

Stormwater Management Report

Owner:

Rory Synstelien 925 Wayzata Blvd Long Lake, MN 55391

Project: Wilds on Wayzata 925 Wayzata Blvd Long Lake, MN 55391

Engineer's Certification:

All plans and supporting Documentation contained in this report have been reviewed by me and it is hereby certified that to the best of my knowledge the plans comply with the requirements of the ordinance.

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Robert A. Latta P.E.

Registration Number: 59612

Date: 06/26/2024



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2.0 Summary Analysis / Narrative:

2.1 Introduction:

This stormwater management report accompanies the Civil Engineering Plans prepared by Civil Site Group for the subject project and serves as attachment D to the storm water pollution prevention plan (SWPPP). This report includes a summary of the existing and proposed site conditions, the stormwater requirements of relevant regulatory agencies, and proposed design calculations and data to meet the requirements.

2.2 Existing Site Conditions:

Site Description:

The existing site is currently one single family home. The existing site surface coverage areas are shown in the table below:

Existing Conditions

Drainage Area	Impervic	ous Area	Perviou	us Area	Tota	Area
	Area [SF]	CN Value	Area [SF]	CN Value	Area [SF]	CN Value
EX1 TO ROAD	5991	98	33663	74	39654	78
EX2 TO ADJACENT PROPERTY TO WEST	0	98	13009	74	13009	74

Existing Soils:

A geotechnical evaluation is not available at this time. USDA Web Soil Survey shows Lester Loam with an HSG 'C' designation, and Hamel-Glencoe Complex with HSG 'C/D' designation. Soils are poor for infiltration and filtration basins with draintile will be utilized for stormwater treatment.

Groundwater:

Groundwater observations are not available at this time.

2.3 Proposed Site Conditions:

Site Description:

The proposed site is a development of the parcel into four single-family homes with parking, landscaping, and aboveground stormwater management. The proposed site surface coverage areas are shown in the table below:

Proposed Conditions						
Drainage Area	Impervio	ous Area	Pervio	us Area	Tota	Area
	Area [SF]	CN Value	Area [SF]	CN Value	Area [SF]	CN Value
2S TO RAIN GARDEN 1	7572	98	11823	74	19395	83
4S TO RAIN GARDEN 2	11156	98	17847	74	29003	83
7S TO ADJACENT PROPERTY TO WEST	0	98	2641	74	2641	74
8S TO ROAD	1032	98	592	74	1624	89

2.4 Stormwater Requirements City (Long Lake):

The City of Long Lake defers to Minnehaha Creek Watershed District requirements.

2.5 Stormwater Requirements Watershed (Minnehaha Creek Watershed District):

Requirement threshold – Redevelopment Projects that are >1 acre, result in an increase in impervious surface and disturb >40% of the site.

Rate Control – Runoff rate may not exceed existing conditions for the 2, 10, 100-yr storm events. Utilize Atlas-14 rainfall data.



Water Quality – Stormwater must be treated prior to discharge to result in no net increase of total phosphorus. If volume control requirements are met, it can be assumed that water quality requirements are satisfied

Volume Control – Stormwater runoff volume must be infiltrated/abstracted onsite in the amount equivalent to one inch (1") of runoff generated from the new or reconstructed impervious surface. If infiltration is infeasible onsite, volume control requirements double to 2.2" of runoff generated from the new or reconstructed impervious surface.

2.6 Stormwater Requirements - Minnesota Pollution Control Agency – NPDES permit (MPCA):

Requirement threshold - A permit is required for projects with a disturbed area over 1 acre in size, Stormwater management is required for a project adding 1-acre of more of NEW impervious surface (reconstructed impervious is not included).

Rate Control – No specific regulation, may not degrade downstream facilities.

Water Quality – Stormwater water quality treatment volume must be provided equal to 1.0" over all new impervious surfaces (includes all newly constructed impervious surfaces only, re-constructed impervious surfaces are not included).

Volume Control – Must consider volume reduction if feasible and not prohibited on site. The required infiltration volume is equal to the water quality volume described above.

3.0 Stormwater Calculations:

3.1 Proposed Stormwater Management Strategy & Facilities Description

Stormwater Management is provided for this site by two aboveground filtration basins. Filtration Rain Garden 1 drains by draintile and overflow outlet to Filtration Rain Garden 2, which drains by draintile and overflow to the catch basin structure in the ROW.

3.2 Rate Control

Rate control per the requirement is provided by live storage within the proposed filtration basins. This information was derived using HydroCAD stormwater modeling software. The existing and proposed runoff rates are shown in the summary table below.



Overall Stormwater Rate Summary		
	Existing Conditions Rate (cfs)	Proposed Conditions Rate (cfs)
2-Year Event	2.09	0.24
10-Year Event	4.26	0.63
100-Year Event	9.59	5.47
Stormwater Rate Summary - To Road		
2-Year Event 10-Year Event	Existing Conditions Rate (cfs) (EX1) 1.66 3.31	Proposed Conditions Rate (cfs) (9R) 0.19 0.61
100-Year Event	7.32	5.06
Stormwater Rate Summary - To Adjacent Property		
	Existing Conditions Rate (cfs) (EX2)	Proposed Conditions Rate (cfs) (7S)
2-Year Event	0.43	0.09
10-Year Event	0.96	0.19
100-Year Event	2.28	0.46

3.3 Water Quality

The proposed stormwater BMP's are designed to capture the prescribed water quality volume meeting the watershed requirements.

3.4 Volume Control

Water quality and volume control requirements are met by providing filtration onsite in the amount equal to 2.2 inches of runoff from the new or reconstructed impervious surfaces. The proposed aboveground filtration basins will be utilized to meet these requirements. Filtration is being provided in lieu of infiltration due to poorly draining soils.

The calculations are shown below:



Stormwater Water Quality and Volume Summary				
Drainage Area	Required Infiltration Vol. Summary		Filtration Volume =	
	New Impv. Area (sf)	Required Volume (cf)	2.2"*Dist. Impv. Area	
2S TO RAIN GARDEN 1	7572	1388		
4S TO RAIN GARDEN 2	11156	2045		
7S TO ADJACENT PROPERTY TO WEST	0	0		
8S TO ROAD	1032	189		
TOTAL	19760	3623		
Proposed BMP Area	Provided Vol (cf)	Drawdo	wn Time Calculations (0.	8"/Hour)
		Inf. Area (sf)	Assoc. Inf. Height (ft)	Drawdown Time (h)
Rain Garden 1	987	822	1.20	9.01
Rain Garden 2	3920	1368	2.87	21.49
Total	4907			

4.0 Conclusions:

To the best of our knowledge, this project meets all State, City, and Watershed stormwater management requirements.

Wilds on Wayzata Civil Site Group - Stormwater Calculations

Existing Conditions

Drainage Area	Impervious Area		Pervious Area		Total Area	
-	Area [SF]	CN Value	Area [SF]	CN Value	Area [SF]	CN Value
EX1 TO ROAD	5991	98	33663	74	39654	78
EX2 TO ADJACENT PROPERTY TO WEST	0	98	13009	74	13009	74

Proposed Conditions

Drainage Area	Impervious Area		Pervious Area		Total Area	
-	Area [SF]	CN Value	Area [SF]	CN Value	Area [SF]	CN Value
2S TO RAIN GARDEN 1	7572	98	11823	74	19395	83
4S TO RAIN GARDEN 2	11156	98	17847	74	29003	83
7S TO ADJACENT PROPERTY TO WEST	0	98	2641	74	2641	74
8S TO ROAD	1032	98	592	74	1624	89

Site Area Summary

	Impervious [SF]	Impervious [AC]	Pervious [SF]	Pervious [AC]	Total [SF]	Total [AC]
Existing Site	5991	0.14	46672	1.07	52663	1.21
Proposed Site	19760	0.45	32903	0.76	52663	1.21

Stormwater Rate Summary

Drainage Area	Existing Rate (cfs)		
-	2-YR [2.94"]	10-YR [4.47"]	100-YR [7.81"]
EX1 TO ROAD	1.66	3.31	7.32
EX2 TO ADJACENT PROPERTY TO WEST	0.43	0.96	2.28
TOTAL (REACH)	2.09	4.26	9.59

Drainage Area	Proposed Conditions Rate (cfs)			
	2-YR [2.94"]	10-YR [4.47"]	100-YR [7.81"]	
Rain Garden 1	0.24	1.73	3.68	
Rain Garden 2	0.07	0.59	4.71	
7S TO ADJACENT PROPERTY	0.09	0.19	0.46	
8S TO ROAD	0.14	0.22	0.42	
TOTAL (REACH)	0.24	0.63	5.47	

Overall Stormwater Rate Summary

	Existing Conditions	Proposed Conditions
	Rate (cfs)	Rate (cfs)
2-Year Event	2.09	0.24
10-Year Event	4.26	0.63
100-Year Event	9.59	5.47

Stormwater Rate Summary - To Road

	Existing Conditions Rate (cfs) (EX1)	Proposed Conditions Rate (cfs) (9R)
2-Year Event	1.66	0.19
10-Year Event	3.31	0.61
100-Year Event	7.32	5.06

Stormwater Rate Summary - To Adjacent Property

	Existing Conditions	Proposed Conditions
	Rate (cfs) (EX2)	Rate (cfs) (7S)
2-Year Event	0.43	0.09
10-Year Event	0.96	0.19
100-Year Event	2.28	0.46

Stormwater Water Quality and Volume Summary

Drainage Area	Required Infiltrati	Filtration Volume =	
	New Impv. Area (sf)	Required Volume (cf)	2.2"*Dist. Impv. Area
2S TO RAIN GARDEN 1	7572	1388	
4S TO RAIN GARDEN 2	11156	2045	
7S TO ADJACENT PROPERTY TO WEST	0	0	
8S TO ROAD	1032	189	
TOTAL	19760	3623	

Proposed BMP Area	Provided Vol (cf)	Drawdown Time Calculations (0.8"/Hour)						
		Inf. Area (sf)	Assoc. Inf. Height (ft)	Drawdown Time (h)				
Rain Garden 1	987	822	1.20	9.01				
Rain Garden 2	3920	1368	2.87	21.49				
Total	4907							





EXISTING D

5000 Glenwood Avenue Golden Valley, MN 55422 612-615-0060 www.CivilSiteGroup.com







5000 Glenwood Avenue Golden Valley, MN 55422 612-615-0060 www.CivilSiteGroup.com

PROPOSED [



Project Notes

Rainfall events imported from "20163 PROPOSED.hcp" Rainfall events imported from "20163 PROPOSED.hcp"

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type II 24-hr		Default	24.00	1	2.86	2
2	10-Year	Type II 24-hr		Default	24.00	1	4.26	2
3	100-Year	Type II 24-hr		Default	24.00	1	7.32	2

Rainfall Events Listing

Area Listing (all nodes)

Area	CN	Description
(acres)		(subcatchment-numbers)
1.071	74	>75% Grass cover, Good, HSG C (EX1, EX2)
0.138	98	Paved parking, HSG C (EX1)
1.208	77	TOTAL AREA

Soil Listing (all nodes)

Area	Soil	Subcatchment
(acres)	Group	Numbers
0.000	HSG A	
0.000	HSG B	
1.208	HSG C	EX1, EX2
0.000	HSG D	
0.000	Other	
1.208		TOTAL AREA

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0.138

1.208

0.000

0.000

0.000

0.000

EX1

Paved parking

TOTAL AREA

0.138

1.208

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	1.071	0.000	0.000	1.071	>75% Grass cover, Good	EX1, EX2			

0.000

0.000

0.000

0.000

20163 EXISTING	Type II 24-hr 2-Year Rainfall=2.86"
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HydroCAD® 10.20-4a s/n 02202 © 2023 Hydro	CAD Software Solutions LLC Page 7
Time span=0.00-2 Runoff by SCS TF Reach routing by Stor-Ind	40.00 hrs, dt=0.01 hrs, 24001 points R-20 method, UH=SCS, Weighted-Q method - Pond routing by Stor-Ind method
Subcatchment EX1: EX1 - TO ROAD	Runoff Area=39,624 sf 15.12% Impervious Runoff Depth=1.09" Tc=6.0 min CN=WQ Runoff=1.66 cfs 0.083 af
Subcatchment EX2: EX2 - TO ADJACENT	Runoff Area=13,009 sf 0.00% Impervious Runoff Depth=0.82" Tc=6.0 min CN=74 Runoff=0.43 cfs 0.020 af
Reach 1R: TOTAL	Inflow=2.09 cfs 0.103 af Outflow=2.09 cfs 0.103 af
Total Runoff Area = 1.208 a	c Runoff Volume = 0.103 af Average Runoff Depth = 1.03" 88.62% Pervious = 1.071 ac 11.38% Impervious = 0.138 ac

Summary for Subcatchment EX1: EX1 - TO ROAD

Runoff = 1.66 cfs @ 11.98 hrs, Volume= 0.083 af, Depth= 1.09" Routed to Reach 1R : TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.86"

