

Project: Grove City Self Storage
Location: 5965 Haughn Rd.

IMPERVIOUS AREA CALCULATOR

PROJECT NUMBER: CW-19001
DATE: 05/01/2019

CALCULATED BY: RAB

Tabulation of Impervious Areas

All square footages are based on actual identification of entities within the plan, digitally provided from Autodesk - AutoCAD Civil 3D (Version 2010)

Item	Area (sq-ft)	Area (Ac.)
Ex. Building	23065.00	0.529
Prop. Building	45000.00	1.033
Parking/Sidewalk/Driveway	98881.20	2.270
	166946.20	
		3.833 Acres

Received by
City of Grove City
07-31-19

Crossing Waters Engineering, Inc.
260 S. Main St., Suite A. / P.O. Box 27
Sugar Grove, Ohio 43155
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Printed: 7/16/2019

Project: Grove City Self Storage
 Location: 5965 Haughn Rd.
 Grove City, Ohio

CRITICAL STORM CALCULATIONS

PROJECT NUMBER: CW-19001
 DATE: 04/18/2019

CALCULATED BY: RAB

PEAK VOLUME - UNDEVELOPED 1 YEAR STORM HydroCAD 10.00 Results:

Volume = 0.352 Acre-Ft.
 Flowrate = 6.14 cfs.

PEAK VOLUME - DEVELOPED 1 YEAR STORM HydroCAD 10.00 Results:

Volume = 0.486 Acre-Ft.
 Flowrate = 8.33 cfs.

PERCENT CHANGE IN VOLUME

$$\begin{array}{rclcl}
 0.486 & - & 0.352 & = & 0.134 \\
 \hline
 0.134 & = & 0.381 & = & \mathbf{38.1\%} \\
 0.352 & & & &
 \end{array}$$

THEREFORE, BASED ON INFORMATION FOUND IN THE MORPC STORMWATER MANUAL, THE CRITICAL STORM IS A **5 YEAR STORM**

PERCENT INCREASE IS EQUAL TO OR GREATER THAN:	AND LESS THAN:	CRITICAL STORM FOR RUNOFF LIMITATION WILL BE: (YEARS)
0%	10%	1
10%	20%	2
20%	50%	5
50%	100%	10
100%	250%	25
250%	500%	50
500%	-	100

PEAK FLOW ALLOWABLE RELEASE RATES

CRITICAL STORM = 5 YEAR

Pre-Developed Peak Flow Conditions (Provided from HydroCAD 10.00)

1 YEAR STORM EVENT Q = 6.14 CFS

5 YEAR STORM EVENT Q = 11.23 CFS

The City of Grove City requires all post developed stormwater release rates as follows:

STORM EVENT (YEAR)	ALLOWABLE PEAK FLOW RATE (CFS)	PROPOSED PEAK FLOW RATE AT OUTLET STRUCT. (HydroCAD 10.00) (CFS)
1	6.14	2.04
2	6.14	2.39
5	6.14	2.81
10	11.23	3.24
25	11.23	3.88
50	11.23	4.90
100	11.23	5.02

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STORM DRAINAGE REQUIRED STORAGE VOLUME

PROJECT NUMBER: CW-19001
 DATE: 05/02/2019

CALCULATED BY: RAB

Difference in Increased Runoff Volume

(Based on HydroCAD 10.00 Report)

	Outlet		100 YEAR (AF)	(CU-FT)	-	10 YEAR (AF)	(CU-FT)	=
			1.632	71089.92		0.978	42601.68	
Proposed Underground & Parking Lot Storage								
PARKING (37716)	x	0.5		/	3	=	6286.00	
30" CHAMBERS & STONE						=	22728.00	STORAGE VOLUME REQUIRED = 28488.24
2 x 2 STRUCTURES	x	4	EACH			=	0.00	
3 x 3 STRUCTURES	x	9	EACH			=	0.00	
12" CONDUIT	x	0.7854	EACH			=	0.00	
24" CONDUIT	x	3.142	EACH			=	0.00	
							TOTAL STORAGE VOLUME REQUIRED = 28488.24 CU. FT.	
							Total = <u>29014.00</u>	= 28488.24 CU. FT.
							TOTAL STORAGE VOLUME AVAILABLE = 29014.00 CU. FT.	