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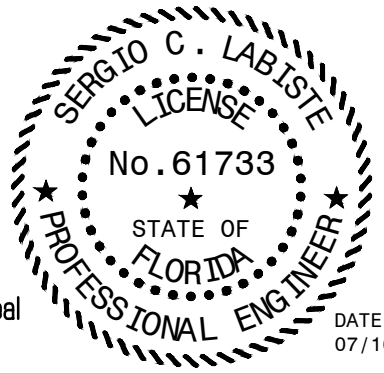
DRAINAGE CALCULATIONS

NEW CONSTRUCTION

10840 SW 67 AVE, PINECREST, FL 33156
FOLIO No: 20-5011-005-0151

July 16th 2025

SERGIO LABISTE
2025.07.16 10:49:57
-04'00'



Seal

DATE:
07/16/2025

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY SERGIO C. LABISTE, P.E. ON THE DATE ADJACENT TO THE SEAL.

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SERGIO C. LABISTE P.E. # 61733

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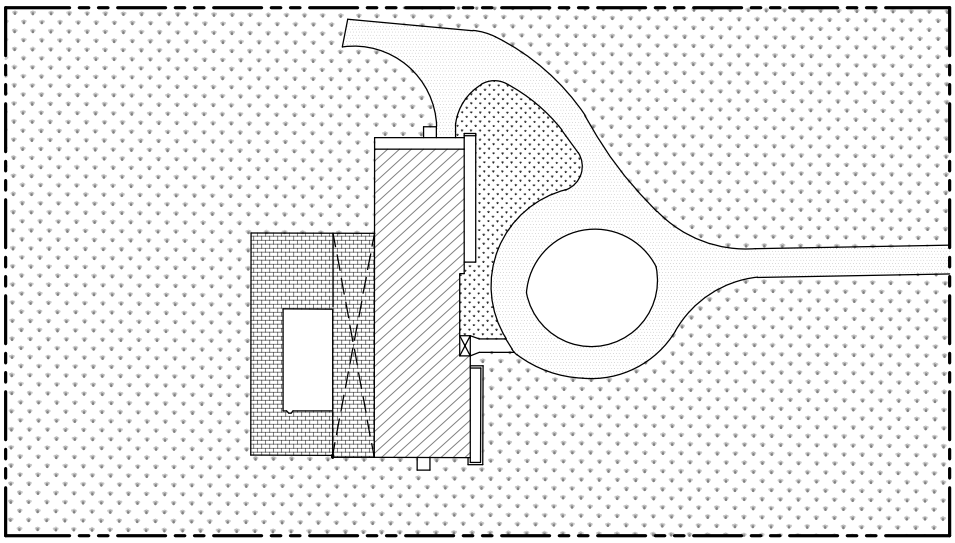
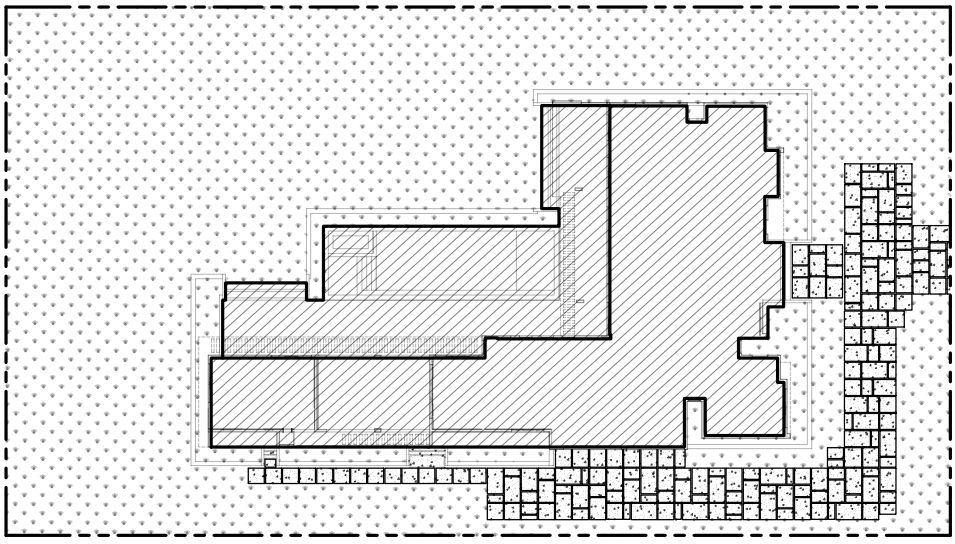
AREA BREAKDOWN