A	rea (sf)	CN	Description								
	5,991	98	Paved park	ing, HSG C	C						
	33,633	74	>75% Gras	s cover, Go	ood, HSG C						
	39,624		Weighted A	verage							
	33,633		84.88% Pervious Area								
	5,991		15.12% Imp	pervious Are	rea						
Tc (min)	Length (feet)	Slop (ft/f	e Velocity) (ft/sec)	Capacity (cfs)	Description						
6.0					Direct Entry,						

Subcatchment EX1: EX1 - TO ROAD





Summary for Subcatchment EX2: EX2 - TO ADJACENT PROPERTY TO WEST

Runoff = 0.43 cfs @ 11.98 hrs, Volume= Routed to Reach 1R : TOTAL 0.020 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.86"

A	rea ((sf)	C	١	De	scri	iptic	n																	
	13,009 74 >75% Grass cover, Good, HSG C																								
	13,009 100.00% Pervious Area																								
Tc (min)	Ler (f	ngth eet)	S	Slope Velocity Capacity Description (ft/ft) (ft/sec) (cfs)																					
6.0												Dir	ect	En	try,										
Subcatchment EX2: EX2 - TO ADJACENT PROPERTY TO WEST Hydrograph																									
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Summary for Reach 1R: TOTAL

[40] Hint: Not Described (Outflow=Inflow)

Inflow Are	ea =	1.208 ac,	11.38% Impe	ervious,	Inflow Depth =	1.()3" for 2-Y	ear event
Inflow	=	2.09 cfs @	11.98 hrs,	Volume	= 0.103	af		
Outflow	=	2.09 cfs @	11.98 hrs,	Volume	= 0.103	af,	Atten= 0%,	Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 1R: TOTAL

20163 EXISTING	Type II 24-hr 10-Year Rainfall=4.26"
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Time span=0.00-2 Runoff by SCS TF Reach routing by Stor-Ind	40.00 hrs, dt=0.01 hrs, 24001 points R-20 method, UH=SCS, Weighted-Q method - Pond routing by Stor-Ind method
Subcatchment EX1: EX1 - TO ROAD	Runoff Area=39,624 sf 15.12% Impervious Runoff Depth=2.13" Tc=6.0 min CN=WQ Runoff=3.31 cfs 0.161 af
Subcatchment EX2: EX2 - TO ADJACENT	Runoff Area=13,009 sf 0.00% Impervious Runoff Depth=1.79" Tc=6.0 min CN=74 Runoff=0.96 cfs 0.045 af
Reach 1R: TOTAL	Inflow=4.26 cfs 0.206 af Outflow=4.26 cfs 0.206 af
Total Runoff Area = 1.208 a	nc Runoff Volume = 0.206 af Average Runoff Depth = 2.04'' 88.62% Pervious = 1.071 ac 11.38% Impervious = 0.138 ac

0.161 af, Depth= 2.13"

Summary for Subcatchment EX1: EX1 - TO ROAD

Runoff = 3.31 cfs @ 11.97 hrs, Volume= Routed to Reach 1R : TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=4.26"

A	rea (sf)	CN	Description									
	5,991	98	Paved park	ing, HSG C	C							
	33,633	74	>75% Gras	s cover, Go	lood, HSG C							
	39,624		Weighted A	verage								
	33,633		84.88% Pervious Area									
	5,991		15.12% Imp	pervious Are	rea							
Tc	Length	Slope	e Velocity	Capacity	Description							
<u>(min)</u>	(feet)	(ft/ft) (ft/sec)	(cfs)								
6.0					Direct Entry,							

Subcatchment EX1: EX1 - TO ROAD



Summary for Subcatchment EX2: EX2 - TO ADJACENT PROPERTY TO WEST

Runoff = 0.96 cfs @ 11.98 hrs, Volume= Routed to Reach 1R : TOTAL 0.045 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=4.26"



Summary for Reach 1R: TOTAL

[40] Hint: Not Described (Outflow=Inflow)

Inflow Ar	rea =	1.208 ac, 1	11.38% Impervious,	Inflow Depth = 2.0	04" for 10-Year event
Inflow	=	4.26 cfs @	11.97 hrs, Volume	= 0.206 af	
Outflow	=	4.26 cfs @	11.97 hrs, Volume	= 0.206 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 1R: TOTAL

20163 EXISTING	Type II 24-hr 100-Year Rainfall=7.32"
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Time span=0.00-2 Runoff by SCS TF Reach routing by Stor-Ind	40.00 hrs, dt=0.01 hrs, 24001 points R-20 method, UH=SCS, Weighted-Q method - Pond routing by Stor-Ind method
Subcatchment EX1: EX1 - TO ROAD	Runoff Area=39,624 sf 15.12% Impervious Runoff Depth=4.74" Tc=6.0 min CN=WQ Runoff=7.32 cfs 0.359 af
Subcatchment EX2: EX2 - TO ADJACENT	Runoff Area=13,009 sf 0.00% Impervious Runoff Depth=4.32" Tc=6.0 min CN=74 Runoff=2.28 cfs 0.108 af
Reach 1R: TOTAL	Inflow=9.59 cfs 0.467 af Outflow=9.59 cfs 0.467 af
Total Runoff Area = 1.208 a	c Runoff Volume = 0.467 af Average Runoff Depth = 4.64" 88.62% Pervious = 1.071 ac 11.38% Impervious = 0.138 ac

Summary for Subcatchment EX1: EX1 - TO ROAD

Runoff = 7.32 cfs @ 11.97 hrs, Volume= 0.359 af, Depth= 4.74" Routed to Reach 1R : TOTAL

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=7.32"

A	rea (sf)	CN	Description						
	5,991	98	Paved park	ing, HSG C	0				
	33,633	74	>75% Gras	s cover, Go	ood, HSG C				
	39,624		Weighted Average						
	33,633		84.88% Pervious Area						
	5,991		15.12% Imp	pervious Are	rea				
				_					
Tc	Length	Slope	e Velocity	Capacity	Description				
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)					
6.0					Direct Entry,				
					-				

Subcatchment EX1: EX1 - TO ROAD



Summary for Subcatchment EX2: EX2 - TO ADJACENT PROPERTY TO WEST

Runoff = 2.28 cfs @ 11.97 hrs, Volume= Routed to Reach 1R : TOTAL 0.108 af, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=7.32"



Summary for Reach 1R: TOTAL

[40] Hint: Not Described (Outflow=Inflow)

Inflow Are	a =	1.208 ac, 1	1.38% Impe	ervious,	Inflow Depth =	= 4.6	64" for 10	00-Year event
Inflow	=	9.59 cfs @	11.97 hrs,	Volume	= 0.46	7 af		
Outflow	=	9.59 cfs @	11.97 hrs,	Volume	= 0.46	7 af,	Atten= 0%	, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 1R: TOTAL



Project Notes

Rainfall events imported from "Atlas-14-Rain.txt" for 543 MN Hennepin Rainfall events imported from "Atlas-14-Rain.txt" for 543 MN Hennepin Rainfall events imported from "Atlas-14-Rain.txt" for 543 MN Hennepin Rainfall events imported from "Atlas-14-Rain.txt" for 543 MN Hennepin

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						•		
 Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
 1	2-Year	Type II 24-hr		Default	24.00	1	2.86	2
2	10-Year	Type II 24-hr		Default	24.00	1	4.26	2
3	100-Year	Type II 24-hr		Default	24.00	1	7.32	2

Rainfall Events Listing

Area Listing (all nodes)

Area	CN	Description
(acres)		(subcatchment-numbers)
0.755	74	>75% Grass cover, Good, HSG C (2S, 4S, 7S, 8S)
0.454	98	Paved parking, HSG C (2S, 4S, 8S)
1.209	83	TOTAL AREA

Soil Listing (all nodes)

Area	Soil	Subcatchment
(acres)	Group	Numbers
0.000	HSG A	
0.000	HSG B	
1.209	HSG C	2S, 4S, 7S, 8S
0.000	HSG D	
0.000	Other	
1.209		TOTAL AREA

20163 PROPOSED

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	0.755	0.000	0.000	0.755	>75% Grass cover, Good	2S, 4S, 7S, 8S
0.000	0.000	0.454	0.000	0.000	0.454	Paved parking	2S, 4S, 8S
0.000	0.000	1.209	0.000	0.000	1.209	TOTAL AREA	

20163 PROPOSED Prepared by Civil Site Group HydroCAD® 10.20-4a s/n 02202 © 2023 Hyd	Type	II 24-hr 2-Year Rainfall=2.86" Printed 6/26/2024 Page 7
Time span=0.00- Runoff by SCS T Reach routing by Stor-In	240.00 hrs, dt=0.01 hrs, 24001 R-20 method, UH=SCS, Weigh d method - Pond routing by St	points Ited-Q or-Ind method
Subcatchment 2S: TO RAIN GARDEN 1	Runoff Area=19,395 sf 39.04% Tc=6.0 min C	% Impervious Runoff Depth=1.53" N=WQ Runoff=1.09 cfs 0.057 af
Subcatchment 4S: TO RAIN GARDEN 2	Runoff Area=29,003 sf 38.46% Tc=6.0 min C	% Impervious Runoff Depth=1.52" N=WQ Runoff=1.61 cfs 0.084 af
Subcatchment 7S: TO ADJACENT	Runoff Area=2,641 sf 0.00% Tc=6.0 min	% Impervious Runoff Depth=0.82" CN=74 Runoff=0.09 cfs 0.004 af
Subcatchment 8S: TO ROAD	Runoff Area=1,624 sf 63.55% Tc=0.0 min C	% Impervious Runoff Depth=1.97" N=WQ Runoff=0.14 cfs 0.006 af
Reach 7R: TOTAL		Inflow=0.24 cfs 0.151 af Outflow=0.24 cfs 0.151 af
Reach 9R: ROAD		Inflow=0.19 cfs 0.147 af Outflow=0.19 cfs 0.147 af
Pond 3P: RAIN GARDEN 1 Primary=0.24 cfs	Peak Elev=970.07' Storage= 0.057 af Secondary=0.00 cfs 0.	1,049 cf Inflow=1.09 cfs 0.057 af 000 af Outflow=0.24 cfs 0.057 af
Pond 6P: RAIN GARDEN 2 Primary=0.07 cfs	Peak Elev=966.72' Storage= 0.141 af Secondary=0.00 cfs 0.	2,446 cf Inflow=1.64 cfs 0.141 af 000 af Outflow=0.07 cfs 0.141 af
		Assessed During off Danth = 4 CO

Total Runoff Area = 1.209 acRunoff Volume = 0.151 afAverage Runoff Depth = 1.50"62.48% Pervious = 0.755 ac37.52% Impervious = 0.454 ac

Summary for Subcatchment 2S: TO RAIN GARDEN 1

Runoff = 1.09 cfs @ 11.97 hrs, Volume= Routed to Pond 3P : RAIN GARDEN 1 0.057 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.86"

A	rea (sf)	CN	Description					
	7,572	98	Paved park	ing, HSG C	2			
	11,823	74	>75% Gras	s cover, Go	ood, HSG C			
	19,395		Weighted Average					
	11,823		60.96% Pervious Area					
	7,572		39.04% Imp	pervious Are	rea			
То	Longth	Slon	o Volocity	Capacity	Description			
(min)	(feet)	Siop (ft/f	the fit sec (cfs)					
		(101		(013)				
6.0					Direct Entry,			

Subcatchment 2S: TO RAIN GARDEN 1



0.084 af, Depth= 1.52"

Summary for Subcatchment 4S: TO RAIN GARDEN 2

Runoff = 1.61 cfs @ 11.97 hrs, Volume= Routed to Pond 6P : RAIN GARDEN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.86"

A	rea (sf)	CN	Description					
	11,156	98	Paved park	ing, HSG C	2			
	17,847	74	>75% Gras	s cover, Go	ood, HSG C			
	29,003		Weighted Average					
	17,847		61.54% Pervious Area					
11,156 38.46% Impervious Are			38.46% Imp	pervious Are	rea			
Тс	Length	Slope	e Velocity	Capacity	Description			
<u>(min)</u>	(feet)	(ft/ft	(ft/ft) (ft/sec) (cfs)					
6.0					Direct Entry,			
					-			

Subcatchment 4S: TO RAIN GARDEN 2




Summary for Subcatchment 7S: TO ADJACENT PROPERTY TO WEST

Runoff = 0.09 cfs @ 11.98 hrs, Volume= Routed to Reach 7R : TOTAL 0.004 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.86"



Summary for Subcatchment 8S: TO ROAD

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.14 cfs @ 11.90 hrs, Volume= Routed to Reach 9R : ROAD 0.006 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 2-Year Rainfall=2.86"

Area (sf)	CN	Description
1,032	98	Paved parking, HSG C
592	74	>75% Grass cover, Good, HSG C
1,624		Weighted Average
592		36.45% Pervious Area
1,032		63.55% Impervious Area

Subcatchment 8S: TO ROAD



Summary for Reach 7R: TOTAL

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.209 ac, 3	37.52% Imp	ervious,	Inflow De	epth = 1	.50" fo	or 2-Y	'ear event	
Inflow	=	0.24 cfs @	11.90 hrs,	Volume	=	0.151 af				
Outflow	=	0.24 cfs @	11.90 hrs,	Volume	=	0.151 af	f, Atten=	: 0% ,	Lag= 0.0	min

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 7R: TOTAL

Summary for Reach 9R: ROAD

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.148 ac, 🗧	39.50% Impe	ervious,	Inflow Depth =	1.5	53" for 2-Y	ear event
Inflow	=	0.19 cfs @	11 90 hrs,	Volume	= 0.147	7 af		
Outflow	=	0.19 cfs @	11.90 hrs,	Volume	= 0.147	7 af,	Atten= 0%,	Lag= 0.0 min
Routed	to Reac	h 7R : TOTA	NL .					

