
Surveyor's Report

Hydrology – Polk County Monitoring Wells

NMI Project No. 1078.026

Report Date: April 6, 2007

Submittal: Final

Prepared for:

**South Florida Water Management
District**



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OVERVIEW OF THE PROJECT

PURPOSE

The purpose of the Polk County Monitoring Wells Project is to establish a vertical control mark near the monitoring well. The project tests the application of Federal Geodetic Control Subcommittee (FGCS) Second-Order, Class II leveling procedures with Third-Order equipment. The goal of this hybrid pairing of procedures and equipment is to produce leveling measurements that will be acceptable to the National Geodetic Survey (NGS) and used in future vertical adjustments throughout the District.

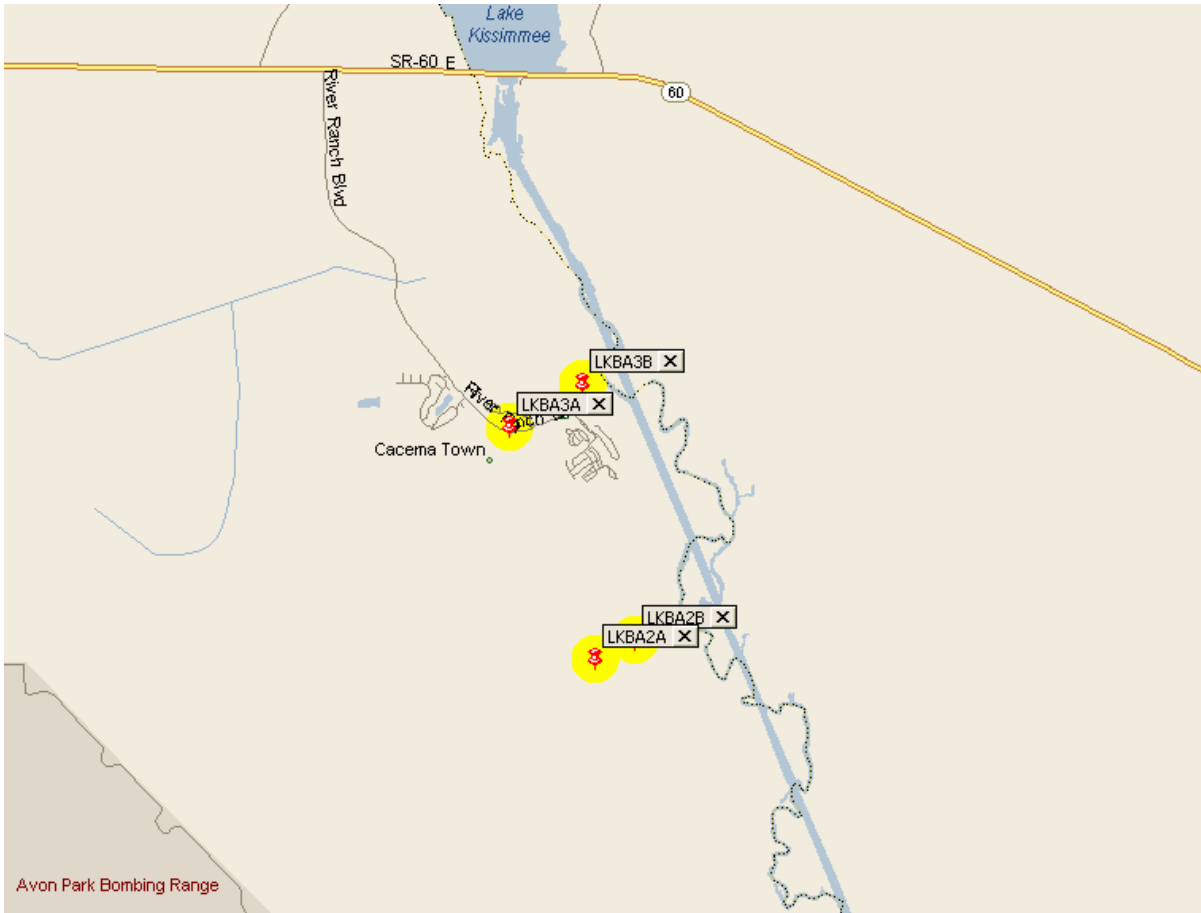
This project utilizes uncalibrated “off-the-shelf” fiberglass level rods. Such rods are not currently approved by NGS for precise leveling (Second-Order Class II and above) for three primary reasons:

1. The fiberglass material used to construct the rods is less dimensionally stable than rods constructed of Invar metal.
2. The fiberglass rods are not individually calibrated by the manufacturer to identify scale errors across the length of the rod.
3. The fiberglass rods are a three-section snap-together style that will, over time, wear at the connection points creating error in measurements on the top two sections.

While these limitations make the rods unsuitable for the extreme precision required in First-Order and Second-Order, Class I leveling, it is the hypothesis of this project that such rods can deliver Second-Order, Class II precisions. Fiberglass rods are commonly used by surveyors today. In contrast, Invar level rods are expensive and specialized equipment only used by surveyors working on the highest precision vertical control surveys. By demonstrating that fiberglass level rods such as those used in this project are suitable for Second-Order, Class II leveling the District will benefit from the increased number of consultants using these rods. As a result, more level lines run within the District should meet NGS’s requirements for inclusion in future vertical adjustments, further refining the elevation models used for water control.

LOCATION OF PROJECT

This project is located in Polk County, Florida. Following is a vicinity map.



ITEMS DELIVERED TO THE CLIENT

The following items are delivered to the client with this report. Neither the report nor the items listed below are complete without the other.

1. Paper and electronic copy of field notes
2. Paper and electronic copy of all computation sheets
3. CORPSMET file for well site
4. Paper and electronic copy of site photographs
5. Paper copy of South Florida Water Management District Benchmark Description
6. Paper and electronic copy of NGS Blue Book submittal

VERTICAL DATUM FOR THE PROJECT

The vertical datum for the project is the North American Vertical Datum of 1988. For correlation with older data sets, the elevations of the benchmarks are also shown in the National Geodetic Vertical Datum (NGVD) of 1929. The NGVD 29 elevations were derived using data provided by the South Florida Water Management District in a file named “NGVD29.ABS” when applicable, otherwise NGS superseded values were used. The linear unit for all elevations is the meter unless otherwise stated.

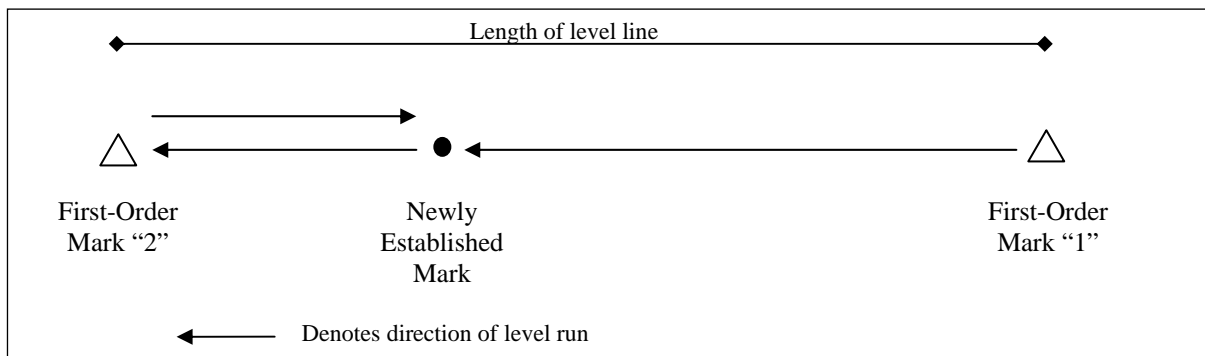
Leveling Methods

CONFIGURATION OF LEVEL RUNS

The leveling for the project was performed in accordance with the Federal Geodetic Control Subcommittee standard for Second-Order, Class II geodetic leveling. A brief description of the procedures used follows.

For each level line, two existing First or Second Order vertical marks were used. The run was started at one of the First or Second Order marks and continued through the newly established mark near the structure and closed on the second First or Second Order vertical mark. The run was then looped back from the second First or Second Order mark to the newly established mark (see Figure 1 below).

Figure 1 Typical Level Run Pattern




The FGCS maximum allowable misclosure for this type of run is eight millimeters multiplied by the length of the line in kilometers.

EQUIPMENT USED

All leveling during the project was performed with a Leica DNA03 digital level and Leica three-section, fiberglass bar-code level rods. Information and technical specification for the Leica DNA03 digital level are available at <http://www.leica-geosystems.com>.


PROJECT RESULTS


The following table lists the elevations established for the new mark, the level run misclosure, “to-reach” description for the mark and a photo of the mark. All elevations are in US Survey Feet.

LKBA2A	Elevation:	55.91 ft	(NAVD 88)	57.09 ft	(NGVD 29)
Bench Mark 1:	A 461	52.20 ft	(NAVD 88)	N/A ft	(NGVD 29)
Bench Mark 2:	KR 1560	54.43 ft	(NAVD 88)	N/A ft	(NGVD 29)
Bench Mark 3:	Z 460	53.93 ft	(NAVD 88)	N/A ft	(NGVD 29)
Monitoring Well:	LKBA2A	59.36 ft	(NAVD 88)	60.54 ft	(NGVD 29)
Concrete Pad:	LKBA2A	56.48 ft	(NAVD 88)	57.66 ft	(NGVD 29)
Ground Elevation:	LKBA2A	56.21 ft	(NAVD 88)	57.39 ft	(NGVD 29)
Length of Run:	0.99 km	To Reach LKBA2A: TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MILES TO THE JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO SOUTHEAST FOR 2.55 MILES TO THE GUARD HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH BOULEVARD FOR 0.3 MILE TO THE JUNCTION OF KICCO ROAD ON THE RIGHT, TURN RIGHT ON KICCO ROAD (NEED SFWMD L KEY) AND GO SOUTHEAST FOR 0.2 MILE TO FOUR SETS OF DOUBLE UNLOCKED GATES, CONTINUE SOUTH ON KICCO ROAD FOR 0.5 MILES TO ANOTHER UNLOCKED METAL GATE, CONTINUE SOUTHEAST ON KICCO ROAD FOR 0.2 MILE TO THE JUNCTION OF ROAD ON THE LEFT, CONTINUE SOUTH-SOUTHEAST ON KICCO ROAD FOR 1.4 MILES TO AN ENTRANCE OF A BRIDGE. +/- 200 FEET BEFORE BRIDGE MAKE RIGHT AND HEAD WESTERLY THROUGH GRASSY AREA TO DIRT ROAD ON EAST SIDE OF BARBED WIRE FENCE. MAKE RIGHT AND HEAD NORTH ON DIRT ROAD FOR 0.3 MILE TO BEND. MAKE LEFT AND HEAD WEST ON DIRT ROAD FOR 0.1 MILE TO MARK ON RIGHT. MONUMENT IS +/- 150 FEET NORTH OF DIRT ROAD ON SOUTH SIDE OF MONITORING WELL LKBA2A. SET IN THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE GROUND. LOCATED 7.2 FEET SOUTH OF CENTERLINE OF 1 FOOT DIAMETER WHITE PVC PIPE FOR MONITORING WELL, 5.2 FEET SOUTHEAST OF SOUTHWEST BALLARD POST, 5.2 FEET SOUTHWEST OF SOUTHEAST BALLARD POST. MAGNET SET 1 FOOT NORTH OF MONUMENT.			
Max Allowable Misclosure:	8 mm				
Actual Misclosure:	1 mm				
					

LKBA2B (USED NGS BM Z 460)		Elevation:	53.93 ft	(NAVD 88)	N/A ft	(NGVD 29)
Bench Mark 1:	A 461		52.20 ft	(NAVD 88)	N/A ft	(NGVD 29)
Bench Mark 2:	KR 1560		54.43 ft	(NAVD 88)	N/A ft	(NGVD 29)
Bench Mark 3:	Z 460		53.93 ft	(NAVD 88)	N/A ft	(NGVD 29)
Monitoring Well:	LKBA2B		58.22 ft	(NAVD 88)	59.41 ft	(NGVD 29)
Concrete Pad:	LKBA2B		54.70 ft	(NAVD 88)	55.89 ft	(NGVD 29)
Ground Elevation:	LKBA2B		54.35 ft	(NAVD 88)	55.54 ft	(NGVD 29)
Monitoring Well:	Well West of LKBA2B		56.87 ft	(NAVD 88)	58.06 ft	(NGVD 29)
Concrete Pad:	Well West of LKBA2B		54.81 ft	(NAVD 88)	56.00 ft	(NGVD 29)
Ground Elevation:	Well West of LKBA2B		54.28 ft	(NAVD 88)	55.47 ft	(NGVD 29)
Monitoring Well:	Well South of LKBA2B		55.41 ft	(NAVD 88)	56.60 ft	(NGVD 29)
Concrete Pad:	Well South of LKBA2B		54.94 ft	(NAVD 88)	56.13 ft	(NGVD 29)
Ground Elevation:	Well South of LKBA2B		54.34 ft	(NAVD 88)	55.53 ft	(NGVD 29)
Length of Run:	0.99 km		To Reach Z 460:			
Max Allowable Misclosure:	8 mm		<p>DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM) THE MARK IS ABOUT 30.0 MI (48.3 KM) SOUTHEAST OF LAKE WALES, 0.6 MI (1.0 KM) WEST OF THE KISSIMMEE RIVER ON KICCO ROAD IN SECTION 25, TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MI (41.4 KM) TO THE JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO SOUTHEAST FOR 2.55 MI (4.10 KM) TO THE GUARD HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH BOULEVARD FOR 0.3 MI (0.5 KM) TO THE JUNCTION OF KICCO ROAD ON THE RIGHT, TURN RIGHT ON KICCO ROAD AND GO SOUTHEAST FOR 0.2 MI (0.3 KM) TO FOUR SETS OF DOUBLE UNLOCKED GATES, CONTINUE SOUTH ON KICCO ROAD FOR 0.5 MI (0.8 KM) TO ANOTHER UNLOCKED METAL GATE, CONTINUE SOUTHEAST ON KICCO ROAD FOR 0.2 MI (0.3 KM) TO THE JUNCTION OF ROAD ON THE LEFT, CONTINUE SOUTH-SOUTHEAST ON KICCO ROAD FOR 0.8 MI (1.3 KM) TO THE MARK ON THE RIGHT, A STAINLESS STEEL ROD DRIVEN TO REFUSAL AT A DEPTH OF 40.3 FT (12.3 M) WITH A LOGO CAP FLUSH WITH THE GROUND AND LEVEL WITH KICCO ROAD, THE DATUM POINT IS RECESSED 0.4 FT (12.2 CM) BELOW THE LEVEL OF THE LOGO CAP. LOCATED 37.5 FT (11.4 M) SOUTHWEST OF THE APPROXIMATE CENTERLINE OF KICCO ROAD AND 1.0 FT (0.3 M) NORTHWEST OF A CARSONITE WITNESS POST. NOTE ACCESS TO DATUM POINT IS HAD THROUGH A 5-INCH LOGO CAP. FOR KEY CONTACT SOUTH FLORIDA WATER MANAGEMENT DISTRICT AT 561-686-8800.</p>			
Actual Misclosure:	1 mm					



LKBA3A (USED NGS BM Y 460)		Elevation:	55.00 ft	(NAVD 88)	N/A ft	(NGVD 29)
Bench Mark 1:	X 460		55.47 ft	(NAVD 88)	N/A ft	(NGVD 29)
Bench Mark 2:	Y 460		55.00 ft	(NAVD 88)	N/A ft	(NGVD 29)
Monitoring Well:	LKBA3A		58.86 ft	(NAVD 88)	60.07 ft	(NGVD 29)
Concrete Pad:	LKBA3A		55.45 ft	(NAVD 88)	56.65 ft	(NGVD 29)
Ground Elevation:	LKBA3A		55.30 ft	(NAVD 88)	56.50 ft	(NGVD 29)
Length of Run:	1.37 km	To Reach Y 460:				
Max Allowable Misclosure:		9 mm	DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM) THE MARK IS ABOUT 29.0 MI (46.7 KM) SOUTHEAST OF LAKE WALES, 1.0 MI (1.6 KM) WEST OF THE KISSIMMEE RIVER ON RIVER RANCH BOULEVARD IN SECTION 23, TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MI (41.4 KM) TO THE JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO SOUTH FOR 2.55 MI (4.10 KM) TO THE GUARD HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH BOULEVARD FOR 0.3 MI (0.5 KM) TO THE JUNCTION OF KICCO ROAD (A DIRT ROAD) LEADING SOUTHEAST ON THE RIGHT AND THE MARK ON THE RIGHT, SET IN THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE GROUND AND LEVEL WITH RIVER RANCH BOULEVARD. LOCATED 85.4 FT (26.0 M) EAST-SOUTHEAST OF THE APPROXIMATE CENTERLINE OF TRACTOR TRAIL (A DIRT ROAD LEADING SOUTH), 55.9 FT (17.0 M) SOUTH OF THE APPROXIMATE CENTERLINE OF RIVER RANCH BOULEVARD, 50.8 FT (15.5 M) WEST-SOUTHWEST OF POWER POLE NUMBER 3717-1, 20.1 FT (6.1 M) EAST OF KICCO ROAD (A DIRT ROAD LEADING SOUTHEAST), 1.0 FT (0.3 M) WEST OF A BARBWIRE FENCE LINE AND 0.8 FT (24.4 CM) WEST OF A CARSONITE WITNESS POST.			
Actual Misclosure:		1 mm				
						

LKBA3B		Elevation:	46.03 ft	(NAVD 88)	47.23 ft	(NGVD 29)
Bench Mark 1:	X 460		55.47 ft	(NAVD 88)	N/A ft	(NGVD 29)
Bench Mark 2:	Y 460		55.00 ft	(NAVD 88)	N/A ft	(NGVD 29)
Monitoring Well:	LKBA3B		50.59 ft	(NAVD 88)	51.80 ft	(NGVD 29)
Concrete Pad:	LKBA3B		46.61 ft	(NAVD 88)	47.82 ft	(NGVD 29)
Ground Elevation:	LKBA3B		46.32 ft	(NAVD 88)	47.52 ft	(NGVD 29)
Length of Run:	1.37 km	To Reach LKBA3B:				
Max Allowable Misclosure:		9 mm	TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MILES TO THE JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO SOUTH FOR 2.55 MI TO THE GUARD HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTHERLY AND WESTERLY ON RIVER RANCH BOULEVARD FOR 0.8 MI (0.5 KM) TO WHERE THE ROAD TEES (MARINA PARKING). MAKE LEFT AND HEAD NORTH FOR +/- 200 FEET TO GATE. CONTINUE THROUGH GATE AND HEAD NORTHEASTERLY FOR 0.15 MILE TO THE MARK ON NORTH SIDE OF MONITORING WELL LKBA3B, SET IN THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE GROUND. LOCATED 12.0 FEET NORTH OF CENTERLINE OF 1 FOOT DIAMETER GREY PVC PIPE FOR MONITORING WELL, 163.60 FEET NORTHEAST OF PK NAIL AND DISK ON NORTH SIDE OF 1 FOOT DIAMETER PALM TREE, 9.7 FEET NORTHEAST OF NORTHWEST YELLOW BALLARD POST. MAGNET SET 1 FOOT NORTH OF MONUMENT.			
Actual Misclosure:		1 mm				
						

The combination of Second-Order, Class II methods and Third-Order fiberglass level rods produced errors of closure within the FGCS standard for Second-Order, Class II geodetic leveling. The data gathered during this project has been submitted to Mr. Ronnie Taylor, NGS Advisor for the State of Florida for further analysis and recommendations.

SURVEYOR'S CERTIFICATION

In my professional opinion, this report of survey meets applicable portions of the Minimum Technical Standards set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 61-G17, Florida Administrative Code. This report is prepared for the sole and specific use of the South Florida Water Management District and is not assignable.

NICK MILLER, INC.
DBPR Authorization No. 4318

March 7th, 2007
Date of Survey

By: _____
Stephen M. Gordon, PSM
Professional Surveyor and Mapper
State of Florida
Certificate No. 5974

1078.026

LKBA3B

SPUMD

1078

MONITORING WELL

- SET FOURED-IN-PLACE CONCRETE MONUMENT
w/ SPUMD BRASS DISK
- SET MAGNET 1' NORTH OF MONUMENT

STAMPED LKBA3B
2007

TIES

- SET MONUMENT 12.0' NORTH OF \varnothing 1' DIA. GREY PVC PIPE FOR MONITORING WELL LKBA3B.
- SET MONUMENT 163.0' NE OF PRNHIL & DEK ON NORTH SIDE OF 1' DIA. PALM TREE.
- SET MONUMENT 9.7' NE OF NEW YELLOW BALLARD POST.

COORDINATESMONITORING WELL

N. $27^{\circ} 46' 24''$ N. 1250346.016 ft
W. $81^{\circ} 11' 23''$ E. 594817.529 ft

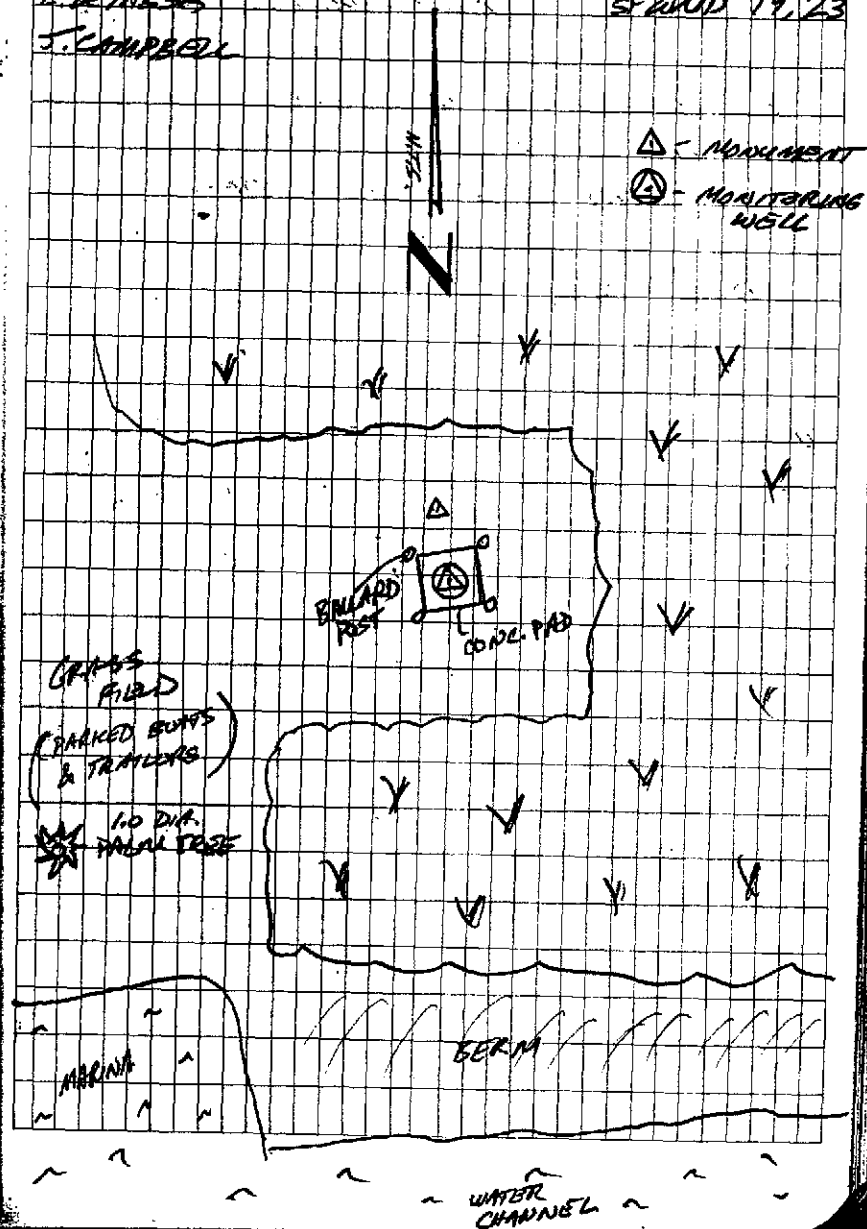
MONUMENT

N. $27^{\circ} 46' 24''$ N. U
W. $81^{\circ} 11' 23''$ E. U

THUR. FEB. 15, 2007

E. DETRETSIS
J. CAMPBELL

SPUMD 19.23



1078.026

LKBA3A

SFUND

MONITORING WELL

- NGS BENCHMARK Y460 USED
FOR MONITORING WELL.

REF: NGS DATA SHEET FOR TO REACH
DESCRIPTION AND COORDINATES

LKBA3A Well site

COORDINATES:

MONITORING WELL

N. 27° 46' 09"

N. 1248835.337 ft

W. 81° 11' 52"

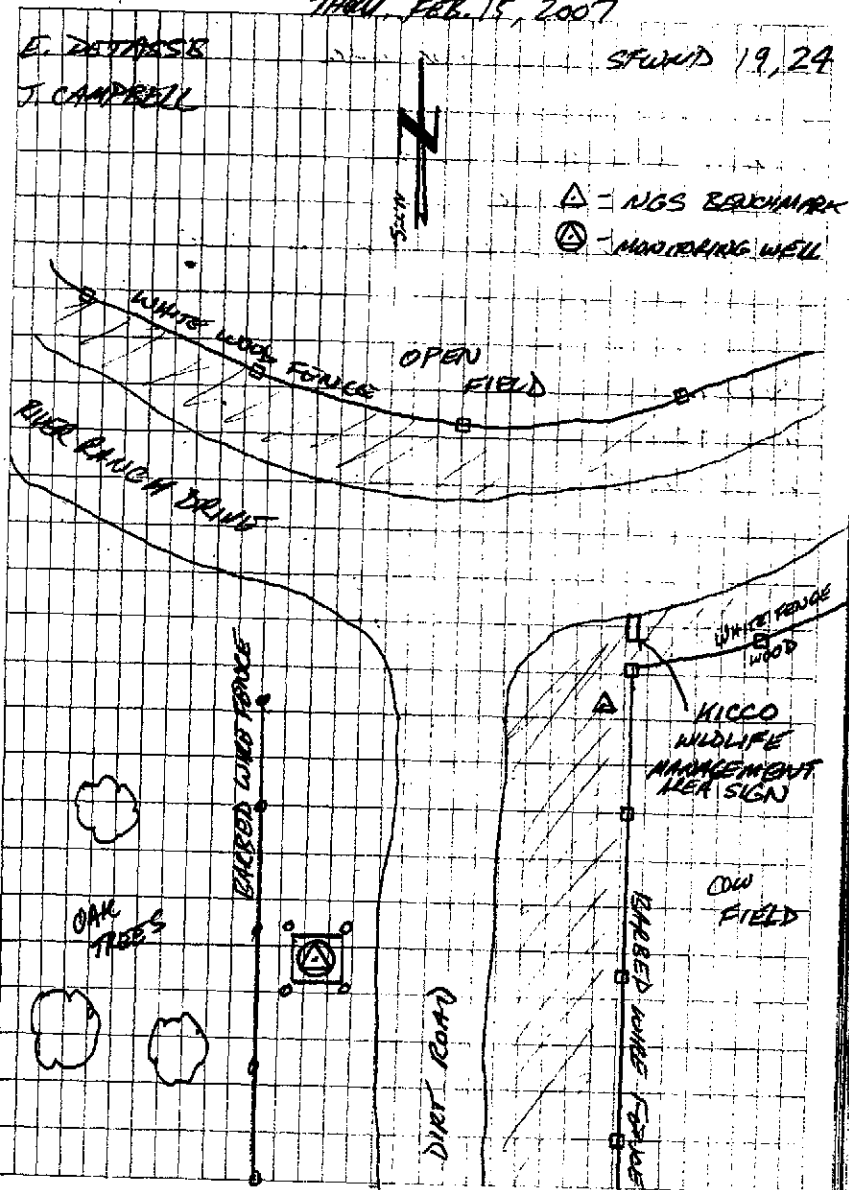
E. 592210.219 ft

THRU FEB. 15, 2007

E. DETHASSE

J. CAMPBELL

SFUND 19, 29



1078-026

LKBA2B

SEUMID

THUR. FEB. 15, 2007

MONITORING WELL

E. DETASSIS

SEUMID 19, 25

J. CAMPBELL

- NGS BENCHMARK Z 460 USED FOR
MONITORING WELL

REF: NGS DATA SHEET FOR TO REACH
DESCRIPTION AND COORDINATES.

LKBA2B Well site

COORDINATES

MONITORING WELL

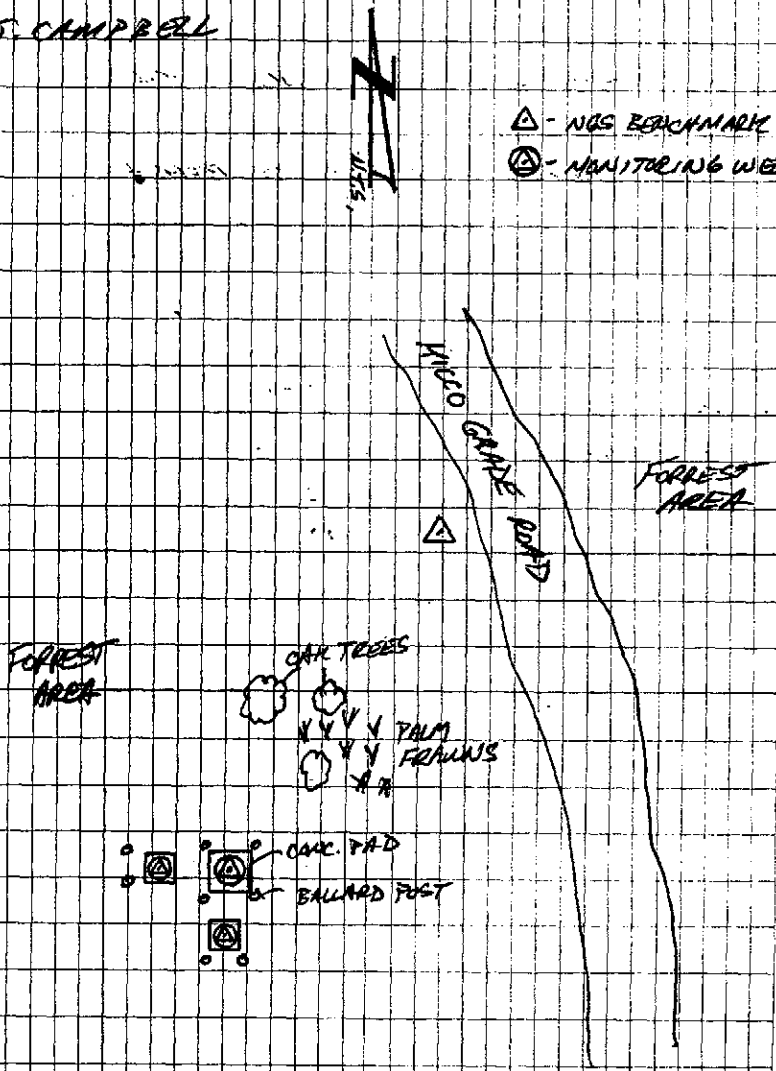
N. 27° 42' 57"

N. 1241254.47 PL

W. 81° 11' 02"

E. 596690.23 PL

- △ - NGS BENCHMARK
- ⊙ - MONITORING WELLS



1078.026

LKBAZA

SEWARD

MONITORING WELL

- SET FOURED-IN-PLACE CONCRETE MONUMENT
W/ BRASS DISK.
- SET MAGNET 1' NORTH OF MONUMENT

STANDED LKBAZA

2007

TIES

- SET MONUMENT 7.2' SOUTH OF 1' DIA. ~~GRAY~~ WHITE
PVC PIPE FOR MONITORING WELL.
- SET MONUMENT 5.2' SE OF SW CORNER POST
- " " 5.2' SW OF SE " "

(COORDINATES)

MONITORING WELL

N. 27° 44' 47"

N. 12A0549.747 R₆

W. 81° 11' 18"

E. 595251.640 R₆

MONUMENT

N. 27° 44' 47"

N. "

W. 81° 11' 18"

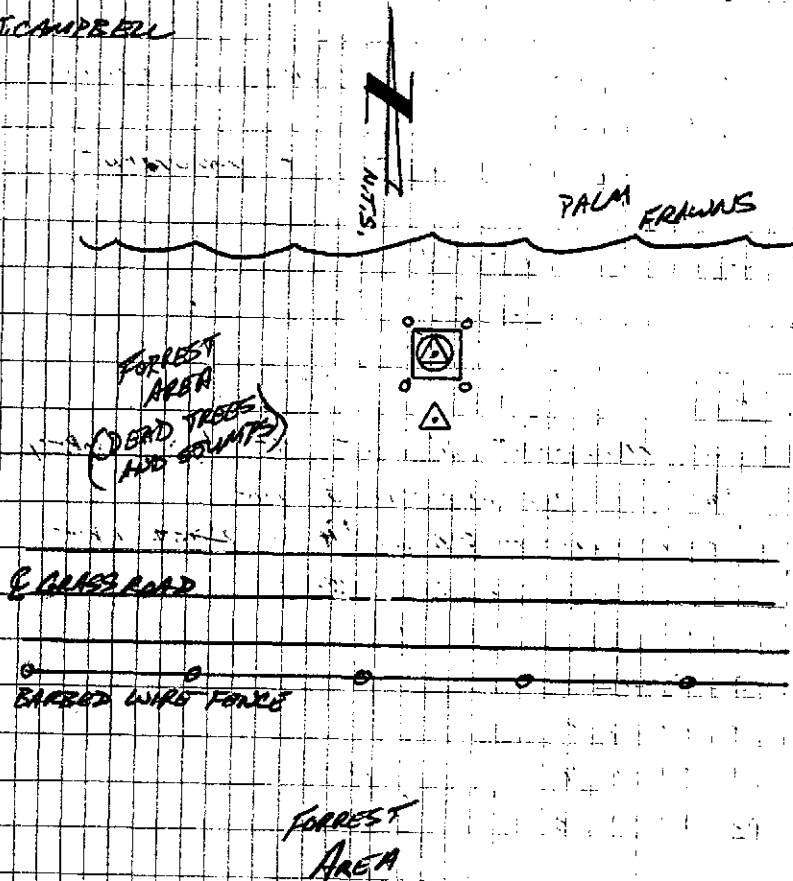
E. "

THRU: FEB. 15, 2007

SEWARD 19, 26

E. DETASSIS

J. CAMPBELL



1078.

LEVEL RUN

A 461 → KR 1560

	+	H.I.	-
1	1.5342 [67.71]		1.1720 [67.92]
2	1.8670 [69.15]		1.4504 [69.20]
3	1.3673 [69.71]		1.6113 [69.52]
4	1.6283 [56.83]		1.4823 [59.34]

SFWMD

J. CAMPBELL

TUE. MAR. 6, 2007

G. RAGER III

SFWMD-19,52

N. KHAN

ELEV.

DESC.

15.910M

A 461 BM

60 D NAIL SET ON WEST SIDE OF KICCO RD.

" " "

" " "

" " "

" " "

" " "

16.5908M

KR 1560 BM

TOTAL DIST: 0.52937 KM

0.2MM ✓

1078.

LEVEL RUN

KR1560 → Z 460

	+	H.I.	-
1	1.6629 69.03		1.5044 68.83
2	1.3848 69.84		1.4060 69.74
3	1.4908 67.92		1.6081 68.32
4	1.6104 23.66		1.7824 26.11

SFWMD J. CAMPBELL
G. RAGER III
N. KHAN

TUE. MAR. 6, 2007

SFWMD-1953

ELEV. DIESE
16.591M KR1560 BM

60 D. NAIL SET ON WESTSIDE OF KICCO RD.

" " "

" " "

" " "

" " "

" " "

Z 460 BM

16.4391M

TOTAL DIST: 0.46344 KM

1.1 MM ✓

1078.

LEVEL RUN

J. CAMPBELL

TUE. MAR. 6, 2007

SEWMD

G. RAGER III

SEWMD 19,54

MONITORING WELL LKBA2B

N. KHAN

<u>+</u>	<u>H.F.</u>	<u>-</u>	<u>ELEV.</u>	<u>DESC.</u>
5.54'	105.54		100'	Z 460 BM
		5.12'	100.42'	GROUND
		4.77'	100.77'	CONC. PAD
		1.25'	104.29'	CONTRACTORS MARK LKBA2B
		5.13'	100.41'	GROUND
		4.53'	101.01'	CONC. PAD
		4.06'	101.48'	CONTRACTORS MARK LKBA2B(SOUTH)
		5.19'	100.35'	GROUND
		4.66'	100.88'	CONC. PAD
		2.60'	102.94'	CONTRACTORS MARK LKBA2B (WEST)
2.44'	105.38'		102.94'	CONTRACTORS MARK LKBA2B (WEST)
		3.90'	101.48'	CONTRACTORS MARK (SOUTH)
		1.09'	104.29'	CONTRACTORS MARK
		5.38'	100'	Z 460 BM
			0.00'	✓

1078.

LEVEL RUN

KR1560 → LKBA2A

SFWM

J. CAMPBELL

TUE. MAR. 6, 2007

G. RAGER III

SFWM-19,55

NIKHAN

+	H.I.	-	ELEV.	DESC.
1.7063		1.4816		KR1560 BM
[62.41]		[62.72]		I.R. SET IN WOODED AREA.
1.5290		1.4804		" "
2 [61.72]		[60.66]		" "
1.5804		1.5752		" "
3 [68.70]		[68.67]		" "
1.7731		1.5746		" "
4 [50.27]		[47.52]		" "
1.6816		1.7320		" "
5 [19.70]		[21.98]		" "
1.6804		1.6565		" "
6 [9.79]		[8.07]		LKBA2A BM

17.0415M

TOTAL DIST: 0.54221 KM

1078.

LEVEL RUN

MONITORING WELL LKBAZA

SFWMD

J. CAMPBELL TUE. MAR. 6, 2007

G. RAGER III

SFWMD-19,56

N. KHAN

<u>+</u>	<u>H.I.</u>	<u>-</u>	<u>ELEV.</u>	<u>DESC.</u>
5.100'	105.100'		100'	LKBAZA BM
		4.800'	100.300'	GROUND
		4.530'	100.570'	CONC. PAD
		1.655'	103.445'	CONTRACTORS MARK LKBAZA
1.270'	104.715'			CONTRACTORS MARK LKBAZA
		4.150'	100.565'	CONC. PAD.
		4.715'	100'	LKBAZA BM
				0.00 ✓

1078.

