STORMWATER MANAGEMENT REPORT

for

Dunkin'

540 W Atlantic Avenue
Delray Beach, FL 33444

Prepared for:

Delray Donuts

Prepared by

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Fort Lauderdale, FL 33309
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_____
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November 4, 2025

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Introduction

The project site is located at 540 W Atlantic Ave, Delray Beach, FL 33444. The Parcel Identification Number associated with this project is 12-43-46-16-01-021-0150. The existing 0.27-acre site has a small restaurant with a total building footprint of 1,129-sf. The building has an associated parking lot for customers and employees. The site does not have any existing drainage structures, and its paving is in very poor condition. The project proposes the demolition of the existing parking lot for the construction of new asphalt and drainage design. The existing building and all other utilities are to remain.

The project site is located within the drainage jurisdiction of the South Florida Water Management District (SFWMD) C-15 Canal Drainage Basin, Palm Beach County and the City of Delray Beach. The vertical datum for the project elevations and calculations refers to the North American Vertical Datum of 1988 (NAVD88) and is expressed in feet. The design storm events for this project are the 10-year 1-day, 25-year 1-day, and 100-year 3-day storm events. A summary of the rainfall requirements for the design storm events is provided in the table below:

Table 1- Design Storm Event Rainfall

Design Storm Event	Design Storm Event Rainfall Depth (Inches)
10-year 1-day	11.00
25-year 3-day	13.00
100-year 3-day	17.00

Pursuant to the FEMA FIRM Panel 12099C0979G, dated December 20, 2024 the project site is located within FEMA Flood Zone X. As such, the building finish floor elevation (F.F.E.) will be designed to be set at or above the proposed peak stage of the 100-year 3-day design storm event. Based on the approved environmental resource permit 50-11142-P of the neighboring property, the groundwater table elevation for the project site is assumed to be 8.50 NAVD.

Design

The proposed drainage system consists of a network of drainage inlets, exfiltration trench, and piping. The proposed drainage system has been designed to discharge small amounts onto neighboring properties or right-of-ways (ROWs). The proposed drainage system has been designed to provide the required water quality volume generated for the proposed development. Below is a site area calculation comparison for the existing and proposed site:

Table 2 – Site Land Use Area Comparison

	Existing			Proposed			Change	
	S.F.	Acres	%	S.F.	Acres	%	S.F.	Acres
Impervious Areas								
Building	1,129	0.03	10.2%	1,297	0.03	11.7%	168	0
VUA	5,953	0.14	53.6%	5,164	0.12	46.5%	-789	-0.02
Sidewalk/Curb/Ramps	297	0.01	2.7%	1,094	0.03	9.8%	796	0.02
Total Impervious Areas	7,380	0.17	66.4%	7,82p0	0.18	68.0%	175	0
Pervious Areas								
Landscape	3,727	0.09	33.6%	3,552	0.08	32.0%	-175	0
Total Pervious Areas	3,727	0.09	33.6%	3,552	0.08	32.0%	-175	0
Total Areas	11,107	0.25	100%	11,107	0.25	100%	0	0

Water Quality

The required water quality treatment volume for the project has been calculated to be either 1-inch over the entire site area or 2.5-inches over the percent impervious area, whichever is greater. Based upon the proposed land use areas, water quality treatment volume will be provided for 2.5-inches over the percent impervious area. As such, the required water quality treatment volume has been calculated to be 0.41 acre-feet, which will be provided by the proposed exfiltration trench Since the project is a commercial development, the site will be required to provide at least 1/2" dry pretreatment volume, which is calculated to be 0.13 acre-feet. The 0.13 acre-feet of dry pretreatment volume will be provided by the proposed exfiltration trench. The exfiltration trench length required to provide the 0.13 acre-feet of dry pretreatment is 21.1 linear feet. The project proposes 72 linear feet of exfiltration trench, which fulfills the dry pretreatment requirement.

Water Quantity

Flood Routings:

Flood routings for the post-condition were performed for the 10-year 1-day, 25-year 3-day and 100-year 3-day storm events to determine the post-development peak stage elevations.

Table 3 - Results Summary

Design Storm Event	Storm Event Rainfall Depth (Inches)	Proposed Peak Stage (NAVD)
5-year 1-day	8.00	15.64
10-year 1-day	11.00	16.18
25-year 3-day	13.00	16.39
100-year 3-day	17.00	16.78

The proposed development minimum design elevations have been set to be in accordance with the flood routing results. A table has been provided below to summarize the minimum design elevations.

Table 4 – Proposed Development Minimum Design Elevations

Design Storm Event	Existing Peak Stage (NAVD)	Proposed Peak Stage (NAVD)	Design Elevations (NAVD)	Description
5-year 1-day	16.33	15.64	15.65	Min. Pavement Elevation
10-year 1-day	16.61	16.18	16.40	Crown of Road Elevation
25-year 3-day	16.79	16.39	16.79	Improvements from Existing
100-year 3-day	17.16	16.78	17.03	Min. Finished Floor Elevation

Pursuant to the summary table provided above, the lowest proposed pavement grade is at Elevation 15.65 NAVD, which is at the calculated peak stage elevation for the 5-year 1-day storm event at Elevation 15.64 NAVD. The 10-year 1-day proposed peak stage of 16.18 NAVD is at or below the crown of road elevation. This is also an improvement from the existing peak stage of 16.61 NAVD. The 25-year 3-day storm event at proposed Elevation 16.39 NAVD is an improvement from the existing 16.79 NAVD. Additionally, the

finished floor elevation for the proposed building will be set at Elevation 17.03 NAVD, which is at or above the peak stage elevation for the 100-year 3-day, storm event which staged 16.78 NAVD.

