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SURVEYOR'S REPORT

USGS Wells Phase 4

USGS Station No:	265529081185201
Station Name:	82412801R
Prepared For:	South Florida Water Management District
Work Order No:	4600004161-WO5
Report Date:	September 1, 2020

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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

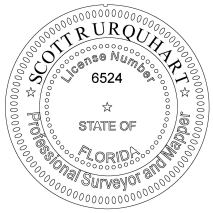
This report and copies thereof are not valid without the signature and original raised seal of a Florida Licensed Surveyor and Mapper. **This report is not valid without the digital files referenced in this report.**

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.



Digitally signed by Scott R. Urquhart, P.S.M.
Date: 2020.09.29 14:05:06 -04'00'

Scott Urquhart
Professional Surveyor & Mapper
Florida Certificate No. 6524

Date Signed

(For the firm – LB 8336)

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 **82412801R**, 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 Orange County Benchmark C1286007, ran through site benchmark 82412801R and closed on Orange County Benchmark R136010. 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 feet times the square root in miles (0.02*SQRT(miles)). In attempt to hold National Geodetic Survey benchmarks as primary project control the following NGS benchmarks were searched for but not found or recovered:

- L 665 006
- RTE 528+ORANGEWOOD BLVD

See page 23 for SFWMD Benchmark Datasheet.

NATIONAL GEODETIC SURVEY ONLINE POSITIONING USER SERVICE (OPUS)

The site-established benchmark was also occupied collecting positional GPS data for a duration of 6.5 hours. This information was then uploaded to the OPUS site for processing. See pages 24-27 for 82412801R OPUS Report.

DATES OF FIELD DATA COLLECTION

Field survey work by T2 was performed between August 4th & 13th, 2020. Field notes are contained in Field Book 555, pages 29-31, 52-54, 60, 64 and 77.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/19

U.S.G.S. Station Name: 82412801R	U.S.G.S. Station Number: 282434081283102	Agency: T2 UES, Inc.	Date of Field Work: 8-13-20
Party Chief: ABREU	Field Book: 555	Page(s): **29-31, 52-54, 60, 64, 77**	Report Prepared by: CAMPBELL

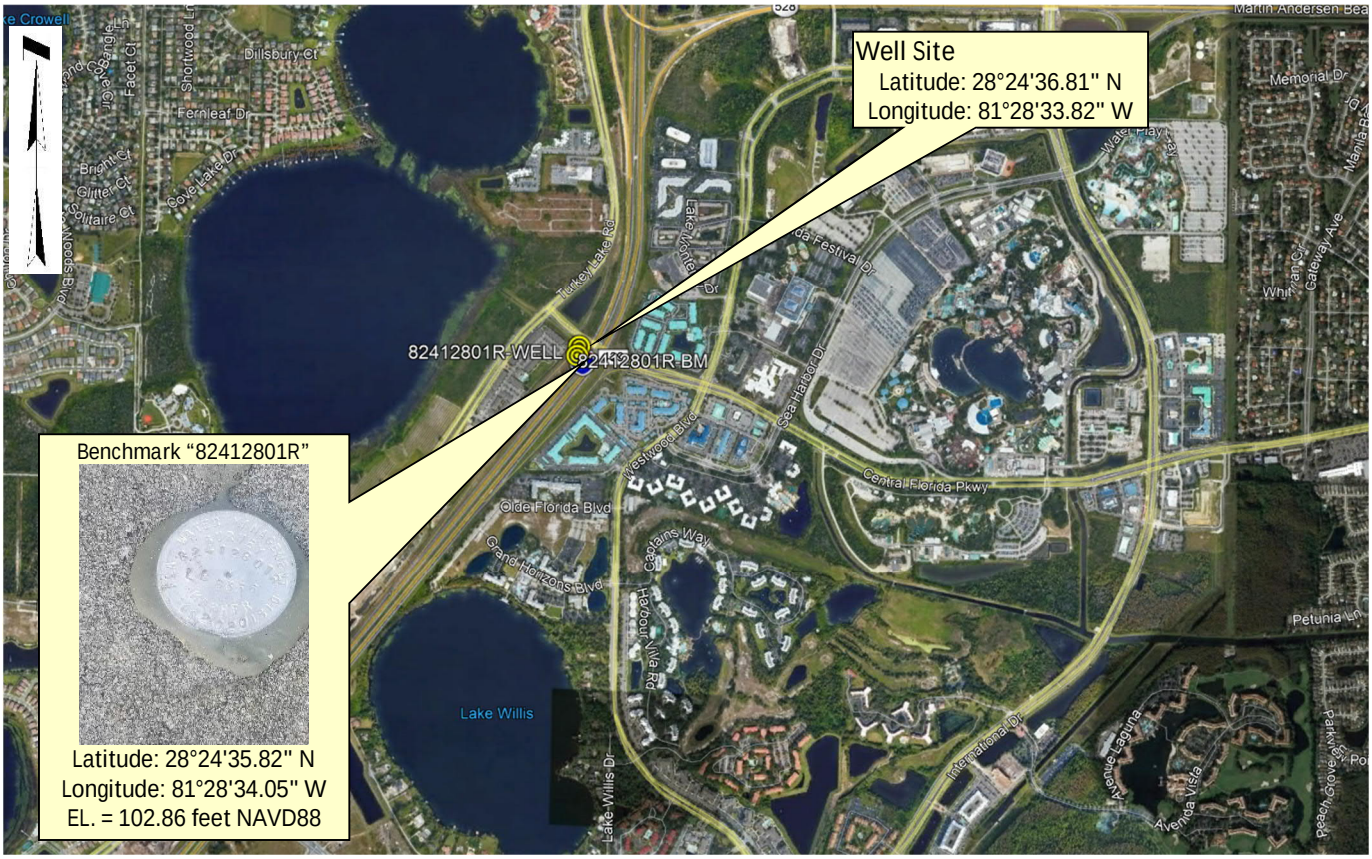
SITE SPECIFIC DATA			
Site Benchmark: 82412801R	Benchmark Elevation(s) *(NAVD88)*: 102.86	Corpscon 6.0.1 Conversion Factor (*NAVD88 to NGVD29*) + 0.89	
Well Reference Elevation (*NAVD88*): 107.06	DTW: 39.80 (08/13/20 at : 12:07PM)	Ground Elevation *(NAVD88)*: 103.82	Pad Elevation (*NAVD88*): N/A

GEOGRAPHIC DATA		
Section 11	Township 24S	Range 28E
Well Latitude: 28°24'36.81" N	Well Longitude: 81°28'33.82" W	Location Source: RTK GPS
State Plane Coordinates:	Northing (Y) = 1482151.349	Easting (X) = 503131.654

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



Not to scale (GoogleEarth product)

Well Site and Well Head

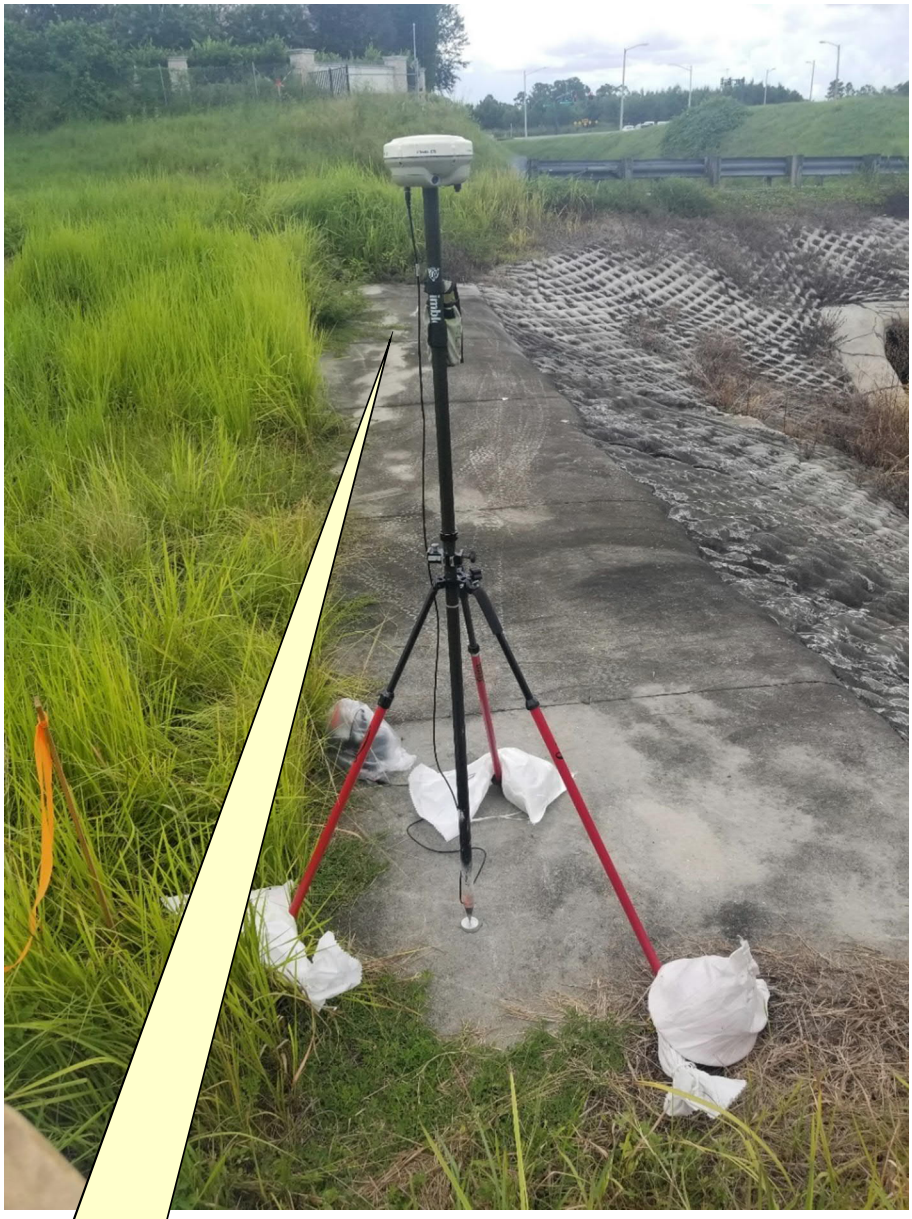
Well: “82412801R”
Reference Point: TOP OF 4” PVC COUPLING

Reference Point El. = 107.06 feet NAVD88

Distance to Water = 39.80 feet from reference point (08/13/20 at 12:07 PM)

New Aluminum Tab

USGS RMs



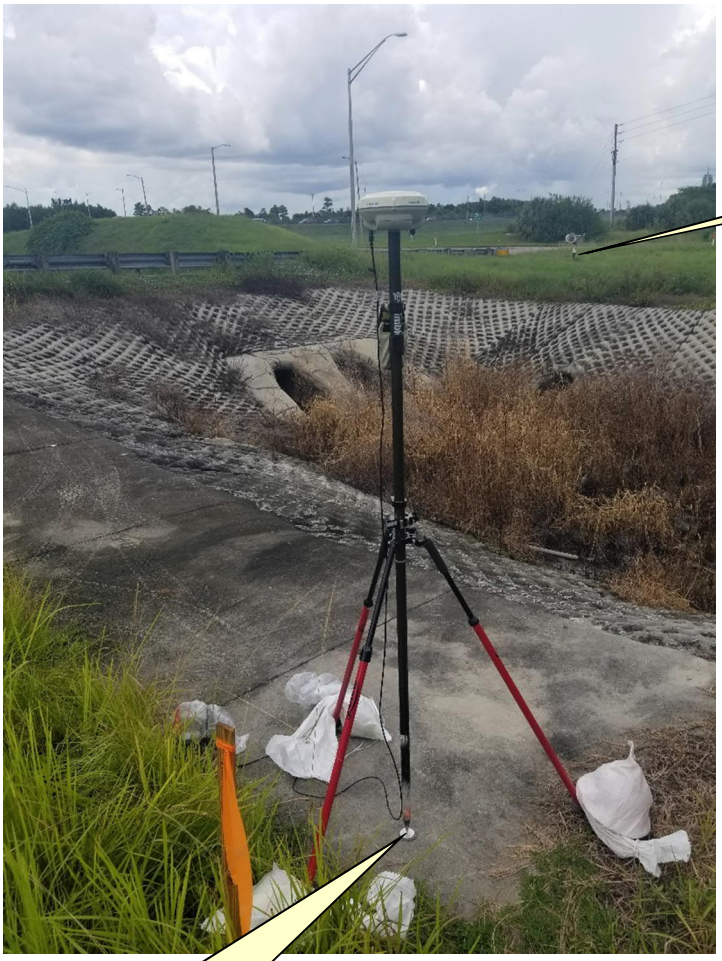
RM -4 – NAIL & DISK WITH USGS SURVEY MARKER

