



## **SURVEYOR'S REPORT**

**Specific Purpose Survey of the  
United States Geological Survey  
Recorder Well G-2896  
in  
Broward County, Florida**

**Prepared for:**

### **South Florida Water Management District**

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West Palm Beach, Florida 33406  
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**Prepared by:**

#### **William Donley, PSM**

Florida Professional Surveyor and Mapper  
License Number 5381  
State of Florida

Dewberry Engineering, Inc. LB No 8011  
131 West Kaley Street, Orlando, FL. 32806  
Tel (321) 354-9826

Field Date: September 25, 2019  
Report Date: December 1, 2019, 2019  
PO NO: 9500008146

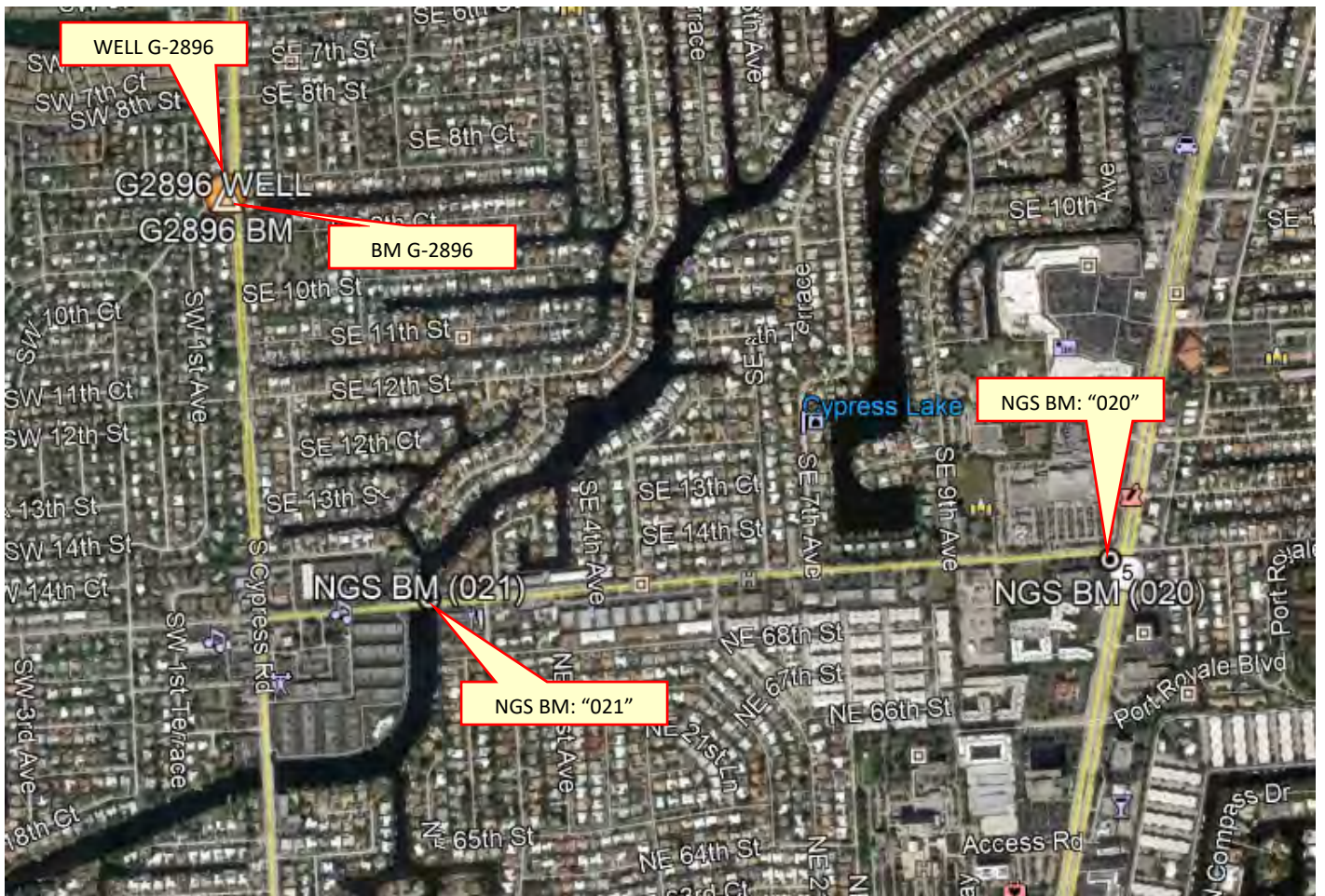
## SURVEYOR'S REPORT

### PURPOSE

The objective of this work order is to supply NAVD 88 elevations on the site benchmark, ground elevation at the site, well monitoring point and any USGS benchmarks at the site. In addition, horizontal positions of each well and benchmark need to be provided in the North American Datum of 1983.

### LOCATION OF PROJECT

The United States Geological Survey's Recorder Well **G-2896** is located in Section 2, Township 49 South, Range 42 East, Broward County, Florida.



**General Location (Intended Display scale is "Not to Scale")**

**PROJECT VERTICAL DATUM**

The project vertical datum is the North American Vertical Datum (NAVD) of 1988.

To convert the NAVD 88 elevation to the National Geodetic Vertical Datum of 1929 at station **G-2896 (G2896 2019), add 1.58'**. These values are based on Corpscon 6.0.1 a US. Army Corps of Engineers Engineering Research and Development Center Topographic Engineering Center Alexandria, Virginia Windows-based program to convert coordinates and elevations between datum's using vertcon05.txt and vertcon05.05 files supplied by the US. Army Corps of Engineers South Atlantic Division, Jacksonville, FL.

**PROJECT HORIZONTAL DATUM**

All horizontal data shall be collected in and based on the North American Datum of 1983, 2011 adjustment (NAD 83/11). Horizontal coordinate control shall be established from existing National Geodetic Survey (NGS) 2<sup>nd</sup> Order control or higher in the area by using GPS, RTK GPS, network RTK GPS, or OPUS derived solutions.

**LEVELING METHODS (Site Benchmark)**

The leveling for this project was performed in accordance with standard survey practice using conventional third order methods, techniques and equipment.

The allowable error (.02  $\sqrt{\text{miles}}$ ) on this project meets or exceeds third order closures as required by SFWMD for this project per executed SOW for 4600003706-WO03 and discussions with SFWMD.

A level loop was run from the NGS Benchmark "020" (DO2659) to NGS Benchmark "021" (AD2660), and through the site Benchmark. To verify G-2896 Benchmark elevation, a 2<sup>nd</sup> level loop was ran from site BM G-2896 and closed on NGS Benchmark "021" (AD2660). The measurements were collected using a Digital Level and were hand written in Whidden Surveying & Mapping, Inc. Field Book W 212 Page 30-31, dated September 27, 2019, reduced and adjusted electronically. Additional data was manually recorded in the field book.