Conclusion

Based on the analysis and calculation provided, the proposed stormwater management system meets or exceeds the applicable design criteria. As such, we respectively request the project design be approved.
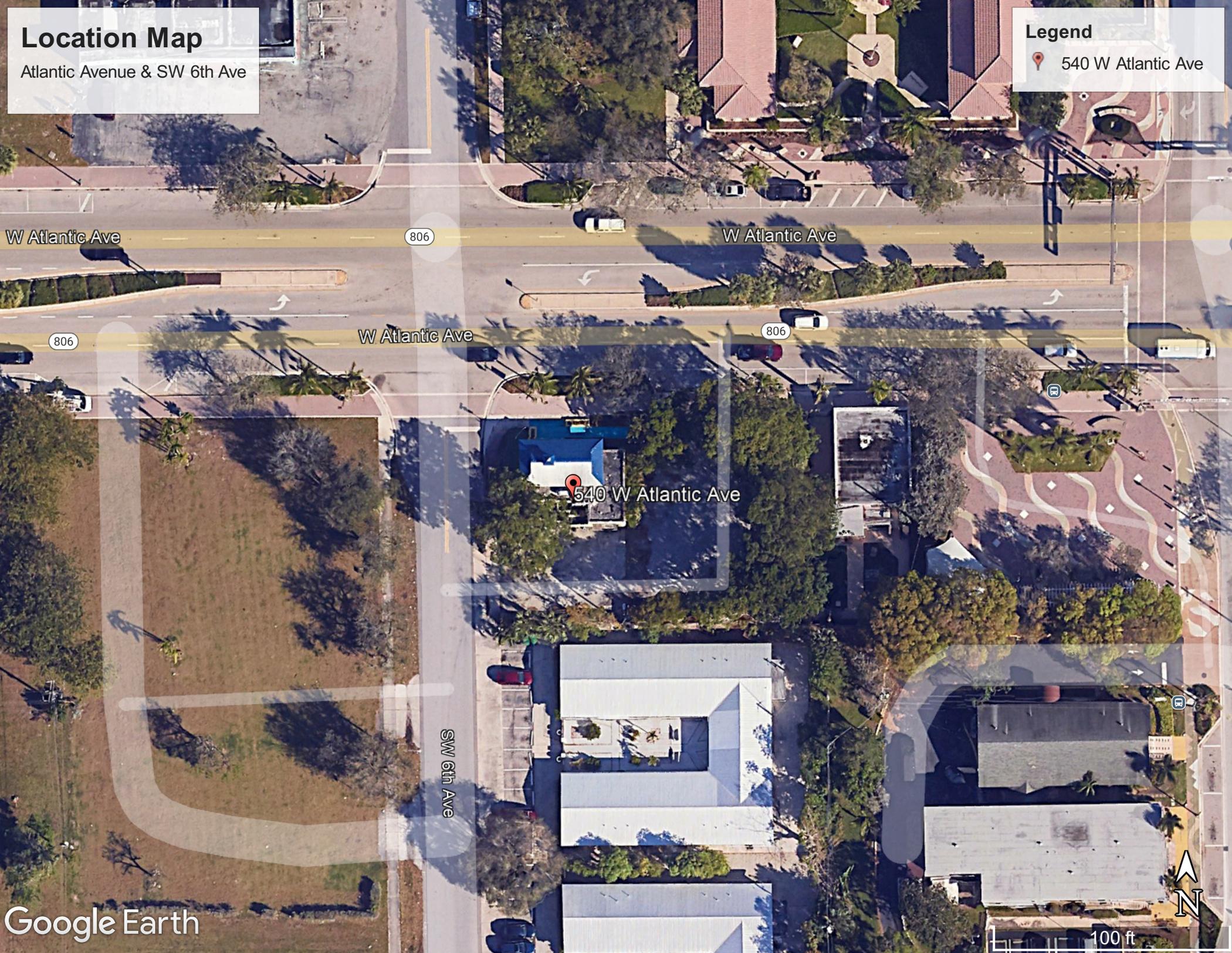
Appendix

Appendix A
Location Map

Location Map
Atlantic Avenue & SW 6th Ave

Legend
📍 540 W Atlantic Ave

W Atlantic Ave
806
W Atlantic Ave
806
W Atlantic Ave
806

SW 6th Ave

540 W Atlantic Ave

Google Earth

N

100 ft

Appendix B

Drainage Calculations

EXISTING SITE DRAINAGE CALCULATIONS

Design Criteria:

Control Elevation: .... 8.50 NAVD
FEMA Base Flood Effective Elevation (Zone AE): .... N/A (Zone X)

Existing Land Use Summary:

Roof Areas (A_R):	1,129	sf	or	0.026 ac
Paved Areas (A_P):	6,250	sf	or	0.143 ac
Green Areas (A_G):	3,728	sf	or	0.086 ac
Total (A_T):	11,107	sf	or	0.255 ac

Compute Water Quality Volume:

1) Provide at least 1 inch over the developed project:

$$V_{PRE} = \text{1 inch x } A_T \text{ x 1 ft / 12 inches}$$
$$= \text{1 x 0.255 / 12}$$
$$= 0.02 \quad \text{ac-ft} \quad \text{or} \quad 0.25 \quad \text{ac-in}$$

2) Provide 2.5" over % impervious area:

   a) Site Area for water quality pervious/impervious calculation:

$$A_S = A_T - (A_L + A_R)$$
$$= \text{0.255 - (0 + 0.026)}$$
$$= 0.229 \quad \text{ac of site area for water quality pervious/impervious}$$

   b) Impervious area for water quality pervious/impervious calculation:

$$A_{IMP} = A_S - A_G$$
$$= \text{0.229 - 0.086}$$
$$= 0.143 \quad \text{ac of impervious area for water quality pervious/impervious}$$

   c) Percent of impervious for water quality calculation:

$$= A_{IMP} / A_S \text{ x 100\%}$$
$$= \text{0.143 / 0.229 x 100\%}$$
$$= 62.6\% \quad \text{impervious}$$

   d) For 2.5" times the percent impervious:

$$= \text{2.5" x \% impervious area}$$
$$= \text{2.5 x 0.626}$$
$$= 1.57 \quad \text{inches to be treated}$$

   e) Compute volume required volume for quality detention

$$V_{PRE} = \text{inches to be treated x } (A_T - A_L)$$
$$= \text{1.57 x (0.255 - 0) x 1 foot / 12 inches)}$$
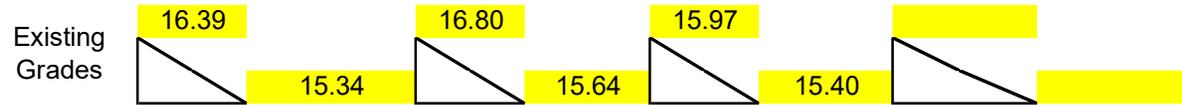$$= 0.03 \quad \text{ac-ft} \quad \text{or} \quad 0.40 \quad \text{ac-in}$$

3) Since the 0.4 ac-in is greater than the 0.25 ac-in computed for the first inch of runoff the volume of 0.4 ac-in controls.