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 9R: ROAD

Summary for Pond 3P: RAIN GARDEN 1

Inflow Area = 0.445 ac, 39.04% Impervious, Inflow Depth = 1.53" for 2-Year event Inflow 1.09 cfs @ 11.97 hrs, Volume= 0.057 af = 0.24 cfs @ 12.13 hrs, Volume= Outflow = 0.057 af, Atten= 78%, Lag= 9.3 min Primary = 0.24 cfs @ 12.13 hrs, Volume= 0.057 af Routed to Pond 6P : RAIN GARDEN 2 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Routed to Reach 9R : ROAD

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Peak Elev= 970.07' @ 12.13 hrs Surf.Area= 850 sf Storage= 1,049 cf

Plug-Flow detention time= 329.9 min calculated for 0.057 af (100% of inflow) Center-of-Mass det. time= 329.9 min (1,121.3 - 791.4)

Volume	Invert	Avail.Stor	age Storage [Description	
#1	968.00'	1,99	98 cf Custom	Stage Data (Pr	ismatic) Listed below (Recalc)
Elevation (feet)	n Sui	rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
968.00 969.00 970.00)	236 458 822	0 347 640	0 347 987	
971.00 Device	Routing	1,200 Invert	1,011 Outlet Devices	1,998	
#1 #2 #3	Device 2 Device 4 Device 4	968.00' 966.00' 970.00'	1.600 in/hr Ext 6.0" Vert. Orifi 12.0" Horiz. O Limited to weir	filtration over s ice/Grate C= rifice/Grate (flow at low hea	Surface area 0.600 Limited to weir flow at low heads C= 0.600 ads
#4 #5 \$	Primary Secondary	966.00' 970.50'	12.0'' Vert. Ori 10.0' long x 1 Head (feet) 0. 2.50 3.00 Coef. (English) 3.30 3.31 3.3	fice/Grate C: .0' breadth Bro 20 0.40 0.60) 2.69 2.72 2. 2	 = 0.600 Limited to weir flow at low heads bad-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 1.80 2.00 75 2.85 2.98 3.08 3.20 3.28 3.31
Primary C 4=Orif -2=C	DutFlow Ma ice/Grate (F Drifice/Grate	ax=0.24 cfs (Passes 0.24 e (Passes 0.		/=970.07' (Fre otential flow) s potential flow	ee Discharge) /)

1=Exfiltration (Exfiltration Controls 0.03 cfs)

-3=Orifice/Grate (Weir Controls 0.21 cfs @ 0.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=968.00' (Free Discharge) 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



Pond 3P: RAIN GARDEN 1

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Stage-Area-Storage for Pond 3P: RAIN GARDEN 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
968.00	236	0	970.60	1,049	1,548
968.05	247	12	970.65	1,068	1,601
968.10	258	25	970.70	1,087	1,655
968.15	269	38	970.75	1,106	1,710
900.20	280	52	970.80	1,124	1,700
900.20	292	00 91	970.65	1,143	1,022
900.30	303	01	970.90	1,102	1,000
968 40	325	112	971.00	1,101 1 200	1,900
968 45	336	129	071.00	1,200	1,000
968.50	347	146			
968.55	358	163			
968.60	369	182			
968.65	380	200			
968.70	391	220			
968.75	403	239			
968.80	414	260			
968.85	425	281			
968.90	436	302			
968.95	447	324			
969.00	458	347			
969.05	4/6	370			
969.10	494	395			
969.15	531	420			
969.25	549	473			
969.30	567	501			
969.35	585	530			
969.40	604	559			
969.45	622	590			
969.50	640	622			
969.55	658	654			
969.60	676	687			
969.65	695	722			
969.70	713	757			
969.75	731	793			
969.80	749	830			
909.00	707	000			
969.90	804	907 946			
970.00	822	987			
970.05	841	1.029			
970.10	860	1.071			
970.15	879	1,115			
970.20	898	1,159			
970.25	917	1,204			
970.30	935	1,251			
970.35	954	1,298			
970.40	973	1,346			
970.45	992	1,395			
970.50	1,011	1,445			
970.55	1,030	1,496			

Summary for Pond 6P: RAIN GARDEN 2

[79] Warning: Submerged Pond 3P Primary device # 4 by 0.72'

Inflow Area = 1.111 ac, 38.70% Impervious, Inflow Depth = 1.52" for 2-Year event Inflow = 1.64 cfs @ 11.97 hrs, Volume= 0.141 af Outflow 0.07 cfs @ 15.46 hrs, Volume= = 0.141 af, Atten= 96%, Lag= 209.0 min Primary = 0.07 cfs @ 15.46 hrs, Volume= 0.141 af Routed to Reach 9R : ROAD Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Routed to Reach 9R : ROAD

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Peak Elev= 966.72' @ 15.46 hrs Surf.Area= 1,852 sf Storage= 2,446 cf

Plug-Flow detention time= 391.9 min calculated for 0.141 af (100% of inflow) Center-of-Mass det. time= 391.9 min (1,316.4 - 924.5)

Volume	Invert	Avail.Sto	rage Storage [e Storage Description											
#1	965.00'	9,06	67 cf Custom	Stage Data (Prisma	atic) Listed below (Recalc)										
Elevatio	on Su	rf.Area	Inc.Store	Cum.Store											
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)											
965.0	00	901	0	0											
966.5	50	1,813	2,036	2,036											
967.0	00	1,900	928	2,964											
968.0	00	1,951	1,926	4,889											
969.0	00	1,952	1,952	6,841											
970.0	00	2,500	2,226	9,067											
Device	Routing	Invert	Outlet Devices												
#1	Device 2	965.00'	1.600 in/hr Ext	iltration over Surfa	ace area										
#2	Device 4	963.50'	6.0" Vert. Orifi	ce/Grate C= 0.60	00 Limited to weir flow at low heads										
#3	Device 4	967.50'	12.0" Horiz. O	rifice/Grate C= 0.	.600										
			Limited to weir	flow at low heads											
#4	Primary	963.50'	12.0" Vert. Ori	fice/Grate C= 0.6	500 Limited to weir flow at low heads										
#5	Secondary	969.00'	10.0' long x 1.	0' breadth Broad-0	Crested Rectangular Weir										
			Head (feet) 0.2	20 0.40 0.60 0.80) 1.00 1.20 1.40 1.60 1.80 2.00										
			2.50 3.00												
			Coef. (English)	2.69 2.72 2.75 2	2.85 2.98 3.08 3.20 3.28 3.31										
			3.30 3.31 3.3	2											
Primary	OutFlow M	ax=0.07 cfs (🗊 15.46 hrs HW	/=966.72' (Free Di	ischarge)										

-4=Orifice/Grate (Passes 0.07 cfs of 6.24 cfs potential flow)

-**2=Orifice/Grate** (Passes 0.07 cfs of 1.63 cfs potential flow) **1=Exfiltration** (Exfiltration Controls 0.07 cfs)

-3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=965.00' (Free Discharge)

Pond 6P: RAIN GARDEN 2



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Stage-Area-Storage for Pond 6P: RAIN GARDEN 2