**GPS METHODS (horizontal position of site benchmark)**

Latitude and Longitude for Benchmark G-2896 (G2896 2019) were established by observing a 3-minute session of GPS data on September 27, 2019 using a Trimble R-8-S and The Florida Permanent Reference Network (FPRN). The FPRN network consists of nearly 100 Continuously Operating Reference Stations (CORS) located throughout Florida.

**EQUIPMENT USED**

- Trimble GPS unit R8-3 Serial #: 4615113539
- Trimble GPS unit R6-4 Serial #: 0220266504
- Dini Digital Level Serial #: 735642

## SURVEYOR'S REPORT

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### **LEVELING METHODS (Site: ground elevation-well monitoring point- USGS benchmarks)**

A level loop was run from the previously established Site Benchmark G-2896 (G2896 2019), through all corners of concrete slab around well casing, through the ground shot north of the well enclosure (ground elevation), through the well monitoring point (North edge of 2 ½" PVC well head), through north edge of metal well casing, and back to the Site Benchmark. The measurements were collected using an Automatic Level and were hand written in Dewberry Engineering, Inc. Field Book S.F.W.M.D. #1, Pages 54-57, dated September 25, 2019. Additional data was manually recorded.

### **GPS METHODS (horizontal position of Well G-2896 monitoring point & USGS Benchmarks)**

Latitude and Longitude for Well G-2896 monitoring point (North edge of 2 ½" PVC well head) were established by observing a 3-minute session of GPS data on September 25, 2019 using a Spectra SP-80 and The Florida Permanent Reference Network (FPRN). The FPRN network consists of nearly 100 Continuously Operating Reference Stations (CORS) located throughout Florida.


### **EQUIPMENT USED**


- Spectra SP-80 Rover Serial #: 1165
- Topcon AT-G2 Serial #: 1439

**SURVEYOR'S REPORT**

**VERTICAL CONTROL POINT**

The Vertical Control point utilized and set as part of this survey is the:

<b>NGS Benchmark "020" (DO2659)</b>						
26° 12' 41.33" (N)	80° 06' 25.62" (W)	Published	4.37 ft.	(NAVD88)	1.33 m	Published
		LOCATED 82 FT WEST OF CENTERLINE OF SOUTH FEDERAL HWY (U.S. HWY 1), 45 FT SOUTH OF THE CENTERLINE OF MCNAB ROAD, 18.8 FT NE OF A TRAFFIC SIGNAL POLE, 16.5 FT SE OF A CONCRETE POWER POLE, 15.5 FT NE OF THE EAST END OF A CVS PHARMACY SIGN, 9.3 FT SW OF A TRAFFIC SIGNAL POLE AND 1.2 FT NE OF A CARSONITE WITNESS POST  NGS BENCHMARK DISK, SET IN GRASS AREA  STAMPING: CITY OF POMPANO BEACH 020 2011 BENCHMARK				

<b>NGS Benchmark "021" (DO2660)</b>						
26° 12' 40.63" (N)	80° 07' 11.48" (W)	Published	10.96 ft.	(NAVD88)	3.34 m	Published
		LOCATED 59.3 FT NE OF A CONCRETE POWER POLE NUMBER "85C11", 28.2 FT SW OF A WOODEN POWER POLE, 24.5 FT NORTH OF THE CENTERLINE OF EAST MCNAB ROAD AND 24 FT SW OF THE WEST END OF A CONCRETE WALK  NGS BENCHMARK DISK SET IN CONCRETE GUARD RAIL ON SIDE OF BRIDGE  STAMPING: CITY OF POMPANO BEACH 021 2011 BENCHMARK				

**SURVEYOR'S REPORT**

**BM: G-2896 (Existing on site benchmark set by Dewberry Engineering, Inc.)**

26° 13' 05.61" (N)	80° 07' 24.47" (W)	5.71 ft.	(NAVD88)	1.74 m	Level run
NAD_83(2011)		7.29 ft.	(NGVD29)	2.22 m	Converted
			1.58 ft. (conversion factor)		Corpscon 6.0.1



STATION IS A S.F.W.M.D. BM STAMPED "G2896 2019" SET IN THE SW CORNER OF A TRAFFIC SIGNAL BOX CONCRETE SLAB.

LOCATED: APPROXIMATELY 100 FT SOUTH OF THE INTERSECTION OF SW 9TH ST AND SOUTH CYPRESS RD ON LEFT SIDE OF SIDEWALK ALONG THE WESTERLY RIGHT OF WAY.

**Whidden Field Notes (Field Book W212, Page 30)**

NGS BM \*020\*  
Elev. 4.37' (NAVD88)

STA	HI	EL
020		4.37
TP 1	5.819	10.219
TP 2	5.496	4.279
TP 3	5.448	8.878
TP 4	5.183	4.021
TP 5	4.195	8.277
TP 6	6.252	12.877
TP 7	6.120	12.840
TP 8	4.832	10.172
TP 9	4.917	8.286
TP 10	4.640	4.977
TP 11	5.962	12.901
1131	3.182	14.782

TP	HI	EL
TP 12	7.111	6.32
TP 13	2.38	11.245
TP 14	4.950	9.591
TP 15	6.123	10.664
TP 16	5.177	10.438
TP 17	5.629	10.336
TP 18	5.67	11.035
TP 19	5.154	10.766
TP 20	5.382	10.67
TP 21	5.723	10.459
TP 22	4.760	10.910
	5.547	10.676

Site BM G-2896  
Elev. 5.71' (NAVD88)

NGS BM \*021\*  
Elev. 10.96' (NAVD88)

**SURVEYOR'S REPORT**

**Whidden Field Notes (Field Book W203, Page 31)**

G2896 (cont.)