Latitude: 28°24'36.01" N
Longitude: 81°28'34.24" W
NAVD88 EL = 103.20

Site Benchmark

Site Benchmark Overall Photo

N
W E
S



Well

Site BM:

Latitude: 28°24'35.82" N
Longitude: 81°28'34.05" W
NAVD88 EL = 102.86

Source Benchmarks

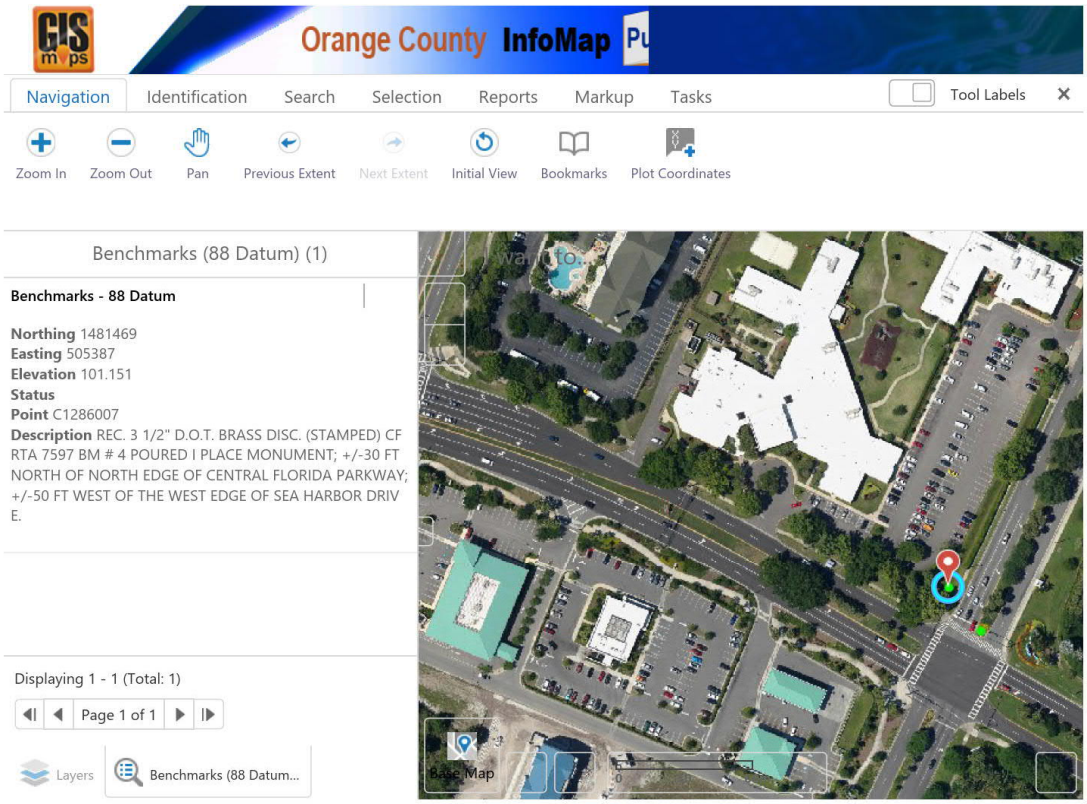
Orange County Benchmark (C1286007)

Latitude: 28°24'30.14" N
Longitude: 81°28'08.53" W
NAVD88 EL = 101.15

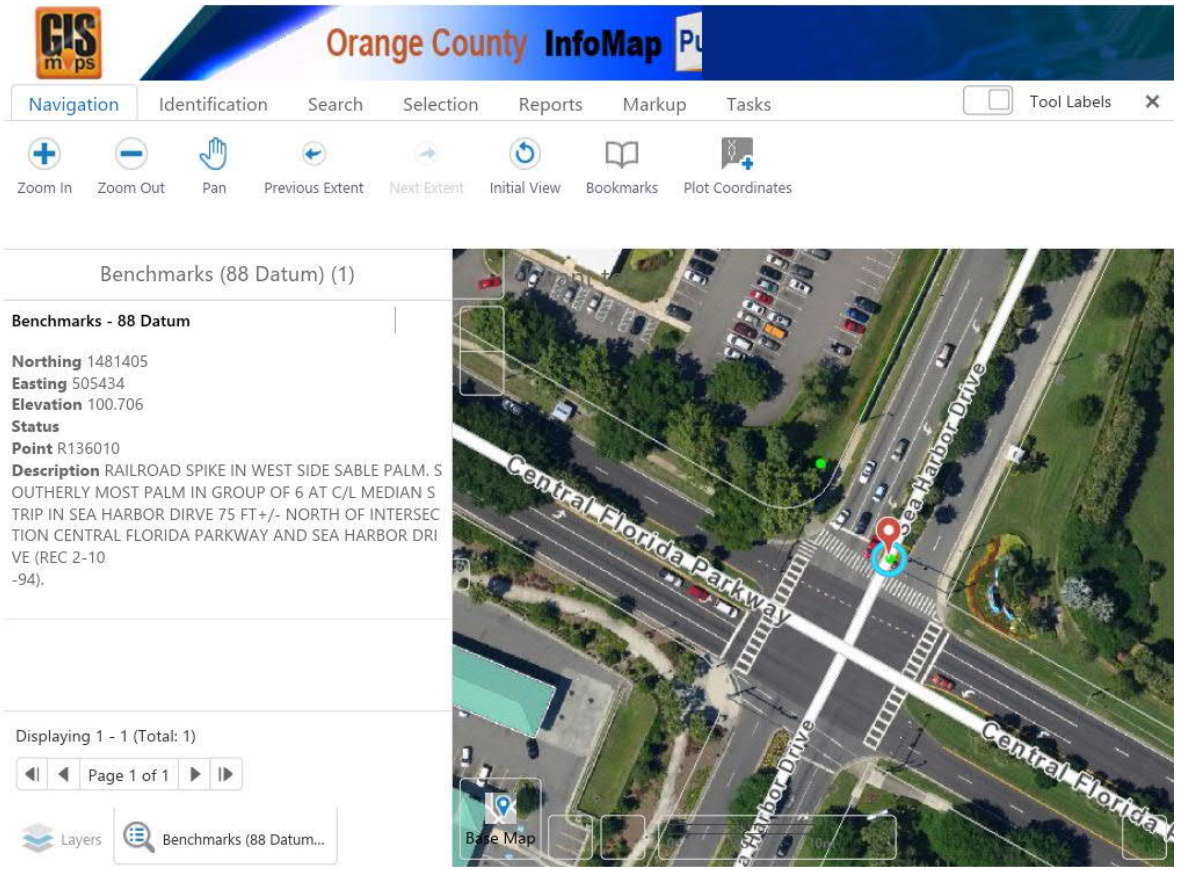
Orange County Benchmark (R136010)

Latitude: 28°24'29.50" N
Longitude: 81°28'08.00" W
NAVD88 EL = 100.71

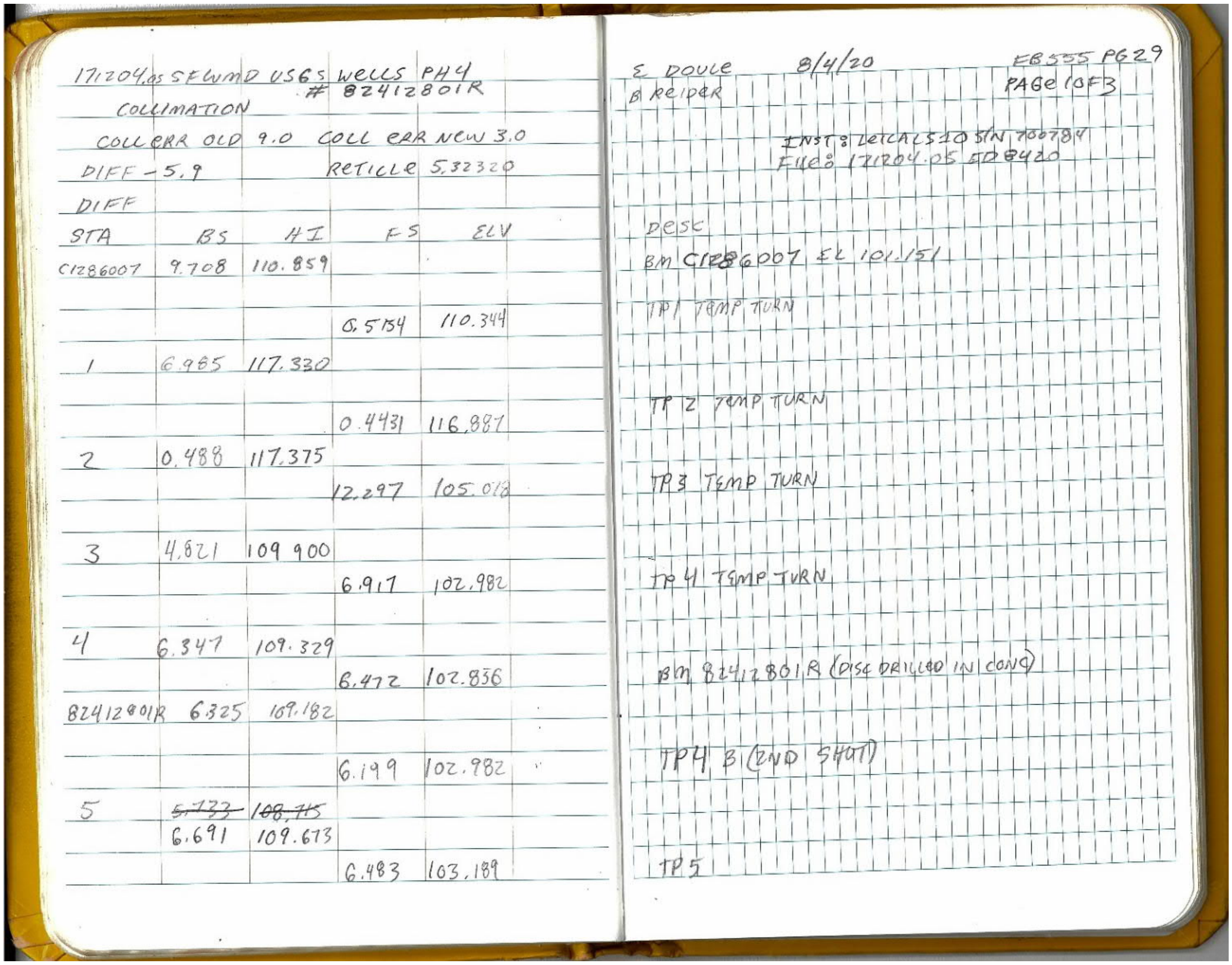
"C1286007" Benchmark Datasheet (1 of 1)



"R136010" Benchmark Datasheet (1 of 1)



Field Notes (1 of 9)



