

Project: Gary Matzner Park

Flood Routing Description: PRE-Development Calculations

Client : Village of Pincecrest

Design Engineer :

Project Address / Location : 6610 N. Kendall Drive

Section/Township/Range: Section 01, Township 55, Range 40

Surfacewater License: Zone: X

FEMA FIRM Information: Redevelopment of existing city owned lot with parking area, playground area and landscaping g

Project Description:

Date: 01/13/2025

Job Number: 13861.00

City: Pinecrest

County: Miami-Dade

State: Florida

Zipcode: 33156

N/A

Total Drainage Basin: 2.890 Acres

Hydrogeologic Information :

Table 1.	1 Day Storm Event			3 Day Storm Event		
RAINFALL DATA	Rainfall Inches	Runoff Inches	Runoff Ac-Ft	Rainfall Inches	Runoff Inches	Runoff Ac-Ft
100 Year Return Period	14.7	8.03	1.935	17.5	10.47	2.521
25 Year Return Period	10.6	4.69	1.129	12.9	6.53	1.572
10 Year Return Period	8.4	2.55	0.614	10.4	4.53	1.092
5 Year Return Period	7.0	2.09	0.504	9.4	3.81	0.919
3 Year Return Period	6.0	1.49	0.359	8.1	2.84	0.685
5 Yr Return Period - 1 Hr	2.9	0.17	0.040			

Runoff estimation - USDA SCS formula

Runoff (in) $Q = \frac{(P - 0.2S)^2}{P + 0.8S}$

Where: P = accumulated rainfall (in.)
S = Soil Storage Value

Table 2. SUMMARY OF FLOOD ROUTING	Agency maps	SBUH Calculated with Q-1 Day Storm		SBUH Calculated with Q-3 Day Storm		SBUH Calculated *Zero Q-3 Day Storm		Calc. 5Yr 1 hour Peak Stage (ft)
		Peak Stage(ft)	Peak Q (CFS)	Peak Stage(ft)	Peak Q (CFS)	Peak Stage(ft)	Peak Q (CFS)	
100 Year Return Period		10.31	0.00	10.53	0.00	10.53	0.00	Zero Q (Water Budget) 9.08
25 Year Return Period		10.01	0.00	10.18	0.00	10.18	0.00	
10 Year Return Period		9.79	0.00	10.00	0.00	10.00	0.00	
5 Year Return Period		9.65	0.00	9.90	0.00	9.90	0.00	
3 Year Return Period		9.56	0.00	9.76	0.00	9.76	0.00	

For 5 yr - 1 hr rainfall, Calculate 5 yr Vol by subtracting Exfil vol in inches from 5 yr 1 h rainfall, then calc Runoff using SCS formula. From stage storage table find Zero Discharge Stage. Uses Max. Elev of Lookup Stage or highest top of EXFIL trench. If exfil vol exceeds 5 year 1 hour vol. Uses Max. Elev of highest top of EXFIL trench.

* Zero Q indicates there is no offsite discharge included in the calculations (only Exfil Trench and Wells). Hypothetical stage calc. for PRE-POST Analysis.

Table 3. WATER QUALITY STORAGE REQUIREMENTS:

Based on Total Drainage Basin Acreage	Ac-Ft
1" x Basin Area	0.241
2.5" x WQPI x (Basin Area 0.00 Inches	0.000
Required Wet Detention (Total basin incl Offsite)	
0.5" Pretreatment-Com. Prjs,x(Basin Area - water area)	0.120
Credit for Inlets in Grass Areas, GAC=0.2" x (TDA	0.048
	N

Table 4. WATER QUALITY STORAGE SOURCE	Basin Storage Elev. (Ac-Ft)	WQ Eq WDV (Ac-Ft)	WQ Eq WDV Inches
Retention (RV) @			
Dry Det. (DDV) @			
Wet Det. (WDV) @			
Equiv WDV=WDV+RV/.5+DDV/.75)		0.000	
Exfil Trench Storage	0.000	0.000	
Total WQ EQ WDV - Provided		0.000	
Total WQ EQ WDV - Required		0.241	1.00