STA	+	HZ	ELEV
TP 23	4.802	10.428	5.251
TP 24	5.181	10.227	5.308
TP 25	5.021	9.884	5.714
TP 26	5.022	10.468	5.011
TP 27	4.110	9.543	5.325
TP 28			4.313

W203 181

STA	+	HZ	ELEV
G2896	5.673	10.384	5.071
TP 1	5.797	11.106	5.104
TP 2	8.433	10.765	5.173
TP 3	4.860	10.214	5.126
TP 4	5.632	10.318	5.266
TP 5	5.774	10.568	5.625
TP 6	5.581	9.925	5.874
TP 7	7.051	14.407	5.874
021	5.431	10.765	5.532

Site BM G-2896  
Elev. 5.71' (NAVD88)

NGS BM "021"  
Elev. 10.96' (NAVD88)

**PROJECT RESULTS**

Overall Site





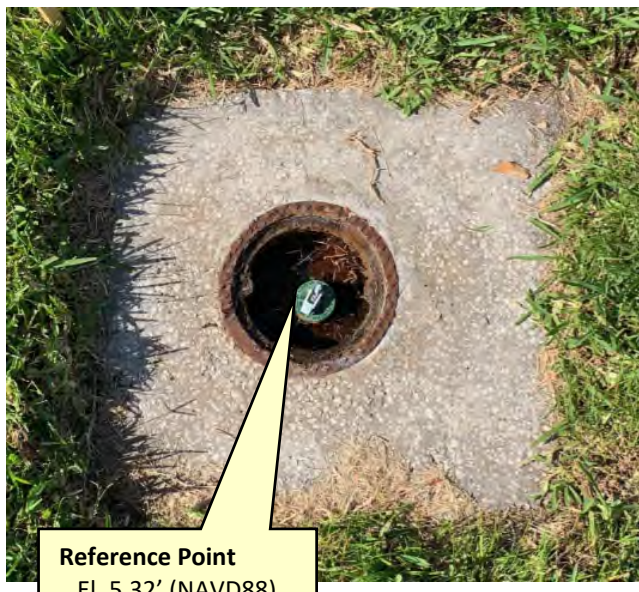
**SURVEYOR'S REPORT**

Tabular Form

<b>Reference and Ground Elevations: NAVD88</b>			
Well	Ground Elevation	Reference Elevation	Comments
G-2896	5.66 ft.	5.32 ft.	North edge of PVC pipe opening
Offset to NGVD29: +1.58' (See Project Vertical Datum Notes in Page: 4)			
Well diameter		Casing material	DTW
2 ½" PVC		Metal	-4.42 ft. (9/25/19 at 4:15 PM)

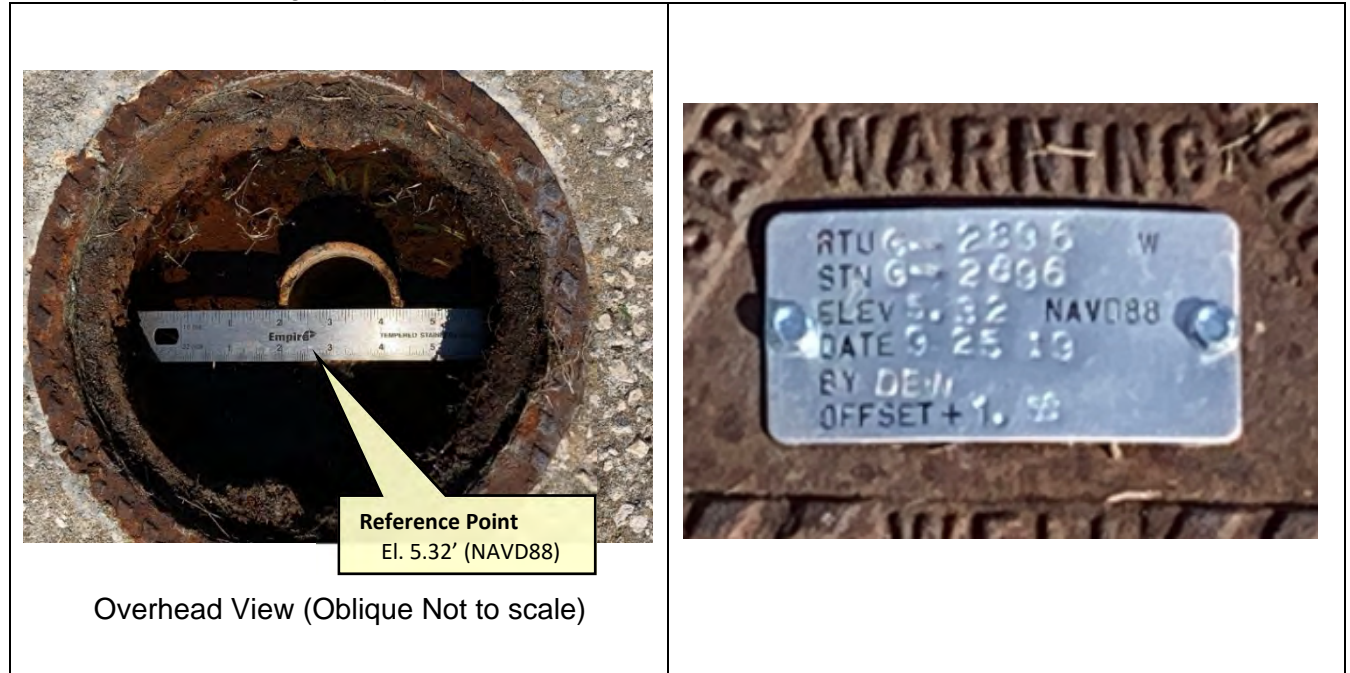
Source & Site Benchmark	NAVD88	NGVD29 (Published)	NGVD29 (Corpscon)
NGS "020" (DO2659)	4.37 ft. (Published)		
NGS "021" (DO2660)	10.96 ft. (Published)		
BM G2896 (SFWMD)	5.71 ft. (Measured)		7.29 ft. (Converted)

Well Photos and Diagrams (Continued)

	<p>PT # DESCRIPTION</p> <p>12038 NORTH EDGE OF TOP OF METAL (2") CASING</p> <p>12039 NORTH EDGE OF TOP OF PVC WELL HEAD (2-1/2")</p> <hr/> <p>TASK: MEASURE &amp; RECORD DISTANCE TO WATERLINE FROM MONITORING POINT</p> <p>MEASUREMENT: 4.42' ; AS MEASURED FROM N. EDGE OF 2-1/2" PVC WELL HEAD</p> <p>TIME: 4:15 PM</p> <hr/> <p>THIS WELL IS LOCATED AT THE ENTRANCE TO LYONS PARK NEIGHBORHOOD, JUST OFF THE WEST END OF SOUTH CYRESS ROAD, NORTH OF SW 9TH CT. MORE APPROXIMATELY, THE WELL IS LOCATED</p>
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## SURVEYOR'S REPORT

### Well Photos and Diagrams (Continued)



### Surveyors' Notes:

1. All measurements herein are in United States Survey feet and decimal thereof, unless otherwise specified.
2. Underground utilities were not located as part of this survey.
3. This survey report or copies thereof are not valid without the original signature and seal of a Florida licensed Surveyor and Mapper.
4. Additions or deletions to this survey report by other than the signing party (or parties) is prohibited without written consent of the signing party (or parties).
5. To convert from NAVD 88 to NGVD 29 add 1.58 feet. This value is based on Corpscon 6.0.1 a U.S. Army Corps of Engineers Engineering Research and Development Center Topographic Engineering Center Alexandria, Virginia Windows-based program to convert coordinates and elevations between datum's using vertcon05.txt and vertcon05.05 files supplied by the U.S. Army Corps of Engineers South Atlantic Division, Jacksonville Fl.
6. Date of last field work: September 27, 2019, PO NO: 9500008146
7. SFWMD Data records (on file at the District's headquarters):
8. A. Electronic Data files:  
Miscellaneous picture files
- B. Conventional reporting  
Field Book: W212 pages 30-31