171204.05 SFWMD USGS WELLS PH4
82412801R
COLLIMATION
COLL ERR OLD 9.0 COLL ERR NEW 3.0
DIFF -5.9 RETICLE 5.32320
DIFF

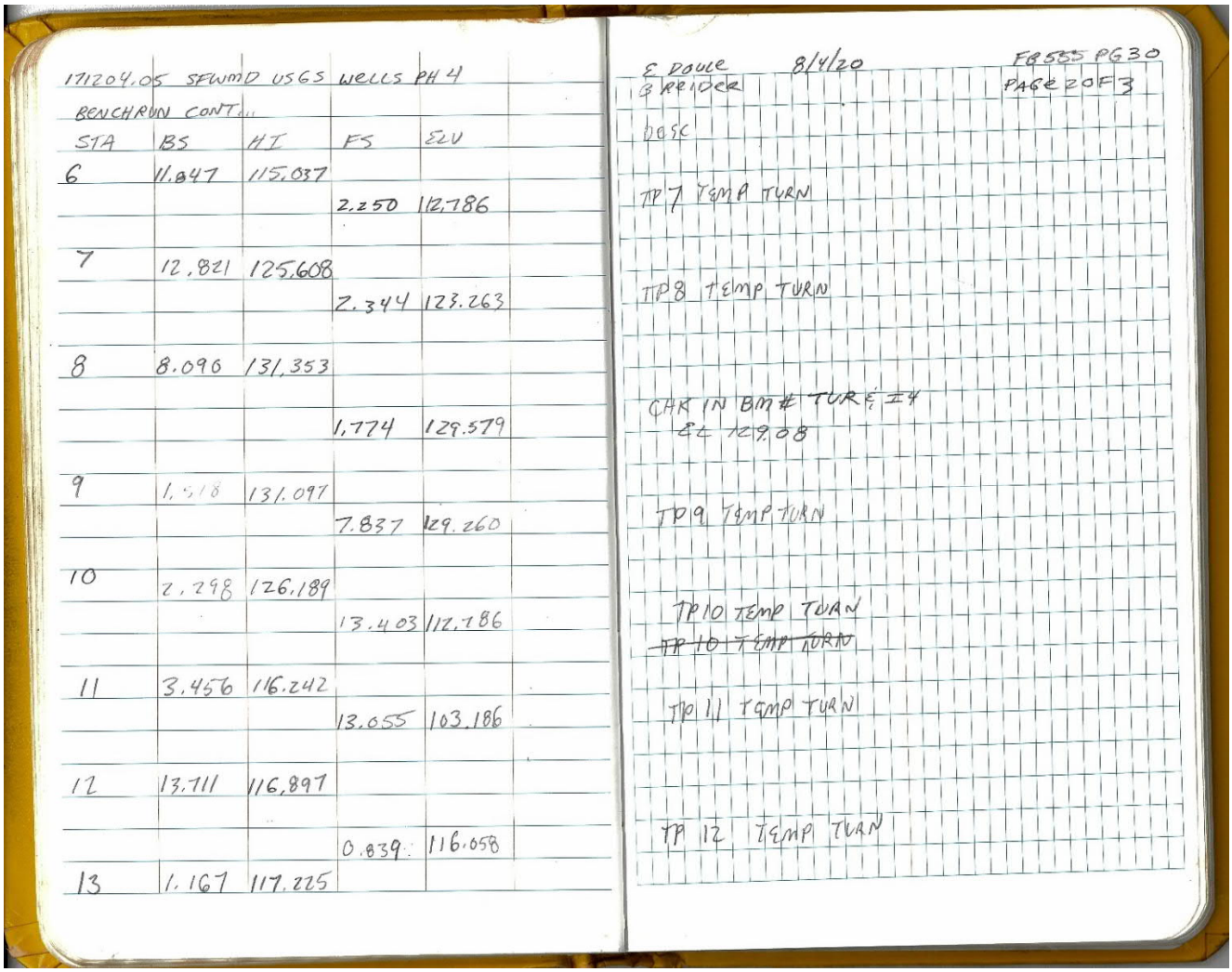
STA	BS	HI	FS	ELV
C1286007	9.708	110.859		
			0.5154	110.344
1	6.985	117.330		
			0.4431	116.887
2	0.488	117.375		
			12.297	105.018
3	4.821	109 900		
			6.917	102.982
4	6.347	109.329		
			6.472	102.856
82412801R	6.325	109.182		
			6.199	102.982
5	~~5.733~~ 6.691	~~108.715~~ 109.673		
			6.483	103.189

E DOULE 8/4/20 FB555 PG29
B REIDER PAGE 1 OF 3

INST: LEICA LS10 S/N 700784
File: 171204.05 FD 8420

DESC
BM C1286007 EL 101.151
TP1 TEMP TURN
TP 2 TEMP TURN
TP3 TEMP TURN
TP 4 TEMP TURN
BM 82412801R (DISC DRILLED IN CONC)
TP4 B (2ND SHOT)
TP5

Field Notes (2 of 9)



171204.05 SFWMD USGS WELLS PH 4
BENCHRUN CONT...

STA	BS	HI	FS	ELV
6	11.847	115.037		
			2.250	112.786
7	12.821	125.608		
			2.344	123.263
8	8.096	131.353		
			1.774	129.579
9	1.518	131.097		
			7.837	129.260
10	2.298	126.189		
			13.403	112.786
11	3.456	116.242		
			13.055	103.186
12	13.711	116.897		
			0.839	116.058
13	1.167	117.225		

E DOUCE 8/4/20 FB 555 PG 30
B ARNOCK PAGE 20 OF 3
DOSC

TP 7 TEMP TURN

TP 8 TEMP TURN

CHK IN BM # TURE IN
EL 129.08

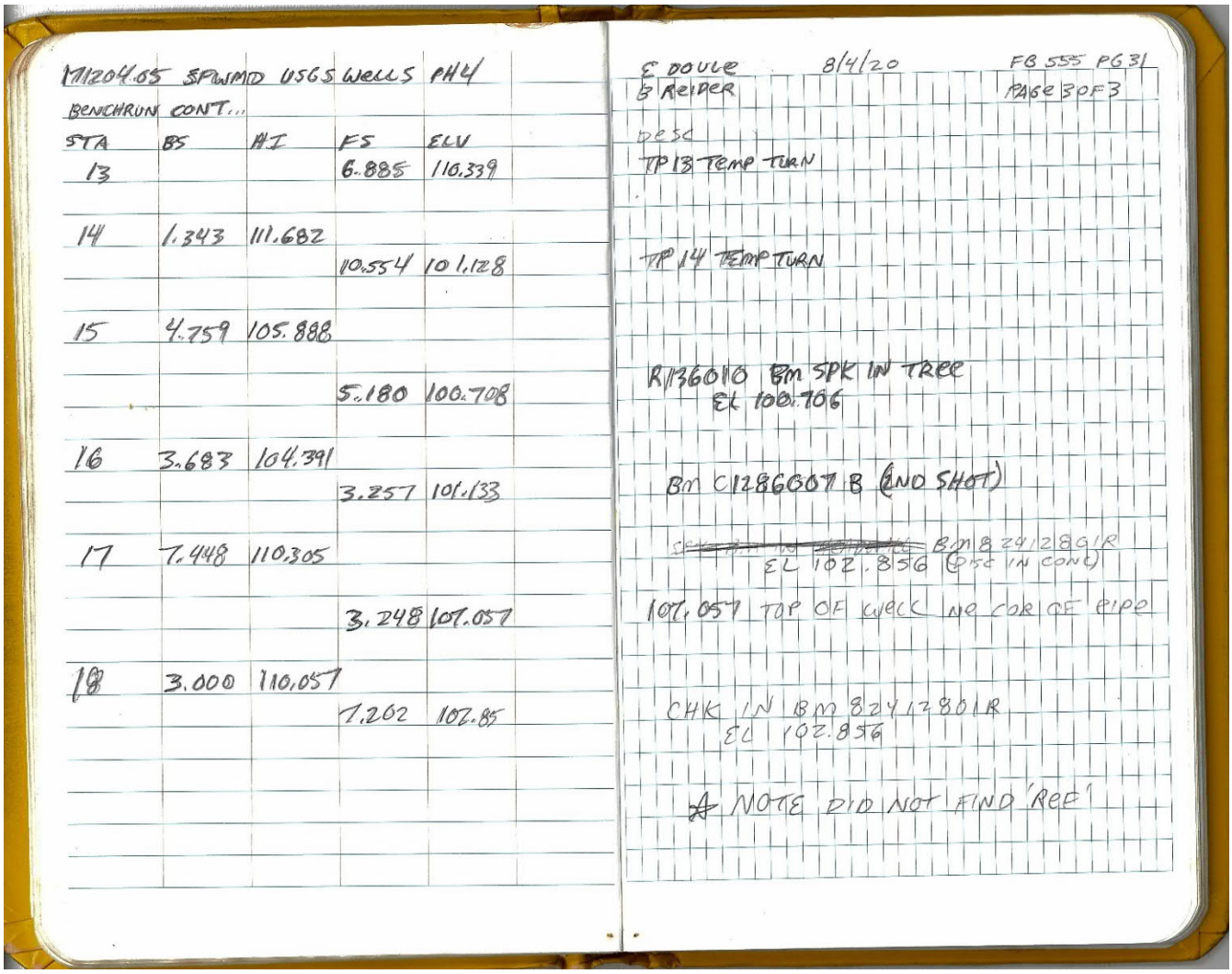
TP 9 TEMP TURN

TP 10 TEMP TURN
~~TP 10 TEMP TURN~~

TP 11 TEMP TURN

TP 12 TEMP TURN

Field Notes (3 of 9)



M1204.05 SFWMD USGS WELLS PH4
BENCHRUN CONT...

STA	BS	HI	FS	ELV
13			6.885	110.339
14	1.343	111.682		
			10.554	101.128
15	4.759	105.888		
			5.180	100.708
16	3.683	104.391		
			3.257	101.133
17	7.448	110.305		
			3.248	107.057
18	3.000	110.057		
			7.202	102.85

E DOULE & HELPER 8/4/20 FB 555 PG 31
PAGE 30 OF 3

DESC
TP 13 TEMP TURN

TP 14 TEMP TURN

R1136010 BM SPK IN TREE
EL 100.706

BM C1286607 B (NO SHOT)

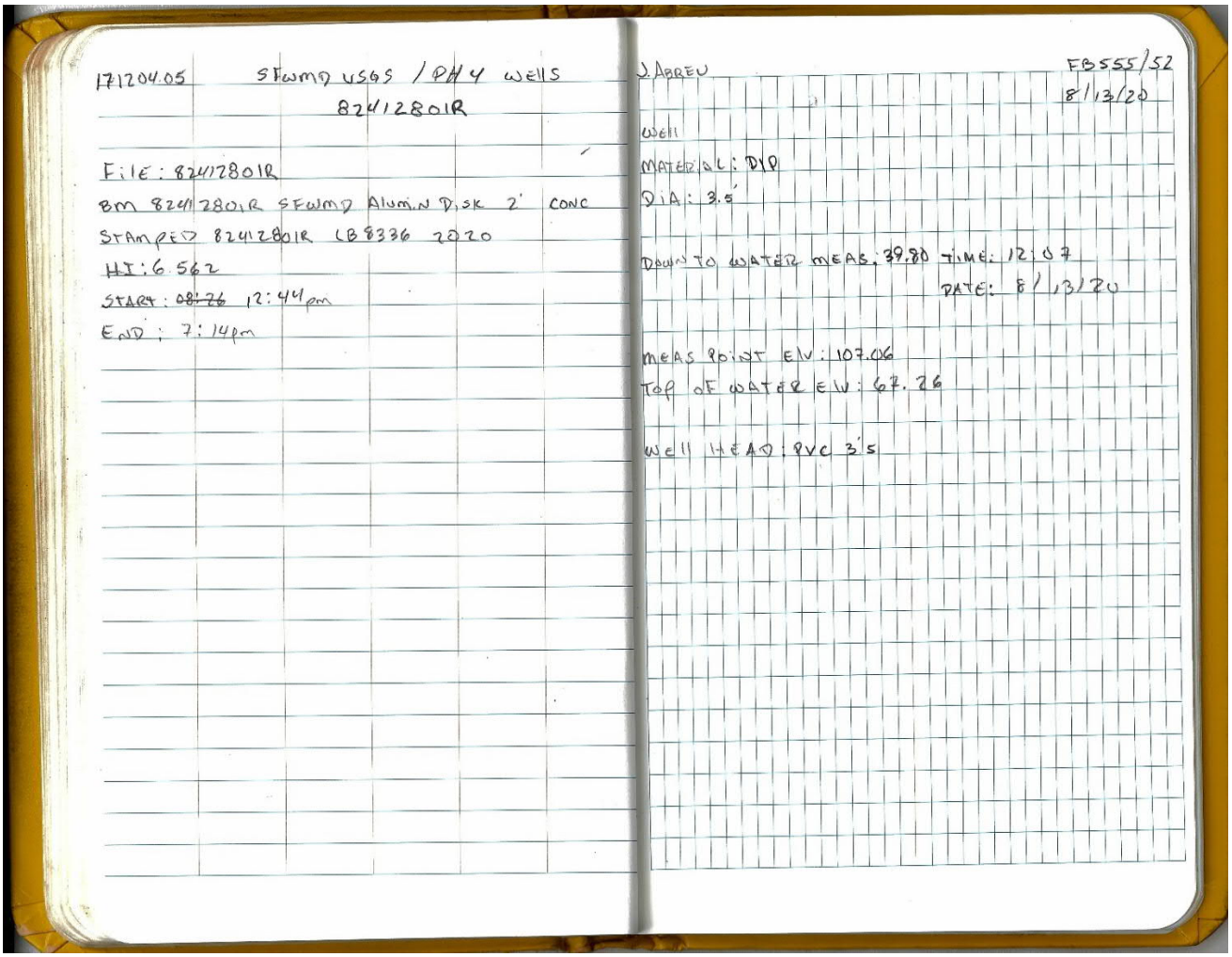
~~SPK IN~~ BM 8241286 IR
EL 102.856 (DESC IN CONC)

