



T2 UES, Inc.

5670 Zip Drive
Fort Myers, FL 33905
USA

Phone +1 239 277 0722

www.T2ue.com

SURVEYOR'S REPORT

USGS Wells Phase 4

USGS Station No: 280905081270101

Station Name: OSF-11

Prepared For: South Florida Water Management
District

Work Order No: 4600004161-WO5

Report Date: September 1, 2020



TABLE OF CONTENTS

CERTIFICATION	3
PURPOSE OF SURVEY AND PROJECT OVERVIEW	4
SITE LOCATION	4
PROJECT DATUM.....	4
LEVELING PROCEDURES AND METHODOLOGY	5
NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (OPUS).	5
DATES OF FIELD DATA COLLECTION.....	5
PROJECT RESULTS	
DISTRICT WELL REPORT FORM.....	6-11
NGS DATA SHEETS	12-15
FIELD NOTES	16-27
SFWMD BENCHMARK FORM.....	28
OPUS REPORT	29-32
RAW LEVEL DATA	33-34
CORPSCON SOLUTION	38



SURVEYOR'S REPORT

According to the:
STATE OF FLORIDA
Standards of Practice
CHAPTER 472.027 Florida Statutes
Chapter 5J-17.050 through 5J-17.052, Florida Administrative Code

This report and copies thereof are not valid without the signature and original raised seal of a Florida Licensed Surveyor and Mapper. **This report is not valid without the digital files referenced in this report.**

Additions or deletions to the report by other than the signing party are prohibited without written consent of the signing party.

All field work was performed by:

T2 UES, Inc., LB00008336
5670 Zip Drive
Fort Myers, Florida 33905
Phone: (239) 277-0722 Fax: (239) 277-7179
Scott Urquhart, PSM 6524 (Surveyor and Mapper in Responsible Charge)

I hereby certify that as a duly registered Florida Professional Surveyor and Mapper, I have prepared this Report for the specific purpose of providing the **South Florida Water Management District** with the information as outlined. This report is not complete without the referenced information being available during an examination of said Report. I further certify that the precision achieved and the care taken in collecting the data to formulate this Report are adequate for the purpose of the assignment and that the standards set forth in Chapter 5J-17.050 through 5J-17.052 of the Florida Administrative Code have been met.

Scott Urquhart
Professional Surveyor & Mapper
Florida Certificate No. 6524

(For the firm – LB 8336)

Date Signed

PURPOSE OF SURVEY AND PROJECT OVERVIEW

The specific purpose of this survey is establish North American Vertical Datum of 1988 (NAVD88) elevations for United States Geological Survey (USGS) well site **OSF-11**, provide a site benchmark and additional well data as follows:

- Establish an elevation on the USGS measuring mark on top of the well(s) at each site.
- Stamp a District provided aluminum tag with the appropriate data in the appropriate spaces on the tag. Including the Corpscon 6.0.1 vertical offset value from NGVD1929 to NAVD1988.
- Establish a North American Datum 83/11 (or higher) State Plane Coordinate on the benchmark and the well head.
- Provide an NAVD88 elevation on each of the USGS benchmarks (in the USGS Reports noted as “Reference Marks” or “RM’s”) recovered at the site.
- Take a typical ground shot near the well.
- Take an elevation shot on all four (4) corners of the concrete well pad.
- Measure the well diameter to determine the casing material (i.e. PVC), include a picture with a ruler on it and state and show in the report.
- Determine distance to the water table inside the well (DTW) (measurement from the well measuring point, along with time and date). Measure the well head size whether it is a manhole or surface casing.
- Complete the standard District benchmark form for each control monument set and submit the form as a .pdf and a .xlsx.

SITE LOCATION

See Page 6 for SFWMD Well Site Form.

PROJECT DATUM

- Horizontal – The project horizontal data is referenced to the North American Datum of 1983, 2011 adjustment, Florida State Plane Coordinate System, East Zone, U.S. Survey Feet.
- Vertical – The project vertical data is referenced to the North American Vertical Datum of 1988 (NAVD88). All data referenced to National Geodetic Vertical Datum of 1929 (NGVD29) was converted utilizing **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.



LEVELING PROCEDURES AND METHODOLOGY

All control leveling for the project was completed utilizing a Leica DNA 03 (serial number 347859) and Leica LS10 digital level (serial number 700874) with barcode level rod. Collimation and adjustment of the instrument was completed prior to leveling. Leveling began on National Geodetic Survey Benchmark W 512, ran through site benchmark OSF 11 and closed on National Geodetic Survey Benchmark OS 135. All leveling was completed in accordance with standard survey practice utilizing conventional third order methods, techniques, and equipment. The overall closure met or exceeded allowable project requirements of $0.02 \times \text{SQRT}(\text{miles})$.

See page 28 for SFWMD Benchmark Datasheet.

NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (OPUS)

The site-established benchmark was occupied collecting positional GPS data for a duration of 6.5 hours on 8-14-2020. This information was then uploaded to the OPUS site and OPUS Shared was selected for processing. Values calculated by OPUS did not meet the 70 percent observation standards for OPUS sharing and was re-observed for an 8 hour duration on 8-26-2020. Again, this information was then uploaded to the OPUS site and OPUS Shared was selected for processing. Values calculated by OPUS did not meet the 70 percent observation standards for OPUS sharing. The OPUS non-shared results were returned with a vertical value 0.03' higher than the conventional run elevation achieved. See pages 29-32 for OSF-11 OPUS Report.

DATES OF FIELD DATA COLLECTION

Field survey work by T2 was performed between July 29th & August 26th, 2020. Field notes are contained in Field Book 555, pages 43-45, 56-57 and 61; Field Book 556, pages 13-16 and 38.



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

U.S.G.S. Station Name: OSF-11	U.S.G.S. Station Number: 280905081270101	Agency: T2 UES, Inc.	Date of Field Work: 8-26-2020
Party Chief: ABREU	Field Book: 555; 556	Page(s): 56-57; 13-16	Report Prepared by: CHAMBLESS

SITE SPECIFIC DATA

Site Benchmark: OSF-11	Benchmark Elevation(s) (NAVD88): 66.56	Corpscon 6.0.1 Conversion Factor (NAVD88 to NGVD29) + 0.99	
Well Reference Elevation (NAVD88): 65.71	DTW: 4.35 (08/26/2020 at 9:05 AM)	Ground Elevation (NAVD88): 62.96	Pad Elevation (NAVD88): N/A

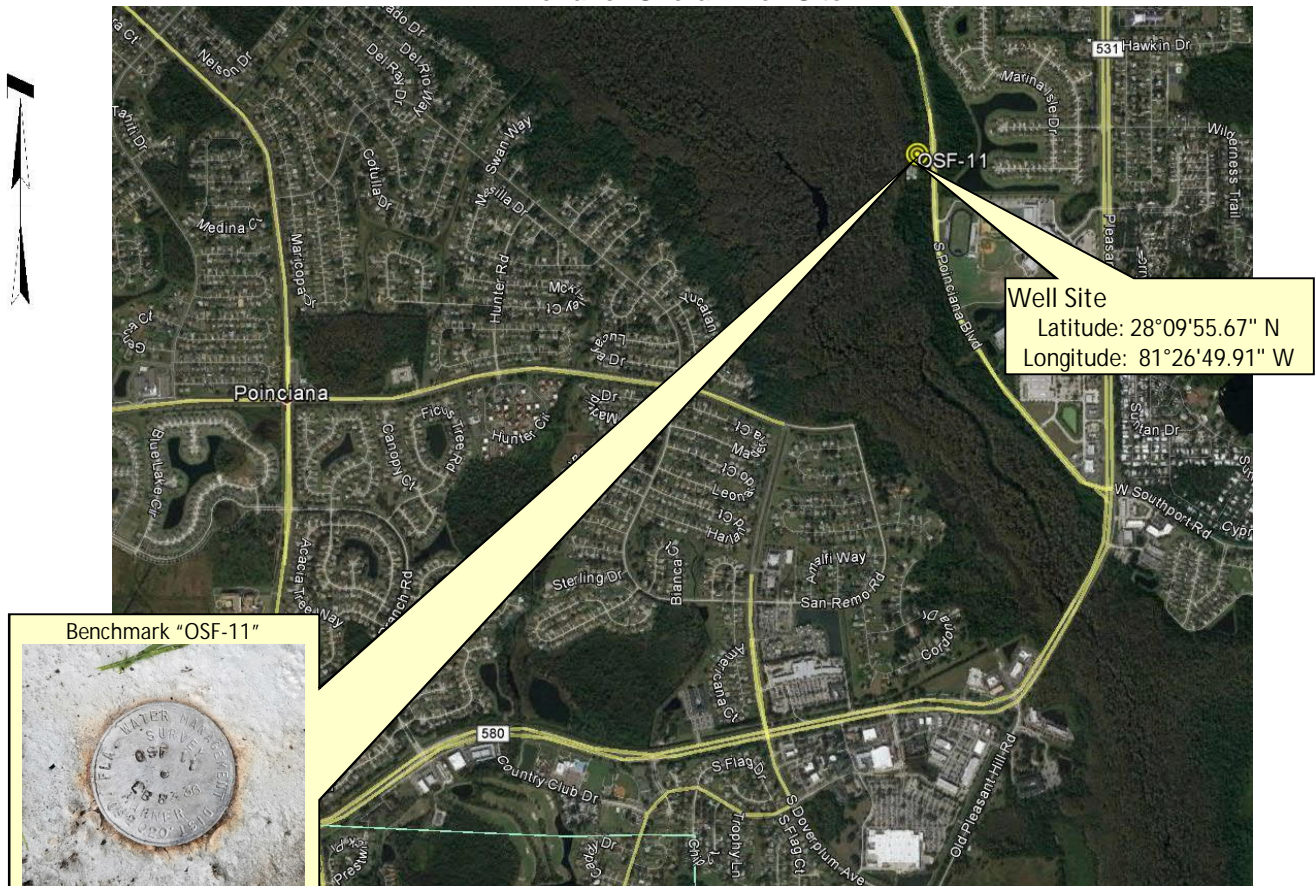
GEOGRAPHIC DATA

Section 6	Township 27S	Range 29E
Well Latitude: 28°09'55.67"N	Well Longitude: 81°26'49.91"W	Location Source: RTK GPS
State Plane Coordinates:	Northing (Y) = 1393125.813	Easting (X) = 512080.529

Notes: NAVD88 – North American Vertical Datum of 1988; NGVD29- National Geodetic Vertical Datum of 1929; 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.