(PRE-DEVELOPMENT)



(POST-DEVELOPMENT)

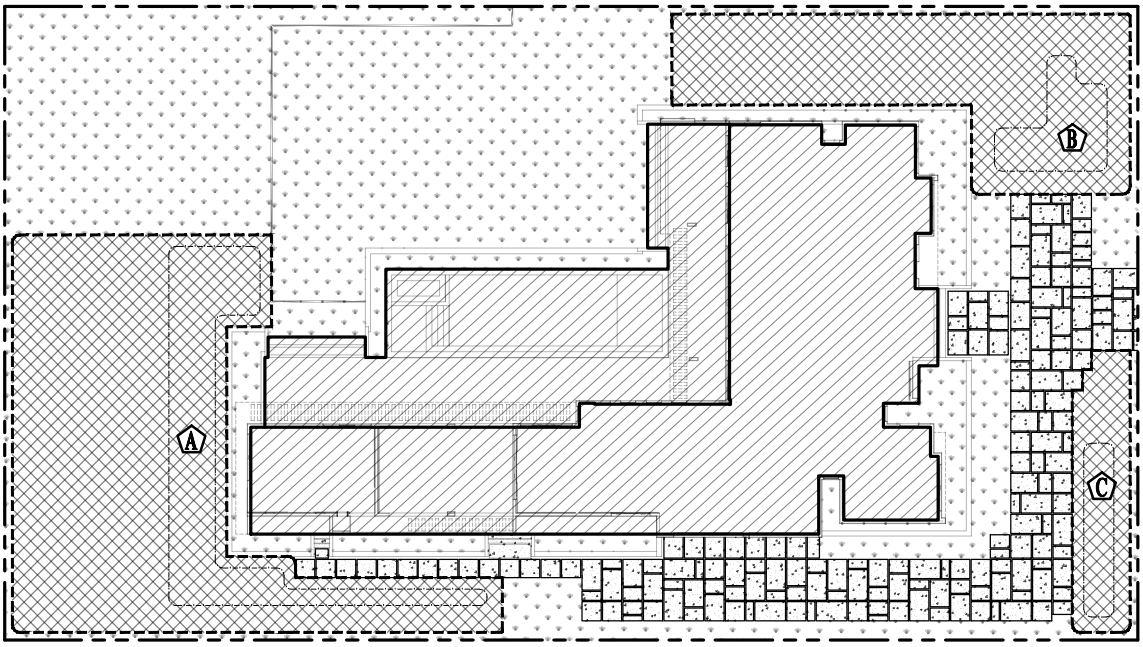


DEVELOPMENT INFORMATION			
PRE-DEVELOPMENT		POST DEVELOPMENT	
TOTAL	48,675.00 ft^2	TOTAL	48,675.00 ft^2
	1.12 AC		1.12 AC
PERVIOUS	36,157.55 ft^2	PERVIOUS	29,079.39 ft^2
	0.83 AC		0.67 AC
IMPERVIOUS	12,517.45 ft^2	IMPERVIOUS	19,595.61 ft^2
	0.29 AC		0.45 AC

LEGEND

- BUILDING FOOTPRINT, TERRACE AND POOL
- GRASS AREA
- CONCRETE

RETENTION AREAS SKETCH



VOLUME RETENTION TABLE					
AREA NO.	VERTICAL AREA (SF)	LINEAR AREA (SF)	TOP ELEV (NGVD)	BOTTOM ELEV (NGVD)	TOTAL VOLUME RETAINED (ft^3)
B_A	1,734	5,442	9.30'	8.80'	2,228
B_B	560	3,224	9.00'	8.10'	1,955
B_C	349	677	9.30'	8.80'	352
TOTAL SITE RETENTION PROVIDED					4,535

LEGEND

- BUILDING FOOTPRINT
- CONCRETE
- GRASS AREA
- RETENTION AREA

PROJECT DESCRIPTION

The project consists of a two-story proposed single-family residence with a pool, and driveway as shown in plans. Drainage calculations provided showing stormwater to be retained on-site with no runoff to adjacent properties.