107.057 TOP OF CHECK NO FOR OF PIPE

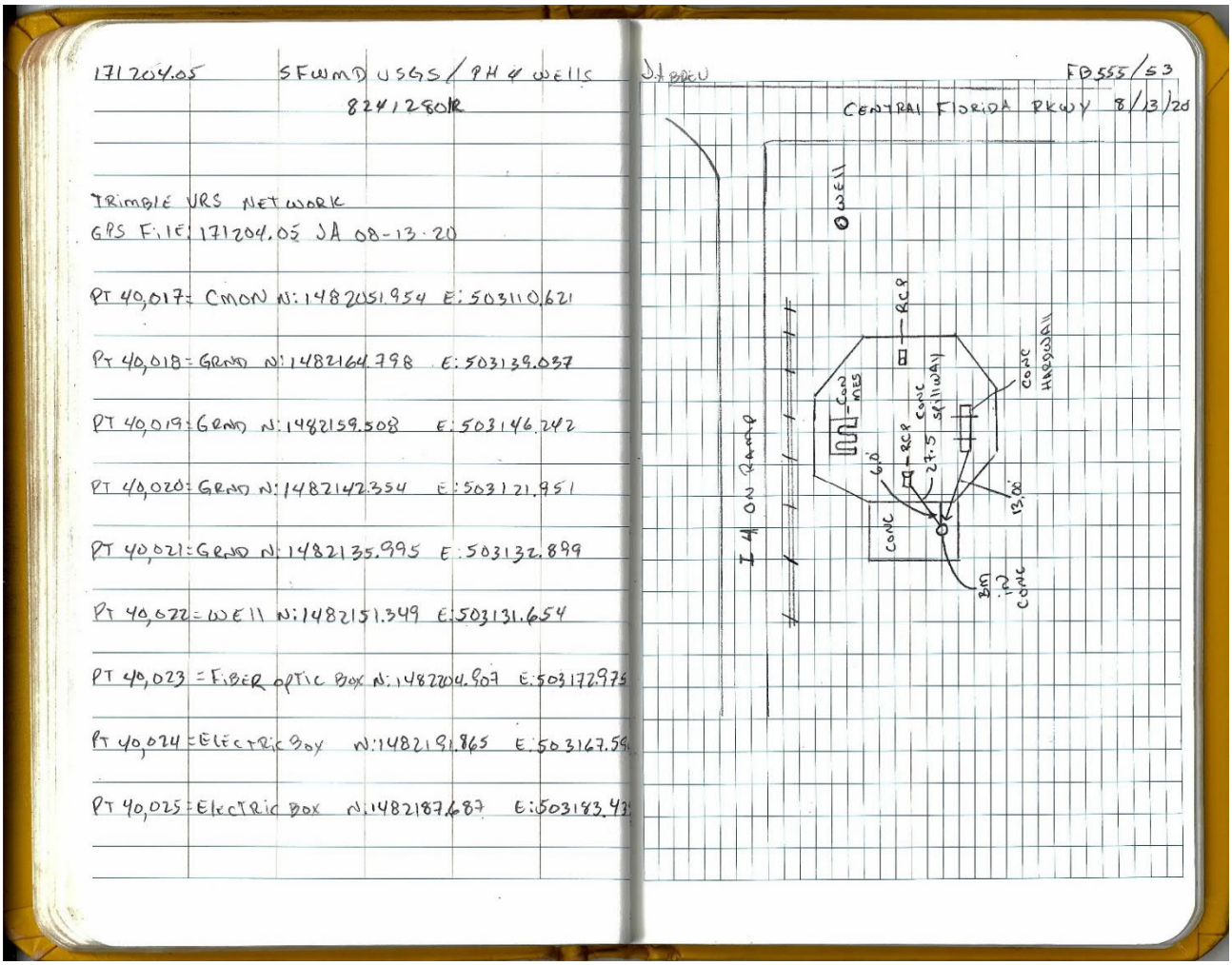
CHK IN BM 8241286 IR
EL 102.856

A NOTE DID NOT FIND 'REF'

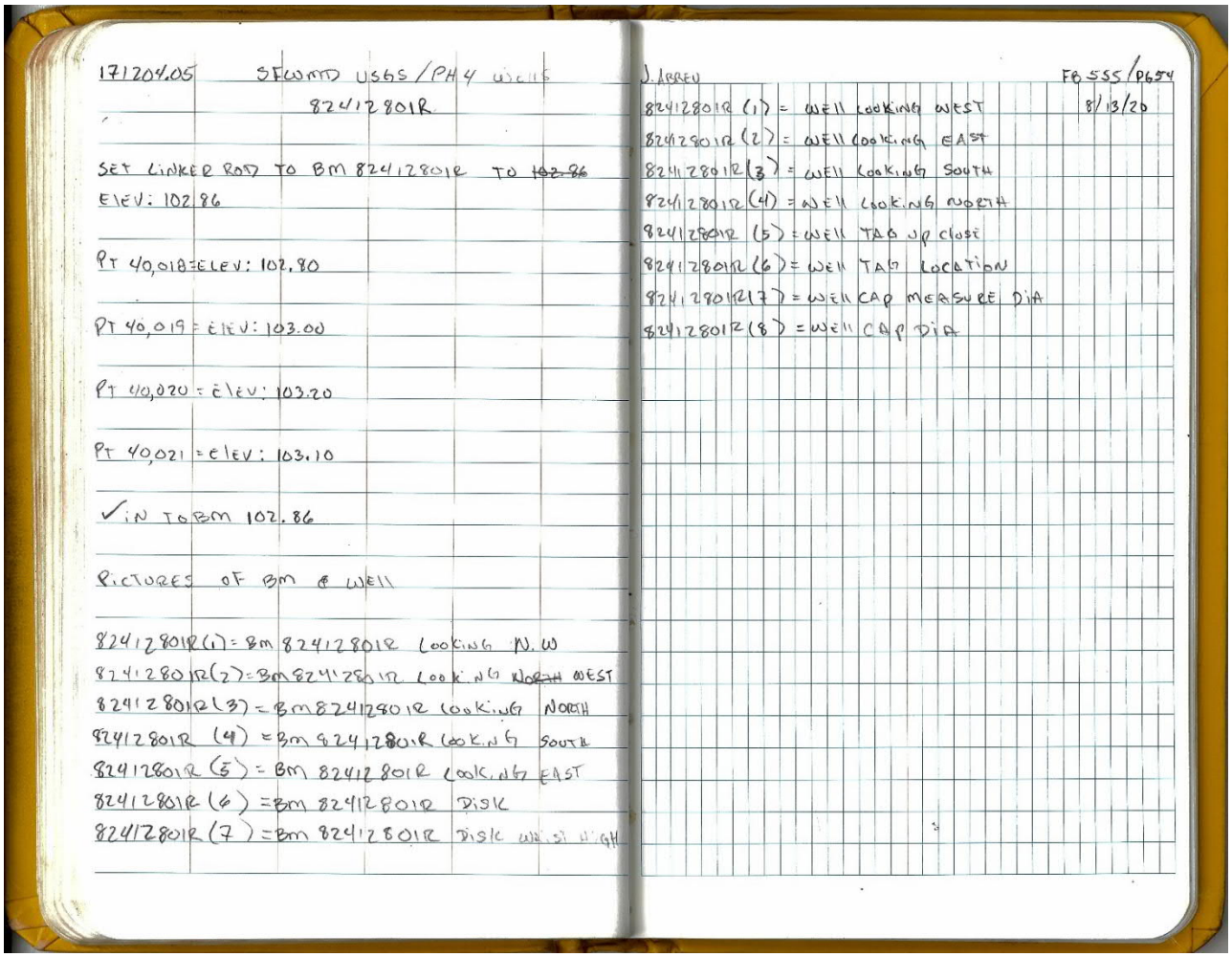
Field Notes (4 of 9)



Field Notes (5 of 9)



Field Notes (6 of 9)



171204.05 SFWMD USGS/PHY WELLS
824128018

SET LINKER ROD TO BM 824128018 TO ~~102.86~~
ELEV: 102.86

PT 40,018 = ELEV: 102.80

PT 40,019 = ELEV: 103.00

PT 40,020 = ELEV: 103.20

PT 40,021 = ELEV: 103.10

✓ IN TO BM 102.86

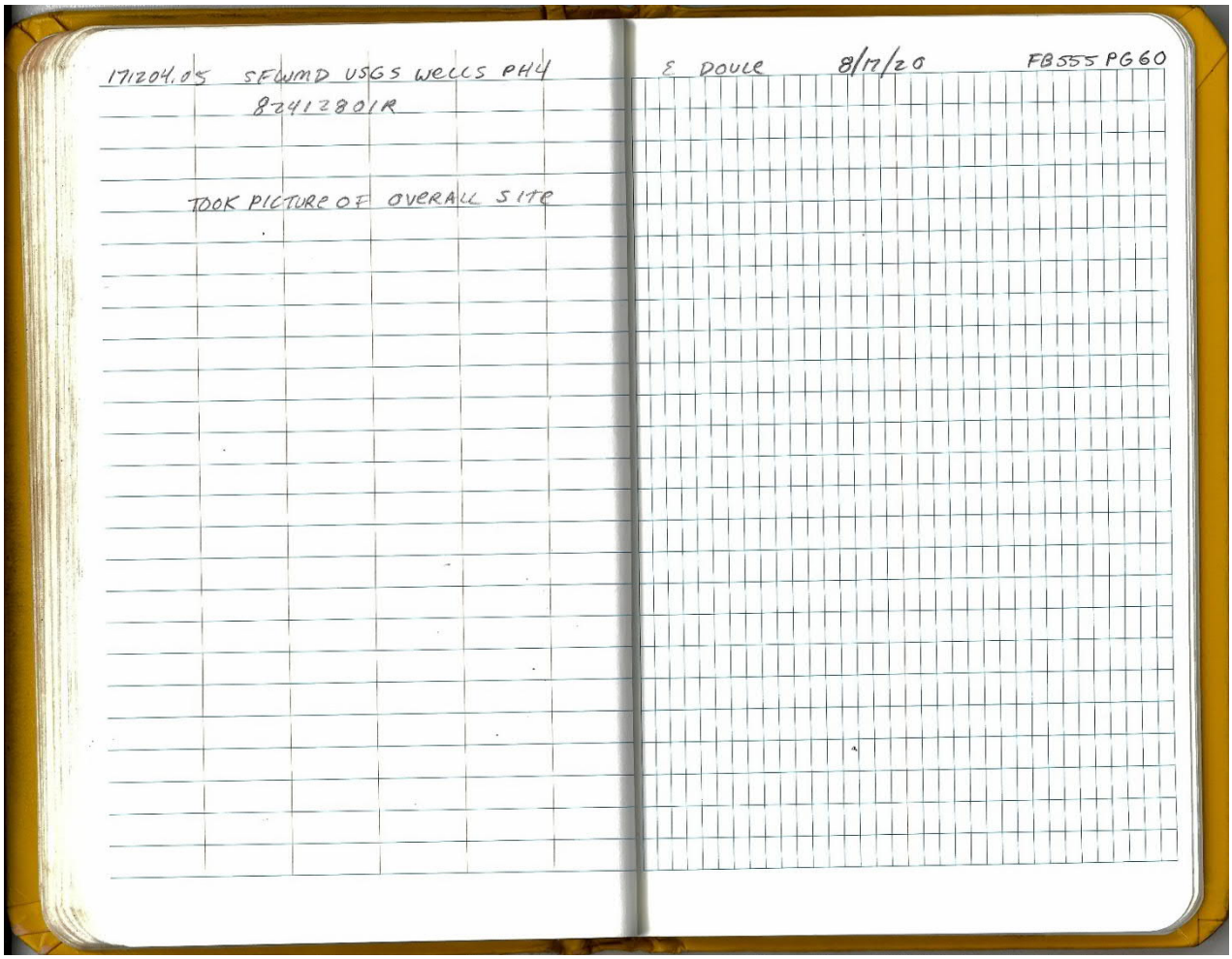
PICTURES OF BM & WELL

824128018(1) = BM 824128018 LOOKING N.W
824128018(2) = BM 824128018 LOOKING ~~NORTH~~ WEST
824128018(3) = BM 824128018 LOOKING NORTH
824128018 (4) = BM 824128018 LOOKING SOUTH
824128018 (5) = BM 824128018 LOOKING EAST
824128018 (6) = BM 824128018 DISK
824128018 (7) = BM 824128018 DISK WITH HIGH