**SURVEYOR'S REPORT**

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**Abbreviations:**

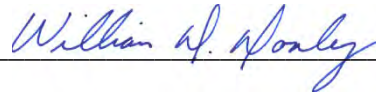
- Elev.** - Elevation
- DTW** - Distance to the water table inside the well
- BroCo.** - Broward County
- NAVD88** - North American Vertical Datum of 1988
- NGVD29** - National Geodetic Vertical Datum of 1929
- NGS** - National Geodetic Survey
- PSM** - Professional Surveyor & Mapper
- PID** - Permanent Identifiers
- SFWMD** - South Florida Water Management District
- USGS** - United States Geological Survey
- MP** - Monitoring Point
- GS** - Ground Shot
- BM** - Benchmark
- RM** - Reference Monument

**SURVEYOR'S CERTIFICATION**

In my professional opinion this Specific Purpose Survey meets applicable portions of the Standards of Practice set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 5J-17, Florida Administrative Code. This report is prepared for the sole and specific use of the South Florida Water Management District and is not assignable.

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Last date of Survey  
Sept. 27, 2019



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William Donley, PSM  
Florida Professional Surveyor and Mapper  
License Number 5381  
State of Florida  
Dewberry Engineering, Inc. LB No 8011  
131 West Kaley Street, Orlando, FL. 32806  
Tel (321) 354-9826





### South Florida Water Management District Benchmark Datasheet

Designation: <b>G-2896</b>	Project Name: <b>USGS Ph 2, BROWARD</b>	Type: <b>V</b>	State Plane Zone: <b>FL East</b>
Stamping: <b>G2896 2019</b>	Field Book Name: <b>W212</b>	Field Book Page: <b>30</b>	
Established By: <b>DEWBERRY / WHIDDEN</b>	Recovered By: <b>N/A</b>	Recovery Date: <b>N/A</b>	
Surveyor: <b>WILLIAM D. DONLEY</b>	Established Date: <b>09/27/19</b>	Status: <b>New</b>	

#### GEOGRAPHIC POSITION INFORMATION

Section: <b>2</b>	Township: <b>49 SOUTH</b>	Range: <b>42 EAST</b>
County: <b>BROWARD</b>	Quadrangle: <b>POMPANO BEACH</b>	Quad Index: <b>1801</b>
NAD83 Adj. Year: <b>2011</b>	Vertical Datum: <b>NAVD1988</b>	Horizontal Datum: <b>NAD1983</b>
NAVD88 Elevation (feet): <b>5.71</b>	NGVD29 Elevation (feet): <b>7.29</b>	NGS Source BM(s): <b>"021"</b>
NAVD88 Class: <b>N/A</b>	NGVD29 Class: <b>N/A</b>	NGS PID(s): <b>DO2660</b>
NAVD88 Order: <b>3</b>	NGVD29 Order: <b>N/A</b>	2022 Elevation: <b>N/A</b>
		Other Elevation: <b>N/A</b>
		NGS NAVD88 Elev (ft): <b>10.96</b>
		NGS NAVD88 Elev (m): <b>3.34</b>
		Other Elevation Type: <b>N/A</b>
		NGS 2022 Elev (ft): <b>N/A</b>

CORPSCON 6.0.1 CONVERSION FACTOR (NAVD88 TO NGVD29): (A J.S. Army Corps of Engineers Engineering Research and Development Center Topographic Engineering Center Alexandria, Virginia Windows-based program to convert coordinates and elevations between datums using vertical05.txt and vertical05.D5 files supplied by the U.S. Army Corps of Engineers South Atlantic Division, Jacksonville FL)

Vertical Datum Offset: + <b>1.58</b>	Actual NGS Elevation or ngvd29.txt file: <b>N/A</b>	OPUS Ortho Height: <b>N/A</b>
Northing (Y) (feet): <b>685977.7</b>	Easting (X) (feet): <b>943538.4</b>	Source of Latitude & Longitude: <b>AVERAGED FPRN &amp; TRIMBLE VRSNOW RTK</b>
Latitude: <b>26</b> DD° <b>13</b> MM' <b>5.61</b> SS"	Longitude: <b>80</b> DD° <b>7</b> MM' <b>24.47</b> SS"	
Latitude (Decimal Degrees): <b>26.218225</b>	Longitude (Decimal Degrees): <b>-80.123464</b>	

#### RECOVERY DATA

How to Reach:

1. FROM FL-811/S DIXIE HWY, HEAD EAST ON SW 6TH ST FOR 0.4 MI
2. TURN RIGHT ONTO S CYPRESS RD, CONTINUE 0.3 MI TO THE MARK ON THE RIGHT, LOCATED APPROXIMATELY 100 FEET SOUTH OF THE INTERSECTION OF S CYPRESS ROAD AND SW 9TH STREET

Description/Notes: **2" ALUMINUM SFWMD DISK SET IN SW CORNER OF CONCRETE PAD OF TRAFFIC SIGNAL BOX**

#### Notable Landmarks:

Other Source Benchmarks: **NGS BM "020" (DO2659)**

#### PICTURES

Aerial View of Overall Site

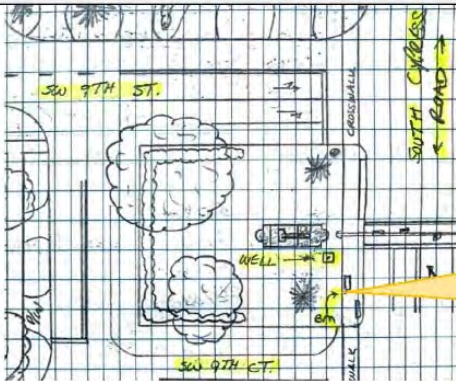


NOT TO SCALE. AERIAL FROM GOOGLE EARTH.



