SOUTH FLORIDA WATER MANAGEMENT DISTRICT

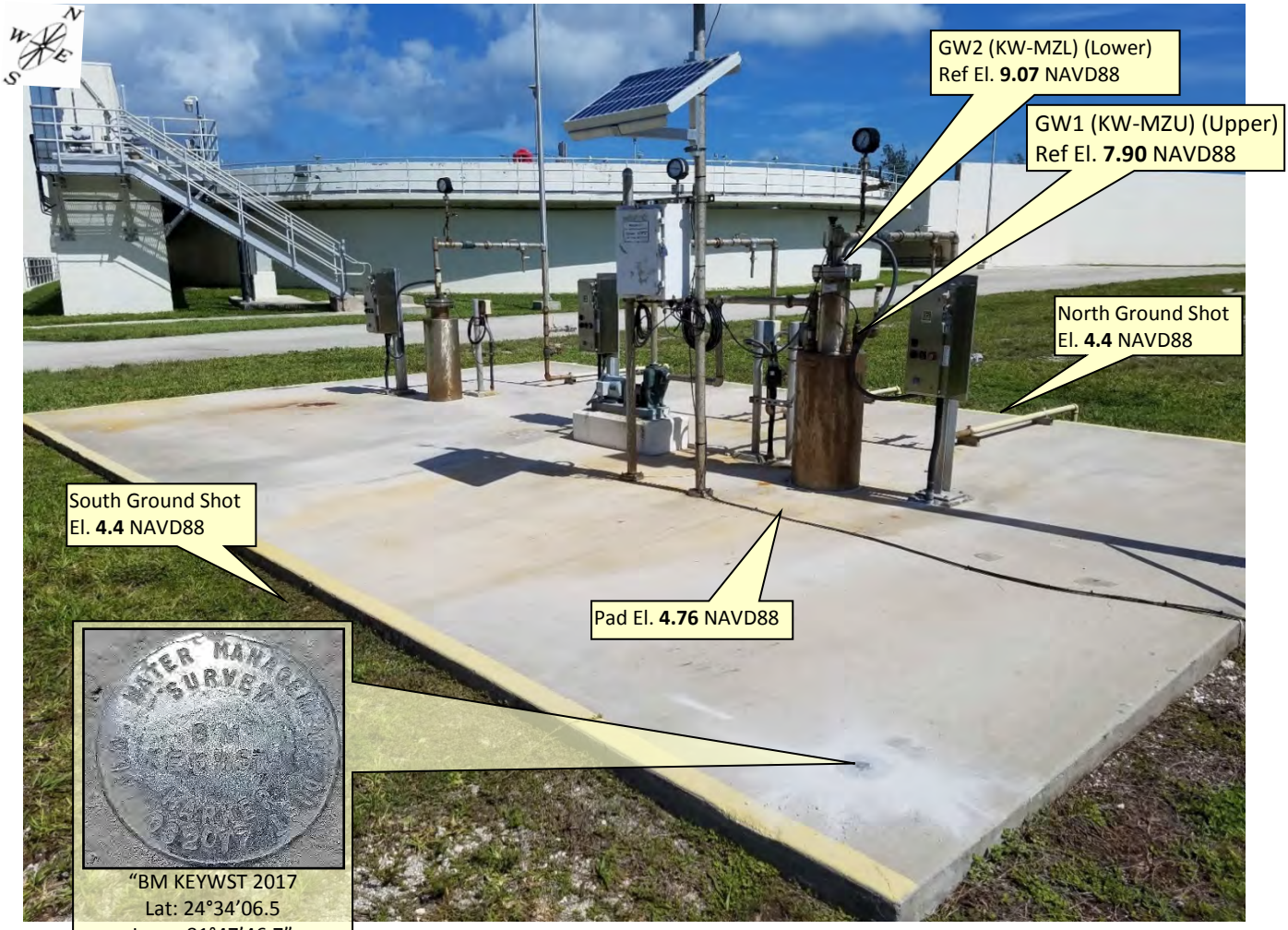
Rev. 1/16

DB Hydro Station Name: **KW-MZU**	DB Hydro Site Name: **KEYWST**	Last Date of Field Work: **15-jun-17**	
Party Chiefs: **Kett** (Digital Level run) **Ebanks** (Site notes optical)	Field Book: **SCADA 12**	Page **50**	
Site Benchmark: **BM KEYWST 2017**	Benchmark Elevation (NAVD88) **4.826**	Corpscon 6.0.1 Conversion Factor (NAVD88 to NGVD29) **+1.345**	
Reference Elevation(s) (NAVD88): **El. 7.90** GW1 (KW-MZU) **El. 9.07** GW2 (KW-MZL) (per SCADA personnel on site)	12-apr-09 Addendum (NGVD 29): El. 9.42 GW1 (KW-MZU) El. 10.56 GW2 (KW-MZL)	Existing Tag Elevation (Datum): **None**	Calibration Port Elevation (Datum): **Not applicable**
Ground Elevation (NAVD88): **El. 4.4** (North) **El. 4.4** (South)	Pad Elevation (NAVD88): **El. 4.76** (taken on the southerly side of the well head)		
Latitude: **24°34'06.5"**	Longitude: **81°47'46.7"** (Hand held GPS Unit)		