PICTURES

Aerial of Overall Well Site



Well Site
Latitude: 28°09'55.67" N
Longitude: 81°26'49.91" W

Benchmark "OSF-11"

Latitude: 28°09'56.40" N
Longitude: 81°26'48.51" W
El. = 66.56 feet NAVD88

Not to scale (GoogleEarth product)



Well Site and Well Head



Well



Well: "OSF-11"
Reference Point: TOP OF 6" WELL CASING
Reference Point El. = 65.71 feet NAVD88
Distance to Water = 4.35 feet from reference point (08/26/2020 at 9:05 AM)



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

New Aluminum Tag





SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

USGS RMs



RM 1 – 1/2" REBAR



Latitude: N 28°09'55.68"
Longitude: W 81°26'49.91"
NAVD88 EL = 62.91 feet

RM 2 – LAG BOLT



Latitude: N 28°09'56.33"
Longitude: W 81°26'49.85"
NAVD88 EL = 66.79 feet



Site Benchmark

Site Benchmark Overall Photo



Site BM:



Latitude: 28°09'56.40" N
Longitude: 81°26'48.51" W
NAVD88 EL = 66.56





SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

Source Benchmarks



NGS Benchmark "OS135" (DF6750)



Latitude: 28°09'14" N SCALED
Longitude: 81°26'15" W SCALED
NAVD88 EL = 64.74 feet



NGS Benchmark "W512" (DF6708)



Latitude: 28°11'44" N SCALED
Longitude: 81°26'23" W SCALED
NAVD88 EL = 70.68 feet



"OS135" Benchmark Datasheet (1 of 2)

DATASHEETS

Page 1 of 2

The NGS Data Sheet

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

```

PROGRAM = datasheet95, VERSION = 8.12.5.7
Starting Datasheet Retrieval...
1 National Geodetic Survey, Retrieval Date = MAY 19, 2020
DF6750 *****
DF6750 DESIGNATION - OS 135
DF6750 PID - DF6750
DF6750 STATE/COUNTY- FL/OSCEOLA
DF6750 COUNTRY - US
DF6750 USGS QUAD - LAKE TOHOPEKALIGA (2018)
DF6750
DF6750 *CURRENT SURVEY CONTROL
DF6750
DF6750* NAD 83(1986) POSITION- 28 09 14. (N) 081 26 15. (W) SCALED
DF6750* NAVD 88 ORTHO HEIGHT - 19.734 (meters) 64.74 (feet) ADJUSTED
DF6750
DF6750 GEOID HEIGHT - -27.594 (meters) GEOID18
DF6750 DYNAMIC HEIGHT - 19.705 (meters) 64.65 (feet) COMP
DF6750 MODELED GRAVITY - 979,153.6 (mgal) NAVD 88
DF6750
DF6750 VERT ORDER - SECOND CLASS I
DF6750
DF6750.The horizontal coordinates were scaled from a map and have
DF6750.an estimated accuracy of +/- 6 seconds.
DF6750.
DF6750.The orthometric height was determined by differential leveling and
DF6750.adjusted by the NATIONAL GEODETIC SURVEY
DF6750.in April 2004.
DF6750
DF6750.Significant digits in the geoid height do not necessarily reflect accuracy.
DF6750.GEOID18 height accuracy estimate available here.
DF6750
DF6750.Click photographs - Photos may exist for this station.
DF6750
DF6750.The dynamic height is computed by dividing the NAVD 88
DF6750.geopotential number by the normal gravity value computed on the
DF6750.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DF6750.degrees latitude (g = 980.6199 gals.).
DF6750
DF6750.The modeled gravity was interpolated from observed gravity values.
DF6750
DF6750; North East Units Estimated Accuracy
DF6750;SPC FL E - 423,340. 157,030. MT (+/- 180 meters Scaled)
DF6750
DF6750_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMM570143(NAD 83)
DF6750
DF6750 SUPERSEDED SURVEY CONTROL
DF6750
DF6750.No superseded survey control is available for this station.
DF6750
DF6750 MARKER: DD = SURVEY DISK
DF6750_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)

```



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

"OS135" Benchmark Datasheet (2 of 2)

DATASHEETS

Page 2 of 2

DF6750_STAMPING: BM OS-135 1981
 DF6750_MARK LOGO: SFLWMD
 DF6750_PROJECTION: FLUSH
 DF6750_MAGNETIC: N = NO MAGNETIC MATERIAL
 DF6750_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 DF6750_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
 DF6750+SATELLITE: SATELLITE OBSERVATIONS - July 20, 2001
 DF6750_ROD/PIPE-DEPTH: 16.5 meters

DF6750	HISTORY	- Date	Condition	Report By
DF6750	HISTORY	- 1981	MONUMENTED	SFLWMD
DF6750	HISTORY	- 20010720	GOOD	FLDEP
DF6750	HISTORY	- 20050216	GOOD	INDIV
DF6750	HISTORY	- 20071017	GOOD	WOOLPT

DF6750
 DF6750 STATION DESCRIPTION

DF6750'DESCRIBED BY FL DEPT OF ENV PRO 2001 (JLM)
 DF6750'THE MARK IS ABOUT 10.0 MI SOUTHWEST OF KISSIMEE, IN SECTION 8,
 DF6750'TOWNSHIP 27 SOUTH, RANGE
 DF6750'29 EAST.
 DF6750'
 DF6750'TO REACH THE MARK FROM THE JUNCTION OF U.S. HIGHWAY 192 (VINE STREET)
 DF6750'AND U.S. HIGHWAY
 DF6750'17, 92 (JOHN YOUNG PARKWAY) IN KISSIMEE, GO SOUTH ON U.S. HIGHWAY 17,
 DF6750'92 FOR 3.5 MI TO THE
 DF6750'JUNCTION OF PLEASANT HILL ROAD (COUNTY ROAD 531) ON THE LEFT, TURN
 DF6750'LEFT ON PLEASANT HILL
 DF6750'ROAD (COUNTY ROAD 531) AND GO SOUTH FOR 7.55 MI TO THE JUNCTION OF
 DF6750'SOUTHPORT ROAD ON
 DF6750'THE LEFT, TURN LEFT ON SOUTHPORT ROAD AND GO EAST FOR 0.1 MI TO THE
 DF6750'MARK ON THE LEFT, A
 DF6750'DISK SET ON TOP OF A ROD DRIVEN INTO THE GROUND ENCASED IN A 6-INCH
 DF6750'PVC PIPE FLUSH WITH
 DF6750'THE GROUND AND LEVEL WITH SOUTHPORT ROAD, THE DISK IS RECESSED 1.0 FT
 DF6750'BELOW THE TOP OF
 DF6750'THE PVC PIPE.

DF6750'
 DF6750'LOCATED 33.0 FT NORTH OF THE CENTERLINE OF SOUTHPORT ROAD, 14.5 FT
 DF6750'EAST OF POWER POLE
 DF6750'NUMBER 6-38430, 6.0 FT SOUTH-SOUTHWEST OF POWER POLE NUMBER K 6086733
 DF6750'WITH 4 GUY WIRES
 DF6750'ATTACHED AND 1.1 FT SOUTH OF A SFWMD METAL WITNESS POST.
 DF6750'
 DF6750'NOTE ACCESS TO THE DISK IS HAD THROUGH A 5-INCH SCREW CAP.

DF6750
 DF6750 STATION RECOVERY (2005)

DF6750
 DF6750'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2005
 DF6750'RECOVERED AS DESCRIBED. RECOVERY NOTE BY COONER AND ASSOCIATES, INC.

DF6750
 DF6750 STATION RECOVERY (2007)

DF6750
 DF6750'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2007 (NM)
 DF6750'RECOVERED IN GOOD CONDITION.

*** retrieval complete.
 Elapsed Time = 00:00:02



"W512" Benchmark Datasheet (1 of 2)

The NGS Data Sheet

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

PROGRAM = datasheet95, VERSION = 8.12.5.9
Starting Datasheet Retrieval...
1 National Geodetic Survey, Retrieval Date = AUGUST 11, 2020
DF6706 *****
DF6706 DESIGNATION - W 512
DF6706 PID - DF6706
DF6706 STATE/COUNTY- FL/OSCEOLA
DF6706 COUNTRY - US
DF6706 USGS QUAD - LAKE TOHOPEKALIGA (2018)
DF6706
DF6706 *CURRENT SURVEY CONTROL
DF6706
DF6706* NAD 83(1986) POSITION- 28 11 44. (N) 081 26 23. (W) SCALED
DF6706* [NAVD 88](#) ORTHO HEIGHT - 21.542 (meters) 70.68 (feet) ADJUSTED
DF6706
DF6706 GEOID HEIGHT - -27.679 (meters) GEOID18
DF6706 DYNAMIC HEIGHT - 21.510 (meters) 70.57 (feet) COMP
DF6706 MODELED GRAVITY - 979,155.7 (mgal) NAVD 88
DF6706
DF6706 VERT ORDER - SECOND CLASS I
DF6706
DF6706.The horizontal coordinates were scaled from a map and have
DF6706.an estimated accuracy of +/- 6 seconds.
DF6706.
DF6706.The orthometric height was determined by differential leveling and
DF6706.adjusted by the NATIONAL GEODETIC SURVEY
DF6706.in April 2004.
DF6706
DF6706.Significant digits in the geoid height do not necessarily reflect accuracy.
DF6706.GEOID18 height accuracy estimate available [here](#).
DF6706
DF6706.Click [photographs](#) - Photos may exist for this station.
DF6706
DF6706.The dynamic height is computed by dividing the NAVD 88
DF6706.geopotential number by the normal gravity value computed on the
DF6706.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
DF6706.degrees latitude (g = 980.6199 gals.).
DF6706
DF6706.The modeled gravity was interpolated from observed gravity values.
DF6706
DF6706;
DF6706;SPC FL E - North East Units Estimated Accuracy
DF6706; 427,960. 156,830. MT (+/- 180 meters Scaled)
DF6706
DF6706_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMM568189(NAD 83)
DF6706
DF6706 SUPERSEDED SURVEY CONTROL
DF6706
DF6706.No superseded survey control is available for this station.
DF6706



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

"W512" Benchmark Datasheet (2 of 2)

DF6706_MARKER: DD = SURVEY DISK
 DF6706_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DF6706_STAMPING: W 512 2001
 DF6706_MARK LOGO: FLDEP
 DF6706_PROJECTION: FLUSH
 DF6706_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
 DF6706_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 DF6706+STABILITY: SURFACE MOTION
 DF6706_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DF6706+SATELLITE: SATELLITE OBSERVATIONS - April 20, 2010

DF6706			
DF6706	HISTORY	- Date	Condition
DF6706	HISTORY	- 20010628	MONUMENTED
DF6706	HISTORY	- 20100420	GOOD
DF6706			Report By
DF6706			FLDEP
DF6706			GPI

DF6706
 DF6706 STATION DESCRIPTION
 DF6706 DESCRIBED BY FL DEPT OF ENV PRO 2001 (JLM)
 DF6706 THE MARK IS ABOUT 7.1 MI SOUTHWEST OF KISSIMMEE, IN SECTION 29,
 DF6706 TOWNSHIP 26 SOUTH, RANGE
 DF6706 29 EAST.
 DF6706
 DF6706 TO REACH THE MARK FROM THE JUNCTION OF U.S. HIGHWAY 192 (VINE STREET)
 DF6706 AND U.S. HIGHWAY
 DF6706 17, 92 (JOHN YOUNG PARKWAY) IN KISSIMMEE, GO SOUTH ON U.S. HIGHWAY 17,
 DF6706 92 FOR 3.5 MI TO THE
 DF6706 JUNCTION OF PLEASANT HILL ROAD (COUNTY ROAD 531) ON THE LEFT, TURN
 DF6706 LEFT ON PLEASANT HILL
 DF6706 ROAD (COUNTY ROAD 531) AND GO SOUTH FOR 4.65 MI TO THE MARK ON THE
 DF6706 LEFT, SET IN THE TOP OF
 DF6706 A ROUND CONCRETE MONUMENT FLUSH WITH THE GROUND AND ABOUT LEVEL WITH
 DF6706 PLEASANT HILL
 DF6706 ROAD.
 DF6706
 DF6706 LOCATED 207.0 FT NORTH OF THE APPROXIMATE CENTER OF A TURN-A-ROUND FOR
 DF6706 SOUTHWOOD
 DF6706 DRIVE AND A METAL GATE, 60.4 FT EAST OF THE CENTERLINE OF PLEASANT
 DF6706 HILL ROAD, 20.6 FT EAST
 DF6706 OF POWER POLE NUMBER 21213 WITH 3 GUY WIRES ATTACHED, 8.8 FT EAST OF
 DF6706 THE EAST SIDE OF
 DF6706 THE SIDEWALK AND 1.2 FT WEST OF A BARBWIRE FENCE AND A CARSONITE
 DF6706 WITNESS POST.
 DF6706
 DF6706 NOTE A MAGNET WAS IMBEDDED IN THE MONUMENT ON THE SOUTH SIDE.
 DF6706
 DF6706 STATION RECOVERY (2010)
 DF6706
 DF6706 RECOVERY NOTE BY GREENMAN PEDERSEN INCORPORATED 2010 (KAW)
 DF6706 RECOVERED IN GOOD CONDITION.