Compute Required Dry Pre-Treatment Water Quality Volume:

1) Provide at least 1/2-inch over the developed project:

$$V_{dry} = \text{0.5 inches x } A_T \text{ x 1 ft / 12 inches}$$
$$= \text{0.5 x 0.255 / 12}$$
$$= 0.01 \quad \text{ac-ft} \quad \text{or} \quad \boxed{0.13 \ \text{ac-in}}$$

Existing Stage / Storage Area Calculation (NAVD)

Existing Grades

16.39	16.80	15.97	
15.34	15.64	15.40	

Stage (NAVD)	Vehicle Pavement Area	Concrete and Curb	Landscape Area	Building Area FFE: 17.03	Total Storage
	Area **0.137**	Area **0.007**	Area **0.086**	Area **0.026**	**0.255** Area
	(ac.-ft.)	(ac.-ft.)	(ac.-ft.)	(ac.-ft.)	(ac.-ft.)
8.50	0.00	0.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00	0.00
12.50	0.00	0.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	0.00	0.00
13.50	0.00	0.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	0.00	0.00
14.50	0.00	0.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	0.00	0.00
15.50	0.00	0.00	0.00	0.00	0.00
16.00	0.03	0.00	0.03	0.00	0.06
16.50	0.09	0.00	0.07	0.00	0.16
17.00	0.16	0.01	0.11	0.00	0.27
17.50	0.22	0.01	0.16	0.00	0.39

Design Criteria	MTK

Control Elevation: .... 8.50 NAVD
FEMA Base Flood Effective Elevation (Zo .... N/A (Zone X)

Existing Land Use Summary

Areas:	Square Ft.	Acres	Percent
Lake	0	0.000	0.0%
Building	1,129	0.026	10.2%
Paved and Sidewalk	6,250	0.143	56.3%
Pervious	3,728	0.086	33.6%
Total Area:	11,107	0.255	100.0%

Existing Stage / Storage Area Calculations (NAVD)

Stage (NAVD)	Site Stage-Storage (Previous Page) (ac.-ft.)	Exfiltration Trench Storage (ac.-ft.)	Total Storage Area (ac.-ft.)
12.00	0.00		0.00
12.50	0.00		0.00
13.00	0.00		0.00
13.50	0.00		0.00
14.00	0.00		0.00
14.50	0.00		0.00
15.00	0.00		0.00
15.50	0.00		0.00
16.00	0.06		0.06
16.50	0.16		0.16
17.00	0.27		0.27
17.50	0.39		0.39

Existing Site Soil Storage

Existing Land Use Summary:

	Acres	Percent
Lake Areas (A_L):	0.000	0.0%
Roof Areas (A_R):	0.026	10.2%
Paved Areas (A_P):	0.143	56.3%
Green Areas (A_G):	0.086	33.6%
Total (A_T):	0.255	100.0%

Compacted Soil Storage per
SFWMD Vol. IV Page C-III-1
Flatwood Classification

Depth to Water Table (feet)	Compacted Water Storage (inches)
1	0.45
2	1.88
3	4.05
4	6.75

Average Pervious Grade (Elev.): 15.69 NAVD
Depth to Water Table: 7.19 ft
Soil Storage at Average Depth (S_S): 6.75 inches

Weighted S value:
= S_S x % Pervious
= 6.75 x 0.336
= **2.27 inches**

CN = 1000/(S+10)
= 82

Storm Events Rainfall Return Period Values

From Figure C-9, 100-Year 3-Day Storm Event = 17.00 inches

From Figure C-8, 25-Year 3-Day Storm Event = 13.00 inches

From Figure C-3, 5-Year 1-Day Storm Event = 8.00 inches

From Figure C-4, 10-Year 1-Day Storm Event = 11.00 inches

Existing Site Flood Routing Results

Runoff (Q) = $(P - 0.2S)^2 / (P + 0.8S)$
= (17 - (0.2 x 2.27))^2 / (17 + (0.8 x 2.27))
= 14.55 inches of total runoff
Runoff Volume = Q * Project Area
= 14.55 x 0.255 = 3.71 acre-inches = 0.31 acre-ft.

Maximum Stage for 100-Year 3-Day Storm (zero discharge)	**17.16** NAVD

Runoff (Q) = $(P - 0.2S)^2 / (P + 0.8S)$
= (13 - (0.2 x 2.27))^2 / (13 + (0.8 x 2.27))
= 10.63 inches of total runoff
Runoff Volume = Q * Project Area
= 10.63 x 0.255 = 2.71 acre-inches = 0.23 acre-ft.

Maximum Stage for 25-Year 3-Day Storm (zero discharge)	**16.79** NAVD

Runoff (Q) = $(P - 0.2S)^2 / (P + 0.8S)$
= (8 - (0.2 x 2.27))^2 / (8 + (0.8 x 2.27))
= 5.80 inches of total runoff
Runoff Volume = Q * Project Area
= 5.8 x 0.255 = 1.48 acre-inches = 0.12 acre-ft.

Maximum Stage for 5-Year 1-Day Storm (zero discharge)	**16.33** NAVD

Runnoff (Q) = (P - 0.2S)^2 / (P + 0.8S)

= (- (0.2 x 2.27))^2 / (+ (0.8 x 2.27))

=   8.68   inches of total runnoff

Runoff Volume = Q * Project Area

= 8.68 x 0.255 =   2.21   acre-inches   =   0.18   acre-ft.