$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Elevation	Surface	Storage	Elevation	Surface	Storage
965.00 901 0 967.65 1,931 4,113 965.05 931 46 967.70 1,936 4,306 965.05 931 967.75 1,938 4,403 965.20 1,023 192 967.85 1,943 4,597 965.30 1,083 228 967.95 1,946 4,684 965.45 1,114 353 967.95 1,948 4,792 965.46 1,175 407 968.05 1,951 4,889 965.45 1,225 588 968.15 1,951 5,182 965.60 1,2266 774 968.30 1,951 5,182 965.65 1,237 760 968.30 1,951 5,172 965.66 1,266 744 968.35 1,951 5,172 965.65 1,337 815 968.45 1,951 5,172 965.65 1,418 965 968.45 1,951 5,172 965.65 1,539 1,261 968.55 1,952 5,665 966.05 <td>(feet)</td> <td>(sq-ft)</td> <td>(cubic-feet)</td> <td>(feet)</td> <td>(sq-ft)</td> <td>(cubic-feet)</td>	(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
965.05 931 46 967.75 1,933 4,210 965.16 992 142 967.75 1,938 4,030 965.20 1,023 192 967.80 1,941 4,500 965.25 1,053 244 967.85 1,943 4,597 965.30 1,083 298 967.90 1,946 4,694 965.45 1,114 353 968.00 1,951 4,897 965.45 1,175 467 968.05 1,951 4,897 965.66 1,205 527 963.10 1,951 5,104 965.65 1,226 650 968.20 1,951 5,279 965.66 1,266 650 968.30 1,951 5,77 965.75 1,357 847 963.35 1,951 5,767 965.90 1,448 1,057 968.55 1,952 5,862 966.15 1,601 950.60 1,952 6,255 966.16<	965.00	901	0	967.60	1,931	4,113
965.10 962 93 967.75 1,936 4,403 965.15 992 142 967.75 1,938 4,403 965.20 1,023 192 967.76 1,941 4,507 965.30 1,083 298 967.90 1,946 4,694 965.40 1,144 409 966.00 1,951 4,889 965.45 1,215 467 968.05 1,951 4,889 965.50 1,205 527 968.10 1,951 5,084 965.55 1,226 650 968.25 1,951 5,172 965.56 1,226 650 968.35 1,951 5,475 965.70 1,327 780 968.35 1,951 5,475 965.75 1,327 780 968.45 1,951 5,475 965.85 1,418 985 968.45 1,951 5,475 965.85 1,418 985 968.45 1,952 5,665	965.05	931	46	967.65	1,933	4,210
995.15 992 142 967.75 1,938 4,403 965.20 1,023 192 967.86 1,941 4,500 965.30 1,083 298 967.90 1,946 4,694 965.35 1,114 353 967.95 1,948 4,792 965.40 1,144 409 968.05 1,951 4,887 965.50 1.205 527 968.10 1,951 5,784 965.65 1.266 650 968.20 1,951 5,775 965.75 1,327 780 968.30 1,951 5,777 965.70 1,327 780 968.45 1,951 5,777 965.80 1,387 915 968.45 1,951 5,767 965.90 1,448 1,057 968.65 1,952 5,962 966.00 1,509 1,225 968.65 1,952 6,255 966.10 1,570 1,339 968.70 1,952 6,255	965.10	962	93	967.70	1,936	4,306
965.201,023192967.801,9414,500965.301,083298967.901,9464,694965.351,114353967.951,9464,792965.401,144409968.001,9514,889965.551,205527968.101,9515,084965.551,235588968.151,9515,182965.601,266650988.201,9515,377965.551,2267,968.101,9515,672965.551,227780968.351,9515,572965.751,327780968.351,9515,672965.751,337947968.351,9515,672965.801,387915968.401,9515,672965.951,4791,130968.651,9525,665965.951,4791,30968.651,9526,660966.051,5391,281968.751,9526,353966.201,6311,519968.801,9526,450966.351,7221,770968.851,9526,450966.451,7831,946969.051,9796,939966.551,8392,309963.252,0437,140966.601,8302,1187,9699,0247,42966.611,601968.951,9526,643966.551,8392,309963.252,0347,140 <td>965.15</td> <td>992</td> <td>142</td> <td>967.75</td> <td>1,938</td> <td>4,403</td>	965.15	992	142	967.75	1,938	4,403
965.25 1,053 244 967.85 1,943 4,594 965.30 1,083 298 967.90 1,946 4,694 965.35 1,114 353 967.95 1,948 4,792 965.45 1,175 467 968.00 1,951 4,987 965.50 1,205 527 968.10 1,951 5,784 965.65 1,226 650 968.20 1,951 5,775 965.75 1,357 847 968.35 1,951 5,772 965.75 1,357 847 968.50 1,951 5,772 965.85 1,418 985 968.45 1,951 5,767 965.95 1,479 1,130 968.55 1,952 5,665 966.00 1,509 1,205 968.60 1,952 6,255 966.15 1,600 1,438 968.75 1,952 6,255 966.15 1,601 968.90 1,952 6,548 <	965.20	1,023	192	967.80	1,941	4,500
965.30 1,083 298 967.90 1,948 4,792 965.30 1,144 409 968.00 1,951 4,889 965.45 1,175 467 968.05 1,951 4,897 965.50 1,205 527 968.10 1,951 5,084 965.66 1,266 650 968.20 1,951 5,182 965.65 1,226 714 968.35 1,951 5,377 965.70 1,327 780 968.35 1,951 5,572 965.80 1,387 915 968.45 1,951 5,670 965.81 1,418 985 968.45 1,951 5,767 965.90 1,448 1,057 968.55 1,952 5,865 966.01 1,509 1,205 968.60 1,952 6,865 966.10 1,600 1,438 968.75 1,952 6,353 966.20 1,631 1,519 968.80 1,952 6,446 <	965.25	1,053	244	967.85	1,943	4,597
965.35 1,114 353 967.95 1,948 4,792 965.40 1,144 409 968.00 1,951 4,889 965.45 1,175 467 968.05 1,951 4,889 965.50 1,205 527 968.10 1,951 5,182 965.60 1,266 650 968.20 1,951 5,182 965.65 1,226 714 968.25 1,951 5,377 965.70 1,327 780 968.30 1,951 5,767 965.80 1,387 915 968.45 1,951 5,767 965.90 1,448 965 968.45 1,952 5,865 966.00 1,509 1,205 968.60 1,952 6,255 966.10 1,570 1,359 968.70 1,952 6,255 966.10 1,570 1,359 968.75 1,952 6,345 966.40 1,752 1,857 969.00 1,952 6,446 <	965.30	1,083	298	967.90	1,946	4,694
965.40 1,144 409 968.00 1,951 4,889 965.45 1,175 467 968.05 1,951 5,084 965.55 1,205 527 968.10 1,951 5,084 965.60 1,266 650 968.20 1,951 5,279 965.65 1,296 714 968.35 1,951 5,377 965.76 1,357 847 968.35 1,951 5,672 965.80 1,387 915 968.45 1,951 5,767 965.90 1,448 1,057 968.50 1,952 5,865 965.90 1,448 1,057 968.60 1,952 5,865 966.10 1,509 1,205 968.60 1,952 6,265 966.10 1,570 1,359 968.75 1,952 6,255 966.20 1,631 1,519 968.80 1,952 6,450 966.20 1,631 1,519 968.80 1,952 6,450	965.35	1,114	353	967.95	1,948	4,792
965.45 1,1/5 467 968.05 1,951 4,987 965.50 1,205 527 968.10 1,951 5,084 965.65 1,226 588 968.15 1,951 5,279 965.65 1,226 6714 968.20 1,951 5,377 965.70 1,327 780 968.35 1,951 5,672 965.80 1,387 915 968.40 1,951 5,672 965.80 1,387 915 968.45 1,951 5,767 965.90 1,448 1,057 968.55 1,952 5,962 966.00 1,509 1,205 968.60 1,952 6,255 966.10 1,570 1,359 968.70 1,952 6,255 966.20 1,631 1,611 968.85 1,952 6,353 966.20 1,631 1,611 968.90 1,952 6,454 966.40 1,752 1,857 969.90 1,952 6,484	965.40	1,144	409	968.00	1,951	4,889
965.50 1,205 527 968.10 1,951 5,084 965.55 1,235 588 968.15 1,951 5,182 965.60 1,266 650 968.20 1,951 5,377 965.70 1,327 780 968.35 1,951 5,572 965.75 1,357 847 968.40 1,951 5,670 965.80 1,448 1,057 968.45 1,951 5,677 965.90 1,448 1,057 968.65 1,952 5,862 966.00 1,559 1,205 968.60 1,952 6,266 966.00 1,559 1,281 968.70 1,952 6,255 966.15 1,600 1,438 968.75 1,952 6,353 966.20 1,631 1,619 968.80 1,952 6,548 966.30 1,691 1,685 968.90 1,952 6,548 966.40 1,752 1,857 969.00 1,952 6,646 <td>965.45</td> <td>1,1/5</td> <td>467</td> <td>968.05</td> <td>1,951</td> <td>4,987</td>	965.45	1,1/5	467	968.05	1,951	4,987
965.55 1,235 588 968.15 1,951 5,182 965.66 1,266 650 968.20 1,951 5,377 965.65 1,327 780 968.30 1,951 5,475 965.75 1,357 847 968.35 1,951 5,670 965.85 1,418 985 968.40 1,951 5,670 965.95 1,448 1,057 968.55 1,952 5,865 965.95 1,448 1,057 968.60 1,952 5,962 966.00 1,509 1,205 968.61 1,952 6,060 966.10 1,570 1,359 968.70 1,952 6,353 966.20 1,631 1,519 968.80 1,952 6,548 966.35 1,722 1,770 968.95 1,952 6,548 966.40 1,752 1,857 969.00 1,952 6,646 966.55 1,822 2,126 969.15 2,034 7,140 <td>965.50</td> <td>1,205</td> <td>527</td> <td>968.10</td> <td>1,951</td> <td>5,084</td>	965.50	1,205	527	968.10	1,951	5,084
965.60 1,266 650 968.20 1,951 5,279 965.60 1,327 780 968.30 1,951 5,377 965.70 1,357 847 968.30 1,951 5,572 965.80 1,387 915 968.45 1,951 5,670 965.85 1,418 985 968.45 1,951 5,767 965.90 1,448 1,057 968.50 1,952 5,865 966.00 1,509 1,205 968.60 1,952 6,158 966.10 1,570 1,359 968.70 1,952 6,255 966.10 1,570 1,359 968.75 1,952 6,353 966.20 1,631 1,519 968.80 1,952 6,454 966.30 1,691 1,685 968.90 1,952 6,743 966.40 1,752 1,857 969.00 1,952 6,743 966.45 1,783 1,946 969.05 1,979 6,939 <td>965.55</td> <td>1,235</td> <td>588</td> <td>968.15</td> <td>1,951</td> <td>5,182</td>	965.55	1,235	588	968.15	1,951	5,182
965.65 1,296 /14 968.25 1,951 5,37/ 965.75 1,327 760 968.30 1,951 5,475 965.75 1,337 915 968.40 1,951 5,670 965.80 1,387 915 968.40 1,951 5,772 965.90 1,448 1,057 968.50 1,952 5,865 965.90 1,448 1,057 968.60 1,952 5,865 966.00 1,509 1,205 968.60 1,952 6,158 966.10 1,570 1,359 968.70 1,952 6,450 966.20 1,631 1,519 968.80 1,952 6,450 966.25 1,661 1,601 968.85 1,952 6,743 966.40 1,752 1,857 969.00 1,952 6,841 966.55 1,822 2,126 969.10 2,007 7,039 966.55 1,833 2,309 969.25 2,089 7,346<	965.60	1,266	650	968.20	1,951	5,279
965.70 $1,327$ 780968.30 $1,951$ $5,475$ 965.80 $1,387$ 915968.35 $1,951$ $5,572$ 965.80 $1,387$ 915968.45 $1,951$ $5,670$ 965.90 $1,448$ $1,067$ 968.50 $1,952$ $5,865$ 965.95 $1,479$ $1,130$ 968.55 $1,952$ $5,962$ 966.00 $1,509$ $1,205$ 968.60 $1,952$ $6,606$ 966.10 $1,570$ $1,359$ 968.70 $1,952$ $6,255$ 966.15 $1,600$ $1,438$ 968.75 $1,952$ $6,353$ 966.20 $1,631$ $1,519$ 968.80 $1,952$ $6,548$ 966.30 $1,691$ $1,685$ 968.90 $1,952$ $6,548$ 966.40 $1,752$ $1,857$ 969.00 $1,952$ $6,646$ 966.50 $1,813$ $2,036$ 969.10 $2,007$ $7,039$ 966.50 $1,813$ $2,036$ 969.10 $2,007$ $7,039$ 966.50 $1,830$ $2,218$ 969.20 $2,062$ $7,242$ 966.65 $1,839$ $2,309$ 969.25 $2,089$ $7,346$ 966.70 $1,848$ $2,402$ 969.30 $2,116$ $7,451$ 966.80 $1,865$ $2,587$ 969.40 $2,171$ $7,665$ 966.95 $1,891$ $2,664$ 969.55 $2,226$ $7,885$ 966.80 $1,865$ $2,587$ 969.40 $2,171$ $7,665$ 966.95 $1,891$ $2,669$ 969.65 $2,308$ $3,249$	965.65	1,296	/14	968.25	1,951	5,377
965.75 1,357 847 968.35 1,951 5,572 965.80 1,387 915 968.40 1,951 5,670 965.95 1,418 985 968.45 1,951 5,767 965.90 1,448 1,057 968.50 1,952 5,865 965.95 1,479 1,130 968.55 1,952 6,060 966.00 1,509 1,205 968.60 1,952 6,060 966.10 1,570 1,359 968.70 1,952 6,353 966.20 1,631 1,519 968.80 1,952 6,450 966.35 1,722 1,770 968.95 1,952 6,646 966.40 1,752 1,857 969.00 1,952 6,644 966.50 1,813 2,036 969.10 2,007 7,039 966.50 1,813 2,030 9,69.25 2,062 7,242 966.65 1,833 2,775 969.30 2,116 7,4	965.70	1,327	/80	968.30	1,951	5,475
965.80 1,387 915 968.40 1,951 5,670 965.85 1,418 985 968.45 1,951 5,767 965.90 1,448 1,057 968.50 1,952 5,865 965.95 1,479 1,130 968.55 1,952 6,060 966.00 1,539 1,281 968.65 1,952 6,060 966.10 1,570 1,359 968.70 1,952 6,353 966.20 1,631 1,519 968.85 1,952 6,450 966.30 1,691 1,685 968.90 1,952 6,644 966.35 1,722 1,770 968.95 1,952 6,743 966.40 1,752 1,857 969.00 1,952 6,841 966.55 1,822 2,18 969.10 2,007 7,039 966.65 1,830 2,218 969.10 2,062 7,242 966.65 1,830 2,218 969.30 2,116 7,4	965.75	1,357	847	968.35	1,951	5,572
965.85 1,418 985 968.45 1,951 5,767 965.90 1,448 1,057 968.50 1,952 5,865 966.00 1,509 1,205 968.60 1,952 6,060 966.05 1,539 1,281 968.65 1,952 6,255 966.10 1,570 1,359 968.70 1,952 6,255 966.20 1,631 1,519 968.85 1,952 6,450 966.30 1,691 1,685 968.90 1,952 6,646 966.35 1,722 1,770 968.95 1,952 6,743 966.40 1,752 1,857 969.05 1,979 6,939 966.55 1,813 2,036 969.10 2,007 7,039 966.55 1,822 2,126 969.15 2,034 7,140 966.65 1,830 2,218 969.35 2,116 7,451 966.75 1,857 2,494 969.35 2,144 7,565 966.85 1,874 2,681 969.40 2,171 <td< td=""><td>965.80</td><td>1,387</td><td>915</td><td>968.40</td><td>1,951</td><td>5,670</td></td<>	965.80	1,387	915	968.40	1,951	5,670
965.90 1,448 1,057 968.50 1,952 5,865 965.95 1,479 1,130 968.55 1,952 5,962 966.00 1,509 1,205 968.60 1,952 6,060 966.05 1,539 1,281 968.65 1,952 6,255 966.10 1,570 1,359 968.70 1,952 6,450 966.20 1,631 1,519 968.80 1,952 6,450 966.25 1,661 1,601 968.85 1,952 6,646 966.30 1,691 1,685 968.90 1,952 6,646 966.35 1,722 1,770 968.95 1,952 6,743 966.40 1,752 1,857 969.00 1,952 6,841 966.55 1,813 2,036 969.15 2,034 7,140 966.60 1,830 2,218 969.30 2,116 7,455 966.75 1,857 2,494 969.35 2,144 <t< td=""><td>965.85</td><td>1,418</td><td>985</td><td>968.45</td><td>1,951</td><td>5,767</td></t<>	965.85	1,418	985	968.45	1,951	5,767
965.95 1,479 1,130 968.55 1,952 5,962 966.00 1,509 1,205 968.60 1,952 6,060 966.10 1,570 1,359 968.70 1,952 6,255 966.15 1,600 1,438 968.75 1,952 6,353 966.20 1,631 1,519 968.80 1,952 6,450 966.30 1,691 1,685 968.90 1,952 6,646 966.35 1,722 1,770 968.95 1,952 6,646 966.40 1,752 1,857 969.00 1,952 6,841 966.45 1,783 1,946 969.05 1,979 6,939 966.55 1,822 2,126 969.15 2,034 7,140 966.60 1,839 2,309 969.25 2,089 7,346 966.70 1,848 2,402 969.30 2,116 7,451 966.80 1,865 2,587 969.40 2,171 <t< td=""><td>965.90</td><td>1,448</td><td>1,057</td><td>968.50</td><td>1,952</td><td>5,865</td></t<>	965.90	1,448	1,057	968.50	1,952	5,865
966.00 1,509 1,205 988.60 1,952 6,060 966.05 1,539 1,281 968.65 1,952 6,158 966.10 1,570 1,359 968.70 1,952 6,255 966.15 1,600 1,438 968.75 1,952 6,450 966.20 1,631 1,519 988.80 1,952 6,646 966.30 1,691 1,685 968.95 1,952 6,646 966.35 1,722 1,770 968.95 1,952 6,841 966.40 1,752 1,857 969.00 1,952 6,841 966.50 1,813 2,036 969.15 2,007 7,039 966.55 1,822 2,126 969.15 2,034 7,140 966.65 1,830 2,218 969.25 2,062 7,242 966.70 1,848 2,402 969.30 2,116 7,451 966.75 1,857 2,494 969.35 2,144 <t< td=""><td>965.95</td><td>1,479</td><td>1,130</td><td>968.55</td><td>1,952</td><td>5,962</td></t<>	965.95	1,479	1,130	968.55	1,952	5,962
966.05 1,539 1,281 968.65 1,952 6,158 966.10 1,570 1,359 968.70 1,952 6,255 966.15 1,600 1,438 968.75 1,952 6,353 966.20 1,631 1,519 968.85 1,952 6,450 966.30 1,691 1,685 968.95 1,952 6,646 966.35 1,722 1,770 968.95 1,952 6,841 966.40 1,752 1,857 969.00 1,952 6,841 966.50 1,813 2,036 969.10 2,007 7,039 966.55 1,822 2,126 969.15 2,034 7,140 966.60 1,830 2,218 969.20 2,062 7,242 966.65 1,839 2,309 969.25 2,144 7,558 966.70 1,848 2,402 969.35 2,144 7,558 966.80 1,865 2,587 969.40 2,171 <t< td=""><td>966.00</td><td>1,509</td><td>1,205</td><td>968.60</td><td>1,952</td><td>6,060</td></t<>	966.00	1,509	1,205	968.60	1,952	6,060
966.10 $1,570$ $1,359$ 968.70 $1,952$ $6,255$ 966.15 $1,600$ $1,438$ 968.75 $1,952$ $6,353$ 966.20 $1,631$ $1,519$ 968.80 $1,952$ $6,450$ 966.25 $1,661$ $1,601$ 968.85 $1,952$ $6,646$ 966.30 $1,691$ $1,685$ 968.90 $1,952$ $6,646$ 966.40 $1,752$ $1,857$ 969.00 $1,952$ $6,841$ 966.45 $1,783$ $1,946$ 969.05 $1,979$ $6,939$ 966.50 $1,813$ $2,036$ 969.10 $2,007$ $7,039$ 966.55 $1,822$ $2,126$ 969.15 $2,034$ $7,140$ 966.66 $1,830$ $2,218$ 969.25 $2,089$ $7,346$ 966.70 $1,848$ $2,402$ 969.30 $2,116$ $7,451$ 966.80 $1,865$ $2,587$ 969.40 $2,171$ $7,665$ 966.80 $1,865$ $2,587$ 969.40 $2,171$ $7,665$ 966.90 $1,883$ $2,775$ 969.50 $2,226$ $7,885$ 966.95 $1,891$ $2,869$ 969.55 $2,308$ $8,225$ 967.10 $1,905$ $3,154$ 969.70 $2,336$ $8,341$ 967.25 $1,913$ $3,440$ 969.85 $2,418$ $8,698$ 967.30 $1,915$ $3,536$ 969.90 $2,445$ $8,819$ 967.35 $1,918$ $3,632$ 969.95 $2,473$ $8,942$ 967.45	966.05	1,539	1,281	968.65	1,952	6,158
966.15 1,600 1,438 968.75 1,952 6,353 966.20 1,631 1,519 968.80 1,952 6,4450 966.25 1,661 1,601 968.85 1,952 6,548 966.30 1,691 1,685 968.90 1,952 6,646 966.40 1,752 1,857 969.00 1,952 6,841 966.45 1,783 1,946 969.05 1,979 6,939 966.50 1,813 2,036 969.10 2,007 7,039 966.60 1,830 2,218 969.25 2,089 7,346 966.70 1,848 2,402 969.30 2,116 7,451 966.75 1,857 2,494 969.35 2,144 7,558 966.80 1,865 2,587 969.40 2,171 7,665 966.85 1,891 2,869 969.55 2,226 7,885 966.90 1,893 3,154 969.75 2,363 <	966.10	1,570	1,359	968.70	1,952	6,255
966.201,6311,519968.801,9526,450966.251,6611,601968.851,9526,548966.301,6911,685968.901,9526,646966.351,7221,770968.951,9526,743966.401,7521,857969.001,9526,841966.501,8132,036969.102,0077,039966.551,8222,126969.152,0347,140966.601,8302,218969.202,0627,242966.651,8392,309969.252,0897,346966.701,8482,402969.302,1167,451966.751,8572,494969.352,1447,558966.801,8652,587969.402,1717,665966.851,8742,681969.452,1997,775966.901,8832,775969.502,2267,885966.951,8912,869969.552,3088,225967.101,9053,154960.702,3368,341967.151,9083,249969.752,3638,459967.201,9103,345969.902,4458,819967.351,9183,632969.952,4738,942967.451,9233,824967.501,9263,920967.551,9284,016970.002,5009,067	966.15	1,600	1,438	968.75	1,952	6,353
966.251,6611,601968.851,9526,548966.301,6911,685968.901,9526,646966.351,7221,770968.951,9526,743966.401,7521,857969.001,9526,841966.451,8132,036969.051,9796,939966.501,8132,036969.102,0077,039966.551,8222,126969.152,0347,140966.601,8302,218969.252,0897,346966.701,8482,402969.302,1167,451966.751,8572,494969.352,1447,558966.801,8652,587969.402,1717,665966.851,8742,681969.552,2267,885966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.702,3368,341967.151,9033,059969.652,3088,225967.101,9103,345969.802,3908,578967.201,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.351,9283,824967.501,9263,920967.551,9283,920969.552,4738,942967.551,9263,920	966.20	1,631	1,519	968.80	1,952	6,450
966.301,6911,685968.901,9526,646966.351,7221,770968.951,9526,743966.401,7521,857969.001,9526,841966.451,7831,946969.051,9796,939966.501,8132,036969.102,0077,039966.551,8222,126969.152,0347,140966.601,8302,218969.202,0627,242966.651,8392,309969.252,0897,346966.701,8482,402969.302,1167,451966.751,8572,494969.352,1447,558966.801,8652,587969.402,1717,665966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.051,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.301,9153,536969.802,3908,578967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.451,9233,824970.002,5009,067967.551,9263,920969.952,4738,942967.551,9263,920	966.25	1,661	1,601	968.85	1,952	6,548
966.35 1,722 1,770 968.95 1,952 6,743 966.40 1,752 1,857 969.00 1,952 6,841 966.45 1,783 1,946 969.05 1,979 6,939 966.50 1,813 2,036 969.10 2,007 7,039 966.55 1,822 2,126 969.15 2,034 7,140 966.65 1,830 2,218 969.20 2,062 7,242 966.65 1,839 2,309 969.25 2,089 7,346 966.70 1,848 2,402 969.30 2,116 7,451 966.75 1,857 2,494 969.35 2,144 7,568 966.80 1,865 2,587 969.40 2,171 7,665 966.90 1,883 2,775 969.50 2,226 7,885 966.90 1,891 2,869 969.55 2,308 8,225 967.10 1,900 2,964 969.60 2,281 <t< td=""><td>966.30</td><td>1,691</td><td>1,685</td><td>968.90</td><td>1,952</td><td>6,646</td></t<>	966.30	1,691	1,685	968.90	1,952	6,646
966.40 $1,52$ $1,87$ 969.00 $1,952$ $6,841$ 966.45 $1,783$ $1,946$ 969.05 $1,979$ $6,939$ 966.50 $1,813$ $2,036$ 969.10 $2,007$ $7,039$ 966.55 $1,822$ $2,126$ 969.15 $2,034$ $7,140$ 966.60 $1,830$ $2,218$ 969.20 $2,062$ $7,242$ 966.65 $1,839$ $2,309$ 969.25 $2,089$ $7,346$ 966.70 $1,848$ $2,402$ 969.30 $2,116$ $7,451$ 966.80 $1,865$ $2,587$ 969.40 $2,171$ $7,665$ 966.80 $1,865$ $2,587$ 969.40 $2,171$ $7,665$ 966.85 $1,874$ $2,681$ 969.45 $2,199$ $7,775$ 966.90 $1,883$ $2,775$ 969.50 $2,226$ $7,885$ 966.95 $1,900$ $2,964$ 969.60 $2,281$ $8,111$ 967.05 $1,903$ $3,059$ 969.65 $2,308$ $8,225$ 967.10 $1,905$ $3,154$ 969.70 $2,336$ $8,341$ 967.25 $1,913$ $3,440$ 969.85 $2,418$ $8,698$ 967.30 $1,915$ $3,536$ 969.90 $2,445$ $8,819$ 967.35 $1,918$ $3,632$ 969.95 $2,473$ $8,942$ 967.45 $1,923$ $3,824$ 967.50 $1,926$ $3,920$ 967.55 $1,928$ $4,016$ $4,016$ $4,016$	966.35	1,722	1,770	968.95	1,952	6,743
966.45 1,783 1,946 969.05 1,979 6,939 966.50 1,813 2,036 969.10 2,007 7,039 966.55 1,822 2,126 969.15 2,034 7,140 966.60 1,830 2,218 969.20 2,062 7,242 966.65 1,839 2,309 969.25 2,089 7,346 966.70 1,848 2,402 969.30 2,116 7,451 966.75 1,857 2,494 969.35 2,144 7,558 966.80 1,865 2,587 969.40 2,171 7,665 966.85 1,874 2,661 969.45 2,199 7,775 966.90 1,883 2,775 969.50 2,226 7,885 966.95 1,891 2,869 969.55 2,308 8,225 967.00 1,900 2,964 969.60 2,281 8,111 967.05 1,903 3,059 969.65 2,308 <t< td=""><td>966.40</td><td>1,752</td><td>1,857</td><td>969.00</td><td>1,952</td><td>6,841</td></t<>	966.40	1,752	1,857	969.00	1,952	6,841
966.501,8132,036969.102,0077,039966.551,8222,126969.152,0347,140966.601,8302,218969.202,0627,242966.651,8392,309969.252,0897,346966.701,8482,402969.302,1167,451966.751,8572,494969.352,1447,558966.801,8652,587969.402,1717,665966.851,8742,681969.552,2267,885966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.051,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.451,9233,824970.002,5009,067967.451,9263,920967.551,9284,016	966.45	1,783	1,946	969.05	1,979	6,939
966.551,8222,126969.152,0347,140966.601,8302,218969.202,0627,242966.651,8392,309969.252,0897,346966.701,8482,402969.302,1167,451966.751,8572,494969.352,1447,558966.801,8652,587969.402,1717,665966.851,8742,681969.552,2267,885966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.051,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.251,9103,345969.802,3908,578967.201,9103,345969.802,3908,578967.351,9133,440969.852,4188,698967.351,9183,632969.952,4738,942967.401,9203,728970.002,5009,067967.451,9284,016969.552,5009,067967.551,9284,016969.552,5009,067	900.50	1,813	2,036	969.10	2,007	7,039
960.601,8302,216969.202,0627,242966.651,8392,309969.252,0897,346966.701,8482,402969.302,1167,451966.751,8572,494969.352,1447,558966.801,8652,587969.402,1717,665966.851,8742,681969.452,1997,775966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.101,9053,154969.702,3368,225967.101,9053,154969.702,3368,341967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.451,9233,824970.002,5009,067967.551,9284,016970.002,5009,067	900.00	1,022	2,120	969.15	2,034	7,140
966.651,8392,309969.252,0897,346966.701,8482,402969.302,1167,451966.751,8572,494969.352,1447,558966.801,8652,587969.402,1717,665966.851,8742,681969.452,1997,775966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.151,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.401,9203,728970.002,5009,067967.551,9284,016970.002,5009,067	900.00	1,830	2,218	969.20	2,062	7,242
960.701,8482,402969.302,1167,451966.751,8572,494969.352,1447,558966.801,8652,587969.402,1717,665966.851,8742,681969.452,1997,775966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.551,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.401,9203,728970.002,5009,067967.551,9284,016970.002,5009,067	900.00	1,039	2,309	969.25	2,069	7,340
966.731,8372,494969.352,1447,338966.801,8652,587969.402,1717,665966.851,8742,681969.452,1997,775966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.551,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.401,9203,728970.002,5009,067967.551,9284,016969.552,5009,067	900.70	1,040	2,402	969.30	2,110	7,451
966.801,8652,867969.402,1717,665966.851,8742,681969.452,1997,775966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.051,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.151,9083,249969.752,3638,459967.201,9103,345969.802,3908,578967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.401,9203,728970.002,5009,067967.551,9284,016969.752,5009,067	900.75	1,007	2,494	969.35	2,144	7,000
966.651,8742,661969.452,1997,775966.901,8832,775969.502,2267,885966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.051,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.401,9203,728970.002,5009,067967.551,9284,016969.552,4089,067	900.00	1,000	2,507	969.40	2,171	7,005
960.901,8832,773969.502,2207,883966.951,8912,869969.552,2537,997967.001,9002,964969.602,2818,111967.051,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.401,9203,728970.002,5009,067967.551,9284,016969.551,9284,016	900.00	1,074	2,001	909.40	2,199	7,773
966.951,8912,609969.552,2337,997967.001,9002,964969.602,2818,111967.051,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.151,9083,249969.752,3638,459967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.401,9203,728970.002,5009,067967.451,9233,824967.501,9263,920967.551,9284,016969.852,4738,942	900.90	1,003	2,115	909.50	2,220	7,005
967.001,9002,904969.002,2818,111967.051,9033,059969.652,3088,225967.101,9053,154969.702,3368,341967.151,9083,249969.752,3638,459967.201,9103,345969.802,3908,578967.251,9133,440969.852,4188,698967.301,9153,536969.902,4458,819967.351,9183,632969.952,4738,942967.401,9203,728970.002,5009,067967.451,9233,824967.501,9263,920967.551,9284,016967.551,9284,016	900.90	1,091	2,009	909.00	2,200	7,997
967.03 1,903 3,039 909.03 2,300 8,223 967.10 1,905 3,154 969.70 2,336 8,341 967.15 1,908 3,249 969.75 2,363 8,345 967.20 1,910 3,345 969.80 2,390 8,578 967.25 1,913 3,440 969.85 2,418 8,698 967.30 1,915 3,536 969.90 2,445 8,819 967.35 1,918 3,632 969.95 2,473 8,942 967.40 1,920 3,728 970.00 2,500 9,067 967.55 1,928 4,016 4,016 4,016 4,016	907.00	1,900	2,904	909.00	2,201	0,111
967.10 1,903 3,134 969.70 2,330 8,341 967.15 1,908 3,249 969.75 2,363 8,459 967.20 1,910 3,345 969.80 2,390 8,578 967.25 1,913 3,440 969.85 2,418 8,698 967.30 1,915 3,536 969.90 2,445 8,819 967.35 1,918 3,632 969.95 2,473 8,942 967.40 1,920 3,728 970.00 2,500 9,067 967.55 1,926 3,920 967.55 1,928 4,016 1	907.05	1,905	3,059	909.00	2,300	0,223
967.13 1,900 3,249 903.73 2,303 8,439 967.20 1,910 3,345 969.80 2,390 8,578 967.25 1,913 3,440 969.85 2,418 8,698 967.30 1,915 3,536 969.90 2,445 8,819 967.35 1,918 3,632 969.95 2,473 8,942 967.40 1,920 3,728 970.00 2,500 9,067 967.55 1,926 3,920 967.55 1,928 4,016 1	907.10	1,905	3,104	909.70	2,330	8 450
967.20 1,910 3,340 969.85 2,418 8,698 967.30 1,915 3,536 969.90 2,445 8,819 967.35 1,918 3,632 969.95 2,473 8,942 967.40 1,920 3,728 970.00 2,500 9,067 967.55 1,926 3,920 967.55 1,928 4,016	907.13	1,900	3,249	909.75	2,303	8 578
967.25 1,915 3,546 303.05 2,416 30,036 967.30 1,915 3,536 969.90 2,445 8,819 967.35 1,918 3,632 969.95 2,473 8,942 967.40 1,920 3,728 970.00 2,500 9,067 967.45 1,923 3,824 967.55 1,928 4,016	967.20	1,013	3,040	060.85	2,000	8 608
967.35 1,918 3,632 969.95 2,473 8,942 967.40 1,920 3,728 970.00 2,500 9,067 967.45 1,923 3,824 967.55 1,928 4,016	967 30	1,015	3,536	969.00	2,410	8 819
967.40 1,920 3,728 970.00 2,500 9,067 967.45 1,923 3,824 970.55 1,926 3,920 967.55 1,928 4,016 1,928 1,928 1,016	967.35	1 018	2,000	969.90	2,773	8 QA2
967.45 1,923 3,824 967.50 1,926 3,920 967.55 1,928 4,016	967.00	1 020	3,002	970 00	2,473	0,042 Q 067
967.55 1,928 4,016	967 45	1 923	3 824	570.00	2,000	3,007
967.55 1,928 4,016	967 50	1 926	3 920			
	967.55	1 928	4 016			
		.,020	1,010			