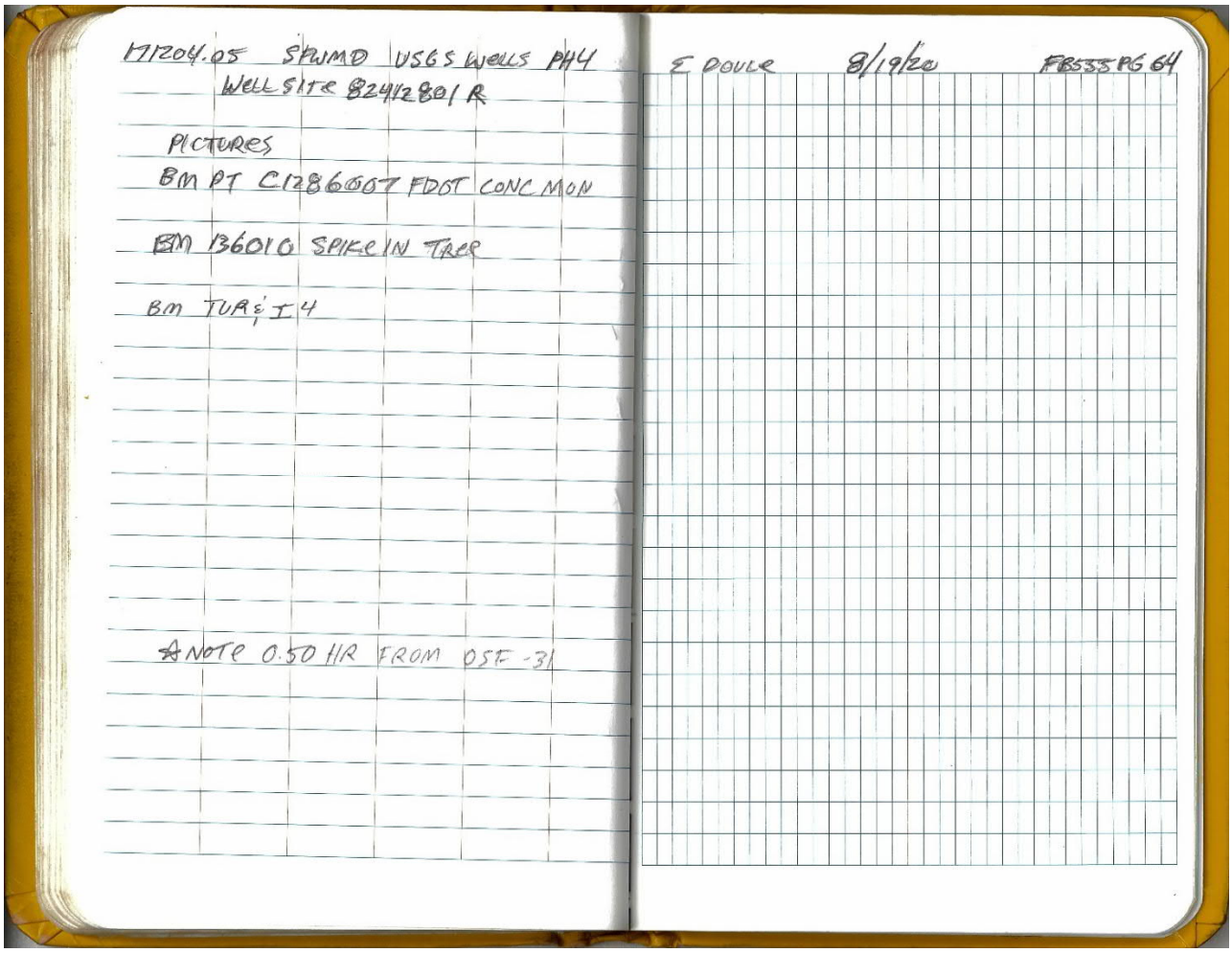
J. ARREN FB 555/PG54 8/13/20

824128018 (1) = WELL LOOKING WEST
824128018 (2) = WELL LOOKING EAST
824128018 (3) = WELL LOOKING SOUTH
824128018 (4) = WELL LOOKING NORTH
824128018 (5) = WELL TAG UP CLOSE
824128018 (6) = WELL TAG LOCATION
824128018 (7) = WELL CAP MEASURE DIA
824128018 (8) = WELL CAP DIA

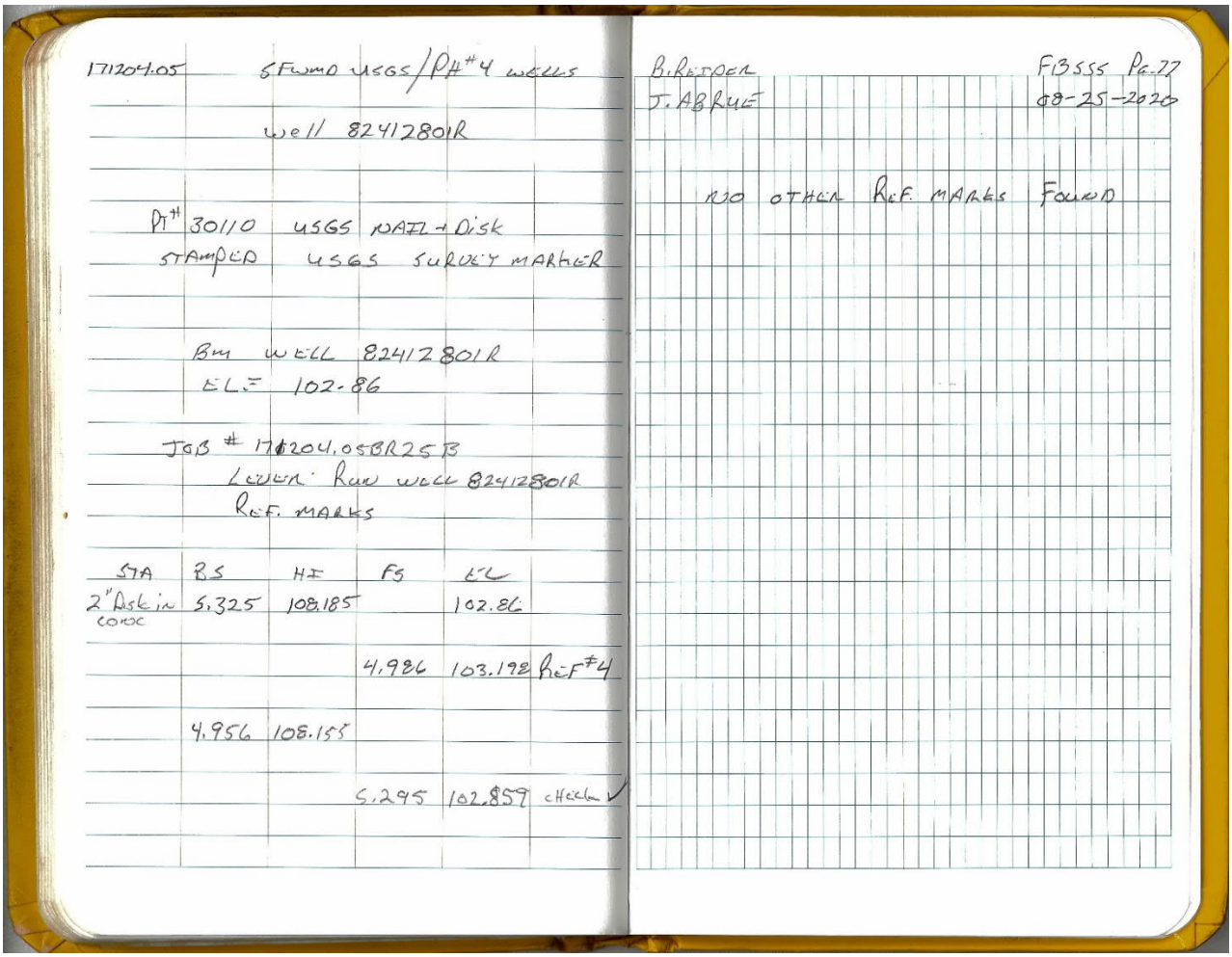
Field Notes (7 of 9)



Field Notes (8 of 9)



Field Notes (9 of 9)



171204.05 FOUND USGS/PI#4 WELLS

well 8241280IR

PI# 30110 USGS NAIL + Disk

STAMPED USGS SURVEY MARKER

BM WELL 8241280IR

ELEV 102.86

JOB # 171204.05BR25FB

LEVEL RUN WELL 8241280IR

REF. MARKS

STA	BS	HI	FS	EL
2" Disk in conc	5.325	108.185		102.86
			4.986	103.198 REF #4
	4.956	108.155		
			5.295	102.859 check ✓

B. REIDER

J. ABRUE

F13555 Pg. 77

08-25-2020

NO OTHER REF. MARKS FOUND

South Florida Water Management District Benchmark Datasheet

Designation:	82412801R	Project Name:	USGS PHASE 4 WELLS	Type:	V	State Plane Zone:	FL East
Stamping:	82412801R LB 8336	Field Book Name:	555	Field Book Page:	29-31, 52-54		
Established By:	T2ues	Recovered By:		Recovery Date:			
Surveyor:	DOULE	Established Date:	08/04/20	Status:	New		

GEOGRAPHIC POSITION INFORMATION

Section:	11	Township:	24S	Range:	28E		
County:	ORANGE	Quadrangle:	LAKE JESSAMINE	Quad Index:	3612	NGS Source BM(s):	
NAD83 Adj. Year:	2011	Vertical Datum:	NAVD1988	Horizontal Datum:	NAD1983	NGS PID(s):	
NAVD88 Elevation (feet):	102.856	NGVD29 Elevation (feet):	103.746	2022 Elevation:		NGS NAVD88 Elev (ft):	
NAVD88 Class:		NGVD29 Class:		Other Elevation:		NGS NAVD88 Elev (m):	
NAVD88 Order:	3RD	NGVD29 Order:		Other Elevation Type:		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: +	0.89	Actual NGS Elevation or ngvd29.txt file:		OPUS Ortho Height:	31.332(m)		
Northing (Y) (feet):	1482051.98	Easting (X) (feet):	503110.588	Source of Latitude & Longitude:	OPUS SOLUTION		
Latitude:	28	24	35.82054	Longitude:	81	28	34.04719
	DD°	MM'	SS"		DD°	MM'	SS"
Latitude (Decimal Degrees):	28.40995015			Longitude (Decimal Degrees):	-81.47612422		

RECOVERY DATA

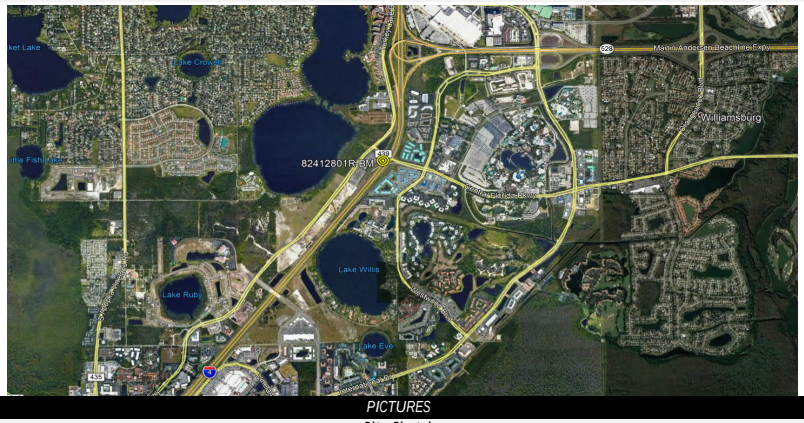
How to Reach:	FROM THE PHYSICAL INTERSECTION OF KISSIMMEE VINELAND RD AND PALM PARKWAY, GO NORTHEAST ALONG PALM PARKWAY FOR 2.7 MILES TO THE INTERSECTION OF PALM PARKWAY, CENTRAL FLORIDA PARKWAY AND TURKEY LAKE RD. TURN RIGHT ONTO CENTRAL FLORIDA PARKWAY AND CONTINUE SOUTHEAST FOR 450 FEET TO THE INTERSECTION OF CENTRAL FLORIDA PARKWAY AND A ONE WAY ON RAMP FOR I4. CONTINUE ALONG THE ON RAMP FOR 170 FEET, THE MARK IS ON THE LEFT. BENCHMARK 82412801R IS A SFWMD DISC SET IN A THE SOUTH CORNER OF A CONCRETE DRANIGE BASIN, 27.5 FEET FROM THE END OF A RCP, 13.0 FEET FROM THE SOUTHEAST CORNER OF A CONCRETE HEADWALL AND 6.0 FEET FROM THE TOP OF CONCRETE BANK.
Description/Notes:	SOURCE BENCHMARKS UTILIZED: ORANGE COUNTY BENCHMARK C1286007, ELEVATION = 101.151 (NAVD88) & ORANGE COUNTY BENCHMARK R136010, ELEVATION = 100.706 (NAVD88).