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

Overall Site



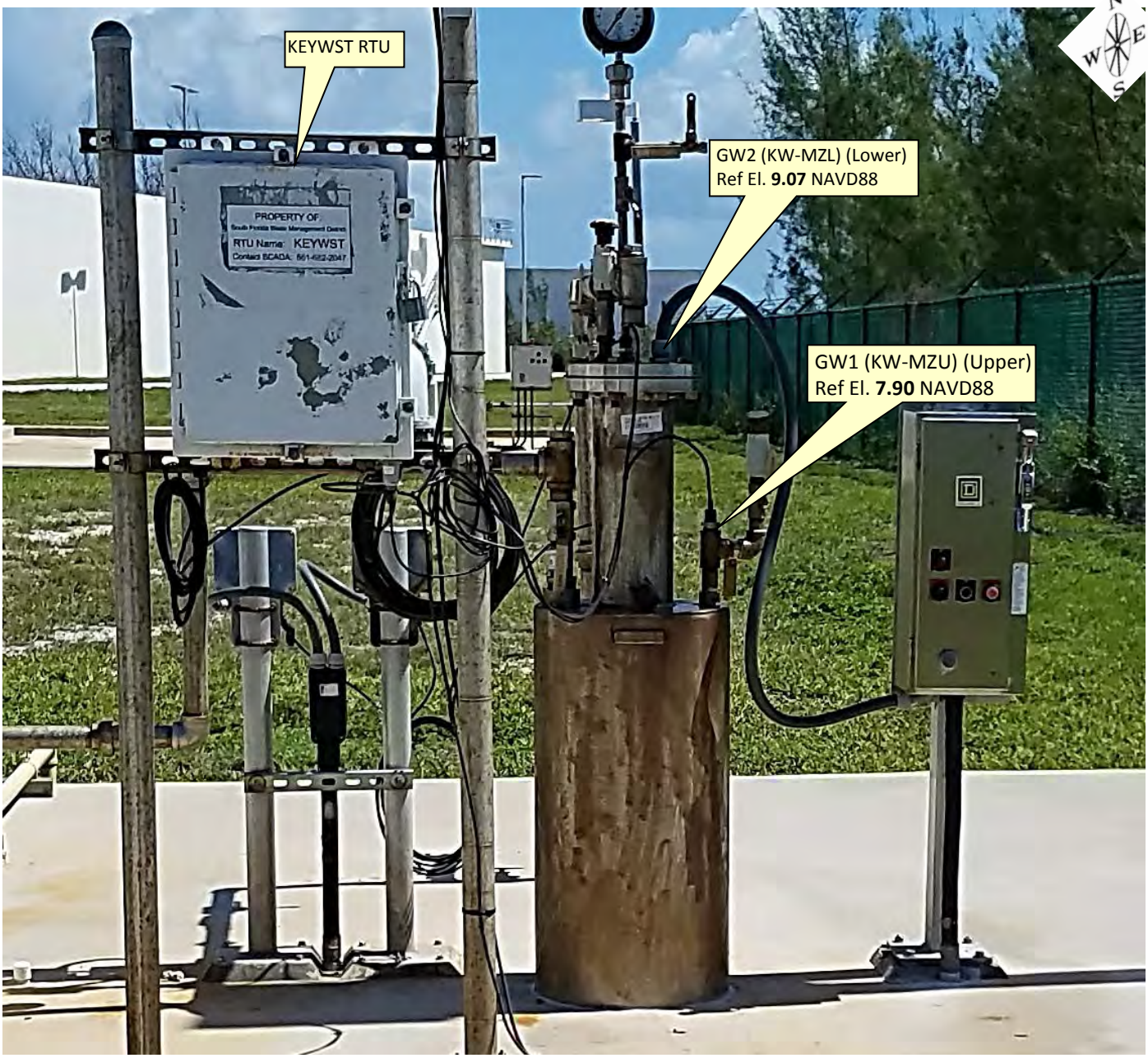
"BM KEYWST 2017
Lat: 24°34'06.5
Long: 81°47'46.7"
El. 4.826 NAVD88

Looking Northwesterly (Not to scale) (15-jun-17)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/16

Well Close-up



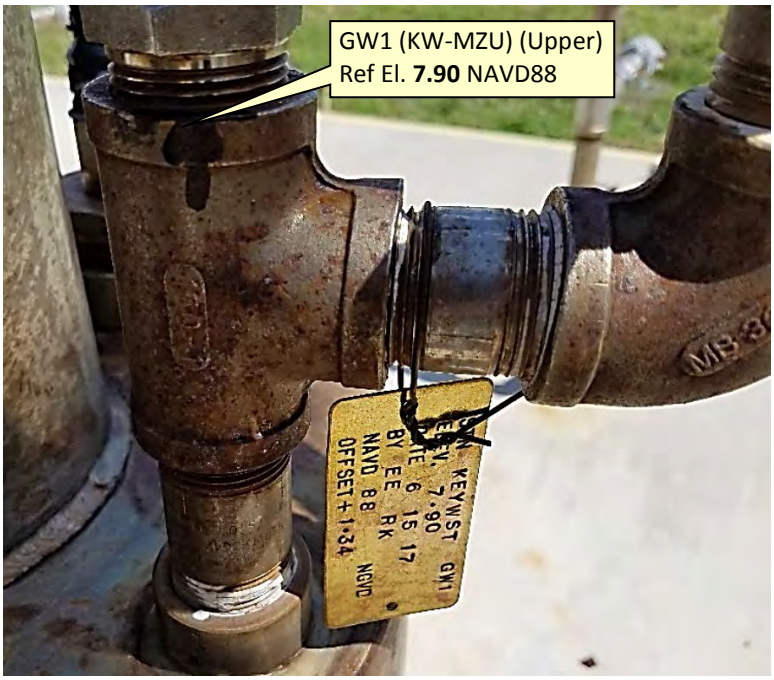
Looking North (North to scale) (15-jun-17)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/16

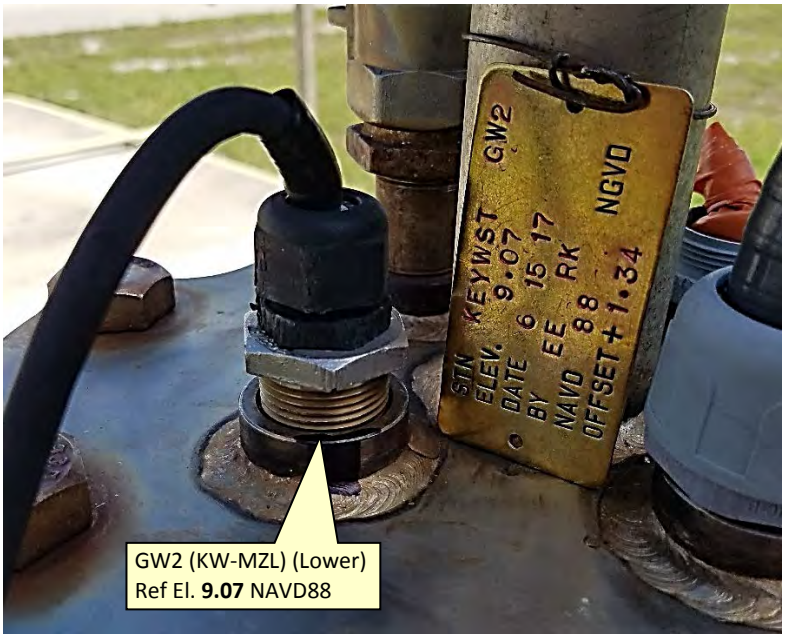
GW1 (KW-MZU) (Upper) Brass Tag Close-Up

GW1 (KW-MZU) (Upper) Brass Tag and Reference Mark



GW2 (KW-MZL) (Lower) Brass Tag Close-Up

GW2 (KW-MZL) (Lower) Brass Tag and Reference Mark



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/16

DESIGNATION: **KEYWST**	PROJECT: **KEYWST Well Site**
ESTABLISHED BY: **SOUTH FLORIDA WATER MANAGEMENT DISTRICT** RECOVERED BY:	SURVEYOR: **Kett** DATE: **15-jun-17**