20163 PROPOSED Prepared by Civil Site Group HydroCAD® 10.20-4a s/n 02202 © 2023 Hyd	roCAD Software Solutions	Type II 24-hr	<i>10-Year Rainfall=4.26"</i> Printed 6/26/2024 Page 20
Time span=0.00-	-240.00 hrs, dt=0.01 hrs,	24001 points	nethod
Runoff by SCS T	⁻ R-20 method, UH=SCS	, Weighted-Q	
Reach routing by Stor-In	d method - Pond routin	g by Stor-Ind m	
Subcatchment 2S: TO RAIN GARDEN 1	Runoff Area=19,395 sf	39.04% Imper	vious Runoff Depth=2.66"
	Tc=6.0) min CN=WQ	Runoff=1.92 cfs 0.099 af
Subcatchment 4S: TO RAIN GARDEN 2	Runoff Area=29,003 sf	38.46% Imperv	vious Runoff Depth=2.65"
	Tc=6.0) min CN=WQ	Runoff=2.86 cfs 0.147 af
Subcatchment 7S: TO ADJACENT	Runoff Area=2,641 s	f 0.00% Imperv	vious Runoff Depth=1.79"
	Tc=6	.0 min CN=74	Runoff=0.19 cfs 0.009 af
Subcatchment 8S: TO ROAD	Runoff Area=1,624 sf	63.55% Imper	vious Runoff Depth=3.21"
	Tc=0.0) min CN=WQ	Runoff=0.22 cfs 0.010 af
Reach 7R: TOTAL			Inflow=0.63 cfs 0.265 af Outflow=0.63 cfs 0.265 af
Reach 9R: ROAD			Inflow=0.61 cfs 0.256 af Outflow=0.61 cfs 0.256 af
Pond 3P: RAIN GARDEN 1	Peak Elev=970.30' S	otorage=1,252 cf	⁻ Inflow=1.92 cfs 0.099 af
Primary=1.73 cfs	0.099 af Secondary=0.0	0 cfs_0.000 af	Outflow=1.73 cfs 0.099 af
Pond 6P: RAIN GARDEN 2	Peak Elev=967.64' S	otorage=4,182 cf	Inflow=4.47 cfs 0.246 af
Primary=0.59 cfs	0.246 af Secondary=0.0	0 cfs 0.000 af	Outflow=0.59 cfs 0.246 af
Total Bunoff Area = 1 200	ac Bunoff Volume - 0	265 of Avera	ao Bunoff Donth - 2 62"