DEFINITIONS OF WORKSHEET VARIABLES			
P:	Rainfall depth (Inches)	A:	Total property area (SF)
S_1:	Soil storage capacity (Inches)	AP:	Total property pervious area (SF)
R:	Runoff depth (Inches)	V:	Runoff Volume (CF)
AI:	Total impervious area (roof, pool, pool deck, driveway, walkways, **septic tank and drain field** within property, in square feet)		

PRE DEVELOPMENT CONDITION

$A_{pre} := 48765\ ft^2$

$AP_{pre} := 36157.55\ ft^2$

$AI_{pre} := 12517.45\ ft^2$

POST DEVELOPMENT DISTRIBUTION

$A_{post} := 48765\ ft^2$

$AP_{post} := 29079.39\ ft^2$

$AI_{post} := 19595.61\ ft^2$

GENERAL SITE CONDITIONS

$P := 9.50\ in$ Rainfall Amount (25-year, 24-hour storm). see attached map

$AE := 9.30\ ft$ Average Elevation of Pervious Areas (NGVD)

$GW := 3.20\ ft$ Average October Water Table Elevation (NGVD) see attached map.

$D = 6.10\ ft$ Average Depth to Water Table (AE-GW)

Distance between groundwater table and average elevation of pervious areas:	S_1
1 ft	0.45 inches
2 ft	1.88 inches
3 ft	4.95 inches
≥4 ft greater	8.18 inches

SFWMD-Management and Storage of Surface Waters Permit Information Manual, Vol. IV sec. 8.4.2

By interpolation when $D = 6.10\ ft$ then $S_1 := 8.18\ in$

PRE DEVELOPMENT VOLUME CALCULATION

$$S_{pre} := \frac{AP_{pre}}{A_{pre}} \cdot S_1 = 6.07 \ in$$

$$R_{pre} := \frac{\left(P - 0.2 \cdot S_{pre}\right)^2}{\left(P + 0.8 \cdot S_{pre}\right)} = 4.78 \ in$$

$$V_{pre} := A_{pre} \cdot R_{pre} = 19445 \ ft^3$$

POST DEVELOPMENT VOLUME CALCULATION

$$S_{post} := \frac{AP_{post}}{A_{post}} \cdot S_1 = 4.88 \ in$$

$$R_{post} := \frac{\left(P - 0.2 \cdot S_{post}\right)^2}{\left(P + 0.8 \cdot S_{post}\right)} = 5.42 \ in$$

$$V_{post} := A_{post} \cdot R_{post} = 22033 \ ft^3$$

VOLUME OF RUNOFF REQUIRED TO MAINTAINED ON SITE

Whichever is the greater:

Water Quantity

Pre/Post Volume difference

$$V_{condition1} := V_{post} - V_{pre} = 2589 \ ft^3$$

Water Quality

Imperviousness percent times 2.5 inch

I = Inches to be treated $\quad I := 2.5 \ in \cdot \frac{AI_{post}}{A_{post}} = 1.00 \ in$

$$V_{condition2} := I \cdot A_{post} = 4082 \ ft^3$$

First inch of runoff

$$V_{condition3} := 1 \ in \cdot A_{post} = 4064 \ ft^3$$

Storage Volume Required

$$V_{req} := \max\left(V_{condition1}, V_{condition2}, V_{condition3}\right)$$

$$V_{req} = 4082 \ ft^3$$

RETENTION VOLUME PROVIDED (V_P)

V_P is computed in cubic feet. **V_P** is the retention volume capacity of swales, retention areas and drains within the property or sub-basin within the property

$$B_A := (9.30\ ft - 8.80\ ft) \cdot (5442\ ft^2) \cdot \frac{1}{2} + (9.30\ ft - 8.80\ ft) \cdot (1734\ ft^2) = 2228\ ft^3$$

$$B_B := (9.00\ ft - 8.10\ ft) \cdot (3224\ ft^2) \cdot \frac{1}{2} + (9.00\ ft - 8.10\ ft) \cdot (560\ ft^2) = 1955\ ft^3$$

$$B_C := (9.30\ ft - 8.80\ ft) \cdot (677\ ft^2) \cdot \frac{1}{2} + (9.30\ ft - 8.80\ ft) \cdot (366\ ft^2) = 352\ ft^3$$