LEVEL RUN

LKBAZA → KR 1560

J. CAMPBELL

TUE. MAR. 6, 2007

SFWMD G. RAGER III

SFWMD-19,57

N. KHAN

	+	H.I.	-
1	1.6147 [47.54]		1.6739 [47.79]
2	1.5926 [67.30]		1.7636 [67.68]
3	1.3272 [68.73]		1.2981 [68.96]
4	1.5812 [65.29]		1.8304 [61.38]
5	[]		[]
6	[]		[]

VOID

ELEV.	DESC.
17.0405M	LKBAZA BM I.R. SET IN WOODED AREA.
"	"
"	"
"	"
"	"
"	"
16.5912	KR 1560 BM

TOTAL DIST: 0.49467KM
0.2MM ✓

1078.

LEVEL RUN

MONITORING WELL LKBA3B

<u>+</u>	<u>H.I.</u>	<u>-</u>
5.095'	105.095'	
		4.805'
		4.510'
		0.530'

0.820'	105.385'	
		4.800'
		5.375'

MONITORING WELL LKBA3A

4.225'	104.225'	
		3.940'
		3.765'
		0.380'

VOID

0.780'	104.625'	
		4.185'
		4.640'

J. CAMPBELL TUE. MAR. 6, 2007

SFWMD G. RAGER III

SFWMD-19,58

N. KHAN

<u>ELEV.</u>	<u>DESC.</u>
100'	LKBA3B BM
100.290'	GROUND
100.585'	CONC. PAD
104.565'	CONTRACTORS MARK LKBA3B

	CONTRACTORS MARK LKBA3B
100.585'	CONC. PAD
100.01'	LKBA3B BM
	0.01' ✓

100'	LKBA3A BM.
100.285'	GROUND
100.460'	CONC. PAD
103.845'	CONTRACTORS MARK LKBA3A

	CONTRACTORS MARK LKBA3A
100.440'	CONC. PAD
99.985'	LKBA3A BM

1078.

LEVEL RUN

J. CAMPBELL

TUE. MAR. 6, 2007

SFWMD

G. RAGER III

SFWMD-19,59

MONITORING WELL LKBA3A

N. KHAN

<u>+</u>	<u>H.I.</u>	<u>-</u>	<u>ELEV.</u>	<u>DESC.</u>
4.750'	104.750'		100'	LKBA3A BM
		4.450'	100.300'	GROUND
		4.300'	100.450'	CONC. PAD
		0.885'	103.865	CONTRACTORS MARK LKBA3A
0.763'	104.625'			CONTRACTORS MARK LKBA3A
		4.180'	100.445'	CONC. PAD
		4.630'	99.995'	LKBA3A BM
				0.005' ✓

1078.

LEVEL RUN

J. CAMPBELL

WED. MAR. 7, 2007

SFWMD

G. RAIGER III

SFWMD-19,61

X 460 → Y460 (CONT'D)

N. KHAN

	+	H.I.	-	ELEV.	DESC.
8	1.4835 [69.61]		1.5379 [69.65]		60.0 MAIL SET ON EAST SIDE OF RIVER RANCH RD.
					" " " "
9	1.5351 [69.84]		1.7604 [69.63]		" " " "
					" " " "
10	1.4887 [59.68]		1.3396 [61.88]	16.7628	Y460 BM

TOTAL DIST: 1.36623 KM
1.2 MM ✓

1078.

LEVEL RUN

J. CAMPBELL

WED, MAR. 7, 2007

SFWMD

E. RAGER, III

SFWMD-19,62

Y460 → LKBA3B

N. KHAN

	+	H. I.	-	ELEV.	DESC.
	1.7446		1.6292	16.764M	Y. 460 BM
1	43.88		43.74		60D. NAIL SET ON SOUTH SIDE OF RIVER RANCH RD.
	1.5297		1.5461		" " " "
2	69.30		69.37		" " " "
	1.3402		1.6815		" " " "
3	69.61		69.53		" " " "
	1.6664		1.5770		" " " "
4	69.52		69.37		" " " "
	1.5501		1.9478		" " " "
5	69.59		69.50		" " " "
	1.0310		2.4582		" " " "
6	69.19		69.19		" " " "
	1.2093		1.8991		" " " "
7	69.68		69.70		" " " "

1078.

LEVEL RUN

J. CAMPBELL

WED. MAR. 7, 2007

SFWMD

G. RAGER ~~III~~

SFWMD-19, 63

Y460 → LKBA3B (CONT'D)

N. KHAN

+	H.I.	-	ELEV.	DESC.
1.4291		1.4953	14.0301M	IRI SET IN COW PASTURE
6.25		6.53		LKBA3B BM
TOTAL DIST: 0.93397 KM				

LKBA3B → Y460

+	H.I.	-	ELEV.	DESC.
1.9311		1.1466	14.0301M	LKBA3B BM
68.85		69.46		BOD. NAIL SET ON NORTH SIDE OF RIVER RANCH RD.
1.7648		1.4014		"
68.71		68.55		"
1.7311		1.5304		"
69.91		69.42		"
1.6396		1.4825		"
69.26		69.13		"
1.5412		1.4259		"
69.49		69.19		"

1078.

LEVEL RUN

J. CAMPBELL

WED. MAR. 7, 2007

SFWMD

G. RAGER III

SFWMD-19, 64

LKBA3B → Y460 (CONT'D)

N. KHAN

	<u>H.I.</u>	<u>-</u>	<u>ELEV.</u>	<u>DESC.</u>
	1.5961			BOD NAIL SET ON SOUTH SIDE OF RIVER RANCH RD.
6	69.49	1.6556		"
		69.75		"
	1.9464			"
7	52.47	1.6211		"
		54.35		"
	1.5206			"
8	9.75	1.6735		Y460. BM
		8.46	16.7639M	

TOTAL DIST: 0.95622 KM

0.1 MM ✓



U . S D E P A R T M E N T O F C O M M E R C E

**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL GEODETIC SURVEY**

Charles W. Challstrom
Director

PROJECT REPORT
Second Order Class II Leveling and Mark Setting

March 2007

Ronnie L. Taylor
National Geodetic Survey, NOAA
National Ocean Service Advisor, Florida

PROJECT TITLE

Polk County Monitoring Wells

LINE TITLE FOR L10785

**ESTABLISH BENCH MARK NEAR MONITORING WELLS
IN POLK COUNTY, FLORIDA**

STARTING HEIGHT IS BASED ON NAVD 88 HEIGHTS.
NOTE: COLLIMATION STORED IN ELECTRONIC INSTRUMENT.
NOTE: LATITUDE AND LONGITUDE WAS OBTAINED FROM
SUB-METER GPS OBSERVATIONS.

JOB CODE AA



PROJECT REPORT

I. INTRODUCTION

A. Authority

Bench Mark Setting and Leveling along this level route was authorized by a contract between the South Florida Water Management District and Nick Miller Incorporated.

B. Purpose

The purpose of this leveling project was to establish precise NAVD 88 heights near an existing Ground Water Monitoring Well for use by the South Florida Water Management District and the citizens of the State of Florida.

II. PROJECT AREA

A. Locality

This project is located in Polk County, Florida.

B. Terrain

The terrain is flat to rolling.

C. Specifications

FGCS Specifications and Procedures to Incorporate Electronic Digital/Bar-Code Leveling Systems were followed.

D. Monumentation

Monuments are set in concrete with a South Florida Water Management survey disk. A Magnetic device was either placed in or near the monuments. Please see descriptions for magnetic placements.

E. Instrumentation

One LEICA DNA03 Electronic Digital Level Instrument was used along with one set of LEICA Digital/Bar-Code Leveling Rods.



III. COMMENTS

A. Reconnaissance

See the To-Reach Descriptions included, for a clear access to all L10785 Stations.

B. Specifications

There were no deviations from the FGCS Specifications and Procedures to Incorporate Electronic Digital/Bar-Code Leveling Systems.

C. Route

The leveling route varied for each leveling part.

STARTING ELEVATION BASED ON NAVD 88 HEIGHTS PUBLISHED FROM THE NGS DATABASE. NOTE: COLLIMATION STORED IN ELECTRONIC INSTRUMENT. NOTE: LATITUDE AND LONGITUDE WAS DERIVED FROM NGS DATA SHEETS AND GPS SUB-METER OBSERVATIONS

This is a new second order, class 2 level run by Nick Miller, Inc.

D. Problems

No problems occurred during this project.



IV. Closures

Loop closures were computed and are included in the package for L10785.

A. Status

All records will be kept at Nick Miller, Inc. For information on these records please contact Stephen M. Gordon at (561)627-5200.

For question concerning the collection or processing of this data please call Ronnie L. Taylor or Randy Wegner at (850)245-2606.

B. Attachments

The following are included in this package:

Hardcopy of the ABS & BOK files and Quad Maps

Disk containing the following data files is attached to the front of the folder containing the ABS and BOK Files:

- DSC
- BLU
- HGZ
- ABS
- BOK
- LST RAW
- BACKUP.GSI
- BACKUP.RAW (RAW DATA UNTOUCHED)
- PHOTO'S
- LST

-*- FIELD ABSTRACT -*-

070306-070306 HGZ L10785 8.0 MM ORDER 2 CLASS 2 PAGE 1
 SOUTH FLORIDA WATER MANAGEMENT DISTRICT
 ESTABLISH BENCH MARK NEAR MONITORING WELL LKBA2A AND LKBA2B
 LOCATED IN POLK COUNTY, FLORIDA

FROM TO	START	F/B	DIST TOTAL (KM)	ELEV DIFF (MT)	-(F+B) TOTAL (MM)	MEAN DIFF FLD ELEV (MT)	I C
0149 KR 1560						16.59100	
0149 KR 1560	3061305	F	0.54	0.45052 *	-0.10	0.45047	1
0151 LKBA2A	3061430	B	0.50	-0.45042 *			1
	SL 1		0.50		-0.10	17.04147	
0149 KR 1560	3061020	B	0.53	0.68102 *	0.00	-0.68102	1
0148 A 461	SL 1		0.53		0.00	15.90998	
0149 KR 1560	3061120	F	0.46	-0.15198 *	0.00	-0.15198	1
0150 Z 460			0.46		0.00	16.43902♀	

ELEVATION REJECTION AND ERROR CODES

- C - section elevation difference was rejected for cause ie. *43* record rejection code set to "F"
- R - section elevation difference was rejected by Halperin rejection algorithm
- @ - section elevation difference does not include refraction correction
- * - section elevation difference does not include rod correction

♀

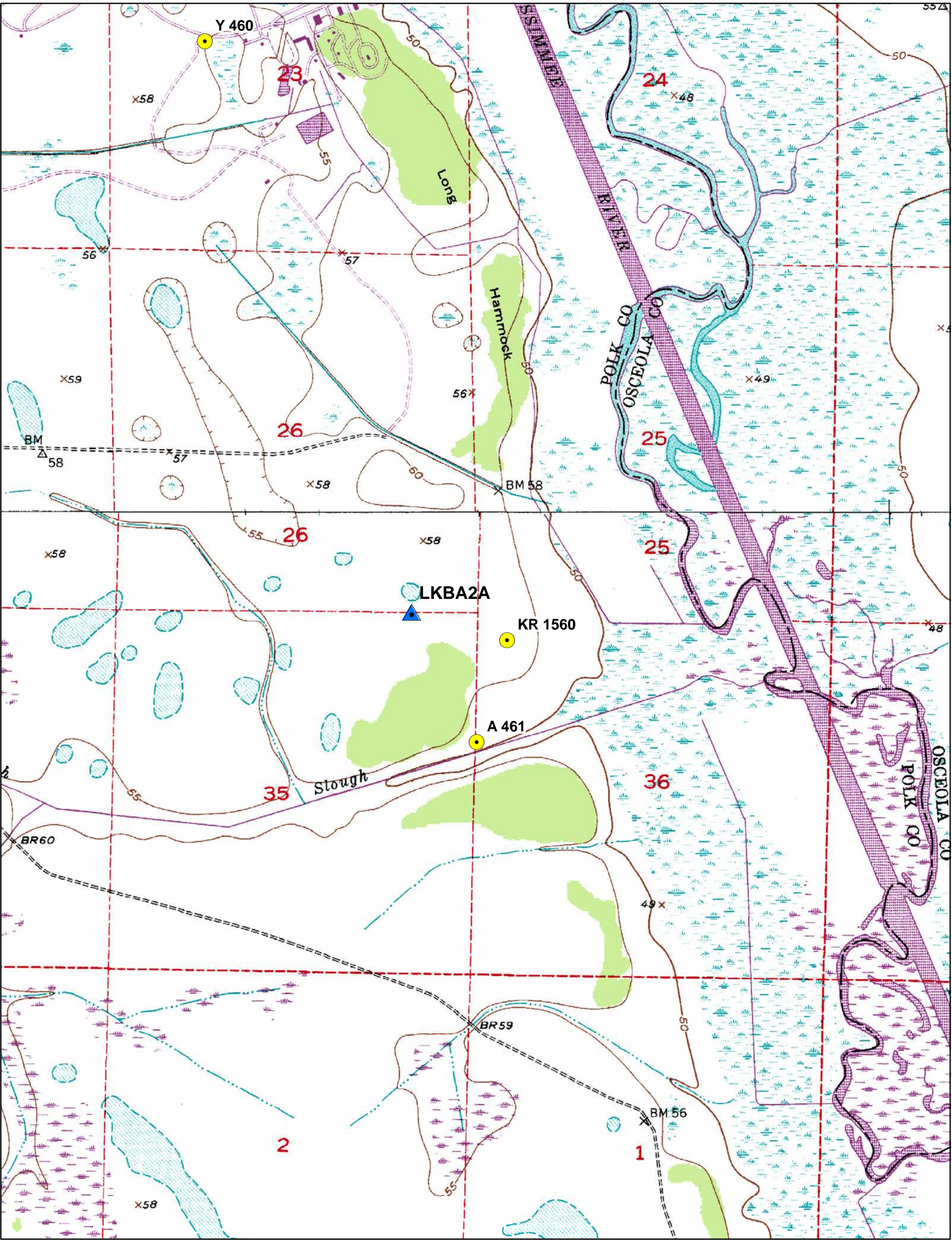
INSTRUMENT CODE	INSTRUMENT	RODS
1	243 - 331132	396 - 555 396 - 666

♀
 LEVEL LINE SECTION RUNNING TREE




0149 (0151 0148)
 0150♀

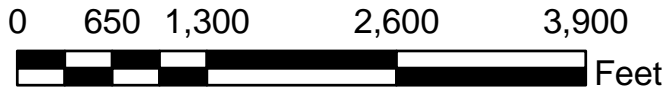
FROM	TO	N. LATITUDE	W. LONGITUDE	FIELD DISTANCE	VS. COMPUTED
0149	0149	274442	0811102	0.00	0.00
0149	0151	274447	0811118	0.50	0.46
0149	0148	274427	0811107	0.53	0.48
0149	0150	274456	0811101	0.46	0.43♀

SECTION FROM TO ERROR MESSAGES



Legend

-  New Benchmark
-  1st Order Control
-  2nd Order Control



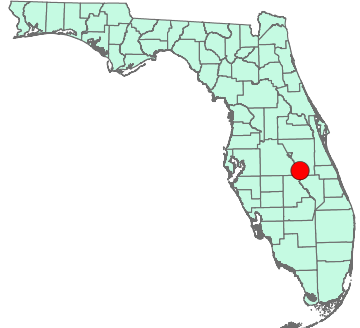
1 inch equals 1,320 feet

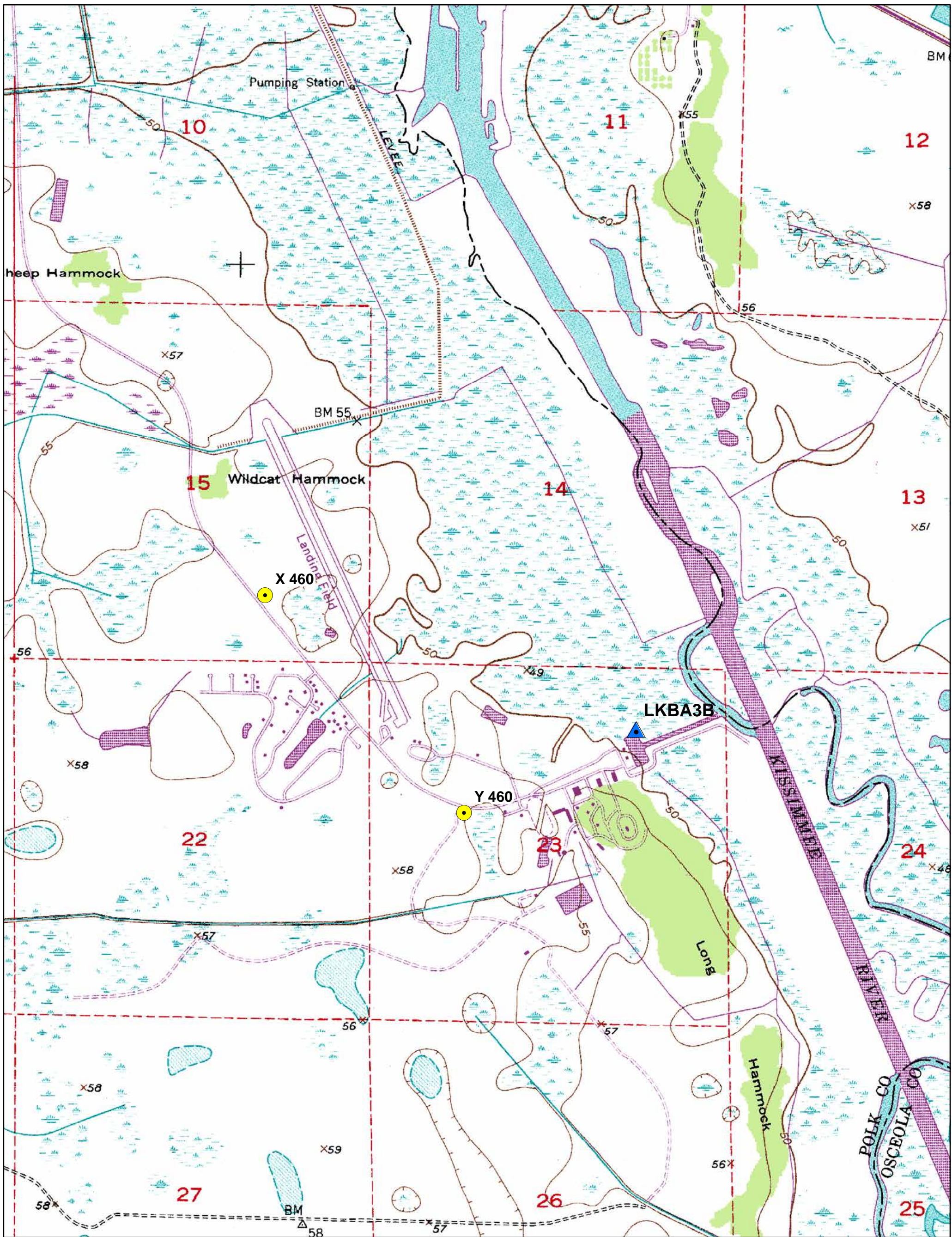
LKBA2A

South Florida Water Management District






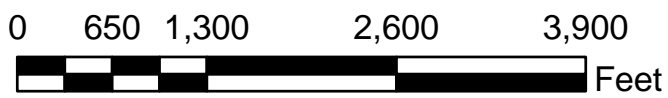
Location Sketch





Legend

-  New Benchmark
-  1st Order Control
-  2nd Order Control

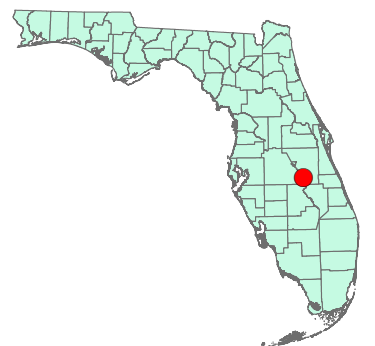


1 inch equals 1,320 feet

LKBA3B

South Florida Water Management District

Location Sketch



LKBA2A



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Looking at the well facing east

LKBA2A



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Close-up of the showing the contractor's markings

LKBA2A



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Looking at the benchmark facing south

LKBA2A



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: A top view of the benchmark

Identification_Information:

Citation:

Citation_Information:

Originator: Nick Miller, Inc. (comp.)
 Originator: Stephen M. Gordon, PSM(ed.)
 Publication_Date: 20070315
 Publication_Time: Unknown
 Title: S. F. W. M. D. Monitoring Well LKBA2A
 Edition: 1
 Series_Information:
 Publication_Information:
 Publication_Place: West Palm Beach, FL
 Publisher: South Florida Water Management District
 Larger_Work_Citation:
 Citation_Information:
 Originator: Stephen M. Gordon, PSM
 Series_Information:
 Publication_Information:

Description:

Abstract:

South Florida Water Management District Monitoring Well LKBA2A.

Purpose:

To determine as built dimensions relative to NAVD 88 and NGVD 29 vertical datum

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 20070315

Range_of_Dates/Times:

Multiple_Dates/Times:

Currentness_Reference: Publication Date

Status:

Progress: Complete

Maintenance_and_Update_Frequency: Unknown

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -081D 11M 18.0S

East_Bounding_Coordinate: -081D 11M 01.0S

North_Bounding_Coordinate: +27D 44M 56.0S

South_Bounding_Coordinate: +27D 44M 27.0S

Keywords:

Theme:

Theme_Keyword_Thesaurus: Tri - Service Spatial Data Standard

Theme_Keyword: Improvement

Theme_Keyword: Geodesic/Cadastral

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: S. F. W. M. D. Monitoring Well LKBA2A

Place_Keyword: Sec. 35, Twp. 31 S., Rge. 31 E

Place_Keyword: Polk County, Florida

Place_Keyword_Thesaurus: Geographic Names Information System

Place_Keyword: Florida

Place_Keyword: Polk County

Place_Keyword: FORT KISSIMMEE NW

Stratum:

Temporal:

Access_Constraints: None

Use_Constraints: None

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Howard Ehmke

Contact_Organization: South Florida Water Management

District

Contact_Organization_Primary:

Contact_Position: Project Manager

Contact_Address:

Address_Type: mailing and physical address

Address: 3301 Gun Club Road

LKBA2A.gen
City: West Palm Beach
State_or_Province: Florida
Postal_Code: 33406
Country: USA
Contact_Voice_Telephone: 561-682-6672
Contact_Electronic_Mail_Address: hehmke@sfwmd.gov

Security_Information:

Cross_Reference:

 Citation_Information:

 Series_Information:

 Publication_Information:

Data_Quality_Information:

 Attribute_Accuracy:

 Attribute_Accuracy_Report: N/A

 Logical_Consistency_Report:

 Horizontal data was established using mapping grade GPS equipment. Vertical data was established using NGS control points A 461, KR 1560 & Z 460. Coordinates are in the Florida State Plane Coordinate System, East Zone, NAD 83/90. Elevations are in the NAVD 88 and the NGVD 29.

 Completeness_Report:

 Horizontal location taken at site benchmark

 Lat. +27D 44M 47.0S

 Long. -081D 11M 18.0S

 N 1,240,549 ft

 E 595,251 ft

 Site Benchmark.

 "LKBA2A" is a SFWMD brass disk set concrete at LKBA2A site.

 TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MILES TO THE JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO SOUTHEAST FOR 2.55 MILES TO THE GUARD HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH BOULEVARD FOR 0.3 MILE TO THE JUNCTION OF KICCO ROAD ON THE RIGHT, TURN RIGHT ON KICCO ROAD (NEED SFWMD L KEY) AND GO SOUTHEAST FOR 0.2 MILE TO FOUR SETS OF DOUBLE UNLOCKED GATES, CONTINUE SOUTH ON KICCO ROAD FOR 0.5 MILES TO ANOTHER UNLOCKED METAL GATE, CONTINUE SOUTHEAST ON KICCO ROAD FOR 0.2 MILE TO THE JUNCTION OF ROAD ON THE LEFT, CONTINUE SOUTH-SOUTHEAST ON KICCO ROAD FOR 1.4 MILES TO AN ENTRANCE OF A BRIDGE. +/- 200 FEET BEFORE BRIDGE MAKE RIGHT AND HEAD WESTERLY THROUGH GRASSY AREA TO DIRT ROAD ON EAST SIDE OF BARBED WIRE FENCE. MAKE RIGHT AND HEAD NORTH ON DIRT ROAD FOR 0.3 MILE TO BEND. MAKE LEFT AND HEAD WEST ON DIRT ROAD FOR 0.1 MILE TO MARK ON RIGHT. MONUMENT IS +/- 150 FEET NORTH OF DIRT ROAD ON SOUTH SIDE OF MONITORING WELL LKBA2A. SET IN THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE GROUND. LOCATED 7.2 FEET SOUTH OF CENTERLINE OF 1 FOOT DIAMETER WHITE PVC PIPE FOR MONITORING WELL, 5.2 FEET SOUTHEAST OF SOUTHWEST BALLARD POST, 5.2 FEET SOUTHWEST OF SOUTHEAST BALLARD POST. MAGNET SET 1 FOOT NORTH OF MONUMENT. Benchmark Elevation is 55.91 feet (NAVD 88). Ground Elevation is 56.21 feet (NAVD 88).

LKBA2A.gen

Concrete Pad Elevation is 56.48 feet (NAVD 88).
Well Elevation for LKBA2A is 59.36 feet (NAVD 88)
as observed at the existing reference mark for the well
which is a red mark at the top of a PVC pipe at the
center of the well.

NGVD 29 minus NAVD 88 equals 1.181 feet.

The NGVD 1929 value was taken from the NGS

VERTCON conversion program.

Vertical Control used A 461 El. 15.91 (m) (NAVD 88),

KR 1560 El. 16.591 (m) (NAVD 88), Z 460 El. 16.438 (m)
(NAVD 88).

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

The horizontal position of Site Benchmark "LKBA2A"
was established using a mapping grade GPS receiver
(Trimble Pro XR in accordance with the Florida Minimum
Technical Standards (Chapter 61G17-6, Florida
Administrative Code).

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Value: 3 to 5 meters

Horizontal_Positional_Accuracy_Explanation: The intended

positional accuracy for this survey is 3 to 5 meters more or less.

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report:

A level line was run originating on benchmark A 461
and terminating at benchmark Z 460 with an allowable
error of 8mm times the square root of the distance
levelled (in kilometers).

Quantitative_Vertical_Positional_Accuracy_Assessment:

Vertical_Positional_Accuracy_Value: 0.001 m

Vertical_Positional_Accuracy_Explanation: NAVD 88 Level

Loop, 0.001 m closure in 0.615 km, max. allowed 0.006m.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Series_Information:

Publication_Information:

Larger_Work_Citation:

Citation_Information:

Series_Information:

Publication_Information:

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Range_of_Dates/Times:

Multiple_Dates/Times:

Process_Step:

Process_Description:

The horizontal work was performed using a Trimble
Pro XR GPS receiver (mapping grade). The level
loop was run with a Leica DNA03 digital level.

Process_Date: 20070315

Process_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Organization_Primary:

Contact_Address:

Spatial_Data_Organization_Information:

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Geographic:

Planar:

Map_Projection:

Albers_Conical_Equal_Area:

Azimuthal_Equidistant:

Equidistant_Conic:

Equiangular:

General_Vertical_Near-sid_Perspective:

- LKBA2A.gen
- Gnomonic:
- Lambert_Azimuthal_Equal_Area:
- Lambert_Conformal_Conic:
- Mercator:
- Modified_Stereographic_for_Alaska:
- Miller_Cylindrical:
- Oblique_Mercator:
- Oblique_Line_Point:
- Orthographic:
- Polar_Stereographic:
- Polyconic:
- Robinson:
- Sinusoidal:
- van_der_Grinten:
- Space_Oblique_Mercator_(Landsat):
- Stereographic:
- Transverse_Mercator:
- van_der_Grinten:
- Grid_Coordinate_System:
- Universal_Transverse_Mercator:
- Transverse_Mercator:
- Universal_Polar_Stereographic:
- Polar_Stereographic:
- StatePlane_Coordinate_System:
- Lambert_Conformal_Conic:
- Transverse_Mercator:
- Oblique_Mercator:
- Oblique_Line_Point:
- Polyconic:
- ARC_Coordinate_System:
- Equi_rectangular:
- Azimuthal_Equidistant:
- Local_Planar:
- Planar_Coordinate_Information:
- Coordinate_Representation:
- Distance_and_Bearing_Representation:
- Local:
- Geodetic_Model:
- Vertical_Coordinate_System_Definition:
- Altitude_System_Definition:
- Depth_System_Definition:
- Entity_and_Attribute_Information:
- Detailed_Description:
- Entity_Type:
- Attribute:
- Attribute_Domain_Values:
- Attribute_Value_Accuracy_Information:
- Overview_Description:
- Distribution_Information:
- Distributor:
- Contact_Information:
- Contact_Person_Primary:
- Contact_Organization_Primary:
- Contact_Address:
- Standard_Order_Process:
- Digital_Form:
- Digital_Transfer_Information:
- Digital_Transfer_Option:
- Online_Option:
- Computer_Contact_Information:
- Network_Address:
- Download_Instructions:
- Offline_Option:
- Recording_Capacity:
- Availability_Period:
- Time_Period_Information:
- Single_Date/Time:
- Range_of_Dates/Times:
- Multiple_Dates/Times:
- Metadata_Reference_Information:

Metadata_Date: 20070315

Metadata_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Stephen M. Gordon

Contact_Organization: Nick Miller, Inc.

Contact_Organization_Primary:

Contact_Position: Project Surveyor

Contact_Address:

Address_Type: mailing and physical address

Address: 2560 RCA Blvd., Suite 105

City: Palm Beach Gardens

State_or_Province: Florida

Postal_Code: 33410

Country: USA

Contact_Voice_Telephone: 561-627-5200

Contact_Facsimile_Telephone: 561-627-0983

Contact_Electronic_Mail_Address: sgordon@nickmillerinc.com

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: 2.0

Metadata_Time_Convention: Local time

Metadata_Access_Constraints: South Florida Water Management District controls

access.

Metadata_Use_Constraints: Per South Florida Water Management District

Metadata_Security_Information:

Metadata_Security_Handling_Description: None

Metadata_Security_Classification: Unclassified

Metadata_Security_Classification_System: Structure



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

COUNTY POLK	PROJECT Hydrology – Polk County Wells	DESIGNATION LKBA2A
SECTION 35	TOWNSHIP 31 SOUTH	RANGE 31 EAST
GEOGRAPHIC INDEX OF QUAD		
Established by <u>Nick Miller Inc.</u> Recovered by	NAME OF QUADRANGLE FORT KISSIMMEE NW	
SURVEYOR <u>Stephen M. Gordon</u> DATE <u>3/07/2007</u>	FIELD BOOK _____ 19 PAGE 26	
HORIZONTAL DATUM: 1927 1983 Other _____ (circle one) ZONE E or W		
STATE PLANE COORDINATES	E 595,252 ft	N 1,240,550 ft
LATITUDE: N 27.74639°	LONGITUDE: W 81.18833°	
VERTICAL DATUM: MSL 1929 1988 Other _____ (circle one)	EL. 55.91 ft	
VERTICAL DATUM: MSL 1929 1988 Other _____ (circle one)	EL. 57.09 ft	
CONTROL ACCURACY: HORIZONTAL 1 2 3 SUB-METER (circle one) VERTICAL 1 2 3		
DESCRIPTION		
<p>To Reach:</p> <p>TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MILES TO THE JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO SOUTHEAST FOR 2.55 MILES TO THE GUARD HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH BOULEVARD FOR 0.3 MILE TO THE JUNCTION OF KICCO ROAD ON THE RIGHT, TURN RIGHT ON KICCO ROAD (NEED SFWMD L KEY) AND GO SOUTHEAST FOR 0.2 MILE TO FOUR SETS OF DOUBLE UNLOCKED GATES, CONTINUE SOUTH ON KICCO ROAD FOR 0.5 MILES TO ANOTHER UNLOCKED METAL GATE, CONTINUE SOUTHEAST ON KICCO ROAD FOR 0.2 MILE TO THE JUNCTION OF ROAD ON THE LEFT, CONTINUE SOUTH-SOUTHEAST ON KICCO ROAD FOR 1.4 MILES TO AN ENTRANCE OF A BRIDGE. +/- 200 FEET BEFORE BRIDGE MAKE RIGHT AND HEAD WESTERLY THROUGH GRASSY AREA TO DIRT ROAD ON EAST SIDE OF BARBED WIRE FENCE. MAKE RIGHT AND HEAD NORTH ON DIRT ROAD FOR 0.3 MILE TO BEND. MAKE LEFT AND HEAD WEST ON DIRT ROAD FOR 0.1 MILE TO MARK ON RIGHT. MONUMENT IS +/- 150 FEET NORTH OF DIRT ROAD ON SOUTH SIDE OF MONITORING WELL LKBA2A. SET IN THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE GROUND. LOCATED 7.2 FEET SOUTH OF CENTERLINE OF 1 FOOT DIAMETER WHITE PVC PIPE FOR MONITORING WELL, 5.2 FEET SOUTHEAST OF SOUTHWEST BALLARD POST, 5.2 FEET SOUTHWEST OF SOUTHEAST BALLARD POST. MAGNET SET 1 FOOT NORTH OF MONUMENT.</p> <p>Benchmarks Used: A 461, KR 1560, Z 460</p> <p>Notable Land marks:</p>		



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

SKETCH

1078.026 LKBAZA SFUND
MONITORING WELL

- SET TOWERED-IN-PLACE CONCRETE MONUMENT W/ BRASS DISK.
- SET MAGNET 1' NORTH OF MONUMENT

STAMPED LKBAZA
2007

TIES

- SET MONUMENT 7.2' SOUTH OF 1" DIA. WHITE PVC PIPE FOR MONITORING WELL
- SET MONUMENT 52' SE OF SW BALLARD POST
- " " 5.2' SW DE SE " "

COORDINATES

MONITORING WELL	
N. 27° 44' 47"	N. 1240549.747 ft
W. 81° 11' 18"	E. 595251.648 ft
MONUMENT	
N. 27° 44' 47"	N. "
W. 81° 11' 18"	E. "

THRU: FEB. 15, 2007
FUND 19, 26

E. WETPASS
J. CAMPBELL

FOREST AREA
(BERT TREES AND GRUNTS)

ROAD

BARBED WIRE FENCE

FOREST AREA



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01



LKBA2B

West Well



LKBA2B Well

South Well

Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Looking at the wells facing north

LKBA2B

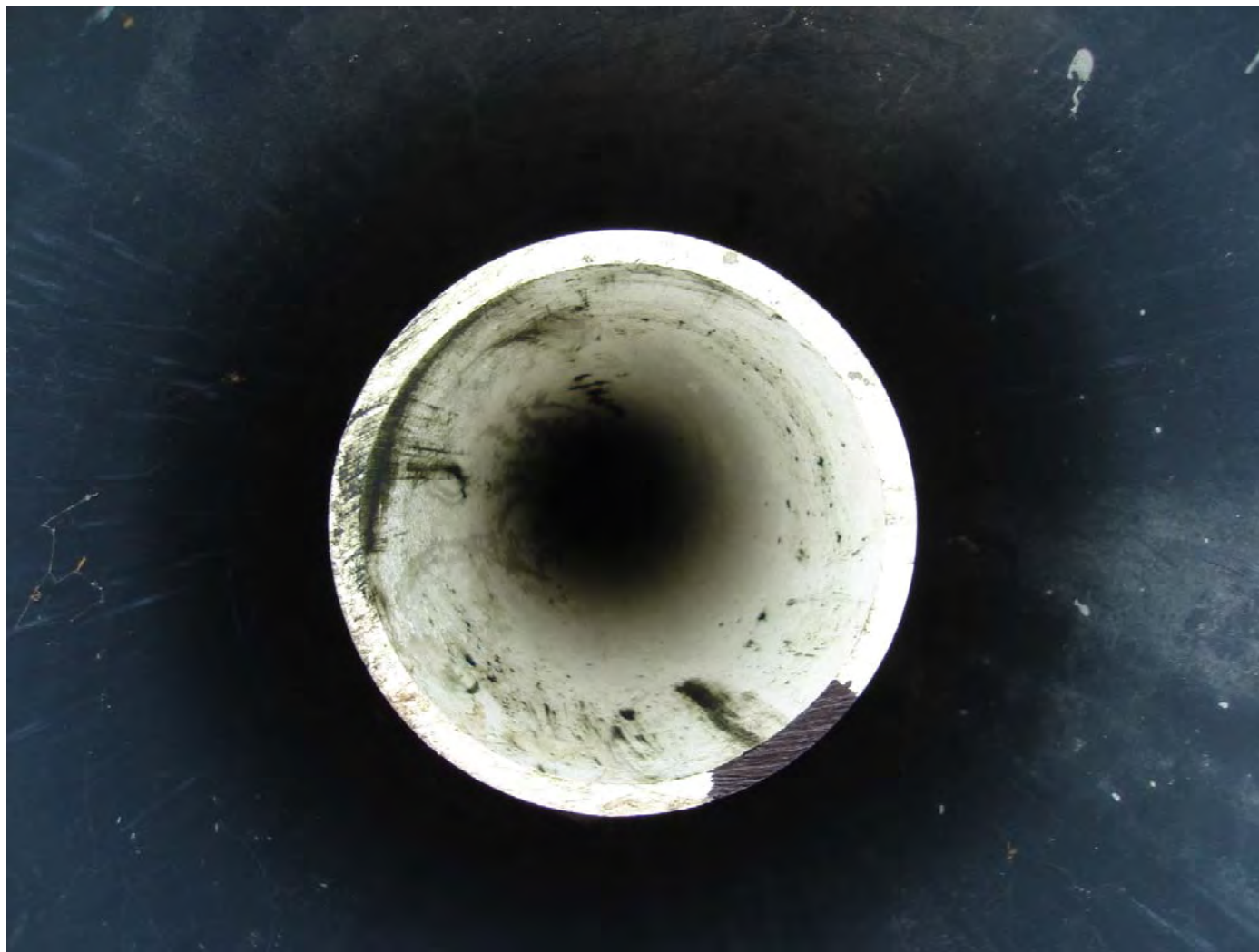


Nick Miller, Inc.

Date of Photo: February 15, 2007

View: Close-up of the showing the contractor's markings on well LKBA2B

LKBA2B



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Close-up of the showing the contractor's markings on well west of well LKBA2B

LKBA2B



**View: Close-up of the showing the contractor's markings on well south
of well LKBA2B**

Nick Miller, Inc.

Date of Photo: February 15, 2007

of well LKBA2B

LKBA2B



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Looking at the NGS benchmark Z 460 facing west

LKBA2B



Nick Miller, Inc.

Date of Photo: February 15, 2007

View: A top view of the NGS benchmark Z 460



Identification_Information:

Citation:

Citation_Information:

Originator: Nick Miller, Inc. (comp.)
 Originator: Stephen M. Gordon, PSM(ed.)
 Publication_Date: 20070315
 Publication_Time: Unknown
 Title: S. F. W. M. D. Monitoring Well LKBA2B
 Edition: 1
 Series_Information:
 Publication_Information:
 Publication_Place: West Palm Beach, FL
 Publisher: South Florida Water Management District
 Larger_Work_Citation:
 Citation_Information:
 Originator: Stephen M. Gordon, PSM
 Series_Information:
 Publication_Information:

Description:

Abstract:

South Florida Water Management District Monitoring Well LKBA2B.

Purpose:

To determine as built dimensions relative to NAVD 88 and NGVD 29 vertical datum

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 20070315

Range_of_Dates/Times:

Multiple_Dates/Times:

Currentness_Reference: Publication Date

Status:

Progress: Complete

Maintenance_and_Update_Frequency: Unknown

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -081D 11M 07.0S

East_Bounding_Coordinate: -081D 11M 01.0S

North_Bounding_Coordinate: +27D 44M 56.0S

South_Bounding_Coordinate: +27D 44M 27.0S

Keywords:

Theme:

Theme_Keyword_Thesaurus: Tri - Service Spatial Data Standard

Theme_Keyword: Improvement

Theme_Keyword: Geodesic/Cadastral

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: S. F. W. M. D. Monitoring Well LKBA2B

Place_Keyword: Sec. 25, Twp. 31 S., Rge. 31 E

Place_Keyword: Polk County, Florida

Place_Keyword_Thesaurus: Geographic Names Information System

Place_Keyword: Florida

Place_Keyword: Polk County

Place_Keyword: FORT KISSIMMEE NW

Stratum:

Temporal:

Access_Constraints: None

Use_Constraints: None

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Horward Ehmke

Contact_Organization: South Florida Water Management

District

Contact_Organization_Primary:

Contact_Position: Project Manager

Contact_Address:

Address_Type: mailing and physical address

Address: 3301 Gun Club Road

LKBA2B.gen

City: West Palm Beach

State_or_Province: Florida

Postal_Code: 33406

Country: USA

Contact_Voice_Telephone: 561-682-6672

Contact_Electronic_Mail_Address: hehmke@sfwmd.gov

Security_Information:

Cross_Reference:

 Citation_Information:

 Series_Information:

 Publication_Information:

Data_Quality_Information:

 Attribute_Accuracy:

 Attribute_Accuracy_Report: N/A

 Logical_Consistency_Report:

 Horizontal data was established using mapping grade GPS equipment. Vertical data was established using NGS control points A 461, KR 1560 & Z 460. Coordinates are in the Florida State Plane Coordinate System, East Zone, NAD 83/90. Elevations are in the NAVD 88 and the NGVD 29.

 Completeness_Report:

 Horizontal location taken at site benchmark

 Lat. +27D 44M 56.0S

 Long. -081D 11M 01.0S

 N 1,241,456 ft

 E 596,780 ft

 Site Benchmark.

 "Z 460" is a NGS flange-encased stainless steel rod at LKBA2B site.

 DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM)

 THE MARK IS ABOUT 30.0 MI (48.3 KM) SOUTHEAST

 OF LAKE WALES, 0.6 MI

 (1.0 KM) WEST OF THE KISSIMMEE RIVER ON KICCO

 ROAD IN SECTION 25,

 TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO REACH

 THE MARK FROM THE

 INTERSECTION OF STATE ROAD 27 UNDERPASS

 AND STATE ROAD 60 IN LAKE

 WALES, GO EAST-SOUTHEAST ON STATE ROAD 60

 FOR 25.7 MI (41.4 KM) TO THE

 JUNCTION OF RIVER RANCH BOULEVARD ON THE

 RIGHT, TURN RIGHT ON RIVER

 RANCH BOULEVARD AND GO SOUTHEAST FOR 2.55

 MI (4.10 KM) TO THE GUARD

 HOUSE AT THE ENTRANCE TO RIVER RANCH,

 CONTINUE SOUTH ON RIVER RANCH

 BOULEVARD FOR 0.3 MI (0.5 KM) TO THE JUNCTION

 OF KICCO ROAD ON THE

 RIGHT, TURN RIGHT ON KICCO ROAD AND GO

 SOUTHEAST FOR 0.2 MI (0.3 KM)

 TO FOUR SETS OF DOUBLE UNLOCKED GATES,

 CONTINUE SOUTH ON KICCO ROAD

 FOR 0.5 MI (0.8 KM) TO ANOTHER UNLOCKED METAL

 GATE, CONTINUE SOUTHEAST

 ON KICCO ROAD FOR 0.2 MI (0.3 KM) TO THE

 JUNCTION OF ROAD ON THE LEFT,

 CONTINUE SOUTH-SOUTHEAST ON KICCO ROAD

 FOR 0.8 MI (1.3 KM) TO THE MARK

 ON THE RIGHT, A STAINLESS STEEL ROD DRIVEN

 TO REFUSAL AT A DEPTH OF

 40.3 FT (12.3 M) WITH A LOGO CAP FLUSH WITH THE

 GROUND AND LEVEL WITH

 KICCO ROAD, THE DATUM POINT IS RECESSED 0.4

 FT (12.2 CM) BELOW THE

 LEVEL OF THE LOGO CAP. LOCATED 37.5 FT (11.4 M)

 SOUTHWEST OF THE

 APPROXIMATE CENTERLINE OF KICCO ROAD AND

 1.0 FT (0.3 M) NORTHWEST OF A

 CARSONITE WITNESS POST. NOTE ACCESS TO

 DATUM POINT IS HAD THROUGH A

LKBA2B.gen

5-INCH LOGO CAP. FOR KEY CONTACT SOUTH
FLORIDA WATER MANAGEMENT
DISTRICT AT 561-686-8800.
Benchmark Elevation is 53.93 feet (NAVD 88).
Ground Elevation is 54.35 feet (NAVD 88).
Concrete Pad Elevation is 54.70 feet (NAVD 88).
Well Elevation for LKBA2B is 58.22 feet (NAVD 88)
as observed at the existing reference mark for the well
which is a red mark at the top of a PVC pipe at the
center of the well.
Ground Elevation is 54.28 feet (NAVD 88).
Concrete Pad Elevation is 54.81 feet (NAVD 88).
Well Elevation for well west of well LKBA2B is 56.87 feet
(NAVD 88)
as observed at the existing reference mark for the well
which is a black mark at the top of a PVC pipe at the
center of the well.
Ground Elevation is 54.34 feet (NAVD 88).
Concrete Pad Elevation is 54.94 feet (NAVD 88).
Well Elevation for well south of well LKBA2B is 55.41 feet
(NAVD 88)
as observed a newly established reference mark for the
well
which is a white mark at the top of a metal pipe at the
center of the well.
NGVD 29 minus NAVD 88 equals 1.184 feet.
The NGVD 1929 value was taken from the NGS
VERTCON conversion program.
Vertical Control used A 461 El. 15.91 (m) (NAVD 88),
KR 1560 El. 16.591 (m) (NAVD 88), Z 460 El. 16.438 (m)
(NAVD 88).

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

The horizontal position of Site Benchmark "LKBA2B"
was established using a mapping grade GPS receiver
(Trimble Pro XR in accordance with the Florida Minimum
Technical Standards (Chapter 61G17-6, Florida
Administrative Code).

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Value: 3 to 5 meters

Horizontal_Positional_Accuracy_Explanation: The intended

positional accuracy for this survey is 3 to 5 meters more or less.

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report:

A level line was run originating on benchmark A 461
and terminating at benchmark Z 460 with an allowable
error of 8mm times the square root of the distance
levelled (in kilometers).

Quantitative_Vertical_Positional_Accuracy_Assessment:

Vertical_Positional_Accuracy_Value: 0.001 m

Vertical_Positional_Accuracy_Explanation: NAVD 88 level

loop, 0.001 m closure in 0.99 km, max. allowed 0.008m.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Series_Information:

Publication_Information:

Larger_Work_Citation:

Citation_Information:

Series_Information:

Publication_Information:

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Range_of_Dates/Times:

Multiple_Dates/Times:

Process_Step:

Process_Description:

LKBA2B.gen
The horizontal work was performed using a Trimble Pro XR GPS receiver (mapping grade). The level loop was run with a Leica DNA03 digital level.

Process_Date: 20070315
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Organization_Primary:
Contact_Address:

Spatial_Data_Organization_Information:
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Geographic:
Planar:
Map_Projection:
Albers_Conical_Equal_Area:
Azimuthal_Equidistant:
Equidistant_Conic:
Equiangular:
General_Vertical_Near-sidereal_Perspective:
Gnomonic:
Lambert_Azimuthal_Equal_Area:
Lambert_Conformal_Conic:
Mercator:
Modified_Stereographic_for_Alaska:
Miller_Cylindrical:
Oblique_Mercator:
Oblique_Line_Point:
Orthographic:
Polar_Stereographic:
Polyconic:
Robinson:
Sinusoidal:
van_der_Grinten:
Space_Oblique_Mercator_(Landsat):
Stereographic:
Transverse_Mercator:
van_der_Grinten:

Grid_Coordinate_System:
Universal_Transverse_Mercator:
Transverse_Mercator:
Universal_Polar_Stereographic:
Polar_Stereographic:
StatePlane_Coordinate_System:
Lambert_Conformal_Conic:
Transverse_Mercator:
Oblique_Mercator:
Oblique_Line_Point:
Polyconic:
ARC_Coordinate_System:
Equiangular:
Azimuthal_Equidistant:

Local_Planar:
Planar_Coordinate_Information:
Coordinate_Representation:
Distance_and_Bearing_Representation:

Local:
Geodetic_Model:
Vertical_Coordinate_System_Definition:
Altitude_System_Definition:
Depth_System_Definition:

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Attribute:
Attribute_Domain_Values:
Attribute_Value_Accuracy_Information:

Overview_Description:
Distribution_Information:
Distributor:

LKBA2B. gen

Contact_Information:

Contact_Person_Primary:

Contact_Organization_Primary:

Contact_Address:

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Digital_Transfer_Option:

Online_Option:

Computer_Contact_Information:

Network_Address:

Dialup_Instructions:

Offline_Option:

Recording_Capacity:

Available_Time_Period:

Time_Period_Information:

Single_Date/Time:

Range_of_Dates/Times:

Multiple_Dates/Times:

Metadata_Reference_Information:

Metadata_Date: 20070315

Metadata_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Stephen M. Gordon

Contact_Organization: Nick Miller, Inc.

Contact_Organization_Primary:

Contact_Position: Project Surveyor

Contact_Address:

Address_Type: mailing and physical address

Address: 2560 RCA Blvd., Suite 105

City: Palm Beach Gardens

State_or_Province: Florida

Postal_Code: 33410

Country: USA

Contact_Voice_Telephone: 561-627-5200

Contact_Facsimile_Telephone: 561-627-0983

Contact_Electronic_Mail_Address: sgordon@nickmillerinc.com

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: 2.0

Metadata_Time_Convention: Local time

Metadata_Access_Constraints: South Florida Water Management District controls

access.

Metadata_Use_Constraints: Per South Florida Water Management District

Metadata_Security_Information:

Metadata_Security_Handling_Description: None

Metadata_Security_Classification: Unclassified

Metadata_Security_Classification_System: Structure

LKBA3A



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Looking at the well facing south

LKBA3A



Nick Miller, Inc.

Date of Photo: February 15, 2007

View: Close-up of the showing the contractor's markings

LKBA3A



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Looking at the NGS benchmark Y 460 facing east

LKBA3A



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: A top view of the NGS benchmark Y 460

Identification_Information:

Citation:

Citation_Information:

Originator: Nick Miller, Inc. (comp.)
 Originator: Stephen M. Gordon, PSM(ed.)
 Publication_Date: 20070315
 Publication_Time: Unknown
 Title: S. F. W. M. D. Monitoring Well LKBA3A
 Edition: 1
 Series_Information:
 Publication_Information:
 Publication_Place: West Palm Beach, FL
 Publisher: South Florida Water Management District
 Larger_Work_Citation:
 Citation_Information:
 Originator: Stephen M. Gordon, PSM
 Series_Information:
 Publication_Information:

Description:

Abstract:

South Florida Water Management District Monitoring Well LKBA3A.

Purpose:

To determine as built dimensions relative to NAVD 88 and NGVD 29 vertical datum

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 20070315

Range_of_Dates/Times:

Multiple_Dates/Times:

Currentness_Reference: Publication Date

Status:

Progress: Complete

Maintenance_and_Update_Frequency: Unknown

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -081D 12M 25.0S

East_Bounding_Coordinate: -081D 11M 52.0S

North_Bounding_Coordinate: +27D 46M 42.0S

South_Bounding_Coordinate: +27D 46M 10.0S

Keywords:

Theme:

Theme_Keyword_Thesaurus: Tri - Service Spatial Data Standard

Theme_Keyword: Improvement

Theme_Keyword: Geodesic/Cadastral

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: S. F. W. M. D. Monitoring Well LKBA3A

Place_Keyword: Sec. 23, Twp. 31 S., Rge. 31 E

Place_Keyword: Polk County, Florida

Place_Keyword_Thesaurus: Geographic Names Information System

Place_Keyword: Florida

Place_Keyword: Polk County

Place_Keyword: LAKE MARIAN SW

Stratum:

Temporal:

Access_Constraints: None

Use_Constraints: None

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Howard Ehmke

Contact_Organization: South Florida Water Management

District

Contact_Organization_Primary:

Contact_Position: Project Manager

Contact_Address:

Address_Type: mailing and physical address

Address: 3301 Gun Club Road

LKBA3A.gen
City: West Palm Beach
State_or_Province: Florida
Postal_Code: 33406
Country: USA

Contact_Voice_Telephone: 561-682-6672
Contact_Electronic_Mail_Address: hehmke@sfwmd.gov

Security_Information:

Cross_Reference:

 Citation_Information:

 Series_Information:

 Publication_Information:

Data_Quality_Information:

 Attribute_Accuracy:

 Attribute_Accuracy_Report: N/A

 Logical_Consistency_Report:

 Horizontal data was established using mapping grade GPS equipment. Vertical data was established using NGS control points X 460 & Y 460. Coordinates are in the Florida State Plane Coordinate System, East Zone, NAD 83/90. Elevations are in the NAVD 88 and the NGVD 29.

 Completeness_Report:

 Horizontal location taken at site benchmark

 Lat. +27D 46M 10.0S

 Long. -081D 11M 52.0S

 N 1,248,936 ft

 E 592,210 ft

 Site Benchmark.

 "Y 460" is a NGS brass disk set in concrete at LKBA3A site.

 DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM)

 THE MARK IS ABOUT 29.0 MI (46.7 KM) SOUTHEAST

 OF LAKE WALES, 1.0 MI

 (1.6 KM) WEST OF THE KISSIMMEE RIVER ON RIVER

 RANCH BOULEVARD IN

 SECTION 23, TOWNSHIP 31 SOUTH, RANGE 31 EAST.

 TO REACH THE MARK FROM

 THE INTERSECTION OF STATE ROAD 27

 UNDERPASS AND STATE ROAD 60 IN LAKE

 WALES, GO EAST-SOUTHEAST ON STATE ROAD 60

 FOR 25.7 MI (41.4 KM) TO THE

 JUNCTION OF RIVER RANCH BOULEVARD ON THE

 RIGHT, TURN RIGHT ON RIVER

 RANCH BOULEVARD AND GO SOUTH FOR 2.55 MI

 (4.10 KM) TO THE GUARD HOUSE

 AT THE ENTRANCE TO RIVER RANCH, CONTINUE

 SOUTH ON RIVER RANCH

 BOULEVARD FOR 0.3 MI (0.5 KM) TO THE JUNCTION

 OF KICCO ROAD (A DIRT

 ROAD) LEADING SOUTHEAST ON THE RIGHT AND

 THE MARK ON THE RIGHT, SET IN

 THE TOP OF A ROUND CONCRETE MONUMENT

 FLUSH WITH THE GROUND AND LEVEL

 WITH RIVER RANCH BOULEVARD. LOCATED 85.4 FT

 (26.0 M) EAST-SOUTHEAST OF

 THE APPROXIMATE CENTERLINE OF TRACTOR

 TRAIL (A DIRT ROAD LEADING

 SOUTH), 55.9 FT (17.0 M) SOUTH OF THE

 APPROXIMATE CENTERLINE OF RIVER

 RANCH BOULEVARD, 50.8 FT (15.5 M)

 WEST-SOUTHWEST OF POWER POLE NUMBER

 3717-1, 20.1 FT (6.1 M) EAST OF KICCO ROAD (A DIRT

 ROAD LEADING

 SOUTHEAST), 1.0 FT (0.3 M) WEST OF A BARBWIRE

 FENCE LINE AND 0.8 FT

 (24.4 CM) WEST OF A CARSONITE WITNESS POST.

 "Y 460" Benchmark Elevation is 55.00 feet (NAVD 88).

 Ground Elevation is 55.30 feet (NAVD 88).

 Concrete Pad Elevation is 55.45 feet (NAVD 88).

 Well Elevation for LKBA3B is 58.86 feet (NAVD 88)

 as observed at the existing reference mark for the well

Red

LKBA3A.gen

which is a black mark at the top of a PVC pipe at the center of the well.

NGVD 29 minus NAVD 88 equals 1.204 feet.

The NGVD 1929 value was taken from the published NGS superseded value for benchmark F 63.

Vertical Control used Y 460 El. 16.764 (m) (NAVD 88), X 460 El. 16.907 (m) (NAVD 88)

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

The horizontal position of Site Benchmark "LKBA3A" was established using a mapping grade GPS receiver (Trimble Pro XR in accordance with the Florida Minimum Technical Standards (Chapter 61G17-6, Florida Administrative Code).

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Value: 3 to 5 meters

Horizontal_Positional_Accuracy_Explanation: The intended

positional accuracy for this survey is 3 to 5 meters more or less.

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report:

A level line was run originating on benchmark X 460 and terminating at benchmark Y 460 with an allowable error of 8mm times the square root of the distance leveled (in kilometers).

Quantitative_Vertical_Positional_Accuracy_Assessment:

Vertical_Positional_Accuracy_Value: 0.001 m

Vertical_Positional_Accuracy_Explanation: NAVD 88 level

loop, 0.001 m closure in 1.37 km, max. allowed 0.009m.

Li neage:

Source_Information:

Source_Citation:

Citation_Information:

Series_Information:

Publication_Information:

Larger_Work_Citation:

Citation_Information:

Series_Information:

Publication_Information:

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Range_of_Dates/Times:

Multiple_Dates/Times:

Process_Step:

Process_Description:

The horizontal work was performed using a Trimble Pro XR GPS receiver (mapping grade). The level loop was run with a Leica DNA03 digital level.

Process_Date: 20070315

Process_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Organization_Primary:

Contact_Address:

Spatial_Data_Organization_Information:

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Geographic:

Planar:

Map_Projection:

Albers_Conical_Equal_Area:

Azimuthal_Equidistant:

Equidistant_Conic:

Equiangular:

General_Vertical_Near-sidew_Perspective:

Gnomonic:

Lambert_Azimuthal_Equal_Area:

Lambert_Conformal_Conic:

Mercator:

LKBA3A.gen
 Modified_Stereographic_for_Alaska:
 Miller_Cylindrical:
 Oblique_Mercator:
 Oblique_Linear_Points:
 Orthographic:
 Polar_Stereographic:
 Polyconic:
 Robinson:
 Sinusoidal:
 van_der_Grinten:
 Space_Oblique_Mercator_(Landsat):
 Stereographic:
 Transverse_Mercator:
 van_der_Grinten:
 Grid_Coordinate_System:
 Universal_Transverse_Mercator:
 Transverse_Mercator:
 Universal_Polar_Stereographic:
 Polar_Stereographic:
 StatePlane_Coordinate_System:
 Lambert_Conformal_Conic:
 Transverse_Mercator:
 Oblique_Mercator:
 Oblique_Linear_Points:
 Polyconic:
 ARC_Coordinate_System:
 Equiangular:
 Azimuthal_Equidistant:
 Local_Planar:
 Planar_Coordinate_Information:
 Coordinate_Representation:
 Distance_and_Bearing_Representation:
 Local:
 Geodetic_Model:
 Vertical_Coordinate_System_Definition:
 Altitude_System_Definition:
 Depth_System_Definition:
 Entity_and_Attribute_Information:
 Detailed_Description:
 Entity_Type:
 Attribute:
 Attribute_Domain_Values:
 Attribute_Value_Accuracy_Information:
 Overview_Description:
 Distribution_Information:
 Distributor:
 Contact_Information:
 Contact_Person_Primary:
 Contact_Organization_Primary:
 Contact_Address:
 Standard_Order_Process:
 Digital_Form:
 Digital_Transfer_Information:
 Digital_Transfer_Option:
 Online_Option:
 Computer_Contact_Information:
 Network_Address:
 Display_Instructions:
 Offline_Option:
 Recording_Capacity:
 Availability_Period:
 Time_Period_Information:
 Single_Date/Time:
 Range_of_Dates/Times:
 Multiple_Dates/Times:
 Metadata_Reference_Information:
 Metadata_Date: 20070315
 Metadata_Contact:
 Contact_Information:
 Contact_Person_Primary:

LKBA3A.gen

Contact_Person: Stephen M. Gordon

Contact_Organization: Nick Miller, Inc.

Contact_Organization_Primary:

Contact_Position: Project Surveyor

Contact_Address:

Address_Type: mailing and physical address

Address: 2560 RCA Blvd., Suite 105

City: Palm Beach Gardens

State_or_Province: Florida

Postal_Code: 33410

Country: USA

Contact_Voice_Telephone: 561-627-5200

Contact_Facsimile_Telephone: 561-627-0983

Contact_Electronic_Mail_Address: sgordon@nickmillerinc.com

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata_Standard_Version: 2.0

Metadata_Time_Convention: Local time

Metadata_Access_Constraints: South Florida Water Management District controls

access.

Metadata_Use_Constraints: Per South Florida Water Management District

Metadata_Security_Information:

Metadata_Security_Handling_Description: None

Metadata_Security_Classification: Unclassified

Metadata_Security_Classification_System: Structure

LKBA3B



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Looking at the well facing east

LKBA3B



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: Close-up of the showing the contractor's markings

LKBA3B



Nick Miller, Inc.

Date of Photo: February 15, 2007

View: Looking at the benchmark facing south

LKBA3B



Nick Miller, Inc.
Date of Photo: February 15, 2007
View: A top view of the benchmark

Identification_Information:

Citation:

Citation_Information:

Originator: Nick Miller, Inc. (comp.)
 Originator: Stephen M. Gordon, PSM(ed.)
 Publication_Date: 20070315
 Publication_Time: Unknown
 Title: S. F. W. M. D. Monitoring Well LKBA3B
 Edition: 1
 Series_Information:
 Publication_Information:
 Publication_Place: West Palm Beach, FL
 Publisher: South Florida Water Management District
 Larger_Work_Citation:
 Citation_Information:
 Originator: Stephen M. Gordon, PSM
 Series_Information:
 Publication_Information:

Description:

Abstract:

South Florida Water Management District Monitoring Well LKBA3B.

Purpose:

To determine as built dimensions relative to NAVD 88 and NGVD 29 vertical datum

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 20070315

Range_of_Dates/Times:

Multiple_Dates/Times:

Currentness_Reference: Publication Date

Status:

Progress: Complete

Maintenance_and_Update_Frequency: Unknown

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -081D 12M 25.0S

East_Bounding_Coordinate: -081D 11M 23.0S

North_Bounding_Coordinate: +27D 46M 42.0S

South_Bounding_Coordinate: +27D 46M 10.0S

Keywords:

Theme:

Theme_Keyword_Thesaurus: Tri - Service Spatial Data Standard

Theme_Keyword: Improvement

Theme_Keyword: Geodesic/Cadastral

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: S. F. W. M. D. Monitoring Well LKBA3B

Place_Keyword: Sec. 23, Twp. 31 S., Rge. 31 E

Place_Keyword: Polk County, Florida

Place_Keyword_Thesaurus: Geographic Names Information System

Place_Keyword: Florida

Place_Keyword: Polk County

Place_Keyword: LAKE MARIAN SW

Stratum:

Temporal:

Access_Constraints: None

Use_Constraints: None

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Howard Ehmke

Contact_Organization: South Florida Water Management

District

Contact_Organization_Primary:

Contact_Position: Project Manager

Contact_Address:

Address_Type: mailing and physical address

Address: 3301 Gun Club Road

LKBA3B.gen
City: West Palm Beach
State_or_Province: Florida
Postal_Code: 33406
Country: USA

Contact_Voice_Telephone: 561-682-6672
Contact_Electronic_Mail_Address: hehmke@sfwmd.gov

Security_Information:

Cross_Reference:

 Citation_Information:

 Series_Information:

 Publication_Information:

Data_Quality_Information:

 Attribute_Accuracy:

 Attribute_Accuracy_Report: N/A

 Logical_Consistency_Report:

 Horizontal data was established using mapping grade GPS equipment. Vertical data was established using NGS control points X 460 & Y 460. Coordinates are in the Florida State Plane Coordinate System, East Zone, NAD 83/90. Elevations are in the NAVD 88 and the NGVD 29.

 Completeness_Report:

 Horizontal location taken at site benchmark

 Lat. +27D 46M 24.0S

 Long. -081D 11M 23.0S

 N 1,250,346 ft

 E 594,818 ft

 Site Benchmark.

 "LKBA3B" is a South Florida Water Management District (SFWMD) brass disk set in concrete at LKBA3B site.

 TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD

 27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST

 ON STATE ROAD 60 FOR 25.7 MILES TO THE JUNCTION OF RIVER RANCH

 BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND

 GO SOUTH FOR 2.55 MI TO THE GUARD HOUSE AT THE ENTRANCE TO RIVER

 RANCH, CONTINUE SOUTHERLY AND WESTERLY ON RIVER RANCH BOULEVARD

 FOR 0.8 MI (0.5 KM) TO WHERE THE ROAD TEES (MARINA PARKING). MAKE

 LEFT AND HEAD NORTH FOR +/- 200 FEET TO GATE. CONTINUE THROUGH GATE

 AND HEAD NORTHEASTERLY FOR 0.15 MILE TO THE MARK ON NORTH SIDE OF

 MONITORING WELL LKBA3B, SET IN THE TOP OF A ROUND CONCRETE MONUMENT

 FLUSH WITH THE GROUND. LOCATED 12.0 FEET NORTH OF CENTERLINE OF 1 FOOT

 DIAMETER GREY PVC PIPE FOR MONITORING WELL, 163.60 FEET NORTHEAST OF

 PK NAIL AND DISK ON NORTH SIDE OF 1 FOOT DIAMETER PALM TREE, 9.7 FEET

 NORTHEAST OF NORTHWEST YELLOW BALLARD POST. MAGNET SET 1 FOOT NORTH OF MONUMENT.

 Benchmark Elevation is 46.03 feet (NAVD 88).

 Ground Elevation is 46.32 feet (NAVD 88).

 Concrete Pad Elevation is 46.61 feet (NAVD 88).

 Well Elevation for LKBA3B is 50.59 feet (NAVD 88)

 as observed at the existing reference mark for the well which is a black mark at the top of a PVC pipe at the center of the well.

 NGVD 29 minus NAVD 88 equals 1.204 feet.

 The NGVD 1929 value was taken from the published NGS superseded value for benchmark F 63.

 Vertical Control used Y 460 El. 16.764 (m) (NAVD 88),

 X 460 El. 16.907 (m) (NAVD 88)

 Positional_Accuracy:

LKBA3B. gen

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

The horizontal position of Site Benchmark "LKBA3B" was established using a mapping grade GPS receiver (Trimble Pro XR in accordance with the Florida Minimum Technical Standards (Chapter 61G17-6, Florida Administrative Code).

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Value: 3 to 5 meters

Horizontal_Positional_Accuracy_Explanation: The intended positional accuracy for this survey is 3 to 5 meters more or less.

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report:

A level line was run originating on benchmark X 460 and terminating at benchmark Y 460 with an allowable error of 8mm times the square root of the distance leveled (in kilometers).

Quantitative_Vertical_Positional_Accuracy_Assessment:

Vertical_Positional_Accuracy_Value: 0.001 m

Vertical_Positional_Accuracy_Explanation: NAVD 88 Level

Loop, 0.001 m closure in 1.37 km, max. allowed 0.009m.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Series_Information:

Publication_Information:

Larger_Work_Citation:

Citation_Information:

Series_Information:

Publication_Information:

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Range_of_Dates/Times:

Multiple_Dates/Times:

Process_Step:

Process_Description:

The horizontal work was performed using a Trimble Pro XR GPS receiver (mapping grade). The level loop was run with a Leica DNA03 digital level.

Process_Date: 20070315

Process_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Organization_Primary:

Contact_Address:

Spatial_Data_Organization_Information:

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Geographic:

Planar:

Map_Projection:

Albers_Conical_Equal_Area:

Azimuthal_Equidistant:

Equidistant_Conic:

Equiangular:

General_Vertical_Near-sidereal_Perspective:

Gnomonic:

Lambert_Azimuthal_Equal_Area:

Lambert_Conformal_Conic:

Mercator:

Modified_Stereographic_for_Aaska:

Miller_Cylindrical:

Oblique_Mercator:

Oblique_Line_Point:

Orthographic:

Polar_Stereographic:

Polyconic:

Robinson:

LKBA3B.gen
 Si nusoida :
 van_der_Grinten:
 Space_Obl i que_Mercator_(Landsat):
 Stereographi c:
 Transverse_Mercator:
 van_der_Grinten:
 Gri d_Coordi nate_System:
 Uni versal _Transverse_Mercator:
 Transverse_Mercator:
 Uni versal _Pol ar_Stereographi c:
 Pol ar_Stereographi c:
 State_PI ane_Coordi nate_System:
 Lambert_Conformal _Coni c:
 Transverse_Mercator:
 Obl i que_Mercator:
 Obl i que_Li ne_Poi nt:
 Pol yconi c:
 ARC_Coordi nate_System:
 Equi rectangul ar:
 Azi muthal _Equi di stant:
 Local _PI anar:
 PI anar_Coordi nate_I nformati on:
 Coordi nate_Representati on:
 Di stance_and_Beari ng_Representati on:
 Local :
 Geodeti c_Model :
 Verti cal _Coordi nate_System_Defi ni ti on:
 Al ti tude_System_Defi ni ti on:
 Depth_System_Defi ni ti on:
 Enti ty_and_Attri bute_I nformati on:
 Detai led_Descri pti on:
 Enti ty_Type:
 Attri bute:
 Attri bute_Domai n_Val ues:
 Attri bute_Val ue_Accuracy_I nformati on:
 Overvi ew_Descri pti on:
 Di stri buti on_I nformati on:
 Di stri butor:
 Contact_I nformati on:
 Contact_Person_Pri mary:
 Contact_Organi zati on_Pri mary:
 Contact_Address:
 Standard_Order_Process:
 Di gi tal _Form:
 Di gi tal _Transfer_I nformati on:
 Di gi tal _Transfer_Opti on:
 Onl i ne_Opti on:
 Computer_Contact_I nformati on:
 Network_Address:
 Di al up_I nstructi ons:
 OffLi ne_Opti on:
 Recordi ng_Capaci ty:
 Avai l abl e_Ti me_Period:
 Ti me_Period_I nformati on:
 Si ngl e_Date/Ti me:
 Range_of_Dates/Ti mes:
 Mul ti pl e_Dates/Ti mes:
 Metadata_Reference_I nformati on:
 Metadata_Date: 20070315
 Metadata_Contact:
 Contact_I nformati on:
 Contact_Person_Pri mary:
 Contact_Person: Stephen M. Gordon
 Contact_Organi zati on: Ni ck Mi l l er, I nc.
 Contact_Organi zati on_Pri mary:
 Contact_Posi ti on: Project Surveyor
 Contact_Address:
 Address_Type: mai l i ng and physi cal address
 Address: 2560 RCA Bl vd., Sui te 105
 Ci ty: Pal m Beach Gardens

LKBA3B.gen
State_or_Province: Florida
Postal_Code: 33410
Country: USA
Contact_Voice_Telephone: 561-627-5200
Contact_Facsimile_Telephone: 561-627-0983
Contact_Electronic_Mail_Address: sgordon@nickmillerinc.com
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: 2.0
Metadata_Time_Convention: Local time
Metadata_Access_Constraints: South Florida Water Management District controls
access.
Metadata_Use_Constraints: Per South Florida Water Management District
Metadata_Security_Information:
Metadata_Security_Handling_Description: None
Metadata_Security_Classification: Unclassified
Metadata_Security_Classification_System: Structure



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

COUNTY POLK	PROJECT Hydrology – Polk County Wells	DESIGNATION LKBA3B
SECTION 23	TOWNSHIP 31 SOUTH	RANGE 31 EAST
GEOGRAPHIC INDEX OF QUAD		
Established by <u>Nick Miller Inc.</u> Recovered by	NAME OF QUADRANGLE LAKE MARIAN SW	
SURVEYOR <u>Stephen M. Gordon</u> DATE <u>3/07/2007</u>	FIELD BOOK _____ 19 PAGE <u>23</u>	
HORIZONTAL DATUM: 1927 <u>1983</u> Other _____ (circle one) ZONE <u>E</u> or W		
STATE PLANE COORDINATES	E 594,818 ft	N 1,250,346 ft
LATITUDE: N 27.77333°	LONGITUDE: W 81.18972°	
VERTICAL DATUM: MSL 1929 <u>1988</u> Other _____ (circle one)	EL. 46.03 ft	
VERTICAL DATUM: MSL <u>1929</u> 1988 Other _____ (circle one)	EL. 47.23 ft	
CONTROL ACCURACY: HORIZONTAL 1 2 3 <u>SUB-METER</u> (circle one) VERTICAL 1 2 <u>3</u>		
DESCRIPTION		
<p>To Reach:</p> <p>TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MILES TO THE JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO SOUTH FOR 2.55 MI TO THE GUARD HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTHERLY AND WESTERLY ON RIVER RANCH BOULEVARD FOR 0.8 MI (0.5 KM) TO WHERE THE ROAD TEES (MARINA PARKING). MAKE LEFT AND HEAD NORTH FOR +/- 200 FEET TO GATE. CONTINUE THROUGH GATE AND HEAD NORTHEASTERLY FOR 0.15 MILE TO THE MARK ON NORTH SIDE OF MONITORING WELL LKBA3B, SET IN THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE GROUND. LOCATED 12.0 FEET NORTH OF CENTERLINE OF 1 FOOT DIAMETER GREY PVC PIPE FOR MONITORING WELL, 163.60 FEET NORTHEAST OF PK NAIL AND DISK ON NORTH SIDE OF 1 FOOT DIAMETER PALM TREE, 9.7 FEET NORTHEAST OF NORTHWEST YELLOW BALLARD POST. MAGNET SET 1 FOOT NORTH OF MONUMENT.</p> <p>Benchmarks Used: X 460, Y 460</p> <p>Notable Land marks:</p>		



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

SKETCH

1078-026	LCB33B	SPUND
496	MONITORING WELL	

- SET FOUR 10" - 12" DIAM. CONCRETE MONUMENT
w/ SPUND BRASS DISK
- SET MAGNET 1' NORTH OF MONUMENT

STAMPED LCB33B
2007

TIES

- SET MONUMENT 120' NORTH OF 8" DIA. GREY
PVC PIPE FOR MONITORING WELL LCB33B
- SET MONUMENT 163.60' NE OF PALM & DEK
ON NORTH SIDE OF 1" DIA. PALM TREE
- SET MONUMENT 9.7' NE OF NEW YELLOW
BALLARD POST

COORDINATES

<u>MONITORING WELL</u>	
N. 27° 46' 24"	N. 1250396.016 ft
W. 81° 11' 23"	E. 594817.529 ft
<u>MONUMENT</u>	
N. 27° 46' 24"	N. "
W. 81° 11' 23"	E. "

TRAIL FEB. 15, 2007

E. DETROCKS
J. CAMPBELL

SPUND 19, 23

△ - MONUMENT
⊙ - MONITORING WELL

GRASS FIELD
PARKED BUSES & TRAILERS
10 DIA. PALM TREE
BALLARD POST
CODE PAD
WATER CHANNEL



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01



Looking South



Looking East





The NGS Data Sheet

See file [dsdata.txt](#) for more

DATABASE = Sybase ,PROGRAM
1 National Geodetic

AH8768 DESIGNATION - Z 460
AH8768 PID - AH8768
AH8768 STATE/COUNTY- FL/POLK
AH8768 USGS QUAD - FORT KISSIMMEE NW (1972)

*CURRENT SURVEY CONTROL

AH8768*	NAD 83(1986)-	27 44 56.	(N)	081 11 01.	(W)	SCALED
AH8768*	NAVD 88	-	16.438	(meters)	53.93	(feet) ADJUSTED

AH8768 GEOID HEIGHT- -26.64 (meters) GEOID03
 AH8768 DYNAMIC HT - 16.413 (meters) 53.85 (feet) COMP
 AH8768 MODELED GRAV- 979,157.5 (mgal) NAVD 88

AH8768 VERT ORDER - SECOND CLASS I

AH8768.The horizontal coordinates were scaled from a topographic map and have
 AH8768.an estimated accuracy of +/- 6 seconds.

AH8768.The orthometric height was determined by differential leveling
 AH8768.and adjusted in July 1999.

AH8768.The geoid height was determined by GEOID03.

AH8768.The dynamic height is computed by dividing the NAVD 88
 AH8768.geopotential number by the normal gravity value computed on the
 AH8768.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AH8768.degrees latitude (g = 980.6199 gals.).

AH8768.The modeled gravity was interpolated from observed gravity values.

	North	East	Units	Estimated Accuracy
AH8768; SPC FL W -	378,650.	280,480.	MT	(+/- 180 meters Scaled)

SUPERSEDED SURVEY CONTROL

No superseded survey control is available for this station.

U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML819694(NAD 83)
 _MARKER: F = FLANGE-ENCASED ROD
 _SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 _STAMPING: Z 460 1997
 _MARK LOGO: NGS
 _PROJECTION: FLUSH
 _MAGNETIC: N = NO MAGNETIC MATERIAL
 _STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 _SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 +SATELLITE: SATELLITE OBSERVATIONS - 1997
 _ROD/PIPE-DEPTH: 12.3 meters

HISTORY	Date	Condition	Report By
AH8768 HISTORY	- 1997	MONUMENTED	FLDEP

STATION DESCRIPTION

DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM)
 THE MARK IS ABOUT 30.0 MI (48.3 KM) SOUTHEAST OF LAKE WALES, 0.6 MI
 (1.0 KM) WEST OF THE KISSIMMEE RIVER ON KICCO ROAD IN SECTION 25,
 TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO REACH THE MARK FROM THE
 INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE
 WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MI (41.4 KM) TO THE
 JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER
 RANCH BOULEVARD AND GO SOUTHEAST FOR 2.55 MI (4.10 KM) TO THE GUARD
 HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH
 BOULEVARD FOR 0.3 MI (0.5 KM) TO THE JUNCTION OF KICCO ROAD ON THE
 RIGHT, TURN RIGHT ON KICCO ROAD AND GO SOUTHEAST FOR 0.2 MI (0.3 KM)

DATASHEETS

AH8768' TO FOUR SETS OF DOUBLE UNLOCKED GATES, CONTINUE SOUTH ON KICCO ROAD
AH8768' FOR 0.5 MI (0.8 KM) TO ANOTHER UNLOCKED METAL GATE, CONTINUE SOUTHEAST
AH8768' ON KICCO ROAD FOR 0.2 MI (0.3 KM) TO THE JUNCTION OF ROAD ON THE LEFT,
AH8768' CONTINUE SOUTH-SOUTHEAST ON KICCO ROAD FOR 0.8 MI (1.3 KM) TO THE MARK
AH8768' ON THE RIGHT, A STAINLESS STEEL ROD DRIVEN TO REFUSAL AT A DEPTH OF
AH8768' 40.3 FT (12.3 M) WITH A LOGO CAP FLUSH WITH THE GROUND AND LEVEL WITH
AH8768' KICCO ROAD, THE DATUM POINT IS RECESSED 0.4 FT (12.2 CM) BELOW THE
AH8768' LEVEL OF THE LOGO CAP. LOCATED 37.5 FT (11.4 M) SOUTHWEST OF THE
AH8768' APPROXIMATE CENTERLINE OF KICCO ROAD AND 1.0 FT (0.3 M) NORTHWEST OF A
AH8768' CARSONITE WITNESS POST. NOTE ACCESS TO DATUM POINT IS HAD THROUGH A
AH8768' 5-INCH LOGO CAP. FOR KEY CONTACT SOUTH FLORIDA WATER MANAGEMENT
AH8768' DISTRICT AT 561-686-8800.

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



South Florida Water Management District Benchmark Database

Report run on: February 25, 2008 6:56 AM

Designation: Z460	Latitude: 274456.000	Scaled values only
County: POLK	Longitude: 811101.000	
USGS Quad: FT.KISSIMMEE NW	Monument By: FL DEPT OF ENVIR PROT	
Project: LKBA2B WELL SITE	Year: 1997	
Sec: 25 Twp: 31 Rge: 31	Type: V	
Status: GOOD	Stamping: Z 460 1997	
NAD 1927 Coordinates:	Party Chief:	
N =	Field Book	
E =	Page:	
Adjustment:	NGVD 1929	
NAD 1983 Coordinates:	Elevation: 55.114	
X =	Order: 2	
Y =	Class: I	
Adjustment:	NAVD 1988	
Order:	Elevation: 53.930	
Class:	Order: 2	
	Class: I	

Description:

OLD NGVD 1929 ELEVATION = 55.15
 ***** RECOVERY NOTE *****
 3/6/2007 RAGER NICK MILLER INC FIELDBOOK19 PAGE 53 BM Z460
 5/6/1999 PURPERA OF 3001 INC., A CONTRACTOR FOR THE CORPS OF ENGINEERS,
 FIELD BOOK #1 99-133, PAGE 16, Z 460 (1997) EL. 55.24 NGVD 29, A
 STAINLESS STEEL ROD WITH ACCESS CAP STAMPED "Z 460 1997"

THE NGS DATA SHEET
 DATABASE = SYBASE ,PROGRAM = DATASHEET, VERSION = 6.20
 STARTING DATASHEET RETRIEVAL...
 1 NATIONAL GEODETIC SURVEY, RETRIEVAL DATE = MAY 24, 2000
 AH8768 *****
 AH8768 DESIGNATION - Z 460
 AH8768 PID - AH8768
 AH8768 STATE/COUNTY- FL/POLK
 AH8768 USGS QUAD - FORT KISSIMMEE NW (1973)
 AH8768
 AH8768 *CURRENT SURVEY CONTROL
 AH8768
 AH8768* NAD 83(1986)- 27 44 56. (N) 081 11 01. (W) SCALED
 AH8768* NAVD 88 - 16.438 (METERS) 53.93 (FEET) ADJUSTED
 AH8768
 AH8768 GEOID HEIGHT- -26.67 (METERS) GEOID99
 AH8768 DYNAMIC HT - 16.413 (METERS) 53.85 (FEET) COMP
 AH8768 MODELED GRAV- 979,157.5 (MGAL) NAVD 88
 AH8768
 AH8768 VERT ORDER - SECOND CLASS I
 AH8768
 AH8768.THE HORIZONTAL COORDINATES WERE SCALED FROM A TOPOGRAPHIC MAP AND HAVE
 AH8768.AN ESTIMATED ACCURACY OF +/- 6 SECONDS.
 AH8768
 AH8768.THE ORTHOMETRIC HEIGHT WAS DETERMINED BY DIFFERENTIAL LEVELING
 AH8768.AND ADJUSTED BY THE NATIONAL GEODETIC SURVEY IN JULY 1999.



South Florida Water Management District Benchmark Database

Report run on: February 25, 2008 6:56 AM

AH8768
 AH8768.THE GEOID HEIGHT WAS DETERMINED BY GEOID99.
 AH8768
 AH8768.THE DYNAMIC HEIGHT IS COMPUTED BY DIVIDING THE NAVD 88
 AH8768.GEOPOTENTIAL NUMBER BY THE NORMAL GRAVITY VALUE COMPUTED ON THE
 AH8768.GEODETIC REFERENCE SYSTEM OF 1980 (GRS 80) ELLIPSOID AT 45
 AH8768.DEGREES LATITUDE (G = 980.6199 GALS.).
 AH8768
 AH8768.THE MODELED GRAVITY WAS INTERPOLATED FROM OBSERVED GRAVITY VALUES.
 AH8768
 AH8768; NORTH EAST UNITS ESTIMATED ACCURACY
 AH8768;SPC FL W - 378,650. 280,480. MT (+/- 180 METERS SCALED)
 AH8768
 AH8768 SUPERSEDED SURVEY CONTROL
 AH8768
 AH8768.NO SUPERSEDED SURVEY CONTROL IS AVAILABLE FOR THIS STATION.
 AH8768
 AH8768_MARKER: F = FLANGE-ENCASED ROD
 AH8768_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
 AH8768_STAMPING: Z 460 1997
 AH8768_PROJECTION: FLUSH
 AH8768_MAGNETIC: N = NO MAGNETIC MATERIAL
 AH8768_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 AH8768_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 AH8768+SATELLITE: SATELLITE OBSERVATIONS - 1997
 AH8768_ROD/PIPE-DEPTH: 12.3 METERS
 AH8768
 AH8768 HISTORY - DATE CONDITION RECOV. BY
 AH8768 HISTORY - 1997 MONUMENTED FLDEP
 AH8768
 AH8768 STATION DESCRIPTION
 AH8768
 AH8768'DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM)
 AH8768'THE MARK IS ABOUT 30.0 MI (48.3 KM) SOUTHEAST OF LAKE WALES, 0.6 MI
 AH8768'(1.0 KM) WEST OF THE KISSIMMEE RIVER ON KICCO ROAD IN SECTION 25,
 AH8768'TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO REACH THE MARK FROM THE
 AH8768'INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE
 AH8768'WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MI (41.4 KM) TO THE
 AH8768'JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER
 AH8768'RANCH BOULEVARD AND GO SOUTHEAST FOR 2.55 MI (4.10 KM) TO THE GUARD
 AH8768'HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH
 AH8768'BOULEVARD FOR 0.3 MI (0.5 KM) TO THE JUNCTION OF KICCO ROAD ON THE
 AH8768'RIGHT, TURN RIGHT ON KICCO ROAD AND GO SOUTHEAST FOR 0.2 MI (0.3 KM)
 AH8768'TO FOUR SETS OF DOUBLE UNLOCKED GATES, CONTINUE SOUTH ON KICCO ROAD
 AH8768'FOR 0.5 MI (0.8 KM) TO ANOTHER UNLOCKED METAL GATE, CONTINUE SOUTHEAST
 AH8768'ON KICCO ROAD FOR 0.2 MI (0.3 KM) TO THE JUNCTION OF ROAD ON THE LEFT,
 AH8768'CONTINUE SOUTH-SOUTHEAST ON KICCO ROAD FOR 0.8 MI (1.3 KM) TO THE MARK
 AH8768'ON THE RIGHT, A STAINLESS STEEL ROD DRIVEN TO REFUSAL AT A DEPTH OF
 AH8768'40.3 FT (12.3 M) WITH A LOGO CAP FLUSH WITH THE GROUND AND LEVEL WITH
 AH8768'KICCO ROAD, THE DATUM POINT IS RECESSED 0.4 FT (12.2 CM) BELOW THE
 AH8768'LEVEL OF THE LOGO CAP. LOCATED 37.5 FT (11.4 M) SOUTHWEST OF THE
 AH8768'APPROXIMATE CENTERLINE OF KICCO ROAD AND 1.0 FT (0.3 M) NORTHWEST OF A
 AH8768'CARSONITE WITNESS POST. NOTE ACCESS TO DATUM POINT IS HAD THROUGH A
 AH8768'5-INCH LOGO CAP. FOR KEY CONTACT SOUTH FLORIDA WATER MANAGEMENT
 AH8768'DISTRICT AT 561-686-8800.
 ELAPSED TIME = 00:00:02

The NGS Data Sheet

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

```

PROGRAM = datasheet95, VERSION = 8.8
1      National Geodetic Survey,   Retrieval Date = DECEMBER 5, 2015
AH8770 *****
AH8770 DESIGNATION - KR 1560
AH8770 PID - AH8770
AH8770 STATE/COUNTY- FL/POLK
AH8770 COUNTRY - US
AH8770 USGS QUAD - FORT KISSIMMEE NW (1972)
AH8770
AH8770 *CURRENT SURVEY CONTROL
AH8770
AH8770 *-----
AH8770* NAD 83(1986) POSITION- 27 44 42. (N) 081 11 02. (W) SCALED
AH8770* NAVD 88 ORTHO HEIGHT - 16.591 (meters) 54.43 (feet) ADJUSTED
AH8770 *-----
AH8770 GEOID HEIGHT - -26.662 (meters) GEOID12B
AH8770 DYNAMIC HEIGHT - 16.566 (meters) 54.35 (feet) COMP
AH8770 MODELED GRAVITY - 979,157.5 (mgal) NAVD 88
AH8770
AH8770 VERT ORDER - SECOND CLASS I
AH8770
AH8770.The horizontal coordinates were scaled from a topographic map and have
AH8770.an estimated accuracy of +/- 6 seconds.
AH8770.
AH8770.The orthometric height was determined by differential leveling and
AH8770.adjusted by the NATIONAL GEODETIC SURVEY
AH8770.in July 1999.
AH8770
AH8770.Significant digits in the geoid height do not necessarily reflect accuracy.
AH8770.GEOID12B height accuracy estimate available here.
AH8770
AH8770.The dynamic height is computed by dividing the NAVD 88
AH8770.geopotential number by the normal gravity value computed on the
AH8770.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AH8770.degrees latitude (g = 980.6199 gals.).
AH8770
AH8770.The modeled gravity was interpolated from observed gravity values.
AH8770
AH8770; North East Units Estimated Accuracy
AH8770;SPC FL W - 378,220. 280,460. MT (+/- 180 meters Scaled)
AH8770
AH8770 SUPERSEDED SURVEY CONTROL
AH8770
AH8770 No superseded survey control is available for this station.
AH8770
AH8770_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML818689(NAD 83)
AH8770
AH8770_MARKER: DD = SURVEY DISK
AH8770_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND
AH8770_STAMPING: KR-1560 GPS 1994 JAX FLA
AH8770_MARK LOGO: USE
AH8770_MAGNETIC: N = NO MAGNETIC MATERIAL
AH8770_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
AH8770_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AH8770+SATELLITE: SATELLITE OBSERVATIONS - July 10, 1997
AH8770
AH8770 HISTORY - Date Condition Report By
AH8770 HISTORY - 1994 MONUMENTED USE

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AH8770 HISTORY - 19970710 GOOD FLDEP

AH8770

AH8770 STATION DESCRIPTION

AH8770

AH8770'DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM)

AH8770'THE MARK IS ABOUT 30.0 MI (48.3 KM) SOUTHEAST OF LAKE WALES, 0.5 MI

AH8770'(0.8 KM) WEST OF THE KISSIMMEE RIVER ON KICCO ROAD IN SECTION 36,

AH8770'TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO REACH THE MARK FROM THE

AH8770'INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE

AH8770'WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MI (41.4 KM) TO THE

AH8770'JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER

AH8770'RANCH BOULEVARD AND GO SOUTHEAST FOR 2.55 MI (4.10 KM) TO THE GUARD

AH8770'HOUSE AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH

AH8770'BOULEVARD FOR 0.3 MI (0.5 KM) TO THE JUNCTION OF KICCO ROAD ON THE

AH8770'RIGHT, TURN RIGHT ON KICCO ROAD AND GO SOUTHEAST FOR 0.2 MI (0.3 KM)

AH8770'TO FOUR SETS OF DOUBLE UNLOCKED GATES, CONTINUE SOUTH ON KICCO ROAD

AH8770'FOR 0.5 MI (0.8 KM) TO ANOTHER UNLOCKED METAL GATE, CONTINUE SOUTHEAST

AH8770'ON KICCO ROAD FOR 0.05 MI (0.08 KM) TO A LOCKED GATE, THE ENTRANCE TO

AH8770'PROPERTY OWNED BY THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT,

AH8770'CONTINUE SOUTHEAST ON A SHELL ROAD (KICCO ROAD) FOR 0.2 MI (0.3 KM) TO

AH8770'THE JUNCTION OF A ROAD ON THE LEFT, CONTINUE SOUTH-SOUTHEAST ON THE

AH8770'SHELL ROAD FOR 1.1 MI (1.8 KM) TO THE MARK ON THE RIGHT, A STANDARD

AH8770'CORP OF ENGINEERS BRASS DISK SET IN CONCRETE INSIDE A 6-INCH PVC PIPE

AH8770'INBEDDED IN THE GROUND, FLUSH WITH THE GROUND AND 0.6 FT (18.3 CM)

AH8770'BELOW THE LEVEL OF THE SHELL ROAD. LOCATED 33.2 FT (10.1 M)

AH8770'WEST-NORTHWEST OF THE APPROXIMATE CENTERLINE OF THE SHELL ROAD (KICCO

AH8770'ROAD) , 32.7 FT (10.0 M) SOUTHWEST OF THE WEST END OF A GALVANIZED

AH8770'CULVERT UNDER THE SHELL ROAD (KICCO ROAD) , 2.1 FT (0.6 M) WEST OF A

AH8770'METAL WITNESS POST AND 0.8 FT (24.4 CM) WEST OF A CARSONITE WITNESS

AH8770'POST. NOTE FOR ACCESS AND KEY CONTACT SOUTH FLORIDA WATER MANAGEMENT

AH8770'DISTRICT AT 561-686-8800.

*** retrieval complete.

Elapsed Time = 00:00:02

The NGS Data Sheet

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

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PROGRAM = datasheet95, VERSION = 8.8
1      National Geodetic Survey,   Retrieval Date = DECEMBER 5, 2015
AH8771 *****
AH8771 DESIGNATION - A 461
AH8771 PID - AH8771
AH8771 STATE/COUNTY- FL/POLK
AH8771 COUNTRY - US
AH8771 USGS QUAD - FORT KISSIMMEE NW (1972)
AH8771
AH8771 *CURRENT SURVEY CONTROL
AH8771
AH8771* NAD 83(1986) POSITION- 27 44 27. (N) 081 11 07. (W) SCALED
AH8771* NAVD 88 ORTHO HEIGHT - 15.910 (meters) 52.20 (feet) ADJUSTED
AH8771
AH8771 GEOID HEIGHT - -26.648 (meters) GEOID12B
AH8771 DYNAMIC HEIGHT - 15.886 (meters) 52.12 (feet) COMP
AH8771 MODELED GRAVITY - 979,157.4 (mgal) NAVD 88
AH8771
AH8771 VERT ORDER - SECOND CLASS I
AH8771
AH8771.The horizontal coordinates were scaled from a topographic map and have
AH8771.an estimated accuracy of +/- 6 seconds.
AH8771.
AH8771.The orthometric height was determined by differential leveling and
AH8771.adjusted by the NATIONAL GEODETIC SURVEY
AH8771.in July 1999.
AH8771
AH8771.Significant digits in the geoid height do not necessarily reflect accuracy.
AH8771.GEOID12B height accuracy estimate available here.
AH8771
AH8771.The dynamic height is computed by dividing the NAVD 88
AH8771.geopotential number by the normal gravity value computed on the
AH8771.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AH8771.degrees latitude (g = 980.6199 gals.).
AH8771
AH8771.The modeled gravity was interpolated from observed gravity values.
AH8771
AH8771; North East Units Estimated Accuracy
AH8771;SPC FL W - 377,760. 280,330. MT (+/- 180 meters Scaled)
AH8771
AH8771 SUPERSEDED SURVEY CONTROL
AH8771
AH8771.No superseded survey control is available for this station.
AH8771
AH8771_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML817685(NAD 83)
AH8771
AH8771_MARKER: DD = SURVEY DISK
AH8771_SETTING: 35 = SET IN A MAT FOUNDATION OR CONCRETE SLAB OTHER THAN
AH8771+WITH SETTING: PAVEMENT
AH8771_SP_SET: BRIDGE DECK
AH8771_STAMPING: A 461 1997
AH8771_MARK LOGO: FLDEP
AH8771_MAGNETIC: N = NO MAGNETIC MATERIAL
AH8771_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AH8771+STABILITY: SURFACE MOTION
AH8771_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AH8771+SATELLITE: SATELLITE OBSERVATIONS - May 06, 2008

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AH8771	HISTORY	- Date	Condition	Report By
AH8771	HISTORY	- 1997	MONUMENTED	FLDEP
AH8771	HISTORY	- 20080506	GOOD	PICKET

AH8771

AH8771

AH8771

STATION DESCRIPTION

AH8771'DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM)

AH8771'THE MARK IS ABOUT 30.5 MI (49.1 KM) SOUTHEAST OF LAKE WALES, 0.5 MI
 AH8771'(0.8 KM) WEST OF THE KISSIMMEE RIVER IN SECTION 35, TOWNSHIP 31 SOUTH,
 AH8771'RANGE 31 EAST. TO REACH THE MARK FROM THE INTERSECTION OF STATE ROAD
 AH8771'27 UNDERPASS AND STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON
 AH8771'STATE ROAD 60 FOR 25.7 MI (41.4 KM) TO THE JUNCTION OF RIVER RANCH
 AH8771'BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO
 AH8771'SOUTHEAST FOR 2.55 MI (4.10 KM) TO THE GUARD HOUSE AT THE ENTRANCE TO
 AH8771'RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH BOULEVARD FOR 0.3 MI (0.5
 AH8771'KM) TO THE JUNCTION OF KICCO ROAD ON THE RIGHT, TURN RIGHT ON KICCO
 AH8771'ROAD AND GO SOUTHEAST FOR 0.2 MI (0.3 KM) TO FOUR SETS OF DOUBLE OF
 AH8771'UNLOCKED GATES, CONTINUE SOUTH ON KICCO ROAD FOR 0.5 MI (0.8 KM) TO
 AH8771'ANOTHER UNLOCKED METAL GATE, CONTINUE SOUTHEAST ON KICCO ROAD FOR 0.05
 AH8771'MI (0.08 KM) TO A LOCKED METAL GATE, THE ENTRANCE TO PROPERTY OWNED BY
 AH8771'THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT, CONTINUE SOUTHEAST ON A
 AH8771'SHELL ROAD (KICCO ROAD) FOR 0.2 MI (0.3 KM) TO THE JUNCTION OF ROAD ON
 AH8771'THE LEFT, CONTINUE SOUTH-SOUTHEAST ON THE SHELL ROAD (KICCO ROAD) FOR
 AH8771'1.45 MI (2.33 KM) TO AN UNLOCKED METAL GATE NUMBER 8, PASSING THROUGH
 AH8771'THE GATE GO SOUTHERLY FOR ABOUT 15.0 FT (4.6 M) TO THE NORTH END OF
 AH8771'THE BRIDGE OVER ICE-CREAM SLOUGH AND THE MARK ON THE RIGHT. LOCATED
 AH8771'28.4 FT (8.7 M) SOUTH-SOUTHWEST OF THE CENTERLINE OF THE METAL GATE,
 AH8771'7.2 FT (2.2 M) WEST OF THE APPROXIMATE CENTERLINE OF THE SHELL ROAD
 AH8771'(KICCO ROAD) AND 1.4 FT (0.4 M) SOUTH OF THE NORTH END OF THE BRIDGE
 AH8771'GUARDRAIL. NOTE FOR ACCESS AND KEY CONTACT SOUTH FLORIDA WATER
 AH8771'MANAGEMENT DISTRICT AT 561-686-8800.

AH8771

AH8771

AH8771

STATION RECOVERY (2008)

AH8771'RECOVERY NOTE BY PICKETT AND ASSOCIATES 2008 (JS)

AH8771'RECOVERED IN GOOD CONDITION.

*** retrieval complete.

Elapsed Time = 00:00:01

The NGS Data Sheet

See file [dsdata.txt](#) for more info



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PROGRAM = datasheet95,
1      National Geodetic Survey, Retrieval Date
AH8765 *****
AH8765 DESIGNATION - Y 460
AH8765 PID - AH8765
AH8765 STATE/COUNTY- FL/POLK
AH8765 COUNTRY - US
AH8765 USGS QUAD - LAKE MARIAN SW (1972)
AH8765
AH8765 *CURRENT SURVEY CONTROL
AH8765
AH8765* NAD 83(1986) POSITION- 27 46 10. (N) 081 11 52. (W) SCALED
AH8765* NAVD 88 ORTHO HEIGHT - 16.764 (meters) 55.00 (feet) ADJUSTED
AH8765
AH8765 GEOID HEIGHT - -26.764 (meters) GEOID12B
AH8765 DYNAMIC HEIGHT - 16.739 (meters) 54.92 (feet) COMP
AH8765 MODELED GRAVITY - 979,154.1 (mgal) NAVD 88
AH8765
AH8765 VERT ORDER - SECOND CLASS I
AH8765
AH8765.The horizontal coordinates were scaled from a topographic map and have
AH8765.an estimated accuracy of +/- 6 seconds.
AH8765.
AH8765.The orthometric height was determined by differential leveling and
AH8765.adjusted by the NATIONAL GEODETIC SURVEY
AH8765.in July 1999.
AH8765
AH8765.Significant digits in the geoid height do not necessarily reflect accuracy.
AH8765.GEOID12B height accuracy estimate available here.
AH8765
AH8765.The dynamic height is computed by dividing the NAVD 88
AH8765.geopotential number by the normal gravity value computed on the
AH8765.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AH8765.degrees latitude (g = 980.6199 gals.).
AH8765
AH8765.The modeled gravity was interpolated from observed gravity values.
AH8765
AH8765; North East Units Estimated Accuracy
AH8765;SPC FL W - 380,920. 279,070. MT (+/- 180 meters Scaled)
AH8765
AH8765 SUPERSEDED SURVEY CONTROL
AH8765
AH8765 No superseded survey control is available for this station.
AH8765
AH8765_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML805716(NAD 83)
AH8765
AH8765_MARKER: DD = SURVEY DISK
AH8765_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AH8765_STAMPING: Y 460 1997
AH8765_MARK LOGO: FLDEP
AH8765_MAGNETIC: N = NO MAGNETIC MATERIAL
AH8765_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AH8765+STABILITY: SURFACE MOTION
AH8765_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AH8765+SATELLITE: SATELLITE OBSERVATIONS - May 06, 2008
AH8765
AH8765 HISTORY - Date Condition Report By
    
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AH8765 HISTORY - 1997 MONUMENTED FLDEP
AH8765 HISTORY - 20080506 GOOD PICKET

AH8765

AH8765 STATION DESCRIPTION

AH8765

AH8765'DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM)

AH8765'THE MARK IS ABOUT 29.0 MI (46.7 KM) SOUTHEAST OF LAKE WALES, 1.0 MI
AH8765'(1.6 KM) WEST OF THE KISSIMMEE RIVER ON RIVER RANCH BOULEVARD IN
AH8765'SECTION 23, TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO REACH THE MARK FROM
AH8765'THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND STATE ROAD 60 IN LAKE
AH8765'WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MI (41.4 KM) TO THE
AH8765'JUNCTION OF RIVER RANCH BOULEVARD ON THE RIGHT, TURN RIGHT ON RIVER
AH8765'RANCH BOULEVARD AND GO SOUTH FOR 2.55 MI (4.10 KM) TO THE GUARD HOUSE
AH8765'AT THE ENTRANCE TO RIVER RANCH, CONTINUE SOUTH ON RIVER RANCH
AH8765'BOULEVARD FOR 0.3 MI (0.5 KM) TO THE JUNCTION OF KICCO ROAD (A DIRT
AH8765'ROAD) LEADING SOUTHEAST ON THE RIGHT AND THE MARK ON THE RIGHT, SET IN
AH8765'THE TOP OF A ROUND CONCRETE MONUMENT FLUSH WITH THE GROUND AND LEVEL
AH8765'WITH RIVER RANCH BOULEVARD. LOCATED 85.4 FT (26.0 M) EAST-SOUTHEAST OF
AH8765'THE APPROXIMATE CENTERLINE OF TRACTOR TRAIL (A DIRT ROAD LEADING
AH8765'SOUTH) , 55.9 FT (17.0 M) SOUTH OF THE APPROXIMATE CENTERLINE OF RIVER
AH8765'RANCH BOULEVARD, 50.8 FT (15.5 M) WEST-SOUTHWEST OF POWER POLE NUMBER
AH8765'3717-1, 20.1 FT (6.1 M) EAST OF KICCO ROAD (A DIRT ROAD LEADING
AH8765'SOUTHEAST) , 1.0 FT (0.3 M) WEST OF A BARBWIRE FENCE LINE AND 0.8 FT
AH8765'(24.4 CM) WEST OF A CARSONITE WITNESS POST.

AH8765

AH8765 STATION RECOVERY (2008)

AH8765

AH8765'RECOVERY NOTE BY PICKETT AND ASSOCIATES 2008 (JS)

AH8765'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.

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PROGRAM = datasheet95, VERSION = 8.8
1      National Geodetic Survey,   Retrieval Date = DECEMBER 5, 2015
AH8764 *****
AH8764 DESIGNATION - X 460
AH8764 PID - AH8764
AH8764 STATE/COUNTY- FL/POLK
AH8764 COUNTRY - US
AH8764 USGS QUAD - LAKE MARIAN SW (1972)
AH8764
AH8764 *CURRENT SURVEY CONTROL
AH8764
AH8764 *-----
AH8764 * NAD 83(1986) POSITION- 27 46 42. (N) 081 12 25. (W) SCALED
AH8764 * NAVD 88 ORTHO HEIGHT - 16.907 (meters) 55.47 (feet) ADJUSTED
AH8764 *-----
AH8764 GEOID HEIGHT - -26.805 (meters) GEOID12B
AH8764 DYNAMIC HEIGHT - 16.882 (meters) 55.39 (feet) COMP
AH8764 MODELED GRAVITY - 979,152.1 (mgal) NAVD 88
AH8764
AH8764 VERT ORDER - SECOND CLASS I
AH8764
AH8764.The horizontal coordinates were scaled from a topographic map and have
AH8764.an estimated accuracy of +/- 6 seconds.
AH8764.
AH8764.The orthometric height was determined by differential leveling and
AH8764.adjusted by the NATIONAL GEODETIC SURVEY
AH8764.in July 1999.
AH8764
AH8764.Significant digits in the geoid height do not necessarily reflect accuracy.
AH8764.GEOID12B height accuracy estimate available here.
AH8764
AH8764.The dynamic height is computed by dividing the NAVD 88
AH8764.geopotential number by the normal gravity value computed on the
AH8764.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AH8764.degrees latitude (g = 980.6199 gals.).
AH8764
AH8764.The modeled gravity was interpolated from observed gravity values.
AH8764
AH8764; North East Units Estimated Accuracy
AH8764;SPC FL W - 381,900. 278,160. MT (+/- 180 meters Scaled)
AH8764
AH8764 SUPERSEDED SURVEY CONTROL
AH8764
AH8764.No superseded survey control is available for this station.
AH8764
AH8764_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML796726(NAD 83)
AH8764
AH8764_MARKER: DD = SURVEY DISK
AH8764_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AH8764_STAMPING: X 460 1997
AH8764_MARK LOGO: FLDEP
AH8764_MAGNETIC: N = NO MAGNETIC MATERIAL
AH8764_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AH8764+STABILITY: SURFACE MOTION
AH8764_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AH8764+SATELLITE: SATELLITE OBSERVATIONS - May 06, 2008
AH8764
AH8764 HISTORY - Date Condition Report By

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AH8764 HISTORY - 1997 MONUMENTED FLDEP
AH8764 HISTORY - 20080506 GOOD PICKET

AH8764

AH8764 STATION DESCRIPTION

AH8764

AH8764'DESCRIBED BY FL DEPT OF ENV PRO 1997 (JLM)

AH8764'THE MARK IS ABOUT 28.0 MI (45.1 KM) SOUTHEAST OF LAKE WALES ON RIVER
AH8764'RANCH BOULEVARD IN SECTION 15, TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO
AH8764'REACH THE MARK FROM THE INTERSECTION OF STATE ROAD 27 UNDERPASS AND
AH8764'STATE ROAD 60 IN LAKE WALES, GO EAST-SOUTHEAST ON STATE ROAD 60 FOR
AH8764'25.7 MI (41.4 KM) TO THE JUNCTION OF RIVER RANCH BOULEVARD ON THE
AH8764'RIGHT, TURN RIGHT ON RIVER RANCH BOULEVARD AND GO SOUTH FOR 2.15 MI
AH8764'(3.46 KM) TO THE MARK ON THE LEFT, SET IN THE TOP OF A ROUND CONCRETE
AH8764'MONUMENT FLUSH WITH THE GROUND AND LEVEL WITH RIVER RANCH BOULEVARD.
AH8764'LOCATED 206.0 FT (62.8 M) SOUTHEAST OF A METAL CABLE POLE AEF3-24-LP9,
AH8764'APPROXIMATELY 112.0 FT (34.1 M) NORTHEAST OF POWER POLE NUMBER 35,
AH8764'71.2 FT (21.7 M) NORTHEAST OF THE CENTERLINE OF RIVER RANCH BOULEVARD
AH8764'AND 1.6 FT (0.5 M) SOUTHWEST OF A CARSONITE WITNESS POST.

AH8764

AH8764 STATION RECOVERY (2008)

AH8764

AH8764'RECOVERY NOTE BY PICKETT AND ASSOCIATES 2008 (JS)

AH8764'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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PROGRAM = datasheet95, VERSION = 8.8
1      National Geodetic Survey,      Retrieval Date = DECEMBER 5, 2015
AF6116 *****
AF6116 DESIGNATION - F 63
AF6116 PID - AF6116
AF6116 STATE/COUNTY- FL/POLK
AF6116 COUNTRY - US
AF6116 USGS QUAD - LAKE MARIAN SW (1972)
AF6116
AF6116 *CURRENT SURVEY CONTROL
AF6116
AF6116* NAD 83(1986) POSITION- 27 48 16. (N) 081 12 38. (W) SCALED
AF6116* NAVD 88 ORTHO HEIGHT - 15.829 (meters) 51.93 (feet) ADJUSTED
AF6116
AF6116 GEOID HEIGHT - -26.909 (meters) GEOID12B
AF6116 DYNAMIC HEIGHT - 15.806 (meters) 51.86 (feet) COMP
AF6116 MODELED GRAVITY - 979,150.6 (mgal) NAVD 88
AF6116
AF6116 VERT ORDER - FIRST CLASS II
AF6116
AF6116.The horizontal coordinates were scaled from a topographic map and have
AF6116.an estimated accuracy of +/- 6 seconds.
AF6116.
AF6116.The orthometric height was determined by differential leveling and
AF6116.adjusted by the NATIONAL GEODETIC SURVEY
AF6116.in May 2008.
AF6116
AF6116.Significant digits in the geoid height do not necessarily reflect accuracy.
AF6116.GEOID12B height accuracy estimate available here.
AF6116
AF6116.The dynamic height is computed by dividing the NAVD 88
AF6116.geopotential number by the normal gravity value computed on the
AF6116.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AF6116.degrees latitude (g = 980.6199 gals.).
AF6116
AF6116.The modeled gravity was interpolated from observed gravity values.
AF6116
AF6116;
AF6116;SPC FL W - North East Units Estimated Accuracy
AF6116; 384,790. 277,790. MT (+/- 180 meters Scaled)
AF6116
AF6116 SUPERSEDED SURVEY CONTROL
AF6116
AF6116 NAVD 88 (06/15/91) 15.827 (m) 51.93 (f) SUPERSEDED 2 0
AF6116 NGVD 29 (??/??/92) 16.194 (m) 53.13 (f) SUPERSEDED 2 0
AF6116 NGVD 29 (09/01/92) 16.194 (m) 53.13 (f) ADJUSTED 2 0
AF6116
AF6116.Superseded values are not recommended for survey control.
AF6116
AF6116.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AF6116.See file dsdata.txt to determine how the superseded data were derived.
AF6116
AF6116_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML792755(NAD 83)
AF6116
AF6116_MARKER: DB = BENCH MARK DISK
AF6116_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AF6116_STAMPING: F 63 1934
AF6116_MARK LOGO: CGS

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AF6116_PROJECTION: FLUSH
 AF6116_MAGNETIC: N = NO MAGNETIC MATERIAL
 AF6116_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 AF6116+STABILITY: SURFACE MOTION
 AF6116_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 AF6116+SATELLITE: SATELLITE OBSERVATIONS - May 06, 2008

AF6116
 AF6116 HISTORY - Date Condition Report By
 AF6116 HISTORY - 1934 MONUMENTED CGS
 AF6116 HISTORY - 1960 GOOD CGS
 AF6116 HISTORY - 1973 GOOD NGS
 AF6116 HISTORY - 1983 GOOD FLDNR
 AF6116 HISTORY - 19970726 GOOD FLDEP
 AF6116 HISTORY - 20070414 GOOD FLDEP
 AF6116 HISTORY - 20080506 GOOD PICKET

AF6116
 AF6116 STATION DESCRIPTION

AF6116
 AF6116'DESCRIBED BY COAST AND GEODETIC SURVEY 1960
 AF6116'25.4 MI E FROM LAKE WALES.
 AF6116'25.4 MILES EAST ALONG STATE HIGHWAY 60 FROM THE ATLANTIC COAST
 AF6116'LINE RAILROAD STATION AT LAKE WALES, 0.7 MILE WEST OF THE WEST
 AF6116'END OF THE CONCRETE HIGHWAY BRIDGE OVER KISSIMMEE RIVER, 0.3 MILE
 AF6116'WEST OF A 30-FOOT BRIDGE OVER A SWAMP, BETWEEN THE 3RD. AND 4TH.
 AF6116'TELEPHONE POLES WEST OF THE BRIDGE, 50 FEET SOUTH OF THE CENTER
 AF6116'LINE OF HIGHWAY, 103 1/2 FEET WEST-NORTHWEST OF THE 4TH. POLE WEST
 AF6116'OF THE BRIDGE, (POLE NO. 17-187), 14 FEET NORTH OF AN EAST-WEST
 AF6116'FENCE LINE, 2 FEET WEST OF A CONCRETE WITNESS POST, ABOUT 4
 AF6116'FEET BELOW THE LEVEL OF THE HIGHWAY, AND SET IN TOP OF A CONCRETE
 AF6116'POST PROJECTING 1 INCH. STEEL WITNESS POST WAS SET NEARBY.

AF6116
 AF6116 STATION RECOVERY (1973)

AF6116
 AF6116'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1973
 AF6116'RECOVERED IN GOOD CONDITION.

AF6116
 AF6116 STATION RECOVERY (1983)

AF6116
 AF6116'RECOVERY NOTE BY FL DEPT OF NAT RES 1983
 AF6116'RECOVERED IN GOOD CONDITION.

AF6116
 AF6116 STATION RECOVERY (1997)

AF6116
 AF6116'RECOVERY NOTE BY FL DEPT OF ENV PRO 1997 (JLM)
 AF6116'THE MARK IS ABOUT 25.0 MI (40.2 KM) EAST-SOUTHEAST OF LAKE WALES, 55.0
 AF6116'MI (88.5 KM) NORTH-NORTHWEST OF VERO BEACH ON STATE ROAD 60 IN SECTION
 AF6116'10, TOWNSHIP 31 SOUTH, RANGE 31 EAST. TO REACH THE MARK FROM THE
 AF6116'INTERSECTION OF STATE ROAD 27 AND STATE ROAD 60 IN LAKE WALES, GO
 AF6116'EAST-SOUTHEAST ON STATE ROAD 60 FOR 25.7 MI (41.4 KM) TO THE JUNCTION
 AF6116'OF RIVER RANCH BOULEVARD ON THE RIGHT, CONTINUE EAST ON STATE ROAD 60
 AF6116'FOR 0.5 MI (0.8 KM) TO THE MARK ON THE RIGHT, SET IN TOP OF A ROUND
 AF6116'CONCRETE MONUMENT FLUSH WITH THE GROUND AND 4.0 FT (1.2 M) BELOW THE
 AF6116'LEVEL OF THE ROAD. LOCATED 257.3 FT (78.4 M) WEST OF POWER POLE NUMBER
 AF6116'17-187, 87.4 FT (26.6 M) EAST OF POWER POLE NUMBER 17-188, 50.0 FT
 AF6116'(15.2 M) SOUTH OF THE CENTERLINE OF STATE ROAD 60 AND 1.0 FT (0.3 M)
 AF6116'SOUTH OF A METAL WITNESS POST.

AF6116
 AF6116 STATION RECOVERY (2007)

AF6116
 AF6116'RECOVERY NOTE BY FL DEPT OF ENV PRO 2007 (BPJ)
 AF6116'RECOVERED AS DESCRIBED.

AF6116
 AF6116 STATION RECOVERY (2008)

AF6116
 AF6116'RECOVERY NOTE BY PICKETT AND ASSOCIATES 2008 (JS)
 AF6116'RECOVERED IN GOOD CONDITION.

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