GEOGRAPHIC POSITION

SECTION **31**	TOWNSHIP **67** SOUTH	RANGE **25** EAST
COUNTY: **Monroe**	NAME OF QUADRANGLE: Key West GEOGRAPHIC INDEX OF QUAD: **0515**	

HORIZONTAL DATUM: 1927 (**1983**) Other___ (*circle one*) ZONE (E) or W

VERTICAL DATUM: MSL 1929 (**1988**) Other ____ (*circle one*)

VERTICAL ACCURACY: 1 2 (3)

STATE PLANE COORDINATE	(N) Y=	(E) X=	NAVD 88 EL. **4.826** NGVD 29 EL. **6.171**

CORPSCON 6.0.1 CONVERSION FACTOR (NAVD88 TO NGVD29): **+1.345**

LATITUDE: **24°34'06.5"**	LONGITUDE: **81°47'46.7"** (Hand held GPS Unit)

RECOVERY DATA

Stamping: **BM KEYWST 2017**

To Reach: From the intersection of Palm Avenue and Ely Street, go northeasterly, 250 feet to the entrance gate to Naval Air Station Trumbo Pont Annex; continue northeasterly on Ely Street and go, 190 feet to Chevalier Avenue; turn left onto Chevalier Avenue and go 640 feet to Flatley Avenue; turn right on to Flatley Avenue and go 140 feet to Whiting Avenue; turn left onto Whiting Avenue and go 1000 feet to Fleming Key Road on the right; turn right and go northeasterly 0.25 of a mile on Fleming Key Road (crossing over Fleming Key Cut) to Mustin Street; turn left onto Mustin Street and go westerly 400 feet to a road ahead; turn right, continuing on Mustin Street and go northeasterly and northerly 180 feet to the KEYWST Well station on the left and station location.

The station is a South Florida Water Management District aluminum disk grouted into the southeast corner of the concrete well pad for KEYWST well.

NOTABLE LAND MARKS:

NGS SOURCE BENCHMARK: **D 121 (AA0020) 2.569 NAVD 88** (3.914 NGVD 29)

FIELD BOOK: **SCADA 12** PAGE **50**

PICTURES

Overall Site

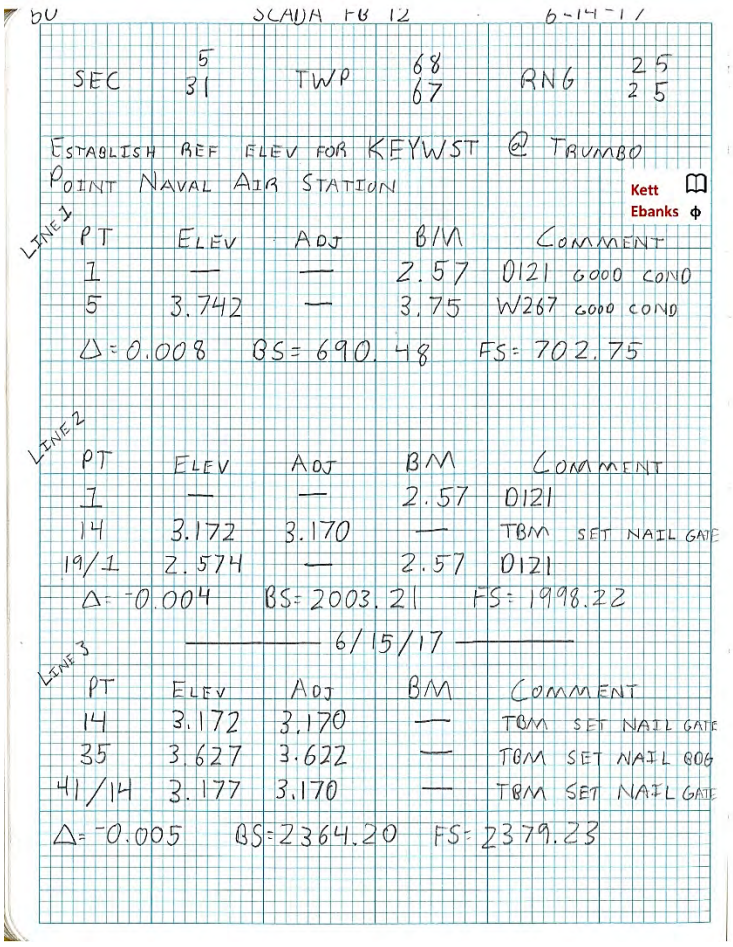
Looking Northerly (Not to scale) (15-jun-17)

Aluminum cap stamped
"BM KEYWST 2017"
El. 4.826 NAVD88
El. 6.171 NGVD29

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 1/16

Field Notes (FB SCADA 12 page 50



50 SCADA FB 12 6-14-17

SEC 5/31 TWP 68/67 RNG 25/25

ESTABLISH REF ELEV FOR KEYWST @ TRUMBO POINT NAVAL AIR STATION

Kett
Ebanks

LINE 1

PT	ELEV	ADJ	BM	COMMENT
1	—	—	2.57	D121 GOOD COND
5	3.742	—	3.75	W267 GOOD COND

Δ = 0.008 BS = 690.48 FS = 702.75

LINE 2

PT	ELEV	ADJ	BM	COMMENT
1	—	—	2.57	D121
14	3.172	3.170	—	TBM SET NAIL GATE
19/1	2.574	—	2.57	D121

Δ = -0.004 BS = 2003.21 FS = 1998.22

6/15/17

LINE 3

PT	ELEV	ADJ	BM	COMMENT
14	3.172	3.170	—	TBM SET NAIL GATE
35	3.627	3.622	—	TBM SET NAIL BOG
41/14	3.177	3.170	—	TBM SET NAIL GATE