Total Runoff Area = 1.209 acRunoff Volume = 0.265 afAverage Runoff Depth = 2.63"62.48% Pervious = 0.755 ac37.52% Impervious = 0.454 ac

Summary for Subcatchment 2S: TO RAIN GARDEN 1

Runoff = 1.92 cfs @ 11.97 hrs, Volume= Routed to Pond 3P : RAIN GARDEN 1 0.099 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=4.26"

A	rea (sf)	CN	Description													
	7,572	98	Paved park	ing, HSG C	C											
	11,823	74	>75% Gras	5% Grass cover, Good, HSG C												
	19,395		Weighted A	verage												
	11,823	60.96% Pervious Area														
	7,572	7,572 39.04% Impervious Area														
Тс	Length	Slope	e Velocity	Capacity	Description											
<u>(min)</u>	(feet)	(ft/ft) (ft/sec)	(cfs)												
6.0					Direct Entry,											

Subcatchment 2S: TO RAIN GARDEN 1



Summary for Subcatchment 4S: TO RAIN GARDEN 2

Runoff = 2.86 cfs @ 11.97 hrs, Volume= Routed to Pond 6P : RAIN GARDEN 2 0.147 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=4.26"

A	rea (sf)	CN	Description												
	11,156	98	Paved park	ing, HSG C											
	17,847	74	>75% Gras	5% Grass cover, Good, HSG C											
	29,003		Weighted A	verage											
	17,847	7,847 61.54% Pervious Area													
	11,156 38.46% Impervious Area														
Тс	Length	Slop	e Velocity	Capacity	Description										
(min)	(feet)	(ft/fl) (ft/sec)	(cfs)											
6.0					Direct Entry,										
					-										

Subcatchment 4S: TO RAIN GARDEN 2



Summary for Subcatchment 7S: TO ADJACENT PROPERTY TO WEST

Runoff = 0.19 cfs @ 11.98 hrs, Volume= Routed to Reach 7R : TOTAL 0.009 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=4.26"

A	rea (sf)	C١	1	De	scri	iptic	n																	
	2,641	74	1	>7	5%	Gra	ass	cov	ver,	Go	od,	HS	<u>G C</u>											
	2,641			10	0.00)%	Per	viou	us A	rea	I													
Tc (min)	Length (feet)	S (lope ft/ft	e ')	Vel (ft/	ocit sec	y ;)	Cap	oaci (cf:	ty s)	De	scri	ptio	n										
6.0											Dir	ect	En	try,										
		Sı	ıbc	ate	chr	nei	nt 7	7S:	тс	A	DJ		EN	T P	RC)PE	ERT	ΓY	то	W	ES	т		
									Ну	drog	Irapl	h												_
0.21																								_ Runoff
0.2 0.19 0.18																		Ту	pε) 	24	4- ľ	nr	-
0.18 0.17 0.16													1	0-	Ye	ear	R	aiı	fa	all=	=4.	26		-
0.15 [.] 0.14														R	un	OT V	Γ Α	re	a=	2,	64	1 (ST	
0.13 ⁻													Rι	inc)TT	V			e=	0.0	UU A	98		
5 0.12															۲u	nc)tt	De	ept	th=	=1.	.79		-
																			C=	=6.	. 0 I	mi	n	-
0.08																				-0	N	=7	' 4	-
0.06																								-
0.05 0.04																								-
0.03																								
0.01		T											////											ļ
0-	0 10 20	30	40	50	60	70	80	90	100	110 Time	120 120	130 urs)	140	150	160	170	180	190	200	210	220	230	240	

Summary for Subcatchment 8S: TO ROAD

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.22 cfs @ 11.90 hrs, Volume= Routed to Reach 9R : ROAD 0.010 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 10-Year Rainfall=4.26"

Area (sf)	CN	Description
1,032	98	Paved parking, HSG C
592	74	>75% Grass cover, Good, HSG C
1,624		Weighted Average
592		36.45% Pervious Area
1,032		63.55% Impervious Area

Subcatchment 8S: TO ROAD



Summary for Reach 7R: TOTAL

[40] Hint: Not Described (Outflow=Inflow)

Inflow Are	a =	1.209 ac, 3	7.52% Impe	ervious,	Inflow Depth	= 2.6	53" for 10	-Year event
Inflow	=	0.63 cfs @	12.31 hrs,	Volume	= 0.26	35 af		
Outflow	=	0.63 cfs @	12.31 hrs,	Volume	= 0.26	65 af ,	Atten= 0%,	Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 7R: TOTAL

Summary for Reach 9R: ROAD

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.148 ac, 3	39.50% Impe	ervious,	Inflow Depth =	2.67"	for 10-	Year event
Inflow	=	0.61 cfs @	12 31 hrs,	Volume=	= 0.256	af		
Outflow	=	0.61 cfs @	12.31 hrs,	Volume=	= 0.256	af, Att	en= 0%,	Lag= 0.0 min
Routed	to Reac	h 7R : TOTA	L					

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 9R: ROAD

Summary for Pond 3P: RAIN GARDEN 1

Inflow Area = 0.445 ac, 39.04% Impervious, Inflow Depth = 2.66" for 10-Year event Inflow 1.92 cfs @ 11.97 hrs, Volume= 0.099 af = 1.73 cfs @ 12.01 hrs, Volume= 0.099 af, Atten= 10%, Lag= 2.0 min Outflow = Primary = 1.73 cfs @ 12.01 hrs, Volume= 0.099 af Routed to Pond 6P : RAIN GARDEN 2 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Routed to Reach 9R : ROAD

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Peak Elev= 970.30' @ 12.01 hrs Surf.Area= 936 sf Storage= 1,252 cf