*** retrieval complete.
 Elapsed Time = 00:00:01



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

Field Notes (1 of 6)

171204.05	SFWMD USGS / PH 4 WELLS	J. ABREU	FB 555 / Pb 56
	OSF-11		8/14/20
FILE:	OSF-11 08-14-20	WELL	
BM	OSF-11 SFWMD ALUMI DISK IN 7" DIA	MATERIAL: DIP	
CONC	STAMPED OSF-11 CB 8336 2020	DIA	
HI:	6.562	DOWN TO WATER MEAS:	4.35
START:	8:19 AM	TIME:	9:05 AM
END:		DATE:	8/14/20
		MEAS POINT EL:	66.56
		TOP OF WATER EL:	62.21
	TRIMBLE VRS NETWORK		
	GPS FILE: 171204.05 JA 08-14-20		
PT 40,026	= CONN N: 1393199.709 E: 512206.493		
PT 40,027	= LAG BOLT N: 1393193.850 E: 512086.800		
PT 40,028	= WELL N: 1393125.813 E: 512080.529		
PT 40,028			
PT 40,029	= FIR N: 1393126.491 E: 512080.803		
PT 40,030	= GRND N: 1393126.338 E: 512078.766		



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

Field Notes (2 of 6)

171204.05 SEWMP USGS / PH4 WELLS
OSF-11

The diagram shows a layout of wells and infrastructure. At the top center is a 'GATE POST' with a 'G.C.F.E.' label. Below it is a 'BM' (benchmark) with a '30°' angle. To the left is a 'REF' (reference) point. A 'CABLE' is labeled with 'S. POINTE #24334'. A 'WELL' is shown with a 'DIA' (diameter) of '63.60'. Other labels include 'OSCEOLA COUNTY ENV', 'ASPHALT DRIVE', 'S. POINT ROAD BVB', and 'GUY'.

J. Agnew
EB 555 / P 57

PICTURES OF BM & WELL

- OSF-11 BM (1) = LOOKING NORTH
- OSF-11 BM (2) = LOOKING WEST
- OSF-11 BM (3) = LOOKING EAST
- OSF-11 BM (4) = LOOKING SOUTH
- OSF-11 BM (5) = LOOKING N.W. AREA
- OSF-11 BM (6) = DISK CLOSE UP
- OSF-11 BM (7) = DISK WAIST HIGH

- OSF-11 WELL (1) = TAG UP CLOSE
- OSF-11 WELL (2) = TAG LOCATION
- OSF-11 WELL (3) = LOOKING EAST
- OSF-11 WELL (4) = LOOKING WEST
- OSF-11 WELL (5) = LOOKING SOUTH
- OSF-11 WELL (6) = LOOKING NORTH
- OSF-11 WELL (7) = WELL DIA
- OSF-11 WELL (8) = WELL MEAS DIA



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

Field Notes (3 of 6)

<p>171204.05 SFWMD USGS PH4 WELLS WELL OSF-11</p> <p>LEICA DNA 03 S/N: 347859 FILE: 171204.05JC.72920</p> <p>COLLIMATION COLL. ERROR OLD = -14.1" COLL. ERROR NEW = -12.8" DIFF = 1.2" RECTILE = 5.2724</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">STA</th> <th style="width: 15%;">BS (+)</th> <th style="width: 15%;">A.I.</th> <th style="width: 15%;">F.S. (-)</th> <th style="width: 45%;">EL.</th> </tr> </thead> <tbody> <tr> <td></td> <td>7.0028</td> <td>71.7428</td> <td></td> <td>64.74 (88)</td> </tr> <tr> <td></td> <td>2.6296</td> <td>69.4275</td> <td>4.9449</td> <td>66.7979</td> </tr> <tr> <td></td> <td>3.9465</td> <td>70.3920</td> <td>2.9820</td> <td>66.4455</td> </tr> <tr> <td></td> <td>3.3739</td> <td>70.3619</td> <td>3.4040</td> <td>66.9880</td> </tr> <tr> <td></td> <td>4.1170</td> <td>69.4469</td> <td>5.0319</td> <td>65.3300</td> </tr> <tr> <td></td> <td>5.1570</td> <td>70.3645</td> <td>4.2395</td> <td>65.2075</td> </tr> <tr> <td></td> <td>5.3125</td> <td>71.7154</td> <td>3.9616</td> <td>66.4029</td> </tr> </tbody> </table>				STA	BS (+)	A.I.	F.S. (-)	EL.		7.0028	71.7428		64.74 (88)		2.6296	69.4275	4.9449	66.7979		3.9465	70.3920	2.9820	66.4455		3.3739	70.3619	3.4040	66.9880		4.1170	69.4469	5.0319	65.3300		5.1570	70.3645	4.2395	65.2075		5.3125	71.7154	3.9616	66.4029	<p>J. CONNORS T. ADT 7/29/20 FB 556 PG 13</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">DESC.</th> </tr> </thead> <tbody> <tr> <td>OS 135 DE6570 ROD W/CAP (UNDER WATER) IN PVC SLEEVE (64.74) (88)</td> </tr> <tr> <td>T.P. 1</td> </tr> <tr> <td>T.P. 2</td> </tr> <tr> <td>T.P. 3 SET PK IN SIDEWALK JOINT 100' FROM LOWES ENTRANCE</td> </tr> <tr> <td>T.P. 4</td> </tr> <tr> <td>T.P. 5</td> </tr> <tr> <td>T.P. 6 SET PK IN WALK 71-30 S. OF SCHOOL ENTRANCE</td> </tr> </tbody> </table>	DESC.	OS 135 DE6570 ROD W/CAP (UNDER WATER) IN PVC SLEEVE (64.74) (88)	T.P. 1	T.P. 2	T.P. 3 SET PK IN SIDEWALK JOINT 100' FROM LOWES ENTRANCE	T.P. 4	T.P. 5	T.P. 6 SET PK IN WALK 71-30 S. OF SCHOOL ENTRANCE
STA	BS (+)	A.I.	F.S. (-)	EL.																																																
	7.0028	71.7428		64.74 (88)																																																
	2.6296	69.4275	4.9449	66.7979																																																
	3.9465	70.3920	2.9820	66.4455																																																
	3.3739	70.3619	3.4040	66.9880																																																
	4.1170	69.4469	5.0319	65.3300																																																
	5.1570	70.3645	4.2395	65.2075																																																
	5.3125	71.7154	3.9616	66.4029																																																
DESC.																																																				
OS 135 DE6570 ROD W/CAP (UNDER WATER) IN PVC SLEEVE (64.74) (88)																																																				
T.P. 1																																																				
T.P. 2																																																				
T.P. 3 SET PK IN SIDEWALK JOINT 100' FROM LOWES ENTRANCE																																																				
T.P. 4																																																				
T.P. 5																																																				
T.P. 6 SET PK IN WALK 71-30 S. OF SCHOOL ENTRANCE																																																				



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

Field Notes (4 of 6)

STA	B.S. (+)	H.I.	F.S. (-)	EL.	DESC.
171204.05 SFWMD USGS PH4 WELLS					
WELL OSF-11					
(CONTINUED FROM PG 13)					
	3.5592	70.3924	4.8822	66.8332	T.P. 7
	5.6017	71.6087	4.3854	66.0070	T.P. 8
	5.7201	72.4865	4.8423	66.7664	T.P. 9
	4.7787	71.3342	5.9309	66.5555	FCM OSF-11 LB 8336 2020 (ENDED 7/29, STARTED 7/30)
	2.9250	68.9442	5.3151	66.0192	T.P. 10
	3.0956	68.8028	3.2370	65.7072	OSF-11 N. PIM UNDER CAP, NO M.P. FOUND
	5.5255	71.4296	2.8987	65.9041	T.P. 11
	5.9898	72.5449	4.8745	66.5551	T.P. 12 (FCM OSF-11)
	5.1142	71.8731	5.7861	66.7589	T.P. 13
	4.2733	70.2929	5.8534	66.0190	T.P. 14
	5.0397	71.8314	3.5012	66.7917	T.P. 15



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

Field Notes (5 of 6)

171204.05 SFWMD USGS PH4 WELLS					J. CONNORS	
WELL OSF-11					T. AOT	
(CONTINUED FROM PG 14)					7/30/20	
					FB 556 PG 15	
STA.	B.S. (+)	H.I.	F.S. (-)	EL.	DESC.	
	4.0838	70.4901	5.4251	66.4063	T.P. 16	(T.P. 6)
	4.3363	69.4271	5.3993	65.0908	T.P. 17	
	5.4482	70.4723	4.4030	65.0241	T.P. 18	
	7.8107	75.4149	2.8680	67.6043	T.P. 19	
	5.4561 75.5492	75.5492	5.3218	70.0938	T.P. 20	
	6.5523	75.3262	6.7754	68.7739	T.P. 21 T.P. 21	
	5.0792	75.6450	4.7604	70.5658	T.P. 22	
	5.8240	77.6937	3.7754	71.8679	T.P. 23	
	3.4671	76.1029	5.0758	72.6358	T.P. 24	
	6.3788	78.9376	3.5441	72.5588	T.P. 25	
	5.4883	80.9442	3.4817	75.4559	T.P. 26	



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

Field Notes (6 of 6)

STA	B.S. (+)	H.I.	F.S. (-)	EL.	DESC.
171204.05 SFWMD USGS PH4 WELLS					
WELL OSF-11					
(CONTINUED FROM PG 15)					
	5.0080	81.3920	4.5601	76.3841	
			4.2511	77.1409	
FILE: 171204.05 5673020 OSF11R					
	4.7805	71.3360		66.5555	
	4.5585	71.3557	4.5388	66.7972	
			¹¹⁵ 5.045 4.49	4.805 66.5507	
J. CONNORS T. AOT 7/30/20 FB556 PG 16					
T.P. 27					
4512 DE6708 FCM FDEP 2001 (77.1) (GPS)					
DESC.					
FCM OSF-11 66.5555 (88)					
LAG BOLT IN ELECTRIC POLE (6.75691)					
FCM OSF-11 * NO DIGITAL SHOT AVAILABLE * THROUGH CLT.					



South Florida Water Management District Benchmark Datasheet

Designation: OSF 11	Project Name: USGS PHASE 4 WELLS	Type: V	State Plane Zone: FL East
Stamping: OSF 11 LB 8336 2020	Field Book Name: 555: 556	Field Book Page: 56-57: 13-16	
Established By: T2ues	Recovered By:	Recovery Date:	
Surveyor: ABREU	Established Date: 08/14/20	Status: New	

GEOGRAPHIC POSITION INFORMATION

Section: 6	Township: 27S	Range: 29E
County: OSCEOLA	Quadrangle: LAKE TOHOPEKALIGA	Quad Index: 3412
NAD83 Adj. Year: 2011	Vertical Datum: NAVD1988	Horizontal Datum: NAD1983
NGVD88 Elevation (feet): 66.561	NGVD29 Elevation (feet): 67.551	2022 Elevation:
NGVD88 Class:	NGVD29 Class:	Other Elevation:
NGVD88 Order: 3RD	NGVD29 Order:	Other Elevation Type:

NGS Source BM(s): OS 135, W 512
 NGS PID(s): DF6750, DF6706
 NGS NAVD88 Elev (ft): 64.74, 70.68
 NGS NAVD88 Elev (m): 19.734, 21.542
 NGS 2022 Elev (ft):

CORPSCON 6.0.1 CONVERSION FACTOR (NAVD88 TO NGVD29): (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)

Vertical Datum Offset: + 0.99	Actual NGS Elevation or ngvd29.txt file:	OPUS Ortho Height: 20.298(m)
Northing (Y) (feet): 1393199.71	Easting (X) (feet): 512206.499	Source of Latitude & Longitude: OPUS SOLUTION
Latitude: 28	9	56.40469
DD°	MM'	SS"
Longitude: 81	26	48.50909
DD°	MM'	SS"
Latitude (Decimal Degrees): 28.16566797	Longitude (Decimal Degrees): -81.44680808	

RECOVERY DATA

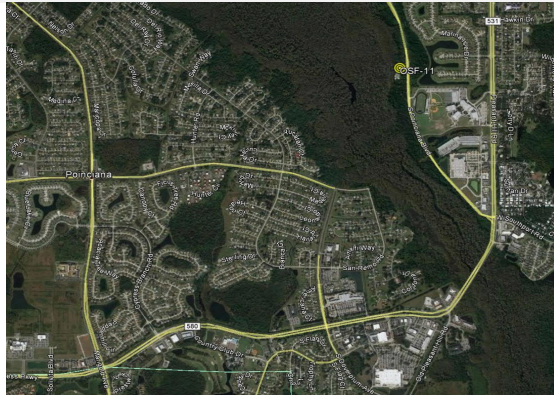
How to Reach: FROM THE INTERSECTION OF PLEASANT HILL RD AND S POINCIANA BLVD, GO NORTHWEST ALONG S POINCIANA BLVD FOR 0.93 MILES. THE MARK IS ON THE LEFT ON THE NORTH SIDE OF A WEST RUNNING ACCESS ROAD FOR OSCEOLA COUNTY SCHOOLBOARD ENVIRONMENTAL STUDY CENTER. THE BENCHMARK IS A SFWMD DISK SET IN A 1 1/2 INCH PIPE WITH A 10 INCH CONCRETE COLLAR 30 FEET NOTH OF A CABLE RISER NUMBERED 27334, 5.3 FEET NORTH OF THE EDGE OF PAVEMENT OF THE ACCESS ROAD AND 4.2 FEET NORTHEAST OF THE NORTHERN GATE POST.

Description/Notes:

Notable Landmarks:
Other Source Benchmarks:

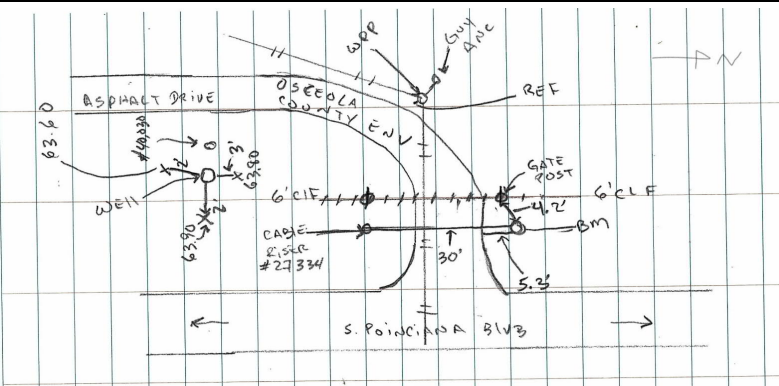
PICTURES

Aerial View of Overall Site



PICTURES

Site Sketch



Haywood, Joshua

From: opus <opus@ngs.noaa.gov>
Sent: Friday, August 28, 2020 7:28 AM
To: Haywood, Joshua
Subject: OPUS solution : 42732390.20o OP1598613916664

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

FILE: 42732390.20o OP1598613916664

NGS OPUS SOLUTION REPORT
=====

All computed coordinate accuracies are listed as peak-to-peak values.

For additional information:

https://can01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ngs.noaa.gov%2FOPUS%2Fabout.jsp%23accuracy&data=02%7C01%7Cjosh.haywood%40t2ue.com%7C47293b1718564f79c36108d84b456786%7Ce64791d699864645a1a068c1175eda41%7C1%7C637342108763207918&sd=7tlyt6XVL1yG%2FnCi6a4%2BCJ1ooOgnmmN0vUIVzEs0YA%3D&reserved=0

USER: josh.haywood@t2ue.com DATE: August 28, 2020
RINEX FILE: 4273239I.20o TIME: 11:27:41 UTC

SOFTWARE: page5 1801.18 master72.pl 160321 START: 2020/08/26 11:45:00
EPHEMERIS: igr21203.eph [rapid] STOP: 2020/08/26 19:44:00
NAV FILE: brdc2390.20n OBS USED: 11219 / 17281 : 65%
ANT NAME: TRMR6-3 NONE # FIXED AMB: 150 / 187 : 80%
ARP HEIGHT: 2.000 OVERALL RMS: 0.025(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2020.6521)

X: 836900.307(m) 0.008(m) 836899.465(m) 0.008(m)
Y: -5564487.719(m) 0.020(m) -5564486.158(m) 0.020(m)
Z: 2992699.781(m) 0.010(m) 2992699.621(m) 0.010(m)

LAT: 28 9 56.40469 0.018(m) 28 9 56.42572 0.018(m)
E LON: 278 33 11.49091 0.008(m) 278 33 11.46892 0.008(m)
W LON: 81 26 48.50909 0.008(m) 81 26 48.53108 0.008(m)
EL HGT: -7.307(m) 0.014(m) -8.854(m) 0.014(m)
ORTHO HGT: 20.298(m) 0.054(m) [NAVD88 (Computed using GEOID18)]

UTM COORDINATES STATE PLANE COORDINATES
UTM (Zone 17) SPC (0901 FL E)
Northing (Y) [meters] 3115635.214 424648.121
Easting (X) [meters] 456135.825 156120.853
Convergence [degrees] -0.21090556 -0.21090556
Point Scale 0.99962375 0.99996493
Combined Factor 0.99962490 0.99996608

US NATIONAL GRID DESIGNATOR: 17RMM5613515635(NAD 83)

BASE STATIONS USED
PID DESIGNATION LATITUDE LONGITUDE DISTANCE(m)
DG9757 DLND DELAND CORS ARP N290322.897 W0811547.480 100333.9
DQ7965 FLWE WEDGEFIELD FL CORS ARP N282626.477 W0810533.176 46220.6
DH3757 WACH WAUCHULA CORS ARP N273051.042 W0815256.615 83983.6

NEAREST NGS PUBLISHED CONTROL POINT
DF6708 Y 512 N281006.710 W0812625.638 699.9

BASE STATION INFORMATION
STATION NAME: dlnd a 3 (DELAND; Deland, Florida, U.S.A.)
MONUMENT: NO DOMES NUMBER
XYZ 847548.9489 -5515060.4257 3079363.2140 MON @ 2010.0000 (M)
XYZ -0.0120 0.0012 0.0015 VEL (M/YR)
NEU 0.0000 0.0000 0.0000 MON TO ARP (M)
NEU 0.0001 -0.0008 0.1242 ARP TO L1 PHASE CENTER (M)
NEU -0.0000 -0.0008 0.1337 ARP TO L2 PHASE CENTER (M)
XYZ -0.1283 0.0127 0.0163 VEL TIMES 10.6523 YRS
XYZ 0.0000 0.0000 0.0000 MON TO ARP
XYZ 0.0157 -0.1074 0.0605 ARP TO L1 PHASE CENTER
XYZ 847548.8364 -5515060.5204 3079363.2908 L1 PHS CEN @ 2020.6521
XYZ -0.0000 0.0000 0.0000 + XYZ ADJUSTMENTS

XYZ 847548.8364 -5515060.5204 3079363.2908 NEW L1 PHS CEN @ 2020.6521
XYZ 847548.8207 -5515060.4130 3079363.2303 NEW ARP @ 2020.6521
XYZ 847548.8207 -5515060.4130 3079363.2303 NEW MON @ 2020.6521
LLH 29 3 22.91916 278 44 12.49707 -1.1443 NEW L1 PHS CEN @ 2020.6521
LLH 29 3 22.91916 278 44 12.49709 -1.2686 NEW ARP @ 2020.6521
LLH 29 3 22.91916 278 44 12.49709 -1.2686 NEW MON @ 2020.6521

STATION NAME: flwe a 1 (Wedgfield FL; Wedgfield, Florida USA)

MONUMENT: NO DOMES NUMBER

XYZ 869051.4451 -5544931.6701 3019536.5503 MON @ 2010.0000 (M)
XYZ -0.0120 -0.0006 0.0021 VEL (M/YR)
NEU 0.0000 0.0000 0.0000 MON TO ARP (M)
NEU 0.0014 -0.0002 0.0880 ARP TO L1 PHASE CENTER (M)
NEU 0.0006 0.0002 0.0812 ARP TO L2 PHASE CENTER (M)
XYZ -0.1278 -0.0064 0.0224 VEL TIMES 10.6523 YRS
XYZ 0.0000 0.0000 0.0000 MON TO ARP
XYZ 0.0116 -0.0759 0.0432 ARP TO L1 PHASE CENTER
XYZ 869051.3289 -5544931.7523 3019536.6158 L1 PHS CEN @ 2020.6521
XYZ -0.0000 0.0000 -0.0000 + XYZ ADJUSTMENTS
XYZ 869051.3289 -5544931.7523 3019536.6158 NEW L1 PHS CEN @ 2020.6521
XYZ 869051.3173 -5544931.6765 3019536.5727 NEW ARP @ 2020.6521
XYZ 869051.3173 -5544931.6765 3019536.5727 NEW MON @ 2020.6521
LLH 28 26 26.49884 278 54 26.80193 -4.9993 NEW L1 PHS CEN @ 2020.6521
LLH 28 26 26.49880 278 54 26.80194 -5.0873 NEW ARP @ 2020.6521
LLH 28 26 26.49880 278 54 26.80194 -5.0873 NEW MON @ 2020.6521

STATION NAME: wach a 2 (Wauchula; Wauchula, Florida, U.S.A.)

MONUMENT: NO DOMES NUMBER

XYZ 799335.4500 -5604081.2975 2928868.5949 MON @ 2010.0000 (M)
XYZ -0.0116 0.0017 0.0012 VEL (M/YR)
NEU 0.0000 0.0000 0.0000 MON TO ARP (M)
NEU 0.0001 -0.0008 0.1242 ARP TO L1 PHASE CENTER (M)
NEU -0.0000 -0.0008 0.1337 ARP TO L2 PHASE CENTER (M)
XYZ -0.1239 0.0180 0.0124 VEL TIMES 10.6523 YRS
XYZ 0.0000 0.0000 0.0000 MON TO ARP
XYZ 0.0148 -0.1091 0.0575 ARP TO L1 PHASE CENTER
XYZ 799335.3410 -5604081.3886 2928868.6648 L1 PHS CEN @ 2020.6521
XYZ -0.0000 0.0000 0.0000 + XYZ ADJUSTMENTS
XYZ 799335.3410 -5604081.3886 2928868.6648 NEW L1 PHS CEN @ 2020.6521
XYZ 799335.3262 -5604081.2795 2928868.6073 NEW ARP @ 2020.6521
XYZ 799335.3262 -5604081.2795 2928868.6073 NEW MON @ 2020.6521
LLH 27 30 51.06303 278 7 3.36194 9.2826 NEW L1 PHS CEN @ 2020.6521
LLH 27 30 51.06303 278 7 3.36197 9.1584 NEW ARP @ 2020.6521
LLH 27 30 51.06303 278 7 3.36197 9.1584 NEW MON @ 2020.6521

REMOTE STATION INFORMATION

STATION NAME: 4273 1

MONUMENT: NO DOMES NUMBER

XYZ 836899.5883 -5564486.8533 2992699.7363 MON @ 2020.6516 (M)
NEU -0.0022 -0.0003 2.0000 MON TO ARP (M)
NEU 0.0022 0.0003 0.0855 ARP TO L1 PHASE CENTER (M)
NEU 0.0017 -0.0018 0.0828 ARP TO L2 PHASE CENTER (M)
XYZ 0.2621 -1.7446 0.9421 MON TO ARP
XYZ 0.0113 -0.0735 0.0423 ARP TO L1 PHASE CENTER
XYZ 836899.8617 -5564488.6714 2992700.7207 L1 PHS CEN @ 2020.6521

BASELINE NAME: dIInd 4273

XYZ -0.1191 0.6888 -0.1166 + XYZ ADJUSTMENTS
XYZ 836899.7427 -5564487.9826 2992700.6041 NEW L1 PHS CEN @ 2020.6521
XYZ 836899.7313 -5564487.9091 2992700.5618 NEW ARP @ 2020.6521
XYZ 836899.4692 -5564486.1645 2992699.6197 NEW MON @ 2020.6521
LLH 28 9 56.42555 278 33 11.46903 -6.7628 NEW L1 PHS CEN @ 2020.6521
LLH 28 9 56.42548 278 33 11.46903 -6.8484 NEW ARP @ 2020.6521
LLH 28 9 56.42555 278 33 11.46903 -8.8483 NEW MON @ 2020.6521

BASELINE NAME: flwe 4273

XYZ -0.1275 0.6880 -0.1197 + XYZ ADJUSTMENTS
XYZ 836899.7342 -5564487.9834 2992700.6010 NEW L1 PHS CEN @ 2020.6521
XYZ 836899.7229 -5564487.9099 2992700.5587 NEW ARP @ 2020.6521
XYZ 836899.4608 -5564486.1653 2992699.6166 NEW MON @ 2020.6521
LLH 28 9 56.42547 278 33 11.46872 -6.7647 NEW L1 PHS CEN @ 2020.6521
LLH 28 9 56.42540 278 33 11.46871 -6.8502 NEW ARP @ 2020.6521
LLH 28 9 56.42547 278 33 11.46872 -8.8502 NEW MON @ 2020.6521

BASELINE NAME: wach 4273

XYZ -0.1237 0.7083 -0.1095 + XYZ ADJUSTMENTS
XYZ 836899.7380 -5564487.9631 2992700.6112 NEW L1 PHS CEN @ 2020.6521
XYZ 836899.7267 -5564487.8896 2992700.5690 NEW ARP @ 2020.6521
XYZ 836899.4646 -5564486.1450 2992699.6268 NEW MON @ 2020.6521
LLH 28 9 56.42606 278 33 11.46897 -6.7770 NEW L1 PHS CEN @ 2020.6521
LLH 28 9 56.42599 278 33 11.46896 -6.8626 NEW ARP @ 2020.6521
LLH 28 9 56.42606 278 33 11.46897 -8.8625 NEW MON @ 2020.6521

G-FILES

Axx2020 826 20 826
 B2020 8261144 20 8261943 1 page5 v1801.18IGS 132 1 2 27NGS 2020 828IFDDPX
 ITRF2014_2114 IGS 20200712
 C00090003 106493515 11 494257515 57 866636106 30 X2390A4273X2390ADLND
 D 1 2 -7750482 1 3 7362982 2 3 -8371301

Axx2020 826 20 826
 B2020 8261144 20 8261943 1 page5 v1801.18IGS 132 1 2 27NGS 2020 828IFDDPX
 ITRF2014_2114 IGS 20200712
 C00090004 321518565 16 195544888 67 268369561 37 X2390A4273X2390AFLWE
 D 1 2 -6873868 1 3 8001412 2 3 -9309260

Axx2020 826 20 826
 B2020 8261144 20 8261943 1 page5 v1801.18IGS 132 1 2 27NGS 2020 828IFDDPX
 ITRF2014_2114 IGS 20200712
 C00090002 -375641384 13 -395951345 74 -638310196 36 X2390A4273X2390AWACH
 D 1 2 -4689316 1 3 6918547 2 3 -8833557

POST-FIT RMS BY SATELLITE VS. BASELINE

OVERALL 01 02 03 05 06 07 09 12
 dlnd-4273| 0.024 0.032 0.021 0.032 0.022 0.023 ... 0.031 0.023
 13 15 17 18 19 20 22 24 25
 dlnd-4273| 0.023 0.023 0.028 0.031 0.024 0.026 0.018 0.029 0.024
 28 29 30
 dlnd-4273| 0.022 0.029 0.025

OVERALL 01 02 03 05 06 07 09 12
 flwe-4273| 0.026 0.035 0.027 0.023 0.029 0.023 ... 0.038 0.027
 13 15 17 18 19 20 22 24 25
 flwe-4273| 0.022 0.019 0.030 0.027 0.057 ... 0.020 0.021 0.031
 28 29 30
 flwe-4273| 0.022 0.025 0.024

OVERALL 01 02 03 05 06 07 09 12
 wach-4273| 0.025 ... 0.026 0.051 0.027 0.023 ... 0.022 0.025
 13 15 17 18 19 20 22 24 25
 wach-4273| 0.025 0.022 0.027 0.027 0.030 0.019 0.035 0.026 0.021
 28 29 30
 wach-4273| 0.023 0.025 0.025

OBS BY SATELLITE VS. BASELINE

OVERALL 01 02 03 05 06 07 09 12
 dlnd-4273| 3967 20 733 83 285 490 ... 115 346
 13 15 17 18 19 20 22 24 25
 dlnd-4273| 250 265 446 27 53 40 20 10 198
 28 29 30
 dlnd-4273| 326 198 62

OVERALL 01 02 03 05 06 07 09 12
 flwe-4273| 3687 20 691 79 265 471 ... 78 324
 13 15 17 18 19 20 22 24 25
 flwe-4273| 219 264 424 19 21 ... 19 20 192
 28 29 30
 flwe-4273| 292 225 64

OVERALL 01 02 03 05 06 07 09 12
 wach-4273| 3565 ... 741 8 252 437 ... 27 305
 13 15 17 18 19 20 22 24 25
 wach-4273| 224 269 398 19 74 37 28 26 166
 28 29 30
 wach-4273| 302 189 63

ITRF position of 4273 as determined by individual baselines

	X	Y	Z
dlnd	836899.469	-5564486.164	2992699.620
flwe	836899.461	-5564486.165	2992699.617
wach	836899.465	-5564486.145	2992699.627

Residuals of position determined by individual baselines from the final position

	X	Y	Z	East	North	Up
dlnd	0.004	-0.006	-0.001	0.003	-0.004	0.005
flwe	-0.004	-0.007	-0.004	-0.005	-0.007	0.004
wach	-0.000	0.013	0.006	0.002	0.011	-0.009

Covariance Matrix for the xyz OPUS Position (meters^2).

0.0000032133	-0.0000008343	0.0000004558
-0.0000008343	0.0000402978	-0.0000019379
0.0000004558	-0.0000019379	0.0000108889

Covariance Matrix for the enu OPUS Position (meters^2).

0.0000037882	0.0000023301	-0.0000040351
--------------	--------------	---------------

0.0000023301 0.0000156013 -0.0000108447
-0.0000040351 -0.0000108447 0.0000350105

Horizontal network accuracy = 0.00810 meters.
Vertical network accuracy = 0.01160 meters.

Derivation of NAD 83 vector components

Position of reference station ARP in NAD_83(2011)(EPOCH:2010.0000).

	Xa(m)	Ya(m)	Za(m)		
DLND	847549.66841	-5515061.98181	3079363.38792	2010.00	
FLWE	869052.16310	-5544933.23543	3019536.72788	2010.00	
WACH	799336.16445	-5604082.87126	2928868.78053	2010.00	

Position of reference station monument in NAD_83(2011)(EPOCH:2010.0000).

	Xr(m)	Yr(m)	Zr(m)		
DLND	847549.66841	-5515061.98181	3079363.38792	2010.00	
FLWE	869052.16310	-5544933.23543	3019536.72788	2010.00	
WACH	799336.16445	-5604082.87126	2928868.78053	2010.00	

Velocity of reference station monument in NAD_83(2011)(EPOCH:2010.0000).

	Vx (m/yr)	Vy (m/yr)	Vz (m/yr)	
DLND	0.00141	0.00220	-0.00149	
FLWE	0.00120	0.00039	-0.00096	
WACH	0.00128	0.00265	-0.00157	

Vectors from unknown station monument to reference station monument
in NAD_83(2011)(EPOCH:2010.0000).

	Xr-X= DX(m)	Yr-Y= DY(m)	Zr-Z= DZ(m)		
DLND	10649.36141	49425.73719	86663.60692	2010.00	
FLWE	32151.85610	19554.48357	26836.94688	2010.00	
WACH	-37564.14255	-39595.15226	-63831.00047	2010.00	

STATE PLANE COORDINATES - U.S. Survey Foot

SPC (0901 FLE)
Northing (Y) [feet] 1393199.710
Easting (X) [feet] 512206.499
Convergence [degrees] -0.21090556
Point Scale 0.99996493
Combined Factor 0.99996608

***** New Reference Frame Preview *****

We are replacing the nation's NAD 83 and NAVD 88 datums, to improve access and accuracy of the National Spatial Reference System. More at <https://can01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fgeodesy.noaa.gov%2Fdatums%2Fnewdatums%2F&data=02%7C01%7Cjosh.haywood%40t2ue.com%7C47293b1718564f79c36108d84b456786%7Ce64791d699864645a1a068c1175eda41%7C0%7C637342108763207918&sd=qqjYO m%2BdMmgezF75eRrPvk%2FrEX2A09LvLVLyV6VadY%3D&reserved=0>

Below are approximate coordinates for this solution in the new frames:

APPROX ORTHO HGT: 20.288 (m) [PROTOTYPE (Computed using xGeoid19B,GRS80,ITRF2014)]

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

OSF-11 Raw Level Data.GSI

110001+000000A1	32. . . 7+00323755	331. 27+00050671	390. . . +00000008	391. 27+00000000
110002+000000B1	32. . . 7+00330191	332. 27+00049163	390. . . +00000004	391. 27+00000001
110003+000000B2	32. . . 7+00655948	336. 27+00051221	390. . . +00000005	391. 27+00000001
110004+000000A2	32. . . 7+01310706	335. 27+00052732	390. . . +00000004	391. 27+00000001
110005+00DF6750	32. . . 7+02298407	331. 07+00070028	390. . . +00000003	391. 07+00000002
410006+?. 1				
110007+00DF6750	83. . 17+00647400			
110008+00DF6750	32. . . 7+02298407	331. 07+00070028	390. . . +00000003	391. 07+00000002
110009+00000TP1	32. . . 7+02151432	332. 07+00049449	390. . . +00000004	391. 07+00000004
110010+00000TP1	573. . 7+00146975	574. . 7+04449839	83. . 07+00667979	
110011+00000TP1	32. . . 7+02622096	331. 07+00026296	390. . . +00000004	391. 07+00000004
110012+00000TP2	32. . . 7+02516115	332. 07+00029820	390. . . +00000003	391. 07+00000003
110013+00000TP2	573. . 7+00252957	574. . 7+09588050	83. . 07+00664455	
110014+00000TP2	32. . . 7+02929190	331. 07+00039465	390. . . +00000006	391. 07+00000006
110015+00000TP3	32. . . 7+02960501	332. 07+00034040	390. . . +00000007	391. 07+00000003
110016+00000TP3	573. . 7+00221646	574. . 7+15477741	83. . 07+00669880	
110017+00000TP3	32. . . 7+03031279	331. 07+00033739	390. . . +00000003	391. 07+00000002
110018+00000TP4	32. . . 7+02969456	332. 07+00050319	390. . . +00000007	391. 07+00000004
110019+00000TP4	573. . 7+00283470	574. . 7+21478476	83. . 07+00653300	
110020+00000TP4	32. . . 7+03082244	331. 07+00041170	390. . . +00000009	391. 07+00000006
110021+00000TP5	32. . . 7+03011879	332. 07+00042395	390. . . +00000006	391. 07+00000004
110022+00000TP5	573. . 7+00353835	574. . 7+27572599	83. . 07+00652075	
110023+00000TP5	32. . . 7+03069901	331. 07+00051570	390. . . +00000003	391. 07+00000002
110024+00000TP6	32. . . 7+03040292	332. 07+00039616	390. . . +00000004	391. 07+00000005
110025+00000TP6	573. . 7+00383444	574. . 7+33682793	83. . 07+00664029	
110026+00000TP6	32. . . 7+03018407	331. 07+00053125	390. . . +00000003	391. 07+00000001
110027+00000TP7	32. . . 7+03093126	332. 07+00048822	390. . . +00000006	391. 07+00000004
110028+00000TP7	573. . 7+00308725	574. . 7+39794326	83. . 07+00668332	
110029+00000TP7	32. . . 7+02939171	331. 07+00035592	390. . . +00000004	391. 07+00000005
110030+00000TP8	32. . . 7+03027799	332. 07+00043854	390. . . +00000005	391. 07+00000005
110031+00000TP8	573. . 7+00220096	574. . 7+45761296	83. . 07+00660070	
110032+00000TP8	32. . . 7+02822026	331. 07+00056017	390. . . +00000004	391. 07+00000005
110033+00000TP9	32. . . 7+02919344	332. 07+00048423	390. . . +00000004	391. 07+00000002
110034+00000TP9	573. . 7+00122779	574. . 7+51502666	83. . 07+00667664	
110035+00000TP9	32. . . 7+01654642	331. 07+00057201	390. . . +00000003	391. 07+00000002
110036+00000FCM	32. . . 7+01299171	332. 07+00059309	390. . . +00000005	391. 07+00000003
110037+00000FCM	573. . 7+00478249	574. . 7+54456479	83. . 07+00665555	
110038+00000FCM	32. . . 7+00732533	331. 07+00047787	390. . . +00000003	391. 07+00000001
110039+00000TP10	32. . . 7+00778877	332. 07+00053151	390. . . +00000003	391. 07+00000001
110040+00000TP10	573. . 7+00431905	574. . 7+55967889	83. . 07+00660192	
110041+00000TP10	32. . . 7+00326087	331. 07+00029250	390. . . +00000004	391. 07+00000001
110042+00000SF11	32. . . 7+00212052	332. 07+00032370	390. . . +00000004	391. 07+00000000
110043+00000SF11	573. . 7+00545940	574. . 7+56506028	83. . 07+00657072	
110044+00000SF11	32. . . 7+00212063	331. 07+00030956	390. . . +00000005	391. 07+00000000
110045+00000TP11	32. . . 7+00332992	332. 07+00028987	390. . . +00000005	391. 07+00000000
110046+00000TP11	573. . 7+00425011	574. . 7+57051084	83. . 07+00659041	
110047+00000TP11	32. . . 7+00730522	331. 07+00055255	390. . . +00000003	391. 07+00000001
110048+00000TP12	32. . . 7+00744802	332. 07+00048745	390. . . +00000004	391. 07+00000001
110049+00000TP12	573. . 7+00410731	574. . 7+58526408	83. . 07+00665551	

OSF-11 Raw Level Data.GSI

110050+0000TP12	32. . . 7+01280037	331. 07+00059898	390. . . +00000003	391. 07+00000002
110051+0000TP13	32. . . 7+01398975	332. 07+00057861	390. . . +00000004	391. 07+00000001
110052+0000TP13	573. . . 7+00291793	574. . 7+61205420	83. . 07+00667589	
110053+0000TP13	32. . . 7+03119005	331. 07+00051142	390. . . +00000005	391. 07+00000005
110054+0000TP14	32. . . 7+02915991	332. 07+00058566	390. . . +00000003	391. 07+00000005
110055+0000TP14	32. . . 7+02918151	332. 07+00058534	390. . . +00000003	391. 07+00000004
110056+0000TP14	573. . . 7+00492647	574. . 7+67242576	83. . 07+00660196	
110057+0000TP14	32. . . 7+02999356	331. 07+00042733	390. . . +00000003	391. 07+00000005
110058+0000TP15	32. . . 7+02948664	332. 07+00035012	390. . . +00000003	391. 07+00000005
110059+0000TP15	573. . . 7+00543339	574. . 7+73190597	83. . 07+00667917	
110060+0000TP15	32. . . 7+02950308	331. 07+00050397	390. . . +00000003	391. 07+00000005
110061+0000TP16	32. . . 7+03187068	332. 07+00054251	390. . . +00000004	391. 07+00000004
110062+0000TP16	573. . . 7+00306579	574. . 7+79327973	83. . 07+00664063	
110063+0000TP16	32. . . 7+03036613	331. 07+00040838	390. . . +00000007	391. 07+00000002
110064+0000TP17	32. . . 7+02978345	332. 07+00053993	390. . . +00000003	391. 07+00000004
110065+0000TP17	573. . . 7+00364846	574. . 7+85342930	83. . 07+00650908	
110066+0000TP17	32. . . 7+03023172	331. 07+00043363	390. . . +00000003	391. 07+00000004
110067+0000TP18	32. . . 7+02985739	332. 07+00044030	390. . . +00000003	391. 07+00000003
110068+0000TP18	573. . . 7+00402279	574. . 7+91351841	83. . 07+00650241	
110069+0000TP18	32. . . 7+02976571	331. 07+00054482	390. . . +00000004	391. 07+00000003
110070+0000TP19	32. . . 7+01783353	332. 07+00028680	390. . . +00000003	391. 07+00000002
110071+0000TP19	573. . . 7+01595497	574. . 7+96111765	83. . 07+00676043	
110072+0000TP19	32. . . 7+02826060	331. 07+00078107	390. . . +00000003	391. 07+00000003
110073+0000TP20	32. . . 7+02741350	332. 07+00053218	390. . . +00000004	391. 07+00000004
110074+0000TP20	573. . . 7+01680207	574. . 1+10167917	83. . 07+00700931	
110075+0000TP20	32. . . 7+02961929	331. 07+00054561	390. . . +00000005	391. 07+00000001
110076+0000TP21	32. . . 7+02890211	332. 07+00067754	390. . . +00000004	391. 07+00000003
110077+0000TP21	573. . . 7+01751925	574. . 1+10753132	83. . 07+00687739	
110078+0000TP21	32. . . 7+03159226	331. 07+00065523	390. . . +00000006	391. 07+00000007
110079+0000TP22	32. . . 7+02927772	332. 07+00047604	390. . . +00000004	391. 07+00000004
110080+0000TP22	573. . . 7+01983379	574. . 1+11361831	83. . 07+00705658	
110081+0000TP22	32. . . 7+02969714	331. 07+00050792	390. . . +00000005	391. 07+00000006
110082+0000TP23	32. . . 7+02938217	332. 07+00037754	390. . . +00000003	391. 07+00000004
110083+0000TP23	573. . . 7+02014876	574. . 1+11952625	83. . 07+00718697	
110084+0000TP23	32. . . 7+02929429	331. 07+00058240	390. . . +00000004	391. 07+00000004
110085+0000TP24	32. . . 7+02846038	332. 07+00050578	390. . . +00000004	391. 07+00000002
110086+0000TP24	573. . . 7+02098267	574. . 1+12530171	83. . 07+00726358	
110087+0000TP24	32. . . 7+02970943	331. 07+00034671	390. . . +00000005	391. 07+00000006
110088+0000TP25	32. . . 7+03005634	332. 07+00035441	390. . . +00000005	391. 07+00000003
110089+0000TP25	573. . . 7+02063576	574. . 1+13127829	83. . 07+00725588	
110090+0000TP25	32. . . 7+02905471	331. 07+00063788	390. . . +00000004	391. 07+00000001
110091+0000TP26	32. . . 7+02970846	332. 07+00034817	390. . . +00000006	391. 07+00000001
110092+0000TP26	573. . . 7+01998202	574. . 1+13715461	83. . 07+00754559	
110093+0000TP26	32. . . 7+02809506	331. 07+00054883	390. . . +00000003	391. 07+00000004
110094+0000TP27	32. . . 7+03004641	332. 07+00045601	390. . . +00000004	391. 07+00000004
110095+0000TP27	573. . . 7+01803067	574. . 1+14296875	83. . 07+00763841	
110096+0000TP27	32. . . 7+00473300	331. 07+00050080	390. . . +00000003	391. 07+00000000
110097+0000Y512	32. . . 7+00448599	332. 07+00042511	390. . . +00000003	391. 07+00000000
110098+0000Y512	573. . . 7+01827768	574. . 1+14389065	83. . 07+00771409	