Exfil Vol. in Stage Storage =

(Ac-FT)	(Inches)
0.000	0.00

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Routing Results from Analysis ZERO Offsite Discharge

Table 6. STAGE - DISCHARGE INFORMATION 100 - YEAR STORM - ZERO Offsite Discharge

TIME STEP (HOUR)	Rain Fall RATIO	Rain C*P (IN)	Q Scs (IN)	Inst Q In (CFS)	Sbuh Q (CFS)	Tot Q In (AC-FT)	Sumq Out (AC-FT)	Stored Vol (AC-FT)	Stage Lk-Up (FEET)	Inst Q Lkup (CFS)	Avg. Q Out (CFS)	Step Qout (AC-FT)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
4.00	0.02	0.31	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
8.00	0.05	0.63	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
12.00	0.07	0.94	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
16.00	0.10	1.25	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
20.00	0.12	1.57	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
24.00	0.15	1.88	0.01	0.02	0.01	0.00	0.00	0.00	9.00	0.00	0.00	0.00
28.00	0.18	2.34	0.06	0.07	0.05	0.01	0.00	0.01	9.02	0.00	0.00	0.00
32.00	0.22	2.79	0.14	0.07	0.07	0.03	0.00	0.03	9.07	0.00	0.00	0.00
36.00	0.25	3.25	0.26	0.09	0.09	0.06	0.00	0.06	9.12	0.00	0.00	0.00
40.00	0.29	3.71	0.42	0.11	0.12	0.10	0.00	0.10	9.20	0.00	0.00	0.00
44.00	0.32	4.17	0.60	0.19	0.15	0.14	0.00	0.14	9.28	0.00	0.00	0.00
48.00	0.36	4.62	0.80	0.14	0.15	0.19	0.00	0.19	9.38	0.00	0.00	0.00
52.00	0.40	5.20	1.08	0.31	0.25	0.25	0.00	0.25	9.50	0.00	0.00	0.00
56.00	0.50	6.39	1.75	0.72	0.65	0.41	0.00	0.41	9.59	0.00	0.00	0.00
58.00	0.57	7.37	2.36	1.07	1.04	0.55	0.00	0.55	9.68	0.00	0.00	0.00
59.00	0.63	8.09	2.84	1.64	1.53	0.65	0.00	0.65	9.74	0.00	0.00	0.00
59.50	0.68	8.73	3.30	2.65	2.39	0.74	0.00	0.74	9.79	0.00	0.00	0.00
59.75	0.85	10.91	4.93	19.00	8.02	0.91	0.00	0.91	9.89	0.00	0.00	0.00
60.00	1.02	13.07	6.67	20.29	15.77	1.23	0.00	1.23	10.05	0.00	0.00	0.00
60.50	1.09	14.01	7.45	4.53	7.56	1.67	0.00	1.67	10.22	0.00	0.00	0.00
61.00	1.13	14.50	7.86	2.42	3.22	1.84	0.00	1.84	10.28	0.00	0.00	0.00
62.00	1.18	15.16	8.42	1.41	1.58	2.00	0.00	2.00	10.34	0.00	0.00	0.00
64.00	1.24	15.95	9.11	0.91	0.98	2.18	0.00	2.17	10.41	0.00	0.00	0.00
68.00	1.31	16.88	9.92	0.53	0.59	2.38	0.00	2.38	10.48	0.00	0.00	0.00
72.00	1.36	17.50	10.47	0.40	0.40	2.51	0.00	2.51	10.53	0.00	0.00	0.00
Peak stage						10.53	At hour	72.00				
Peak discharge						0.00	At hour	72.00				

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Routing Results from Analysis WITHOUT Offsite Discharge