#### PICTURES

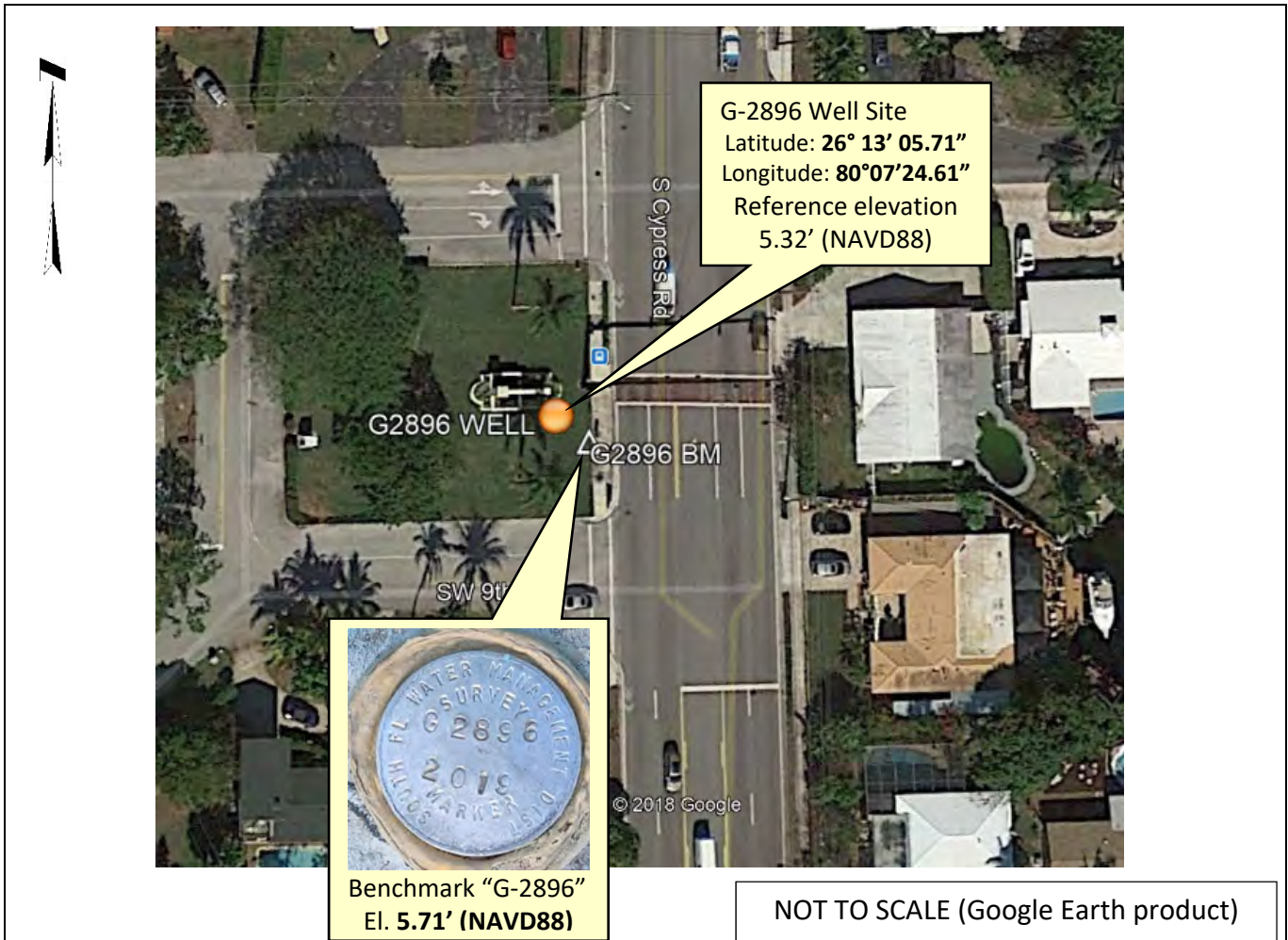
Site Sketch





# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/18

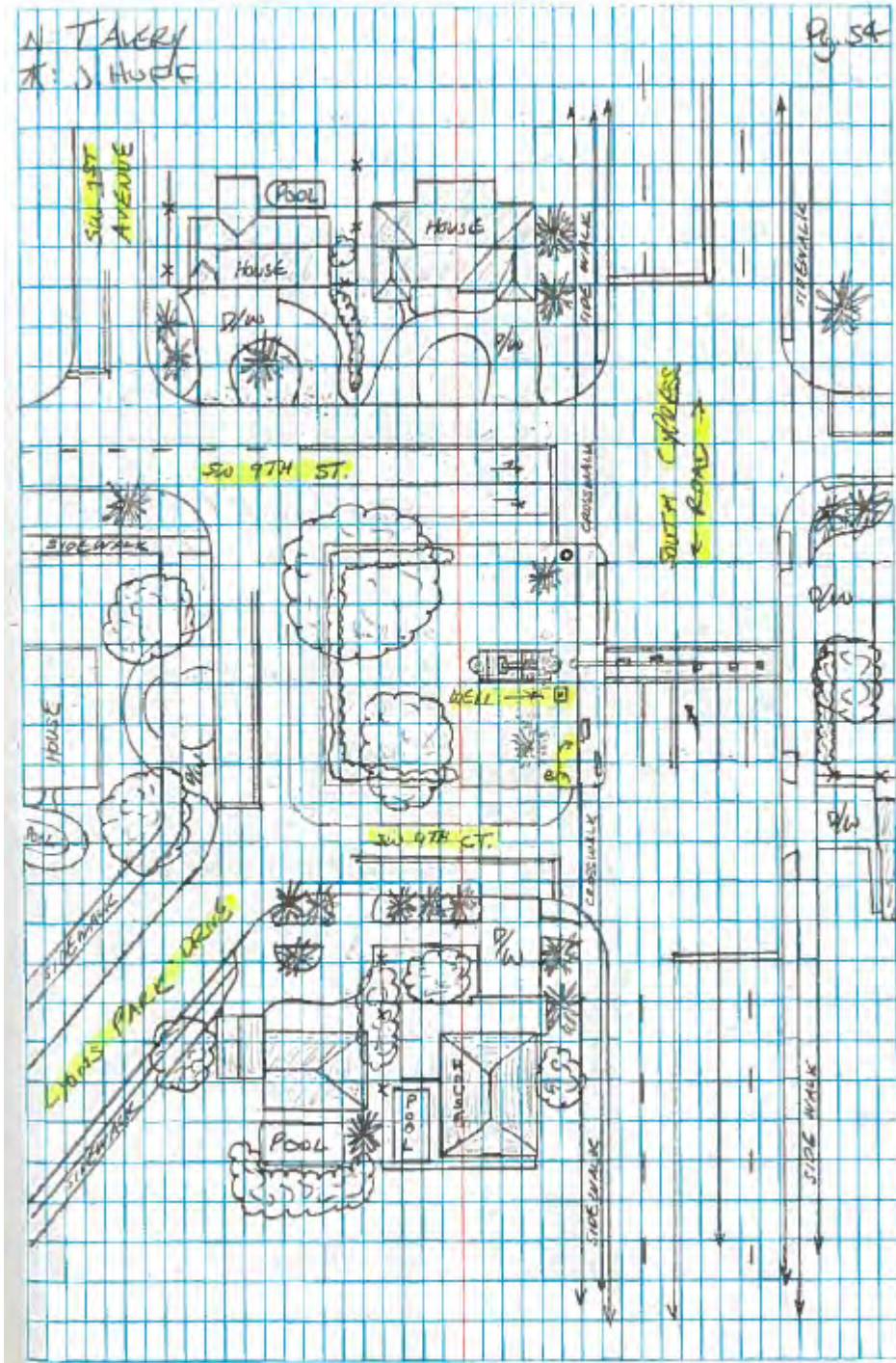




# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/18

## SKETCH



FIELD BOOK SFWMD #1, PAGE 54-57

**Office**

**Project**

2 December 2019

**INPUT**

State Plane, NAD83  
0901 - Florida East, U.S. Feet  
Vertical - NAVD88, U.S. Feet