Project File Data		Coordinate System	
Name:	J:\2017\171204.05 - SFWMD USGS Phase 4 Wells\TBC\OSF 11.vce	Name:	Default
Size:	56 KB	Datum:	WGS 1984
Modified:	8/11/2020 2:30:01 PM (UTC:-4)	Zone:	Default
Time zone:	Eastern Standard Time	Geoid:	
Reference number:		Vertical datum:	
Description:		Calibrated site:	
Comment 1:			
Comment 2:			
Comment 3:			

Level Report

Imported file: [171204.05JC072920.GSI](#)

Instrument:

Creation option: Delta elevations

Description usage: Feature codes

Run - 0002 Raw Observations

Standard error per kilometer of double leveling: 0.00230 ft
Standard error per turn/station setup: 0.00000 ft
Raw Misclosure: -0.02704 ft
Σ BS Distances: 12431.929 ft
Σ FS Distances: 12263.518 ft
Run Length: 24695.447 ft
Reduction: Adjusted Values

Create	Point ID	BS	HI	IS	FS	A Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
✓	DF6750	✓ 7.00279 ft	71.74266 ft			0.00000 ft	64.73987 ft	0.00000 ft	64.73987 ft	Benchmark	229.840 ft	
✓	TP1				✓ 4.94489 ft	2.05790 ft	66.79777 ft	0.00049 ft	66.79825 ft	Computed	215.143 ft	
	TP1	✓ 2.62959 ft	69.42736 ft								262.209 ft	
✓	TP2				✓ 2.98199 ft	-0.35240 ft	66.44537 ft	0.00105 ft	66.44642 ft	Computed	251.611 ft	
	TP2	✓ 3.94649 ft	70.39186 ft								292.918 ft	
✓	TP3				✓ 3.40399 ft	0.54250 ft	66.98787 ft	0.00169 ft	66.98956 ft	Computed	296.050 ft	
	TP3	✓ 3.37389 ft	70.36176 ft								303.127 ft	
✓	TP4				✓ 5.03189 ft	-1.65800 ft	65.32987 ft	0.00235 ft	65.33222 ft	Computed	296.945 ft	
	TP4	✓ 4.11699 ft	69.44686 ft								308.224 ft	
✓	TP5				✓ 4.23949 ft	-0.12250 ft	65.20737 ft	0.00302 ft	65.21039 ft	Computed	301.187 ft	
	TP5	✓ 5.15699 ft	70.36436 ft								306.989 ft	
✓	TP6				✓ 3.96159 ft	1.19540 ft	66.40277 ft	0.00369 ft	66.40646 ft	Computed	304.029 ft	
	TP6	✓ 5.31249 ft	71.71526 ft								301.840 ft	
✓	TP7				✓ 4.88219 ft	0.43030 ft	66.83307 ft	0.00436 ft	66.83742 ft	Computed	309.312 ft	
	TP7	✓ 3.55919 ft	70.39226 ft								293.917 ft	
✓	TP8				✓ 4.38539 ft	-0.82620 ft	66.00687 ft	0.00501 ft	66.01188 ft	Computed	302.779 ft	
	TP8	✓ 5.60169 ft	71.60856 ft								282.202 ft	
✓	TP9				✓ 4.84229 ft	0.75940 ft	66.76627 ft	0.00564 ft	66.77191 ft	Computed	291.934 ft	
	TP9	✓ 5.72009 ft	72.48636 ft								165.464 ft	
✓	BM OSF 11				✓ 5.93089 ft	-0.21080 ft	66.55547 ft	0.00596 ft	66.56143 ft	Computed	129.917 ft	
	BM OSF 11	✓ 4.77869 ft	71.33416 ft								73.253 ft	
✓	TP10				✓ 5.31509 ft	-0.53640 ft	66.01907 ft	0.00613 ft	66.02520 ft	Computed	77.888 ft	
	TP10	✓ 2.92499 ft	68.94406 ft								32.609 ft	
✓	OSF11 MP				✓ 3.23699 ft	-0.31200 ft	65.70707 ft	0.00619 ft	65.71326 ft	Computed	21.205 ft	
	OSF11 MP	✓ 3.09559 ft	68.80266 ft								21.206 ft	
✓	TP11				✓ 2.89869 ft	0.19690 ft	65.90397 ft	0.00625 ft	65.91022 ft	Computed	33.299 ft	
	TP11	✓ 5.52549 ft	71.42946 ft								73.052 ft	
✓	TP12				✓ 4.87449 ft	0.65100 ft	66.55497 ft	0.00641 ft	66.56138 ft	Computed	74.480 ft	
	TP12	✓ 5.98979 ft	72.54475 ft								128.003 ft	
✓	TP13				✓ 5.78609 ft	0.20370 ft	66.75867 ft	0.00670 ft	66.76537 ft	Computed	139.897 ft	
	TP13	✓ 5.11419 ft	71.87286 ft								311.900 ft	
✓	TP14				5.85659 ft	-0.73920 ft	66.01947 ft	0.00736 ft	66.02683 ft	Computed	291.599 ft	
	TP14				✓ 5.85339 ft						291.815 ft	
	TP14	✓ 4.27329 ft	70.29276 ft								299.935 ft	
✓	TP15				✓ 3.50119 ft	0.77210 ft	66.79157 ft	0.00801 ft	66.79958 ft	Computed	294.866 ft	
	TP15	✓ 5.03969 ft	71.83126 ft								295.030 ft	
✓	TP16				✓ 5.42509 ft	-0.38540 ft	66.40617 ft	0.00869 ft	66.41485 ft	Computed	318.706 ft	
	TP16	✓ 4.08379 ft	70.48996 ft								303.661 ft	
✓	TP17				✓ 5.39929 ft	-1.31550 ft	65.09067 ft	0.00934 ft	65.10001 ft	Computed	297.834 ft	
	TP17	✓ 4.33629 ft	69.42696 ft								302.317 ft	
✓	TP18				✓ 4.40299 ft	-0.06670 ft	65.02397 ft	0.01000 ft	65.03397 ft	Computed	298.573 ft	
	TP18	✓ 5.44819 ft	70.47216 ft								297.657 ft	
✓	TP19				✓ 2.86799 ft	2.58019 ft	67.60416 ft	0.01052 ft	67.61469 ft	Computed	178.335 ft	

	TP19	✓ 7.81068 ft	75.41485 ft								282.605 ft	
✓	TP20			✓ 5.32179 ft	2.48890 ft	70.09306 ft	0.01113 ft	70.10419 ft	Computed		274.134 ft	
	TP20	✓ 5.45609 ft	75.54915 ft								296.192 ft	
✓	TP21			✓ 6.77539 ft	-1.31930 ft	68.77376 ft	0.01177 ft	68.78554 ft	Computed		289.021 ft	
	TP21	✓ 6.55229 ft	75.32605 ft								315.922 ft	
✓	TP22			✓ 4.76039 ft	1.79190 ft	70.56566 ft	0.01244 ft	70.57810 ft	Computed		292.777 ft	
	TP22	✓ 5.07919 ft	75.64485 ft								296.971 ft	
✓	TP23			✓ 3.77539 ft	1.30380 ft	71.86946 ft	0.01309 ft	71.88254 ft	Computed		293.821 ft	
	TP23	✓ 5.82399 ft	77.69344 ft								292.942 ft	
✓	TP24			✓ 5.05779 ft	0.76620 ft	72.63565 ft	0.01372 ft	72.64938 ft	Computed		284.603 ft	
	TP24	✓ 3.46709 ft	76.10275 ft								297.094 ft	
✓	TP25			✓ 3.54409 ft	-0.07700 ft	72.55865 ft	0.01437 ft	72.57303 ft	Computed		300.563 ft	
	TP25	✓ 6.37879 ft	78.93744 ft								290.547 ft	
✓	TP26			✓ 3.48169 ft	2.89709 ft	75.45575 ft	0.01502 ft	75.47077 ft	Computed		297.084 ft	
	TP26	✓ 5.48829 ft	80.94404 ft								280.950 ft	
✓	TP27			✓ 4.56009 ft	0.92820 ft	76.38395 ft	0.01565 ft	76.39960 ft	Computed		300.463 ft	
	TP27	✓ 5.00799 ft	81.39194 ft								47.330 ft	
✓	Y512			✓ 4.25109 ft	0.75690 ft	77.14085 ft	0.01576 ft	77.15660 ft	Computed		44.860 ft	
	Y512	✓ 3.94209 ft	81.08294 ft								177.156 ft	
✓	TP28			✓ 5.68309 ft	-1.74100 ft	75.39985 ft	0.01616 ft	75.41601 ft	Computed		188.643 ft	
	TP28	✓ 5.90809 ft	81.30794 ft								346.385 ft	
✓	TP29			✓ 5.24829 ft	0.65980 ft	76.05965 ft	0.01692 ft	76.07656 ft	Computed		347.476 ft	
	TP29	✓ 5.64779 ft	81.70744 ft								352.368 ft	
✓	TP30			✓ 6.04319 ft	-0.39540 ft	75.66425 ft	0.01768 ft	75.68193 ft	Computed		348.270 ft	
	TP30	✓ 3.92599 ft	79.59024 ft								352.386 ft	
✓	TP31			✓ 5.95919 ft	-2.03320 ft	73.63105 ft	0.01845 ft	73.64950 ft	Computed		349.051 ft	
	TP31	✓ 5.67359 ft	79.30464 ft								354.647 ft	
✓	TP32			✓ 4.26779 ft	1.40580 ft	75.03685 ft	0.01922 ft	75.05607 ft	Computed		348.355 ft	
	TP32	✓ 6.09479 ft	81.13164 ft								349.318 ft	
✓	TP33			✓ 6.11279 ft	-0.01800 ft	75.01885 ft	0.01998 ft	75.03883 ft	Computed		348.172 ft	
	TP33	✓ 4.15669 ft	79.17554 ft								346.932 ft	
✓	TP34			✓ 7.03169 ft	-2.87499 ft	72.14386 ft	0.02074 ft	72.16460 ft	Computed		347.055 ft	
	TP34	✓ 4.77369 ft	76.91755 ft								347.755 ft	
✓	TP35			✓ 7.19849 ft	-2.42480 ft	69.71906 ft	0.02151 ft	69.74057 ft	Computed		348.114 ft	
	TP35	✓ 4.45039 ft	74.16945 ft								353.444 ft	
✓	TP36			✓ 5.62809 ft	-1.17770 ft	68.54136 ft	0.02228 ft	68.56364 ft	Computed		348.561 ft	
	TP36	✓ 4.91809 ft	73.45945 ft								348.216 ft	
✓	TP37			✓ 5.68959 ft	-0.77150 ft	67.76986 ft	0.02304 ft	67.79290 ft	Computed		348.509 ft	
	TP37	✓ 5.43449 ft	73.20435 ft								346.304 ft	
✓	TP38			✓ 3.61629 ft	1.81820 ft	69.58806 ft	0.02380 ft	69.61186 ft	Computed		348.676 ft	
	TP38	✓ 6.19699 ft	75.78505 ft								348.131 ft	
✓	TP39			✓ 4.77209 ft	1.42490 ft	71.01296 ft	0.02456 ft	71.03752 ft	Computed		348.105 ft	
	TP39	✓ 6.09489 ft	77.10785 ft								337.571 ft	
✓	TP40			✓ 9.13448 ft	-3.03959 ft	67.97336 ft	0.02532 ft	67.99869 ft	Computed		357.996 ft	
	TP40	✓ 4.44879 ft	72.42216 ft								347.170 ft	
✓	TP41			✓ 5.30169 ft	-0.85290 ft	67.12047 ft	0.02609 ft	67.14655 ft	Computed		348.671 ft	
	TP41	✓ 6.56349 ft	73.68395 ft								350.543 ft	
✓	TP42			✓ 4.12729 ft	2.43620 ft	69.55666 ft	0.02685 ft	69.58351 ft	Computed		347.501 ft	
	TP42	✓ 5.43929 ft	74.99595 ft								87.695 ft	
✓	WS12			✓ 4.34299 ft	1.09630 ft	70.65296 ft	0.02704 ft	70.68000 ft	Benchmark		87.234 ft	