Table 8. STAGE - DISCHARGE INFORMATION 10 - YEAR STORM - Zero Offsite Discharge

TIME STEP (HOUR)	Rain Fall RATIO	Rain C*P (IN)	Q Scs (IN)	Inst Q In (CFS)	Sbuh Q (CFS)	Tot Q In (AC-FT)	Sumq Out (AC-FT)	Stored Vol (AC-FT)	Stage Lk-Up (FEET)	Inst Q Lkup (CFS)	Avg. Q Out (CFS)	Step Qout (AC-FT)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
4.00	0.02	0.18	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
8.00	0.05	0.37	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
12.00	0.07	0.56	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
16.00	0.10	0.74	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
20.00	0.12	0.93	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
24.00	0.15	1.12	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
28.00	0.18	1.39	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
32.00	0.22	1.66	0.00	0.00	0.00	0.00	0.00	0.00	7.49	0.00	0.00	0.00
36.00	0.25	1.93	0.01	0.01	0.01	0.00	0.00	0.00	9.00	0.00	0.00	0.00
40.00	0.29	2.20	0.04	0.02	0.02	0.01	0.00	0.01	9.02	0.00	0.00	0.00
44.00	0.32	2.48	0.08	0.05	0.04	0.02	0.00	0.02	9.04	0.00	0.00	0.00
48.00	0.36	2.75	0.13	0.04	0.04	0.03	0.00	0.03	9.06	0.00	0.00	0.00
52.00	0.40	3.09	0.22	0.10	0.08	0.05	0.00	0.05	9.10	0.00	0.00	0.00
56.00	0.50	3.80	0.45	0.26	0.24	0.10	0.00	0.10	9.20	0.00	0.00	0.00
58.00	0.57	4.38	0.69	0.43	0.41	0.16	0.00	0.16	9.31	0.00	0.00	0.00
59.00	0.63	4.81	0.89	0.68	0.63	0.20	0.00	0.20	9.40	0.00	0.00	0.00
59.50	0.68	5.19	1.08	1.13	1.01	0.24	0.00	0.24	9.47	0.00	0.00	0.00
59.75	0.85	6.48	1.80	8.47	3.54	0.31	0.00	0.31	9.53	0.00	0.00	0.00
60.00	1.02	7.77	2.63	9.61	7.21	0.46	0.00	0.46	9.62	0.00	0.00	0.00
60.50	1.09	8.33	3.01	2.22	3.61	0.66	0.00	0.66	9.75	0.00	0.00	0.00
61.00	1.13	8.62	3.21	1.20	1.57	0.75	0.00	0.75	9.80	0.00	0.00	0.00
62.00	1.18	9.01	3.49	0.71	0.79	0.83	0.00	0.83	9.84	0.00	0.00	0.00
64.00	1.24	9.48	3.84	0.46	0.49	0.92	0.00	0.91	9.90	0.00	0.00	0.00
68.00	1.31	10.03	4.25	0.27	0.30	1.02	0.00	1.02	9.96	0.00	0.00	0.00
72.00	1.36	10.40	4.53	0.21	0.20	1.09	0.00	1.09	10.00	0.00	0.00	0.00
				Peak stage		10.00	At hour	72.00				
				Peak discharge		0.00	At hour	72.00				

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Total Drainage Basin: 2.890 Acres
Water Table Elevation = 4.00 Feet
Time of Conc. (hr.) = 0.25
Calculated weighted soil (s) 8.18 Soil Storage Value (S) = Storage under pervious area / Total Area
Calculated CN value 55.0 Soil Storage under pavement and buildings is not considered in computations

N	Y/N -Do you want to limit the Exfiltration Trench Vol. to a maximum of 3.28" over the site?
N	Y/N -Deduct EXFIL Vol. from Rainfall amount rather than include Vol. in Stage Storage table
N	Y/N -Use EXFIL Vol. in Stage Storage, up to Water Quality Vol., without safety Factor of 2.