Notable Landmarks:

Other Source Benchmarks:

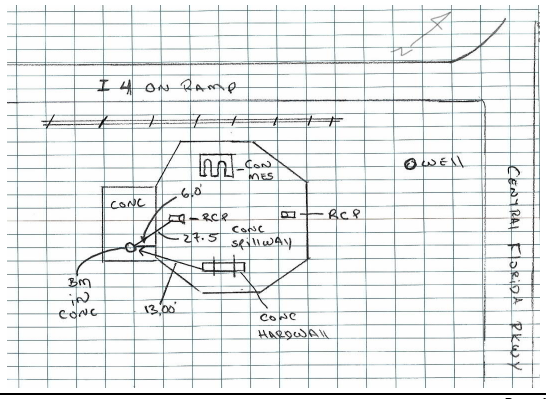
PICTURES

Aerial View of Overall Site



PICTURES

Site Sketch



Haywood, Joshua

From: opus <opus@ngs.noaa.gov>
Sent: Monday, August 17, 2020 10:38 AM
To: Haywood, Joshua
Subject: OPUS solution : 42732261.20o OP1597674915277

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: 42732261.20o OP1597674915277

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%7C1beb2e21b3684db1385108d842bb1e19%7Ce64791d699864645a1a068c1175eda41%7C1%7C0%7C637332718725957895&sdata=xRXzsPfbsEonsN0ucwvf%2FfIlSk0D3uC7Ow87P8%2BcqAI%3D&reserved=0

USER: josh.haywood@t2ue.com DATE: August 17, 2020
RINEX FILE: 4273226q.20o TIME: 14:37:38 UTC

SOFTWARE: page5 1801.18 master72.pl 160321 START: 2020/08/13 16:45:00
EPHEMERIS: igr21184.eph [rapid] STOP: 2020/08/13 23:15:00
NAV FILE: brdc2260.20n OBS USED: 14034 / 15253 : 92%
ANT NAME: TRMR6-3 NONE # FIXED AMB: 87 / 105 : 83%
ARP HEIGHT: 2.000 OVERALL RMS: 0.024(m)

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) ITRF2014 (EPOCH:2020.6170)

X:	832152.861(m)	0.009(m)	832152.018(m)	0.009(m)
Y:	-5552236.855(m)	0.002(m)	-5552235.297(m)	0.002(m)
Z:	3016544.273(m)	0.008(m)	3016544.115(m)	0.008(m)

LAT:	28 24 35.82054	0.007(m)	28 24 35.84178	0.007(m)
E LON:	278 31 25.95281	0.010(m)	278 31 25.93067	0.010(m)
W LON:	81 28 34.04719	0.010(m)	81 28 34.06933	0.010(m)
EL HGT:	3.647(m)	0.004(m)	2.106(m)	0.004(m)
ORTHO HGT:	31.332(m)	0.052(m)	[NAVD88 (Computed using GEOID18)]	

	UTM COORDINATES (UTM (Zone 17))	STATE PLANE COORDINATES (SPC (0901 FL E))
Northing (Y) [meters]	3142708.200	451730.347
Easting (X) [meters]	453364.331	153348.414
Convergence [degrees]	-0.22653333	-0.22653333
Point Scale	0.99962684	0.99996803
Combined Factor	0.99962627	0.99996746

US NATIONAL GRID DESIGNATOR: 17RMM5336442708(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DE9138	OKCB OKEECHOBEE CORS ARP	N271557.715	W0805119.181	140741.5
DH3757	WACH WAUCHULA CORS ARP	N273051.042	W0815256.615	107013.7
DE6005	GNVL GAINESVILLE CORS ARP	N294111.557	W0821636.735	161556.9

NEAREST NGS PUBLISHED CONTROL POINT

AK7233	I4+TURKEY LAKE RD	N282435.000	W0812831.000	86.7

BASE STATION INFORMATION

STATION NAME: okcb a 4 (Okeechobee; Okeechobee, Florida, U.S.A.)
MONUMENT: 49587S001

XYZ	901665.5395	-5601320.7260	2904442.8976	MON @ 2010.0000 (M)
XYZ	-0.0116	0.0012	0.0016	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	-0.1232	0.0123	0.0172	VEL TIMES 10.6172 YRS
XYZ	0.0000	0.0000	0.0000	MON TO ARP
XYZ	0.0168	-0.1091	0.0570	ARP TO L1 PHASE CENTER
XYZ	901665.4331	-5601320.8227	2904442.9718	L1 PHS CEN @ 2020.6170
XYZ	-0.0000	-0.0000	0.0000	+ XYZ ADJUSTMENTS

XYZ 901665.4331 -5601320.8227 2904442.9718 NEW L1 PHS CEN @ 2020.6170
XYZ 901665.4163 -5601320.7136 2904442.9148 NEW ARP @ 2020.6170
XYZ 901665.4163 -5601320.7136 2904442.9148 NEW MON @ 2020.6170
LLH 27 15 57.73632 279 8 40.79741 -15.2076 NEW L1 PHS CEN @ 2020.6170
LLH 27 15 57.73631 279 8 40.79744 -15.3319 NEW ARP @ 2020.6170
LLH 27 15 57.73631 279 8 40.79744 -15.3319 NEW MON @ 2020.6170

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 -0.1235 0.0180 0.0123 VEL TIMES 10.6172 YRS
XYZ 0.0000 0.0000 0.0000 MON TO ARP
XYZ 0.0148 -0.1091 0.0575 ARP TO L1 PHASE CENTER
XYZ 799335.3414 -5604081.3887 2928868.6648 L1 PHS CEN @ 2020.6170
XYZ -0.0000 -0.0000 0.0000 + XYZ ADJUSTMENTS
XYZ 799335.3414 -5604081.3887 2928868.6648 NEW L1 PHS CEN @ 2020.6170
XYZ 799335.3266 -5604081.2795 2928868.6072 NEW ARP @ 2020.6170
XYZ 799335.3266 -5604081.2795 2928868.6072 NEW MON @ 2020.6170
LLH 27 30 51.06303 278 7 3.36196 9.2827 NEW L1 PHS CEN @ 2020.6170
LLH 27 30 51.06302 278 7 3.36198 9.1585 NEW ARP @ 2020.6170
LLH 27 30 51.06302 278 7 3.36198 9.1585 NEW MON @ 2020.6170

STATION NAME: gnvl a 3 (Gainesville; Gainesville, Florida, U.S.A.)
MONUMENT: 49592S001
XYZ 745247.1963 -5495263.1163 3140246.6326 MON @ 2010.0000 (M)
XYZ -0.0122 0.0002 0.0017 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 -0.1295 0.0024 0.0183 VEL TIMES 10.6171 YRS
XYZ 0.0000 0.0000 0.0000 MON TO ARP
XYZ 0.0137 -0.1070 0.0617 ARP TO L1 PHASE CENTER
XYZ 745247.0805 -5495263.2209 3140246.7125 L1 PHS CEN @ 2020.6170
XYZ -0.0000 -0.0000 -0.0000 + XYZ ADJUSTMENTS
XYZ 745247.0805 -5495263.2209 3140246.7125 NEW L1 PHS CEN @ 2020.6170
XYZ 745247.0668 -5495263.1139 3140246.6508 NEW ARP @ 2020.6170
XYZ 745247.0668 -5495263.1139 3140246.6508 NEW MON @ 2020.6170
LLH 29 41 11.57926 277 43 23.24063 22.5654 NEW L1 PHS CEN @ 2020.6170
LLH 29 41 11.57925 277 43 23.24065 22.4411 NEW ARP @ 2020.6170
LLH 29 41 11.57925 277 43 23.24065 22.4411 NEW MON @ 2020.6170

REMOTE STATION INFORMATION

STATION NAME: 4273 1
MONUMENT: NO DOMES NUMBER
XYZ 832151.8770 -5552235.2884 3016544.0792 MON @ 2020.6167 (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 0.2606 -1.7407 0.9496 MON TO ARP
XYZ 0.0113 -0.0734 0.0426 ARP TO L1 PHASE CENTER
XYZ 832152.1489 -5552237.1025 3016545.0714 L1 PHS CEN @ 2020.6170

BASELINE NAME: okcb 4273
XYZ 0.1410 -0.0100 0.0377 + XYZ ADJUSTMENTS
XYZ 832152.2899 -5552237.1125 3016545.1092 NEW L1 PHS CEN @ 2020.6170
XYZ 832152.2787 -5552237.0391 3016545.0666 NEW ARP @ 2020.6170
XYZ 832152.0180 -5552235.2984 3016544.1169 NEW MON @ 2020.6170
LLH 28 24 35.84182 278 31 25.93067 4.1941 NEW L1 PHS CEN @ 2020.6170
LLH 28 24 35.84175 278 31 25.93066 4.1086 NEW ARP @ 2020.6170
LLH 28 24 35.84182 278 31 25.93067 2.1086 NEW MON @ 2020.6170

BASELINE NAME: wach 4273
XYZ 0.1364 -0.0094 0.0395 + XYZ ADJUSTMENTS
XYZ 832152.2853 -5552237.1118 3016545.1109 NEW L1 PHS CEN @ 2020.6170
XYZ 832152.2740 -5552237.0385 3016545.0683 NEW ARP @ 2020.6170
XYZ 832152.0134 -5552235.2978 3016544.1187 NEW MON @ 2020.6170
LLH 28 24 35.84189 278 31 25.93051 4.1938 NEW L1 PHS CEN @ 2020.6170
LLH 28 24 35.84182 278 31 25.93050 4.1082 NEW ARP @ 2020.6170
LLH 28 24 35.84189 278 31 25.93051 2.1083 NEW MON @ 2020.6170

BASELINE NAME: gnvl 4273
XYZ 0.1459 -0.0077 0.0314 + XYZ ADJUSTMENTS
XYZ 832152.2948 -5552237.1101 3016545.1028 NEW L1 PHS CEN @ 2020.6170
XYZ 832152.2835 -5552237.0368 3016545.0603 NEW ARP @ 2020.6170
XYZ 832152.0229 -5552235.2961 3016544.1106 NEW MON @ 2020.6170
LLH 28 24 35.84166 278 31 25.93086 4.1897 NEW L1 PHS CEN @ 2020.6170
LLH 28 24 35.84159 278 31 25.93085 4.1042 NEW ARP @ 2020.6170
LLH 28 24 35.84166 278 31 25.93086 2.1042 NEW MON @ 2020.6170

G-FILES

Axx2020 813 20 813
B2020 8131644 20 8132315 1 page5 v1801.18IGS 132 1 2 27NGS 2020 817IFDDPX
IITRF2014_2114 IGS 20200712
C00090005 695133983 8 -490854152 29-1121012021 19 X2260A4273X2260AOKCB
D 1 2 -5616827 1 3 2699289 2 3 -8447380

Axx2020 813 20 813
B2020 8131644 20 8132315 1 page5 v1801.18IGS 132 1 2 27NGS 2020 817IFDDPX
IITRF2014_2114 IGS 20200712
C00090002 -328166868 8 -518459818 37 -876755114 22 X2260A4273X2260AWACH
D 1 2 -6120080 1 3 7130387 2 3 -8463379

Axx2020 813 20 813
B2020 8131644 20 8132315 1 page5 v1801.18IGS 132 1 2 27NGS 2020 817IFDDPX
IITRF2014_2114 IGS 20200712
C00090001 -869049561 11 569721821 37 1237025402 24 X2260A4273X2260AGNVL
D 1 2 -4560136 1 3 1899127 2 3 -8462844

POST-FIT RMS BY SATELLITE VS. BASELINE

OVERALL 02 05 06 09 10 12 13 15
okcb-4273| 0.022 0.019 0.057 0.023 0.031 0.017 0.019 0.024 0.021
17 18 19 20 21 24 25 27 29
okcb-4273| 0.022 0.041 0.020 0.022 0.020 0.016 0.021 0.018 0.020
32
okcb-4273| 0.019

OVERALL 02 05 06 09 10 12 13 15
wach-4273| 0.024 0.018 0.054 0.027 0.042 0.024 0.015 0.024 0.025
17 18 19 20 21 24 25 27 29
wach-4273| 0.014 0.041 0.023 0.024 0.029 0.020 0.022 0.024 0.023
32
wach-4273| 0.018

OVERALL 02 05 06 09 10 12 13 15
gnvl-4273| 0.026 0.026 0.055 0.020 0.025 0.024 0.021 0.023 0.031
17 18 19 20 21 24 25 27 29
gnvl-4273| 0.021 0.020 0.013 0.029 0.021 0.022 0.033 0.033 0.027
32
gnvl-4273| 0.029

OBS BY SATELLITE VS. BASELINE

OVERALL 02 05 06 09 10 12 13 15
okcb-4273| 4853 438 107 191 70 255 289 515 596
17 18 19 20 21 24 25 27 29
okcb-4273| 32 135 130 459 135 329 349 87 580
32
okcb-4273| 156
OVERALL 02 05 06 09 10 12 13 15
wach-4273| 4506 415 52 123 22 236 263 474 611
17 18 19 20 21 24 25 27 29
wach-4273| 29 136 142 420 121 324 323 102 562
32
wach-4273| 151
OVERALL 02 05 06 09 10 12 13 15
gnvl-4273| 4675 428 108 182 70 237 285 535 287
17 18 19 20 21 24 25 27 29
gnvl-4273| 32 456 142 370 108 263 345 105 574
32
gnvl-4273| 148