Run - 0002 (N11) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
DF6750-TP1 (E184)	Enabled	2.05790 ft	0.00049 ft	2.05838 ft	1	444.983 ft	7.00279 ft	4.94489 ft	0.00085 ft
TP1-TP2 (E185)	Enabled	-0.35240 ft	0.00056 ft	-0.35184 ft	1	513.820 ft	2.62959 ft	2.98199 ft	0.00091 ft
TP2-TP3 (E186)	Enabled	0.54250 ft	0.00064 ft	0.54314 ft	1	588.968 ft	3.94649 ft	3.40399 ft	0.00097 ft
TP3-TP4 (E187)	Enabled	-1.65800 ft	0.00066 ft	-1.65734 ft	1	600.072 ft	3.37389 ft	5.03189 ft	0.00098 ft
TP4-TP5 (E188)	Enabled	-0.12250 ft	0.00067 ft	-0.12183 ft	1	609.411 ft	4.11699 ft	4.23949 ft	0.00099 ft
TP5-TP6 (E189)	Enabled	1.19540 ft	0.00067 ft	1.19607 ft	1	611.018 ft	5.15699 ft	3.96159 ft	0.00099 ft
TP6-TP7 (E190)	Enabled	0.43030 ft	0.00067 ft	0.43097 ft	1	611.152 ft	5.31249 ft	4.88219 ft	0.00099 ft
TP7-TP8 (E191)	Enabled	-0.82620 ft	0.00065 ft	-0.82554 ft	1	596.696 ft	3.55919 ft	4.38539 ft	0.00098 ft
TP8-TP9 (E192)	Enabled	0.75940 ft	0.00063 ft	0.76003 ft	1	574.136 ft	5.60169 ft	4.84229 ft	0.00096 ft
TP9-BM OSF 11 (E193)	Enabled	-0.21080 ft	0.00032 ft	-0.21048 ft	1	295.381 ft	5.72009 ft	5.93089 ft	0.00069 ft
BM OSF 11-TP10 (E194)	Enabled	-0.53640 ft	0.00017 ft	-0.53623 ft	1	151.141 ft	4.77869 ft	5.31509 ft	0.00049 ft
TP10-OSF11 MP (E195)	Enabled	-0.31200 ft	0.00006 ft	-0.31194 ft	1	53.814 ft	2.92499 ft	3.23699 ft	0.00029 ft
OSF11 MP-TP11 (E196)	Enabled	0.19690 ft	0.00006 ft	0.19696 ft	1	54.505 ft	3.09559 ft	2.89869 ft	0.00030 ft
TP11-TP12 (E197)	Enabled	0.65100 ft	0.00016 ft	0.65116 ft	1	147.532 ft	5.52549 ft	4.87449 ft	0.00049 ft
TP12-TP13 (E198)	Enabled	0.20370 ft	0.00029 ft	0.20399 ft	1	267.901 ft	5.98979 ft	5.78609 ft	0.00066 ft
TP13-TP14 (E199)	Enabled	-0.73920 ft	0.00066 ft	-0.73854 ft	1	603.714 ft	5.11419 ft	5.85339 ft	0.00099 ft
TP14-TP15 (E200)	Enabled	0.77210 ft	0.00065 ft	0.77275 ft	1	594.801 ft	4.27329 ft	3.50119 ft	0.00098 ft
	Enabled	-0.38540 ft	0.00067 ft	-0.38473 ft	1	613.736 ft	5.03969 ft	5.42509 ft	0.00099 ft

TP15-TP16 (E201)										
TP16-TP17 (E202)	Enabled	-1.31550 ft	0.00066 ft	-1.31484 ft	1	601.495 ft	4.08379 ft	5.39929 ft	0.00098 ft	
TP17-TP18 (E203)	Enabled	-0.06670 ft	0.00066 ft	-0.06604 ft	1	600.890 ft	4.33629 ft	4.40299 ft	0.00098 ft	
TP18-TP19 (E204)	Enabled	2.58019 ft	0.00052 ft	2.58072 ft	1	475.991 ft	5.44819 ft	2.86799 ft	0.00087 ft	
TP19-TP20 (E205)	Enabled	2.48890 ft	0.00061 ft	2.48950 ft	1	556.740 ft	7.81068 ft	5.32179 ft	0.00095 ft	
TP20-TP21 (E206)	Enabled	-1.31930 ft	0.00064 ft	-1.31866 ft	1	585.213 ft	5.45609 ft	6.77539 ft	0.00097 ft	
TP21-TP22 (E207)	Enabled	1.79190 ft	0.00067 ft	1.79256 ft	1	608.699 ft	6.55229 ft	4.76039 ft	0.00099 ft	
TP22-TP23 (E208)	Enabled	1.30380 ft	0.00065 ft	1.30444 ft	1	590.792 ft	5.07919 ft	3.77539 ft	0.00097 ft	
TP23-TP24 (E209)	Enabled	0.76620 ft	0.00063 ft	0.76683 ft	1	577.546 ft	5.82399 ft	5.05779 ft	0.00096 ft	
TP24-TP25 (E210)	Enabled	-0.07700 ft	0.00065 ft	-0.07635 ft	1	597.657 ft	3.46709 ft	3.54409 ft	0.00098 ft	
TP25-TP26 (E211)	Enabled	2.89709 ft	0.00064 ft	2.89774 ft	1	587.631 ft	6.37879 ft	3.48169 ft	0.00097 ft	
TP26-TP27 (E212)	Enabled	0.92820 ft	0.00064 ft	0.92883 ft	1	581.414 ft	5.48829 ft	4.56009 ft	0.00097 ft	
TP27-Y512 (E213)	Enabled	0.75690 ft	0.00010 ft	0.75700 ft	1	92.190 ft	5.00799 ft	4.25109 ft	0.00038 ft	
Y512-TP28 (E214)	Enabled	-1.74100 ft	0.00040 ft	-1.74060 ft	1	365.799 ft	3.94209 ft	5.68309 ft	0.00077 ft	
TP28-TP29 (E215)	Enabled	0.65980 ft	0.00076 ft	0.66056 ft	1	693.861 ft	5.90809 ft	5.24829 ft	0.00106 ft	
TP29-TP30 (E216)	Enabled	-0.39540 ft	0.00077 ft	-0.39463 ft	1	700.638 ft	5.64779 ft	6.04319 ft	0.00106 ft	
TP30-TP31 (E217)	Enabled	-2.03320 ft	0.00077 ft	-2.03243 ft	1	701.438 ft	3.92599 ft	5.95919 ft	0.00106 ft	
TP31-TP32 (E218)	Enabled	1.40580 ft	0.00077 ft	1.40657 ft	1	703.002 ft	5.67359 ft	4.26779 ft	0.00106 ft	
TP32-TP33 (E219)	Enabled	-2.42480 ft	0.00076 ft	-2.42403 ft	1	695.868 ft	4.77369 ft	7.19849 ft	0.00106 ft	
TP33-TP34 (E220)	Enabled	-1.17770 ft	0.00077 ft	-1.17693 ft	1	702.006 ft	4.45039 ft	5.62809 ft	0.00106 ft	
TP34-TP35 (E221)	Enabled	-0.77150 ft	0.00076 ft	-0.77074 ft	1	696.725 ft	4.91809 ft	5.68959 ft	0.00106 ft	
TP35-TP36 (E222)	Enabled	1.81820 ft	0.00076 ft	1.81896 ft	1	694.981 ft	5.43449 ft	3.61629 ft	0.00106 ft	
TP36-TP37 (E223)	Enabled	1.42490 ft	0.00076 ft	1.42566 ft	1	696.236 ft	6.19699 ft	4.77209 ft	0.00106 ft	
TP37-TP38 (E224)	Enabled	-3.03959 ft	0.00076 ft	-3.03883 ft	1	695.567 ft	6.09489 ft	9.13448 ft	0.00106 ft	
TP38-TP39 (E225)	Enabled	-0.85290 ft	0.00076 ft	-0.85214 ft	1	695.841 ft	4.44879 ft	5.30169 ft	0.00106 ft	
TP39-TP40 (E226)	Enabled	2.43620 ft	0.00076 ft	2.43696 ft	1	698.044 ft	6.56349 ft	4.12729 ft	0.00106 ft	
TP40-TP41 (E227)	Enabled	1.09630 ft	0.00019 ft	1.09649 ft	1	174.929 ft	5.43929 ft	4.34299 ft	0.00053 ft	
TP41-TP42 (E228)	Enabled									
TP42-W512 (E229)	Enabled									

Run - 0002 (N11) Reduced Coordinates

Point ID	Status	Elevation
DF6750	Enabled	64.73987 ft
W512	Enabled	70.68000 ft

Date: 8/16/2020 10:47:10 AM	Project: J:\2017\171204.05 - SFWMD USGS Phase 4 Wells\TBC\OSF 11.vce	Trimble Business Center
-----------------------------	-------------------------------------------------------------------------	-------------------------

Office

Project

14 August 2020

INPUT

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

OUTPUT

State Plane, NAD83
0901 - Florida East, U.S. Feet
Vertical - NGVD29 (Vertcon94), U.S. Feet

OSF-11-BENCHMARK

1/1

Northing/Y: 1393199.708	Northing/Y: 1393199.708
Easting/X: 512206.493	Easting/X: 512206.493
Elevation/Z: 65.71	Elevation/Z: 66.704
Convergence: -0 12 39.26482	Convergence: -0 12 39.26482
Scale Factor: 0.999964931	Scale Factor: 0.999964931
Combined Factor: 0.999966115	Combined Factor: 0.999966067

Grid Shift (U.S. ft.): X/Easting = 0.0, Y/Northing = 0.0

Remark: