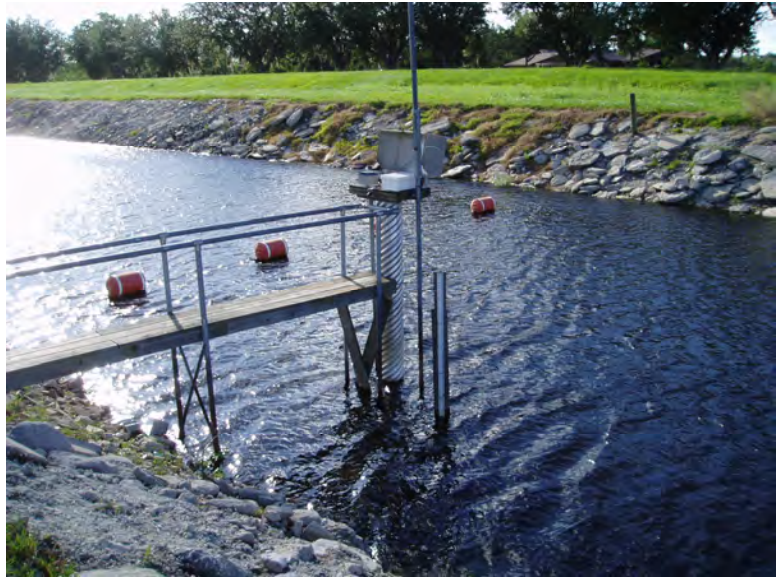




Contract # CN60744/3600000504



VERTICAL CONTROL SURVEY REPORT

**SOUTH FLORIDA WATER
MANAGEMENT DISTRICT**

FINAL

December, 2007

VERTICAL CONTROL SURVEY REPORT

Monitoring Well Reference Elevations

for:

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

by:

WOOLPERT, INC.
Florida Certificate of Authorization # 6777
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Coral Gables, Florida 33134
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Prepared by:

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Florida Professional Surveyor and Mapper # 5994

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Overview of the Project

This survey request consisted of establishing or verifying elevations to third-order National Geodetic Survey (NGS) Standards at District Recorder Well Sites. This survey request is associated with the District's Vertical Datum Upgrade Project (VDUP).

There were two main tasks to this survey.

1. Set reference elevations and tags at each well using a local site benchmark referenced to the National Geodetic Vertical Datum of 1929 (NGVD29).
2. For those sites that did not have a local benchmark, set a concrete monument and establish elevations referencing the North American Vertical Datum of 1988 (NAVD88), and then compute a conversion NGVD29 elevation.

The project began requiring a total of six sites that needed a new local benchmark, and a total of 59 separate sites requiring tags to be placed on wells. As the project was being completed, changes to the scope of services was required due to situation found in the field. For example, some sites were identified to have missing or destroyed benchmarks, additional leveling was required, and some sites were found to have additional wells than were identified.

To address these changes, a second work-order has been assigned for these additional tasks, as well as to perform similar services at additional site locations. The original list of sites to complete include the following.

- | | | | | |
|-------------|--------------|---------------|------------|--------------|
| 1. AIR19 | 15. MOSSPK * | 29. S63-SCA | 43. TOHO4 | 57. WR8 * |
| 2. ALL1 | 16. OAKISL * | 30. SCBR | 44. TOHO5 | 58. WR9 * |
| 3. ALL2 | 17. OS181 ** | 31. SCPE | 45. TOHO6 | 59. WRLGTE * |
| 4. BFARM * | 18. OSF53 | 32. SCPN | 46. TOHO7 | |
| 5. BLACK ** | 19. REDYCK | 33. SCPS | 47. TOHO8 | |
| 6. BOG527 * | 20. REEDC | 34. SCSS | 48. TOHO10 | |
| 7. C31SW | 21. S57-SCA | 35. SW15 | 49. TOHO12 | |
| 8. CAST * | 22. S58-SCA | 36. TAFTOR ** | 50. TOHO13 | |
| 9. EXOTFI * | 23. S59-SCA | 37. TMRNCH | 51. TOHO14 | |
| 10. INRCTY | 24. S59W | 38. TB1 | 52. TOHO15 | |
| 11. KIRCOF | 25. S60-SCA | 39. TB2 | 53. TOHO16 | |
| 12. KISSD * | 26. S61-SCA | 40. TB3 | 54. TOHOE | |
| 13. KISSFS | 27. S61W | 41. TOHO1 | 55. TOHOW | |
| 14. MAKO | 28. S62-SCA | 42. TOHO2 | 56. WR6 * | |

* *Benchmark was set at site (11 total).*

** *Site was decommissioned / destroyed (3 total).*

Not part of this report are the following sites for the following reasons.

Site	Notes:
BFARM	<ul style="list-style-type: none">• Incorrect elevation was set on tag. This site will be included with the second work-order deliverable.
BLACK	<ul style="list-style-type: none">• Site was decommissioned.
KISSFS	<ul style="list-style-type: none">• Incorrect elevation was set on tag. This site will be included with the second work-order deliverable.
OS181	<ul style="list-style-type: none">• Site was decommissioned.
REEDC	<ul style="list-style-type: none">• REEDC was removed from the project after the District was informed that it was completed under a different contract.
S61W	<ul style="list-style-type: none">• Site was overlooked. This site will be included with the second work-order deliverable.
TAFTOR	<ul style="list-style-type: none">• Site was decommissioned.
TMRNCH	<ul style="list-style-type: none">• Site was found to have existing tag, and tag elevations were verified. Tags were set by "EE &

Site	Notes:
TB1	<p>COON". GW1 was set on 5-18-05 with a verified reference elevation of 72.17, and GW2 was set on 1-6-06 with a verified reference elevation of 71.89 feet.</p> <ul style="list-style-type: none"> Site was found to have existing tag, and tag elevations were verified. Tags were set by "K&S" dated "8-8-06". The east well was verified at 104.35 feet. The west well was verified at 104.02 feet.
TB2	<ul style="list-style-type: none"> Site was found to have existing tag, and tag elevations were verified. Tags were set by "K&S" dated "8-9-06". GW1 well was verified at 104.09 feet. GW2 well was verified at 105.24 feet.
TB3	<ul style="list-style-type: none"> TB3 was inaccessible due to high water. After discussing this with the District, it was assumed to also be completed by "K&S" as were TB1 and TB2.
TOHO13	<ul style="list-style-type: none"> Site was found to have existing tag, and tag elevations were verified. Tag was set by "K&S" dated "8-9-07". Stamped elevation was 65.099 feet.
WRLGTE	<ul style="list-style-type: none"> Incorrect elevation was set on tag. This site will be included with the second work-order deliverable.

List of Project Deliverables

In addition to four signed and sealed hard copies of this survey report, the following deliverables were also a part of this project.

1. The survey report in Adobe Acrobat format.
2. Digital photos named by sites.
3. Scanned copies of field notes.
4. Any other digital files associated with the survey.
5. Completed District benchmark description sheet for all set marks.

These digital deliverables will be delivered on CD along with the final signed and sealed copy of this report.

Date of Survey

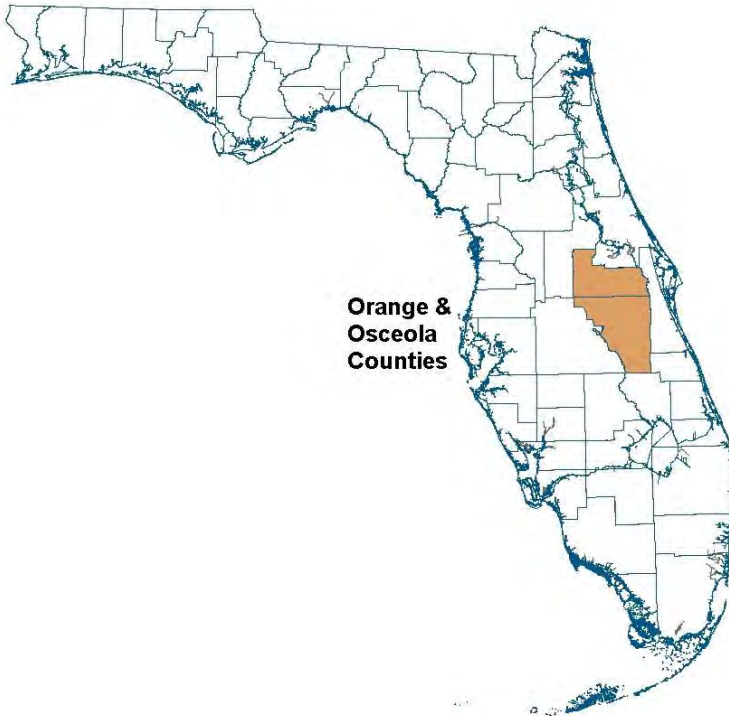
All site field operations took place between August 28 and October 19, 2007.

Equipment Used

Wild NA2002 digital levels were used for all leveling. Latitude and Longitudes were determined for each site using Trimble Pro-XR sub-meter GPS equipment. These Latitudes and Longitudes were then converted to Florida State Plane Coordinates, East Zone, using the United States Army Corps of Engineers software CORPSCON version 6.0.1.

Project Location

All well site locations were in Osceola and Orange Counties, Florida.



Survey Methodology

Woolpert began by setting concrete monuments at each of the locations that did not have a benchmark on site. Monuments consisted of an 8 inch PVC pipe, 40 inches long, filled with poured concrete with an aluminum South Florida Water Management District survey cap. Rebar rods were also added to the mixture for durability.

Following building the concrete monuments, reconnaissance was done to find existing NGS control stations. Once found, elevation were established by using two NGS stations, performing closed level loops ensuring that NGS monument published elevations matched.

At each site, Woolpert used the local site benchmark to set reference elevations for each found well. All well sites had a previously marked reference point on the well. Woolpert used the local benchmark to perform a closed loop level run from the benchmark to the reference mark to establish a NGVD29 elevation on the well reference point. If the local benchmark did not have a published NGVD29 elevation, Woolpert used the sites latitude, longitude, and NAVD88 elevation to find a NGVD29 elevation using the United States Army Corps of Engineers software CORPSCON version 6.0.1. To determine the sites benchmark latitude and longitude, Woolpert used a Trimble Pro-XR GPS receiver. This GPS receiver obtains differential GPS corrections from Coast Guard stations, resulting in horizontal accuracies of approximately 1 meter, at one sigma.

If a staff gauge existed at the site, Woolpert obtained the water level, the staff gauge reading, and

recorded the time and date of those measurements.

Following all leveling and positioning, Woolpert then attached metal tags to each found well. Each tag was stamped with: Site name, well designation, elevation, date, firm name, and reference datum (NGVD29 in all cases).

Summary of Leveling Results

BOG527 was set using NGS station L715017, a Second-Order Class I benchmark with published elevation of 92.90 feet (NAVD88), and NGS station L715018, a Second-Order Class I benchmark with published elevation of 91.84 feet (NAVD88). Leveling began at station L715017, passed through BOG527, and ended on L715018 with a leveled elevation of 91.88. Total leveling distance was 5.8 miles resulting in a closure of 0.04 (0.07 allowable). Resulting elevation for BOG527 was 80.95 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 81.88 feet.

CAST was set using NGS station Q507, a Second-Order Class I benchmark with published elevation of 73.65 feet (NAVD88), and NGS station P507, a Second-Order Class I benchmark with published elevation of 76.01 feet (NAVD88). Leveling began at station Q507, passed through CAST, and ended on P507 with a leveled elevation of 76.01. Total leveling distance was 1.65 miles resulting in a closure of 0.04 (0.04 allowable). Resulting elevation for CAST was 70.65 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 71.85 feet.

EXOFTI was set using NGS station S507, a Second-Order Class I benchmark with published elevation of 73.08 feet (NAVD88), and NGS station R507, a Second-Order Class I benchmark with published elevation of 70.67 feet (NAVD88). Leveling began at station S507, passed through EXOFTI, and ended on R507 with a leveled elevation of 70.65. Total leveling distance was 1.54 miles resulting in a closure of 0.02 (0.04 allowable). Resulting elevation for EXOFTI was 70.92 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 72.14 feet.

KISSD was set using NGS station F514, a Second-Order Class I benchmark with published elevation of 74.41 feet (NAVD88), and NGS station N512, a Second-Order Class I benchmark with published elevation of 65.69 feet (NAVD88). Leveling began at station F514, passed through KISSD, and ended on N512 with a leveled elevation of 65.69. Total leveling distance was 1.46 miles resulting in a closure of 0.00 (0.04 allowable). Resulting elevation for KISSD was 60.48 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 61.42 feet.

MOSSPK was set using NGS station R575, a Second-Order Class I benchmark with published elevation of 66.29 feet (NAVD88), and NGS station C802-008, a Second-Order Class I benchmark with published elevation of 66.88 feet (NAVD88). Leveling began at station R575, passed through MOSSPK, and ended on C802-008 with a leveled elevation of 66.91. Total leveling distance was 0.98 miles resulting in a closure of 0.03 (0.03 allowable). Resulting elevation for MOSSPK was 67.49 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 68.53 feet.

OAKISL was set using NGS station D466, a Second-Order Class I benchmark with published elevation of 155.80 feet (NAVD88), and NGS station I4-72A42E RM2, a Second-Order Class I benchmark with

published elevation of 189.29 feet (NAVD88). Leveling began at station D466, passed through OAKISL, and ended on I4-72A42E RM2 with a leveled elevation of 189.33. Total leveling distance was 6.7 miles resulting in a closure of 0.04 (0.08 allowable). Resulting elevation for OAKISL was 108.24 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 109.10 feet.

WR6 was set using NGS station OS134, a Second-Order Class I benchmark with published elevation of 70.65 feet (NAVD88), and NGS station OS135, a Second-Order Class I benchmark with published elevation of 64.75 feet (NAVD88). Leveling began at station OS134, passed through WR6, and ended on OS135 with a leveled elevation of 64.71. Total leveling distance was 12.8 miles resulting in a closure of 0.06 (0.11 allowable). Resulting elevation for WR6 was 63.78 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 64.82 feet.

WR8 was set using NGS station OS134, a Second-Order Class I benchmark with published elevation of 70.65 feet (NAVD88), and NGS station OS135, a Second-Order Class I benchmark with published elevation of 64.75 feet (NAVD88). Leveling began at station OS134, passed through WR8, and ended on OS135 with a leveled elevation of 64.71. Total leveling distance was 11.6 miles resulting in a closure of 0.06 (0.10 allowable). Resulting elevation for WR8 was 69.79 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 70.83 feet.

WR9 was set using NGS station OS134, a Second-Order Class I benchmark with published elevation of 70.65 feet (NAVD88), and NGS station OS135, a Second-Order Class I benchmark with published elevation of 64.75 feet (NAVD88). Leveling began at station OS134, passed through WR9, and ended on OS135 with a leveled elevation of 64.71. Total leveling distance was 11.6 miles resulting in a closure of 0.06 (0.10 allowable). Resulting elevation for WR9 was 69.32 feet NAVD88. This was converted using the United States Army Corps of Engineers software CORPSCON version 6.0.1 to derive a NGVD29 elevation of 70.36 feet.

Monitoring Well Site Information Summary

In Section 2, all well site information is presented in the same format.

EXAMPLE:

Site Name		Sensor		
Example		GW1		
Latitude	Longitude	Northing	Easting	
28° 23' 31.937"	81° 22' 31.937"	1472251	538267	
Section	Township	Range	County	Quad
13	24	29	Orange	Lake Jessamine
Benchmark Information:				
Name	Existing / Set	NAVD88	NGVD29	
BOG527	Set	80.851	81.876	
Reference Point Information:				
Stamped Elevation (NGVD29)	Stamped Date		By Firm	
87.50	9-21-07		Woolpert, Inc.	
Note: Reference mark at edge of wood as marked.				
Staff Gauge Information:				
Water Elevation (NGVD29)	Gauge Reading	Time of Reading	Date of Reading	
79.928	80.05	09:25	9-21-07	

NOTES:

1. Latitude and longitude were derived at the benchmark location, and is given to assist in locating the site. It is not meant to accurately locate each well.
2. The Northing and Easting were obtained by using CORPSCON to convert the latitude and longitude to Florida State Plane Coordinates, East Zone, Adjustment of 1990 (NAD83/90) HARN.
3. All measurements and elevations are in feet unless otherwise noted.
4. Reference point elevations were determined by using the stated NGVD29 elevation. NGVD29 elevations were calculated using CORPSCON to convert the stated NAVD88 elevation. In some cases the local benchmark only had a NGVD29 elevation, so it was used and no NAVD88 elevation is stated.

Surveyor's Notes:

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

THIS REPORT OF SURVEY CONSISTS OF FOUR SECTIONS AS OUTLINED WITHIN THE SUMMARY OF CONTENTS AND IS NOT VALID UNLESS ATTACHED TO THE OTHERS IN THEIR ENTIRETY.

ADDITIONS OR DELETIONS TO SURVEY MAPS AND REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.

Surveyor and Mapper in Responsible Charge:

John A. Cestnick

Professional Surveyor and Mapper,

License Number: 5994

Signed: _____
(For, and on behalf of the firm Woolpert, Inc.)

Seal:

Section 2: Monitoring Well Site Information

Site Name		Sensor		
CAST		GW2		

Latitude 28° 10' 21.4"	Longitude 81° 08' 07.4"	Northing 1395463	Easting 612547	
Section 5	Township 27	Range 32	County Osceola	Quad Ashton

Benchmark Information:

Name CAST	Existing / Set Set	NAVD88 70.65	NGVD29 71.85
---------------------	------------------------------	------------------------	------------------------

Reference Point Information:

Stamped Elevation (NGVD29) 74.07	Stamped Date 10-17-07	By Firm Woolpert, Inc.
--	---------------------------------	----------------------------------

Note: Reference mark at top of PVC pipe as marked.

Staff Gauge Information:

Water Elevation (NGVD29) NA	Gauge Reading NA	Time of Reading NA	Date of Reading NA
---------------------------------------	----------------------------	------------------------------	------------------------------

To Reach Description:
From the intersection of U.S. 441 and U.S. 192 go west on U.S. 192 for 4.2 miles to the Castelli's Fish Farm, then go south through the east entrance of the farm for 0.4 of a mile to the end of the road and property. The benchmark is located 7 feet northeast of the SFWMD monitoring well.

Sensor Well Area:



Sensor Well:



Tag Close-up:



Bench Mark:



Bench Mark:



CAST

WOMEN'S POINT
PLEASE DO NOT DISTURB
NEARBY
SURVEY



CAST

GW2

ELEV. 74.07

DATE 10 17 07

BY WOOLPERT

NAVD

NGVD29

CAST

GW1

ELEV. 74.54

DATE 10 17 07

BY WOOLPERT

NAVD

NGVD29



CAST
2007



FLA. WATER MANAGEMENT DISTRICT SURVEY
CAST
2007
MARKER

W 2
DATE 11 27 47
BY WOODWARD
EVA
NGVT 23

W 2
DATE 11 27 47
BY WOODWARD
EVA
NGVT 23



SURVEY



WITNESS POST
PLEASE DO NOT DISTURB
NEARBY

S	M
A	A
R	R
V	V
E	E
Y	Y







FLORIDA DEPT. OF ENVIRONMENT AND MAPPING
SURVEY AND MAPPING DIVISION

P 507



2001

DO NOT DISTURB
SURVEY MARK

Monitoring Well Field Data Sheet

SFWMD #067411

Site/Station Designation: CAST

Date: 9/25/07

Crew: M.R/Y.N

Bench Mark Used: CASTelli

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
<u>CASTelli 1998</u>	<u>1998</u>	<u>—</u>	<u>70.85</u>	

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
<u>BM-MON</u>				<u>70.85</u>	
<u>CAST W-1</u>					

Tag Check List:

- Stamp Site/Station Designation _____
- Stamp Elevation in NGVD 29 _____
- Stamp Date _____
- Stamp By Woolpert _____
- Stamp Datum (NGVD 29) _____
- Scratch Old Tag _____

Photo Check List:

- _____ Bench Mark close
- _____ Bench Mark standing
- _____ M. Well tag close
- _____ M. Well standing
- _____ M. Well Area

Photo#	<u>1557</u>
Photo#	<u>1558</u>
Photo#	<u>IN RECORDS</u>
Photo#	<u>IN RECORDS</u>
Photo#	<u>1556</u>

Staff Gauge:

Site Name	Water Elev.	Gauge Reading	Time Meas.	Date Meas.

Latitude and Longitude:

<u>N 28° 10' 21.2"</u>	<u>W 081° 08' 07.4"</u>
------------------------	-------------------------

Site Description, Comments, or Remarks:

BM WAS MISSING CAP DISTURB

Monitoring Well Field Data Sheet

SFWMD #067411

Site/Station Designation: CAST

Date: 9/25/07

Crew: M.R/Y.N

Bench Mark Used: CASTELLI

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
<u>CASTELLI 1998</u>	<u>1998</u>	<u>—</u>	<u>70.85</u>	

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
<u>BM - MON</u>				<u>70.85</u>	
<u>CAST W-2</u>					

Tag Check List:

- Stamp Site/Station Designation _____
- Stamp Elevation in NGVD 29 _____
- Stamp Date _____
- Stamp By Woolpert _____
- Stamp Datum (NGVD 29) _____
- Scratch Old Tag _____

Photo Check List:

- _____ Bench Mark close
- _____ Bench Mark standing
- _____ M. Well tag close
- _____ M. Well standing
- _____ M. Well Area

Photo#	<u>1557</u>
Photo#	<u>1558</u>
Photo#	<u>IN RECORDS</u>
Photo#	<u>IN RECORDS</u>
Photo#	<u>1556</u>

Staff Gauge:

Site Name	Water Elev.	Gauge Reading	Time Meas.	Date Meas.

Latitude and Longitude:

<u>N 28° 10' 21.2"</u>	<u>W 081° 08' 07.4"</u>
------------------------	-------------------------

Site Description, Comments, or Remarks:

BM WAS MISSING CAP DISTURB.

Monitoring Well Field Data Sheet

SFWMD #067411

Site/Station Designation: CAST

Date: 10-17-07

Crew: URZUA / MCLARNEY

Bench Mark Used:

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
<u>CAST</u>	<u>2007</u>	<u>70.65</u>	<u>71.85</u>	<u>yes</u>

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
<u>Cast</u>				<u>71.85</u>	
	<u>6.085</u>	<u>77.934</u>			<u>41.57</u>
<u>GWZ</u>			<u>3.864</u>	<u>74.070</u>	<u>47.36</u>
	<u>3.802</u>	<u>77.872</u>			<u>47.90</u>
<u>Cast</u>			<u>6.025</u>	<u>71.847</u>	<u>42.13</u>

Tag Check List:

Photo Check List:

- | | | |
|----------------------------------|-----------------|---------------------|
| • Stamp Site/Station Designation | <u>Cast GWZ</u> | Bench Mark close |
| • Stamp Elevation in NGVD 29 | <u>74.07</u> | Bench Mark standing |
| • Stamp Date | <u>10-17-07</u> | M. Well tag close |
| • Stamp By Woolpert | <u>J</u> | M. Well standing |
| • Stamp Datum (NGVD 29) | <u>J</u> | M. Well Area |
| • Scratch Old Tag | <u>J</u> | |

Photo# <u>100-0120</u>
Photo# <u>100-0122</u>
Photo# <u>100-0115</u>
Photo# <u>100-0116</u>
Photo# <u>100-0119</u>

Staff Gauge:

Site Name	Water Elev.	Gauge Reading	Time Meas.	Date Meas.
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

Latitude and Longitude:

<u>26 10 21.4</u>	<u>81 08 07.4</u>
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Site Description, Comments, or Remarks:

Monitoring Well Field Data Sheet

SFWMD #067411

Site/Station Designation: CAST

Date: 10-17-07

Crew: U/M

Bench Mark Used:

Name stamp	Date stamp	EL NAVD 88	EL NGVD 29	Sign Present
<u>CAST</u>	<u>2007</u>	<u>70.65</u>	<u>71.85</u>	<u>YES</u>

Level Setup:

STA	BS	HI	FS	NGVD29 EL	DIST & REM
<u>Cast</u>				<u>71.85</u>	
	<u>6.064</u>	<u>77.914</u>			<u>41.21</u>
<u>GW1</u>			<u>3.374</u>	<u>74.548</u>	<u>46.14</u>
	<u>3.393</u>	<u>77.934</u>			<u>46.56</u>
<u>Cast</u>			<u>6.084</u>	<u>71.849</u>	<u>41.60</u>

Tag Check List:

Photo Check List:

- | | | |
|----------------------------------|-----------------|---------------------|
| • Stamp Site/Station Designation | <u>CAST GW1</u> | Bench Mark close |
| • Stamp Elevation in NGVD 29 | <u>74.54</u> | Bench Mark standing |
| • Stamp Date | <u>10-17-07</u> | M. Well tag close |
| • Stamp By Woolpert | <u>/</u> | M. Well standing |
| • Stamp Datum (NGVD 29) | <u>/</u> | M. Well Area |
| • Scratch Old Tag | <u>/</u> | |

Photo# <u>100-0120</u>
Photo# <u>100-0122</u>
Photo# <u>100-0117</u>
Photo# <u>100-0118</u>
Photo# <u>100-0119</u>

Staff Gauge:

Site Name	Water Elev.	Gauge Reading	Time Meas.	Date Meas.
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

Latitude and Longitude:

<u>28 10 21.4</u>	<u>81 08 07.4</u>
-------------------	-------------------

Site Description, Comments, or Remarks:



Client: _____

Sheet: _____ of _____

Subject: CAST ELEVATION RUN

Order No.: _____

Computed by: U/M

Date: _____

Checked by: _____

Date: _____

<u>SIA</u>	<u>BS+</u>	<u>HI</u>	<u>FS-</u>	<u>ELEV</u>	<u>DIST</u>
Q 507				73.65	
	5.093	78.743			104.23
TP1			4.216	74.527	136.78
	4.398	78.925			157.91
TP2			5.106	73.819	142.22
	4.538	78.357			209.78
TP3			5.748	72.609	193.50
	5.335	77.944			209.42
TP4			5.912	72.032	156.43
	5.405	77.437			196.85
TP5			5.616	71.821	191.54
	5.927	77.748			132.74
CAST			7.094	70.654	150.52
	7.245	77.899			150.72
TP6			6.061	71.838	178.58
	6.126	77.964			198.98
TP7			5.507	72.457	241.24
	5.487	77.944			240.42
TP8			4.81	73.134	270.54
	6.005	79.139			195.93
TP9			5.076	74.063	220.50
	5.434	79.497			255.68
TP10			4.877	74.620	231.40
	4.754	79.374			204.59
TP11			4.908	74.466	165.09
	4.433	78.899			167.58
TP12			4.72	74.179	179.04
	4.405	78.584			153.61
TP13			5.171	73.413	184.78
	4.823	78.236			188.98
TP14			5.308	72.928	179.69

Cast 1 of 2



Client: _____

Sheet: _____ of _____

Subject: CAST ELEVATION

Order No.: _____

Computed by: U/M

Date: _____

Checked by: _____

Date: _____

<u>STA</u>	<u>Bst</u>	<u>HL</u>	<u>ES-</u>	<u>ELEV.</u>	<u>DIST</u>
TP16	5.225	78.153	5.624	72.529	123.45 175.10
TP17	5.050	77.579	5.235	72.344	190.16 203.64
TP18	5.242	77.586	5.050	72.536	230.48 225.33
TP19	5.188	77.724	5.063	72.661	224.93 211.61
TP20	5.567	78.228	4.068	74.160	212.37 195.64
TP21	4.709	78.869	4.153	74.716	214.44 171.03
TP22	4.575	79.291	4.116	75.175	169.26 175.34
P507	5.005	80.18	4.170	76.010	148.03 269.00

Total Dist 1.65m
8724.63

P507 ELEV- 76.05

$\Delta = .04$

10/17/07
87°F P/c
URZUA / McCARTNEY



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

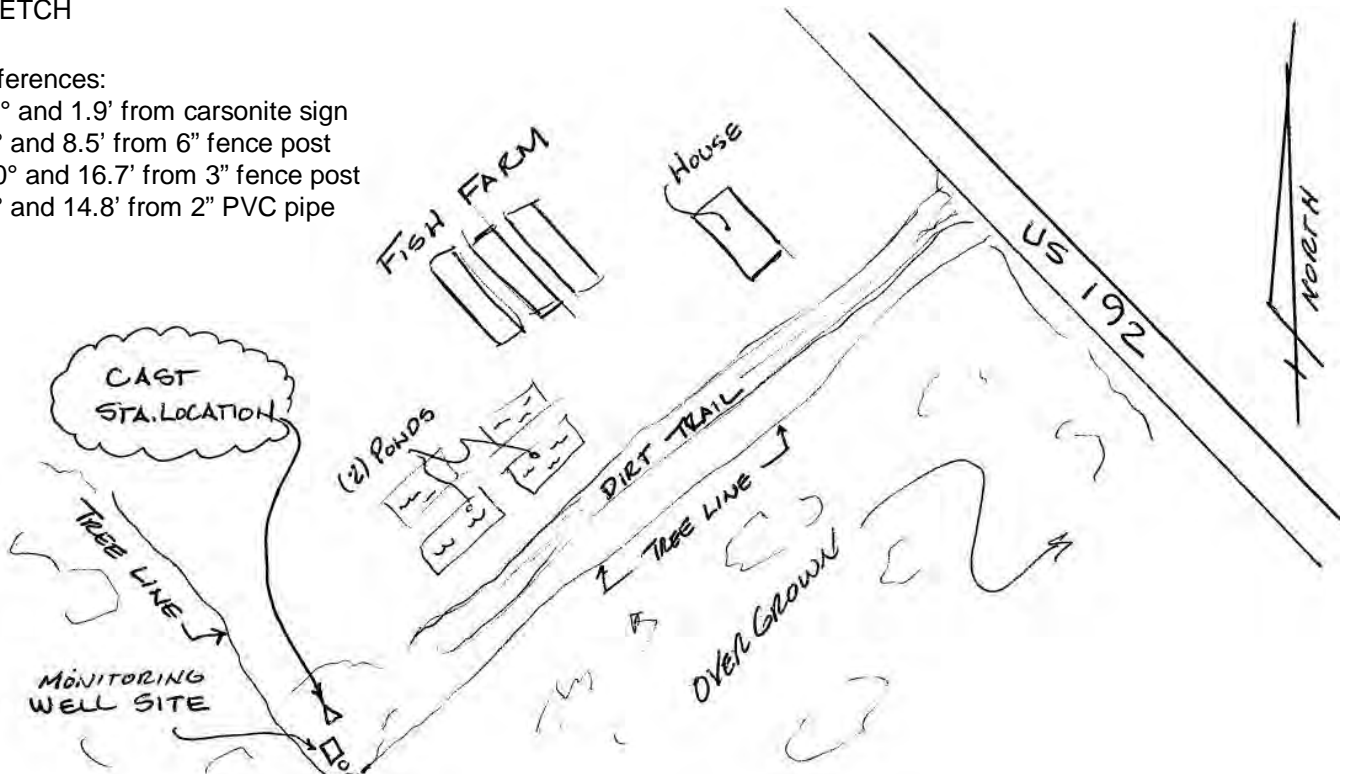
Rev. 4/01

COUNTY	OSCEOLA	PROJECT	VDUP- Reference Elevation Audit Project # 1	DESIGNATION	CAST
SECTION	5	TOWNSHIP	27	RANGE	32
GEOGRAPHIC INDEX OF QUAD 28081-B2					
Established by WOOLPERT			NAME OF QUADRANGLE ASHTON		
SURVEYOR JOHN CESTNICK DATE 9 / 12 / 2007			FIELD BOOK W0104 PAGE		
HORIZONTAL DATUM: 1983 ZONE E					
VERTICAL DATUM: NGVD 1929 NAVD 1988					
CONTROL ACCURACY: HORIZONTAL GPS RTD			VERTICAL 3		
STATE PLANE COORDINATES	X 612547	Y 1395463	EL. NGVD 29 71.85 NAVD 88 70.65		
LATITUDE	28° 10' 21.4"	LONGITUDE	081° 08' 07.4"		
DESCRIPTION					
<p>To Reach: -</p> <p>From the intersection of U.S. 441 and U.S. 192 go west on U.S. 192 for 4.2 miles to the Castelli's Fish Farm. Proceed south through the east entrance of the farm for 0.4 of a mile to the end of the road and property. The benchmark is located 7 feet northeast of the monitoring well. The BM is a SFWMD aluminum disc on an 8" diameter & 40" deep concrete monument incased by a PVC pipe.</p>					

SKETCH

References:

- 55° and 1.9' from carsonite sign
- 55° and 8.5' from 6" fence post
- 130° and 16.7' from 3" fence post
- 10° and 14.8' from 2" PVC pipe



The NGS Data Sheet

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

```

DATABASE = ,PROGRAM = datasheet, VERSION = 7.60
1 National Geodetic Survey, Retrieval Date = MAY 15, 2008
AJ6676 *****
AJ6676 DESIGNATION - Q 507
AJ6676 PID - AJ6676
AJ6676 STATE/COUNTY- FL/OSCEOLA
AJ6676 USGS QUAD - ASHTON (1981)
AJ6676
AJ6676 *CURRENT SURVEY CONTROL
AJ6676
AJ6676 * NAD 83(1986)- 28 10 31. (N) 081 07 54. (W) SCALED
AJ6676 * NAVD 88 - 22.450 (meters) 73.65 (feet) ADJUSTED
AJ6676
AJ6676 GEOID HEIGHT- -28.00 (meters) GEOID03
AJ6676 DYNAMIC HT - 22.416 (meters) 73.54 (feet) COMP
AJ6676 MODELED GRAV- 979,156.9 (mgal) NAVD 88
AJ6676
AJ6676 VERT ORDER - SECOND CLASS I
AJ6676
AJ6676.The horizontal coordinates were scaled from a topographic map and have
AJ6676.an estimated accuracy of +/- 6 seconds.
AJ6676
AJ6676.The orthometric height was determined by differential leveling
AJ6676.and adjusted in April 2004.
AJ6676
AJ6676.The geoid height was determined by GEOID03.
AJ6676
AJ6676.The dynamic height is computed by dividing the NAVD 88
AJ6676.geopotential number by the normal gravity value computed on the
AJ6676.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AJ6676.degrees latitude (g = 980.6199 gals.).
AJ6676
AJ6676.The modeled gravity was interpolated from observed gravity values.
AJ6676
AJ6676; North East Units Estimated Accuracy
AJ6676;SPC FL E - 425,640. 187,070. MT (+/- 180 meters Scaled)
AJ6676
AJ6676 SUPERSEDED SURVEY CONTROL
AJ6676 No superseded survey control is available for this station.
AJ6676
AJ6676 U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMM870166(NAD 83)
AJ6676_MARKER: DD = SURVEY DISK
AJ6676_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AJ6676_STAMPING: Q 507 2001
AJ6676_MARK LOGO: FLDEP
AJ6676_MAGNETIC: B = BAR MAGNET IMBEDDED IN MONUMENT
AJ6676_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AJ6676+STABILITY: SURFACE MOTION
AJ6676_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ6676+SATELLITE: SATELLITE OBSERVATIONS - October 17, 2007
AJ6676
AJ6676 HISTORY - Date Condition Report By
AJ6676 HISTORY - 2001 MONUMENTED FLDEP
AJ6676 HISTORY - 20071017 GOOD WOOLPT
AJ6676
AJ6676 STATION DESCRIPTION
AJ6676
AJ6676'DESCRIBED BY FL DEPT OF ENV PRO 2001 (JLM)
AJ6676'THE MARK IS ABOUT 12.0 MI (19.3 KM) EAST OF ST CLOUD, 4.3 MI (6.9 KM)
AJ6676'NORTHWEST OF HOLOPAW, IN SECTION 32, TOWNSHIP 26 SOUTH, RANGE 32 EAST.
AJ6676'TO REACH THE MARK FROM THE JUNCTION OF U.S. HIGHWAY 441 (HOLOPAW
AJ6676'ROAD) AND U.S. HIGHWAY 192 (EAST BRONSON HIGHWAY, STATE ROAD 15,
AJ6676'COUNTY ROAD 500) IN HOLOPAW, GO WEST ON U.S. HIGHWAY 192, 441 (EAST
AJ6676'BRONSON HIGHWAY, STATE ROAD 15, COUNTY ROAD 500) FOR 4.15 MI (6.68 KM)
AJ6676'TO THE MARK ON THE RIGHT, SET IN THE TOP OF A ROUND CONCRETE MONUMENT
AJ6676'FLUSH WITH THE GROUND AND 1.0 FT (0.3 M) BELOW THE LEVEL OF U.S.
AJ6676'HIGHWAY 192. LOCATED 274.0 FT (83.5 M) SOUTHEAST OF A ROUND CONCRETE
AJ6676'POWER POLE, 64.7 FT (19.7 M) EAST-NORTHEAST OF THE CENTERLINE OF U.S.

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DATASHEETS

AJ6676'HIGHWAY 192 AND 2.0 FT (0.6 M) WEST-SOUTHWEST OF A BARBWIRE FENCE AND
AJ6676'CARSONITE WITNESS POST. NOTE A BAR MAGNET WAS IMBEDDED IN THE MONUMENT
AJ6676'ON THE SOUTH SIDE.

AJ6676
AJ6676 STATION RECOVERY (2007)

AJ6676
AJ6676'RECOVERY NOTE BY WOOLPERT CONSULTANTS 2007 (NM)
AJ6676'RECOVERED IN GOOD CONDITION.

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

The NGS Data Sheet

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

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DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.55
1 National Geodetic Survey, Retrieval Date = OCTOBER 25, 2007
AJ6675 *****
AJ6675 DESIGNATION - P 507
AJ6675 PID - AJ6675
AJ6675 STATE/COUNTY- FL/OSCEOLA
AJ6675 USGS QUAD - ASHTON (1981)
AJ6675
AJ6675 *CURRENT SURVEY CONTROL
AJ6675
AJ6675 * NAD 83(1986)- 28 11 09. (N) 081 08 33. (W) SCALED
AJ6675 * NAVD 88 - 23.179 (meters) 76.05 (feet) ADJUSTED
AJ6675
AJ6675 GEOID HEIGHT- -27.98 (meters) GEOID03
AJ6675 DYNAMIC HT - 23.145 (meters) 75.93 (feet) COMP
AJ6675 MODELED GRAV- 979,157.4 (mgal) NAVD 88
AJ6675
AJ6675 VERT ORDER - SECOND CLASS I
AJ6675
AJ6675.The horizontal coordinates were scaled from a topographic map and have
AJ6675.an estimated accuracy of +/- 6 seconds.
AJ6675
AJ6675.The orthometric height was determined by differential leveling
AJ6675.and adjusted by the in April 2004.
AJ6675
AJ6675.The geoid height was determined by GEOID03.
AJ6675
AJ6675.The dynamic height is computed by dividing the NAVD 88
AJ6675.geopotential number by the normal gravity value computed on the
AJ6675.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AJ6675.degrees latitude (g = 980.6199 gals.).
AJ6675
AJ6675.The modeled gravity was interpolated from observed gravity values.
AJ6675
AJ6675; North East Units Estimated Accuracy
AJ6675;SPC FL E - 426,810. 186,010. MT (+/- 180 meters Scaled)
AJ6675
AJ6675 SUPERSEDED SURVEY CONTROL
AJ6675 No superseded survey control is available for this station.
AJ6675
AJ6675 U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMM860177(NAD 83)
AJ6675_MARKER: DD = SURVEY DISK
AJ6675_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AJ6675_STAMPING: P 507 2001
AJ6675_MARK LOGO: FLDEP
AJ6675_MAGNETIC: B = BAR MAGNET IMBEDDED IN MONUMENT
AJ6675_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AJ6675+STABILITY: SURFACE MOTION
AJ6675_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ6675+SATELLITE: SATELLITE OBSERVATIONS - 2001
AJ6675
AJ6675 HISTORY - Date Condition Report By
AJ6675 HISTORY - 2001 MONUMENTED FLDEP
AJ6675
AJ6675 STATION DESCRIPTION
AJ6675
AJ6675'DESCRIBED BY FL DEPT OF ENV PRO 2001 (JLM)
AJ6675'THE MARK IS ABOUT 10.9 MI (17.5 KM) EAST OF ST CLOUD, 5.4 MI (8.7 KM)
AJ6675'NORTHWEST OF HOLOPAW, IN SECTION 32, TOWNSHIP 26 SOUTH, RANGE 32 EAST.
AJ6675'TO REACH THE MARK FROM THE JUNCTION OF U.S. HIGHWAY 441 (HOLOPAW
AJ6675'ROAD) AND U.S. HIGHWAY 192 (EAST BRONSON HIGHWAY, STATE ROAD 15,
AJ6675'COUNTY ROAD 500) IN HOLOPAW, GO WEST ON U.S. HIGHWAY 192, 441 (EAST
AJ6675'BRONSON HIGHWAY, COUNTY ROAD 500) FOR 5.25 MI (8.45 KM) TO THE MARK ON
AJ6675'THE RIGHT, SET IN THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE
AJ6675'GROUND AND LEVEL WITH U.S. HIGHWAY 192. LOCATED 50.0 FT (15.2 M)
AJ6675'NORTHEAST OF THE CENTERLINE OF U.S. HIGHWAY 192, 25.3 FT (7.7 M)
AJ6675'NORTHEAST OF A ROUND CONCRETE POWER POLE AND 1.0 FT (0.3 M) SOUTHWEST
AJ6675'OF A BARBWIRE FENCE AND CARSONITE WITNESS POST. NOTE A BAR MAGNET WAS

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AJ6675' IMBEDDED IN THE MONUMENT ON THE SOUTH SIDE.
 1 National Geodetic Survey, Retrieval Date = OCTOBER 25, 2007
 AJ6676 *****
 AJ6676 DESIGNATION - Q 507
 AJ6676 PID - AJ6676
 AJ6676 STATE/COUNTY- FL/OSCEOLA
 AJ6676 USGS QUAD - ASHTON (1981)
 AJ6676
 AJ6676 *CURRENT SURVEY CONTROL
 AJ6676

AJ6676*	NAD 83(1986)-	28 10 31.	(N)	081 07 54.	(W)	SCALED
AJ6676*	NAVD 88	-	22.450	(meters)	73.65	(feet) ADJUSTED

AJ6676	GEOID HEIGHT-	-27.98	(meters)			GEOID03
AJ6676	DYNAMIC HT -	22.416	(meters)	73.54	(feet)	COMP
AJ6676	MODELED GRAV-	979,156.9	(mgal)			NAVD 88

 AJ6676 VERT ORDER - SECOND CLASS I
 AJ6676
 AJ6676.The horizontal coordinates were scaled from a topographic map and have
 AJ6676.an estimated accuracy of +/- 6 seconds.
 AJ6676
 AJ6676.The orthometric height was determined by differential leveling
 AJ6676.and adjusted by the in April 2004.
 AJ6676
 AJ6676.The geoid height was determined by GEOID03.
 AJ6676
 AJ6676.The dynamic height is computed by dividing the NAVD 88
 AJ6676.geopotential number by the normal gravity value computed on the
 AJ6676.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AJ6676.degrees latitude (g = 980.6199 gals.).
 AJ6676
 AJ6676.The modeled gravity was interpolated from observed gravity values.
 AJ6676

AJ6676;		North	East	Units	Estimated Accuracy
AJ6676;SPC FL E	-	425,640.	187,070.	MT	(+/- 180 meters Scaled)

 AJ6676
 AJ6676 SUPERSEDED SURVEY CONTROL
 AJ6676
 AJ6676.No superseded survey control is available for this station.
 AJ6676
 AJ6676_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RMM870166(NAD 83)
 AJ6676_MARKER: DD = SURVEY DISK
 AJ6676_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 AJ6676_STAMPING: Q 507 2001
 AJ6676_MARK LOGO: FLDEP
 AJ6676_MAGNETIC: B = BAR MAGNET IMBEDDED IN MONUMENT
 AJ6676_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 AJ6676+STABILITY: SURFACE MOTION
 AJ6676_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 AJ6676+SATELLITE: SATELLITE OBSERVATIONS - 2001
 AJ6676

AJ6676	HISTORY	- Date	Condition	Report By
AJ6676	HISTORY	- 2001	MONUMENTED	FLDEP

 AJ6676
 AJ6676 STATION DESCRIPTION
 AJ6676
 AJ6676 DESCRIBED BY FL DEPT OF ENV PRO 2001 (JLM)
 AJ6676 THE MARK IS ABOUT 12.0 MI (19.3 KM) EAST OF ST CLOUD, 4.3 MI (6.9 KM)
 AJ6676 NORTHWEST OF HOLOPAW, IN SECTION 32, TOWNSHIP 26 SOUTH, RANGE 32 EAST.
 AJ6676 TO REACH THE MARK FROM THE JUNCTION OF U.S. HIGHWAY 441 (HOLOPAW
 AJ6676 ROAD) AND U.S. HIGHWAY 192 (EAST BRONSON HIGHWAY, STATE ROAD 15,
 AJ6676 COUNTY ROAD 500) IN HOLOPAW, GO WEST ON U.S. HIGHWAY 192, 441 (EAST
 AJ6676 BRONSON HIGHWAY, STATE ROAD 15, COUNTY ROAD 500) FOR 4.15 MI (6.68 KM)
 AJ6676 TO THE MARK ON THE RIGHT, SET IN THE TOP OF A ROUND CONCRETE MONUMENT
 AJ6676 FLUSH WITH THE GROUND AND 1.0 FT (0.3 M) BELOW THE LEVEL OF U.S.
 AJ6676 HIGHWAY 192. LOCATED 274.0 FT (83.5 M) SOUTHEAST OF A ROUND CONCRETE
 AJ6676 POWER POLE, 64.7 FT (19.7 M) EAST-NORTHEAST OF THE CENTERLINE OF U.S.
 AJ6676 HIGHWAY 192 AND 2.0 FT (0.6 M) WEST-SOUTHWEST OF A BARBWARE FENCE AND
 AJ6676 CARSONITE WITNESS POST. NOTE A BAR MAGNET WAS IMBEDDED IN THE MONUMENT
 AJ6676 ON THE SOUTH SIDE.

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

Section 3: Monitoring Well Site Information in Table Format

Monitoring Well Site Information in Table Format

Well Designation	Well Type	County	Quadrangle	Section	Township	Range	Northing	Easting	Latitude of BM	Longitude of BM	Ref. Point Elev. (NGVD29)	Ref. Point Elev. (NAVD88)	Benchmark Name Used to Set Ref. Elev.	Benchmark Elev. (NGVD29)	Benchmark Elev. (NAVD88)
AIR19	GW1	Orange	Pine Castle	18	24	30	1479505	542444	28 24 11.94	81 21 13.49	89.41	88.48	AIR19	84.80	83.87
AIR19	GW2	Orange	Pine Castle	18	24	30	1479505	542444	28 24 11.94	81 21 13.49	90.05	89.12	AIR19	84.80	83.87
ALL1	GW1	Osceola	Ashton	29	26	31	1404991	577718	28 11 55	81 14 36.8	76.52	75.59	ALLIGATOR WELL #2	71.77	70.85
ALL1	GW2	Osceola	Ashton	29	26	31	1404991	577718	28 11 55	81 14 36.8	76.27	75.35	ALLIGATOR WELL #2	71.77	70.85
ALL2	GW1	Osceola	Ashton	29	26	31	1404988	578899	28 11 55	81 14 23.6	74.16	73.24	ALLIGATOR WELL #2	71.77	70.85
ALL2	GW2	Osceola	Ashton	29	26	31	1404988	578899	28 11 55	81 14 23.6	73.80	72.88	ALLIGATOR WELL #2	71.77	70.85
BOG527	STG1	Orange	Lake Jessamine	13	24	29	1475481	535428	28 23 31.94	81 22 31.9	87.50	86.58	BOG 527	81.88	80.95
C31SW	STG1	Osceola	St Cloud South	8	26	30	1418598	547434	28 14 09.02	81 20 15.7	62.77	61.83	C31 GFS	57.70	56.76
CAST	GW1	Osceola	Ashton	5	27	32	1395463	612548	28 10 21.4	81 08 07.4	74.54	73.34	CAST	71.85	70.65
CAST	GW2	Osceola	Ashton	5	27	32	1395463	612548	28 10 21.4	81 08 07.4	74.07	72.87	CAST	71.85	70.65
EXOTFI	GW1	Osceola	Holopaw	9	27	32	1389346	619075	28 09 20.7	81 06 54.4	75.39	74.17	EXOTFI	72.14	70.92
INRCTY	GW1	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	71.17	70.21	OSFWELLS BM1	68.47	67.51
INRCTY	GW2	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	71.14	70.18	OSFWELLS BM1	68.47	67.51
INRCTY	GW3	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	71.98	71.02	OSFWELLS BM1	68.47	67.51
INRCTY	GW4	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	72.53	71.57	OSFWELLS BM1	68.47	67.51
INRCTY	GW5	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	72.10	71.14	OSFWELLS BM1	68.47	67.51
INRCTY	GW6	Osceola	Intercession City	3	26	28	1426088	493978	28 15 21.34	81 30 13.70	71.23	70.27	OSFWELLS BM1	68.47	67.51
KIRCOF	GW1	Osceola	Lake Tohopekaliga	9	27	29	1389279	519428	28 09 17.84	81 25 27.67	74.83	73.82	OS 134	71.66	70.65
KIRCOF	GW2	Osceola	Lake Tohopekaliga	9	27	29	1389279	519428	28 09 17.84	81 25 27.67	73.93	72.92	OS 134	71.66	70.65
KISSD	STG1	Osceola	Kissimmee	28	25	29	1436371	521494	28 17 04.2	81 25 06.4	65.19	64.25	KISSD	61.42	60.48
MAKO	GW1	Osceola	Narcoossee	32	25	31	1432570	582808	28 16 28.18	81 13 40.49	80.19		MAKO 3	76.39	
MOSSPK	GW1	Orange	Narcoossee NW	23	24	31	1470369	594673	28 22 42.65	81 11 28.46	72.64	71.60	MOSSPK	68.53	67.49
MOSSPK	GW2	Orange	Narcoossee NW	23	24	31	1470369	594673	28 22 42.65	81 11 28.46	72.30	71.26	MOSSPK	68.53	67.49
OAKISL	GW1	Osceola	Lake Louisa SW	5	25	27	1454680	452311	28 20 02.49	81 38 01.31	111.46	110.60	OAKISL	109.10	108.24
OAKISL	GW2	Osceola	Lake Louisa SW	5	25	27	1454680	452311	28 20 02.49	81 38 01.31	111.60	110.74	OAKISL	109.10	108.24
OAKISL	GW3	Osceola	Lake Louisa SW	5	25	27	1454680	452311	28 20 02.49	81 38 01.31	111.55	110.69	OAKISL	109.10	108.24
OAKISL	GW4	Osceola	Lake Louisa SW	5	25	27	1454680	452311	28 20 02.49	81 38 01.31	110.01	109.15	OAKISL	109.10	108.24
OSF53	GW1	Osceola	St Cloud South	18	27	30	1383756	542986	28 08 23.9	81 21 04.3	62.77	61.73	OSF 53	61.41	60.37
OSF53	GW2	Osceola	St Cloud South	18	27	30	1383756	542986	28 08 23.9	81 21 04.3	63.68	62.63	OSF 53	61.41	60.37
OSF53	GW3	Osceola	St Cloud South	18	27	30	1383756	542986	28 08 23.9	81 21 04.3	63.69	62.65	OSF 53	61.41	60.37
REDYCK	GW1	Orange	Intercession City	23	24	27	1470874	467168	28 22 43.57	81 35 15.94	101.54	100.60	REDYCK	99.09	98.15
REDYCK	GW2	Orange	Intercession City	23	24	27	1470874	467168	28 22 43.57	81 35 15.94	103.64	102.70	REDYCK	99.09	98.15
S57-SCA	STG1	Osceola	Narcoossee	1	25	31	1455933	600071	28 20 19.8	81 10 27.79	71.38	70.33	Y 577	68.78	67.73
S57-SCA	STG2	Osceola	Narcoossee	1	25	31	1455933	600071	28 20 19.8	81 10 27.79	71.37	70.32	Y 577	68.78	67.73
S58-SCA	STG1	Osceola	Narcoossee	36	25	31	1431567	604364	28 16 18.59	81 09 39.38	72.40	71.35	OS 100	70.17	69.12
S58-SCA	STG2	Osceola	Narcoossee	36	25	31	1431567	604364	28 16 18.59	81 09 39.38	72.41	71.36	OS 100	70.17	69.12
S59-SCA	HW	Osceola	St Cloud North	33	25	30	1429037	555707	28 15 52.6	81 18 43.5	66.83	65.83	KR 908	61.69	60.69
S59-SCA	TW	Osceola	St Cloud North	33	25	30	1429037	555707	28 15 52.6	81 18 43.5	66.80	65.81	KR 908	61.69	60.69
S59W	GW1	Osceola	St Cloud North	33	25	30	1429076	555692	28 15 52.99	81 18 43.67	62.52	61.63	OS 81 1980	65.02	64.13
S60-SCA	HW	Osceola	Ashton	32	26	31	1397057	580727	28 10 36.5	81 14 03	75.57	74.48	KR 1066	71.01	70.14
S60-SCA	TW	Osceola	Ashton	32	26	31	1397057	580727	28 10 36.5	81 14 03	74.58	73.49	KR 1066	71.01	70.14
S61-SCA	HW	Osceola	St Cloud South	18	27	30	1383797	542852	28 08 24.3	81 21 05.8	65.58	64.54	OSF 53	61.40	60.37
S61-SCA	TW	Osceola	St Cloud South	18	27	30	1382797	542852	28 08 24.3	81 21 05.8	65.56	64.53	OSF 53	61.40	60.37
S62-SCA	HW	Orange	Narcoossee	33	24	31	1464776	586085	28 21 47.13	81 13 04.49	72.51	71.48	OR 91	68.60	67.57
S62-SCA	TW	Orange	Narcoossee	33	24	31	1464776	586085	28 21 47.13	81 13 04.49	72.53	71.50	OR 91	68.60	67.57
S63-SCA	HW	Osceola	Cypress Lake	19	27	31	1376003	574258	28 07 07.9	81 15 14.8	71.75	70.85	KR 1067	68.33	67.43
S63-SCA	TW	Osceola	Cypress Lake	19	27	31	1376003	574258	28 07 07.9	81 15 14.8	71.78	70.88	KR 1067	68.33	67.43
SCBR	GW1	Orange	Lake Jessamine	8	24	29	1478382	516853	28 24 36.17	81 26 01.71	86.28	85.37	C 1286 036	87.57	86.66
SCPE	GW1	Orange	Kissimmee	29	24	29	1468791	514892	28 22 24.96	81 26 21.57	81.44	80.53	SCPE	78.19	77.28
SCPN	HW	Orange	Lake Jessamine	19	24	29	1474814	510500	28 23 24.27	81 27 11.51	83.15	82.24	SCPN	78.53	77.62
SCPN	TW	Orange	Lake Jessamine	19	24	29	1474814	510500	28 23 24.27	81 27 11.51	83.04	82.13	SCPN	78.53	77.62
SCPS	HW	Orange	Kissimmee	30	24	29	1468563	510520	28 22 22.55	81 27 10.50	82.64	81.73	L 715 008	79.23	78.32
SCPS	TW	Orange	Kissimmee	30	24	29	1468563	510520	28 22 22.55	81 27 10.50	82.47	81.56	L 715 008	79.23	78.32
SCSS	STG1	Orange	Lake Jessamine	13	24	28	1477281	508089	28 23 48.78	81 27 38.09	85.09	84.20	SCSS	80.72	79.83
SW15	GW1	Orange	Lake Louisa SW	16	24	27	1475682	456994	28 23 30.67	81 37 10.11	111.05	110.11	SW15-9	108.93	107.99
SW15	GW2	Orange	Lake Louisa SW	16	24	27	1475682	456994	28 23 30.67	81 37 10.11	112.34	111.40	SW15-9	108.93	107.99
TOHO 1	GW1	Osceola	St Cloud South	33	26	30	1396053	555533	28 10 26	81 18 44.5	68.01		TOHO 1	64.46	
TOHO 1	GW2	Osceola	St Cloud South	33	26	30	1396053	555533	28 10 26	81 18 44.5	67.81		TOHO 1	64.46	
TOHO 2	GW1	Osceola	St Cloud South	3	27	30	1395292	557196	28 10 18.5	81 18 25.9	69.40	68.37	TOHO 2	65.66	64.63

Monitoring Well Site Information in Table Format

Well Designation	Well Type	County	Quadrangle	Section	Township	Range	Northing	Easting	Latitude of BM	Longitude of BM	Ref. Point Elev. (NGVD29)	Ref. Point Elev. (NAVD88)	Benchmark Name Used to Set Ref. Elev.	Benchmark Elev. (NGVD29)	Benchmark Elev. (NAVD88)
TOHO 4	GW1	Osceola	Lake Tohopekaliga	10	27	29	1386180	530170	28 08 47.51	81 23 27.55	63.71	62.68	TOHO 4	59.62	58.59
TOHO 5	GW1	Osceola	Lake Tohopekaliga	29	26	29	1405464	514584	28 11 57.92	81 26 22.44	74.36	73.38	TOHO 5	70.33	69.35
TOHO 5	GW2	Osceola	Lake Tohopekaliga	29	26	29	1405464	514584	28 11 57.92	81 26 22.44	74.10	73.12	TOHO 5	70.33	69.35
TOHO 6	GW1	Osceola	St Cloud South	29	26	29	1403532	540917	28 11 39.66	81 21 28.06	70.44	69.45	TOHO 6	67.01	66.02
TOHO 7	GW1	Osceola	Kissimmee	21	25	29	1440606	519669	28 17 46.06	81 25 26.98	74.21	73.25	BMWELL 7	70.84	69.88
TOHO 8	GW1	Osceola	Kissimmee	21	25	29	1440342	523931	28 17 43.6	81 24 39.3	68.95	67.99	BMWELL 8	65.40	64.44
TOHO 10	GW1	Osceola	St Cloud South	19	26	30	1406499	543294	28 12 09.1	81 21 01.6	74.67	73.67	TOHO 10	70.58	69.58
TOHO 12	GW1	Osceola	St Cloud North	10	25	30	1453807	561663	28 19 58.01	81 17 37.57	77.82	76.62	BMWELL12	73.92	72.72
TOHO 14	GW1	Osceola	St Cloud South	13	27	30	1385263	569855	28 08 39.5	81 16 04.2	72.84		WELL 14	69.09	
TOHO 15	GW1	Osceola	St Cloud South	30	26	31	1401062	572717	28 11 16	81 15 32.6	78.40	77.38	TOHO 15	75.05	74.02
TOHO 16	GW1	Osceola	St Cloud South	1	27	30	1393537	568710	28 10 01.4	81 16 17.2	72.77	71.73	TOHO 16A	69.12	68.08
TOHO 16	GW2	Osceola	St Cloud South	1	27	30	1393537	568710	28 10 01.4	81 16 17.2	72.60	71.56	TOHO 16A	69.12	68.08
TOHO E	STG1	Osceola	St Cloud North	2	26	30	1427170	565475	28 15 34.35	81 16 54.22	61.93	60.94	TOHOE	61.63	60.64
TOHO W	STG1	Osceola	Kissimmee	32	25	29	1438045	525426	28 17 20.9	81 24 22.49	62.07	61.13	TOHOW	57.93	56.98
WR6	GW1	Osceola	Lake Hatchineha	28	27	29	1374487	523000	28 06 51.5	81 24 47.2	69.05	68.01	WR 6	64.82	63.78
WR8	GW1	Osceola	Lake Hatchineha	28	27	29	13711644	521486	28 06 23.3	81 25 04.0	72.89	71.85	WR 8	70.83	69.79
WR9	GW1	Osceola	Lake Hatchineha	28	27	29	1372605	520934	28 06 32.8	81 25 10.2	70.65	69.61	WR 9	70.36	69.32

NOTES:

1. Latitude and longitude were derived at the benchmark location, and is given to assist in locating the site. It is not meant to accurately locate each well.
2. Northing and Eastings were obtained by using CORPSCON to convert the latitude and longitude to Florida State Plane Coordinates, East Zone, Adjustment of 1990 (NAD83/90) HARN.
3. All measurements and elevations are in feet unless otherwise noted.
4. Some Benchmarks used did not have a published NAVD88 elevation, and therefore have been left blank.
5. In a few cases a Benchmark did not have superseded NGVD29 values so CORPSCON was used to derive a NGVD29 elevation.

Section 4: Benchmark Data Sheets