Plug-Flow detention time= 235.0 min calculated for 0.099 af (100% of inflow) Center-of-Mass det. time= 235.0 min (1,020.9 - 785.9)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	968.00'	1,99	98 cf Custom	n Stage Data (Pri	ismatic) Listed below (Recalc)
Elevatio (feet	n Su t)	rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
968.0 969.0 970.0	0 0 0	236 458 822 1 200	0 347 640 1 011	0 347 987 1 998	
Device	Routing	Invert	Outlet Device	1,990 es	
#1 #2 #3	Device 2 Device 4 Device 4	968.00' 966.00' 970.00'	1.600 in/hr E 6.0" Vert. Or 12.0" Horiz. (Limited to we	xfiltration over S ifice/Grate C= Orifice/Grate C ir flow at low hea	Surface area 0.600 Limited to weir flow at low heads C= 0.600 ads
#4 #5	Primary Secondary	966.00' 970.50'	12.0'' Vert. O 10.0' long x Head (feet) (2.50 3.00 Coef. (Englis 3.30 3.31 3.	rifice/Grate C= 1.0' breadth Bro 0.20 0.40 0.60 (h) 2.69 2.72 2. 32	= 0.600 Limited to weir flow at low heads bad-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 1.80 2.00 75 2.85 2.98 3.08 3.20 3.28 3.31
Primary 4=Ori 4-2=0	OutFlow Ma fice/Grate (l Orifice/Grate	ax=1.73 cfs (Passes 1.73 e (Passes 0.	<u></u> 0.12.01 hrs H cfs of 7.37 cfs 03 cfs of 1.90	W=970.30' (Fre potential flow) cfs potential flow	ee Discharge) /)

1=Exfiltration (Exfiltration Controls 0.03 cfs)

-3=Orifice/Grate (Weir Controls 1.69 cfs @ 1.79 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=968.00' (Free Discharge) 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



Pond 3P: RAIN GARDEN 1

Stage-Area-Storage for Pond 3P: RAIN GARDEN 1

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
968.00 968.05 968.10 968.15 968.20 968.25 968.30 968.35 968.40 968.45 968.55 968.60 968.65 968.70 968.75 968.80 968.85 968.90 969.25 969.00 969.25 969.20 969.25 969.20 969.25 969.30 969.25 969.40 969.45 969.55 969.60 969.55 969.60 969.55 969.60 969.55 969.60 969.55 969.60 969.55 969.60 969.55 969.60 969.55 969.60 969.55 969.70 969.75 969.80 969.95 969.90 969.75 969.80 969.95 970.00 970.05 970.30 970.35 970.40 970.55	236 247 258 269 280 292 303 314 325 336 347 358 369 380 391 403 414 425 436 447 458 476 494 513 531 549 567 585 604 622 640 658 676 695 713 731 749 767 786 804 822 841 860 879 898 917 935 954 973 992 1,011 1,030	$\begin{array}{c} 0 \\ 12 \\ 25 \\ 38 \\ 52 \\ 66 \\ 81 \\ 96 \\ 112 \\ 129 \\ 146 \\ 163 \\ 182 \\ 200 \\ 239 \\ 260 \\ 290 \\ 260 \\ 290 \\ 290 \\ 200 \\ 290 \\ 20$	970.60 970.75 970.75 970.80 970.95 970.95 971.00	1,049 1,068 1,087 1,106 1,124 1,143 1,162 1,181 1,200	1,548 1,601 1,655 1,710 1,766 1,822 1,880 1,938 1,998

Summary for Pond 6P: RAIN GARDEN 2

[79] Warning: Submerged Pond 3P Primary device # 4 by 1.64'

Inflow Area = 1.111 ac, 38.70% Impervious, Inflow Depth = 2.65" for 10-Year event Inflow = 4.47 cfs @ 11.99 hrs, Volume= 0.246 af Outflow 0.59 cfs @ 12.31 hrs, Volume= = 0.246 af, Atten= 87%, Lag= 19.6 min Primary = 0.59 cfs @ 12.31 hrs, Volume= 0.246 af Routed to Reach 9R : ROAD 0.00 cfs @ 0.00 hrs, Volume= 0.000 af Secondary = Routed to Reach 9R : ROAD

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Peak Elev= 967.64' @ 12.31 hrs Surf.Area= 1,932 sf Storage= 4,182 cf

Plug-Flow detention time= 483.7 min calculated for 0.246 af (100% of inflow) Center-of-Mass det. time= 483.7 min (1,364.4 - 880.7)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	965.00'	9,06	67 cf Custom	Stage Data (Prisn	natic) Listed below (Recalc)
	_				
Elevatio	on Su	rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
965.0	00	901	0	0	
966.5	50	1,813	2,036	2,036	
967.0	00	1,900	928	2,964	
968.0	00	1,951	1,926	4,889	
969.0	00	1,952	1,952	6,841	
970.0	00	2,500	2,226	9,067	
Dovice	Pouting	Invort		c	
	Routing			5	
#1	Device 2	965.00	1.600 in/hr Ex	diltration over Sur	rface area
#2	Device 4	963.50	6.0" Vert. Ori	rice/Grate C= 0.6	SUU Limited to weir flow at low heads
#3	Device 4	967.50	12.0" Horiz. C	Drifice/Grate C=	0.600
	Duine e m		Limited to wei	r flow at low neads	;
#4	Primary	963.50	12.0" vert. OI	The Grate $C = 0$	600 Limited to weir flow at low neads
#5	Secondary	969.00	10.0' long x 1	1.0' breadth Broad	-Crested Rectangular Weir
			Head (feet) 0	.20 0.40 0.60 0.8	30 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00		
			Coef. (English	1) 2.69 2.72 2.75	2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.3	32	
		0 50 6			
Primary	OutFlow M	ax=0.58 cfs (ງງ12.31 hrs H\	/v=967.64°(⊢ree l	Discharge)

-4=Orifice/Grate (Passes 0.58 cfs of 7.21 cfs potential flow)

2=Orifice/Grate (Passes 0.07 cfs of 1.86 cfs potential flow) **1=Exfiltration** (Exfiltration Controls 0.07 cfs)

-3=Orifice/Grate (Weir Controls 0.51 cfs @ 1.20 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=965.00' (Free Discharge)



Pond 6P: RAIN GARDEN 2

Stage-Area-Storage for Pond 6P: RAIN GARDEN 2

Elevation	Surface	Storage	Elevation	Surface	Storage
(teet)	(sq-ft)	(cubic-feet)	(teet)	(sq-ft)	(cubic-feet)
965.00	901	0	967.60	1,931	4,113
965.05	931	46	967.65	1,933	4,210
965.10	962	93	967.70	1,936	4,306
965.15	992	142	967.75	1,938	4,403
965.20	1,023	192	967.80	1,941	4,500
965.25	1,053	244	967.85	1,943	4,597
965.30	1,083	298	967.90	1,946	4,694
965.35	1,114	353	967.95	1,948	4,792
965.40	1,144	409	968.00	1,951	4,889
965.45	1,175	467	968.05	1,951	4,987
965.50	1,205	527	968.10	1,951	5,084
965.55	1,235	588	968.15	1,951	5,182
965.60	1,266	650	968.20	1,951	5,279
965.65	1,296	/14	968.25	1,951	5,377
965.70	1,327	780	968.30	1,951	5,475
965.75	1,357	847	968.35	1,951	5,572
965.80	1,387	915	968.40	1,951	5,670
965.85	1,418	985	968.45	1,951	5,767
965.90	1,440	1,007	900.00	1,952	5,005
965.95	1,479	1,130	900.00	1,952	5,962
900.00	1,509	1,200	900.00	1,952	6,000
900.05	1,559	1,201	900.00	1,952	6 255
966 15	1,570	1,339	968.75	1,952	6 353
966.20	1,000	1,430	900.75	1,952	6,355
966.25	1,001	1,010	968.85	1,002	6 548
966 30	1,001	1,685	968.90	1,002	6 646
966.35	1 722	1 770	968.95	1,952	6 743
966.40	1 752	1 857	969.00	1,952	6 841
966.45	1 783	1,946	969.05	1,002	6,939
966.50	1,700	2 036	969 10	2 007	7 039
966.55	1.822	2,126	969.15	2.034	7,140
966.60	1.830	2.218	969.20	2.062	7.242
966.65	1.839	2.309	969.25	2.089	7.346
966.70	1,848	2,402	969.30	2,116	7.451
966.75	1,857	2,494	969.35	2,144	7,558
966.80	1,865	2,587	969.40	2,171	7,665
966.85	1,874	2,681	969.45	2,199	7,775
966.90	1,883	2,775	969.50	2,226	7,885
966.95	1,891	2,869	969.55	2,253	7,997
967.00	1,900	2,964	969.60	2,281	8,111
967.05	1,903	3,059	969.65	2,308	8,225
967.10	1,905	3,154	969.70	2,336	8,341
967.15	1,908	3,249	969.75	2,363	8,459
967.20	1,910	3,345	969.80	2,390	8,578
967.25	1,913	3,440	969.85	2,418	8,698
967.30	1,915	3,536	969.90	2,445	8,819
967.35	1,918	3,632	969.95	2,473	8,942
967.40	1,920	3,728	970.00	2,500	9,067
967.45	1,923	3,824			
967.50	1,926	3,920			
967.55	1,928	4,016			

20163 PROPOSED Prepared by Civil Site Group HydroCAD® 10.20-4a s/n 02202 © 2023 Hyd	Type II 2	4-hr 100-Year Rainfall=7.32" Printed 6/26/2024 Page 33
Time span=0.00- Runoff by SCS 1 Reach routing by Stor-In	240.00 hrs, dt=0.01 hrs, 24001 p R-20 method, UH=SCS, Weight d method - Pond routing by Sto	ooints ed-Q r-Ind method
Subcatchment 2S: TO RAIN GARDEN 1	Runoff Area=19,395 sf 39.04% Tc=6.0 min CN	Impervious Runoff Depth=5.40" N=WQ Runoff=3.88 cfs 0.200 af
Subcatchment 4S: TO RAIN GARDEN 2	Runoff Area=29,003 sf 38.46% Tc=6.0 min CN	Impervious Runoff Depth=5.38" N=WQ Runoff=5.79 cfs 0.299 af
Subcatchment 7S: TO ADJACENT	Runoff Area=2,641 sf 0.00% Tc=6.0 min 0	Impervious Runoff Depth=4.32" N=74 Runoff=0.46 cfs 0.022 af
Subcatchment 8S: TO ROAD	Runoff Area=1,624 sf 63.55% Tc=0.0 min CN	Impervious Runoff Depth=6.08" N=WQ Runoff=0.42 cfs 0.019 af
Reach 7R: TOTAL		Inflow=5.47 cfs 0.540 af Outflow=5.47 cfs 0.540 af
Reach 9R: ROAD		Inflow=5.06 cfs 0.518 af Outflow=5.06 cfs 0.518 af
Pond 3P: RAIN GARDEN 1 Primary=2.94 cfs	Peak Elev=970.59' Storage=1 0.196 af Secondary=0.73 cfs 0.0	,538 cf Inflow=3.88 cfs 0.200 af 04 af Outflow=3.68 cfs 0.200 af
Pond 6P: RAIN GARDEN 2 Primary=4.71 cfs	Peak Elev=969.00' Storage=6 0.495 af Secondary=0.01 cfs 0.0	,843 cf Inflow=8.69 cfs 0.495 af 00 af Outflow=4.71 cfs 0.495 af
		Assessed Demoff Demth = 5 00

Total Runoff Area = 1.209 acRunoff Volume = 0.540 afAverage Runoff Depth = 5.36"62.48% Pervious = 0.755 ac37.52% Impervious = 0.454 ac

Summary for Subcatchment 2S: TO RAIN GARDEN 1

Runoff = 3.88 cfs @ 11.97 hrs, Volume= Routed to Pond 3P : RAIN GARDEN 1 0.200 af, Depth= 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=7.32"

A	rea (sf)	CN	Description					
	7,572	98	Paved park	ing, HSG C	0			
	11,823	74	>75% Ġras	s cover, Go	ood, HSG C			
	19,395		Weighted A	verage				
	11,823		60.96% Pervious Area					
	7,572		39.04% Impervious Area					
Tc	Length	Slope	e Velocity	Capacity	Description			
<u>(min)</u>	(feet)	(ft/ft) (ft/sec)	(cfs)				
6.0					Direct Entry,			
					-			

Subcatchment 2S: TO RAIN GARDEN 1



0.299 af, Depth= 5.38"

Summary for Subcatchment 4S: TO RAIN GARDEN 2

Runoff = 5.79 cfs @ 11.97 hrs, Volume= Routed to Pond 6P : RAIN GARDEN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=7.32"

A	rea (sf)	CN	Description					
	11,156	98	Paved park	ing, HSG C	0			
	17,847	74	>75% Gras	>75% Grass cover, Good, HSG C				
	29,003		Weighted A	verage				
	17,847		61.54% Pervious Area					
	11,156	38.46% Impervious Area						
Тс	Length	Slope	e Velocity	Capacity	Description			
<u>(min)</u>	(feet)	(ft/ft) (ft/sec)	(cfs)				
6.0					Direct Entry,			