Maximum Stage for 10-Year 1-Day Storm (no discharge)	16.61	NAVD

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Tel: 954-202-7000
Fax: 954-202-7070

Date: 10/31/2025
Project: Dunkin Donuts 540 W Atlantic
Project No: F250004

Calculated By: *SOT*
Checked By: *MTK*

PROPOSED SITE DRAINAGE CALCULATIONS

Design Criteria:

Control Elevation: .... 8.50 NAVD
FEMA Base Flood Effective Elevation (Zone AE): .... N/A (Zone X)

Proposed Land Use Summary:

Roof Areas (A_R):	1,297	sf	or	0.030 ac
Paved Areas (A_P):	6,258	sf	or	0.144 ac
Green Areas (A_G):	3,552	sf	or	0.082 ac
Total (A_T):	11,107	sf	or	0.255 ac

Compute Required Water Quality Volume:

1) Provide at least 1 inch over the developed project:

$$V_{PRE} = 1 \text{ inch} \times A_T \times 1 \text{ ft} / 12 \text{ inches}$$
$$= 1 \times 0.255 / 12$$
$$= 0.02 \quad \text{ac-ft} \quad \text{or} \quad 0.25 \quad \text{ac-in}$$

2) Provide 2.5" over % impervious area:

a) Site Area for water quality pervious/impervious calculation:

$$A_S = A_T - (A_L + A_R)$$
$$= 0.255 - (0 + 0.03)$$
$$= 0.225 \quad \text{ac of site area for water quality pervious/impervious}$$

b) Impervious area for water quality pervious/impervious calculation:

$$A_{IMP} = A_S - A_G$$
$$= 0.226 - 0.082$$
$$= 0.144 \quad \text{ac of impervious area for water quality pervious/impervious}$$

c) Percent of impervious for water quality calculation:

$$= A_{IMP} / A_S \times 100\%$$
$$= 0.144 / 0.226 \times 100\%$$
$$= 63.8\% \quad \text{impervious}$$

d) For 2.5" times the percent impervious:

$$= 2.5" \times \% \text{ impervious area}$$
$$= 2.5 \times 0.638$$
$$= 1.59 \quad \text{inches to be treated}$$

e) Compute volume required volume for quality detention

$$V_{PRE} = \text{inches to be treated} \times (A_T - A_L)$$
$$= 1.59 \times (0.255 - 0) \times 1 \text{ foot} / 12 \text{ inches})$$
$$= 0.03 \quad \text{ac-ft} \quad \text{or} \quad 0.41 \quad \text{ac-in}$$

3) **Since the 0.41 ac-in is greater than the 0.25 ac-in computed for the first inch of runoff the volume of 0.41 ac-in controls.**

Compute Required Dry Pre-Treatment Water Quality Volume:

1) Provide at least 1/2-inch over the developed project:

$$V_{dry} = 0.5 \text{ inches} \times A_T \times 1 \text{ ft} / 12 \text{ inches}$$
$$= 0.5 \times 0.255 / 12$$
$$= 0.01 \text{ ac-ft} \quad \text{or} \quad \boxed{0.13 \text{ ac-in}}$$

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Proposed Exfiltration Trench Calculations (NAVD)

K-Value:

Test Hole #	(cfs/ft^2/ft hd)
PR-1	2.98E-04
PR-2	2.18E-04
K$_{AVG}$	2.58E-04

*based on adjacent permit 230113-37175

Proposed Exfiltration Trench:

GRADE OR WEIR ELEVATION

*H$_2$ D$_u$ PIPE H TRENCH HEIGHT

Water Table Elev. 8.50

D$_s$

W TRENCH WIDTH

* DEPTH OF EFFECTIVE HEAD

Elev. 15.65 (Grade or Weir Elev.)

Elev. 14.00 (Top of Trench)

Elev. 8.00 (Bottom of Trench)
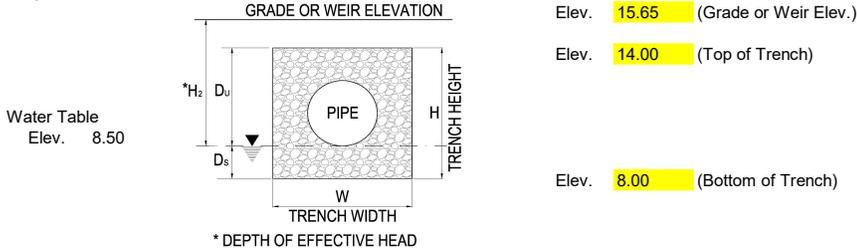
K =	2.58E-04	cfs/ft^2 - ft head
H$_2$ =	7.15	ft
W =	8.00	ft
D$_u$ =	5.50	ft
D$_s$ =	0.50	ft
H = Du + Ds =	6.00	ft
FS =	2.00	Factor of Safety
V$_{wq}$ =	0.41	ac-in
%WQ =	100%	Percent Reduction for Water Quality

1) Trench Length Required for Water Quality (L$_{wq}$):

V$_{wq}$ = 0.41 ac-in or 0.03 ac-ft

$$L_{wq} = \frac{FS\,[\%WQ(Vwq)]}{K(H2W + 2H2Du - Du^2 + 2H2Ds) + (1.39 \times 10^-4)WDu}$$

L$_{wq}$ = 23.1 feet

2) Maximum Allowable Trench Length For Storage (L$_{max}$):

V$_{max}$ = 3.28-inches x 0.255-acres = 0.84 ac-in or 0.07 ac-ft

V$_{add}$ = 0.43 ac-in

$$L_{max} = \frac{FS\,[(\%WQ)(V_{wq}) + V_{add}]}{K(H2W + 2H2Du - Du^2 + 2H2Ds) + (1.39 \times 10^-4)WDu}$$

L$_{max}$ = 47.5 feet

3) Trench Length Required for 1/2" Pre-Treatment (L$_{pre}$):