Swales Retention Capacity:

$$V_P := B_A + B_B + B_C$$

$$V_P = 4535\ ft^3$$

Retention Volume Provided $V_P = 4535\ ft^3$ **>** Storage Volume Required $V_{req} = 4082\ ft^3$

Therefore Sufficient Storage is being Provided

National Flood Hazard Layer FIRMette

FEMA

80°18'30"W 25°40'28"N

80°17'52"W 25°39'56"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 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 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

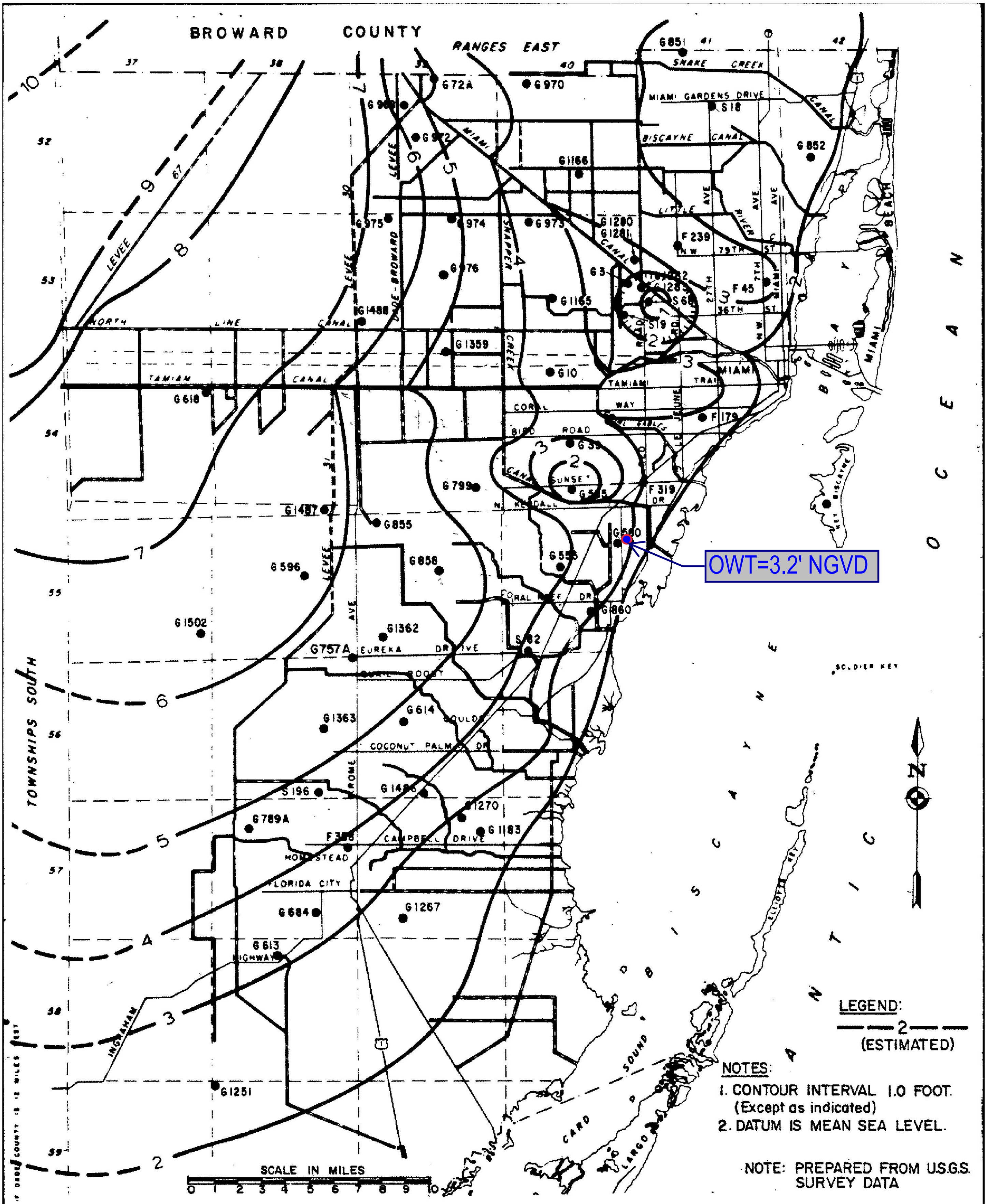
N

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 4/22/2025 at 5:23 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.