Subcatchment 4S: TO RAIN GARDEN 2



Summary for Subcatchment 7S: TO ADJACENT PROPERTY TO WEST

Runoff = 0.46 cfs @ 11.97 hrs, Volume= Routed to Reach 7R : TOTAL 0.022 af, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=7.32"

Area (sf)	CN Description	
2,641	74 >75% Grass cover, Good, HSG C	
2,641	100.00% Pervious Area	
Tc Length (min) (feet)	Slope Velocity Capacity Description (ft/ft) (ft/sec) (cfs)	
6.0	Direct Entry,	
	Subcatchment 7S: TO ADJACENT PROPERTY TO WEST	
	Hydrograph	
0.5		lunoff
0.48 0.46 cfs 0.46	Type II 24-br	
0.44		
0.4		
0.36	Runoff Area=2,641 st	
0.32	Runoff Volume=0.022 af	
(s) 0.28	Runoff Depth=4.32"	
0 0.24 0.24	Tc=6.0 min	
0.2	CN=74	
0.16		
0.14		
0.1		
0.06		
0.02		
0 10 20	30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 Time (hours)	

Summary for Subcatchment 8S: TO ROAD

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.42 cfs @ 11.90 hrs, Volume= Routed to Reach 9R : ROAD 0.019 af, Depth= 6.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Type II 24-hr 100-Year Rainfall=7.32"

Area (sf)	CN	Description
1,032	98	Paved parking, HSG C
592	74	>75% Grass cover, Good, HSG C
1,624		Weighted Average
592		36.45% Pervious Area
1,032		63.55% Impervious Area

Subcatchment 8S: TO ROAD



Summary for Reach 7R: TOTAL

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.209 ac, 3	7.52% Impe	ervious,	Inflow Depth :	= 5.3	36" for 10	0-Year event
Inflow	=	5.47 cfs @	12.01 hrs,	Volume	= 0.54	0 af		
Outflow	=	5.47 cfs @	12.01 hrs,	Volume	= 0.54	0 af,	Atten= 0%	, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 7R: TOTAL

Summary for Reach 9R: ROAD

[40] Hint: Not Described (Outflow=Inflow)

 Inflow Area =
 1.148 ac, 39.50% Impervious, Inflow Depth =
 5.41" for 100-Year event

 Inflow =
 5.06 cfs @
 12.01 hrs, Volume=
 0.518 af

 Outflow =
 5.06 cfs @
 12.01 hrs, Volume=
 0.518 af, Atten= 0%, Lag= 0.0 min

 Routed to Reach 7R : TOTAL
 TOTAL
 100 min

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs



Reach 9R: ROAD

Summary for Pond 3P: RAIN GARDEN 1

Inflow Area = 0.445 ac, 39.04% Impervious, Inflow Depth = 5.40" for 100-Year event Inflow 3.88 cfs @ 11.97 hrs, Volume= 0.200 af = 3.68 cfs @ 11.99 hrs, Volume= 0.200 af, Atten= 5%, Lag= 1.5 min Outflow = Primary = 2.94 cfs @ 11.99 hrs, Volume= 0.196 af Routed to Pond 6P : RAIN GARDEN 2 Secondary = 0.73 cfs @ 11.99 hrs, Volume= 0.004 af Routed to Reach 9R : ROAD

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Peak Elev= 970.59' @ 11.99 hrs Surf.Area= 1,045 sf Storage= 1,538 cf

Plug-Flow detention time= 142.0 min calculated for 0.200 af (100% of inflow) Center-of-Mass det. time= 142.0 min (918.6 - 776.6)

Volume	Invert	Avail.Stor	age Storage	Description	
#1	968.00'	1,99	8 cf Custom	Stage Data (Pr	ismatic) Listed below (Recalc)
Elevation (feet)	Sur	f.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
968.00		236	0	0	
969.00		458	347	347	
970.00		822	640	987	
971.00		1,200	1,011	1,998	
Device R	louting	Invert	Outlet Device	S	
#1 D	evice 2	968.00'	1.600 in/hr Ex	diltration over S	Surface area
#2 D	evice 4	966.00'	6.0" Vert. Ori	fice/Grate C=	0.600 Limited to weir flow at low heads
#3 D	evice 4	970.00'	12.0'' Horiz. C	Orifice/Grate	C= 0.600
			Limited to wei	r flow at low hea	ads
#4 P	rimary	966.00'	12.0" Vert. Or	rifice/Grate C=	= 0.600 Limited to weir flow at low heads
#5 S	econdary	970.50'	10.0' long x 1 Head (feet) 0 2.50 3.00 Coef. (English	1.0' breadth Bro 0.20 0.40 0.60 1) 2.69 2.72 2.	oad-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 1.80 2.00 75 2.85 2.98 3.08 3.20 3.28 3.31
Primary O	utFlow Ma	ax=2.94 cfs @	ی ۵.۵۵ م.۵۱ 11.99 hrs HV	⊳∠ N=970.59' (Fre	ee Discharge)

4=Orifice/Grate (Passes 2.94 cfs of 7.65 cfs potential flow)

-2=Orifice/Grate (Passes 0.04 cfs of 1.97 cfs potential flow)

1=Exfiltration (Exfiltration Controls 0.04 cfs)

-3=Orifice/Grate (Orifice Controls 2.90 cfs @ 3.70 fps)

Secondary OutFlow Max=0.72 cfs @ 11.99 hrs HW=970.59' (Free Discharge) 5=Broad-Crested Rectangular Weir (Weir Controls 0.72 cfs @ 0.80 fps)



Pond 3P: RAIN GARDEN 1

Prepared by Civil Site Group	
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Stage-Area-Storage for Pond 3P: RAIN GARDEN 1

Elevation (feet)	Surface (sg-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
968.00	236	0	970.60	1,049	1,548
968.05	247	12	970.65	1,068	1,601
968.10	258	25	970.70	1,087	1,655
968.15	269	38	970.75	1,106	1,710
968.20	280	52	970.80	1,124	1,766
968.25	292	66	970.85	1,143	1,822
968.30	303	81	970.90	1,162	1,880
968.35	314	90	970.95	1,181	1,938
968.40	336	112	971.00	1,200	1,990
968.50	347	123			
968.55	358	163			
968.60	369	182			
968.65	380	200			
968.70	391	220			
968.75	403	239			
968.80	414	260			
968.85	425	281			
968.90	436	302			
900.90	447	324			
969.00	430	370			
969.10	494	395			
969.15	513	420			
969.20	531	446			
969.25	549	473			
969.30	567	501			
969.35	585	530			
969.40	604	559			
969.45	622	590			
969.50	658	622 654			
969.60	676	687			
969.65	695	722			
969.70	713	757			
969.75	731	793			
969.80	749	830			
969.85	767	868			
969.90	786	907			
969.95	804	946			
970.00	822	987			
970.05	841	1,029			
970.10	879	1,071			
970.20	898	1,110			
970.25	917	1,204			
970.30	935	1,251			
970.35	954	1,298			
970.40	973	1,346			
970.45	992	1,395			
970.50	1,011	1,445			
970.55	1,030	1,496			
			l		

Summary for Pond 6P: RAIN GARDEN 2

[79] Warning: Submerged Pond 3P Primary device # 4 by 3.00'

Inflow Area = 1.111 ac, 38.70% Impervious, Inflow Depth = 5.35" for 100-Year event Inflow = 8.69 cfs @ 11.97 hrs, Volume= 0.495 af Outflow 4.71 cfs @ 12.08 hrs, Volume= = 0.495 af, Atten= 46%, Lag= 6.3 min Primary = 4.71 cfs @ 12.08 hrs, Volume= 0.495 af Routed to Reach 9R : ROAD 0.01 cfs @ 12.08 hrs, Volume= 0.000 af Secondary = Routed to Reach 9R : ROAD

Routing by Stor-Ind method, Time Span= 0.00-240.00 hrs, dt= 0.01 hrs Peak Elev= 969.00' @ 12.08 hrs Surf.Area= 1,953 sf Storage= 6,843 cf

Plug-Flow detention time= 269.8 min calculated for 0.495 af (100% of inflow) Center-of-Mass det. time= 269.8 min (1,104.6 - 834.8)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	965.00'	9,00	67 cf Custom	Stage Data (Pris	matic) Listed below (Recalc)
Elevatio (fee	on Su	urf.Area (sg-ft)	Inc.Store	Cum.Store	
965 (0	901	0	0	
966.5	50	1.813	2,036	2.036	
967.0	0	1,900	928	2,964	
968.0	00	1,951	1,926	4,889	
969.0	00	1,952	1,952	6,841	
970.0	00	2,500	2,226	9,067	
Device	Routing	Invert	Outlet Device	S	
#1	Device 2	965.00'	1.600 in/hr Ex	filtration over Su	rface area
#2	Device 4	963.50'	6.0" Vert. Ori	fice/Grate C= 0.	600 Limited to weir flow at low heads
#3	Device 4	967.50'	12.0'' Horiz. C	Drifice/Grate C=	0.600
			Limited to wei	r flow at low head	S
#4	Primary	963.50'	12.0" Vert. Or	rifice/Grate C= (0.600 Limited to weir flow at low heads
#5	Secondary	969.00'	10.0' long x 1	1.0' breadth Broad	d-Crested Rectangular Weir
			Head (feet) 0	.20 0.40 0.60 0.	80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 Coof (English		
				1) Z.09 Z.72 Z.75 32	2.85 2.98 3.08 3.20 3.28 3.31
			0.00 0.01 0.0		

Primary OutFlow Max=4.70 cfs @ 12.08 hrs HW=969.00' (Free Discharge)

-4=Orifice/Grate (Passes 4.70 cfs of 8.46 cfs potential flow)

-2=Orifice/Grate (Passes 0.07 cfs of 2.17 cfs potential flow) -1=Exfiltration (Exfiltration Controls 0.07 cfs)

-3=Orifice/Grate (Orifice Controls 4.63 cfs @ 5.90 fps)

Secondary OutFlow Max=0.00 cfs @ 12.08 hrs HW=969.00' (Free Discharge) 5=Broad-Crested Rectangular Weir (Weir Controls 0.00 cfs @ 0.08 fps)



Pond 6P: RAIN GARDEN 2



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Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
965.00	901	0	967.60	1,931	4,113
965.05	931	46	967.65	1,933	4,210
965.10	962	93	967.70	1,936	4,306
965.15	992	142	967.75	1,938	4,403
965.20	1,023	192	967.80	1,941	4,500
965.25	1,053	244	967.85	1,943	4,597
965.30	1,083	298	967.90	1,946	4,694
965.35	1,114	353	967.95	1,948	4,792
965.40	1,144	409	900.00	1,951	4,009
905.45	1,175	407 527	900.00	1,951	4,907
965.50	1,205	527 588	900.10	1,951	5,004
905.55	1,200	500	968 20	1,951	5 270
965.65	1,200	714	968.25	1,951	5 377
965 70	1,200	780	968 30	1,001	5 475
965.75	1,327	847	968 35	1,001	5 572
965.80	1,387	915	968.40	1 951	5 670
965.85	1 418	985	968 45	1,951	5 767
965.90	1 448	1 057	968 50	1,952	5 865
965.95	1,479	1,130	968.55	1,952	5,962
966.00	1.509	1.205	968.60	1,952	6.060
966.05	1,539	1,281	968.65	1,952	6,158
966.10	1,570	1,359	968.70	1,952	6,255
966.15	1,600	1,438	968.75	1,952	6,353
966.20	1,631	1,519	968.80	1,952	6,450
966.25	1,661	1,601	968.85	1,952	6,548
966.30	1,691	1,685	968.90	1,952	6,646
966.35	1,722	1,770	968.95	1,952	6,743
966.40	1,752	1,857	969.00	1,952	6,841
966.45	1,783	1,946	969.05	1,979	6,939
966.50	1,813	2,036	969.10	2,007	7,039
966.55	1,822	2,126	969.15	2,034	7,140
966.60	1,830	2,218	969.20	2,062	7,242
966.65	1,839	2,309	969.25	2,089	7,346
966.70	1,848	2,402	969.30	2,116	7,451
966.75	1,857	2,494	969.35	2,144	7,558
966.80	1,805	2,587	969.40	2,171	7,665
900.00	1,874	2,081	969.45	2,199	7,775
900.90	1,000	2,775	909.00	2,220	7,005
900.95	1,091	2,009	909.00	2,200	7,997 8 111
967.00	1,900	2,904	969.60	2,201	8 225
967.00	1,905	3 154	969.00	2,300	8 341
967.10	1,903	3 249	969.75	2,000	8 459
967.10	1,000	3 345	969.80	2,390	8 578
967.25	1,010	3 440	969.85	2,000	8 698
967.30	1,010	3 536	969.90	2 445	8 819
967.35	1,918	3.632	969.95	2,473	8,942
967.40	1.920	3.728	970.00	2.500	9.067
967.45	1.923	3.824		_,	-,- 5-
967.50	1,926	3,920			
967.55	1,928	4,016			

Stage-Area-Storage for Pond 6P: RAIN GARDEN 2