V$_{pre}$ = 0.5-inches x 0.255-acres = 0.13 ac-in or 0.01 ac-ft

$$L_{pre} = \frac{FS\,[\%WQ(V_{pre})]}{K(H2W + 2H2Du - Du^2 + 2H2Ds) + (1.39 \times 10^-4)WDu}$$

L$_{pre}$ = 7.2 feet

4) Total Provided Trench Volume (V$_{total}$):
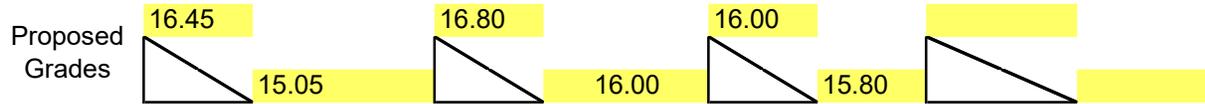
Proposed Trench Length = 72 feet

$$V_{total} = [(L \times (K(H2W + 2H2Du - Du^2 + 2H2Ds) + (1.39 \times 10^-4)WDu) / FS) - VwqWQ] + VwqWQ$$

V$_{total}$ = 1.27 ac-in or 0.11 ac-ft

THOMAS
E N G I N E E R I N G G R O U P

Proposed Stage / Storage Area Calculations (NAVD)

MTK

Proposed Grades

| 16.45 | | 16.80 | | 16.00 | | | |
| 15.05 | | 16.00 | | 15.80 | | | |

Stage (NAVD)	Vehicle Pavement Area		Concrete and Curb		Landscape Area		Building Area FFE:		Total Storage 0.255 Area
	Area	0.120	Area	0.024	Area	0.082	Area	0.030	
	(ac.-ft.)		(ac.-ft.)		(ac.-ft.)		(ac.-ft.)		(ac.-ft.)
11.00	0.00		0.00		0.00		0.00		0.00
11.50	0.00		0.00		0.00		0.00		0.00
12.00	0.00		0.00		0.00		0.00		0.00
12.50	0.00		0.00		0.00		0.00		0.00
13.00	0.00		0.00		0.00		0.00		0.00
13.50	0.00		0.00		0.00		0.00		0.00
14.00	0.00		0.00		0.00		0.00		0.00
14.50	0.00		0.00		0.00		0.00		0.00
15.00	0.00		0.00		0.00		0.00		0.00
15.50	0.01		0.00		0.00		0.00		0.01
16.00	0.04		0.00		0.01		0.00		0.05
16.50	0.09		0.00		0.05		0.00		0.14
17.00	0.15		0.01		0.09		0.00		0.25
17.50	0.21		0.03		0.13		0.00		0.37
18.00	0.27		0.04		0.17		0.00		0.48
18.50	0.33		0.05		0.21		0.00		0.59
19.00	0.39		0.06		0.25		0.00		0.70
19.50	0.45		0.07		0.29		0.00		0.82
20.00	0.51		0.09		0.33		0.00		0.93
20.50	0.57		0.10		0.38		0.00		1.04

Design Criteria	MTK

Control Elevation:	8.50	NAVD
FEMA Base Flood Effective Elevation (Zor	N/A	(Zone X)
Broward County Future 100-Year Flood Elevation:	6.00	NAVD
SFWMD Permitted Minimum Building Floor Elevation:	0.00	NAVD
Average Crown of Road:	0.00	NAVD

Proposed Land Use Summary

Areas:	Square Ft.	Acres	Percent
Lake	-	0.00	0.0%
Building	1,297	0.030	11.7%
Paved and Sidewalk	6,258	0.144	56.3%
Pervious	3,552	0.082	32.0%
Total Area:	11,107	0.255	100.0%

Proposed Stage / Storage Area Calculations (NAVD)

Stage (NAVD)	Site Stage-Storage (Previous Page) (ac.-ft.)	Exfiltration Trench Storage (ac.-ft.)	Total Storage Area (ac.-ft.)
11.00	0.00	0.00	0.00
11.50	0.00	0.02	0.02
12.00	0.00	0.04	0.04
12.50	0.00	0.06	0.06
13.00	0.00	0.08	0.08
13.50	0.00	0.11	0.11
14.00	0.00	0.11	0.11
14.50	0.00	0.11	0.11
15.00	0.00	0.11	0.11
15.50	0.01	0.11	0.11
16.00	0.05	0.11	0.15
16.50	0.14	0.11	0.25
17.00	0.25	0.11	0.36
17.50	0.37	0.11	0.47
18.00	0.48	0.11	0.58

Proposed Site Soil Storage

Proposed Land Use Summary:

	Acres	Percent
Lake Areas (A_L):	0.000	0.0%
Roof Areas (A_R):	0.030	11.7%
Paved Areas (A_P):	0.144	56.3%
Green Areas (A_G):	0.082	32.0%
Total (A_T):	0.255	100.0%

Compacted Soil Storage per
SFWMD Vol. IV Page C-III-1
Flatwood Classification

Depth to Water Table (feet)	Compacted Water Storage (inches)
1	0.45
2	1.88
3	4.05
4	6.75

Average Pervious Grade (Elev.):	15.90	ft
Depth to Water Table:	7.40	ft
Soil Storage at Average Depth (S_S):	6.75	inches

Weighted S value:
    = S_S x % Pervious
    = 6.75 x 0.32
    = **2.16 inches**

CN = 1000/(S+10)
    = 82

Storm Events Rainfall Return Period Values

From Figure C-9, 100-Year 3-Day Storm Event = 17.00 inches

From Figure C-8, 25-Year 3-Day Storm Event = 13.00 inches

From Figure C-3, 5-Year 1-Day Storm Event = 8.00 inches

From Figure C-4, 10-Year 1-Day Storm Event = 11.00 inches

Proposed Site Flood Routing Results

Runoff $(Q) = (P - 0.2S)^2 / (P + 0.8S)$
        $= (17 - (0.2 \times 2.16))^2 / (17 + (0.8 \times 2.16))$
        = 14.66 inches of total runoff
Runoff Volume = Q * Project Area
        = 14.66 x 0.255 = 3.74 acre-inches = 0.31 acre-ft.