**OUTPUT**

Geographic, NAD83  
Vertical - NGVD29 (Vertcon94), U.S. Feet

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**BM G-2896**

1/2

**Northing/Y:** 685977.7  
**Easting/X:** 943538.4  
**Elevation/Z:** 5.71  
**Convergence:** 0 23 14.17625  
**Scale Factor:** 1.000035869  
**Combined Factor:** 1.000039635

**Latitude:** 26 13 05.60688  
**Longitude:** 80 07 24.46586  
**Elevation/Z:** 7.288

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**Well G-2896**

2/2

**Northing/Y:** 685987.54  
**Easting/X:** 943525.27  
**Elevation/Z:** 5.32  
**Convergence:** 0 23 14.11422  
**Scale Factor:** 1.000035860  
**Combined Factor:** 1.000039645

**Latitude:** 26 13 05.70521  
**Longitude:** 80 07 24.60929  
**Elevation/Z:** 6.898

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**Remark:**

SPECTRA SP 80 SFW.M.D. 9/25/19  
 S/N: 1165 USC'S WELLS & BMS  
 TAMBORE NET JOB # 50099999  
 H.T. G.562 WELL SITE G-2896

TASK: ESTABLISH HORIZONTAL LOCATIONS AND ALL PREFERENCE ORIENTATION & USEL MP.

PT#	(N)ERC	(E)ERC	(L)ERC	PT#	DESCRIPTION
5/0	15	-0.014	-0.008	F.0.069	5030 CHK IN B.M. @ 2896
* LOCATED PT #'S 12038-12039					
5/0	15	-0.033	0.003	C.0.047	5031 CHK OUT B.M. @ 2896

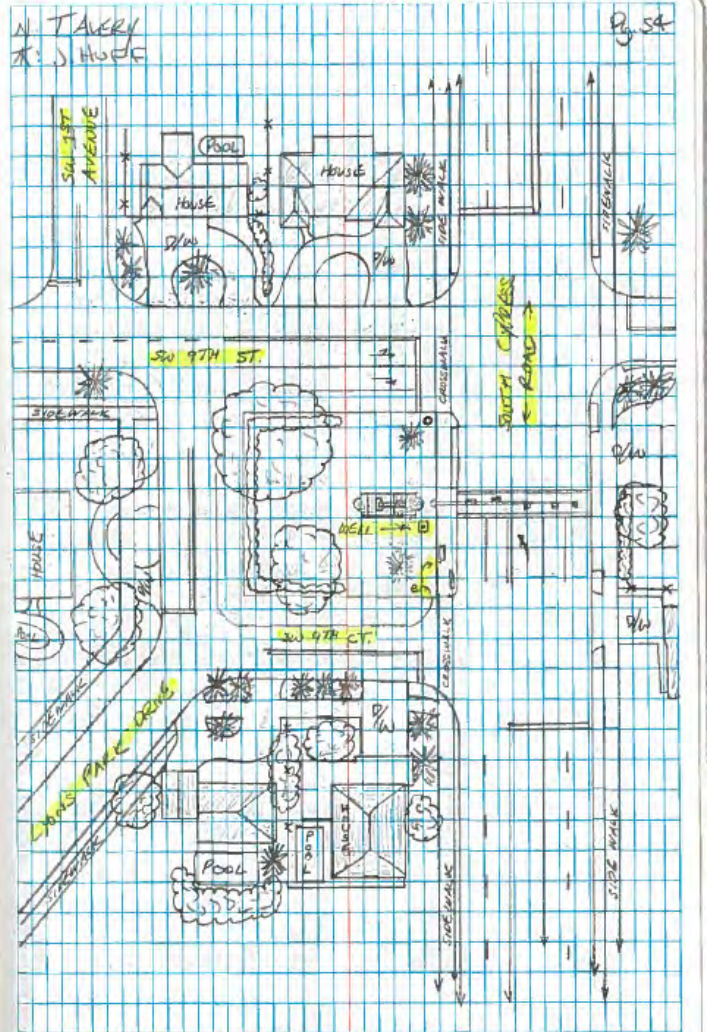
PT#	DESCRIPTION
12038	NORTH EDGE OF TOP OF METAL (6") CASING
12039	NORTH EDGE OF TOP OF PVC WELL HEAD (2-1/2")

TASK: MEASURE & RECORD DISTANCE TO WATERLINE FROM MONITORING POINT

MEASUREMENT: 4.42' ; AS MEASURED FROM N-EDGE OF 2-1/2" PVC WELL HEAD

TIME: 4:15 PM

THIS WELL IS LOCATED AT THE ENTRANCE TO LYONS PARK NEIGHBORHOOD, JUST OFF THE WEST END OF SOUTH CYPRESS ROAD, NORTH OF SW 9TH CT. MORE APPROXIMATELY, THE WELL IS LOCATED





Tolson S F W M. D. 09/25/19  
 AT GZ USGS WELLS & BMS  
 S/N: 1939 JOB #: 5009 9999  
 WELL SITE: G-2896

N: T. AVERY  
 T: J. HUFF

TASK ELEVATE MONITORING POINT, REFERENCE MONUMENTATION, & GROUND LEVEL @ WELL SITE.