Table 16. STAGE STORAGE TABLE

Stage Elevation (feet)	Storage (Ac-ft)	Storage (CF)	Depth to water table (Ft)	Compacted Ground storage table			
				1.00	2.00	3.00	4.00
			Ground storage(In)	0.45	1.88	4.95	8.18
4.00	0.000	0	Mean depth to ground water table (ft)=	5.66	(Pervious Area)		
4.50	0.000	0					
5.00	0.000	0					
5.50	0.000	0	Soil Storage Type	Ground Storage Values (In Inches)			
6.00	0.000	0	Depth to Ground Water (Ft)	1	2	3	4
6.50	0.000	0	* Depressional	0.45	1.58	3.3	5.1
7.00	0.000	0	Flatwoods	0.45	1.88	4.05	6.75
7.50	0.000	0	Coastal Type	0.45	1.88	4.95	8.18
8.00	0.000	0	* (Low Flatwoods & Costal Lowlands)				
8.50	0.000	0	Ground Storage Values reflect 25% reduction of Available Storage,				
9.00	0.000	0	to take into account compaction of native soils.				
9.50	0.252	10,974					
10.00	1.086	47,316					
10.50	2.426	105,690					
11.00	3.871	168,634					
11.50	5.316	231,578					
12.00	6.761	294,522					
12.50	8.206	357,466					
13.00	9.651	420,411					

Project:

Gary Matzner Park

Date: 01/13/2025

Flood Routing Description:

PRE-Development Calculations

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Table 17. SITE ACREAGE INFORMATION

Input Information								Imperv. Paved Acres	Perv. Acres	Bldgs. Acres	Non Bldgs. Acres	Water Lake Acres	Perv. Area Avg. El.	perv. acres * avg el
LAND USES		Acres	High Elev.	Low Elev.	% Imperv. Paved	% Bldgs.	% Water							
BASIN TOTALS / AVERAGE		2.890	10.34	4.00	0.00	0.00	0.00	0.00	2.89	0.00	2.89	0.00	9.66	
1	Pervious Area	2.430	10.34	9.00	0	0	0	0.00	2.43	0.00	2.43	0.00	9.67	23.
2														
3	Impervious Area	0.460	10.02	9.20				0.00	0.46	0.00	0.46	0.00	9.61	4.
4														
5														
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BASIN SUBTOTALS / AVG		2.890	10.34	9.00	0.00	0.00	0.00	0.00	2.89	0.00	2.89	0.00	9.66	28.

Table 18. UNDERGROUND STORAGE INFORMATION

Underground Storage	Area (SF)	Top Elev	Bottom Elev	% Voids										
1 Underground Storage 1														
2 Underground Storage 2														
3 Underground Storage 3														
4 Underground Storage 4														
5 Underground Storage 5														
BASIN TOTALS / AVERAGE	2.890	10.34	4.00	0.00	0.00	0.00	0.00	0.00	2.89	0.00	2.89	0.00	9.66	28.
Basin % Imper. for Water Quality Purposes =		0.00												
Basin % Impervious (incl. Bldg., No lakes)=		0.00												

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Detail - Stage - Storage Information

Table 19. STAGE - STORAGE INFORMATION													
	Surface storage (Ac-Ft)												
LAND USES	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.	Elev.
	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00
Total Surface Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.252	1.086
Underground Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Exfil Trench Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.252	1.086
Pervious Area	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.227	0.907
Impervious Area	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.180

Table 20. SOIL - STORAGE INFORMATION
Detail - Soil Storage Information

	LAND USES	Depth to Water Table	Ground Storage Under Pervious	
			Inches	Ac-Ft
	TOTAL/AVERAGE		16.36	1.97
1	Pervious Area	5.67	8.18	1.656
2				
3	Impervious Area	5.61	8.18	0.314
4				
5				
6				
7				
8				
9				
10				
11				
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39				
40				
	TOTAL/AVERAGE		16.36	1.970

Soil Storage Value (S) = Storage under pervious area / Total Area
Soil Storage under pavement and buildings is not considered in computations

S=	8.18
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