Maximum Stage for 100-Year 3-Day Storm (no discharge)   **16.78** NAVD

Runoff $(Q) = (P - 0.2S)^2 / (P + 0.8S)$
        $= (13 - (0.2 \times 2.16))^2 / (13 + (0.8 \times 2.16))$
        = 10.73 inches of total runoff
Runoff Volume = Q * Project Area
        = 10.73 x 0.255 = 2.73 acre-inches = 0.23 acre-ft.

Maximum Stage for 25-Year 3-Day Storm (no discharge)   **16.39** NAVD

Runoff $(Q) = (P - 0.2S)^2 / (P + 0.8S)$
        $= (8 - (0.2 \times 2.16))^2 / (8 + (0.8 \times 2.16))$
        = 5.89 inches of total runoff
Runoff Volume = Q * Project Area
        = 5.89 x 0.255 = 1.50 acre-inches = 0.13 acre-ft.

Maximum Stage for 5-Year 1-Day Storm (no discharge)	**15.64**	NAVD

Runoff $(Q) = (P - 0.2S)^2 / (P + 0.8S)$

        $= (8 - (0.2 \times 2.16))\wedge 2 / (8 + (0.8 \times 2.16))$

        $=$ 8.78   inches of total runoff

Runoff Volume = Q * Project Area

        $= 8.78 \times 0.255 =$ 2.24   acre-inches $=$ 0.19   acre-ft.