METROPOLITAN DADE COUNTY PUBLIC WORKS DEPARTMENT	APPROVED 4/5/72	REVISED 2/19/75 4/14/77	DESIGN STANDARDS AVERAGE OCTOBER GROUND WATER LEVEL 1960—75	W.C. 2.2 SHEET 1 OF 1

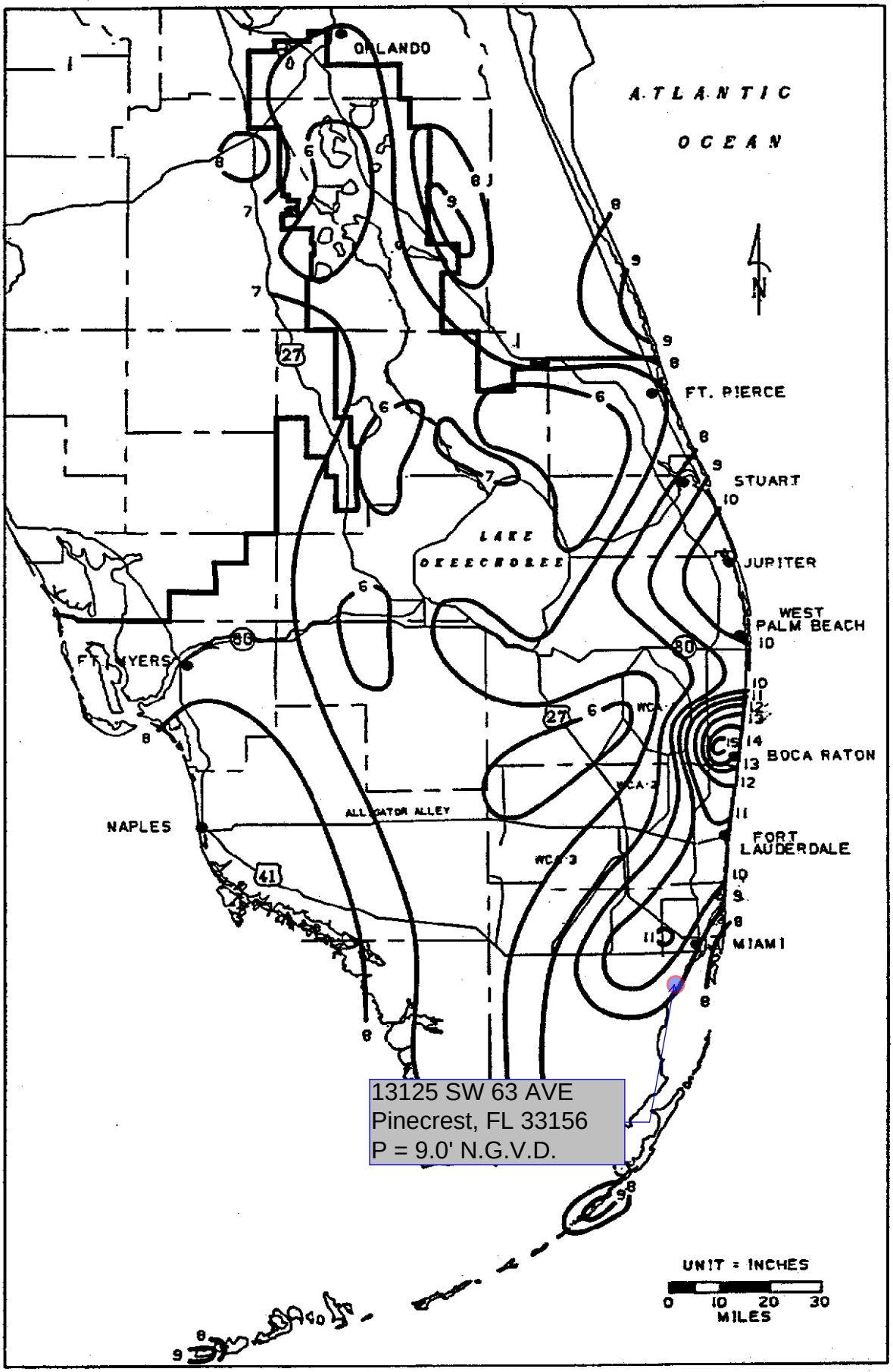


FIGURE C-5. 1-DAY RAINFALL: 25-YEAR RETURN PERIOD