ELEVATION		DESCRIPTION		
BEGIN	<del>100.00</del> 5.71 (Whidden) (NA4088)	ALUMINUM DISC FOUND IN LOCK BOX, LOCATED SOUTH EAST		
BACKSIGHT (+)		FORESIGHT (-)		ADJ. ELEV.
STA ID	RDS	MEAN	ELEV.	
				100.00
	4.785		5.01	
BM	4.675	4.6767	<del>4.6767</del> 4.90	4.900 <del>99.7767</del> 5.557
	4.570		10.2867 4.79	5.457
	21.5' / 21.5'		22' / 43.5'	
			5.03	
"	"	"	4.915 4.9150	<del>99.7767</del> 5.522
			4.80	5.472
			23' / 44.5'	
			5.03	
"	"	"	4.925 4.9233	<del>99.7767</del> 5.513
			4.815	5.463
			21.5' / 43'	
			5.035	
"	"	"	4.93 4.9300	<del>99.7767</del> 5.507
			4.825	5.457
			21' / 42.5'	

TOP OF CONCRETE SLAB BASE FOR METAL OF WELL ENCLOSURE, STAMPED "SURVEY MARKER"

FORESIGHT (-)  
 DESCRIPTIONS

NORTH CORNER OF CONCRETE SLAB AROUND WELL CASING

EAST CORNER OF CONCRETE SLAB AROUND WELL CASING

SOUTH CORNER OF CONCRETE SLAB AROUND WELL CASING

WEST CORNER OF CONCRETE SLAB AROUND WELL CASING

TOLSON		S.F.W./M.D.		07/25/19	
AT-GR		USGS WELLS E. Camp			
S/N: 1439		JOB #: 5009 9999			
		WELL SITE: G-2896			
TASK: CONTINUE ELEVATING POINTS OF INTEREST					
STA ID	RDs	MEAN ELEV.	RDs	MEAN ELEV.	ADJ. ELEV.
				4.825	
BM		<del>104.0767</del>	4.723	4.7233	<del>99.9588</del> 5.775
		10.3867	4.610		5.663
			22.5/44'		
"	"		5.175		
		"	5.065	5.0650	<del>99.6117</del> 5.372
		"	4.955		5.322
			22/43.5'		
"	"		5.015		
		"	4.905	4.9050	<del>99.7777</del> 5.462
		"	4.795		5.462
			22/43.5'		
* BREAK SET-UP					
	5.435		5.205		
	5.325	5.325	105.0967	5.10	5.0983 <del>99.9908</del> 5.758
	5.215	10.807	4.99		5.709
	22/65.5'		21.5/87'		
* END LEVEL LOOP					

N: T. AVERY  
 X: D. HUFF

FORESIGHT (-)  
 DESCRIPTION

GROUND SHOT NORTH OF CONCRETE SLAB AROUND WELL CASING

MEASURING POINT @ NORTH EDGE OF PVC PIPE OPENING (2.5" P.V.C. SCHED. 40 PVC)(O.D.)

MEASURING POINT @ NORTH EDGE OF METAL CASING

BACK @ STARTING POINT (SITE BM)

CHECK IN = -0.001'



## The NGS Data Sheet

See file [dsdata.pdf](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.12.5.2

1 National Geodetic Survey, Retrieval Date = MAY 20, 2019

DO2659 \*\*\*\*\*

DO2659 DESIGNATION - 020

DO2659 PID - DO2659

DO2659 STATE/COUNTY- FL/BROWARD

DO2659 COUNTRY - US

DO2659 USGS QUAD - POMPANO BEACH (1983)

DO2659

DO2659 \*CURRENT SURVEY CONTROL

DO2659

DO2659\* NAD 83(1986) POSITION- 26 12 41. (N) 080 06 25. (W) SCALED

DO2659\* [NAVD 88](#) ORTHO HEIGHT - 1.331 (meters) 4.37 (feet) ADJUSTED

DO2659

DO2659 GEOID HEIGHT - -25.837 (meters) GEOID12B

DO2659 DYNAMIC HEIGHT - 1.328 (meters) 4.36 (feet) COMP

DO2659 MODELED GRAVITY - 979,067.7 (mgal) NAVD 88

DO2659

DO2659 VERT ORDER - SECOND CLASS II

DO2659

DO2659.The horizontal coordinates were scaled from a topographic map and have

DO2659.an estimated accuracy of +/- 6 seconds.

DO2659.

DO2659.The orthometric height was determined by differential leveling and

DO2659.adjusted by the NATIONAL GEODETIC SURVEY

DO2659.in December 2012.

DO2659

DO2659.Significant digits in the geoid height do not necessarily reflect accuracy.

DO2659.GEOID12B height accuracy estimate available [here](#).

DO2659

DO2659.[Photographs](#) are available for this station.

DO2659

DO2659.The dynamic height is computed by dividing the NAVD 88

DO2659.geopotential number by the normal gravity value computed on the

DO2659.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

DO2659.degrees latitude (g = 980.6199 gals.).

DO2659

DO2659.The modeled gravity was interpolated from observed gravity values.

DO2659

DO2659; North East Units Estimated Accuracy

DO2659;SPC FL E - 208,340. 289,250. MT (+/- 180 meters Scaled)

DO2659

DO2659\_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNJ892994(NAD 83)

DO2659

DO2659 SUPERSEDED SURVEY CONTROL

DO2659

DO2659.No superseded survey control is available for this station.

DO2659

DO2659\_MARKER: DB = BENCH MARK DISK

DO2659\_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

DO2659\_STAMPING: 020 2011

DO2659\_MARK LOGO: FL2570

DO2659\_PROJECTION: RECESSED 5 CENTIMETERS

DO2659\_MAGNETIC: R = STEEL ROD IMBEDDED IN MONUMENT

DO2659\_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL

DO2659\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

"020" NGS Benchmark Datasheet (2 of 2)

D02659+SATELLITE: SATELLITE OBSERVATIONS - December 22, 2011

D02659

D02659	HISTORY	- Date	Condition	Report By
D02659	HISTORY	- 20111222	MONUMENTED	STONER

D02659

D02659

STATION DESCRIPTION

D02659

D02659'DESCRIBED BY STONER AND ASSOCIATES INC 2011 (DWS)

D02659'THE MARK IS ABOUT 9.3 MI (15.0 KM) SOUTHEAST OF WEST DIXIE BEND, 6.6

D02659'MI (10.6 KM) NORTH-NORTHEAST OF FORT LAUDERDALE, 2.1 MI (3.4 KM)

D02659'SOUTH-SOUTHEAST OF POMPANO BEACH, IN SECTION 12, TOWNSHIP 49 SOUTH,

D02659'RANGE 42 EAST. OWNERSHIP IS THE FLORIDA DEPARTMENT OF TRANSPORTATION.

D02659'TO REACH THE MARK FROM THE INTERSECTION OF WEST ATLANTIC BOULEVARD AND

D02659'NORTH DIXIE HIGHWAY IN POMPANO BEACH, GO EAST ON EAST ATLANTIC

D02659'BOULEVARD FOR 1.5 MI (2.4 KM) TO THE INTERSECTION OF FEDERAL HIGHWAY

D02659'(U.S. HIGHWAY 1). TURN RIGHT ON SOUTH FEDERAL HIGHWAY (U.S. HIGHWAY

D02659'1) AND GO SOUTH FOR 1.4 MI (2.3 KM) TO THE MARK ON THE RIGHT, SET IN

D02659'THE TOP OF A 10-INCH (25 CM) ROUND CONCRETE MONUMENT RECESSED 0.2 FT

D02659'(6 CM) BELOW THE LEVEL OF THE GROUND AND 0.5 FT (15 CM) BELOW THE

D02659'LEVEL OF SOUTH FEDERAL HIGHWAY (U.S. HIGHWAY 1).