ITRF position of 4273 as determined by individual baselines

	X	Y	Z
okcb	832152.018	-5552235.298	3016544.117
wach	832152.013	-5552235.298	3016544.119
gnvl	832152.023	-5552235.296	3016544.111

Residuals of position determined by individual baselines from the final position

	X	Y	Z	East	North	Up
okcb	-0.000	-0.001	0.001	-0.000	0.001	0.002
wach	-0.005	-0.000	0.003	-0.005	0.003	0.001
gnvl	0.005	0.001	-0.005	0.005	-0.004	-0.003

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

0.0000005911	-0.0000001357	0.0000000671
-0.0000001357	0.0000098200	-0.0000005098
0.0000000671	-0.0000005098	0.0000038578

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

0.0000007541	0.0000005708	-0.0000010817

0.0000005708 0.0000047283 -0.0000021342
-0.0000010817 -0.0000021342 0.0000087866

Horizontal network accuracy = 0.00438 meters.
Vertical network accuracy = 0.00581 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)	
OKCB	901666.25422	-5601322.30851	2904443.08260	2010.00
WACH	799336.16445	-5604082.87126	2928868.78053	2010.00
GNVL	745247.91692	-5495264.65957	3140246.80430	2010.00

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

	Xr(m)	Yr(m)	Zr(m)	
OKCB	901666.25422	-5601322.30851	2904443.08260	2010.00
WACH	799336.16445	-5604082.87126	2928868.78053	2010.00
GNVL	745247.91692	-5495264.65957	3140246.80430	2010.00

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

	Vx (m/yr)	Vy (m/yr)	Vz (m/yr)
OKCB	0.00118	0.00217	-0.00155
WACH	0.00128	0.00265	-0.00157
GNVL	0.00143	0.00120	-0.00093

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)	
OKCB	69513.39322	-49085.45351	-112101.19040	2010.00
WACH	-32816.69655	-51846.01626	-87675.49247	2010.00
GNVL	-86904.94408	56972.19543	123702.53130	2010.00

STATE PLANE COORDINATES - U.S. Survey Foot
SPC (0901 FL E)
Northing (Y) [feet] 1482051.980
Easting (X) [feet] 503110.588
Convergence [degrees] -0.22653333
Point Scale 0.99996803
Combined Factor 0.99996746

********** 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%7C1beb2e21b3684db1385108d842bb1e19%7Ce64791d699864645a1a068c1175eda41%7C1%7C0%7C637332718725957895&sdata=lFLd5WtVspPCL1UiB8WeqPbVmqNNrYGxOw4BjNm7Kel%3D&reserved=0