Maximum Stage for 10-Year 1-Day Storm (no discharge)	**16.18**	NAVD

Appendix C

FEMA FIRMette

National Flood Hazard Layer FIRMette

80°5'3"W 26°27'57"N

AREA OF MINIMAL FLOOD HAZARD
Zone X

T46S R43E S17

City of Delray Beach
125102

12099C0979G
eff. 12/20/2024

80°4'26"W 26°27'25"N

Feet					
0	250	500	1,000	1,500	2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023
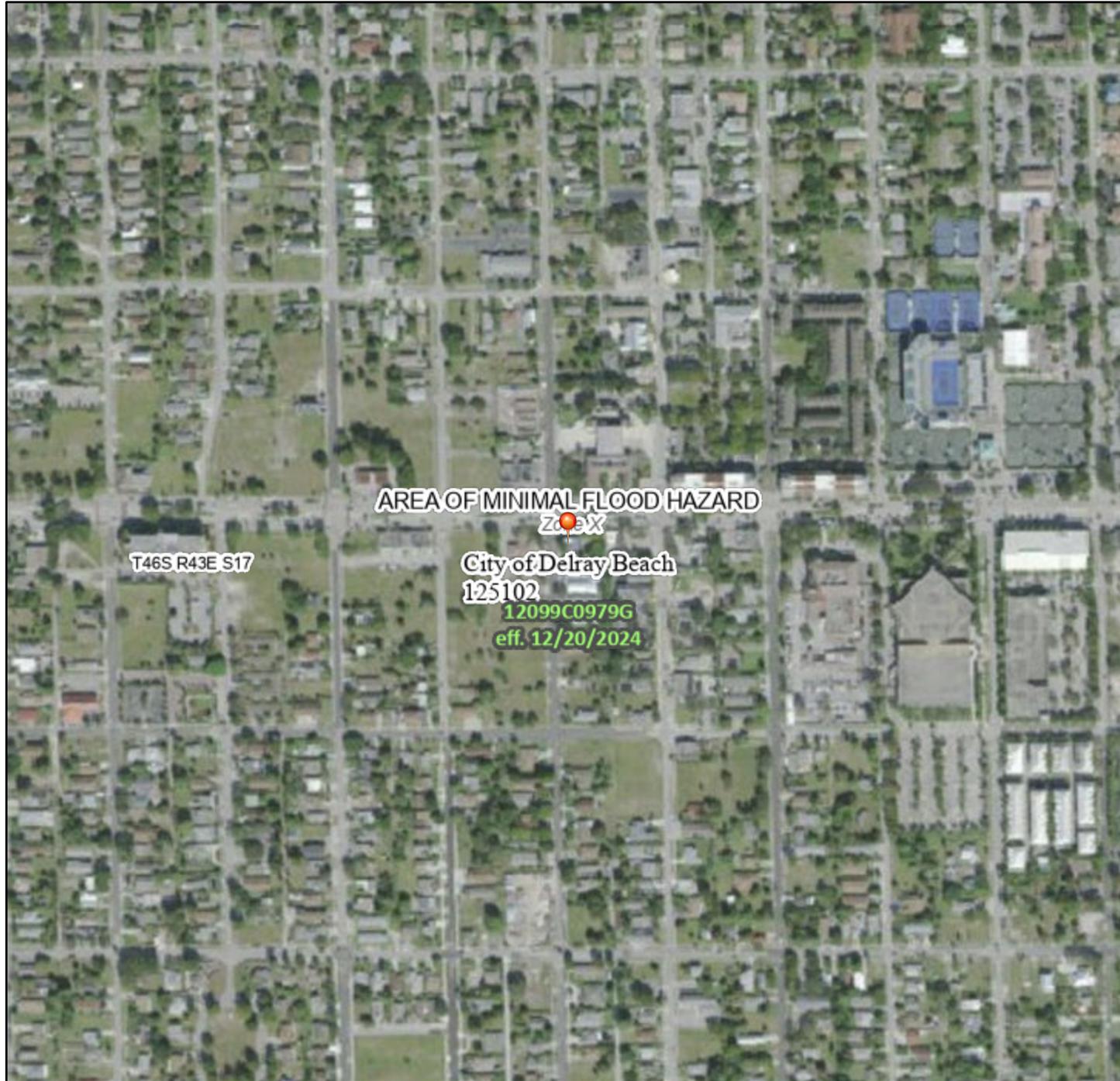
Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE)
  Zone A, V, A99
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- – – – Channel, Culvert, or Storm Sewer
- ||||||| Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 – – Coastal Transect