Δ = -0.005 BS = 2364.20 FS = 2379.23

6-15-17 SCADA FB 12 50

SEC 5/31 TWP 68/67 RNG 25/25

CONT FROM PG. 50

KETT EBANKS

Kett
Ebanks

PT	ELEV	ADJ	BM	COMMENT
35	3.627	3.622	—	TBM SET NAIL BOG
51	4.831	4.826	—	KEYWST SFWMD IN CONC
53/35	3.629	3.622	—	TBM SET NAIL BOG

24 34 06.5
81 47 46.7

KEYWST SFWMD ALUM. CAP SET IN SE COR OF WELL PAD STAMPED: "BM KEYWST 2017"
ELEV = 4.83' OFFSET 1.34'

21-jun-17 Talked With Mr. Kett, he said that SCADA personnel were on site while they were there.

For Wells @ Wellsite

Ebanks
Kett

BM KEYWST 2017 4.69 4.83'

STA	+	HI	-	ELEV	REMARKS
	4.69	9.52			
KeyWst GW#1			1.62	7.90	
KeyWst GW2			0.45	9.07	
Well PAD			4.76	4.76	
GD SHOT (S)			5.1	4.4	
GD SHOT (N)			5.1	4.4	
BM KeyWST			4.69	4.83 ✓	

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.11
1         National Geodetic Survey,   Retrieval Date = MARCH  6, 2017
 AA0020 ***********************************************************************
 AA0020  DESIGNATION -  D 121
 AA0020  PID         -  AA0020
 AA0020  STATE/COUNTY-  FL/MONROE
 AA0020  COUNTRY     -  US
 AA0020  USGS QUAD   -  KEY WEST (1971)
 AA0020
 AA0020                         *CURRENT SURVEY CONTROL
 AA0020  ______________________________________________________________________
 AA0020* NAD 83(1986) POSITION- 24 33 28.47   (N) 081 47 17.55    (W)    HD HELD1
 AA0020* NAVD 88 ORTHO HEIGHT -      0.783 (meters)         2.57   (feet) ADJUSTED
 AA0020  ______________________________________________________________________
 AA0020  GEOID HEIGHT    -        -21.740 (meters)                       GEOID12B
 AA0020  DYNAMIC HEIGHT  -          0.781 (meters)         2.56   (feet) COMP
 AA0020  MODELED GRAVITY -    978,954.1   (mgal)                         NAVD 88
 AA0020
 AA0020  VERT ORDER      -  FIRST     CLASS II
 AA0020
 AA0020.The horizontal coordinates were determined by differentially corrected
 AA0020.hand held GPS observations or other comparable positioning techniques
 AA0020.and have an estimated accuracy of +/- 3 meters.
 AA0020.
 AA0020.The orthometric height was determined by differential leveling and
 AA0020.adjusted by the NATIONAL GEODETIC SURVEY
 AA0020.in June 1991.
 AA0020
 AA0020.Significant digits in the geoid height do not necessarily reflect accuracy.
 AA0020.GEOID12B height accuracy estimate available here.
 AA0020
 AA0020.Photographs are available for this station.
 AA0020
 AA0020.The dynamic height is computed by dividing the NAVD 88
 AA0020.geopotential number by the normal gravity value computed on the
 AA0020.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AA0020.degrees latitude (g = 980.6199 gals.).
 AA0020
 AA0020.The modeled gravity was interpolated from observed gravity values.
 AA0020
 AA0020;                    North         East     Units  Estimated Accuracy
 AA0020;SPC FL E     -    25,101.8     120,151.0     MT  (+/- 3 meters HH1 GPS)
 AA0020
 AA0020_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMH2017816225(NAD 83)
 AA0020
 AA0020                             SUPERSEDED SURVEY CONTROL
 AA0020
 AA0020  NGVD 29 (??/??/92)     1.193   (m)             3.91    (f) SUPERSEDED  1 2
 AA0020  NGVD 29 (09/01/92)     1.193   (m)             3.91    (f) ADJUSTED    1 2
 AA0020
 AA0020.Superseded values are not recommended for survey control.
```

