01		
550.40	0.92	552.48	2.16	554.56	3.02		
550.44	0.94	552.52	2.18	554.60	3.04		
550.48	0.95	552.56	2.20	554.64	3.05		
550.52	0.97	552.60	2.22	554.68	3.07		
550.56	0.98	552.64	2.24	554.72	3.08		
550.60	1.00	552.68	2.26	554.76	3.09		
550.64	1.01	552.72	2.28	554.80	3.11		
550.68	1.02	552.76	2.30	554.84	3.12		
550.72	1.04	552.80	2.32	554.88	3.13		
550.76	1.05	552.84	2.34	554.92	3.15		
550.80	1.07	552.88	2.36	554.96	3.16		
550.84	1.08	552.92	2.38	555.00	3.17		
550.88	1.11	552.96	2.40	555.04	3.19		
550.92	1.14	553.00	2.41	555.08	3.20		
550.96	1.18	553.04	2.43	555.12	3.21		
551.00	1.22	553.08	2.45	555.16	3.23		
551.04	1.26	553.12	2.47	555.20	3.24		

5-22-17 100 year storm

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Page 13

Stage-Area-Storage for Pond 1P: (new Pond)

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
549.00	0.000	554.20	0.122
549.10	0.003	554.30	0.123
549.20	0.006	554.40	0.124
549.30	0.008	554.50	0.126
549.40	0.011	554.60	0.127
549.50	0.014	554.70	0.128
549.60	0.017	554.80	0.130
549.70	0.020	554.90	0.131
549.80	0.022	555.00	0.132
549.90	0.025	555.10	0.134
550.00	0.028	555.20	0.135
550.10	0.030	555.30	0.137
550.20	0.033	555.40	0.138
550.30	0.036	555.50	0.139
550.40	0.039	555.60	0.141
550.50	0.041	555.70	0.142
550.60	0.044		
550.70	0.047		
550.80	0.049		
550.90	0.052		
551.00	0.055		
551.10	0.057		
551.20	0.060		
551.30	0.062		
551.40	0.065		
551.50	0.067		
551.60	0.070		
551.70	0.072		
551.80	0.075		
551.90	0.077		
552.00	0.080		
552.10	0.082		
552.20	0.084		
552.30	0.087		
552.40	0.089		
552.50	0.091		
552.60	0.093		
552.70	0.096		
552.80	0.098		
552.90	0.100		
553.00	0.102		
553.10	0.104		
553.20	0.106		
553.30	0.108		
553.40	0.110		
553.50	0.111		
553.60	0.113		
553.70	0.115		
553.80	0.116		
553.90	0.117		
554.00	0.119		
554.10	0.120		