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

APPROX ORTHO HGT: 31.313 (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.

```
*110001+0000000000000001 32...7+0000000000318954 331.27+0000000000051063
390...+0000000000000003 391.27+0000000000000001
*110002+0000000000000002 32...7+0000000000323417 332.27+0000000000049494
390...+0000000000000003 391.27+0000000000000000
*110003+0000000000000003 32...7+0000000000646834 332.27+0000000000051645
390...+0000000000000003 391.27+0000000000000001
*110004+0000000000000004 32...7+0000000001288416 331.27+0000000000053195
390...+0000000000000003 391.27+0000000000000002
*410005+00000000?......1
*110006+00000000C1286007 83..17+0000000001011510
*110007+00000000C1286007 32...7+0000000003393106 331.07+0000000000097088
390...+0000000000000003 391.07+0000000000000002
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390...+0000000000000003 391.07+0000000000000005
*110009+0000000000000TP1 573.07+0000000000016795 574.07+0000000006769418
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390...+0000000000000003 391.07+0000000000000003
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83..07+0000000001168871
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390...+0000000000000003 391.07+0000000000000001
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83..07+0000000001050781
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390...+0000000000000004 391.07+0000000000000004
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83..07+0000000001029822
*110019+0000000000000TP4 32...7+0000000000844260 331.07+0000000000063475
390...+0000000000000004 391.07+0000000000000002
*110020+000000082412801R 32...7+0000000000935782 332.07+0000000000064729
390...+0000000000000003 391.07+0000000000000001
*110021+000000082412801R 573.07-0000000000537546 574.07+0000000025157268
83..07+0000000001028567
*110022+000000082412801R 32...7+0000000000939175 331.07+0000000000063254
390...+0000000000000003 391.07+0000000000000001
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390...+0000000000000003 391.07+0000000000000000
*110024+000000000000TP4B 573.07-0000000000438842 574.07+0000000026936913
83..07+0000000001029829
*110025+000000000000TP4B 32...7+0000000001896685 331.07+0000000000066911
390...+0000000000000003 391.07+0000000000000003
*110026+0000000000000TP6 32...7+0000000001750280 332.07+0000000000064840
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```
390...+0000000000000003 391.07+0000000000000002
*110027+0000000000000TP6 573.07-0000000000292437 574.07+0000000030583878
83..07+0000000001031900
*110028+0000000000000TP6 32...7+0000000000737002 331.07+0000000000118472
390...+0000000000000003 391.07+0000000000000001
*110029+0000000000000TP7 32...7+0000000000458487 332.07+0000000000022504
390...+0000000000000003 391.07+0000000000000000
*110030+0000000000000TP7 573.07-0000000000013921 574.07+0000000031779367
83..07+0000000001127868
*110031+0000000000000TP7 32...7+0000000000422502 331.07+0000000000128214
390...+0000000000000004 391.07+0000000000000001
*110032+0000000000000TP8 32...7+0000000000294997 332.07+0000000000023448
390...+0000000000000003 391.07+0000000000000000
*110033+0000000000000TP8 573.07+0000000000113584 574.07+0000000032496866
83..07+0000000001232634
*110034+0000000000000TP8 32...7+0000000000225507 331.07+0000000000080902
390...+0000000000000003 391.07+0000000000000000
*110035+0000000CHK IN BM 32...7+0000000000531809 332.07+0000000000017741
390...+0000000000000003 391.07+0000000000000000 71....+0000000EL129.089
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*410037+00000000?......1
*110038+0000000CHK IN BM 83..07+0000000001295795
*110039+0000000CHK IN BM 32...7+0000000000419199 331.07+0000000000015184
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83..07+0000000001232606
*110042+0000000000000TP9 32...7+0000000000441603 331.07+0000000000029289
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*110043+000000000000TP10 32...7+0000000000553619 332.07+0000000000134033
390...+0000000000000004 391.07+0000000000000001
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*110048+000000000000TP11 32...7+0000000003244990 331.07+0000000000137112
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*110049+000000000000TP12 32...7+0000000003145958 332.07+0000000000008394
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*110050+000000000000TP12 573.07-0000000000300933 574.07+0000000009337585
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83..07+0000000001103398
*110054+000000000000TP13 32...7+0000000002974508 331.07+0000000000013430
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390...+0000000000000003 391.07+0000000000000004
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*110069+00000082412801RB 32...7+0000000000612658 332.07+0000000000072029
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*110070+00000082412801RB 573.07+0000000000010178 574.07+0000000002430259
83..07+0000000001028549
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390...+0000000000000003 391.27+0000000000000001
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390...+0000000000000003 391.27+0000000000000000
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*410005+00000000?......1
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*110007+00000000C1286007 32...7+0000000003393106 331.07+0000000000097088
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*110008+0000000000000TP1 32...7+0000000003376312 332.07+0000000000005155
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*110009+0000000000000TP1 573.07+0000000000016795 574.07+0000000006769418
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390...+0000000000000003 391.07+0000000000000003
*110011+0000000000000TP2 32...7+0000000003650190 332.07+0000000000004432
390...+0000000000000003 391.07+0000000000000003
*110012+0000000000000TP2 573.07-0000000000522215 574.07+0000000013530789
83..07+0000000001168871
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390...+0000000000000003 391.07+0000000000000001
*110014+0000000000000TP3 32...7+0000000002805833 332.07+0000000000122973
390...+0000000000000003 391.07+0000000000000004
*110015+0000000000000TP3 573.07-0000000000435953 574.07+0000000019228716
83..07+0000000001050781
*110016+0000000000000TP3 32...7+0000000002069220 331.07+0000000000048219
390...+0000000000000003 391.07+0000000000000002
*110017+0000000000000TP4 32...7+0000000002079290 332.07+0000000000069178
390...+0000000000000004 391.07+0000000000000004
*110018+0000000000000TP4 573.07-0000000000446024 574.07+0000000023377226
83..07+0000000001029822
*110019+0000000000000TP4 32...7+0000000000844260 331.07+0000000000063475
390...+0000000000000004 391.07+0000000000000002
*110020+000000082412801R 32...7+0000000000935782 332.07+0000000000064729
390...+0000000000000003 391.07+0000000000000001
*110021+000000082412801R 573.07-0000000000537546 574.07+0000000025157268
83..07+0000000001028567
*110022+000000082412801R 32...7+0000000000939175 331.07+0000000000063254
390...+0000000000000003 391.07+0000000000000001
*110023+000000000000TP4B 32...7+0000000000840471 332.07+0000000000061993
390...+0000000000000003 391.07+0000000000000000
*110024+000000000000TP4B 573.07-0000000000438842 574.07+0000000026936913
83..07+0000000001029829
*110025+000000000000TP4B 32...7+0000000001896685 331.07+0000000000066911
390...+0000000000000003 391.07+0000000000000003
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*110026+0000000000000TP6 32...7+0000000001750280 332.07+0000000000064840
390...+0000000000000003 391.07+0000000000000002
*110027+0000000000000TP6 573.07-0000000000292437 574.07+0000000030583878
83..07+0000000001031900
*110028+0000000000000TP6 32...7+0000000000737002 331.07+0000000000118472
390...+0000000000000003 391.07+0000000000000001
*110029+0000000000000TP7 32...7+0000000000458487 332.07+0000000000022504
390...+0000000000000003 391.07+0000000000000000
*110030+0000000000000TP7 573.07-0000000000013921 574.07+0000000031779367
83..07+0000000001127868
*110031+0000000000000TP7 32...7+0000000000422502 331.07+0000000000128214
390...+0000000000000004 391.07+0000000000000001
*110032+0000000000000TP8 32...7+0000000000294997 332.07+0000000000023448
390...+0000000000000003 391.07+0000000000000000
*110033+0000000000000TP8 573.07+0000000000113584 574.07+0000000032496866
83..07+0000000001232634
*110034+0000000000000TP8 32...7+0000000000225507 331.07+0000000000080902
390...+0000000000000003 391.07+0000000000000000
*110035+0000000CHK IN BM 32...7+0000000000531809 332.07+0000000000017741
390...+0000000000000003 391.07+0000000000000000 71....+0000000EL129.089
*110036+0000000CHK IN BM 573.07-0000000000192718 574.07+0000000033254182
83..07+0000000001295795
*410037+00000000?......1
*110038+0000000CHK IN BM 83..07+0000000001295795
*110039+0000000CHK IN BM 32...7+0000000000419199 331.07+0000000000015184
390...+0000000000000004 391.07+0000000000000001
*110040+0000000000000TP9 32...7+0000000000329375 332.07+0000000000078373
390...+0000000000000003 391.07+0000000000000000
*110041+0000000000000TP9 573.07+0000000000089824 574.07+0000000000748574
83..07+0000000001232606
*110042+0000000000000TP9 32...7+0000000000441603 331.07+0000000000029289
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*110043+000000000000TP10 32...7+0000000000553619 332.07+0000000000134033
390...+0000000000000004 391.07+0000000000000001
*110044+000000000000TP10 573.07-0000000000022192 574.07+0000000001743796
83..07+0000000001127861
*110045+000000000000TP10 32...7+0000000000412535 331.07+0000000000034563
390...+0000000000000004 391.07+0000000000000001
*110046+000000000000TP11 32...7+0000000000790306 332.07+0000000000130557
390...+0000000000000003 391.07+0000000000000001
*110047+000000000000TP11 573.07-0000000000399964 574.07+0000000002946637
83..07+0000000001031867
*110048+000000000000TP11 32...7+0000000003244990 331.07+0000000000137112
390...+0000000000000003 391.07+0000000000000004
*110049+000000000000TP12 32...7+0000000003145958 332.07+0000000000008394
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*110050+000000000000TP12 573.07-0000000000300933 574.07+0000000009337585
83..07+0000000001160585
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*110051+000000000000TP12 32...7+0000000003435629 331.07+0000000000011671
390...+0000000000000003 391.07+0000000000000004
*110052+000000000000TP13 32...7+0000000003135193 332.07+0000000000068859
390...+0000000000000003 391.07+0000000000000003
*110053+000000000000TP13 573.07-0000000000000497 574.07+0000000015908408
83..07+0000000001103398
*110054+000000000000TP13 32...7+0000000002974508 331.07+0000000000013430
390...+0000000000000003 391.07+0000000000000003
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83..07+0000000001011286
*110057+000000000000TP14 32...7+0000000000815782 331.07+0000000000047597
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390...+0000000000000003 391.07+0000000000000001 71....+0000000EL100.706
*110059+000000000R136010 573.07-0000000000144417 574.07+0000000023632909
83..07+0000000001007081
*110060+000000000R136010 32...7+0000000000449931 331.07+0000000000036835
390...+0000000000000004 391.07+0000000000000001
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390...+0000000000000003 391.07+0000000000000001
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83..07+0000000001011337
*410063+00000000?......1
*110064+000000082412801R 83..07+0000000001028567
*110065+000000082412801R 32...7+0000000000618211 331.07+0000000000074488
390...+0000000000000003 391.07+0000000000000000
*110066+00000000TOP WELL 32...7+0000000000597383 332.07+0000000000032483
390...+0000000000000003 391.07+0000000000000001
*110067+00000000TOP WELL 573.07+0000000000020828 574.07+0000000001215593
83..07+0000000001070572
*110068+00000000TOP WELL 32...7+0000000000602008 331.07+0000000000030005
390...+0000000000000003 391.07+0000000000000001
*110069+00000082412801RB 32...7+0000000000612658 332.07+0000000000072029
390...+0000000000000004 391.07+0000000000000001
*110070+00000082412801RB 573.07+0000000000010178 574.07+0000000002430259
83..07+0000000001028549
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Project File Data		Coordinate System	
Name:	J:\2017\171204.05 - SFWMD USGS Phase 4 Wells\TBC\82412801R.vce	Name:	Default
Size:	50 KB	Datum:	WGS 1984
Modified:	8/12/2020 1:29:44 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: M_171204.05ED8420.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: -0.01750 ft
Σ BS Distances: 2872.485 ft
Σ FS Distances: 2914.014 ft
Run Length: 5786.499 ft
Reduction: Adjusted Values

Create	Point ID	BS	HI	IS	FS	Δ Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
☑	C1286007	☑ 9.70878 ft	110.85958 ft			0.00000 ft	101.15080 ft	0.00000 ft	101.15080 ft	Benchmark	339.310 ft	
☑	TP1				☑ 0.51550 ft	9.19328 ft	110.34408 ft	-0.00023 ft	110.34385 ft	Computed	337.631 ft	
	TP1	☑ 6.98589 ft	117.32997 ft								311.117 ft	
☑	TP2				☑ 0.44320 ft	6.54269 ft	116.88677 ft	-0.00045 ft	116.88631 ft	Computed	365.018 ft	
	TP2	☑ 0.48840 ft	117.37517 ft								289.209 ft	
☑	TP3				☑ 12.29728 ft	-11.80888 ft	105.07789 ft	-0.00064 ft	105.07725 ft	Computed	280.583 ft	
	TP3	☑ 4.82189 ft	109.89978 ft								206.922 ft	
☑	TP4				☑ 6.91779 ft	-2.09590 ft	102.98199 ft	-0.00078 ft	102.98121 ft	Computed	207.929 ft	
	TP4	☑ 6.34749 ft	109.32948 ft								84.426 ft	
☑	82412801R				☑ 6.47289 ft	-0.12540 ft	102.85659 ft	-0.00084 ft	102.85575 ft	Computed	93.578 ft	
	82412801R	☑ 6.32539 ft	109.18198 ft								93.917 ft	
☑	TP4B				☑ 6.19929 ft	0.12610 ft	102.98269 ft	-0.00090 ft	102.98180 ft	Computed	84.047 ft	
	TP4B	☑ 6.69109 ft	109.67378 ft								189.668 ft	
☑	TP6				☑ 6.48399 ft	0.20710 ft	103.18979 ft	-0.00102 ft	103.18877 ft	Computed	175.028 ft	
	TP6	☑ 11.84718 ft	115.03697 ft								73.700 ft	
☑	TP7				☑ 2.25040 ft	9.59678 ft	112.78657 ft	-0.00106 ft	112.78551 ft	Computed	45.849 ft	
	TP7	☑ 12.82137 ft	125.60795 ft								42.250 ft	
☑	TP8				☑ 2.34480 ft	10.47658 ft	123.26315 ft	-0.00108 ft	123.26207 ft	Computed	29.500 ft	
	TP8	☑ 8.09018 ft	131.35334 ft								22.551 ft	
☑	Alum Disk				☑ 1.77410 ft	6.31609 ft	129.57924 ft	-0.00111 ft	129.57813 ft	Computed	53.181 ft	
	Alum Disk	☑ 1.51840 ft	131.09764 ft								41.920 ft	
☑	TP9				☑ 7.83728 ft	-6.31889 ft	123.26035 ft	-0.00113 ft	123.25922 ft	Computed	32.937 ft	
	TP9	☑ 2.92889 ft	126.18925 ft								44.160 ft	
☑	TP10				☑ 13.40327 ft	-10.47438 ft	112.78597 ft	-0.00117 ft	112.78481 ft	Computed	55.362 ft	
	TP10	☑ 3.45629 ft	116.24227 ft								41.253 ft	
☑	TP11				☑ 13.05567 ft	-9.59938 ft	103.18659 ft	-0.00121 ft	103.18539 ft	Computed	79.030 ft	
	TP11	☑ 13.71117 ft	116.89777 ft								324.498 ft	
☑	TP12				☑ 0.83940 ft	12.87177 ft	116.05837 ft	-0.00142 ft	116.05695 ft	Computed	314.595 ft	
	TP12	☑ 1.16710 ft	117.22547 ft								343.562 ft	
☑	TP13				☑ 6.88589 ft	-5.71879 ft	110.33958 ft	-0.00164 ft	110.33794 ft	Computed	313.519 ft	
	TP13	☑ 1.34300 ft	111.68258 ft								297.450 ft	
☑	TP14				☑ 10.55418 ft	-9.21118 ft	101.12840 ft	-0.00184 ft	101.12656 ft	Computed	301.354 ft	
	TP14	☑ 4.75969 ft	105.88809 ft								81.578 ft	
☑	R136010				☑ 5.18019 ft	-0.42050 ft	100.70790 ft	-0.00190 ft	100.70600 ft	Benchmark	92.067 ft	
	R136010	☑ 3.68349 ft	104.39139 ft								44.993 ft	
☑	C1286007B				☑ 3.25789 ft	0.42560 ft	101.13350 ft	0.01750 ft	101.15100 ft	Benchmark	52.808 ft	

Run - 0002 (N5) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
C1286007-TP1 (E23)	Enabled	9.19328 ft	-0.00023 ft	9.19306 ft	1	676.940 ft	9.70878 ft	0.51550 ft	0.00104 ft
TP1-TP2 (E24)	Enabled	6.54269 ft	-0.00023 ft	6.54246 ft	1	676.136 ft	6.98589 ft	0.44320 ft	0.00104 ft
TP2-TP3 (E25)	Enabled	-11.80888 ft	-0.00019 ft	-11.80907 ft	1	569.792 ft	0.48840 ft	12.29728 ft	0.00096 ft
TP3-TP4 (E26)	Enabled	-2.09590 ft	-0.00014 ft	-2.09603 ft	1	414.850 ft	4.82189 ft	6.91779 ft	0.00082 ft

TP4-82412801R (E27)	Enabled	-0.12540 ft	-0.00006 ft	-0.12546 ft	1	178.004 ft	6.34749 ft	6.47289 ft	0.00053 ft
82412801R-TP4B (E28)	Enabled	0.12610 ft	-0.00006 ft	0.12604 ft	1	177.964 ft	6.32539 ft	6.19929 ft	0.00053 ft
TP4B-TP6 (E29)	Enabled	0.20710 ft	-0.00012 ft	0.20698 ft	1	364.696 ft	6.69109 ft	6.48399 ft	0.00077 ft
TP6-TP7 (E30)	Enabled	9.59678 ft	-0.00004 ft	9.59674 ft	1	119.549 ft	11.84718 ft	2.25040 ft	0.00044 ft
TP7-TP8 (E31)	Enabled	10.47658 ft	-0.00002 ft	10.47656 ft	1	71.750 ft	12.82137 ft	2.34480 ft	0.00034 ft
TP8-Alum Disk (E32)	Enabled	6.31609 ft	-0.00003 ft	6.31606 ft	1	75.731 ft	8.09018 ft	1.77410 ft	0.00035 ft
Alum Disk-TP9 (E33)	Enabled	-6.31889 ft	-0.00002 ft	-6.31891 ft	1	74.857 ft	1.51840 ft	7.83728 ft	0.00035 ft
TP9-TP10 (E34)	Enabled	-10.47438 ft	-0.00003 ft	-10.47441 ft	1	99.522 ft	2.92889 ft	13.40327 ft	0.00040 ft
TP10-TP11 (E35)	Enabled	-9.59938 ft	-0.00004 ft	-9.59942 ft	1	120.284 ft	3.45629 ft	13.05567 ft	0.00044 ft
TP11-TP12 (E36)	Enabled	12.87177 ft	-0.00021 ft	12.87156 ft	1	639.094 ft	13.71117 ft	0.83940 ft	0.00101 ft
TP12-TP13 (E37)	Enabled	-5.71879 ft	-0.00022 ft	-5.71901 ft	1	657.081 ft	1.16710 ft	6.88589 ft	0.00103 ft
TP13-TP14 (E38)	Enabled	-9.21118 ft	-0.00020 ft	-9.21138 ft	1	598.804 ft	1.34300 ft	10.55418 ft	0.00098 ft
TP14-R136010 (E39)	Enabled	-0.42050 ft	-0.00006 ft	-0.42056 ft	1	173.645 ft	4.75969 ft	5.18019 ft	0.00053 ft
R136010-C1286007B (E40)	Enabled	0.42560 ft	0.01940 ft	0.44500 ft	1	97.801 ft	3.68349 ft	3.25789 ft	0.00040 ft

Run - 0002 (N5) Reduced Coordinates

Point ID	Status	Elevation
C1286007	Enabled	101.15080 ft
R136010	Enabled	100.70600 ft
C1286007B	Enabled	101.15100 ft

Project File Data		Coordinate System	
Name:	J:\2017\171204.05 - SFWMD USGS Phase 4 Wells\TBC\82412801R.vce	Name:	Default
Size:	50 KB	Datum:	WGS 1984
Modified:	8/12/2020 1:29:44 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: M_171204.05ED8420.GSI
Instrument:
Creation option: Delta elevations
Description usage: Feature codes

Run - 0004 Raw Observations

Standard error per kilometer of double leveling: 0.00230 ft
Standard error per turn/station setup: 0.00000 ft
Raw Misclosure: ?
Σ BS Distances: 122.022 ft
Σ FS Distances: 121.004 ft
Run Length: 243.026 ft
Reduction: Raw Elevations

Create	Point ID	BS	HI	IS	FS	Δ Elevation	Raw Elevation	Misclosure	Adj. Elevation	Type	Distance	Description
✓	82412801R	✓ 7.44879 ft	110.30528 ft			0.00000 ft	102.85649 ft	0.00000 ft	102.85649 ft	Benchmark	61.821 ft	
✓	TOP WELL				✓ 3.24829 ft	4.20049 ft	107.05699 ft			Computed	59.738 ft	
	TOP WELL	✓ 3.00049 ft	110.05748 ft								60.201 ft	
✓	82412801RB				✓ 7.20289 ft	-4.20239 ft	102.85459 ft			Computed	61.266 ft	

Run - 0004 (N10) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
82412801R-TOP WELL (E63)	Enabled	4.20049 ft	0.00000 ft	4.20049 ft	1	121.559 ft	7.44879 ft	3.24829 ft	0.00044 ft
TOP WELL-82412801RB (E64)	Enabled	-4.20239 ft	0.00000 ft	-4.20239 ft	1	121.466 ft	3.00049 ft	7.20289 ft	0.00044 ft

Run - 0004 (N10) Reduced Coordinates

Point ID	Status	Elevation
82412801R	Enabled	102.85649 ft

Office

Project

13 August 2020

INPUT	OUTPUT
State Plane, NAD83	State Plane, NAD83
0901 - Florida East, U.S. Feet	0901 - Florida East, U.S. Feet
Vertical - NAVD88, U.S. Feet	Vertical - NGVD29 (Vertcon94), U.S. Feet

82412801R-BM

1/1

Northing/Y:	1482051.954	**Northing/Y:**	1482051.954
Easting/X:	503110.621	**Easting/X:**	503110.621
Elevation/Z:	107.06	**Elevation/Z:**	107.946
Convergence:	-0 13 35.51874	**Convergence:**	-0 13 35.51874
Scale Factor:	0.999968026	**Scale Factor:**	0.999968026
Combined Factor:	0.999967246	**Combined Factor:**	0.999967203

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

Remark: