

PREPARED FOR



SPECIFIC PURPOSE SURVEY  
**SURVEYOR'S REPORT**  
VERTICAL DATUM UPGRADE PROJECT

WO# 4600002187-WO08R2

SAP PO# 9500006234

**W WGI**™



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## **PROJECT OVERVIEW**

### **Purpose of Project:**

Procure all materials to construct and install 89 staff gauges calibrated to the North American Vertical Datum of 1988 (NAVD88) at various sites identified by the Vertical Datum Project Manager. Establish a NAVD88 Reference Elevation on the inside deck of existing Telemetry Stations and stamp site specific data onto a brass tag, using a steel stamp die set. The brass tags were delivered to SFWMD and would be installed by SFWMD Field Personnel during site inspections.

### **Accuracy:**

Staff gauges have been set (adjusted) to the nearest two hundredth (.02') of a foot, and reference elevations established to the nearest hundredth (.01') of a foot. Elevations have been transferred from provided bench mark using a digital level, leveling rods, and redundant measurements.

### **Bench Marks:**

A bench mark was provided by SFWMD at each location, unless otherwise noted, and used to establish the reference elevation and calibrate each staff gauge. Where bench marks were destroyed or not provided, a new bench mark was established and a SFWMD Bench Mark Sheet was filled out and provided.

### **Survey Equipment Used:**

Topcon DL-502 (Digital Level)  
Fiberglass Digital Level Rods  
Conventional Level Rod  
GPS Equipment - Topcon GR3

### **Vertical Datum Factor:**

The reference elevations and staff gauges, in this report, have been correctly calibrated to the North American Vertical Datum of 1988. The datum conversion to the National Geodetic Vertical Datum of 1929 (NGVD 29), as shown herein and engraved on each gauge, were provided by the SFWMD VDUP Project Manager.

### **Completion Date:**

Staff Gauge installation, calibration, and the establishment of telemetry station reference elevation was completed on November 19, 2015.

### **Construction:**

Each Staff Gauge is attached to a 4" O.D. galvanized steel pipe with stainless steel hardware. The pipes were driven to a depth to achieve required stability, to a minimum of 10', unless otherwise noted, in field notes. In some instances, additional cross bracing was used and attached to existing structure or an additional 2" O.D. galvanized pipe set. Sections of pipes were driven by jack hammer, and attached together with a galvanized threaded coupling. On I-Beams, staff gauges were attached with stainless steel 316 hardware.

# **Details of Staff Gauges**



## Staff Gauge Detail Summary For Miami Sites

Gauges completed:

Staff Gauge Site	Latitude	Longitude	Benchmark Used	Benchmark Elevation NAVD88	Well Head Reference BM Elevation	Conversion Elevation to NGVD29
G58_H	25° 54' 01.87"	80° 09' 45.496"	G58	7.456	5.851	1.56
G72_H	25° 52' 09.022"	80° 20' 21.19"	FCE4665	5.49	9.258	1.55
G72_T	25° 52' 09.954"	80° 20' 19.332"	FCE4665	5.49	9.369	1.55
S27_H	25° 51' 04.199"	80° 11' 17.673"	FCE1696	3.975	7.865	1.54
S27_T	25° 51' 03.057"	80° 11' 18.196"	FCE1696	3.975	7.856	1.54
S28_H	25° 52' 22.908"	80° 10' 52.199"	S28	4.597	7.578	1.54
S28_T	25° 52' 21.543"	80° 10' 50.754"	S28	4.597	7.587	1.54
S29_H	25° 55' 45.153"	80° 09' 05.949"	FCE3089	17.932	9.792	1.56
S29_T	25° 55' 45.209"	80° 09' 04.824"	FCE3089	17.932	6.443	1.56
S30_H	25° 57' 24.485"	80° 25' 54.642"	SNAKE RM3	6.49	10.752	1.52
S30_T	25° 57' 24.465"	80° 25' 49.536"	SNAKE RM3	6.49	9.10	1.52
S337_H(S31_H)	25° 56' 34.331"	80° 26' 26.385"	FCE1248	10.135	20.021	1.52
S31_T	25° 56' 32.002"	80° 26' 24.633"	FCE1248	10.135	13.009	1.52
S32_H	25° 56' 31.779"	80° 26' 22.833"	FCE1248	10.135	10.413	1.52
S32A_H(S337_T)	25° 56' 32.002"	80° 26' 24.633"	FCE1248	10.135	11.908	1.52
S32A_T	25° 56' 32.002"	80° 26' 24.633"	FCE1248	10.135	11.912	1.52
S120_H	25° 40' 15.857"	80° 19' 19.297"	S120	13.429		1.54
S120_T	25° 40' 14.949"	80° 19' 16.516"	S120	13.429		1.54
C2SW1	25° 42' 34.6"	80° 22' 54.3"	C2SW1	6.682	10.312	1.56
C2SW2	25° 41' 28.14"	80° 18' 06.8"	C2SW2	5.123	8.273	1.54
L31NN	25° 44' 46.526"	80° 29' 52.591"	JBA33	6.44	11.467	1.56
L31NN GW1	25° 44' 46.526"	80° 29' 52.591"	JBA33	6.44	14.399	1.56
L31NN GW2	25° 44' 46.526"	80° 29' 52.591"	JBA33	6.44	14.227	1.56
L31NN GW3	25° 44' 46.526"	80° 29' 52.591"	JBA33	6.44	14.122	1.56
L31NN GW4	25° 44' 46.526"	80° 29' 52.591"	JBA33	6.44	14.439	1.56
L31NS	25° 42' 07.12"	80° 29' 46.495"	JBA22	6.73	10.526	1.56
L31NS GW1	25° 42' 07.12"	80° 29' 46.495"	JBA22	6.73	13.705	1.56
L31NS GW2	25° 42' 07.12"	80° 29' 46.495"	JBA22	6.73	13.847	1.56
L31NS GW3	25° 42' 07.12"	80° 29' 46.495"	JBA22	6.73	13.71	1.56
L31NS GW4	25° 42' 07.12"	80° 29' 46.495"	JBA22	6.73	13.931	1.56
S25_H	25° 47' 00.4"	80° 14' 24.69"	S25	3.658	8.821	1.54
S25_T	25° 46' 59.97"	80° 14' 24.14"	S25	3.658	8.81	1.54
S25B_H	25° 47' 38.48"	80° 15' 44.27"	FCE3228	7.205	11.976	1.55
S25B_T	25° 46' 59.97"	80° 14' 24.14"	FCE3828	7.205	12.028	1.55
S25BM_H	25° 47' 37.24"	80° 15' 45.88"	FCE3828	7.205	6.024	1.55

Staff Gauge Site	Latitude	Longitude	Bench-Mark Used	Benchmark Elevation NAVD88	Well Head Reference BM Elevation	Conversion Elevation to NGVD29
S25BM_T	25° 47' 37.96"	80° 15' 40.68"	FCE3828	7.205	6.158	1.55
S26_H	25° 48' 27.459"	80° 15' 39.028"	MIR22	6.984	11.782	1.54
S26_T	25° 48' 25.966"	80° 15' 36.94"	MIR22	6.984	11.76	1.54
S336_H	25° 45' 40.46"	80° 29' 49.58"	PR42	9.39	13.217	1.56
S336_T	25° 45' 40.412"	80° 29' 47.571"	PR42	9.39	10.59	1.56
T5W	25° 45' 41.338"	80° 23' 19.133"	T5 BM02	5.86	9.331	1.57
C8.S28Z	25° 54' 48.338"	80° 17' 35.177"	C8.S28Z	7.508	9.953	1.56
C9.S29Z	25° 57' 43.25"	80° 15' 45.51"	FCE4699	9.326	10.067	1.58
G93_H	25° 44' 18.555"	80° 17' 13.922"	J400	11.55	8.792	1.56
G93_T	25° 44' 18.837"	80° 17' 12.615"	J400	11.55	8.87	1.56
G420_H	25° 46' 18.414"	80° 26' 01.641"	G421	11.266	8.864	1.57
G420_T	25° 46' 18.389"	80° 26' 02.963"	G421	11.266	13.029	1.57
LOOP1_T	25° 45' 40.369"	80° 54' 38.238"	LOOP1 MS	8.54	11.682	1.48
S14_H	25° 45' 43.138"	80° 49' 19.079"	V237	14.45		1.50
S14_T	25° 45' 41.445"	80° 49' 19.11"	V237	14.45		1.50
S118_H	25° 37' 24.949"	80° 20' 34.967"	S118	8.534	12.384	1.54
S118_T	25° 37' 24.645"	80° 20' 33.628"	S118	8.534	12.42	1.54
S119_H	25° 38' 35.169"	80° 20' 18.262"	S119	8.54	12.254	1.54
S119_T	25° 38' 34.483"	80° 20' 17.268"	S119	8.54	12.248	1.54
S121_H	25° 41' 14.51"	80° 21' 38.892"	PR48	5.673		1.56
S121_T	25° 41' 12.804"	80° 21' 38.776"	PR48	5.673		1.56
S123_H	25° 36' 38.68"	80° 18' 31.89"	S123	8.523	13.989	1.53
S123_T	25° 36' 38.79"	80° 18' 27.72"	S123	8.523	13.994	1.53
C2GSW1	25° 41' 57.17"	80° 21' 38.369"	C2GSW1	6.243	9.313	1.56
C2GSW1_GW1	25° 41' 57.17"	80° 21' 38.369"	C2GSW1	6.243	6.342	1.56
C2GSW1_GW2	25° 41' 57.17"	80° 21' 38.369"	C2GSW1	6.243	6.423	1.56
G420S_H	25° 46' 19.599"	80° 26' 02.29"	G421	11.266	11.458	1.57
G422_H	25° 45' 49.287"	80° 26' 01.192"	T626	10.722	9.745	1.57
G422_T	25° 45' 50.131"	80° 26' 02.566"	T626	10.722	11.828	1.57
LOOP2_H	25° 44' 48.145"	80° 57' 14.352"	LOOP2	9.02	11.396	1.47
LOOP2_T	25° 44' 47.362"	80° 57' 14.257"	LOOP2	9.02	11.301	1.47
S12A_H	25° 45' 43.263"	80° 49' 16.737"	V237	14.45		1.50
S12A_T	25° 45' 41.7"	80° 49' 16.764"	V237	14.45		1.50
S22_H	25° 40' 10.89"	80° 17' 01.684"	FCE1694	7.016	10.904	1.54
S22_T	25° 40' 10.264"	80° 17' 01.449"	FCE1694	7.016	10.93	1.54
S343A_H	25° 47' 21.167"	80° 51' 18.474"	L-28	15.55	14.254	1.49
S343A_T	25° 47' 20.021"	80° 51' 19.871"	L-28	15.55	13.413	1.49
S343B_H	25° 46' 41.965"	80° 50' 38.313"	S343B	14.69	14.357	1.49
S343B_T	25° 46' 40.835"	80° 50' 39.343"	S343B	14.69	13.818	1.49
S344_H	25° 55' 08.178"	80° 50' 10.493"	G502	15.69	14.81	1.48
S344_T	25° 55' 08.689"	80° 50' 12.309"	G502	15.69	13.25	1.48

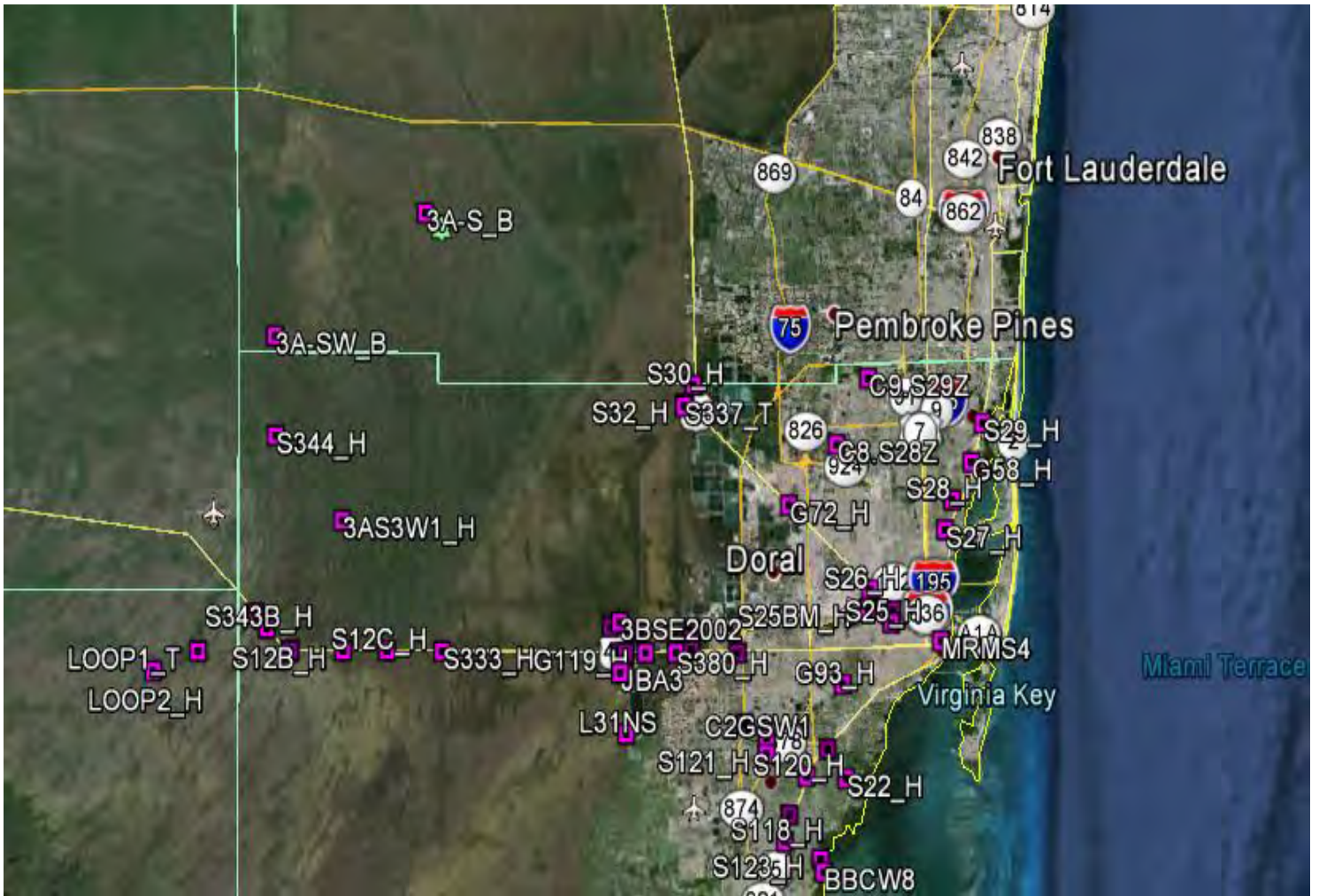


Staff Gauge Site	Latitude	Longitude	Benchmark Used	Benchmark Elevation NAVD88	Well Head Reference BM Elevation	Conversion Elevation to NGVD29
S380_H	25° 45' 40.991"	80° 26' 54.931"	S380	10.18	9.412	1.56
S380_T	25° 45' 40.913"	80° 26' 51.968"	S380	10.18	9.442	1.56
3BS1W1_H	25° 46' 49.361"	80° 30' 41.235"	3BS1W1	6.85	12.495	1.56
G3BS11_GW1	25° 46' 49.361"	80° 30' 41.235"	3BS1W1	6.85	10.71	1.56
G3BS11_GW2	25° 46' 49.361"	80° 30' 41.235"	3BS1W1	6.85	10.72	1.56
3B-SE_B	25° 47' 16.358"	80° 29' 59.199"	3BSE2002	8.56	12.27	1.56
C4SW2	25° 46' 01.234"	80° 26' 27.039"	C4SW2	5.27	12.50	1.57
G119_H	25° 45' 40.441"	80° 28' 39.131"	G119	9.781	10.377	1.56
G119_T	25° 45' 40.85"	80° 28' 36.941"	G119	9.781	10.874	1.56
MRMS1	25° 47' 31.886"	80° 14' 21.024"	MS1	5.131	7.334	1.54
MRMS4	25° 46' 12.267"	80° 11' 32.105"	MRMS4	4.016	7.048	1.56
S12B_H	25° 45' 44.259"	80° 46' 10.775"	T237	14.57		1.51
S12B_T	25° 45' 41.822"	80° 46' 10.863"	T237	14.57		1.51
S12C_H	25° 45' 44.648"	80° 43' 38.92"	Q237	14.44		1.52
S12C_T	25° 45' 42.045"	80° 43' 37.929"	Q237	14.44		1.52
S333_H	25° 45' 43.243"	80° 40' 26.952"	A410X	12.94	16.849	1.53
S333_T	25° 45' 42.774"	80° 40' 25.702"	A410X	12.94	16.867	1.53
S334_H	25° 45' 40.509"	80° 30' 09.305"	S334	12.215	15.814	1.56
S334_T	25° 45' 40.554"	80° 30' 08.046"	S334	12.215	8.892	1.56
S334_MW1	25° 45' 40.554"	80° 30' 08.046"	S334	12.215	6.933	1.56
S334_MW2	25° 45' 40.554"	80° 30' 08.046"	S334	12.215	6.704	1.56
S334_MW3	25° 45' 40.554"	80° 30' 08.046"	S334	12.215	6.463	1.56
S334_MW4	25° 45' 40.554"	80° 30' 08.046"	S334	12.215	7.025	1.56
3A-S_B	26° 04' 55.534"	80° 41' 29.551"	MOSSEY	10.83	16.015	1.47
3AS3W1_H	25° 51' 26.333"	80° 46' 16.979"	3AS3W1	9.68	14.475	1.50
3AS3W1_GW1	25° 51' 26.333"	80° 46' 16.979"	3AS3W1	9.68	12.998	1.50
3AS3W1_GW2	25° 51' 26.333"	80° 46' 16.979"	3AS3W1	9.68	13.011	1.50
3A-SW_B	25° 59' 23.334"	80° 50' 10.225"	3ASW	8.82	15.905	1.46
BBCW8 WQ1S	25° 36' 04.457"	80° 18' 20.777"	S123	8.523	7.261	1.53
BBCW8 WQ2	25° 36' 04.457"	80° 18' 20.777"	S123	8.523	6.196	1.53
BBCW8 STG3	25° 36' 04.457"	80° 18' 20.777"	S123	8.523	5.836	1.53
NESRS3_B	25° 44' 25.365"	80° 30' 17.201"	JBA3	5.564	11.394	1.56
S335_H	25° 46' 33.817"	80° 28' 58.741"	S335	9.856	13.957	1.56
S335_T	25° 46' 33.112"	80° 28' 58.827"	S335	9.856	13.956	1.56