D02659'

D02659'LOCATED 82.0 FT (25.0 M) WEST OF THE CENTERLINE OF SOUTH FEDERAL

D02659'HIGHWAY (U.S. HIGHWAY 1), 45.0 FT (13.7 M) SOUTH OF THE CENTERLINE OF

D02659'MCNAB ROAD, 18.8 FT (5.7 M) NORTHEAST OF A TRAFFIC SIGNAL POLE, 16.5

D02659'FT (5.0 M) SOUTHEAST OF A CONCRETE POWER POLE, 15.5 FT (4.7 M)

D02659'NORTHEAST OF THE EAST END OF A CVS PHARMACY SIGN, 9.3 FT (2.8 M)

D02659'SOUTHWEST OF A TRAFFIC SIGNAL POLE AND 1.2 FT (0.4 M) NORTHEAST OF A

D02659'CARSONITE WITNESS POST.

D02659'

D02659'NOTE REBAR ROD IS IMBEDDED IN THE MONUMENT.

\*\*\* retrieval complete.

Elapsed Time = 00:00:04

## The NGS Data Sheet

See file [dsdata.pdf](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.12.5.2

1 National Geodetic Survey, Retrieval Date = MAY 20, 2019  
DO2660 \*\*\*\*\*  
DO2660 DESIGNATION - 021  
DO2660 PID - D02660  
DO2660 STATE/COUNTY- FL/BROWARD  
DO2660 COUNTRY - US  
DO2660 USGS QUAD - POMPANO BEACH (1983)  
DO2660  
DO2660 \*CURRENT SURVEY CONTROL  
DO2660  
DO2660\* NAD 83(1986) POSITION- 26 12 40. (N) 080 07 11. (W) SCALED  
DO2660\* [NAVD 88](#) ORTHO HEIGHT - 3.340 (meters) 10.96 (feet) ADJUSTED  
DO2660  
DO2660 GEOID HEIGHT - -25.795 (meters) GEOID12B  
DO2660 DYNAMIC HEIGHT - 3.335 (meters) 10.94 (feet) COMP  
DO2660 MODELED GRAVITY - 979,068.0 (mgal) NAVD 88  
DO2660  
DO2660 VERT ORDER - SECOND CLASS II  
DO2660  
DO2660.The horizontal coordinates were scaled from a topographic map and have  
DO2660.an estimated accuracy of +/- 6 seconds.  
DO2660.  
DO2660.The orthometric height was determined by differential leveling and  
DO2660.adjusted by the NATIONAL GEODETTIC SURVEY  
DO2660.in December 2012.  
DO2660  
DO2660.Significant digits in the geoid height do not necessarily reflect accuracy.  
DO2660.GEOID12B height accuracy estimate available [here](#).  
DO2660  
DO2660.[Photographs](#) are available for this station.  
DO2660  
DO2660.The dynamic height is computed by dividing the NAVD 88  
DO2660.geopotential number by the normal gravity value computed on the  
DO2660.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45  
DO2660.degrees latitude (g = 980.6199 gals.).  
DO2660  
DO2660.The modeled gravity was interpolated from observed gravity values.  
DO2660  
DO2660; North East Units Estimated Accuracy  
DO2660;SPC FL E - 208,300. 287,970. MT (+/- 180 meters Scaled)  
DO2660  
DO2660\_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNJ879993(NAD 83)  
DO2660  
DO2660 SUPERSEDED SURVEY CONTROL  
DO2660  
DO2660.No superseded survey control is available for this station.  
DO2660  
DO2660\_MARKER: DB = BENCH MARK DISK  
DO2660\_SETTING: 32 = SET IN A RETAINING WALL OR CONCRETE LEDGE  
DO2660\_SP\_SET: WING WALL  
DO2660\_STAMPING: 021 2011  
DO2660\_MARK LOGO: FL2570  
DO2660\_MAGNETIC: N = NO MAGNETIC MATERIAL  
DO2660\_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO  
DO2660+STABILITY: SURFACE MOTION

"021" NGS Benchmark Datasheet (2 of 2)

DO2660\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

DO2660+SATELLITE: SATELLITE OBSERVATIONS - January 03, 2012

DO2660

DO2660 HISTORY - Date Condition Report By

DO2660 HISTORY - 20120103 MONUMENTED STONER

DO2660

STATION DESCRIPTION

DO2660

DO2660'DESCRIBED BY STONER AND ASSOCIATES INC 2012 (DWS)

DO2660'THE MARK IS ABOUT 8.8 MI (14.2 KM) SOUTHEAST OF WEST DIXIE BEND, 6.3

DO2660'MI (10.1 KM) NORTH-NORTHEAST OF FORT LAUDERDALE, 1.8 MI (2.9 KM) SOUTH

DO2660'OF POMPANO BEACH, IN SECTION 1, TOWNSHIP 49 SOUTH, RANGE 42 EAST.

DO2660'OWNERSHIP IS THE FLORIDA DEPARTMENT OF TRANSPORTATION.

DO2660'

DO2660'TO REACH THE MARK FROM THE INTERSECTION OF WEST ATLANTIC BOULEVARD AND

DO2660'NORTH DIXIE HIGHWAY IN POMPANO BEACH, GO EAST ON EAST ATLANTIC

DO2660'BOULEVARD FOR 1.5 MI (2.4 KM) TO THE INTERSECTION OF FEDERAL HIGHWAY

DO2660'(U.S. HIGHWAY 1). TURN RIGHT ON SOUTH FEDERAL HIGHWAY (U.S. HIGHWAY

DO2660'1) AND GO SOUTH FOR 1.4 MI (2.3 KM) TO THE INTERSECTION OF EAST MCNAB

DO2660'ROAD ON THE RIGHT AND SOUTHEAST 15TH STREET ON THE LEFT. TURN RIGHT

DO2660'ON EAST MCNAB ROAD AND GO EAST FOR 0.8 MI (1.3 KM) TO THE MARK ON THE

DO2660'RIGHT, SET FLUSH IN THE TOP OF THE NORTHEAST WING WALL OF THE BRIDGE

DO2660'OVER THE CYPRESS CREEK CANAL.

DO2660'

DO2660'LOCATED 59.3 FT (18.1 M) NORTHEAST OF A CONCRETE POWER POLE NUMBER

DO2660'85C11, 28.2 FT (8.6 M) SOUTHWEST OF A WOODEN POWER POLE, 24.5 FT (7.5

DO2660'M) NORTH OF THE CENTERLINE OF EAST MCNAB ROAD AND 24.0 FT (7.3 M)

DO2660'SOUTHWEST OF THE WEST END OF A CONCRETE WALK.

\*\*\* retrieval complete.

Elapsed Time = 00:00:04