```
AA0020
AA0020.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AA0020.See file dsdata.txt to determine how the superseded data were derived.
AA0020
AA0020_MARKER: DB = BENCH MARK DISK
AA0020_SETTING: 34 = SET IN THE FOOTINGS OF SMALL/MEDIUM STRUCTURES
AA0020_SP_SET: GRANITE BASE FOR MONUMENT
AA0020_STAMPING: D 121 1945
AA0020_MARK LOGO: CGS
AA0020_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AA0020+STABILITY: SURFACE MOTION
AA0020
AA0020  HISTORY     - Date     Condition        Report By
AA0020  HISTORY     - 1945     MONUMENTED       CGS
AA0020  HISTORY     - 1966     GOOD             CGS
AA0020  HISTORY     - 1968     GOOD             CGS
AA0020  HISTORY     - 1978     GOOD             NGS
AA0020  HISTORY     - 1982     GOOD             FLDNR
AA0020  HISTORY     - 1984     GOOD             USPSQD
AA0020  HISTORY     - 19881108 GOOD             FLDNR
AA0020  HISTORY     - 1989     GOOD             USPSQD
AA0020
AA0020                          STATION DESCRIPTION
AA0020
AA0020'DESCRIBED BY COAST AND GEODETIC SURVEY 1966
AA0020'AT KEY WEST.
AA0020'AT KEY WEST, ABOUT 0.5 MILE NORTHEAST ALONG U.S. HIGHWAY 1 FROM
AA0020'THE CATHOLIC CHURCH, AT THE INTERSECTION OF TRUMAN AVENUE AND
AA0020'EISENHOWER DRIVE, 28 FEET SOUTHEAST OF THE SOUTHEAST CURB OF
AA0020'TRUMAN AVENUE (U.S. HIGHWAY 1), 22 FEET SOUTHWEST OF THE
AA0020'SOUTHWEST CURB OF EISENHOWER DRIVE, NEAR THE NORTH CORNER OF
AA0020'BAYVIEW PARK, SET ON THE TOP AND 2.1 FEET WEST OF THE EAST CORNER
AA0020'OF GRANITE BASE FOR A MONUMENT AND 1.3 FEET ABOVE THE LEVEL OF
AA0020'THE GROUND.
AA0020
AA0020                          STATION RECOVERY (1968)
AA0020
AA0020'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1968
AA0020'RECOVERED IN GOOD CONDITION.
AA0020
AA0020                          STATION RECOVERY (1978)
AA0020
AA0020'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1978
AA0020'RECOVERED IN GOOD CONDITION.
AA0020
AA0020                          STATION RECOVERY (1982)
AA0020
AA0020'RECOVERY NOTE BY FL DEPT OF NAT RES 1982
AA0020'RECOVERED IN GOOD CONDITION.
AA0020
AA0020                          STATION RECOVERY (1984)
AA0020
AA0020'RECOVERY NOTE BY US POWER SQUADRON 1984
AA0020'RECOVERED IN GOOD CONDITION.
AA0020
AA0020                          STATION RECOVERY (1988)
AA0020
AA0020'RECOVERY NOTE BY FL DEPT OF NAT RES 1988
AA0020'RECOVERED IN GOOD CONDITION.
AA0020
```

AA0020 STATION RECOVERY (1989)
AA0020
AA0020'RECOVERY NOTE BY US POWER SQUADRON 1989 (HGB)
AA0020'RECOVERED IN GOOD CONDITION.

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

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.11
1         National Geodetic Survey,   Retrieval Date = MARCH  6, 2017
 AA0022 ***********************************************************************
 AA0022  DESIGNATION -  W 267
 AA0022  PID         -  AA0022
 AA0022  STATE/COUNTY-  FL/MONROE
 AA0022  COUNTRY     -  US
 AA0022  USGS QUAD   -  KEY WEST (1971)
 AA0022
 AA0022                         *CURRENT SURVEY CONTROL
 AA0022  ______________________________________________________________________
 AA0022* NAD 83(1986) POSITION- 24 33 34.65   (N) 081 47 04.71    (W)    HD HELD1
 AA0022* NAVD 88 ORTHO HEIGHT -      1.143 (meters)         3.75  (feet) ADJUSTED
 AA0022  ______________________________________________________________________
 AA0022  GEOID HEIGHT    -        -21.738 (meters)                       GEOID12B
 AA0022  DYNAMIC HEIGHT  -          1.141 (meters)         3.74  (feet) COMP
 AA0022  MODELED GRAVITY -    978,954.3   (mgal)                         NAVD 88
 AA0022
 AA0022  VERT ORDER      -  FIRST     CLASS II
 AA0022
 AA0022.The horizontal coordinates were determined by differentially corrected
 AA0022.hand held GPS observations or other comparable positioning techniques
 AA0022.and have an estimated accuracy of +/- 3 meters.
 AA0022.
 AA0022.The orthometric height was determined by differential leveling and
 AA0022.adjusted by the NATIONAL GEODETIC SURVEY
 AA0022.in June 1991.
 AA0022
 AA0022.Significant digits in the geoid height do not necessarily reflect accuracy.
 AA0022.GEOID12B height accuracy estimate available here.
 AA0022
 AA0022.Photographs are available for this station.
 AA0022
 AA0022.The dynamic height is computed by dividing the NAVD 88
 AA0022.geopotential number by the normal gravity value computed on the
 AA0022.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AA0022.degrees latitude (g = 980.6199 gals.).
 AA0022
 AA0022.The modeled gravity was interpolated from observed gravity values.
 AA0022
 AA0022;                    North         East     Units  Estimated Accuracy
 AA0022;SPC FL E     -    25,289.9     120,513.4     MT  (+/- 3 meters HH1 GPS)
 AA0022
 AA0022_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMH2054016413(NAD 83)
 AA0022
 AA0022                             SUPERSEDED SURVEY CONTROL
 AA0022
 AA0022  NGVD 29 (??/??/92)     1.552   (m)             5.09    (f) SUPERSEDED  1 2
 AA0022  NGVD 29 (09/01/92)     1.552   (m)             5.09    (f) ADJUSTED    1 2
 AA0022
 AA0022.Superseded values are not recommended for survey control.
```

```
AA0022
AA0022.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AA0022.See file dsdata.txt to determine how the superseded data were derived.
AA0022
AA0022_MARKER: DB = BENCH MARK DISK
AA0022_SETTING: 32 = SET IN A RETAINING WALL OR CONCRETE LEDGE
AA0022_SP_SET: CONCRETE SEAWALL
AA0022_STAMPING: W 267 1966
AA0022_MARK LOGO: CGS
AA0022_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AA0022+STABILITY: SURFACE MOTION
AA0022_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AA0022+SATELLITE: SATELLITE OBSERVATIONS - April 07, 2011
AA0022
AA0022  HISTORY     - Date     Condition        Report By
AA0022  HISTORY     - 1966     MONUMENTED       CGS
AA0022  HISTORY     - 1978     GOOD             NGS
AA0022  HISTORY     - 1984     GOOD             USPSQD
AA0022  HISTORY     - 1988     GOOD             USPSQD
AA0022  HISTORY     - 19881108 GOOD             FLDNR
AA0022  HISTORY     - 1989     GOOD             USPSQD
AA0022  HISTORY     - 20030409 GOOD             USPSQD
AA0022  HISTORY     - 20110407 GOOD             INDIV
AA0022
AA0022                          STATION DESCRIPTION
AA0022
AA0022'DESCRIBED BY COAST AND GEODETIC SURVEY 1966
AA0022'0.8 MI NE FROM KEY WEST.
AA0022'0.8 MILE NORTHEAST ALONG U.S. HIGHWAY 1 FROM THE CATHOLIC CHURCH
AA0022'AT KEY WEST, NEAR THE SOUTHWEST CORNER OF A LARGE PARKING LOT,
AA0022'SET ON THE TOP OF THE SOUTH END OF A NORTH-SOUTH CONCRETE SEA
AA0022'WALL, 297 FEET WEST OF THE CENTER LINE OF FIRST STREET, 20.5
AA0022'FEET NORTH OF THE NORTH CURB OF U.S. HIGHWAY 1, 1.1 FEET NORTH
AA0022'OF THE SOUTH END OF SEA WALL AND 1 FOOT ABOVE THE LEVEL OF
AA0022'SIDEWALK.
AA0022
AA0022                          STATION RECOVERY (1978)
AA0022
AA0022'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1978
AA0022'RECOVERED IN GOOD CONDITION.
AA0022
AA0022                          STATION RECOVERY (1984)
AA0022
AA0022'RECOVERY NOTE BY US POWER SQUADRON 1984
AA0022'RECOVERED IN GOOD CONDITION.
AA0022
AA0022                          STATION RECOVERY (1988)
AA0022
AA0022'RECOVERY NOTE BY US POWER SQUADRON 1988 (JHF)
AA0022'RECOVERED IN GOOD CONDITION.
AA0022
AA0022                          STATION RECOVERY (1988)
AA0022
AA0022'RECOVERY NOTE BY FL DEPT OF NAT RES 1988
AA0022'RECOVERED IN GOOD CONIDITION AND AS DESCRIBED.  NOTE--ADD THAT THE
AA0022'MARK IS IN THE SOUTHEAST CORNER OF A SEAWALL.
AA0022
AA0022                          STATION RECOVERY (1989)
AA0022
AA0022'RECOVERY NOTE BY US POWER SQUADRON 1989 (HGB)
```

```
AA0022'RECOVERED IN GOOD CONDITION.
AA0022
AA0022                          STATION RECOVERY (2003)
AA0022
AA0022'RECOVERY NOTE BY US POWER SQUADRON 2003 (JLS)
AA0022'RECOVERED IN GOOD CONDITION.
AA0022
AA0022                          STATION RECOVERY (2011)
AA0022
AA0022'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2011 (WSP)
AA0022'RECOVERED IN GOOD CONDITION.

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

Project Information		Coordinate System	
Name:		Name:	Default
Size:		Datum:	WGS 1984
Modified:	2/15/2012 8:48:57 AM (UTC:-7)	Zone:	Default
Time zone:	Mountain Standard Time	Geoid:	
Reference number:		Vertical datum:	
Description:			

Level Report

Imported file: KEYWST.DAT
Instrument: DiNi
Standard error per kilometer of double leveling: 0.00230 ft
Standard error per turn/station setup: 0.00000 ft
Creation option: Delta elevations
Description usage: Feature codes

Run - 1 Raw Observations

Raw Misclosure: -0.00800 ft
Σ BS Distances: 690.480 ft
Σ FS Distances: 702.750 ft
Run Length: 1393.230 ft
Reduction: Adjusted Values

Create	Point ID	BS	IS	FS	Δ Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
☑	1	☑ 4.96400 ft			0.00000 ft	2.570 ft	0.00000 ft	2.570 ft	Benchmark	139.700 ft	D121 3
☐	2			☑ 3.30600 ft	1.65800 ft	4.228 ft	0.00124 ft	4.229 ft	Computed	151.870 ft	3
	2	☑ 6.14100 ft								236.610 ft	3
☐	3			☑ 6.59300 ft	-0.45200 ft	3.776 ft	0.00455 ft	3.781 ft	Computed	240.780 ft	3
	3	☑ 4.44000 ft								226.180 ft	3
☐	4			☑ 4.00600 ft	0.43400 ft	4.210 ft	0.00760 ft	4.218 ft	Computed	231.950 ft	3
	4	☑ 5.34600 ft								87.990 ft	3
☑	5			☑ 5.81400 ft	-0.46800 ft	3.742 ft	0.00800 ft	3.750 ft	Benchmark	78.150 ft	W267 3

Run - 1 (N1) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
						1393.230			0.01935

1-5 (E1)	Enabled	1.17200 ft	0.00800 ft	1.18000 ft	4	ft	20.89100 ft	19.71900 ft	ft

Run - 1 (N1) Reduced Coordinates

Point ID	Status	Elevation
1	Enabled	2.57000 ft
5	Enabled	3.75000 ft

Run - 2 Raw Observations

Raw Misclosure: 0.00600 ft
Σ BS Distances: 2003.220 ft
Σ FS Distances: 1998.230 ft
Run Length: 4001.450 ft
Reduction: Adjusted Values

Create	Point ID	BS	IS	FS	Δ Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
☑	1	☑ 4.03600 ft			0.00000 ft	2.570 ft	0.00000 ft	2.570 ft ⚠	Benchmark	219.680 ft	D121 3
☐	10			☑ 4.90800 ft	-0.87200 ft	1.698 ft	-0.00075 ft	1.697 ft	Computed	232.450 ft	3
	10	☑ 5.11400 ft								228.610 ft	3
☐	11			☑ 5.04600 ft	0.06800 ft	1.766 ft	-0.00150 ft	1.765 ft	Computed	225.590 ft	3
	11	☑ 4.90400 ft								213.750 ft	3
☐	12			☑ 5.16800 ft	-0.26400 ft	1.502 ft	-0.00217 ft	1.500 ft	Computed	216.040 ft	3
	12	☑ 5.01900 ft								192.980 ft	3
☐	13			☑ 5.16600 ft	-0.14700 ft	1.355 ft	-0.00272 ft	1.352 ft	Computed	194.780 ft	3
	13	☑ 6.28300 ft								132.640 ft	3
☑	14			☑ 4.46500 ft	1.81800 ft	3.173 ft	-0.00300 ft	3.170 ft	Computed	142.590 ft	TBM 3
	14	☑ 4.46000 ft								142.590 ft	TBM 3
☐	15			☑ 6.27800 ft	-1.81800 ft	1.355 ft	-0.00327 ft	1.352 ft	Computed	132.810 ft	3
	15	☑ 5.16200 ft								196.130 ft	3
☐	16			☑ 5.04200 ft	0.12000 ft	1.475 ft	-0.00383 ft	1.471 ft	Computed	193.770 ft	3
	16	☑ 5.23300 ft								217.260 ft	3
☐	17			☑ 4.98400	0.24900	1.724 ft	-0.00450 ft	1.720 ft	Computed	212.600	3

				ft	ft					ft	
	17	☑ 5.06900 ft								226.410 ft	3
☐	18			☑ 5.22500 ft	-0.15600 ft	1.568 ft	-0.00525 ft	1.563 ft	Computed	228.410 ft	3
	18	☑ 5.23200 ft								233.170 ft	3
	1			☑ 4.22400 ft	1.00800 ft	2.576 ft	-0.00600 ft	2.570 ft	Benchmark	219.190 ft	D121 3

Run - 2 (N2) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
1-14 (E2)	Enabled	0.60300 ft	-0.00300 ft	0.60000 ft	5	1999.110 ft	25.35600 ft	24.75300 ft	0.02365 ft
14-1 (E3)	Enabled	-0.59700 ft	-0.00300 ft	-0.60000 ft	5	2002.340 ft	25.15600 ft	25.75300 ft	0.02368 ft

Run - 3 Raw Observations

Raw Misclosure: 0.00800 ft
Σ BS Distances: 2364.200 ft
Σ FS Distances: 2379.230 ft
Run Length: 4743.430 ft
Reduction: Adjusted Values

Create	Point ID	BS	IS	FS	Δ Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
☑	14	☑ 5.12900 ft			0.00000 ft	3.173 ft	-0.00300 ft	3.170 ft	Computed	189.300 ft	TBM GATE 3
☐	30			☑ 4.71900 ft	0.41000 ft	3.583 ft	-0.00357 ft	3.579 ft	Computed	194.590 ft	3
	30	☑ 5.14100 ft								244.360 ft	3
☐	31			☑ 4.19000 ft	0.95100 ft	4.534 ft	-0.00450 ft	4.529 ft	Computed	241.800 ft	3
	31	☑ 5.10400 ft								248.260 ft	3
☐	32			☑ 4.95800 ft	0.14600 ft	4.680 ft	-0.00548 ft	4.675 ft	Computed	250.390 ft	3
	32	☑ 5.26500 ft								240.030 ft	3
☐	33			☑ 4.55500 ft	0.71000 ft	5.390 ft	-0.00642 ft	5.384 ft	Computed	249.470 ft	3
	33	☑ 4.92200 ft								84.020 ft	3
☐	34			☑ 3.08900 ft	1.83300 ft	7.223 ft	-0.00653 ft	7.216 ft	Computed	83.500 ft	3
		☑ 2.04500								193.270	

	34	ft								ft	3
☑	35			☑ 5.63900 ft	-3.59400 ft	3.629 ft	-0.00699 ft	3.622 ft	Computed	151.870 ft	TBM BRIDGE 3
	35	☑ 5.73000 ft								143.770 ft	TBM BRIDGE 3
☐	36			☑ 2.13500 ft	3.59500 ft	7.224 ft	-0.00746 ft	7.217 ft	Computed	201.050 ft	3
	36	☑ 2.65400 ft								82.970 ft	3
☐	37			☑ 4.48500 ft	-1.83100 ft	5.393 ft	-0.00757 ft	5.385 ft	Computed	84.680 ft	3
	37	☑ 4.41800 ft								250.000 ft	3
☐	38			☑ 5.14400 ft	-0.72600 ft	4.667 ft	-0.00852 ft	4.658 ft	Computed	241.270 ft	3
	38	☑ 4.93100 ft								250.100 ft	3
☐	39			☑ 5.02800 ft	-0.09700 ft	4.570 ft	-0.00949 ft	4.561 ft	Computed	248.100 ft	3
	39	☑ 4.01000 ft								241.570 ft	3
☐	40			☑ 4.97800 ft	-0.96800 ft	3.602 ft	-0.01042 ft	3.592 ft	Computed	244.520 ft	3
	40	☑ 4.90300 ft								196.550 ft	3
	14			☑ 5.32400 ft	-0.42100 ft	3.181 ft	-0.01100 ft	3.170 ft	Computed	187.990 ft	TBM GATE 3

Run - 3 (N3) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
14-35 (E4)	Enabled	0.45600 ft	-0.00400 ft	0.45200 ft	6	2370.860 ft	27.60600 ft	27.15000 ft	0.02634 ft
35-14 (E5)	Enabled	-0.44800 ft	-0.00400 ft	-0.45200 ft	6	2372.570 ft	26.64600 ft	27.09400 ft	0.02636 ft

Run - 4 Raw Observations

Raw Misclosure: 0.00000 ft
Σ BS Distances: 907.510 ft
Σ FS Distances: 906.490 ft
Run Length: 1814.000 ft
Reduction: Adjusted Values

Create	Point ID	BS	IS	FS	Δ Elevation	Raw Elevation	Correction	Adj. Elevation	Type	Distance	Description
☑	35	☑ 5.51800 ft			0.00000 ft	3.629 ft	-0.00699 ft	3.622 ft	Computed	277.160 ft	TBM BRIDGE 3
				☑ 5.12000	0.39800					275.360	

☐	50			ft	ft	4.027 ft	-0.00699 ft	4.020 ft	Computed	ft	3
	50	☑ 4.12100 ft								165.980 ft	3
☐	51			☑ 3.31500 ft	0.80600 ft	4.833 ft	-0.00699 ft	4.826 ft	Computed	187.730 ft	KEYWST 3
	51	☑ 3.36700 ft								188.320 ft	KEYWST 3
☐	52			☑ 4.17400 ft	-0.80700 ft	4.026 ft	-0.00699 ft	4.019 ft	Computed	166.600 ft	3
	52	☑ 5.25300 ft								276.050 ft	3
	35			☑ 5.65000 ft	-0.39700 ft	3.629 ft	-0.00699 ft	3.622 ft	Computed	276.800 ft	TBM BRIDGE 3

Run - 4 (N4) Reduced Observations

Observation	Status	Raw Δ Elevation	Correction	Final Δ Elevation	Setups	Length	Σ BS Readings	Σ FS Readings	Std. Error
35-35 (E6)	Enabled	0.00000 ft	0.00000 ft	0.00000 ft	4	1814.000 ft	18.25900 ft	18.25900 ft	0.02422 ft

Date: 6/15/2017 10:30:41 AM	Project:	Trimble Business Center

SEC 5 / 31 TWP 68 / 67 RNG 25 / 25

ESTABLISH REF ELEV FOR KEYWST @ TRUMBO POINT NAVAL AIR STATION

Kett
Ebanks

LINE 1

PT	ELEV	ADJ	BM	COMMENT
1	—	—	2.57	0121 GOOD COND
5	3.742	—	3.75	W267 GOOD COND

Δ = 0.008 BS = 690.48 FS = 702.75

LINE 2

PT	ELEV	ADJ	BM	COMMENT
1	—	—	2.57	0121
14	3.172	3.170	—	TBM SET NAIL GATE
19/1	2.574	—	2.57	0121

Δ = -0.004 BS = 2003.21 FS = 1998.22

6/15/17

LINE 3

PT	ELEV	ADJ	BM	COMMENT
14	3.172	3.170	—	TBM SET NAIL GATE
35	3.627	3.622	—	TBM SET NAIL BOG
41/14	3.177	3.170	—	TBM SET NAIL GATE

Δ = -0.005 BS = 2364.20 FS = 2379.23

SEC 5 / 31 TWP 68 / 67 RNG 25 / 25

CONT FROM PG. 50

KETT
EBANKS

Kett
Ebanks

PT	ELEV	ADJ	BM	COMMENT
35	3.627	3.622	—	TBM SET NAIL BOG
51	4.831	4.826	—	KEYWST SFWMD IN CONC
53/35	3.629	3.622	—	TBM SET NAIL BOG

24 34 06.5 / 81 47 46.7

KEYWST SFWMD ALUM. CAP SET IN SE COR OF WELL PAD STAMPED: "BM KEYWST 2017"
ELEV = 4.83' OFFSET 1.34'

21-jun-17 Talked With Mr. Kett, he said that SCADA personnel were on site while they were there.

For Wells @ Wellsite

Ebanks
Kett

BM KEYWST 2017 4.69

STA	+	HI	−	ELEV	REMARKS
	4.69	9.52	1.62	7.90	KeyWst GW#1
			0.45	9.07	KeyWst GW2
			4.76	4.76	Well PAD
			5.1	4.4	GD SHOT (S)
			5.1	4.4	GD SHOT (N)
			4.69	4.83 ✓	BM KEYWST

Office

Project

6 March 2017

INPUT

Geographic, flhpgn - Florida HPGN
Vertical - NAVD88, U.S. Feet

OUTPUT

State Plane, flhpgn - Florida HPGN
0901 - Florida East, U.S. Feet
Vertical - NGVD29 (Custom), U.S. Feet

KEYWST

Latitude:	24 34 06.60
Longitude:	81 47 46.73
Elevation/Z:	0
Northing/Y:	86219.395
Easting/X:	391523.495
Elevation/Z:	1.345
Convergence:	-0 19 51.99599
Scale Factor:	1.000021507
Combined Factor:	1.000024850

Remark:

Corpscon v6.0.1, U.S. Army Corps of Engineers

sfwmd.gov

DBHYDRO | by station

STATION INFORMATION

Station	KW-MZL
Site	KEYWST
Type	SUBSTATION
Latitude (ddmmss.sss)	243406.603
Longitude (ddmmss.sss)	814746.725
X Coord (ft) NAD83	391523.959
Y Coord (ft) NAD83	86219.695
County	Monroe
Basin	FLORIDA KEYS
Section	31
Township	67
Range	25
Show Map	Google Map
Well Info	Info
Description	Substation of KWDZMW-1 (1280-1320 ft bls)
Notes	KEY WEST WWTP, 200 ft inside gate, east side
Nearby Stations	Nearby Stations
Attachments	None Available

Query returned 1 station record(s).

Get Sample Data | Get Time Series Data

SFWMD Headquarters: 3301 Gun Club Road, West Palm Beach, Florida 33406
561-686-8800 | 1-800-432-2045 (Florida Only)

REGISTRATION WORKSHEET - KEYWST Addendum

Site Name: **KEYWST** Today's Date: **6/21/2017** Type Recorder:

Activity: **Addendum** Effective Date: Start Date of Data :

Customer: **Steve Krupa** Bus. Area: **5720** Agency: **SFWMD** Internal Order: Fund:

Project Manager: **Howard Ehmke** Bus. Area: **Survey & Mapping** Agency: **SFWMD** Contract #:

Project Name: Legal Mandate:

Short Common Name / Description:	
Proj. Mgr. Notes:	This addendum was performed to add NAVD 88 surveying data for the reference elevation. To convert to NGVD 29 add +1.345ft.
Site Directions:	From the intersection of Palm Avenue and Ely Street, go northeasterly, 250 feet to the entrance gate to Naval Air Station Trumbo Pont Annex; continue northeasterly on Ely Street and go, 190 feet to Chevalier Avenue; turn left onto Chevalier Avenue and go 640 feet to Flatley Avenue; turn right on to Flatley Avenue and go 140 feet to Whiting Avenue; turn left onto Whiting Avenue and go 1000 feet to Fleming Key Road on the right; turn right and go northeasterly
Site Address (if any):	

Transportation: Lock type or combination: #

Recorder Location/Purpose: Structure Type:

Array ID Configuration table attached

SURVEY INFORMATION

B.M. Elevation: **4.826** Date: **6/15/2017** Stamp: **BM KEYWST 2017**

Agency: **SFWMD** Type: **ALUM** Datum: NAVD 88

Benchmark Location/ Description	A South Florida Water Management District aluminum disk grouted into the southeast corner of the concrete well pad for KEYWST well.

COMMUNICATIONS INFORMATION

Communications System: Loggernet Server: Loggernet IP Address:

Tower: Communication Type: R.F. Code/Modem Address: R.F. Access Point:

Phone Number:

RTU Address: Gateways:

WELL INFORMATION

Sensor	Customer Ref	Ref Elev	Elev Date	Top of Well	Bottom of Well	Ground Elev	Benchmark Elev	Benchmark Datum	Ref Elevation Location
GW1	KW-MZU	7.9	6/15/2017	7.9		4.4	4.826	NAVD 88	Well measuring point
GW2	KW-MZL	9.07	6/15/2017	9.07		4.4	4.826	NAVD 88	Well measuring point

Sensor	GW Sensor Location Offset	Meas Pt Elevation	GW Land Elevation	Depth of Well	Type of Well	Top of Monitored Interval	Base of Monitored Interval	Parameter Transmitted
GW1								
GW2								

COORDINATE INFORMATION

Item/Parm	Lat	Long	X-Coord	Y-Coord	Sec	Township	Range	Quad	Basin	County	Description
GW1	24 34 06.5	81 47 46.7			31	67	25			Monroe	
GW2	24 34 06.5	81 47 46.7			31	67	36			Monroe	