- **All Elevations shown are NAVD 88**

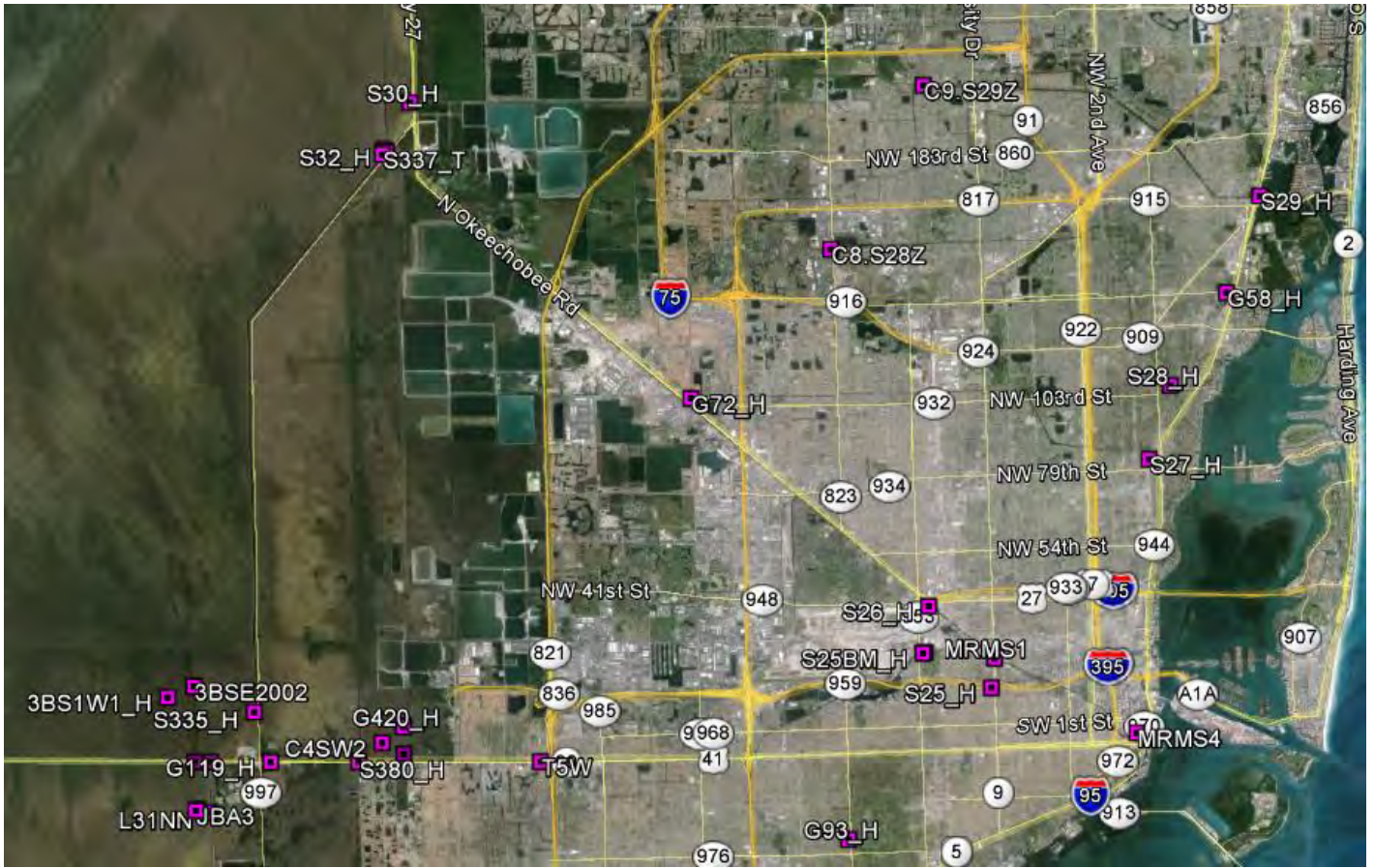
## Project Location Maps:

### Overall Site

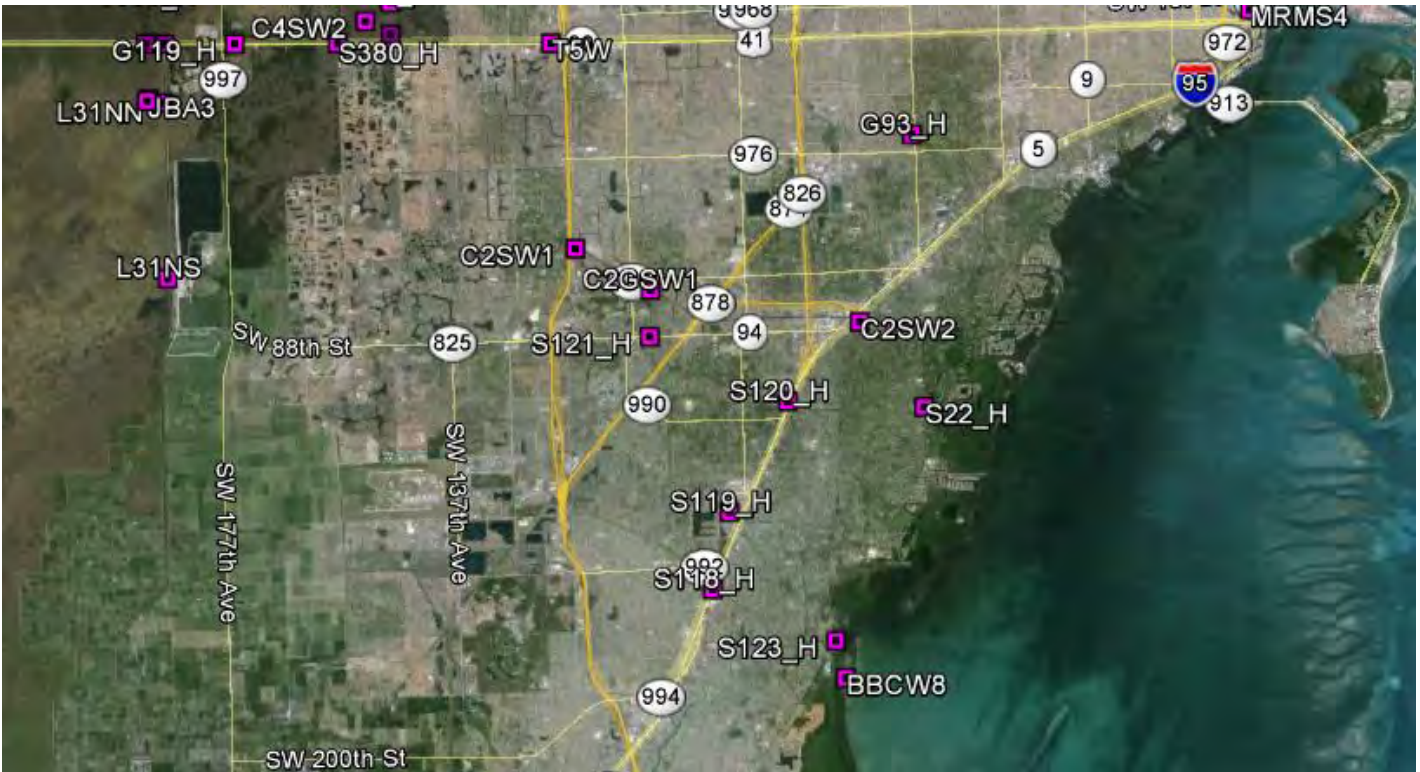




**Site Close Up 1 of 3:**



**Site Close Up 2 of 3:**





Site Close Up 3 of 3:



# **Project Results**

# Stage Recorder Site: L31NN

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17
<b>Benchmark Elevation (NAVD 88):</b> 6.44	<b>Date of Field Work:</b> September 18, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA33
<b>Reference Elevation (NAVD88):</b> 11.467	<b>Existing Tag Elevation (Datum):</b> 13.004 NGVD29	
<b>Latitude:</b> 25° 44' 46.526"	<b>Longitude:</b> 80° 29' 52.591"	
<b>Notes:</b> Datum difference SFWMD +1.56 Field 1.537 Gauge braced to existing 2" pipe from stilling well deck.		
<b>Removed Old Board:</b> Existing gauge removed.		

## Photographs:

### Overall Site:



### Benchmark Location:



### Benchmark Close Up:



### Brass Tag Close Up:



### Reference Mark:



### Brass Tag & Reference:



### New Staff Gauge: Front View:



### Side View:





## Stage Recorder Site: L31NN GW1

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17
<b>Benchmark Elevation (NAVD 88):</b> 6.44	<b>Date of Field Work:</b> September 18, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA33
<b>Reference Elevation (NAVD88):</b> 14.399		<b>Existing Tag Elevation (Datum):</b> 15.956 NGVD29
<b>Latitude:</b> 25° 44' 46.526"		<b>Longitude:</b> 80° 29' 52.591"
<b>Notes:</b> Datum difference SFWMD +1.56 Field 1.557		
<b>Removed Old Board:</b>		

### Photographs:

#### Overall Site:



#### Benchmark Location:



#### Benchmark Close Up:



#### Brass Tag Close Up:



#### Reference Mark:



#### Brass Tag & Reference:



## Stage Recorder Site: L31NN GW2

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17
<b>Benchmark Elevation (NAVD 88):</b> 6.44	<b>Date of Field Work:</b> September 18, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA33
<b>Reference Elevation (NAVD88):</b> 14.227		<b>Existing Tag Elevation (Datum):</b> 15.776 NGVD29
<b>Latitude:</b> 25° 44' 46.526"		<b>Longitude:</b> 80° 29' 52.591"
<b>Notes:</b> Datum difference SFWMD +1.56 Field 1.549		
<b>Removed Old Board:</b>		

### Photographs:

#### Overall Site:



#### Benchmark Location:



#### Benchmark Close Up:



#### Brass Tag Close Up:



#### Reference Mark:



#### Brass Tag & Reference:





## Stage Recorder Site: L31NN GW3

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17
<b>Benchmark Elevation (NAVD 88):</b> 6.44	<b>Date of Field Work:</b> October 20, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA33
<b>Reference Elevation (NAVD88):</b> 14.36		<b>Existing Tag Elevation (Datum):</b> 15.679 NGVD29
<b>Latitude:</b> 25° 44' 46.526"		<b>Longitude:</b> 80° 29' 52.591"
<b>Notes:</b> Datum difference SFWMD +1.56 Field 1.557. Ground well elevation established by CARDNO.		
<b>Removed Old Board:</b>		

### Photographs:

#### Overall Site:



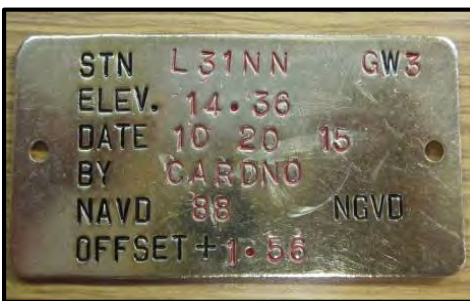
#### Benchmark Location:



#### Benchmark Close Up:



#### Brass Tag Close Up:



#### Reference Mark:



#### Brass Tag & Reference:



## Stage Recorder Site: L31NN GW4

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17
<b>Benchmark Elevation (NAVD 88):</b> 6.44	<b>Date of Field Work:</b> October 20, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA33
<b>Reference Elevation (NAVD88):</b> 14.35		<b>Existing Tag Elevation (Datum):</b> 16.00 NGVD29
<b>Latitude:</b> 25° 44' 46.526"		<b>Longitude:</b> 80° 29' 52.591"
<b>Notes:</b> Datum difference SFWMD +1.56 Field 1.561. Ground well elevation established by CARDNO.		
<b>Removed Old Board:</b>		

### Photographs:

#### Overall Site:



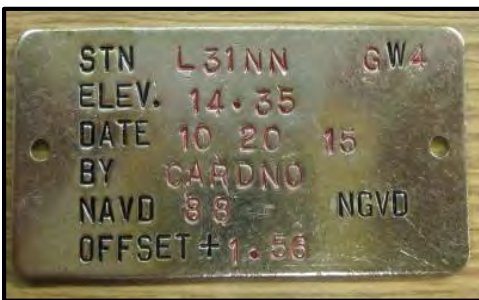
#### Benchmark Location:



#### Benchmark Close Up:



#### Brass Tag Close Up:



#### Reference Mark:



#### Brass Tag & Reference:





## Stage Recorder Site: L31NS

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17-19
<b>Benchmark Elevation (NAVD 88):</b> 6.73	<b>Date of Field Work:</b> September 21, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA22
<b>Reference Elevation (NAVD88):</b> 10.526		<b>Existing Tag Elevation (Datum):</b> 12.09 NGVD29
<b>Latitude:</b> 25° 42' 07.12"		<b>Longitude:</b> 80° 29' 46.495"
<b>Notes:</b> Number plaques added to gauge board.		
<b>Removed Old Board:</b> Existing gauge removed.		

### Photographs:

**Overall Site:**



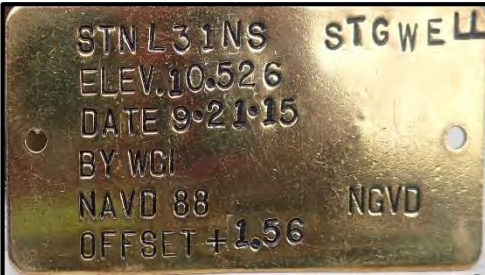
**Benchmark Location:**



**Benchmark Close Up:**



**Brass Tag Close Up:**



**Reference Mark:**



**Brass Tag & Reference:**



**New Staff Gauge:**  
**Front View:**



**Side View:**



## Stage Recorder Site: L31NS GW1

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17-19
<b>Benchmark Elevation (NAVD 88):</b> 6.73	<b>Date of Field Work:</b> October 20, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA22
<b>Reference Elevation (NAVD88):</b> 14.01		<b>Existing Tag Elevation (Datum):</b>
<b>Latitude:</b> 25° 42' 07.12"		<b>Longitude:</b> 80° 29' 46.495"
<b>Notes:</b> No brass tag found at site. Ground well elevation established by CARDNO.		
<b>Removed Old Board:</b>		

### Photographs:

**Overall Site:**



**Benchmark Location:**



**Benchmark Close Up:**



**Brass Tag Close Up:**



**Reference Mark:**



**Brass Tag & Reference:**





## Stage Recorder Site: L31NS GW2

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17-19
<b>Benchmark Elevation (NAVD 88):</b> 6.73	<b>Date of Field Work:</b> October 20, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA22
<b>Reference Elevation (NAVD88):</b> 13.88		<b>Existing Tag Elevation (Datum):</b> 15.42 NGVD29
<b>Latitude:</b> 25° 42' 07.12"		<b>Longitude:</b> 80° 29' 46.495"
<b>Notes:</b> Datum difference SFWMD +1.56 Field +1.546. Ground well elevation established by CARDNO.		
<b>Removed Old Board:</b>		

### Photographs:

**Overall Site:**



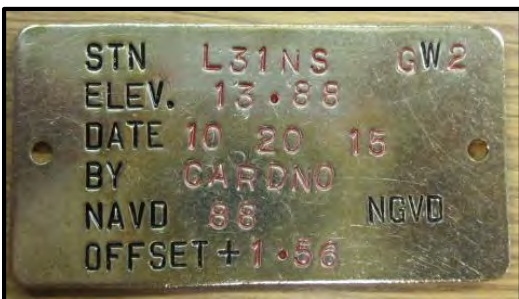
**Benchmark Location:**



**Benchmark Close Up:**



**Brass Tag Close Up:**



**Reference Mark:**



**Brass Tag & Reference:**



## Stage Recorder Site: L31NS GW3

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17-19
<b>Benchmark Elevation (NAVD 88):</b> 6.73	<b>Date of Field Work:</b> October 20, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA22
<b>Reference Elevation (NAVD88):</b> 13.94	<b>Existing Tag Elevation (Datum):</b> 15.28 NGVD29	
<b>Latitude:</b> 25° 42' 07.12"	<b>Longitude:</b> 80° 29' 46.495"	
<b>Notes:</b> Datum difference SFWMD +1.56 Field +1.57. Ground well elevation established by CARDNO.		
<b>Removed Old Board:</b>		

### Photographs:

**Overall Site:**



**Benchmark Location:**



**Benchmark Close Up:**



**Brass Tag Close Up:**



**Reference Mark:**



**Brass Tag & Reference:**





## Stage Recorder Site: L31NS GW4

<b>Party Chief:</b> Jose Mendoza	<b>Field Book Number:</b> 612/ BK 10	<b>Page Number:</b> 17-19
<b>Benchmark Elevation (NAVD 88):</b> 6.73	<b>Date of Field Work:</b> October 20, 2015	<b>Datum Offset to NGVD 29:</b> +1.56
<b>Benchmark Agency:</b> NPS	<b>Benchmark Type:</b> Aluminum Disk	<b>Benchmark Stamp:</b> JBA22
<b>Reference Elevation (NAVD88):</b> 13.76		<b>Existing Tag Elevation (Datum):</b> 15.51 NGVD29
<b>Latitude:</b> 25° 42' 07.12"		<b>Longitude:</b> 80° 29' 46.495"
<b>Notes:</b> Datum difference SFWMD +1.56 Field +1.579. Ground well elevation established by CARDNO.		
<b>Removed Old Board:</b>		

### Photographs:

**Overall Site:**



**Benchmark Location:**



**Benchmark Close Up:**



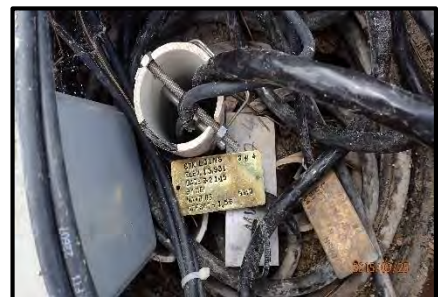
**Brass Tag Close Up:**



**Reference Mark:**



**Brass Tag & Reference:**



# **Project Results**

**Deliverable Items to South Florida Water Management District:**

The following items were delivered to South Florida Water Management District with this Surveyor’s Report. Neither the report nor the items listed below are complete without the other.

A CD Containing the following digital information:

- Survey Report in PDF Format
- Digital Photos of Set Staff Gauges
- Electronic Copy of Field Notes in PDF Format

**Legend:**

BM – Bench Mark  
 NAVD 88 – North American Vertical Datum of 1988  
 NGVD 29 – National Geodetic Vertical Datum of 1929  
 NGS – National Geodetic Survey  
 SFWMD – South Florida Water Management District  
 ACOE – Army Corp of Engineers  
 O.D. – Outside Diameter

**Survey Notes:**

1. Survey map & report, or copies thereof, are not valid without the signature and the original raised seal of a Florida Licensed Surveyor and Mapper.
2. Additions or deletions to the survey maps or reports by other than the signing party or parties are prohibited without the written consent of the signing party or parties.
3. The purpose of the survey is to show results of establishing reference elevations and calibrating staff gauges, as shown herein.
4. Latitude and longitude, as shown on Staff Gauge Detail Summary Chart pages, was provided by the District and not verified as part of this survey.
5. Pursuant to client’s request, the face boards of old NGVD 29 staff gauges were removed when possible. Posts were not removed.
6. New 4” galvanized posts were driven to a minimum depth of 10’ below ground, unless otherwise noted in field notes. All pipes were structurally stable and plumb at time of installation.

**Surveyor’s Certification:**

I hereby certify that this Specific Purpose Survey meets applicable portions of Standards of Practice set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 5J-17, Florida Administrative Code. This report is prepared for the sole and specific use of the South Florida Water Management District and is not assignable. All NAVD88 staff gauges were calibrated to a vertical accuracy of +/- 0.02’ and reference elevations calibrated to a vertical accuracy of +/- 0.01’.

**Wantman Group, Inc.**  
**2035 Vista Parkway**  
**West Palm Beach, FL 33411**  
**PH: (561) 687-2220**

**For the Firm:**  
**Wantman Group, Inc.**  
**L.B. Number 7055**

**By:** \_\_\_\_\_  
**Derek G. Zeman, PSM**  
**State of Florida**  
**Certificate No. LS5655**



				SFWMD	11 Sept 2015					
				Level	Run to	85 Sunny				
				C9	5292	cont'd				
K. Brown										
B. Maackern										
J. Perez										
BS	RH	BS	H.A.	FS	RH	FS	H.A.	EL =	Adj. EL	Desc
4.846		247.8						5.681		602-29-11
				5.511	249.8			5.016		602-29-12
6.268		229.7								
				5.132	233.8			6.152		602-29-13
4.653		250.8								
				4.517	250.5			6.288		602-29-14
4.590		250.3								
				5.899	314.8			4.979		602-29-15
6.199		259.5								
				5.096	250.7			6.082		602-29-16
5.012		260.2								
				4.703	250.7			6.391		602-29-17
5.209		258.8								
				5.535	250.5			6.065		602-29-18
5.280		257.1								
				4.244	253.1			7.101		602-29-19
4.089		257.7								
				4.980	249.1			6.210		602-29-20
5.140		263.9								
				5.286	247.3			6.064		602-29-21
6.105		262.5								
				5.623	251.1			6.546		602-29-22
2798.3			-2.6'	2800.9						

31011071.08

602 / 34

DL 502 31

1021

- NATT in ASPH walk as described in 602-29-11
- NATT S. E.P. @ Entrance's of Wells Fargo and vacant Building 100' +/- west of Douglas Rd
- HUB @ SE Corner of sidewalk END 5' E of Bell South TPO west side of Douglas
- HUB 5' +/- N of Bus stop 10' +/- W E.O.P. Douglas
- NL End of ASPH MID Pt of SW return S. Hollybrook BLVD, appears to be @ "GOD" no disc
- HUB W side Douglas 10' west W. EOP @ turning lane
- HUB W side Douglas 10' +/- west W. EOP 6' SW Conc LP
- HUB W side Douglas 10' +/- West of W. EOP
- NL set <sup>NATT</sup> E. EOP SB Lane Douglas
- NL set <sup>NATT</sup> E. EOP SB Lane Douglas
- HUB 2' +/- W. west EOP 300' +/- N of Intersection Pembroke Rd
- NL set <sup>NATT</sup> W. EOP 25' +/- south of Intersection



SFWMP  
 11 Sept 2015  
 90° Sunny

K. Brown  
 B. McEachern  
 J. Perez

Level Run to  
 C9 5292

BS RH	BS HD	FS RH	FS HD	EL =	Adj EL	Desc
4.847	283.7			6.546		602-29-22
		5.872	248.5	5.521		602-29-23
4.949	238.8					
		5.137	249.3	5.333		602-29-24
5.316	239.2					
		5.043	251.6	5.606		602-29-25
5.133	242.1					
		4.743	250.4	5.996		602-29-26
4.870	223.1					
		5.241	219.8	5.625		602-29-27
5.381	250.4					
		4.839	246.4	6.167		602-29-28
4.486	270.5					
		5.213	270.7	5.440		602-29-29
5.773	254.0					
		5.936	251.2	5.277		602-29-30
5.988	292.2					
	2294.0 = 5092.3	5.873	292.2	5.392		602-29-31
5.433	261.0			2280.1 = 5081.0		
		3.351	245.3	7.474		602-29-32
4.100	234.0					
		4.329	253.5	7.246		602-29-33
4.562	264.7					
	5852.0	4.761	260.8	7.047		602-29-34
5.237	245.3			5846.6	6.790	
		5.494	250.2	6.790		602-29-35

3101107108  
 602 / 35

DL 502 #31  
 1021

NL set N+TT W EOP Douglas Traveling South  
 along W EOP

NL set N+TT W EOP Douglas Douglas Rd

NL set N+TT E EOP SB Lane "

" "

NL set N+TT W. EOP 20' N of Stop Bar  
 NW Return Intersection Douglas Rd + Miramar Blvd

NL set N+TT East E.O.P. SB Lane Douglas Rd

NL set N+TT W. E.O.P. SB Lane

NL set N+TT W EOP SB Lane

NL set N+TT W EOP NW Return Intersection  
 Douglas Rd + Miramar PKWY

NL set Mag + Disc LB 7055 South end of 4'  
 Traffic separator

NL set N+TT East E.O.P. SB Lane Douglas Rd.

NL set N+TT East EOP SB Lane 50' +/- South  
 E Patriot Way



9-21-15 SFW/MD 90°R  
 MENDOZA L31 NN  
 DONOHUE ADJUST GAUGE &  
 MILLER SCREW NEW FT MARKER

+	HI	-	ELEV	DESC
			11.467	88 DAT MARK AT WELL
2.46	13.927			
		4.05	9.877	TOP OF SET GAUGE BOARD
	BROKE SETUP			
4.20	14.08			

2.46 11.47 ✓ G WELL MARK  
 ELEVATE WELLS  
 L31 NS

BS RH	BS DIST	HI	FS RH	FS DIST	ELEV	DESC
					6.730	SITE BM END JAMES
9.094	51.6					
			1.977	21.2	13.847	SHOT G MARK
4.152	6.9					"
			4.294	6.2	13.705	"
4.459	10.6					"
			4.454	11.2	13.710	"
4.291	7.9					"
			4.060	7.7	13.931	"
1.453	17.3					
			4.858	29.7	10.526	MARK @ WELL
6.128	44.2					
			9.926	74.1	6.728 ✓ 6.73	✓ IUG SITE BM

31011071.08  
 1021  
 L31  
 REEFS 17

BEADMAN & ASSOC N.P.S. ALWAYS DSK STAMPED 22 JBA 22

2" PKG GW WELL #2

GW WELL #1 "

GW WELL #3 "

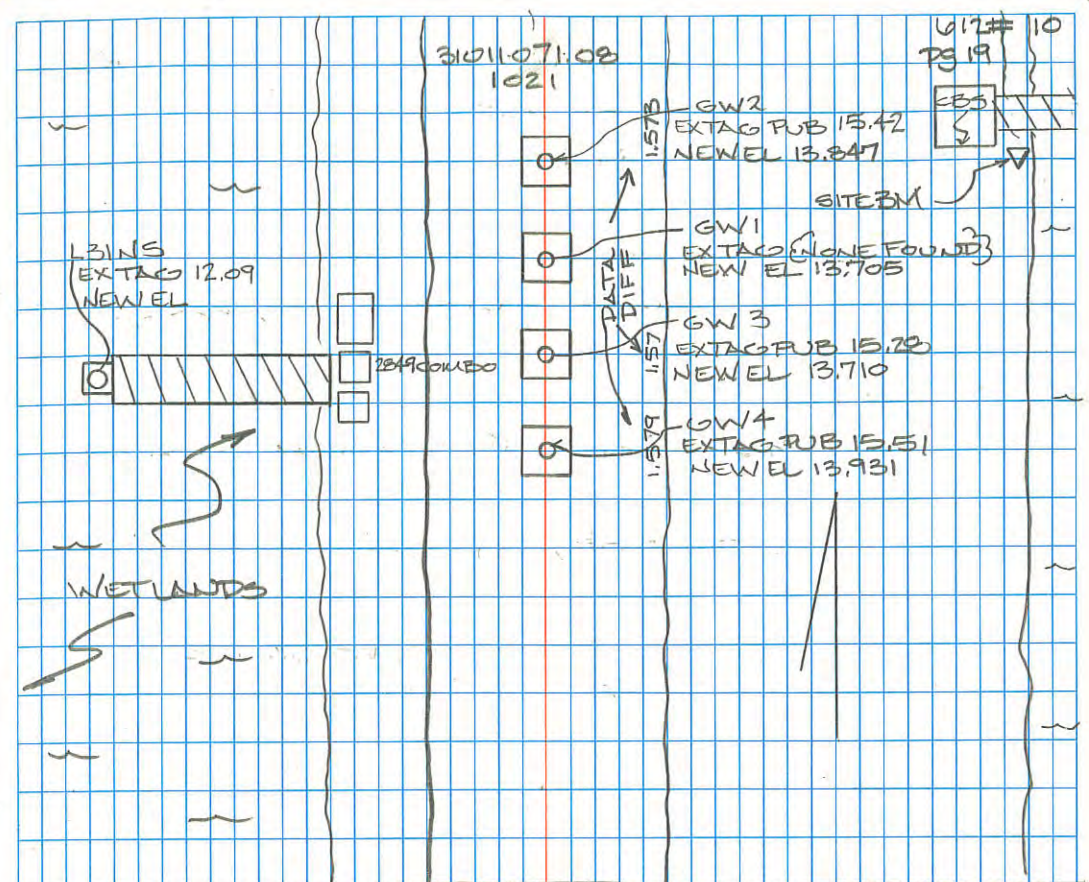
GW WELL #4 "

L31 NS



9-21-15 SFWMD 90° C10  
 MENDOZA SET GAUGE  
 DONOHUE L31 NS  
 MILLER

+	HI	-	ELEV	DESC
			10.526	MARK @ WELL REFS 18
2.25				
	12.776			
	7.91	4.8166	H <sub>2</sub> O @ 2.58 PM	EX TAG GUAGE READS 6.45
	8.73	4.046	NO G	NEW GUAGE
	2.90	9.876	TOP OF SET GAUGE BOARD	
2.995	12.871			
	2.34	10.531	✓ TO MARK @ WELL	



NOTE AS PER SEWMD USE  
 SCREW ON NUMBER PLATES  
 TO ADJUST FOR INCORRECT FT MARKS  
 ON NEW GAUGE

NEW DAT DIFF = 1.56  
 CALC DAT DIFF 1.504

TOP OF GAUGE 9.88

NEW EL = 10.526