- ~~~513~~~ Base Flood Elevation Line (BFE)
- ——— Limit of Study
- ——— Jurisdiction Boundary
- – · – · Coastal Transect Baseline
- – – Profile Baseline
- ——— Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/12/2025 at 6:01 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix D

Rainfall Maps

FIGURE C-3. 1-DAY RAINFALL: 5-YEAR RETURN PERIOD

FIGURE C-4. 1-DAY RAINFALL: 10-YEAR RETURN PERIOD

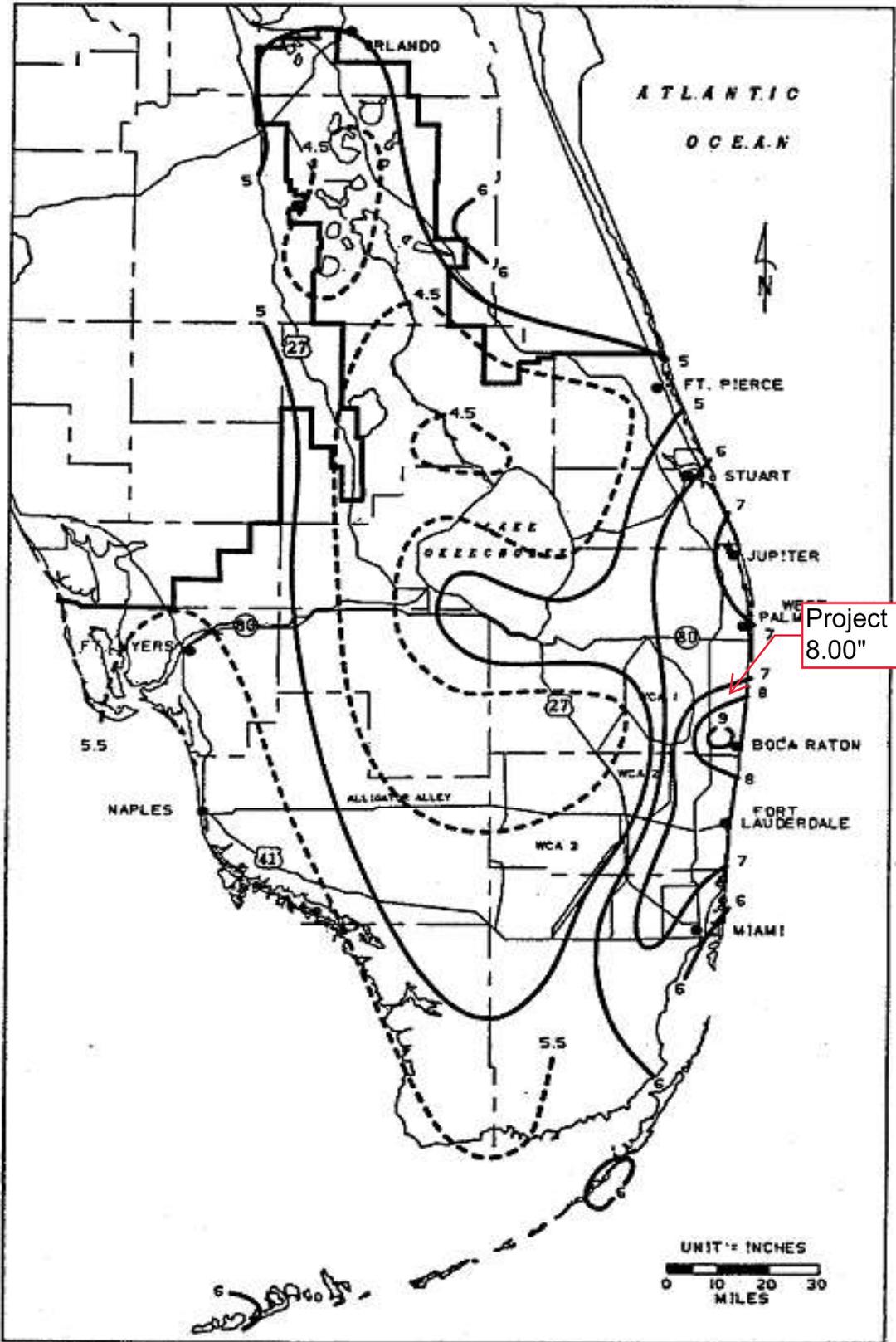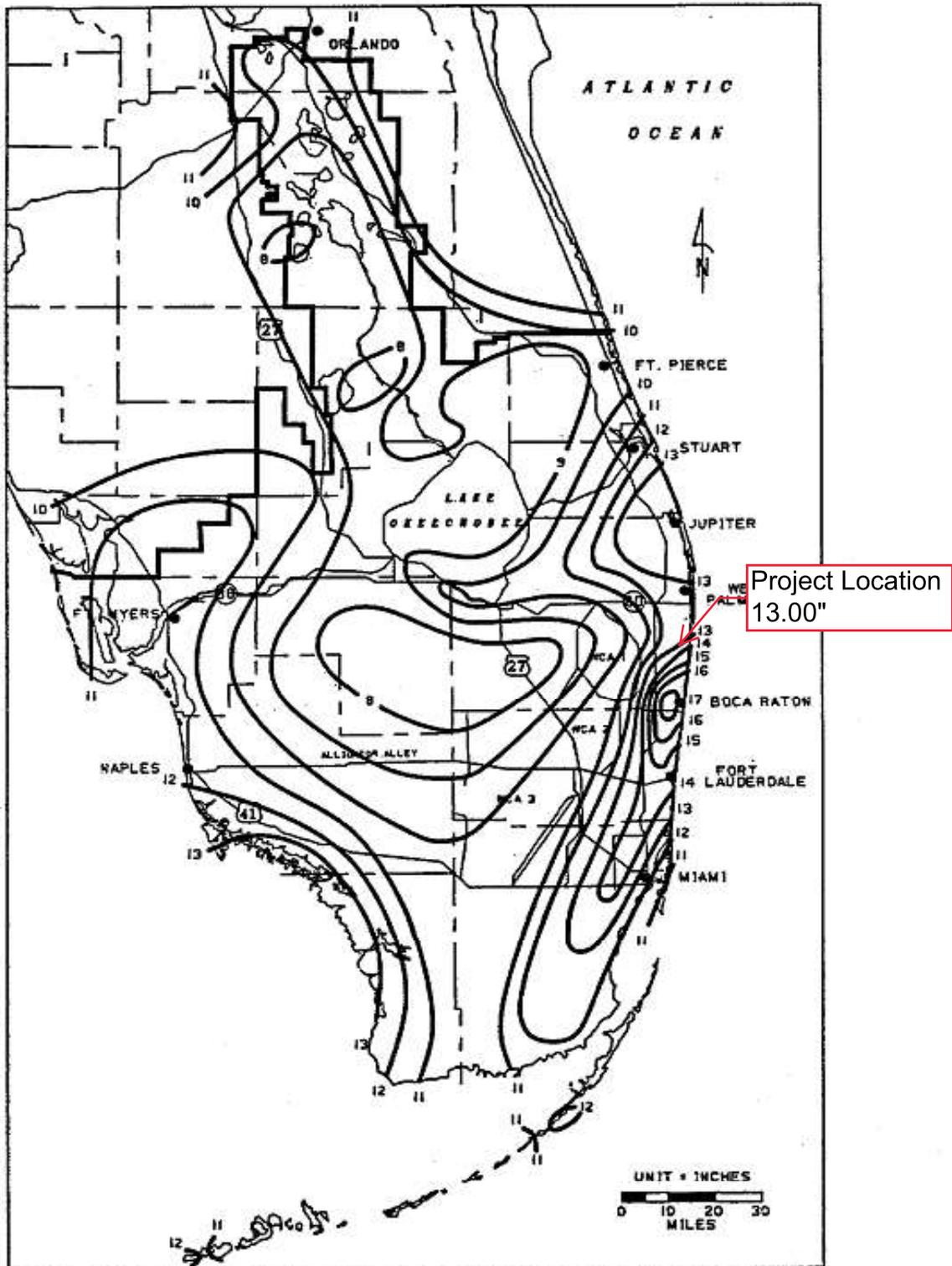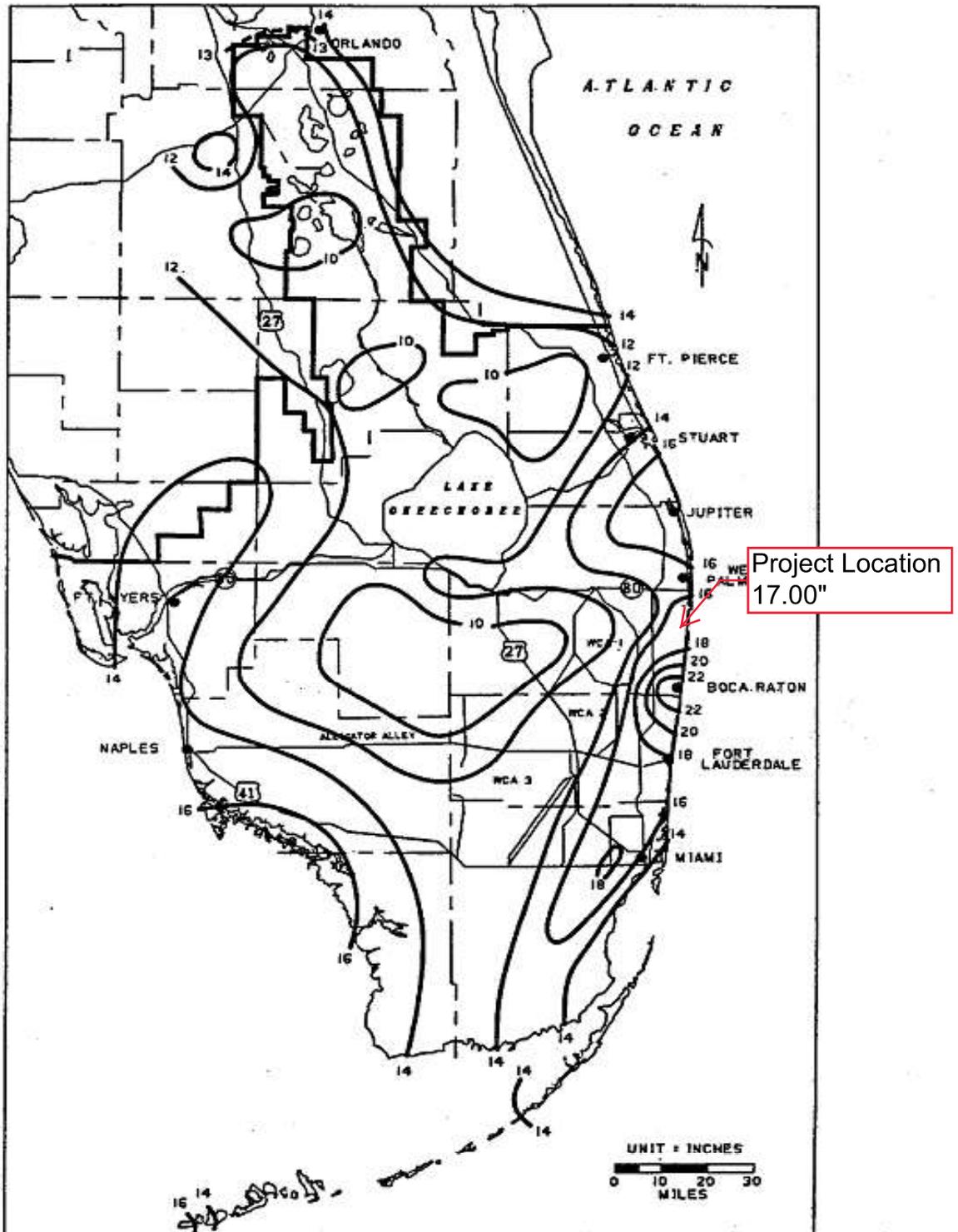Project Location 13.00"

FIGURE C-8. 3-DAY RAINFALL: 25-YEAR RETURN PERIOD

FIGURE C-9. 3-DAY RAINFALL: 100-YEAR RETURN PERIOD