Surveyor's Report

Hydrology – Upper East Coast Floridian Wells

SFWMD Work Order Number: C-C1990P WO 07

NMI Project No. 1078.001

Prepared for:

South Florida Water Management District

NICK MILLER, INC.

2560 RCA Boulevard, Suite 105 ● Palm Beach Gardens, Florida 33410
ph: 561.627.5200 ● fax: 561.627.0983 ● email: info@nickmillerinc.com
www.nickmillerinc.com

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OVERVIEW OF THE PROJECT

PURPOSE

The purpose of the Hydrology – Upper East Coast Floridian Wells Project is to establish vertical control marks near each of the 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:

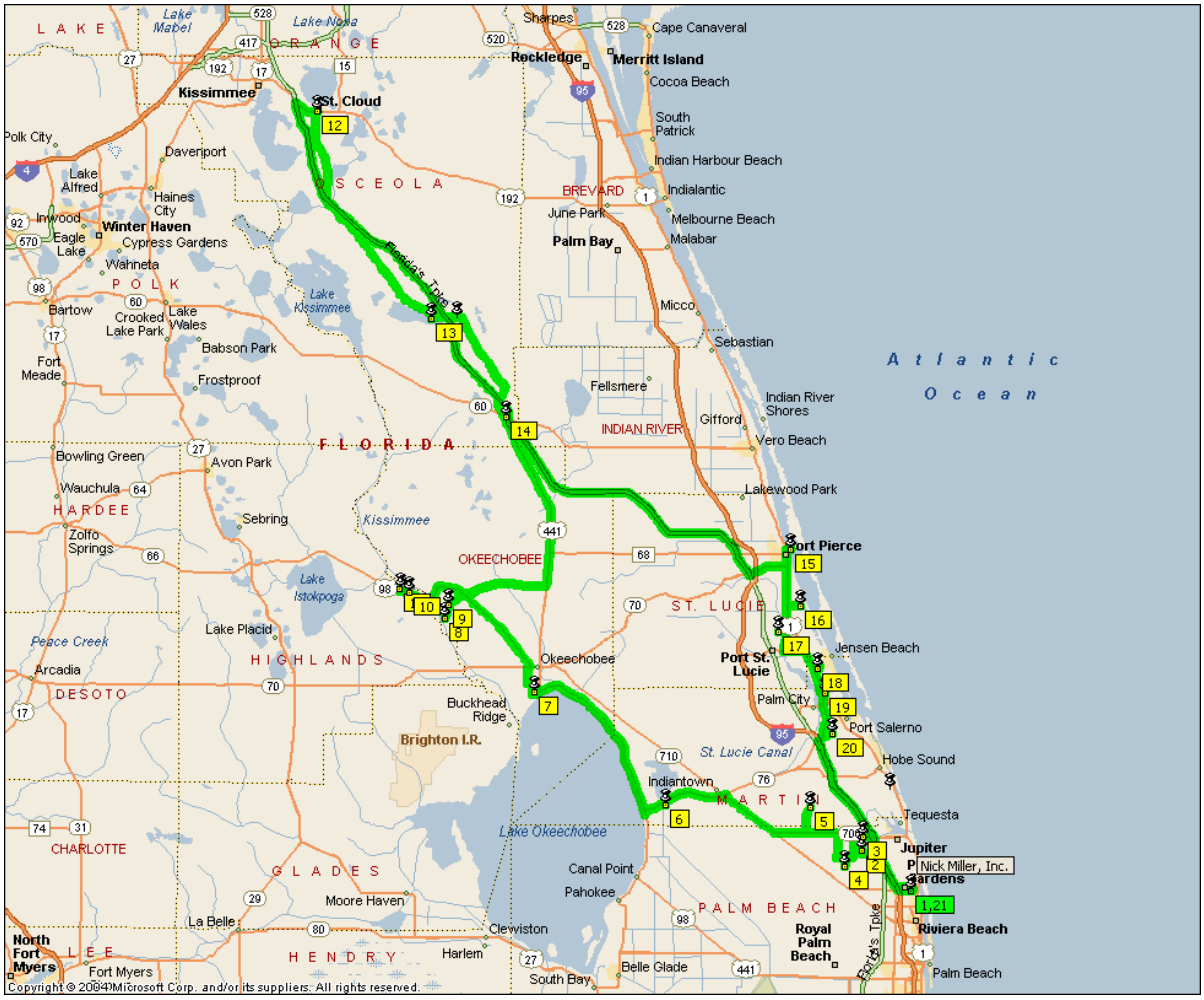
1. The fiberglass material used to construct the rods is less dimensionally stable than rods constructed of Invar metal.
2. The fiberglass rods are not individually calibrated by the manufacturer to identify scale errors across the length of the rod.
3. The fiberglass rods are a three-section snap-together 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 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

The project is located in 5 counties: Palm Beach, Martin, St Lucie, Okeechobee, and Osceola. Following is a map and legend.

2. PB-875
3. PB-1648/1649
4. PB-1525
5. M-1083
6. M-1086/1088
7. Okeechobee Utility
8. LKBD1B
9. LKBD2B
10. LKBD4B
11. LKBD5B
12. St. Cloud Power Plant
13. Lake Marian
14. Turnpike DOT
15. Ft. Pierce Utility
16. STL-278
17. Port St. Lucie Utility
18. Martin County Utility
19. Stuart Utility
20. M-1253



ITEMS DELIVERED TO THE DISTRICT

The following items are delivered to the District 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 each site
4. Paper and electronic copy of site photographs
5. Paper copy of 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 District in a file named “NGVD29.txt” when applicable, otherwise NGS superseded values were used. The linear unit for all elevations is the meter.

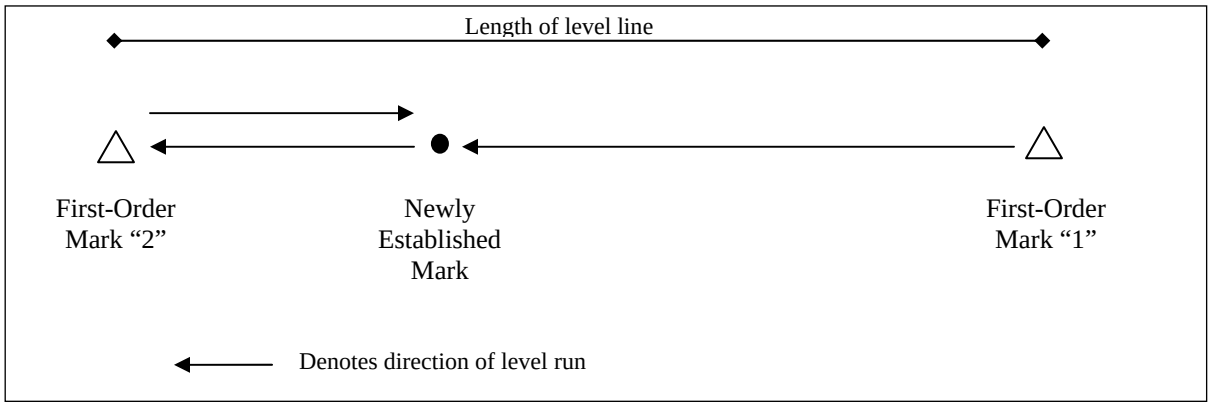
LEVELING METHODS

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-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-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 tables list the elevations established for each new mark, the level run misclosure, "to-reach" description for each mark and a photo of the mark. All elevations are in US Survey Feet.

MCUTL	Elevation:	**16.07**	(NAVD 88)	?	(NGVD 29)
Bench Mark 1:	GCY D20	13.86	(NAVD 88)	?	(NGVD 29)
Bench Mark 2:	GS 41	17.12	(NAVD 88)	?	(NGVD 29)
Monitoring Well:	1A	18.26	(NAVD 88)	?	(NGVD 29)
Monitoring Well:	2B	18.76	(NAVD 88)	?	(NGVD 29)
Length of Run (km):	2.04				
Max Allowable Misclosure (mm):	11				
Actual Misclosure (mm):	1				

To Reach MCUTL:

TO REACH MARK FROM THE JUNCTION OF US HIGHWAY 1 AND STATE ROAD 76 (KANNER HIGHWAY) IN STUART, GO NORTH ON US HIGHWAY 1 FOR 3.8 MI (6.12 KM) TO COUNTY ROAD 707A (JENSEN BEACH BLVD), TURN RIGHT ON COUNTY ROAD 707A AND GO EAST FOR 0.7 MI (1.13 KM) TO NW HILLMAN DRIVE, TURN RIGHT ON NW HILLMAN DRIVE AND GO SOUTH FOR 0.1 MI (0.16 KM) TO MARTIN COUNTY UTILITY SECURITY GATE ENTRANCE, CONTINUE SOUTH ON NW HILLMAN DRIVE FOR 0.9 MI (1.44 KM) TO OPERATOR OFFICE, TURN RIGHT ON UTILITY ROAD AND GO WEST FOR 250 FT (76.2 M) TO MARK ON THE LEFT, SET IN NORTHWEST CORNER OF CONCRETE BASE OF BACK WASH RETURN BASIN 0.1 FT (3.04 CM) ABOVE LEVEL OF THE GROUND. LOCATED 0.6 FT (.18 M) SOUTH AND 0.6 FT (.18 M) EAST OF NORTHWEST CORNER OF CONCRETE BASE OF BACK WASH RETURN BASIN, 6.55 FT (2.0 M) SOUTHEAST OF LIGHT POLE, 128.5 FT (39.17 M) EAST NORTHEAST OF INJECTION WELL #1.

STUTL	Elevation:	**7.42**	(NAVD 88)	8.89	(NGVD 29)
Bench Mark 1:	W 231	14.51	(NAVD 88)	15.96	(NGVD 29)
Bench Mark 2:	F 34 RESET	8.27	(NAVD 88)	9.74	(NGVD 29)
Injection Well:	Number 1	12.25	(NAVD 88)	13.72	(NGVD 29)
Monitoring Well:	Number 2	9.76	(NAVD 88)	11.23	(NGVD 29)
Length of Run (km):	1.22				
Max Allowable Misclosure (mm):	9				
Actual Misclosure (mm):	9				

To Reach STUTL:

TO REACH MARK FROM THE JUNCTION OF STATE ROAD 714 AND STATE ROAD 76 (KANNER HIGHWAY) IN STUART, GO NORTH ON STATE ROAD 76 FOR 1.5 MI (2.41 KM) TO OCEAN BLVD, TURN RIGHT ON OCEAN BLVD AND GO EAST FOR 150 FT (45.7 M) TO SW FLAGER AVE, TURN RIGHT ON SW FLAGER AND GO SOUTHEAST FOR 0.1 MI (0.16 KM) TO STYPMANN STREET, TURN LEFT ON STYPMANN STREET AND GO EAST FOR 400 FT (121.9 M) TO STUART UTILITY ENTRANCE GATE. MARK IS LOCATED IN SOUTHWEST CORNER OF STUART UTILITY PLANT NEAR STUART WATER TOWER ON SOUTHEAST CORNER OF CONCRETE BASE OF INJECTION WELL #1. LOCATED 0.4 FT (.12 M) NORTH AND 0.4 FT WEST SOUTHEAST CORNER OF CONCRETE BASE OF INJECTION WELL #1, 39 FT (11.89 M) NORTHWEST OF PK NAIL & DISK LB 4318 IN OAK TREE, 69.6 FT NORTHEAST OF UTILITY POLE WITH ELECTRIC METER, 15.1 FT (4.6 M) SOUTHWEST OF LIGHT POLE.

M1253	Elevation:	**15.21**	(NAVD 88)	16.71	(NGVD 29)	
Bench Mark 1:	A 569	17.39	(NAVD 88)	18.89	(NGVD 29)	
Bench Mark 2:	E 569	16.04	(NAVD 88)	17.50	(NGVD 29)	
Monitoring Well:	M1253	16.77	(NAVD 88)	18.27	(NGVD 29)	
Length of Run (km):	3.84					
Max Allowable Misclosure (mm):	15					
Actual Misclosure (mm):	2					

To Reach M1253:

TO REACH MARK FROM THE JUNCTION OF INTERSTATE 95 AND STATE ROAD 76 (KANNER HIGHWAY) IN STUART, GO EAST ON STATE ROAD 76 FOR 0.5 MI (0.8 KM) TO COVE ROAD, TURN RIGHT ON COVE ROAD AND GO EAST FOR 1.3 MI (2.09 KM) TO DIRT ROAD (SAMARITAN HOUSE FOR BOYS ENTRANCE), TURN RIGHT ON DIRT ROAD AND GO SOUTH FOR 300 FT (91.4 M) TO MARK ON THE LEFT, SET IN TOP OF A ROUND CONCRETE MONUMENT 0.2 FT (6.1 CM) BELOW LEVEL OF THE GROUND. LOCATED 16 FT (4.88 M) EAST OF CENTER OF ROAD, 59.5 FT (18.1 M) SOUTHEAST FROM WOOD UTILITY POLE, 54 FT (16.46 M) SOUTH FROM U.S. GEOLOGICAL SURVEY MONITORING WELL, 8.1 FT (2.47 M) NORTH OF M1253 MONITORING WELL.

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

I hereby certify that 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 15, 2005
Date of Survey

By: _____

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

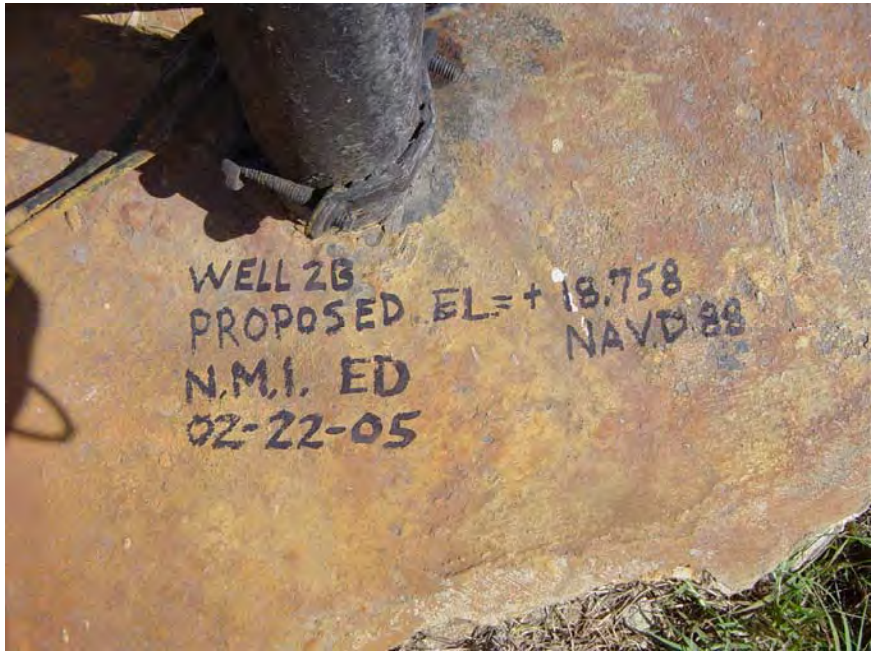
MCUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Looking at the well facing south

MCUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Close-up of the well 1A showing the contractor's markings

MCUTL



Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Close-up of the well 2B showing the contractor's markings

MCUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Looking at the benchmark facing east

MCUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: A top view of the benchmark

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

COUNTY MARTIN	**PROJECT Hydrology – UEC** **Floridian Wells**	**DESIGNATION MCUTL**
SECTION 20	**TOWNSHIP 37 SOUTH**	**RANGE 41 EAST**

GEOGRAPHIC INDEX OF QUAD

Established by Nick Miller Inc. **Recovered by**	**NAME OF QUADRANGLE** **PALM CITY**
SURVEYOR Stephen M. Gordon **DATE** 1/18/2005	**FIELD BOOK** 1 **PAGE** 19

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

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

CONTROL ACCURACY: HORIZONTAL 1 2 3 (SUB-METER) (circle one) **VERTICAL 1 2 (3)**

STATE PLANE COORDINATES	**E 896003ft**	**N 1057481ft**	**EL. 16.07 ft**

LATITUDE N 27.24099° LONGITUDE W 80.26188°

DESCRIPTION

To Reach:

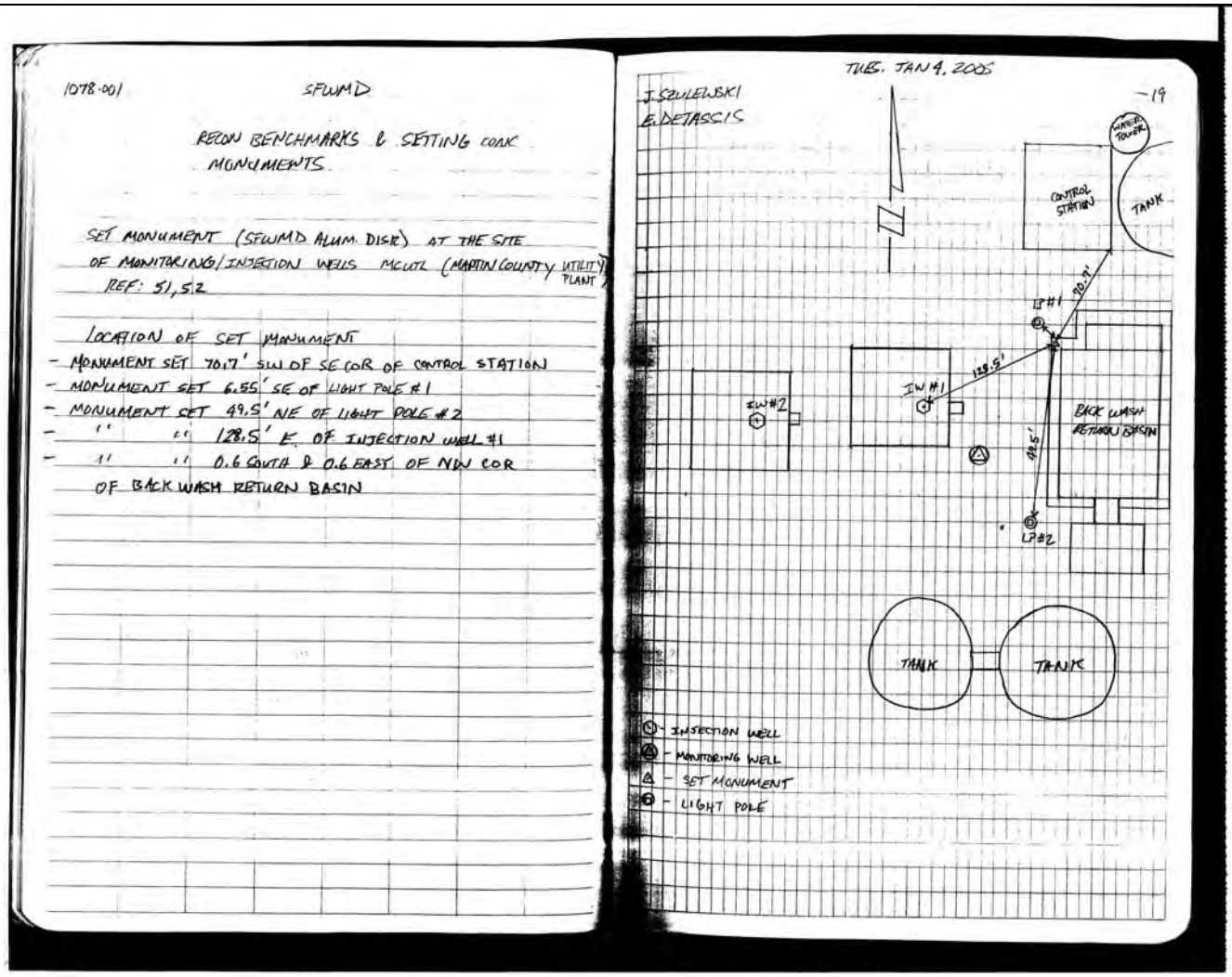
TO REACH MARK FROM THE JUNCTION OF US HIGHWAY 1 AND STATE ROAD 76 (KANNER HIGHWAY) IN STUART, GO NORTH ON US HIGHWAY 1 FOR 3.8 MI (6.12 KM) TO COUNTY ROAD 707A (JENSEN BEACH BLVD), TURN RIGHT ON COUNTY ROAD 707A AND GO EAST FOR 0.7 MI (1.13 KM) TO NW HILLMAN DRIVE, TURN RIGHT ON NW HILLMAN DRIVE AND GO SOUTH FOR 0.1 MI (0.16 KM) TO MARTIN COUNTY UTILITY SECURITY GATE ENTRANCE, CONTINUE SOUTH ON NW HILLMAN DRIVE FOR 0.9 MI (1.44 KM) TO OPERATOR OFFICE, TURN RIGHT ON UTILITY ROAD AND GO WEST FOR 250 FT (76.2 M) TO MARK ON THE LEFT, SET IN NORTHWEST CORNER OF CONCRETE BASE OF BACK WASH RETURN BASIN 0.1 FT (3.04 CM) ABOVE LEVEL OF THE GROUND. LOCATED 0.6 FT (.18 M) SOUTH AND 0.6 FT
(.18 M) EAST OF NORTHWEST CORNER OF CONCRETE BASE OF BACK WASH RETURN BASIN, 6.55 FT (2.0 M) SOUTHEAST OF LIGHT POLE, 128.5 FT (39.17 M) EAST NORTHEAST OF INJECTION WELL #1.

Notable Land marks:

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

SKETCH



1078-001 SFWMD

RECON BENCHMARKS & SETTING CONC MONUMENTS.

SET MONUMENT (SFWMD ALUM. DISK) AT THE SITE OF MONITORING/INJECTION WELLS MCUTL (MARTIN COUNTY UTILITY PLANT)
REF: 51, 52

LOCATION OF SET MONUMENT
- MONUMENT SET 70.7' SW OF SE COR OF CONTROL STATION
- MONUMENT SET 6.55' SE OF LIGHT POLE #1
- MONUMENT SET 49.5' NE OF LIGHT POLE #2
- " " 128.5' E. OF INJECTION WELL #1
- " " 0.6 SOUTH & 0.6 EAST OF NW COR OF BACK WASH RETURN BASIN

TUES. JAN 4, 2005

J. SZULEWSKI
E. DETASSIS

-19

From the "ngvd29.txt" file provided by NGS for the CERP Geodetic Vertical Control Project.
Line/Part: L26368 SSN+: mark floated, SSN*: mark constrained, SSN#: mark floated & constrained

Mark ID	SSN	PID	Designation	Geopotential	Elevation	Codes
2047	1003	AB2495	GS 41	5.5571	5.6706	
2048	1004	AJ5262	GCY D20	4.5827	4.6762	

The NGS Data Sheet

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

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.21
1        National Geodetic Survey,   Retrieval Date = AUGUST 15, 2005
 AJ5262 ***********************************************************************
 AJ5262  DESIGNATION -  GCY D20
 AJ5262  PID         -  AJ5262
 AJ5262  STATE/COUNTY-  FL/MARTIN
 AJ5262  USGS QUAD   -  ST LUCIE INLET (1983)
 AJ5262
 AJ5262                        *CURRENT SURVEY CONTROL
 AJ5262  ______________________________________________________________________
 AJ5262* NAD 83(1999)-  27 14 43.20096(N)    080 14 52.04139(W)     ADJUSTED
 AJ5262* NAVD 88     -         4.224  (meters)      13.86   (feet)  ADJUSTED
 AJ5262  ______________________________________________________________________
 AJ5262  X           -     961,184.863 (meters)                     COMP
 AJ5262  Y           -  -5,592,473.540 (meters)                     COMP
 AJ5262  Z           -   2,902,399.807 (meters)                     COMP
 AJ5262  LAPLACE CORR-          -2.55  (seconds)                    DEFLEC99
 AJ5262  ELLIP HEIGHT-         -23.29  (meters)          (09/27/01) GPS OBS
 AJ5262  GEOID HEIGHT-         -27.53  (meters)                     GEOID03
 AJ5262  DYNAMIC HT  -           4.218 (meters)      13.84  (feet)  COMP
 AJ5262  MODELED GRAV-     979,123.1   (mgal)                       NAVD 88
 AJ5262
 AJ5262  HORZ ORDER  -  FIRST
 AJ5262  VERT ORDER  -  SECOND    CLASS I
 AJ5262  ELLP ORDER  -  FOURTH    CLASS II
 AJ5262
 AJ5262.The horizontal coordinates were established by GPS observations
 AJ5262.and adjusted by the National Geodetic Survey in September 2001.
 AJ5262
 AJ5262.The orthometric height was determined by differential leveling
 AJ5262.and adjusted by the National Geodetic Survey in August 2002.
 AJ5262
 AJ5262.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AJ5262
 AJ5262.The Laplace correction was computed from DEFLEC99 derived deflections.
 AJ5262
 AJ5262.The ellipsoidal height was determined by GPS observations
 AJ5262.and is referenced to NAD 83.
 AJ5262
 AJ5262.The geoid height was determined by GEOID03.
 AJ5262
 AJ5262.The dynamic height is computed by dividing the NAVD 88
 AJ5262.geopotential number by the normal gravity value computed on the
 AJ5262.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AJ5262.degrees latitude (g = 980.6199 gals.).
 AJ5262
 AJ5262.The modeled gravity was interpolated from observed gravity values.
 AJ5262
 AJ5262;                     North         East     Units Scale Factor Converg.
 AJ5262;SPC FL E     -   322,810.629   274,494.757   MT  1.00000966   +0 20 39.8
 AJ5262;UTM  17      - 3,013,832.469   574,469.340   MT  0.99966846   +0 20 39.8
 AJ5262
 AJ5262!             -  Elev Factor  x  Scale Factor =   Combined Factor
 AJ5262!SPC FL E     -   1.00000366  x   1.00000966  =   1.00001332
 AJ5262!UTM  17      -   1.00000366  x   0.99966846  =   0.99967212
 AJ5262
 AJ5262                          SUPERSEDED SURVEY CONTROL
 AJ5262
 AJ5262.No superseded survey control is available for this station.
 AJ5262
 AJ5262_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNL7446913832(NAD 83)
 AJ5262_MARKER: DH = HORIZONTAL CONTROL DISK
 AJ5262_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 AJ5262_STAMPING: GCY D20 2001
 AJ5262_MARK LOGO: FL-085
 AJ5262_PROJECTION: FLUSH
 AJ5262_MAGNETIC: N = NO MAGNETIC MATERIAL
 AJ5262_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 AJ5262+STABILITY: SURFACE MOTION
```

```
AJ5262_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AJ5262+SATELLITE: SATELLITE OBSERVATIONS - April 08, 2002
AJ5262
AJ5262  HISTORY     - Date     Condition        Report By
AJ5262  HISTORY     - 20010514 MONUMENTED       GCYI
AJ5262  HISTORY     - 20020408 GOOD             GCYI
AJ5262
AJ5262                           STATION DESCRIPTION
AJ5262
AJ5262'DESCRIBED BY G.C.Y., INCORPORATED 2001 (MDL)
AJ5262'THE STATION IS LOCATED 1.6 KM (1 MI) WEST OF JENSEN BEACH AND 5.3 KM
AJ5262'(3.3 MI)
AJ5262'NORTH OF STUART NEAR THE NORTH RIGHT OF WAY OF JENSEN BEACH
AJ5262'BOULEVARD IN SECTION 16, TOWNSHIP 37 SOUTH, RANGE 41 EAST, MARTIN
AJ5262'COUNTY, FLORIDA.
AJ5262'
AJ5262'TO REACH THE STATION FROM THE INTERSECTION OF U.S. HIGHWAY 1 AND
AJ5262'JENSEN
AJ5262'BEACH BOULEVARD, GO EAST ON JENSEN BEACH BOULEVARD 2.4 KM (1.5 MI) TO
AJ5262'STATION ON THE LEFT.
AJ5262'
AJ5262'STATION IS LOCATED 3.36 M (11 FT) NORTH OF THE NORTH EDGE OF PAVEMENT
AJ5262'OF
AJ5262'JENSEN BEACH BOULEVARD AND 2.93 M (9.6 FT) SOUTH OF A CARSONITE POST
AJ5262'SET
AJ5262'IN BARBED WIRE FENCE LINE.
AJ5262'REFERENCES-
AJ5262'GCY, INC. MAG NAIL AND WASHER IN 14 INCH PINE TREE -34 DEG. MAG. AZ. -
AJ5262'8.71 M
AJ5262'(28.56 FT)
AJ5262'GCY, INC. MAG NAIL AND WASHER IN NORTH EDGE OF PAVEMENT OF JENSEN
AJ5262'BEACH
AJ5262'BOULEVARD - 141 DEG. MAG. AZ. - 6.05 M (19.84 FT)
AJ5262'GCY, INC. MAG NAIL AND WASHER IN NORTH EDGE OF PAVEMENT OF JENSEN
AJ5262'BEACH
AJ5262'BOULEVARD - 232 DEG. MAG. AZ. - 5.31 M (17.43 FT)
AJ5262'GCY, INC. MAG NAIL AND WASHER IN 13 INCH PINE TREE -338 DEG. MAG. AZ.
AJ5262'- 7.93 M
AJ5262'(26.01 FT)
AJ5262'
AJ5262'NOTE-
AJ5262'DEEP ONE MAGNET BURIED AT NORTH SIDE OF MONUMENT.
AJ5262'
AJ5262'
AJ5262
AJ5262                           STATION RECOVERY (2002)
AJ5262
AJ5262'RECOVERY NOTE BY G.C.Y., INCORPORATED 2002 (PA)
AJ5262'MARK RECOVERED AS DESCRIBED.
AJ5262'

*** retrieval complete.
Elapsed Time = 00:00:00
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From the "ngvd29.txt" file provided by NGS for the CERP Geodetic Vertical Control Project.
Line/Part: L26368 SSN+: mark floated, SSN*: mark constrained, SSN#: mark floated & constrained

The NGS Data Sheet

Mark ID	SSN	PID	Designation	Geopotential	Elevation	Codes
2047	1003	AB2495	GS 41	5.5571	5.6706	
2048	1004	AJ5262	GCY D20	4.5827	4.6762	

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 = OCTOBER 21, 2015
 AB2495 ***********************************************************************
 AB2495  DESIGNATION -  GS 41
 AB2495  PID         -  AB2495
 AB2495  STATE/COUNTY-  FL/MARTIN
 AB2495  COUNTRY     -  US
 AB2495  USGS QUAD   -  PALM CITY (1983)
 AB2495
 AB2495                        *CURRENT SURVEY CONTROL
 AB2495  ______________________________________________________________________
 AB2495* NAD 83(2011) POSITION- 27 14 42.98047(N) 080 15 15.29060(W)   ADJUSTED
 AB2495* NAD 83(2011) ELLIP HT-   -22.313 (meters)        (06/27/12)   ADJUSTED
 AB2495* NAD 83(2011) EPOCH    -  2010.00
 AB2495* NAVD 88 ORTHO HEIGHT -     5.219 (meters)       17.12  (feet) ADJUSTED
 AB2495  ______________________________________________________________________
 AB2495  NAD 83(2011) X  -    960,555.172 (meters)                     COMP
 AB2495  NAD 83(2011) Y  - -5,592,585.763 (meters)                     COMP
 AB2495  NAD 83(2011) Z  -  2,902,394.221 (meters)                     COMP
 AB2495  LAPLACE CORR    -         -2.65  (seconds)                    DEFLEC12B
 AB2495  GEOID HEIGHT    -        -27.545 (meters)                     GEOID12B
 AB2495  DYNAMIC HEIGHT  -          5.211 (meters)       17.10  (feet) COMP
 AB2495  MODELED GRAVITY -    979,123.0   (mgal)                       NAVD 88
 AB2495
 AB2495  VERT ORDER      -  SECOND    CLASS I
 AB2495
 AB2495  Network accuracy estimates per FGDC Geospatial Positioning Accuracy
 AB2495  Standards:
 AB2495         FGDC (95% conf, cm)      Standard deviation (cm)      CorrNE
 AB2495            Horiz  Ellip           SD_N   SD_E   SD_h       (unitless)
 AB2495  ------------------------------------------------------------------
 AB2495  NETWORK    0.77   1.31           0.33   0.30   0.67     -0.03218746
 AB2495  ------------------------------------------------------------------
 AB2495  Click here for local accuracies and other accuracy information.
 AB2495
 AB2495
 AB2495.The horizontal coordinates were established by GPS observations
 AB2495.and adjusted by the National Geodetic Survey in June 2012.
 AB2495
 AB2495.NAD 83(2011) refers to NAD 83 coordinates where the reference
 AB2495.frame has been affixed to the stable North American tectonic plate. See
 AB2495.NA2011 for more information.
 AB2495
 AB2495.The horizontal coordinates are valid at the epoch date displayed above
 AB2495.which is a decimal equivalence of Year/Month/Day.
 AB2495
 AB2495.The orthometric height was determined by differential leveling and
 AB2495.adjusted by the NATIONAL GEODETIC SURVEY
 AB2495.in August 2002.
 AB2495
 AB2495.Significant digits in the geoid height do not necessarily reflect accuracy.
 AB2495.GEOID12B height accuracy estimate available here.
 AB2495
 AB2495.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AB2495
 AB2495.The Laplace correction was computed from DEFLEC12B derived deflections.
 AB2495
```

```
AB2495.The ellipsoidal height was determined by GPS observations
AB2495.and is referenced to NAD 83.
AB2495
AB2495.The dynamic height is computed by dividing the NAVD 88
AB2495.geopotential number by the normal gravity value computed on the
AB2495.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AB2495.degrees latitude (g = 980.6199 gals.).
AB2495
AB2495.The modeled gravity was interpolated from observed gravity values.
AB2495
AB2495. The following values were computed from the NAD 83(2011) position.
AB2495
AB2495;                    North         East     Units Scale Factor Converg.
AB2495;SPC FL E     -   322,800.014   273,855.201   MT  1.00000849   +0 20 29.1
AB2495;SPC FL E     - 1,059,053.05    898,473.27   sFT  1.00000849   +0 20 29.1
AB2495;UTM  17      - 3,013,821.858   573,830.002   MT  0.99966729   +0 20 29.1
AB2495
AB2495!             -  Elev Factor  x  Scale Factor =   Combined Factor
AB2495!SPC FL E     -   1.00000351  x   1.00000849  =   1.00001200
AB2495!UTM  17      -   1.00000351  x   0.99966729  =   0.99967079
AB2495
AB2495                          SUPERSEDED SURVEY CONTROL
AB2495
AB2495  NAD 83(2007)-  27 14 42.98080(N)    080 15 15.29158(W) AD(2002.00) 0
AB2495  ELLIP H (02/10/07)  -22.294  (m)                       GP(2002.00)
AB2495  NAD 83(1999)-  27 14 42.98099(N)    080 15 15.29194(W) AD(       ) 1
AB2495  ELLIP H (06/19/01)  -22.274  (m)                       GP(       ) 4 1
AB2495  NAD 83(1990)-  27 14 42.97973(N)    080 15 15.29087(W) AD(       ) 1
AB2495  ELLIP H (03/26/96)  -22.262  (m)                       GP(       ) 3 2
AB2495  NAVD 88 (03/26/96)    5.2    (m)  GEOID93 model used   GPS OBS
AB2495
AB2495.Superseded values are not recommended for survey control.
AB2495
AB2495.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AB2495.See file dsdata.txt to determine how the superseded data were derived.
AB2495
AB2495_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNL7383013821(NAD 83)
AB2495
AB2495_MARKER: DD = SURVEY DISK
AB2495_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND
AB2495_STAMPING: GS 41 1992
AB2495_MARK LOGO: FL-085
AB2495_PROJECTION: FLUSH
AB2495_MAGNETIC: N = NO MAGNETIC MATERIAL
AB2495_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
AB2495_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AB2495+SATELLITE: SATELLITE OBSERVATIONS - March 17, 2009
AB2495
AB2495  HISTORY     - Date     Condition        Report By
AB2495  HISTORY     - 1992     MONUMENTED       KEISCH
AB2495  HISTORY     - 19950209 GOOD             SFLWMD
AB2495  HISTORY     - 20010730 GOOD             GCYI
AB2495  HISTORY     - 20020408 GOOD             GCYI
AB2495  HISTORY     - 20080118 GOOD             GCYI
AB2495  HISTORY     - 20090317 GOOD             JOHNSN
AB2495  HISTORY     - 20110621 MARK NOT FOUND   FLDEP
AB2495
AB2495                          STATION DESCRIPTION
AB2495
AB2495'DESCRIBED BY S FL WATER MGMT DIST 1995 (MEH)
AB2495'RECOVERED AS DESCRIBED.
AB2495
AB2495                          STATION RECOVERY (2001)
AB2495
AB2495'RECOVERY NOTE BY G.C.Y., INCORPORATED 2001 (PA)
AB2495'RECOVERED IN GOOD CONDITION.
```

```
AB2495
AB2495                          STATION RECOVERY (2002)
AB2495
AB2495'RECOVERY NOTE BY G.C.Y., INCORPORATED 2002 (PA)
AB2495'MARK RECOVERED AS DESCRIBED.
AB2495'
AB2495
AB2495                          STATION RECOVERY (2008)
AB2495
AB2495'RECOVERY NOTE BY G.C.Y., INCORPORATED 2008 (MEL)
AB2495'RECOVERED IN GOOD CONDITION.
AB2495
AB2495                          STATION RECOVERY (2009)
AB2495
AB2495'RECOVERY NOTE BY JOHNSON ENGINEERING INCORPORATED 2009 (TL)
AB2495'RECOVERED IN GOOD CONDITION.
AB2495
AB2495                          STATION RECOVERY (2011)
AB2495
AB2495'RECOVERY NOTE BY FL DEPT OF ENV PRO 2011 (DMP)
AB2495'NOT RECOVERED.  A THOROUGH SEARCH REVEALED NO EVIDENCE OF THE MARK.

*** retrieval complete.
Elapsed Time = 00:00:04
```

Windows Abstra Version 2.3 -- Jan 1, 2004 Thu Mar 03 11:16:35 2005

-*- FIELD ABSTRACT -*-

050114-050114 HGZ L26700 8.0 MM ORDER 2 CLASS 2 PAGE 1

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
HYDROLOGY FLORIDIAN WELLS UPPER EAST COAST
ESTABLISH BENCH MARK NEAR WELL AT MARTIN COUNTY UTILITY

FROM TO	START	F/B	DIST TOTAL (KM)	ELEV DIFF (MT)		-(F+B) TOTAL (MM)	MEAN DIFF FLD ELEV (MT)	I C
0129 GCY D20							4.22400	
0129 GCY D20	1140830	F	0.74	0.99572	*	0.00	0.99572	1
0130 GS 41								
			0.74			0.00	5.21972	
0130 GS 41	1140920	F	1.29	-0.32111	*	-1.99	-0.32210	1
0131 MCUTL	1141044	B	1.29	0.32309	*			1
			2.04			-1.99	4.89762♀	

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 - 111 396 - 222

♀

LEVEL LINE SECTION RUNNING TREE

0129
0130
0131♀

FROM	TO	N. LATITUDE	W. LONGITUDE	FIELD DISTANCE	VS. COMPUTED
	0129	271443	0801452	0.00	0.00
0129	0130	271442	0801515	0.74	0.63
0130	0131	271427	0801542	1.29	0.87♀

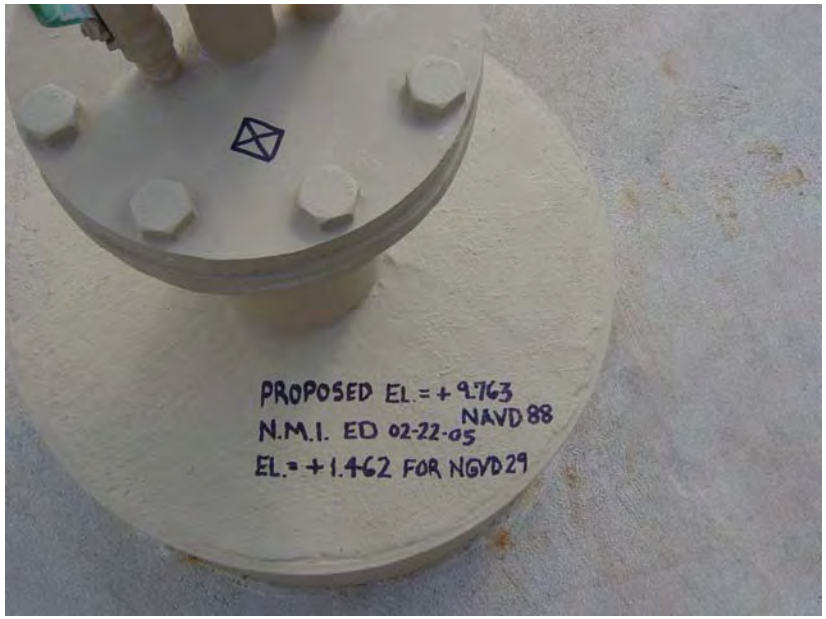
Windows Abstra Version 2.3 -- Jan 1, 2004 -- Thu Mar 03 11:16:35 2005

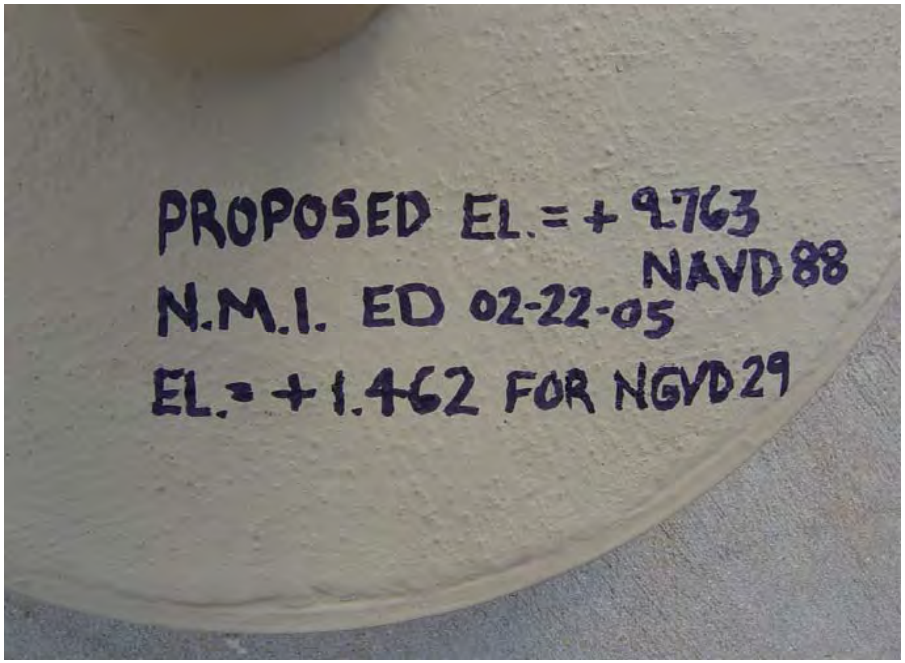
SECTION
FROM TO E R R O R M E S S A G E S

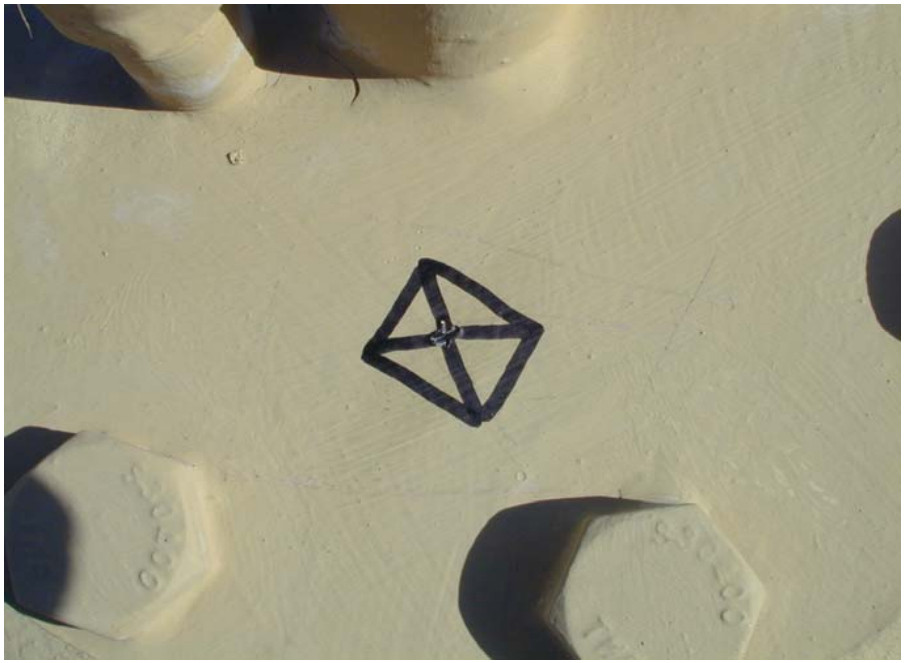
STUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Looking at the monitoring well #2 facing east

STUTL







Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Close-up of the monitoring well #2 showing the contractor's markings on upper flange

STUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Looking at the injection well #1 facing north

STUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Close-up of the injection well #1 showing the contractor's markings on upper flange of T-pipe

STUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: Looking at the benchmark facing north

STUTL

Nick Miller, Inc.
Date of Photo: January 18, 2005
View: A top view of the benchmark

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

COUNTY MARTIN	**PROJECT Hydrology – UEC** **Floridian Wells**	**DESIGNATION STUTL 2005**
SECTION 4	**TOWNSHIP 38 SOUTH**	**RANGE 41 EAST**

GEOGRAPHIC INDEX OF QUAD

Established by Nick Miller Inc. **Recovered by**	**NAME OF QUADRANGLE** **PALM CITY**
SURVEYOR Stephen M. Gordon **DATE** 1/4/2005	**FIELD BOOK** 1 **PAGE** 20

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

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

CONTROL ACCURACY: HORIZONTAL 1 2 3 SUB-METER (circle one) **VERTICAL 1 2** (**3**)

STATE PLANE COORDINATES	**E 900023ft**	**N 1041125ft**	**EL. 7.42 ft**

LATITUDE N 27.19593° LONGITUDE W 80.24981°

DESCRIPTION

To Reach:

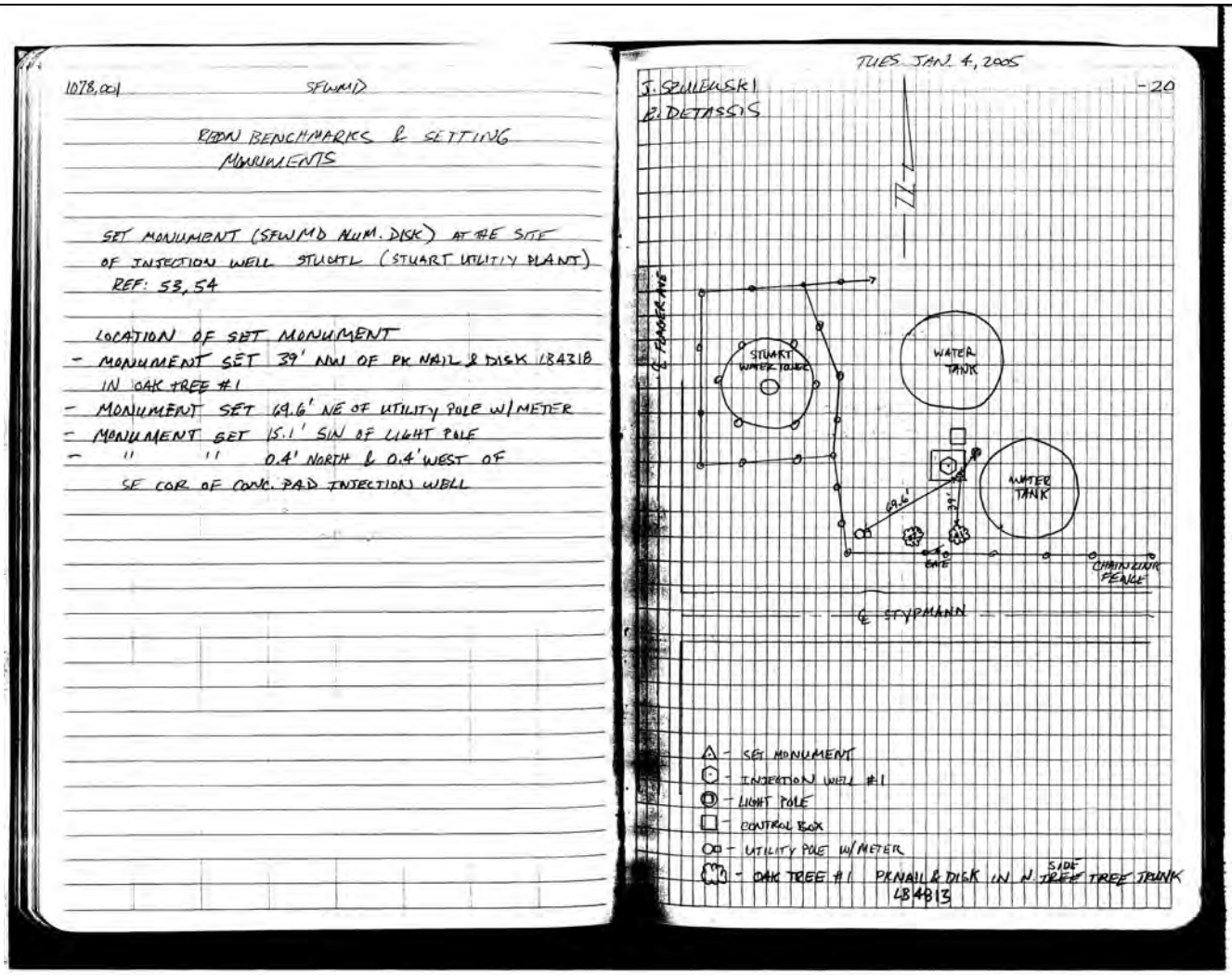
TO REACH MARK FROM THE JUNCTION OF STATE ROAD 714 AND STATE ROAD 76 (KANNER HIGHWAY) IN STUART, GO NORTH ON STATE ROAD 76 FOR 1.5 MI (2.41 KM) TO OCEAN BLVD, TURN RIGHT ON OCEAN BLVD AND GO EAST FOR 150 FT (45.7 M) TO SW FLAGER AVE, TURN RIGHT ON SW FLAGER AND GO SOUTHEAST FOR 0.1 MI (0.16 KM) TO STYPMANN STREET, TURN LEFT ON STYPMANN STREET AND GO EAST FOR 400 FT (121.9 M) TO STUART UTILITY ENTRANCE GATE. MARK IS LOCATED IN SOUTHWEST CORNER OF STUART UTILITY PLANT NEAR STUART WATER TOWER ON SOUTHEAST CORNER OF CONCRETE BASE OF INJECTION WELL #1. LOCATED 0.4 FT (.12 M) NORTH AND 0.4 FT WEST SOUTHEAST CORNER OF CONCRETE BASE OF INJECTION WELL #1, 39 FT (11.89 M) NORTHWEST OF PK NAIL & DISK LB 4318 IN OAK TREE, 69.6 FT NORTHEAST OF UTILITY POLE WITH ELECTRIC METER, 15.1 FT (4.6 M) SOUTHWEST OF LIGHT POLE.

Notable Land marks:

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

SKETCH



1078,004 SFWMD

READ BENCHMARKS & SETTING MONUMENTS

SET MONUMENT (SFWMD NUM. DISK) AT THE SITE OF INJECTION WELL STUART (STUART UTILITY PLANT)
REF: 53, 54

LOCATION OF SET MONUMENT
- MONUMENT SET 39' NW OF PK NAIL & DISK LB4318 IN OAK TREE #1
- MONUMENT SET 69.6' NE OF UTILITY POLE W/METER
- MONUMENT SET 15.1' SW OF LIGHT POLE
- " " 0.4' NORTH & 0.4' WEST OF SE COR. OF CONC. PAD INJECTION WELL

TUES. JAN. 4, 2005

J. SZILEWSKI
E. DETASSIS

-20

℄ FLAGLER

STUART WATER TOWER

WATER TANK

WATER TANK

69.6

15.1

EAST

CHAIN LINK FENCE

℄ STYPMANN

△ - SET MONUMENT
◯ - INJECTION WELL #1
◎ - LIGHT POLE
□ - CONTROL BOX
○□ - UTILITY POLE W/METER
⬭ - OAK TREE #1 PK NAIL & DISK IN W. SIDE TREE LB4813 TREE TRUNK

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 = OCTOBER 21, 2015
 AF3142 ***********************************************************************
 AF3142  TIDAL BM     -  This is a Tidal Bench Mark.
 AF3142  DESIGNATION -  F 34 RESET
 AF3142  PID          -  AF3142
 AF3142  STATE/COUNTY-  FL/MARTIN
 AF3142  COUNTRY      -  US
 AF3142  USGS QUAD    -  PALM CITY (1983)
 AF3142
 AF3142                        *CURRENT SURVEY CONTROL
 AF3142  ______________________________________________________________________
 AF3142* NAD 83(1986) POSITION- 27 11 50.4     (N) 080 15 01.3     (W)    HD_HELD2
 AF3142* NAVD 88 ORTHO HEIGHT -      2.520 (meters)         8.27   (feet) ADJUSTED
 AF3142  ______________________________________________________________________
 AF3142  GEOID HEIGHT    -        -27.518 (meters)                       GEOID12B
 AF3142  DYNAMIC HEIGHT  -          2.516 (meters)         8.25   (feet) COMP
 AF3142  MODELED GRAVITY -    979,115.6   (mgal)                         NAVD 88
 AF3142
 AF3142  VERT ORDER      -  SECOND    CLASS I
 AF3142
 AF3142.The horizontal coordinates were established by autonomous hand held GPS
 AF3142.observations and have an estimated accuracy of +/- 10 meters.
 AF3142.
 AF3142.The orthometric height was determined by differential leveling and
 AF3142.adjusted by the NATIONAL GEODETIC SURVEY
 AF3142.in August 2002.
 AF3142
 AF3142.WARNING-Repeat measurements at this control monument indicate possible
 AF3142.vertical movement.
 AF3142
 AF3142.Significant digits in the geoid height do not necessarily reflect accuracy.
 AF3142.GEOID12B height accuracy estimate available here.
 AF3142
 AF3142.This Tidal Bench Mark is designated as VM 18897
 AF3142.by the CENTER FOR OPERATIONAL OCEANOGRAPHIC PRODUCTS AND SERVICES.
 AF3142
 AF3142.Photographs are available for this station.
 AF3142
 AF3142.The dynamic height is computed by dividing the NAVD 88
 AF3142.geopotential number by the normal gravity value computed on the
 AF3142.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AF3142.degrees latitude (g = 980.6199 gals.).
 AF3142
 AF3142.The modeled gravity was interpolated from observed gravity values.
 AF3142
 AF3142;                    North         East     Units  Estimated Accuracy
 AF3142;SPC FL E     -   317,490.      274,272.      MT  (+/- 10 meters HH2 GPS)
 AF3142
 AF3142                          SUPERSEDED SURVEY CONTROL
 AF3142
 AF3142  NAVD 88 (05/20/94)    2.507  (m)             8.23   (f) SUPERSEDED  1 2
 AF3142  NAVD 88 (06/15/91)    2.508  (m)             8.23   (f) SUPERSEDED  1 2
 AF3142  NGVD 29 (??/??/92)    2.951  (m)             9.68   (f) SUPERSEDED  1 2
 AF3142  NGVD 29 (09/01/92)    2.954  (m)             9.69   (f) ADJUSTED    1 2
 AF3142
 AF3142.Superseded values are not recommended for survey control.
```

AF3142
AF3142.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AF3142.See file dsdata.txt to determine how the superseded data were derived.
AF3142
AF3142_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNL7424608514(NAD 83)
AF3142
AF3142_MARKER: DB = BENCH MARK DISK
AF3142_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
AF3142_STAMPING: F 34 RESET 1936
AF3142_MARK LOGO: CGS
AF3142_PROJECTION: PROJECTING 5 CENTIMETERS
AF3142_MAGNETIC: N = NO MAGNETIC MATERIAL
AF3142_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
AF3142+STABILITY: SURFACE MOTION
AF3142_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
AF3142+SATELLITE: SATELLITE OBSERVATIONS - August 04, 2011
AF3142

AF3142	HISTORY	- Date	Condition	Report By
AF3142	HISTORY	- 1936	MONUMENTED	CGS
AF3142	HISTORY	- 1970	GOOD	NGS
AF3142	HISTORY	- 1972	GOOD	NGS
AF3142	HISTORY	- 1986	GOOD	FLDT
AF3142	HISTORY	- 1989	GOOD	USPSQD
AF3142	HISTORY	- 1990	GOOD	USPSQD
AF3142	HISTORY	- 1991	GOOD	USPSQD
AF3142	HISTORY	- 19910128	GOOD	NGS
AF3142	HISTORY	- 20020409	GOOD	GCYI
AF3142	HISTORY	- 20051101	GOOD	FLDEP
AF3142	HISTORY	- 20110804	GOOD	FLDEP

AF3142
AF3142 STATION DESCRIPTION
AF3142
AF3142'DESCRIBED BY NATIONAL GEODETIC SURVEY 1970
AF3142'AT STUART.
AF3142'AT STUART, AT THE JUNCTION OF EAST OCEAN BLVD AND DETROIT
AF3142'AVENUE, NEAR THE NORTHEAST CORNER OF THE COURTHOUSE LAWN, 53.3
AF3142'FEET NORTHEAST OF THE NORTHEAST CORNER OF THE COURTHOUSE, 17.6
AF3142'FEET SOUTH OF THE SOUTH CURB OF THE BLVD, 28 1/2 FEET WEST OF
AF3142'THE CENTER LINE OF A BLACK TOPPED DRIVEWAY, 38.2 FEET
AF3142'EAST-NORTHEAST OF THE FLAGPOLE, 1 FOOT ABOVE THE LEVEL OF THE
AF3142'BLVD AND SET IN THE TOP OF A CONCRETE POST PROJECTING 2 INCHES
AF3142'ABOVE THE LEVEL OF THE GROUND. NOTE-- FOURTH STREET IS NOW
AF3142'EAST OCEAN BLVD. DELETE 2.4 FEET WEST OF WEST CENTERLINE OF
AF3142'ENTRANCE TO COURTHOUSE AND JAIL. 2.8 FEET SOUTH OF SOUTH EDGE OF
AF3142'A CONCRETE SIDEWALK, INSTEAD OF 28.
AF3142
AF3142 STATION RECOVERY (1972)
AF3142
AF3142'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1972
AF3142'RECOVERED IN GOOD CONDITION.
AF3142
AF3142 STATION RECOVERY (1986)
AF3142
AF3142'RECOVERY NOTE BY FLORIDA DEPARTMENT OF TRANSPORTATION 1986
AF3142'RECOVERED IN GOOD CONDITION.
AF3142
AF3142 STATION RECOVERY (1989)
AF3142
AF3142'RECOVERY NOTE BY US POWER SQUADRON 1989 (DHF)
AF3142'RECOVERED IN GOOD CONDITION.
AF3142
AF3142 STATION RECOVERY (1990)
AF3142
AF3142'RECOVERY NOTE BY US POWER SQUADRON 1990 (DHF)
AF3142'RECOVERED IN GOOD CONDITION.
AF3142

```
AF3142                          STATION RECOVERY (1991)
AF3142
AF3142'RECOVERY NOTE BY US POWER SQUADRON 1991 (DHF)
AF3142'RECOVERED IN GOOD CONDITION.
AF3142
AF3142                          STATION RECOVERY (1991)
AF3142
AF3142'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
AF3142'IN STUART, AT THE INTERSECTION OF DETROIT AVENUE AND EAST OCEAN
AF3142'BOULEVARD (STATE HIGHWAY A1A), 32.4 M (106.3 FT) WEST OF THE EXTENDED
AF3142'CENTER OF THE AVENUE, 21.0 M (68.9 FT) WEST OF THE CENTER OF THE
AF3142'ENTRANCE TO THE MARTIN COUNTY COURTHOUSE, 11.4 M (37.4 FT) SOUTH OF
AF3142'AND LEVEL WITH THE BOULEVARD CENTERLINE, 5.3 M (17.4 FT) SOUTH OF A
AF3142'CURB, 2.7 M (8.9 FT) NORTHEAST OF A UTILITY LIGHT POLE, 2.6 M (8.5
AF3142'FT) NORTH OF THE NORTH EDGE OF A PARKING LOT, 0.7 M (2.3 FT) SOUTH OF
AF3142'THE SOUTH EDGE OF A SIDEWALK, 0.2 M (0.7 FT) SOUTH OF A WITNESS POST,
AF3142'AND THE MONUMENT PROJECTS 0.1 M (0.3 FT) ABOVE THE GROUND SURFACE.
AF3142
AF3142                          STATION RECOVERY (2002)
AF3142
AF3142'RECOVERY NOTE BY G.C.Y., INCORPORATED 2002 (PA)
AF3142'MARK RECOVERED AS DESCRIBED.
AF3142'
AF3142
AF3142                          STATION RECOVERY (2005)
AF3142
AF3142'RECOVERY NOTE BY FL DEPT OF ENV PRO 2005 (JRH)
AF3142'RECOVERED AS DESCRIBED.
AF3142
AF3142                          STATION RECOVERY (2011)
AF3142
AF3142'RECOVERY NOTE BY FL DEPT OF ENV PRO 2011 (PBM)
AF3142'RECOVERED AS DESCRIBED.

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

The NGS Data Sheet

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

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.21
1        National Geodetic Survey,   Retrieval Date = AUGUST 16, 2005
 AF3116 ***********************************************************************
 AF3116  DESIGNATION -  W 231
 AF3116  PID         -  AF3116
 AF3116  STATE/COUNTY-  FL/MARTIN
 AF3116  USGS QUAD   -  ST LUCIE INLET (1983)
 AF3116
 AF3116                          *CURRENT SURVEY CONTROL
 AF3116  ______________________________________________________________________
 AF3116* NAD 83(1986)-  27 11 50.     (N)    080 14 41.     (W)     SCALED
 AF3116* NAVD 88     -         4.422  (meters)      14.51   (feet)  ADJUSTED
 AF3116  ______________________________________________________________________
 AF3116  GEOID HEIGHT-         -27.50  (meters)                     GEOID03
 AF3116  DYNAMIC HT  -           4.415 (meters)      14.48  (feet)  COMP
 AF3116  MODELED GRAV-     979,115.6   (mgal)                       NAVD 88
 AF3116
 AF3116  VERT ORDER  -  FIRST     CLASS I
 AF3116
 AF3116.The horizontal coordinates were scaled from a topographic map and have
 AF3116.an estimated accuracy of +/- 6 seconds.
 AF3116
 AF3116.The orthometric height was determined by differential leveling
 AF3116.and adjusted by the National Geodetic Survey in June 1991.
 AF3116
 AF3116.The geoid height was determined by GEOID03.
 AF3116
 AF3116.The dynamic height is computed by dividing the NAVD 88
 AF3116.geopotential number by the normal gravity value computed on the
 AF3116.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 AF3116.degrees latitude (g = 980.6199 gals.).
 AF3116
 AF3116.The modeled gravity was interpolated from observed gravity values.
 AF3116
 AF3116;                     North         East     Units  Estimated Accuracy
 AF3116;SPC FL E     -   317,480.      274,830.      MT  (+/- 180 meters Scaled)
 AF3116
 AF3116                           SUPERSEDED SURVEY CONTROL
 AF3116
 AF3116  NGVD 29 (09/01/92)    4.865  (m)           15.96   (f) ADJUSTED    1 1
 AF3116
 AF3116.Superseded values are not recommended for survey control.
 AF3116.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AF3116.See file dsdata.txt to determine how the superseded data were derived.
 AF3116
 AF3116_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNL748085(NAD 83)
 AF3116_MARKER: DB = BENCH MARK DISK
 AF3116_SETTING: 40 = SET IN A LARGE STRUCTURE WITH DEEP FOUNDATIONS
 AF3116_SP_SET: BUILDING WALL
 AF3116_STAMPING: W 231 1965
 AF3116_MARK LOGO: CGS
 AF3116_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
 AF3116+STABILITY: POSITION/ELEVATION WELL
 AF3116
 AF3116  HISTORY     - Date     Condition        Report By
 AF3116  HISTORY     - 1965     MONUMENTED       CGS
 AF3116  HISTORY     - 1972     GOOD             NGS
 AF3116  HISTORY     - 1984     GOOD             NGS
 AF3116  HISTORY     - 1986     GOOD             FLDT
 AF3116  HISTORY     - 1987     GOOD             USPSQD
 AF3116  HISTORY     - 1989     GOOD             USPSQD
 AF3116  HISTORY     - 1990     GOOD             USPSQD
 AF3116  HISTORY     - 1991     GOOD             USPSQD
 AF3116
 AF3116                           STATION DESCRIPTION
 AF3116
 AF3116'DESCRIBED BY COAST AND GEODETIC SURVEY 1965
 AF3116'AT STUART.
 AF3116'AT STUART, ABOUT 0.3 MILE EAST ALONG STATE HIGHWAY A1A FROM THE
```

AF3116'COURTHOUSE, IN SECTION 4, R 41 E, T 38 S, AT THE JUNCTION OF THE
AF3116'HIGHWAY (OCEAN BLVD) AND ILLINOIS AVENUE, AT THE STUART JUNIOR
AF3116'HIGH SCHOOL, SET VERTICALLY IN THE WEST FACE AND AT THE SOUTHWEST
AF3116'CORNER OF THE WEST ONE OF THE TWO MOST NORTHERLY BUILDING, 118
AF3116'FEET SOUTH OF THE CENTER LINE OF THE HIGHWAY, 1.3 FEET NORTH OF
AF3116'THE SOUTHWEST CORNER OF THE BUILDING, 1.8 FEET ABOVE THE LEVEL
AF3116'OF THE GROUND AND 4 FEET ABOVE THE LEVEL OF THE HIGHWAY.
AF3116
AF3116 STATION RECOVERY (1972)
AF3116
AF3116'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1972
AF3116'RECOVERED IN GOOD CONDITION.
AF3116
AF3116 STATION RECOVERY (1984)
AF3116
AF3116'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1984
AF3116'RECOVERED IN GOOD CONDITION.
AF3116
AF3116 STATION RECOVERY (1986)
AF3116
AF3116'RECOVERY NOTE BY FLORIDA DEPARTMENT OF TRANSPORTATION 1986
AF3116'RECOVERED IN GOOD CONDITION.
AF3116
AF3116 STATION RECOVERY (1987)
AF3116
AF3116'RECOVERY NOTE BY US POWER SQUADRON 1987 (FGH)
AF3116'RECOVERED IN GOOD CONDITION.
AF3116
AF3116 STATION RECOVERY (1989)
AF3116
AF3116'RECOVERY NOTE BY US POWER SQUADRON 1989 (DHF)
AF3116'RECOVERED IN GOOD CONDITION.
AF3116
AF3116 STATION RECOVERY (1990)
AF3116
AF3116'RECOVERY NOTE BY US POWER SQUADRON 1990 (DHF)
AF3116'RECOVERED IN GOOD CONDITION.
AF3116
AF3116 STATION RECOVERY (1991)
AF3116
AF3116'RECOVERY NOTE BY US POWER SQUADRON 1991 (DHF)
AF3116'RECOVERED IN GOOD CONDITION.

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

-*- FIELD ABSTRACT -*-

050115-050115 HGZ L26700 8.0 MM ORDER 2 CLASS 2 PAGE 1
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
HYDROLOGY FLORIDIAN WELLS UPPER EAST COAST
ESTABLISH BENCH MARK NEAR WELL AT STUART UTILITY

FROM / TO	START	F/B	DIST TOTAL (KM)	ELEV DIFF (MT)		-(F+B) TOTAL (MM)	MEAN DIFF FLD ELEV (MT)	I C
0121 F 34 RESET							2.52000	
0121 F 34 RESET	1150830	F	0.42	-0.25723	*	0.00	-0.25745	1
0119 STUTL	1151030	F	0.47	-0.25767	*			1
			0.42			0.00	2.26255	
0119 STUTL	1150915	F	0.80	2.15015	*	0.00	2.15015	1
0120 W 231								
			1.22			0.00	4.41270♀	

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 - 111	396 - 222

♀

LEVEL LINE SECTION RUNNING TREE

0121
0119
0120♀

FROM	TO	N. LATITUDE	W. LONGITUDE	FIELD DISTANCE	VS. COMPUTED
	0121	271151	0801501	0.00	0.00
0121	0119	271145	0801458	0.42	0.20
0119	0120	271150	0801441	0.80	0.49♀

Windows Abstra Version 2.3 -- Jan 1, 2004 -- Thu Mar 03 12:43:56 2005

SECTION FROM	TO	E R R O R M E S S A G E S
0121	0119	*** All acceptable running for this section are forward!

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Rev. 4/01

SKETCH

SFWMD

1079.001

RECON BENCHMARKS & SETTING CONC. MONUMENTS

- SET CONC. MONUMENT AT THE SITE OF MONITORING WELL M1253 REF: PB 33, 36

LOCATION OF THE SET MONUMENT

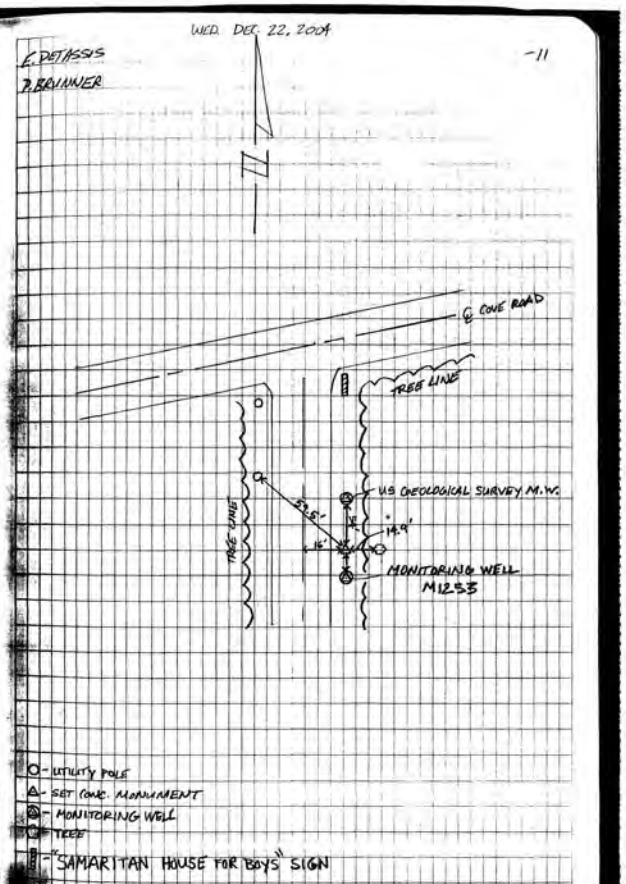
- CONC. MONUMENT 16' EAST OF ℄ ROAD
* - CONC. MONUMENT 59.5' SOUTHEAST FROM WOOD UTILITY POLE.
- CONC. MONUMENT 54.0' SOUTH FROM U.S GEOLOGICAL SURVEY MONITORING WELL
- CONC. MONUMENT 14.9' WEST OF BAY TREE w/ DIA. OF 1.3'
- CONC. MONUMENT 9.1' NORTH OF MONITORING WELL PB 1253
* - CONC. MONUMENT A BEARING OF N 40°00'00" W TO WOOD UTILITY POLE
- RECON BM H-517 (FND IN GOOD CONDITION)
- RECON BM E-569 (" " ")
- RECON BM A-569 (" " ")
- RECON BM Z-517 (" " ")

WED. DEC. 22, 2004

E. DETASSIS

J. BRUNNER

-11



From the "ngvd29.txt" file provided by NGS for the CERP Geodetic Vertical Control Project.

Line/Part: L26368	SSN+: mark floated,	SSN*: mark constrained,	SSN#: mark floated & constrained			
Mark ID	SSN	PID	Designation	Geopotential	Elevation	Codes
2062	1020	DE6037	A 569	5.6416	5.7568	

Line/Part: L26369	SSN+: mark floated,	SSN*: mark constrained,	SSN#: mark floated & constrained			
Mark ID	SSN	PID	Designation	Geopotential	Elevation	Codes
2073	2010	DE6041	E 569	5.2267	5.3334	

The NGS Data Sheet

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

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.21
1        National Geodetic Survey,   Retrieval Date = AUGUST 16, 2005
 DE6037 ***********************************************************************
 DE6037  DESIGNATION -  A 569
 DE6037  PID         -  DE6037
 DE6037  STATE/COUNTY-  FL/MARTIN
 DE6037  USGS QUAD   -  ST LUCIE INLET (1983)
 DE6037
 DE6037                          *CURRENT SURVEY CONTROL
 DE6037  ______________________________________________________________________
 DE6037* NAD 83(1986)-  27 07 41.     (N)    080 13 22.     (W)     SCALED
 DE6037* NAVD 88     -         5.299  (meters)      17.39   (feet)  ADJUSTED
 DE6037  ______________________________________________________________________
 DE6037  GEOID HEIGHT-          -27.46  (meters)                     GEOID03
 DE6037  DYNAMIC HT  -            5.291 (meters)      17.36  (feet)  COMP
 DE6037  MODELED GRAV-      979,106.9   (mgal)                       NAVD 88
 DE6037
 DE6037  VERT ORDER  -  SECOND    CLASS I
 DE6037
 DE6037.The horizontal coordinates were scaled from a topographic map and have
 DE6037.an estimated accuracy of +/- 6 seconds.
 DE6037
 DE6037.The orthometric height was determined by differential leveling
 DE6037.and adjusted by the National Geodetic Survey in August 2002.
 DE6037
 DE6037.The geoid height was determined by GEOID03.
 DE6037
 DE6037.The dynamic height is computed by dividing the NAVD 88
 DE6037.geopotential number by the normal gravity value computed on the
 DE6037.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 DE6037.degrees latitude (g = 980.6199 gals.).
 DE6037
 DE6037.The modeled gravity was interpolated from observed gravity values.
 DE6037
 DE6037;                    North         East     Units  Estimated Accuracy
 DE6037;SPC FL E     -   309,830.      277,050.      MT  (+/- 180 meters Scaled)
 DE6037
 DE6037                          SUPERSEDED SURVEY CONTROL
 DE6037
 DE6037.No superseded survey control is available for this station.
 DE6037
 DE6037_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNL770008(NAD 83)
 DE6037_MARKER: DD = SURVEY DISK
 DE6037_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DE6037_STAMPING: A 569 2002
 DE6037_MARK LOGO: FL-085
 DE6037_PROJECTION: FLUSH
 DE6037_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
 DE6037_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 DE6037+STABILITY: SURFACE MOTION
 DE6037_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
 DE6037+SATELLITE: SATELLITE OBSERVATIONS - April 17, 2002
 DE6037
 DE6037  HISTORY     - Date     Condition        Report By
 DE6037  HISTORY     - 20020417 MONUMENTED       GCYI
 DE6037  HISTORY     - 20040228 GOOD             USPSQD
 DE6037
 DE6037                          STATION DESCRIPTION
 DE6037
 DE6037'DESCRIBED BY G.C.Y., INCORPORATED 2002 (PA)
 DE6037'THE MARK IS LOCATED 4.3 KM (2.7 MILES) SE OF PALM CITY,4.3 KM (2.7
 DE6037'MILES) WSW OF PORT SALERNO AND
 DE6037'6.5 KM (4 MILES) SSE OF STUART IN THE EASTERLY RIGHT OF WAY OF
 DE6037'WILLOUGHBY BLVD AT THE
 DE6037'ENTRANCE TO PINEWOOD ELEMENTARY SCHOOL IN THE HANSON GRANT.  RIGHT OF
 DE6037'WAY OWNED BY MARTIN
 DE6037'COUNTY.
 DE6037'
 DE6037'TO REACH THE MARK FROM THE INTERSECTION OF  MONTEREY ROAD (SR 714) AND
```

DE6037'KANNER HIGHWAY (SR 76),
DE6037'GO EAST ON MONTEREY ROAD 0.64 KM (0.4 MILES) TO THE JUNCTION WITH
DE6037'WILLOUGHBY BLVD, THEN GO SOUTH
DE6037'ON WILLOUGHBY BLVD 4.2 KM (2.6 MILES) TO THE MARK ON THE RIGHT.
DE6037'
DE6037'THE MARK IS 14.6 M (48 FEET) WEST OF THE CENTERLINE OF WILLOUGHBY
DE6037'BLVD, 17.7 M (58 FEET) SOUTH OF THE
DE6037'ENTRANCE TO SCHOOL, 14.7 M (48.2 FEET) NORTH OF A WOOD POWER POLE AND
DE6037'0.5 M (1.7 FEET) WEST OF THE
DE6037'WEST EDGE OF A CONCRETE WALK.
DE6037'NOTE - MAGNET BURIED AT NORTH SIDE OF MARK.
DE6037'NOTE - POSITION OBTAINED USING A WAAS CORRECTED HANDHELD GPS.
DE6037'
DE6037'
DE6037'
DE6037'
DE6037'
DE6037'
DE6037'
DE6037
DE6037   STATION RECOVERY (2004)
DE6037
DE6037'RECOVERY NOTE BY US POWER SQUADRON 2004 (RJS)
DE6037'RECOVERED IN GOOD CONDITION.

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

From the "ngvd29.txt" file provided by NGS for the CERP Geodetic Vertical Control Project.

Line/Part: L26368 SSN+: mark floated, SSN*: mark constrained, SSN#: mark floated & constrained

Mark ID	SSN	PID	Designation	Geopotential	Elevation	Codes
2062	1020	DE6037	A 569	5.6416	5.7568	

Line/Part: L26369 SSN+: mark floated, SSN*: mark constrained, SSN#: mark floated & constrained

Mark ID	SSN	PID	Designation	Geopotential	Elevation	Codes
2073	2010	DE6041	E 569	5.2267	5.3334	

The NGS Data Sheet

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

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.21
1        National Geodetic Survey,   Retrieval Date = AUGUST 16, 2005
 DE6041 ***********************************************************************
 DE6041  DESIGNATION -  E 569
 DE6041  PID         -  DE6041
 DE6041  STATE/COUNTY-  FL/MARTIN
 DE6041  USGS QUAD   -  INDIAN TOWN SE (1983)
 DE6041
 DE6041                          *CURRENT SURVEY CONTROL
 DE6041  ______________________________________________________________________
 DE6041* NAD 83(1986)-  27 06 51.     (N)    080 15 20.     (W)     SCALED
 DE6041* NAVD 88     -         4.888  (meters)      16.04   (feet)  ADJUSTED
 DE6041  ______________________________________________________________________
 DE6041  GEOID HEIGHT-          -27.34  (meters)                     GEOID03
 DE6041  DYNAMIC HT  -            4.881 (meters)      16.01  (feet)  COMP
 DE6041  MODELED GRAV-      979,105.9   (mgal)                       NAVD 88
 DE6041
 DE6041  VERT ORDER  -  SECOND    CLASS I
 DE6041
 DE6041.The horizontal coordinates were scaled from a topographic map and have
 DE6041.an estimated accuracy of +/- 6 seconds.
 DE6041
 DE6041.The orthometric height was determined by differential leveling
 DE6041.and adjusted by the National Geodetic Survey in August 2002.
 DE6041
 DE6041.The geoid height was determined by GEOID03.
 DE6041
 DE6041.The dynamic height is computed by dividing the NAVD 88
 DE6041.geopotential number by the normal gravity value computed on the
 DE6041.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 DE6041.degrees latitude (g = 980.6199 gals.).
 DE6041
 DE6041.The modeled gravity was interpolated from observed gravity values.
 DE6041
 DE6041;                     North         East     Units  Estimated Accuracy
 DE6041;SPC FL E     -   308,270.      273,810.      MT  (+/- 180 meters Scaled)
 DE6041
 DE6041                           SUPERSEDED SURVEY CONTROL
 DE6041
 DE6041.No superseded survey control is available for this station.
 DE6041
 DE6041_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RNK737992(NAD 83)
 DE6041_MARKER: DD = SURVEY DISK
 DE6041_SETTING: 38 = SET IN THE ABUTMENT OR PIER OF A LARGE BRIDGE
 DE6041_SP_SET: BRIDGE ABUTMENT
 DE6041_STAMPING: E 569
 DE6041_MARK LOGO: FLDT
 DE6041_MAGNETIC: N = NO MAGNETIC MATERIAL
 DE6041_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 DE6041_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DE6041+SATELLITE: SATELLITE OBSERVATIONS - June 28, 2002
 DE6041
 DE6041  HISTORY     - Date     Condition        Report By
 DE6041  HISTORY     - 1987     MONUMENTED       FLDT
 DE6041  HISTORY     - 20020628 GOOD             GCYI
 DE6041
 DE6041                           STATION DESCRIPTION
 DE6041
 DE6041'DESCRIBED BY G.C.Y., INCORPORATED 2002 (PA)
 DE6041'THE MARK IS LOCATED 9.3 KM (5.8 MILES) SOUTH OF STUART, 5.4 KM (3.4
 DE6041'MILES) SOUTH SOUTHEAST OF PALM
 DE6041'CITY AND 6.7 KM (4.2 MILES) SOUTHWEST OF PORT SALERNO IN THE
 DE6041'NORTHEASTERLY CORNER OF HIGHWAY
 DE6041'BRIDGE OVER THE SOUTH FORK OF THE ST LUCIE RIVER IN SECTION 5,
 DE6041'TOWNSHIP 39 SOUTH, RANGE 41 EAST.
 DE6041'RIGHT OF WAY OWNED BY FLORIDA DEPARTMENT OF TRANSPORTATION.
 DE6041'
 DE6041'TO REACH THE MARK FROM THE OVERPASS OF I 95 (SR 9) AND KANNER HIGHWAY
 DE6041'(SR 76), GO NORTHERLY
```

DE6041'ALONG KANNER HIGHWAY FOR 0.8 KM (0.5 MILES) TO THE MARK ON THE RIGHT.
DE6041'
DE6041'THE MARK IS SET IN THE TOP OF A CONCRETE ABUTTMENT AT THE NORTHEAST
DE6041'CORNER OF THE BRIDGE
DE6041'OVER THE SOUTH FORK OF THE ST LUCIE RIVER. THE MARK IS ABOUT 1 M (3
DE6041'FEET) ABOVE THE ROAD SURFACE.
DE6041'MARK IS A STANDARD FLORIDA DEPARTMENT OF TRANSPORTATION SURVEY MARK
DE6041'(BRASS DISK) SET IN A
DE6041'MASS OF CONCRETE. NOTE-- THE BRIDGE WAS CONSTRUCTED IN 1987 AND THE
DE6041'MARK HAD NO PREVIOUS
DE6041'DESIGNATION STAMPED ON THE SURFACE. E 569 WAS STAMPED INTO THE MARK
DE6041'PRIOR TO LEVELS BE RUN
DE6041'THROUGH THE MARK.
DE6041'
DE6041'NOTE - POSITION OBTAINED BY WAAS CORRECTED HANDHELD GPS.
DE6041'
DE6041'

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

-*- FIELD ABSTRACT -*-

050103-050112 HGZ L26700 8.0 MM ORDER 2 CLASS 2 PAGE 1
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
HYDROLOGY FLORIDIAN WELLS UPPER EAST COAST
ESTABLISH BENCH MARK NEAR WELL M 1253

FROM TO	START	F/B	DIST TOTAL (KM)	ELEV DIFF (MT)		-(F+B) TOTAL (MM)	MEAN DIFF FLD ELEV (MT)	I C
0126 A 569							5.29900	
0126 A 569	1030935	F	1.29	-0.66364	*	0.00	-0.66392	1
0128 M 1253	1121145	F	1.28	-0.65225	R*			1
	1121430	F	1.28	-0.66420	*			1
			1.28			0.00	4.63508	
0128 M 1253	1031100	F	2.56	0.25053	*	0.00	0.25053	1
0127 E 569								
			3.84			0.00	4.88561♀	

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 - 111	396 - 222

♀

LEVEL LINE SECTION RUNNING TREE

0126
0128
0127♀

FROM	TO	N. LATITUDE	W. LONGITUDE	FIELD DISTANCE	VS. COMPUTED
	0126	270741	0801322	0.00	0.00
0126	0128	270722	0801401	1.28	1.22
0128	0127	270651	0801520	2.56	2.38♀

Windows Abstra Version 2.3 -- Jan 1, 2004 -- Thu Mar 03 11:30:46 2005

SECTION FROM	TO	E R R O R M E S S A G E S
0126	0128	*** All acceptable running for this section are forward!

RECON BENCHMARKS & SETTING CONC. MONUMENTS

→ RECON U-600 BENCHMARK @ C-18 CANAL	FOUND IN GOOD CONDITION (REF. NGS DATA SHEET)
→ RECON C 18 K BENCHMARK @ C-18 CANAL	FOUND IN GOOD CONDITION " "
→ RECON T-600 BENCHMARK @ C-18 CANAL	FOUND IN GOOD CONDITION " "
→ RECON S-600 BENCHMARK @ C-18 CANAL	FOUND IN GOOD CONDITION " "
→ RECON G-160 BENCHMARK ON STRUCTURE	FOUND IN GOOD CONDITION " "
→ RECON N-600 BENCHMARK @ C-18 CANAL	FOUND IN GOOD CONDITION " "
→ RECON M-600 BENCHMARK @ C-18 CANAL	FOUND IN GOOD CONDITION " "
→ RECON L-600 BENCHMARK @ C-18 CANAL	FOUND IN GOOD CONDITION " "
→ RECON JENKINS BENCHMARK ALONG INDIANTOWN RD.	FOUND IN GOOD CONDITION " "
→ RECON E96 BENCHMARK ALONG INDIATOWN RD.	COULD NOT FIND " "
→ RECON F96 BENCHMARK ALONG INDIANTOWN RD.	COULD NOT FIND " "
→ RECON I95 89 A10 BENCHMARK ALONG ENTRANCE RAMP TO I95 SOUTH	FOUND IN GOOD CONDITION (REF: NGS DATA SHEET)
→ RECON I 95 89 A08 BENCHMARK ALONG I-95 NORTH	FOUND IN GOOD CONDITION (REF: NGS DATA SHEET)

SFWMD

1078.001

MON. DEC. 20, 2004

J. SZULEWSKI
E. DETASSIS

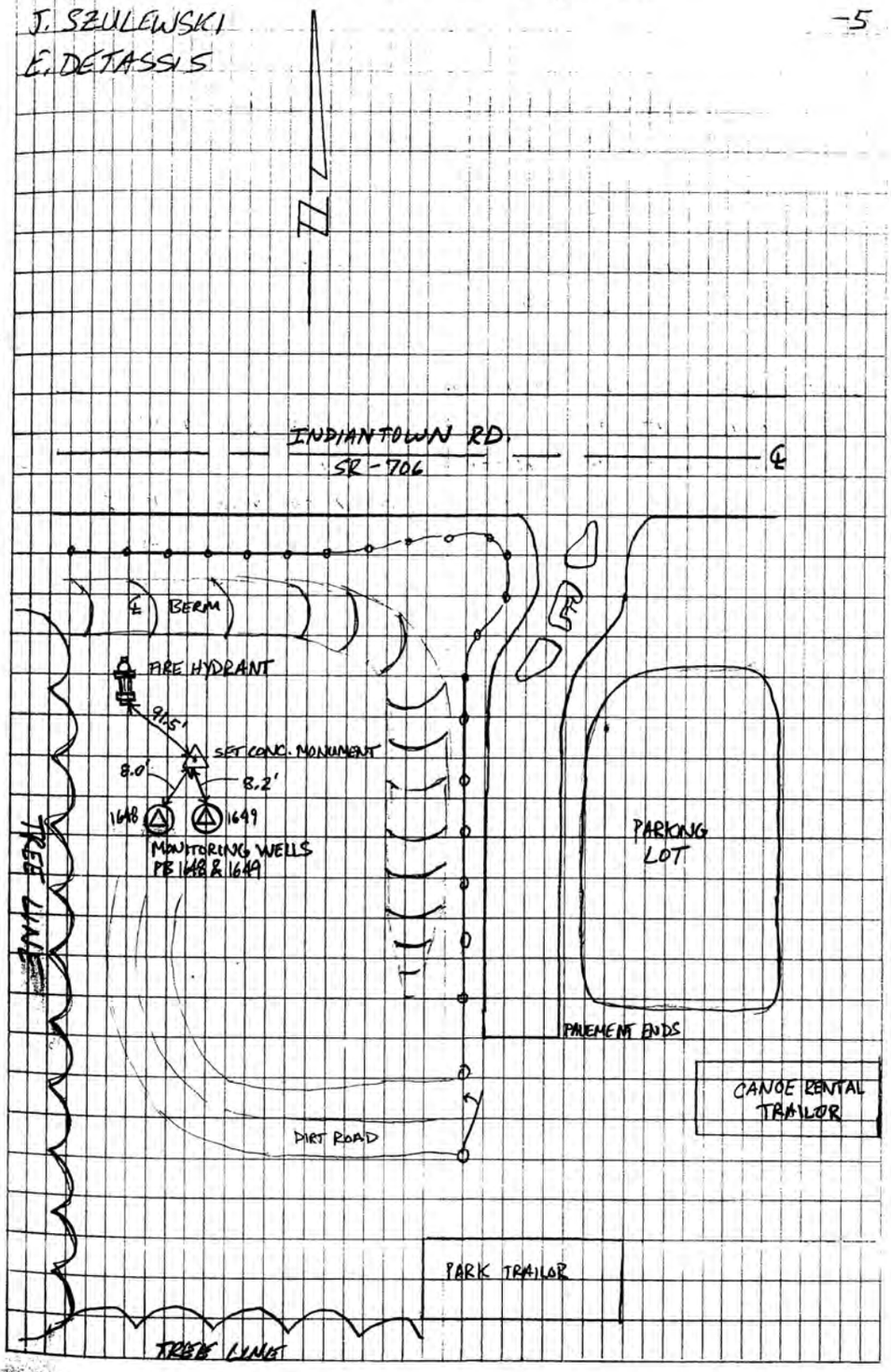
-5

RECON BENCHMARKS & SETTING CONC. MONUMENTS

- SET CONC. MONUMENT AT THE SITE OF MONITORING WELLS PB 1648 & PB 1649 REF: PG 33, 35, 4

LOCATION OF SET CONC. MONUMENT

- CONC. MONUMENT 91.5' ~~SOUTHWEST~~ SE OF FIRE HYDRANT
- CONC. MONUMENT 8.0' ~~NORTH~~ NE OF WEST MONITORING WELL AT N 20°00'00"E.
- CONC. MONUMENT 8.2' NORTH OF EAST MONITORING WELL AT N 20°00'00"E.



SFWMD

TUES. DEC. 21, 2004

J. SZULEWSKI

R. DETASSIS

-6

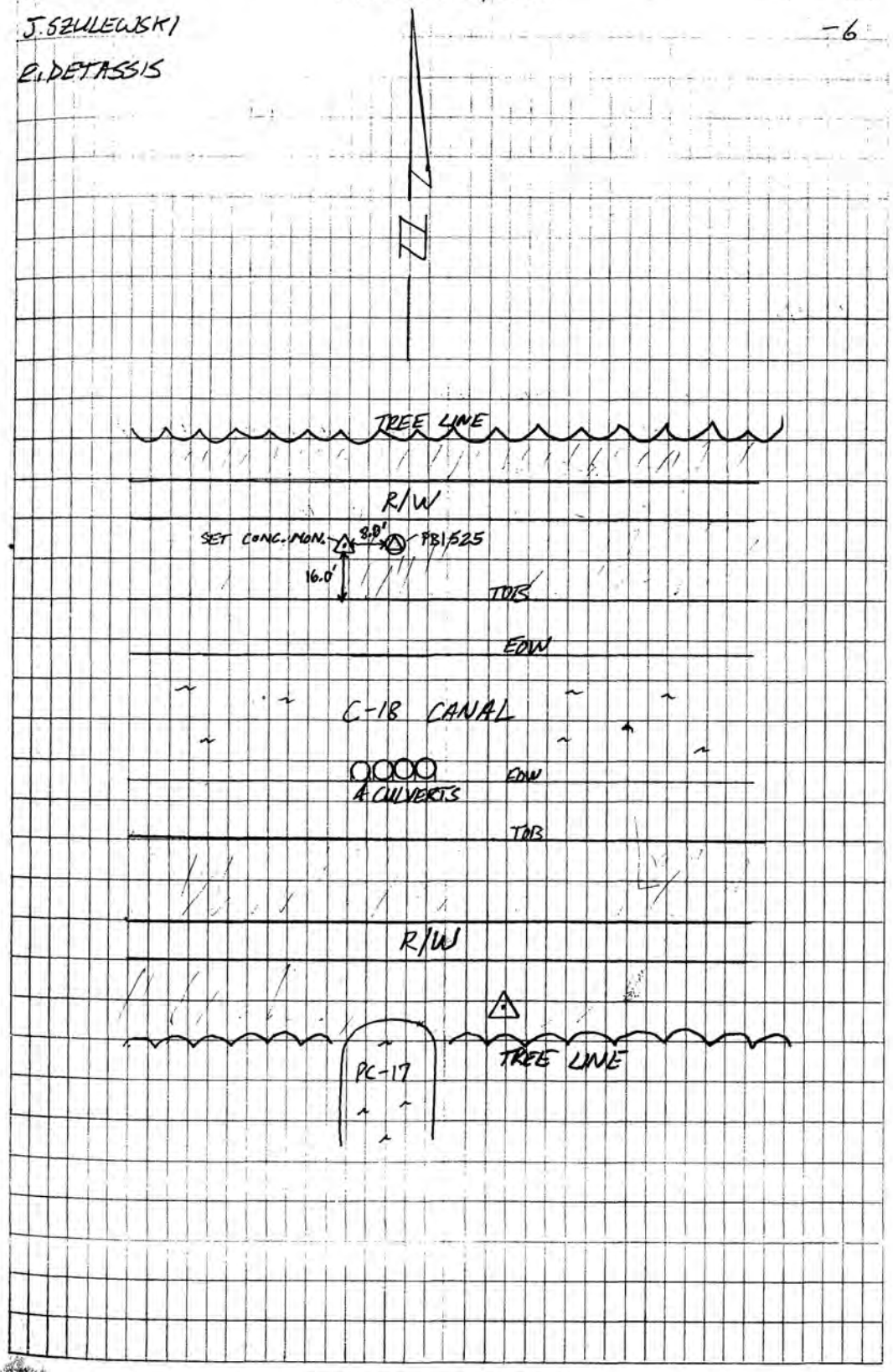
1078.001

RECON BENCHMARKS & SETTING CONC. MONUMENTS

- SET CONC. MONUMENT AT THE SITE OF MONITORING WELL PB 1525 REF: PG 33, 4

LOCATION OF SET CONC. MONUMENT

- CONC. MONUMENT 8.0' WEST OF MONITORING WELL PB 1525
- CONC. MONUMENT 16.0' NORTH OF N. TOB
- CONC. MONUMENT AT N 80°00'00" W TO M.W. PB 1525



1078.001 SFWMD

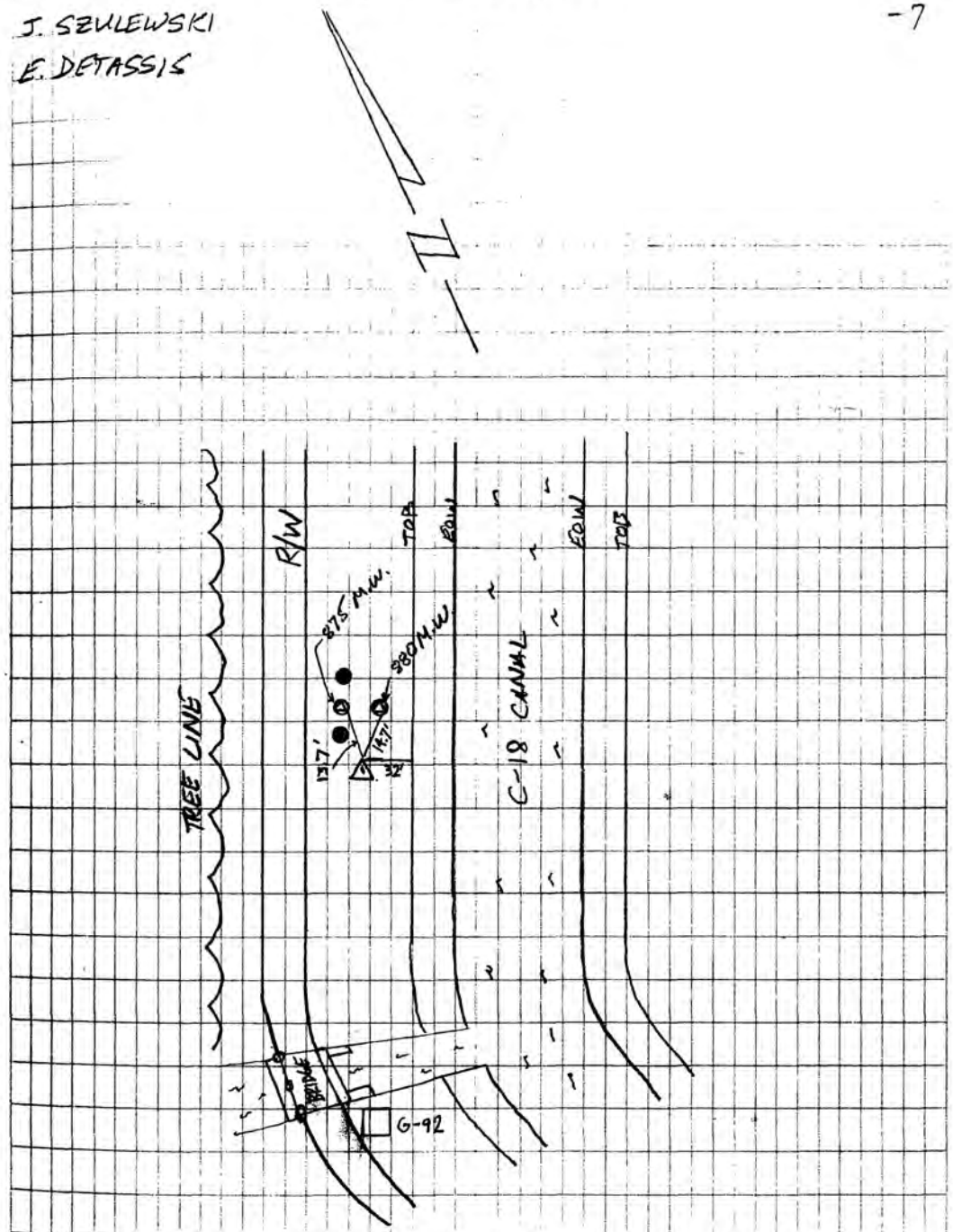
TUES. DEC. 21, 2004

J. SZULEWSKI
E. DETASSIS

RECON BENCHMARKS & SETTING CONC. MONUMENTS

- SET CONC. MONUMENT AT THE SITE OF MONITORING WELL PB 875 REF: PG 33,34,4

LOCATION OF THE SET MONUMENT
- CONC. MONUMENT 13.7' SOUTH OF WEST M.W. PB 875
- CONC. MONUMENT 14.7' SOUTHWEST OF EAST M.W. PB ~~876~~ 880
- CONC. MONUMENT 32' WEST OF W. TOB
- ~~" "~~ ~~S 70°00'00" W OF EAST M.W.~~



Ⓐ - MONITORING WELLS
△ - SET CONC. MONUMENT

SFWMD

TUES, DEC. 21 2004

1078.001

J. SZULEWSKI

E. DETASSIS

-8

M-1083

→ RECON BM BR-26A @ BRIDGE RD IN HOBE SOUND
- QUESTIONABLE FOR GPS
- POWER LINES OVERHEAD
- TOUGH SETUP (BRIDGE ABUTMENT)

FOUND IN GOOD CONDITION

→ RECON BM ALLEN @ INT. OF KANNER HWY. + BRIDGE RD
- OK FOR GPS
- TREE LINE TO WEST 25-30 Ft.

FOUND IN GOOD CONDITION

→ RECON BM S522 ALONG KANNER HWY
- GOOD FOR GPS

FOUND IN GOOD CONDITION

→ RECON BM R522 ALONG KANNER HWY
- OK FOR GPS
- TREE LINE 15-20ft WEST
50-60ft EAST

FOUND IN GOOD CONDITION

→ RECON BM T522 ALONG KANNER HWY.
→ GREAT FOR GPS

FOUND IN GOOD CONDITION (BEST FOR G.P.S.)

→ RECON BM H547 @ INT. OF INDIANTOWN RD + BEELINE HWY
→ GOOD FOR GPS

FOUND IN GOOD CONDITION

→ RECON BM G547 ALONG BEELINE HWY
→ OK FOR GPS
- POINT ± 0.5 ft UNDERWATER
- TALL SHRUBS EAST OF POINT
- GROUND SOFT + MUSHY

FOUND IN GOOD CONDITION

→ RECON BM R547 ALONG BEELINE HWY

NOT FND / FND CARSONITE WITNESS POST

SCWMD

1078.001.

RECON BENCHMARKS & SETTING CONC. MONUMENT

- RECON S-547 BENCHMARK ALONG BEELINE HWY.

WED. DEC. 22 2004

P. BRUNNER

E. DETASSIS

FOUND IN GOOD CONDITION / GOOD FOR GPS

SFWMD

1078.001

RECON BENCHMARKS & SETTING
CONC. MONUMENT

- SET CONC. MONUMENT AT THE SITE OF MONITORING WELL M1083 REF: PG 33, 55, 56, 8, 9

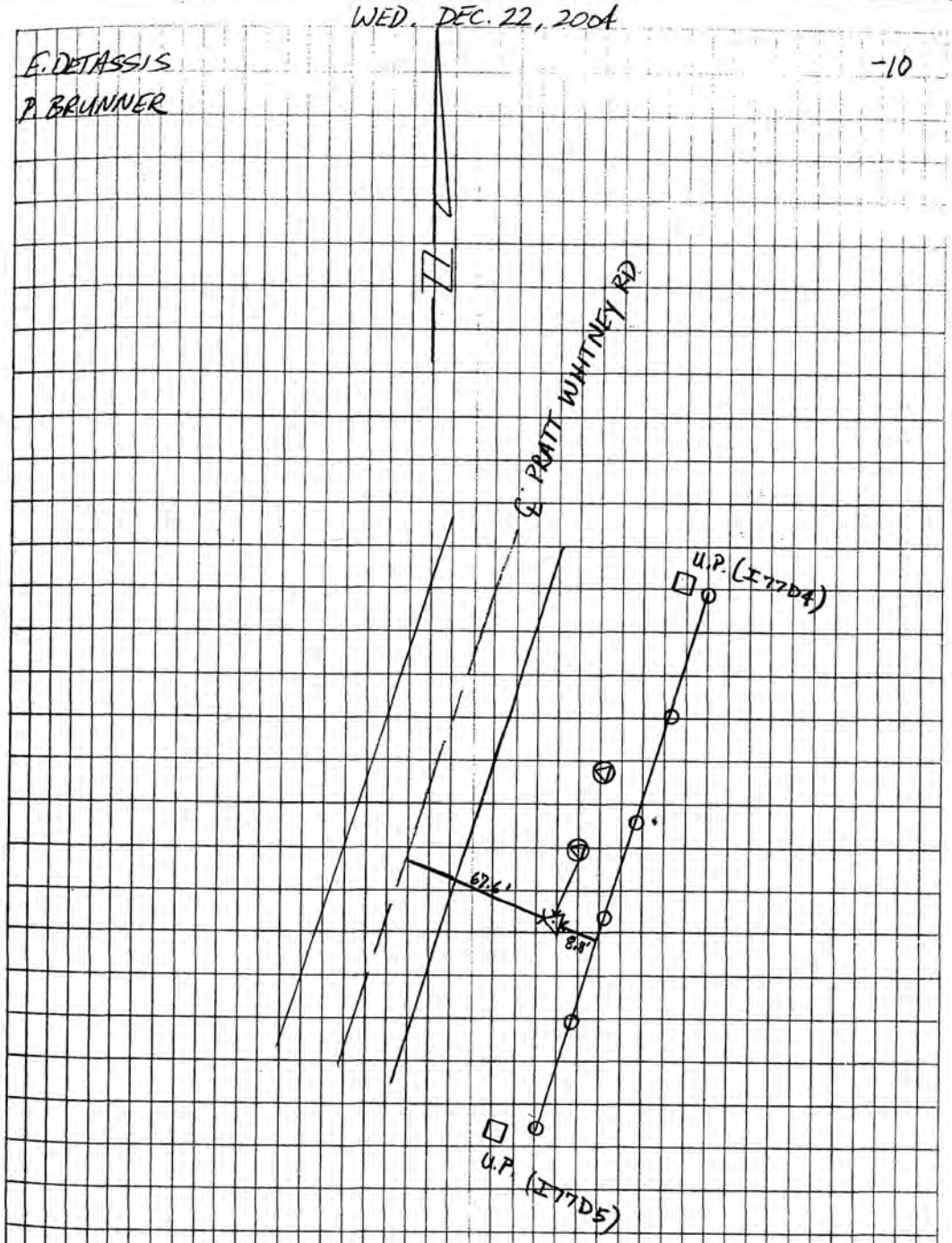
LOCATION OF THE SET MONUMENT

- CONC. MONUMENT 67.6' EAST OF ℄ PRATT WHITNEY RD
- CONC. MONUMENT 20.2' SOUTH OF SOUTH M.W. M1083
- CONC. MONUMENT 8.8' WEST OF BARBED WIRE FENCE
- CONC. MONUMENT ±466' NORTH OF UTILITY POLE I77DS
- CONC. MONUMENT ±224' SOUTH OF UTILITY POLE I77D4

WED. DEC. 22, 2004

E. DETASSIS
P. BRUNNER

-10



□ - UTILITY POLE
Ⓜ - MONITORING WELLS
△ - SET CONC. MONUMENT

SFWMD

1078.001

RECON BENCHMARKS & SETTING
CONC. MONUMENTS

- SET CONC. MONUMENT AT THE SITE OF MONITORING WELL M1253 REF: PG 33, 36

LOCATION OF THE SET MONUMENT
- CONC. MONUMENT 16' EAST OF ℄ ROAD
* - CONC. MONUMENT 59.5' SOUTHEAST FROM WOOD UTILITY POLE
- CONC. MONUMENT 54.0' SOUTH FROM U.S. GEOLOGICAL SURVEY MONITORING WELL
- CONC. MONUMENT 14.9' WEST OF BAY TREE w/ DIA. OF 1.3'
- CONC. MONUMENT 2.1' NORTH OF MONITORING WELL PB 1253

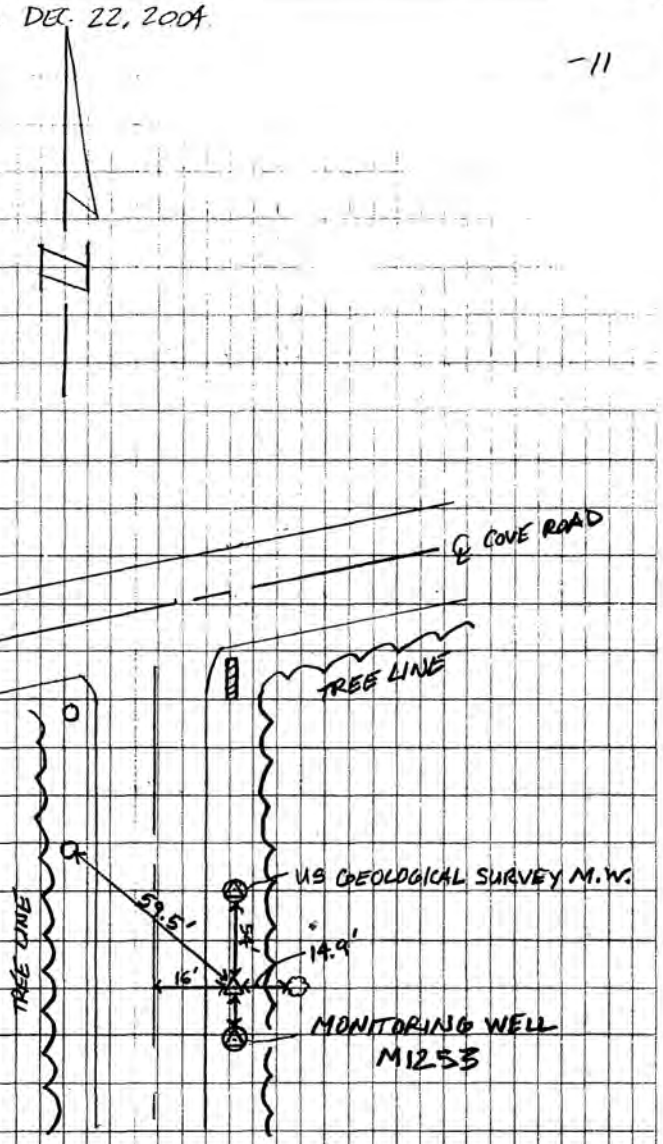
* - CONC. MONUMENT A BEARING OF N 40°00'00" W TO WOOD UTILITY POLE

- RECON BM H-517 (FND IN GOOD CONDITION)
- RECON BM E-569 (" " ")
- RECON BM A-569 (" " ")
- RECON BM Z-517 (" " ")

WED. DEC. 22, 2004

-11

E. DETASSIS
P. BRUNNER



○ - UTILITY POLE
△ - SET CONC. MONUMENT
◬ - MONITORING WELL
℄ - TREE
▮ - "SAMARITAN HOUSE FOR BOYS" SIGN

1078.001 SFWMD

TUES. DEC. 28, 2004

E. DETASSIS
P. BRUNNER

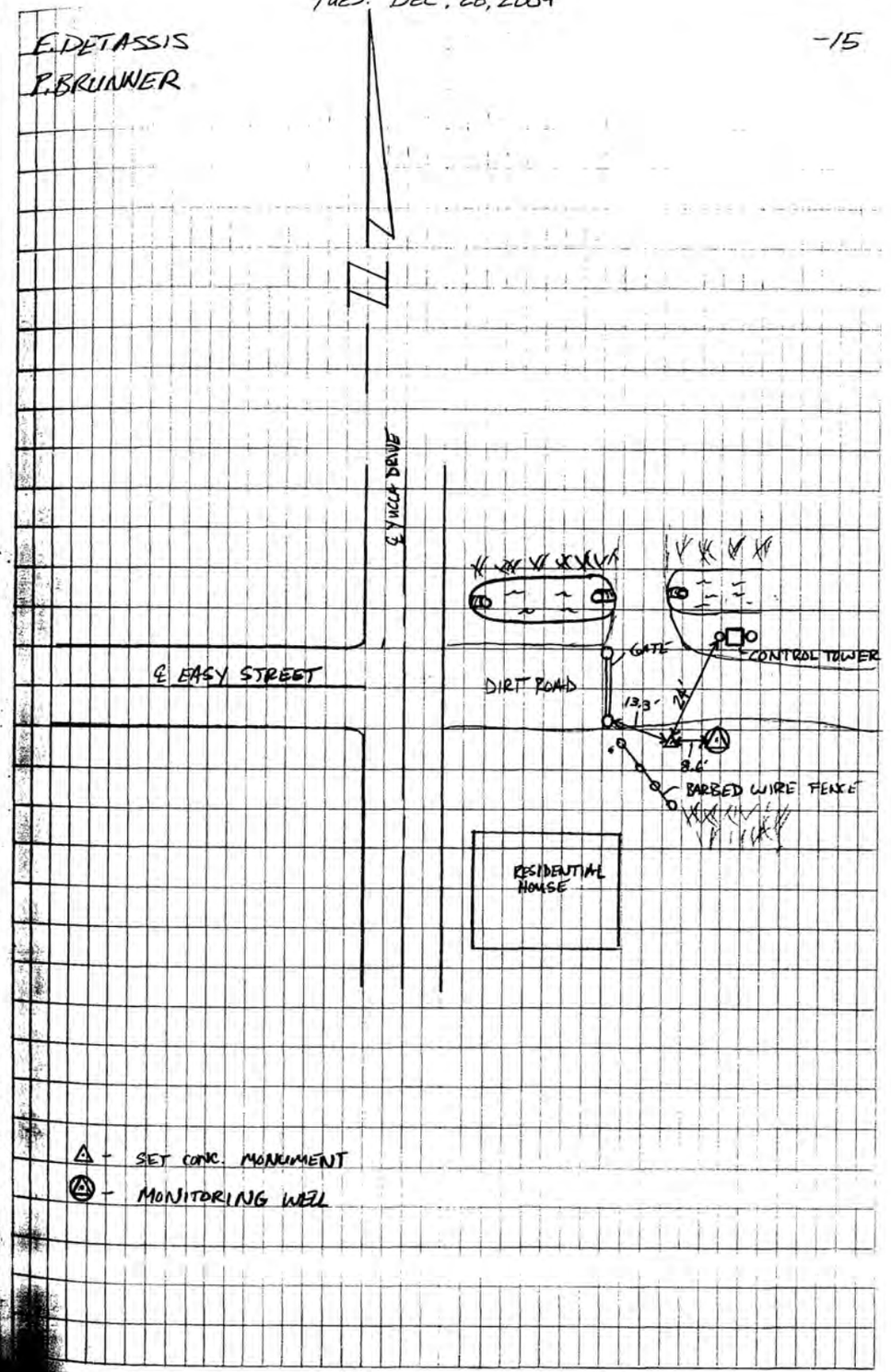
-15

RECON BENCHMARKS & SETTING CONC. MONUMENTS

RECON BM U403 (NOT FND)

SET CONC. MONUMENT AT THE SITE OF STL 278
REF: PG 33, 47, 48

LOCATION OF SET CONC. MONUMENT
- CONC. MONUMENT 8.6' WEST OF MONITORING WELL STL 278
- CONC. MONUMENT 13.3' SOUTHEAST OF SOUTH GATE POST
- CONC. MONUMENT 24' SOUTHWEST OF WESTERN MOST POST OF CONTROL TOWER
- CONC. MONUMENT 4' EAST OF BARBED WIRE FENCE



1078.001 SFWMD

RECON BENCHMARKS & SETTING CONC. MONUMENTS

SET MONUMENT (SFWMD ALUM. DISK) AT THE SITE OF MONITORING WELL PSL UTL (PORT SAINT LUCIE UTILITY PLANT)

~~REP~~ REF: 49, 50

LOCATION OF SET MONUMENT

- MONUMENT 0.6 N & 0.6 W OF SE COR OF CONC. ~~HEADER~~ OF BACK WASH RETURN BASIN
- MONUMENT 37.3' NW OF LP #2
- MONUMENT 22.45' ~~SE~~ SW OF LP #1
- MONUMENT 18.30' EAST OF MOST EASTERLY POST OF CONTROL BOX

TUES. JAN. 4, 2005

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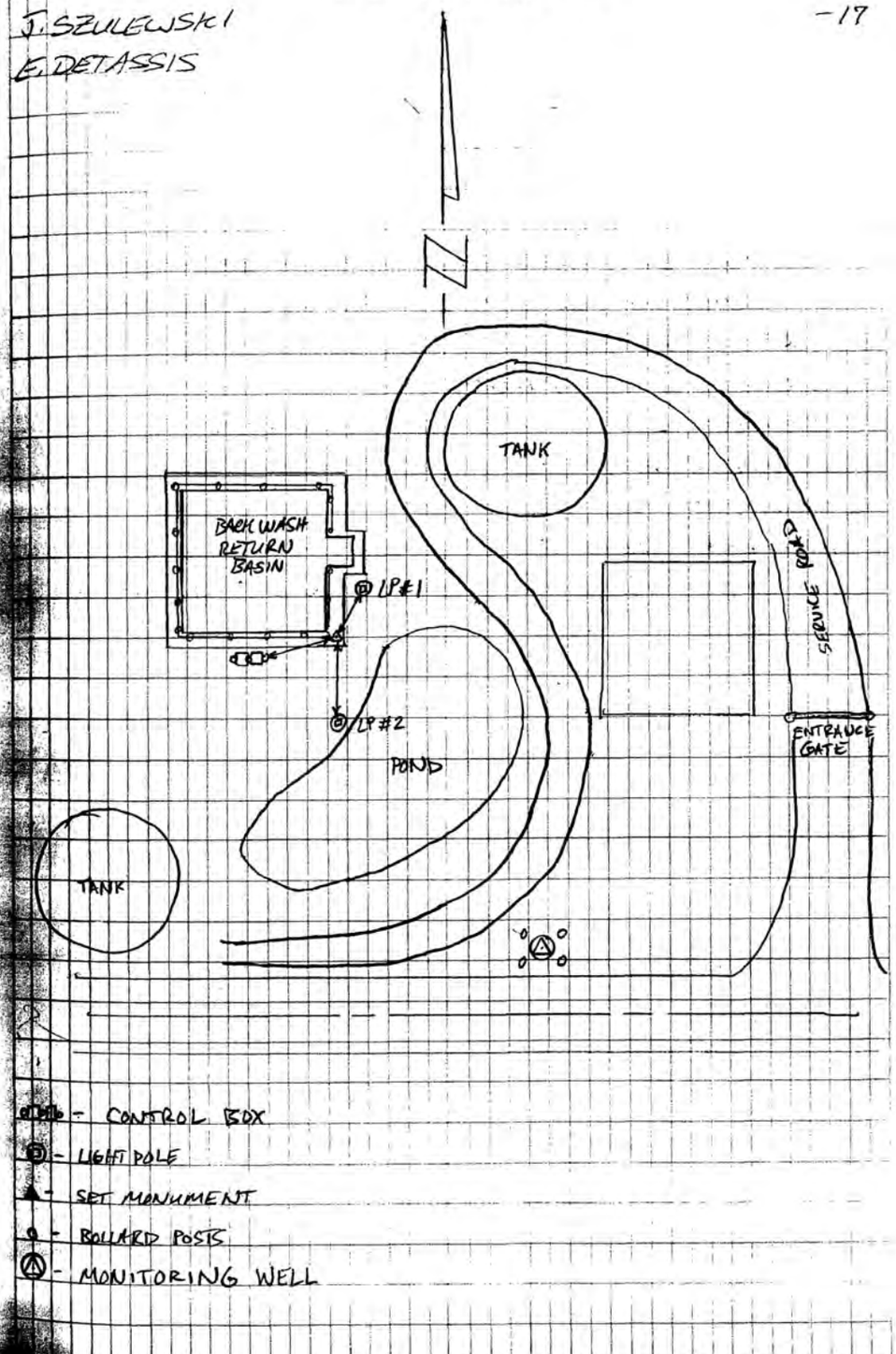

1078.001 SFWMD

TUES. JAN. 4, 2005

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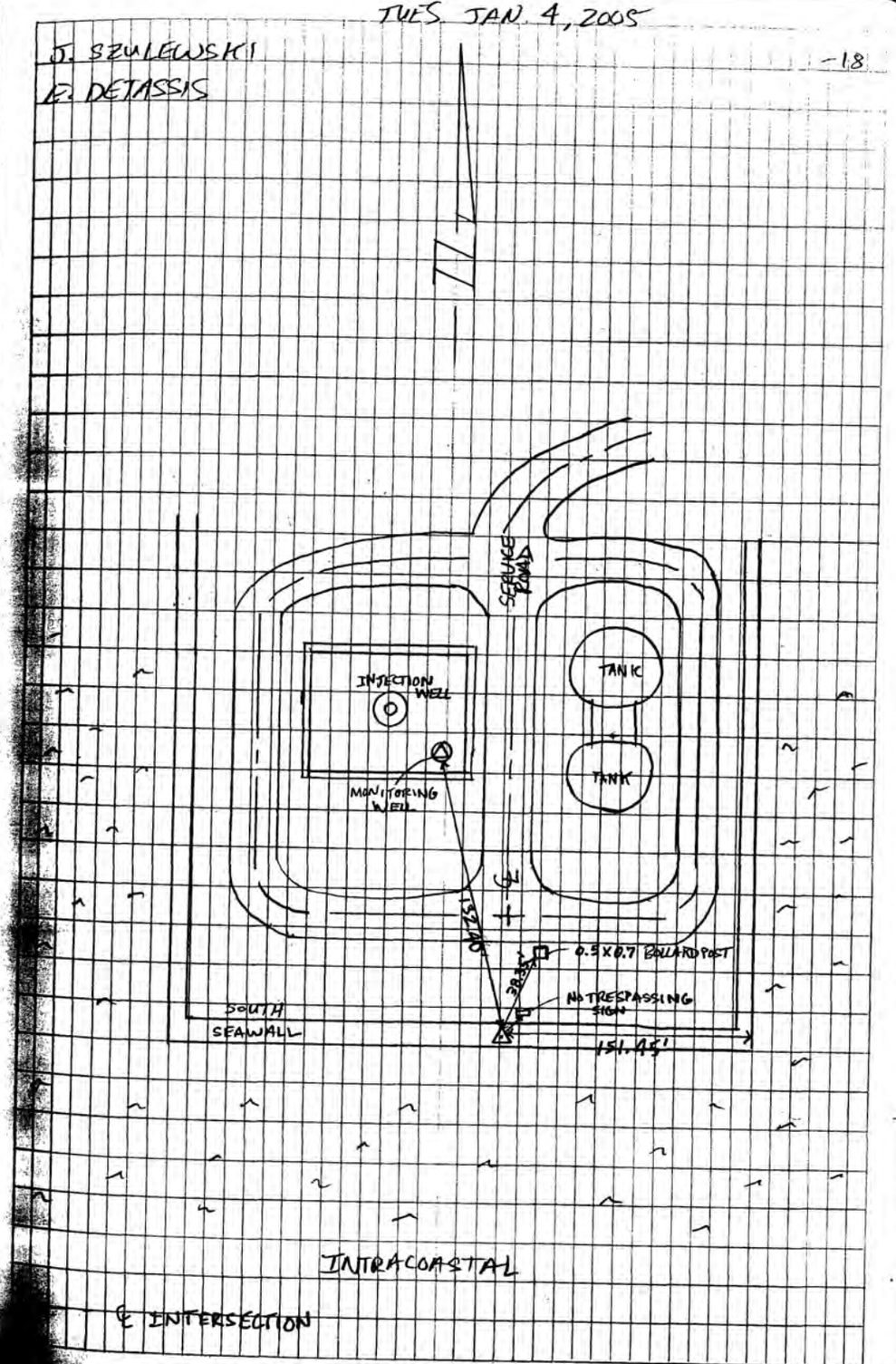
RECON BENCHMARKS & SETTING CONC. MONUMENTS

SET MONUMENT (SFWMD ALUM. DISK) AT THE SITE OF MONITORING WELL PTPUTL (FORT PIERCE UTILITY PLANT)

REF: 45,46

LOCATION OF SET MONUMENT

- MONUMENT 42.6' SOUTH OF ℄ INTERSECTION
- MONUMENT 38.35' SW OF 0.5 x 0.7 BOLLARD POST
- MONUMENT 3.55' SW OF NO TRESPASSING SIGN
- MONUMENT 132.40' SE OF MONITORING WELL
- MONUMENT 151.45' WEST OF SE COR OF SEAWALL



1078.001 SFWMD

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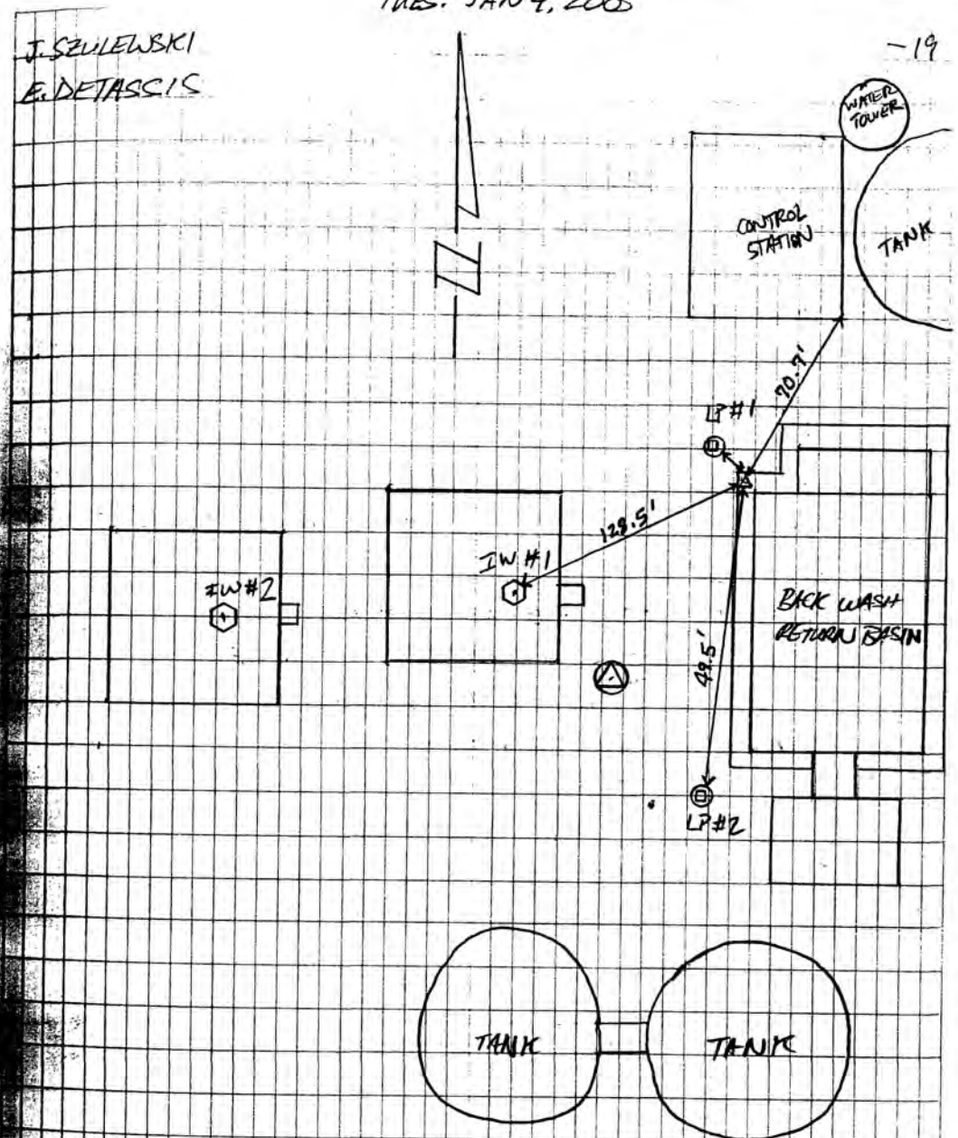
RECON BENCHMARKS & SETTING CONC MONUMENTS.

SET MONUMENT (SFWMD ALUM. DISK) AT THE SITE OF MONITORING/INJECTION WELLS MCUTL (MARTIN COUNTY UTILITY PLANT)
REF: 51, 52

LOCATION OF SET MONUMENT

- MONUMENT SET 70.7' SW OF SE COR OF CONTROL STATION
- MONUMENT SET 6.55' SE OF LIGHT POLE #1
- MONUMENT SET 49.5' NE OF LIGHT POLE #2
- " " 128.5' E. OF INJECTION WELL #1
- " " 0.6 SOUTH & 0.6 EAST OF NW COR OF BACK WASH RETURN BASIN



1078,001 SFWMD

REDN BENCHMARKS & SETTING MONUMENTS

SET MONUMENT (SFWMD ALUM. DISK) AT THE SITE OF INJECTION WELL STUART (STUART UTILITY PLANT)
REF: 53, 54

LOCATION OF SET MONUMENT
- MONUMENT SET 39' NW OF PK NAIL & DISK LB4318 IN OAK TREE #1
- MONUMENT SET 69.6' NE OF UTILITY POLE W/METER
- MONUMENT SET 15.1' SW OF LIGHT POLE
- " " 0.4' NORTH & 0.4' WEST OF SE COR OF CONC. PAD INJECTION WELL

TUES. JAN. 4, 2005

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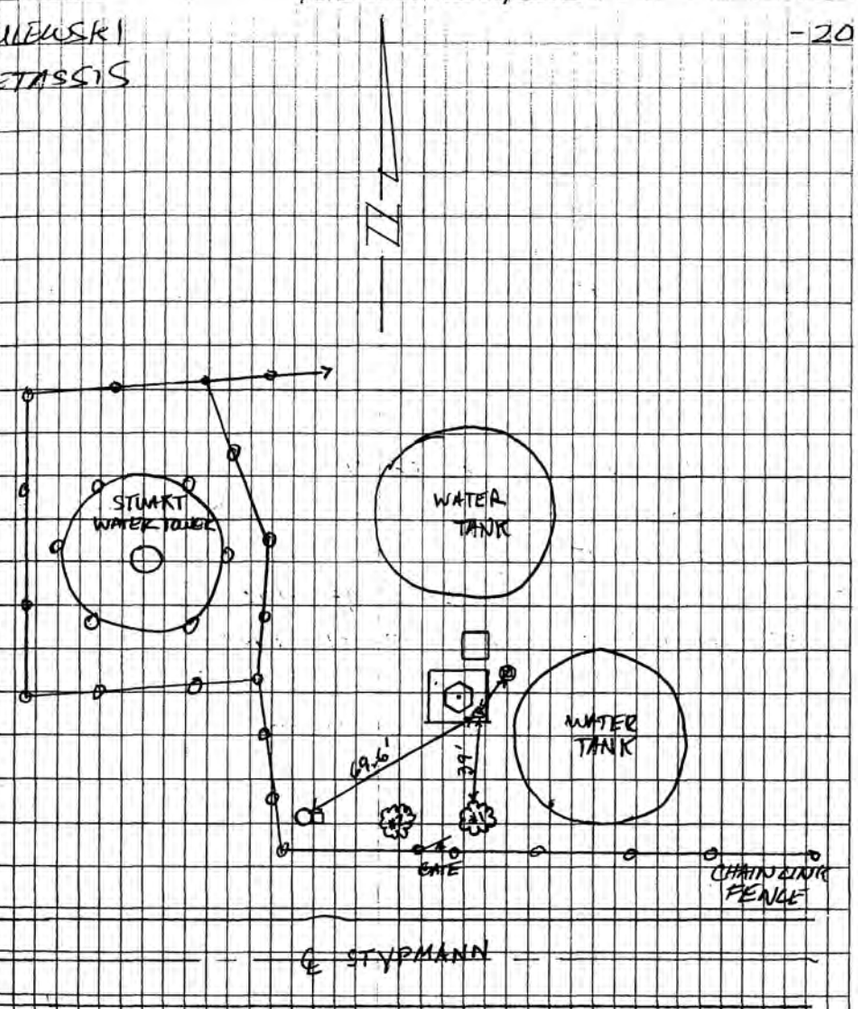

△ - SET MONUMENT
⬡ - INJECTION WELL #1
⊡ - LIGHT POLE
□ - CONTROL BOX
○□ - UTILITY POLE W/METER
- OAK TREE #1 PK NAIL & DISK IN N. SIDE TREE TRUNK LB4313

1078 SFWMD

RECON BENCHMARKS AND SETTING CONC MONUMENTS

- SET CONC. MONUMENT AT THE SITE OF MONITORING WELLS M1086 & M1088 REF: PG33, 57, 58

LOCATION OF SET MONUMENT
- SET MONUMENT 18.7' NE OF MONITORING WELL M-1086
- SET MONUMENT 23.8' WEST OF NORTHERN MOST UTILITY POLE
- SET MONUMENT 26' SOUTH OF ℄ ROAD

COORDINATES ON SET MONUMENT:

US STATE PLANE 1983

METERS	US SURVEY FEET
N. 294790.126	N. 967156.557
E. 242847.762	E. 795563.729

WGS 1984

METERS	US SURVEY FEET
N. 26°59'37".70	N. 26°59'37".692
W. 080°34'18".94	W. 080°34'18".939

MON JAN 10, 2005

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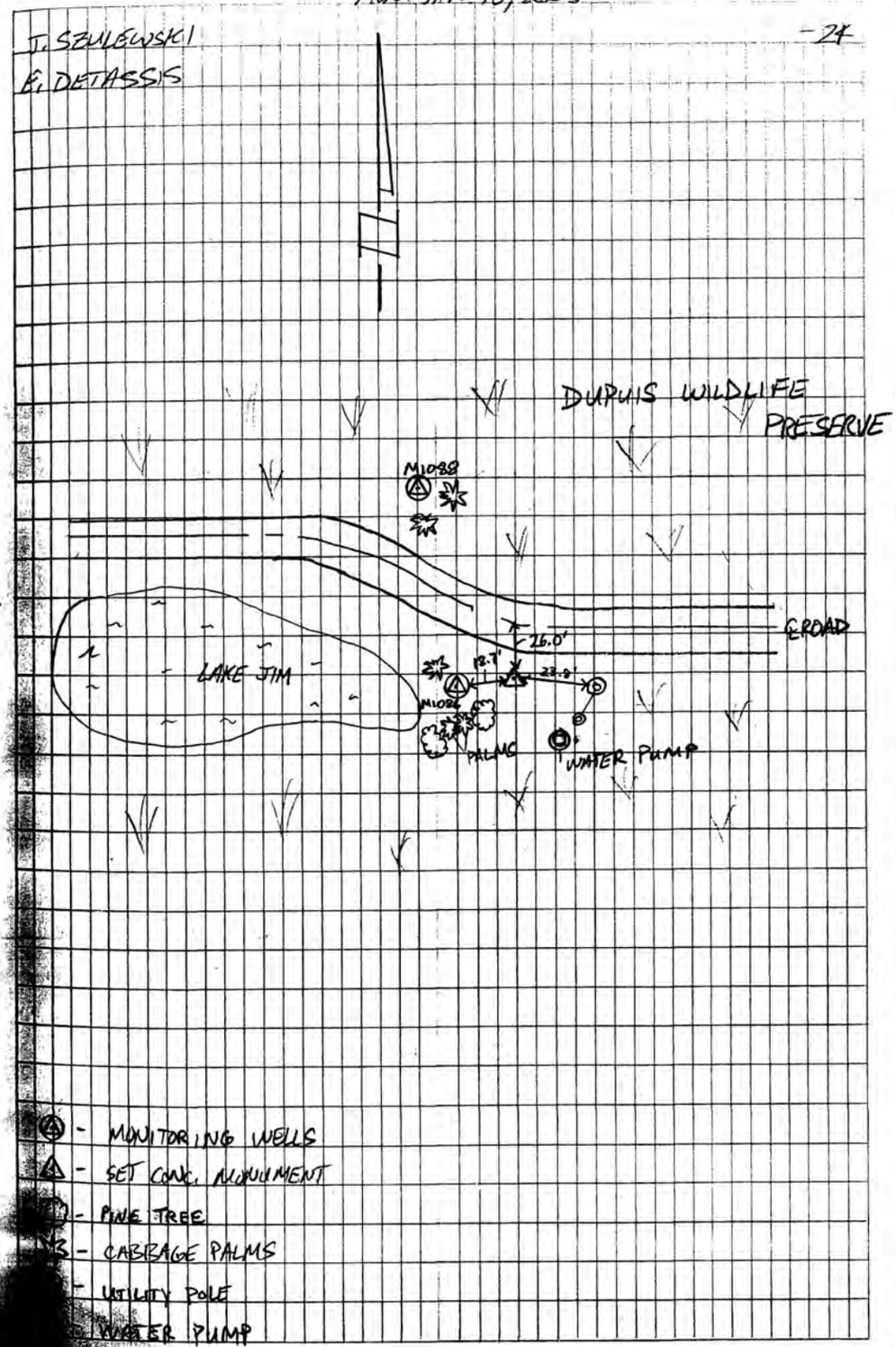

1078 SFWMD

RECON BENCHMARKS & SETTING
CONC. MONUMENTS

SET CONC. MONUMENT AT THE SITE OF MONITORING WELL (OKEE UTILITY AUTHORITY) REF: PG 33, 65, 66

LOCATION OF SET MONUMENT

- SET MONUMENT 1.7' ~~EAST~~ N.E. OF ~~N.W.~~ S.W. BALLARD POST
- SET MONUMENT 3.0' WEST OF SOLAR PANEL POST
- SET MONUMENT 33.4' ~~SOUTH~~ EAST OF MONITORING WELL

COORDINATES ON SET MONUMENT:

US STATE PLANE 1983

METERS	US SURVEY FEET
N. 317332.323	N. 1041114.843
E. 215888.972	E. 708295.762

WGS 1984

METERS	US SURVEY FEET
N. 27° 11' 52". 160	N. 27° 11' 52". 160
W. 080° 50' 22". 657	W. 080° 50' 22". 667

TUES. JAN. 11, 2005 -26

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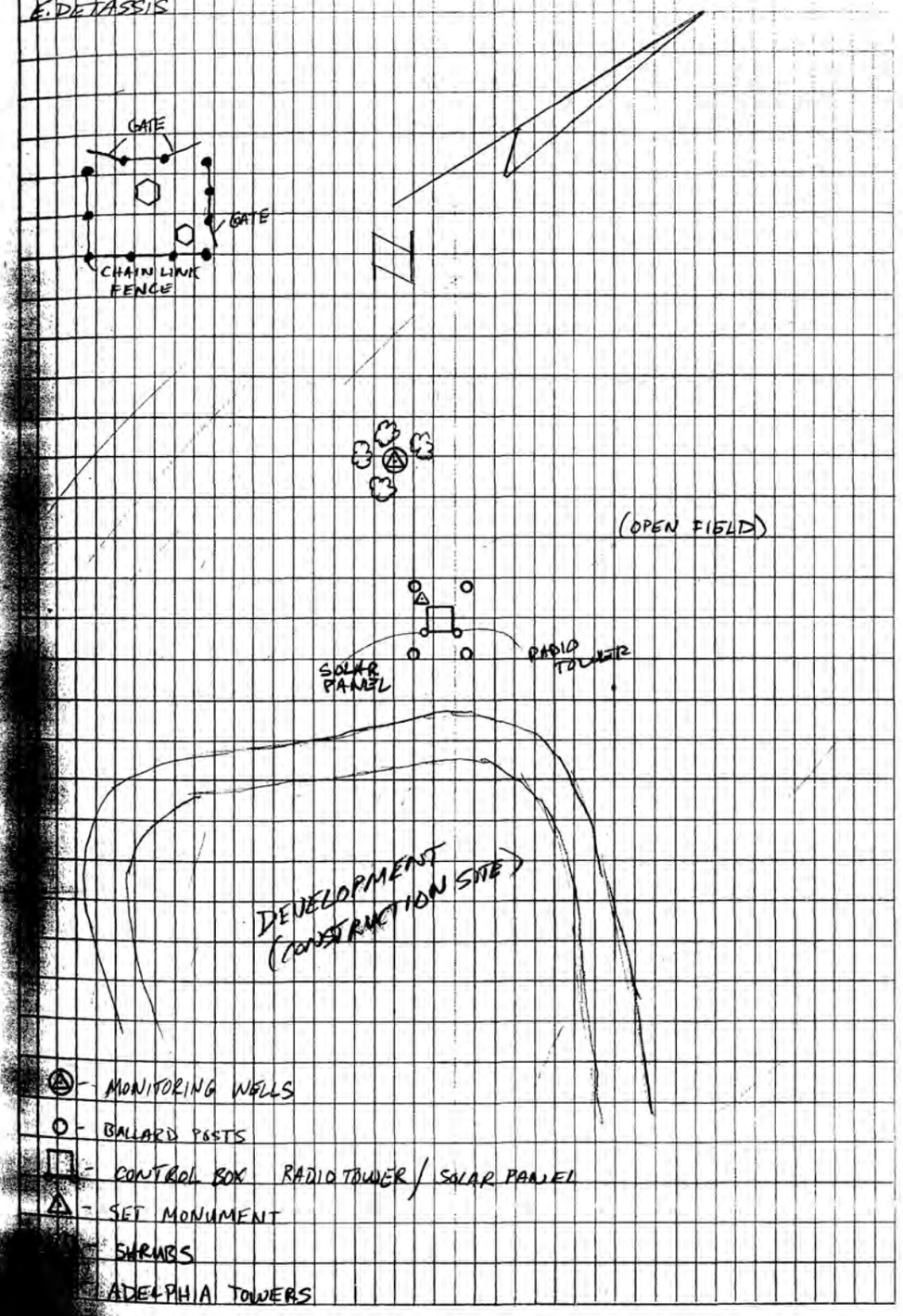

1078 SFWMD

RECON BENCHMARKS & SETTING CONC. MONUMENTS

SET CONC. MONUMENT AT THE SITE OF MONITORING WELL (TURNPIKE DOT) REF; PG. 33, FB. 3-12

LOCATION OF SET MONUMENT
- SET MONUMENT 126.6' NE OF UTILITY POLE (17/426/8)
- SET MONUMENT 181.2' NW OF UTILITY POLE (17/426/9)
- SET MONUMENT 174.70' WEST OF CONTROL BOX W/ SOLAR AND RADIO TOWER

MAGNET SET 1' NORTH OF CONC. MONUMENT
- SET MONUMENT 7.35' EAST OF NE MONITORING WELL

COORDINATES ON SET MONUMENT:

US STATE PLANE 1983

METERS	US SURVEY FEET
N. 372606.712	N. 1222460.178
E. 210243.831	E. 689795.076

WGS 1984

METERS	US SURVEY FEET
N. 27° 41' 48". 1874	N. 27° 41' 48". 1834
W. ~~080 0~~ 080° 53' 46". 10	W. 080° 53' 46". 183

WED. JANUARY 12, 2005

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E. DEMASSIS

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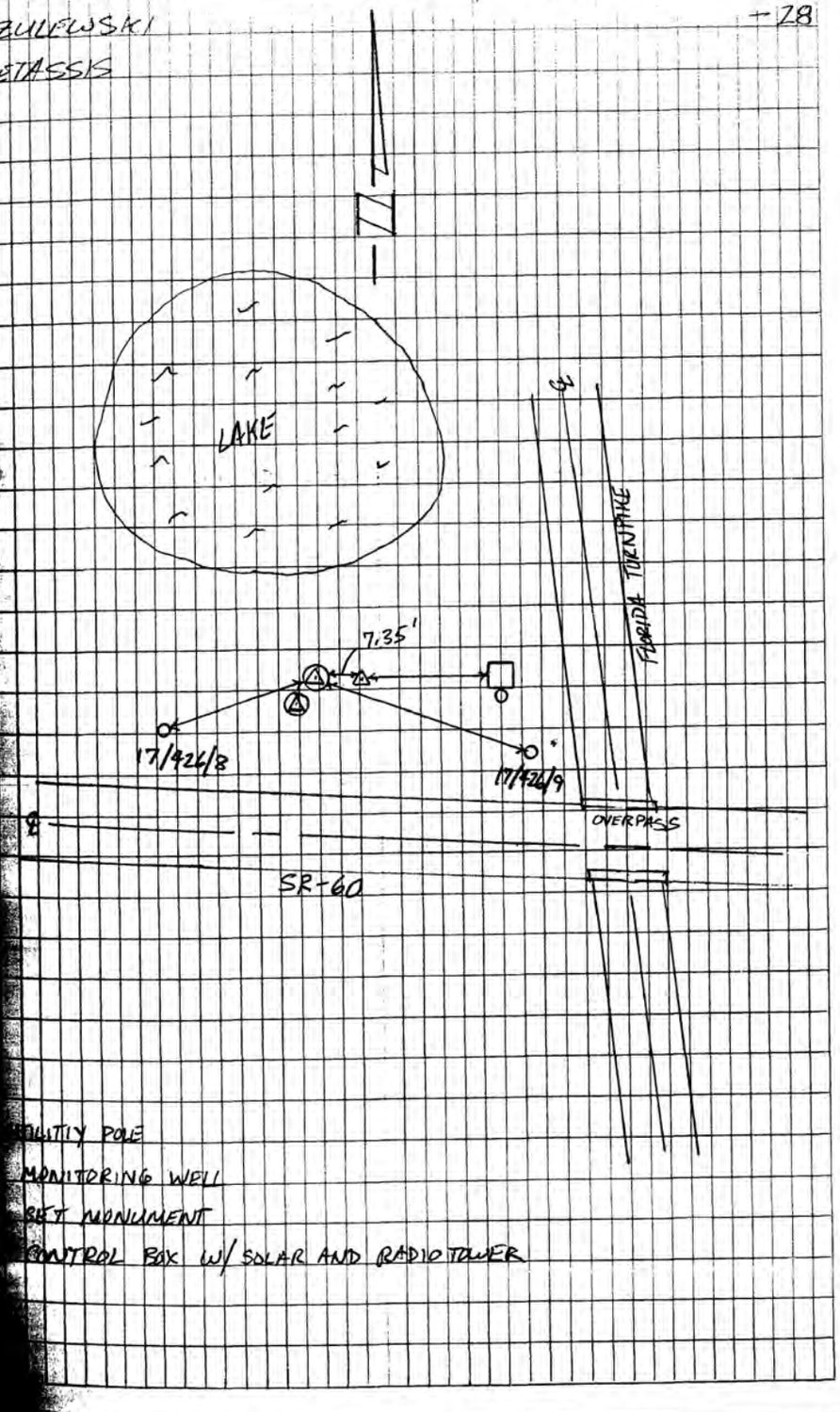

1078 SFWMD

RECON BENCHMARKS & SETTING CONC. MONUMENTS

SET ~~CONC.~~ MONUMENT AT THE SITE OF MONITORING WELL (STCLOUD POWER PLANT) SET SFWMD DISK IN SE COR OF AIR FILTER 3' TALL CONC. PAD.

LOCATION OF SET MONUMENT:
- SET MONUMENT 14.85' WEST OF CHAIN LINK FENCE
- SET MONUMENT 24.7' ~~NE~~ NW OF MONITORING WELL
- SET MONUMENT 41.60' NORTH OF SOLAR/RADIO TOWER

REF: FB 3-17

COORDINATES ON SET MONUMENT:

US STATE PLANE 1983

METERS	US SURVEY FEET
N. 433855.444	N. 1423410.597
E. 171723.895	E. 563410.125

WGS 1984

METERS	US SURVEY FEET
N. 28° 14' 57". 057	N. 28° 14' 57". 099
W. 081° 17' 17". 248	W. 081° 17' 17". 317

WED. JAN. 12, 2005

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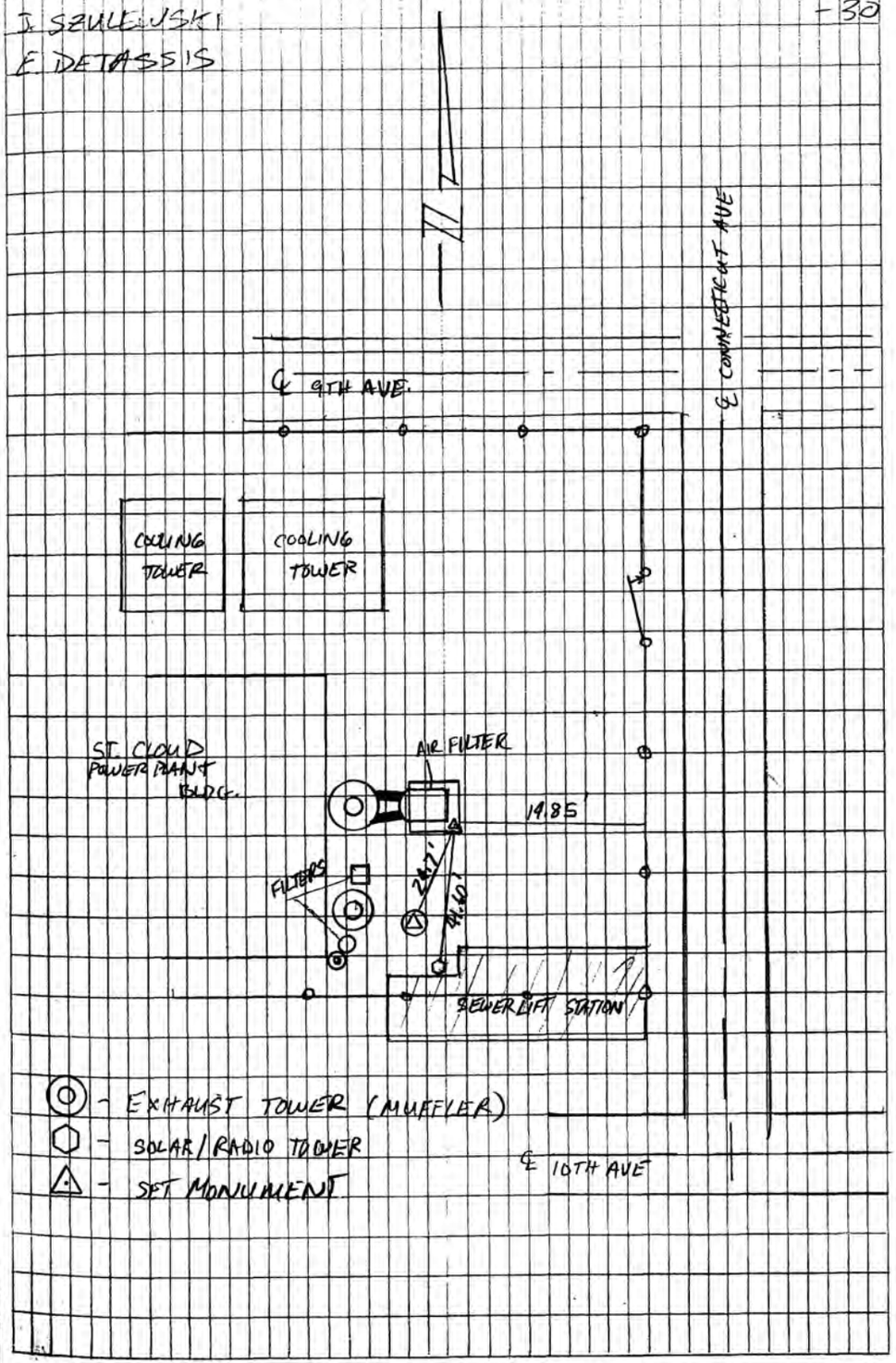

1078 SFWMD

THURS. JAN. 13 2005

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RECON. BENCHMARKS FOR LAKE MARION WELL

LAKE MARION

→ RECON. BENCHMARK Q 199 @ CR. 523

→ RECON BENCHMARK P 199 ON CR. 523

→ RECON BENCHMARK N 199 ON CR. 523
- MONUMENT LOOKS TILTED

→ RECON BENCH MARK H 198 ON C.R. 523

FOUND IN GOOD CONDITION

FOUND IN GOOD CONDITION

FOUND IN QUESTIONABLE CONDITION (TOOK PICTURES)

MARK NOT FOUND (ROAD LOOKS LIKE IT WAS WIDENED SINCE 1960)

1078 SFWMD

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RECON BENCHMARKS & SETTING
. CONC. MONUMENTS

SET CONC MONUMENT AT THE SITE OF 2 MONITORING WELLS (LAKE MARIAN) REF: PG 33, FB. 3-13

LOCATION OF SET MONUMENT
- SET MONUMENT 1.8' SOUTH OF SOUTH EDGE OF CONC. PAD FOR MONITORING WELLS
- SET MONUMENT 17.7' SE OF FIRST CONC. POST
- SET MONUMENT 120.7' WEST OF UTILITY POLE
- SET MONUMENT BETWEEN TWO BALLARD POSTS THAT ARE SOUTH OF TWO MONITORING WELLS

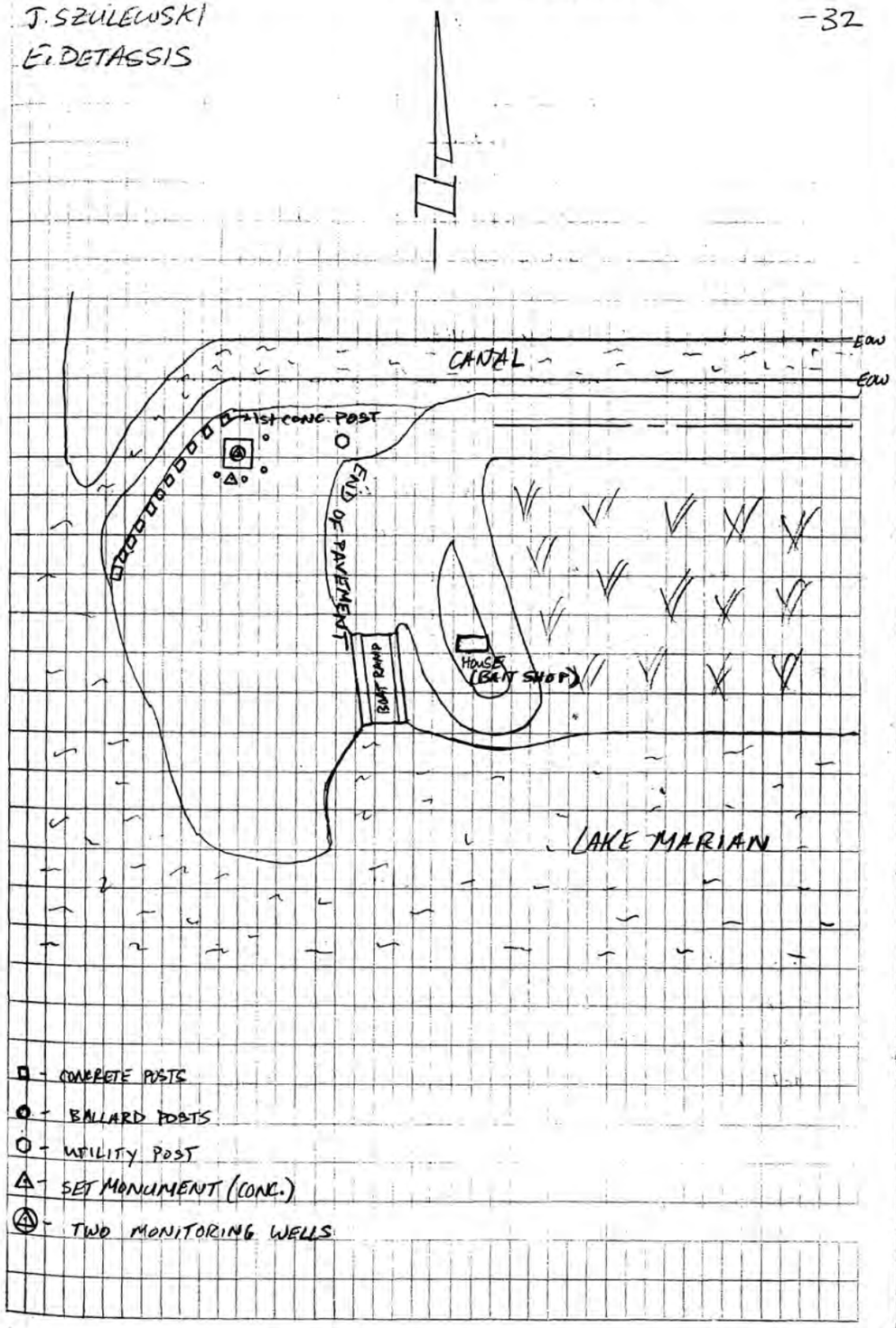
- SET MAGNET 1' SOUTH OF CONC. MONUMENT

COORDINATES ON SET MONUMENT
US STATE PLANE 1983

METERS	US SURVEY FEET
N. 392139.631	N. 1286544.067
E. 194862.032	E. 639310.015

WGS 1984

METERS	US SURVEY FEET
N. 27° 52' 22". 886	N. 27° 52' 22". 898
W. 081° 03' 07". 848	W. 081° 03' 07". 856



1078 SFWMD

COLLECTING DATA ON MONITORING WELLS

PB 1525

- CONCRETE POURED-IN-PLACE MONUMENT REF: PG. 6
- SFWMD ALUM. DISK SET IN MONUMENT
- MAGNET SET IN CONCRETE MONUMENT

ELEVATION ON MONITORING WELL PB 1525

STA	+	H.I.	−	EL.	DESC.
BM	6.15	22.15		16.00	SFWMD ALUM. DISK
			6.03	16.12	M.W. PB 1525 (BLACKMA
	5.54	21.66			" " "
BM			5.66	16.00	SFWMD ALUM. DISK
BM	5.54	~~21.66~~ 21.54		16.00	SFWMD ALUM. DISK
			5.41	~~16.25~~ 16.13	M.W. PB 1525 (BLACK MARK
	4.54	~~20.79~~ 20.67			" "
			~~4.66~~ 4.67	~~16.0~~ 16.0	
BM			4.67	16.0	SFWMD ALUM. DISK

- BLACK MARK ON NORTH SIDE OF M.W. PVC PIPE

COORDINATES ON SET MONUMENT

US STATE PLANE 1983

METERS	US SURVEY FEET
N. 282694.199	N. 927473.217
E. 278554.693	E. 913891.734

WGS 1984

METERS	US SURVEY FEET
N. 26° 52' 59".064	N. 26° 52' 59".069
W. 080° 12' 33".629	W. 080° 12' 33".661

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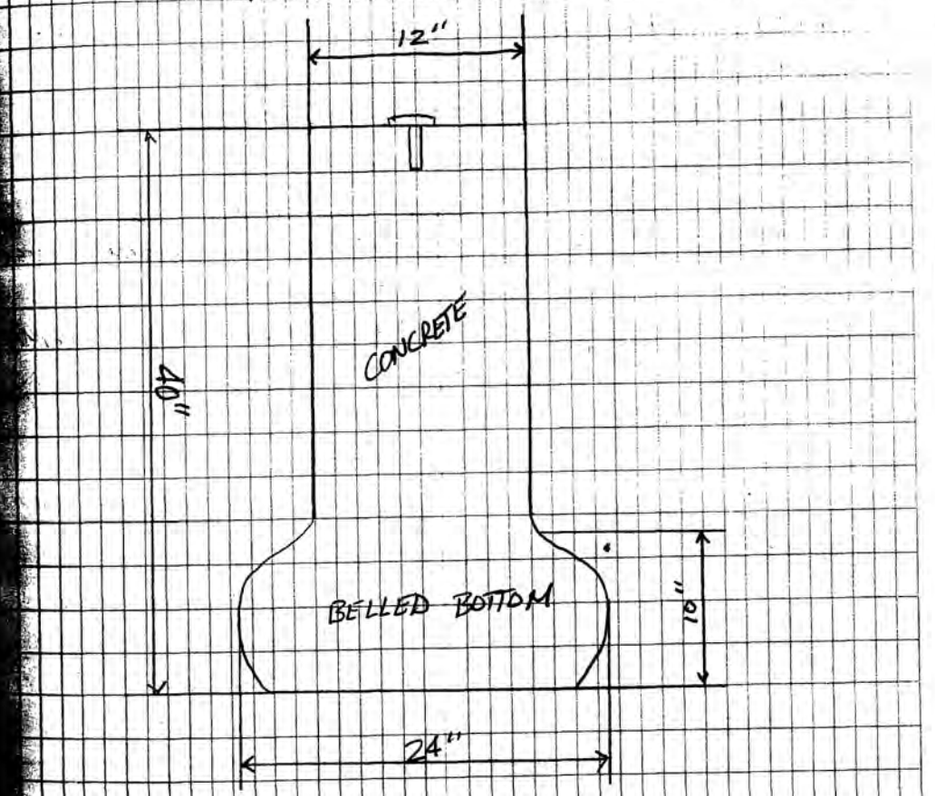
POURED-IN-PLACE CONCRETE MONUMENT



COORDINATES ON M.W. PB 1525

STATE PLANE 1983

METERS	US SURVEY FEET
282694.299	N. 927473.417
278556.528	E. 913897.589

WGS 1984

METERS	US SURVEY FEET
26° 52' 59".064	N. 26° 52' 59".073
080° 12' 33".562	W. 080° 12' 33".536

1075 SFWMD

FRI. JAN. 14, 2005

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COLLECTING DATA ON MONITORING WELLS

PB 875/880

- CONCRETE POURED-IN-PLACE MONUMENT REF: PG 33, 7
- SFWMD ALUM. DISK SET IN MONUMENT
- MAGNET SET IN CONCRETE MONUMENT

ELEVATION ON MONITORING WELL PB880

STA	+	H.I.	−	EL.	DESC.
BM	5.83	21.83		16.00	SFWMD ALUM. DISK
			6.025	15.805	M.W. PB 880 (BLACK MARK)
	5.28	21.085			" " "
BM			5.08	16.005	SFWMD ALUM. DISK
BM	6.51	22.51		16.00	SFWMD ALUM. DISK
			6.71	15.80	M.W. PB 880 (BLACK MARK)
	~~6.00~~ 6.00	21.80			" " "
BM			5.805	15.995	SFWMD ALUM. DISK

- BLACK MARK ON NORTH SIDE OF M.W. 4" PVC PIPE

COORDINATES ON SET MONUMENT ~~MONUMENT~~ M.W. PB880

US STATE PLANE 1983

N. 285773.463 METERS N. 937574.345 US SURVEY FEET
E. 281942.646 E. 925006.001

WGS 1984

N. 26° 54' 38".406 METERS N. 26° 54' 38".421 US SURVEY FEET
W. 080° 10' 30".170 W. 080° 10' 30".182

COORDINATES ON SET ~~MONUMENT~~ M.W. PB880

STATE PLANE 1983

285773.542 METERS N. 937575.891 US SURVEY FEET
281946.515 E. 925016.391

WGS 1984

26° 54' 38".418 METERS N. 26° 54' 38".418 US SURVEY FEET
080° 10' 30".025 W. 080° 10' 30".026

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COLLECTING DATA ON MONITORING WELLS

PB 1649

- CONCRETE POURED-IN-PLACE MONUMENT REF: PG 33,5
- SFWMD ALUM DISK SET IN MONUMENT
- MAGNET SET IN CONCRETE MONUMENT

ELEVATION ON MONITORING WELL PB-1649

STA	+	H.I.	−	EL	DESC
BM	5.72	21.72		16.00	SFWMD ALUM. DISK
			5.76	15.96	M.W. PB-1649
	5.16	21.12			" "
BM			5.11	16.01	SFWMD ALUM. DISK
BM	5.50	21.50		16.00	SFWMD ALUM. DISK
			5.54	15.96	M.W. PB-1649
	4.90	20.86			" "
BM			4.86	16.00	SFWMD ALUM. DISK

- BLACK MARK ON EAST SIDE OF MW PB1649 2" PVC PIPE

- COORDINATES ON SET MONUMENT

US STATE PLANE 1983

METERS	US SURVEY FT.
N: 288588.581	N. 946812.319
E: 281826.335	E 924624.734

WGS 1984

METERS	US SURVEY FT
N: 26° 56' 09". 914	N: 26° 56' 09". 900
W: 080° 10' 33". 701	W. 080° 10' 33". 703

COORDINATES ON MW 1649

US STATE PLANE 1983

METERS	US SURVEY FT
N. 288586.558	N 946803.899
E 281826.337	E. 924625.117

WGS 1984

METERS	US SURVEY FT
N: 26° 56' 09". 826	N. 26° 56' 09". 830
W: 080° 10' 33". 702	W: 080° 10' 33". 712

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FRI. JAN 14, 2005

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COLLECTING DATA ON MONITORING WELLS

M-1253

- CONCRETE POURED-IN-PLACE MONUMENT REF. PG 33, 11
- SFWMD ALUM DISK SET IN MONUMENT
- MAGNET SET IN CONCRETE MONUMENT

ELEVATION ON MONITORING WELL M-1253

STA	+	H.I.	−	EL.	DESC
BM	6.00	22.0		16.00	SFWMD ALUM. DISK
			4.43	17.57	MW M-1253 (BLACK MARK)
	3.85	21.42			" " "
BM			5.42	16.00	SFWMD ALUM. DISK
BM	6.17	22.17			SFWMD ALUM. DISK
			4.61	17.56	MW M-1253 (BLACK MARK)
	3.77	21.33			" " "
BM			5.33	16.00	SFWMD ALUM. DISK

BLACK MARK ON SOUTH SIDE OF MW M-1253

COORDINATES ON SET MONUMENT

US STATE PLANE ~~18~~ 1983

METERS		US SURVEY FEET
N. ~~309247.066~~	309248.839	N. 1014591.809
E. ~~275964.966~~	275957.433	E. 905369.773

WGS 1984

METERS		US SURVEY FEET
N.	27°07'22".284	N. 27°07'22".342
W.	080°14'01".858	W. 080°14'01".841

COORDINATES ON MW ~~M1253~~ M1253

METERS		US SURVEY FT.
N: 309251.678		N: 1014601.937
E: 275958.610		E: 905372.739

WGS 1984

METERS		US SURVEY FT.
N.	27°07'~~22~~ 22".375	N. 27°07'22".378
W.	080°~~13~~ 14'01".901	W. 080°14'01".90

1078 SFWMD

J. SZUMINSKI TUES. JANUARY 19 2021

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COLLECT DATA ON MONITOR WELL STL278 AND CONCRETE MONUMENT

- CONCRETE MONUMENT POURED IN PLACE REF: PG. 15, 33
- SFWMD ALUM. DISK SET IN MONUMENT
- MAGNET SET IN MONUMENT

ELEVATION ON MONITOR WELL STL278

STA	+	HI	-	ELEV.	DESC.
BM	5.37	21.37		16.00	SFWMD ALUM. DISK
M.W			4.35	17.02	M.W. STL 278
" "	3.84	20.86			" "
BM			4.86	16.00	SFWMD ALUM. DISK
BM	4.36	20.36		16.00	SFWMD ALUM. DISK
M.W.			3.34	17.02	M.W. STL 278
"	2.74	19.76	"		" "
BM			3.76	16.00	SFWMD ALUM. DISK

1078 SFWMD

COLLECT COORDINATES ON MW. STL 278
AND CONCRETE MONUMENT

COORDINATES ON M.W. STL 278

US. STATE PLANE 1983

METERS	US SURVEY ft
N: 334720.038	N: 1098159.060
E: 269644.750	E: 884658.337

WGS 1984

METERS	US SURVEY ft.
N: ~~X~~ 27° 21' 11".038	N 27° 21' 11".034
W: 080° 17' 45".866	W 080° 17' 45".850

COORDINATES ON CONCRETE MONUMENT

US STATE PLANE 1983

METERS	US SURVEY FT
N: 334720.088	N 1098161.829
E: 269642.598	E 884655.917

WGS 1984

METERS	US SURVEY FT
N: 27° 21' 11".024	N 27° 21' 11".031
W: 080° 17' 45".965	W 080° 17' 45".942

J. SZUPLEWSKI TUES. JANUARY 18, 2005

E. DATASHEETS

G. RAGIN III

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1078 SFWMD

J. SZULCEWSKI
E. DEIASSIS
G. RAGER III

TUES. JANUARY 18 2005

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COLLECT DATA ON MONITOR WELL AND MONUMENT @ PORT ST. LUCIE UTL.

- SEWMD ALUM. DISK SET IN FOOTER OF BACKWASH RETURN BASIN REF: PG. 17

STA	GET +	HI	−	ELEV.	DESC.	
		ELEVATION ON MONITOR WELL				
B.M.	3.51	+19.51		+16.00	SFWMD	ALUM. DISK
M.W.			2.28	+17.23	TOP WELL	FLANGE
" "	1.93	+19.16			"	"
BM			3.16	+16.00	SFWMD	ALUM. DISK
BM	2.80	+18.80		+16.00	SFWMD	ALUM DISK
M.W.			1.57	+17.23	TOP WELL	FLANGE
" "	1.04	+18.27			"	"
BM			2.27	+16.00	SFWMD	ALUM. DISK

1078 SFWMD

COLLECT COORDINATES ON MONITOR WELL AND MONUMENT @ PORT ST. LUCIE UTL.

COORDINATES FOR MONUMENT

US STATE PLANE 1983

METERS	US SURVEY FT
N: 329720.164	N: 1081756.847
E: 265101.801	E: 869754.375

WGS 1984

METERS	US SURVEY FT
N: 27°18'29".397	N 27°18'29".404
W: 080°20'32".155	W: 080°20'32".161

COORDINATES FOR MONITOR WELL

US STATE PLANE 1983

METERS	US SURVEY FT.
N 329693.190	N 1081668.008
E 265128.316	E 869841.798

WGS 1984

METERS	US SURVEY FT.
N: 27°18'28".517	N: 27°18'28".517
W: 080°20'31".189	W: 080°20'31".194

J. SZULEWSKI TUES. JANUARY 18 2005

E. DEJASSUS -50

G. RAGER II

1078 SFWMD

J. SZULEWSKI TUES. JANUARY 18, 2005
E. DETASSIS
G. RAGER III

COLLECT DATA ON MONITOR WELL
@ MARTIN COUNTY UTL.

- SFWMD ALUM. DISK SET IN FOOTER OF BACK WASH RETURN BASIN REF. PG. 19

GET ELEVATION ON MONITOR WELL

STA	+	HI	−	ELEV.	DESC.	
BM	4.43	+ 20.43		+ 16.00	SFWMD	ALUM. DISK
M.W.			1.74	+18.69	M.W.	2B (TALLER WELL)
M.W.			2.24	+18.19	M.W.	1A
"	1.49	+19.68			"	"
M.W.			0.99	+18.69	M.W.	2B
Bm			3.68	+16.00	SFWMD	ALUM. DISK
Bm	4.225	+20.225		+16.00	SFWMD	ALUM. DISK
M.W.			2.03	+18.195	M.W.	1A
M.W.			1.535	+18.69	M.W.	2B
"	1.09	+19.78			"	"
M.W.			1.595	+18.195	M.W.	1A
B.M.			3.79	+15.99	SFWMD	ALUM. DISK

COLLECT COORDINATES ON MON[illegible] [illegible]LLS
AND MONUMENT @ MARTIN COUNTY UTIL.

COORDINATES FOR MONITORING WELLS

US STATE PLANE 1983

METERS	US SURVEY FT.
N: 322308.789	N: 1057440.417
E: 273071.520	E: 895902.040

WGS 1984

METERS	US SURVEY FT.
N: 27°14'27".173	N: 27°14'27".173
W: 080°15'43".885	W: 080°15'43".891

COORDINATES FOR MONUMENT

US STATE PLANE 1983

METERS	US SURVEY FT.
N: 322321.262	N: 1057481.676
E: 273102.321	E: 896003.612

WGS 1984

METERS	US SURVEY FT.
N: 27°14'27".561	N: 27°14'27".574
W: 080°15'42".750	W: 080°15'42".760

J. SZULE[illegible]
E. DETASSIS
G. RAGER III

[illegible]

1078 SFWMD

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E. DETASSIS
G. RAGEN III

TUES. JAN. 18 2005

COLLECT DATA ON MONITORING WELLS AND MONUMENT @ START UTL.

- SFWMD ALUM. DISK SET IN CONCRETE SLAB BY INJECTION WELL #1 REF. PG. 20

GET ELEVATION ON MONITORING WELL

STA	+	HI	−	ELEV.	DESC.
BM	4.94	+20.94		+16.00	SFWMD ALUM. DISK
I.W.			0.11	+20.83	INJ. WELL #1 UPPER "T" FLANGE
M.W.			2.60	+18.34	MONITOR WELL #2 UPPER FLANGE
" "	2.80	21.14			" "
I.W.			0.32	+20.82	INJ. WELL #1 UPPER "T" FLANGE
BM			5.14	+16.00	SFWMD ALUM DISK
BM	5.30	21.30		+16.00	SFWMD ALUM. DISK
I.W.			0.47	20.83	INJ. WELL #1 UPPER "T" FLANGE
M.W.			2.96	18.34	MONITOR WELL #2 UPPER FLANGE
" "	3.17	21.51			" "
I.W.			0.68	20.83	INJ. WELL #1 UPPER "T" FLANGE
B.M			5.51	16.00	SFWMD ALUM. DISK

1078 SEWMD

COLLECT COORDINATES ON MONITORING WELL AND MONUMENT @ STUART UTILITY

- COORDINATES FOR MONUMENT / INJECTION WELL

US STATE PLANE 1983

METERS	US SURVEY FT.
N: 317335.490	N: 1041125.390
E: 274327.773	E: 900023.504

WGS 1984

METERS	US SURVEY FT
N: 27°11'45".362	N 27°11'45".362
W: 080°14'59".305	W: 080°14'59" .295

COORDINATES FOR MONITORING WELL

US STATE PLANE 1983

METERS	US SURVEY FT.
N: 317345.927	N: 1041158.066
E: 274360.245	E: 900131.585

WGS 1984

METERS	US SURVEY FT.
N: 27°11'45".678	N: 27°11'45".675
W: 080°14'58".095	W: 080°14'58".097

J. SZULEWSKI TUES. JANUARY 18, 2005

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E. DETASSIS
G. RAGER III

WED JANUARY 19, 2005

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COLLECT COORDINATES ON MONITORING WELL AND MONUMENT @ M-1083

- CONCRETE POURED IN PLACE MONUMENT
- SFWMD ALUM. DISK SET IN MONUMENT
- MAGNET SET IN MONUMENT

REF: DF PG. 33, 1 10

ELEVATION ON MONITOR WELL M-1083

STA	+	HI	−	ELEV.	DESC.
BM	5.39	+21.39		16.00	SFWMD ALUM. DISK
M.W.			2.47	+19.92	SOUTH TALL WELL
M.W.			4.04	+17.35	NORTH SMALL WELL
"	3.56	+20.91			" "
M.W.			1.99	+19.92	SOUTH TALL WELL
B.M.			4.91	+16.00	SFWMD ALUM. DISK
B.M.	5.23	+21.23		+16.00	SFWMD ALUM. DISK
M.W.			3.89	+17.34	NORTH SMALL WELL
M.W.			2.31	+~~18.97~~ 19.91	SOUTH TALL WELL
"	1.61	+20.52			" "
			3.18	+17.34	NORTH SMALL WELL
			4.53	+15.99	SOUTH TALL WELL

SFWMD

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COLLECT COORDINATES ON MONITORING WELL AND MONUMENT @ M-1083

COORDINATES FOR MONITOR WELL

US STATE PLANE 1983

METERS

N: 294291.323

E: 271660.586

~~US SURVEY FT~~

US SURVEY FT.

N: 965522.201

E: 891272.238

WGS 1984

METERS

N: 26° 59' 17". 202

W: 080° 16' 41". 017

US SURVEY FT.

N: 26° 59' 17". 198

W: 080° 16' 41". 021

COORDINATES FOR ~~MONITOR WELL~~ MONUMENT

US STATE PLANE 1983

METERS

N: 294286.083

E: 271656.772

US SURVEY FT.

N: 965503.342

E: 891260.350

WGS 1984

METERS

~~N: 294286.083~~

~~W: 271656.772~~

N: 26° 59' 17". 009

W: 080° 16' 41". 144

US SURVEY FT.

N: 26° 59' 17". 005

W: 080° 16' 41". 152

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WED JANUARY 19, 2005

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COLLECT ELEVATIONS AND COORDINATES

@ M1086

- CONCRETE POURED IN-PLACE MON. REF. PG 24, 33
- SFWMD ALUM. DISK SET IN CONCRETE
- MAGNET SET IN MONUMENT

ELEVATIONS ON MONITORING WELLS

STA	+	HI	−	ELEV.	DESC.
BM	6.26	22.26		16.00	SFWMD ALUM. DISK
M.W.			5.21	+17.05	M.W. 1086
M.W.			4.74	+17.52	M.W. 1088
"	4.24	21.76			" "
M.W.			4.70	+17.06	M.W. 1086
BM.			5.75	+16.01	SFWMD ALUM. DISK
B.M.	+5.45	21.45		+16.00	SFWMD ALUM. DISK
M.W.			4.39	+17.06	M.W. 1086
M.W.			3.94	+17.51	M.W. 1088
"	3.39	+20.90			" "
M.W.			3.84	+17.06	M.W. 1086
BM			4.90	+16.00	SFWMD ALUM. DISK

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* BOTH MARKINGS ON WELLS 1086/1088 ON NORTH SIDE OF PIPE.
- PIPES MARKED WITH ORANGE PAINT & 4 TO 5 SMALL NOTCHES IN TOP OF PIPE

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COLLECT COORDINATES ON MONITORING WELLS

COORDINATES FOR M1086

US STATE PLANE 1983

METERS

N: 294789.830

E: 242481.896

US SURVEY FT.

N: 967155.55

E: 795542.076

WGS 1984

METERS

N: 26°59'37".702

W: 080°34'19".180

US SURVEY FT

N: 26°59'37".633

W: 080°34'19".168

COORDINATES FOR M1088

US STATE PLANE 1983

METERS

N: 294819.140

E: 242469.633

US SURVEY FT

N: 967251.777

E: 795499.493

WGS 1984

METERS

N: 26°59'38".659

W: 080°34'19".641

US SURVEY FT

N: 26°59'38".652

W: 080°34'19.630

J. SZUCHNICKI THURS. JANUARY 20, 2005

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THRUS. JAN. 20, 2005

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RECON BENCHMARKS & SETTING
CONC. MONUMENTS

SET CONC. MONUMENT AT THE SITE OF MONITORING WELL (LKBDIB) REF. FB 3-48
REF: PG. 33

LOCATION OF SET MONUMENT
- SET MONUMENT 11' NORTH OF MONITORING WELL LKBDIB
- SET MONUMENT 11' WEST OF SOLAR PANEL
- SET MONUMENT @ 47.2' SW OF WOODEN FENCE CORNER

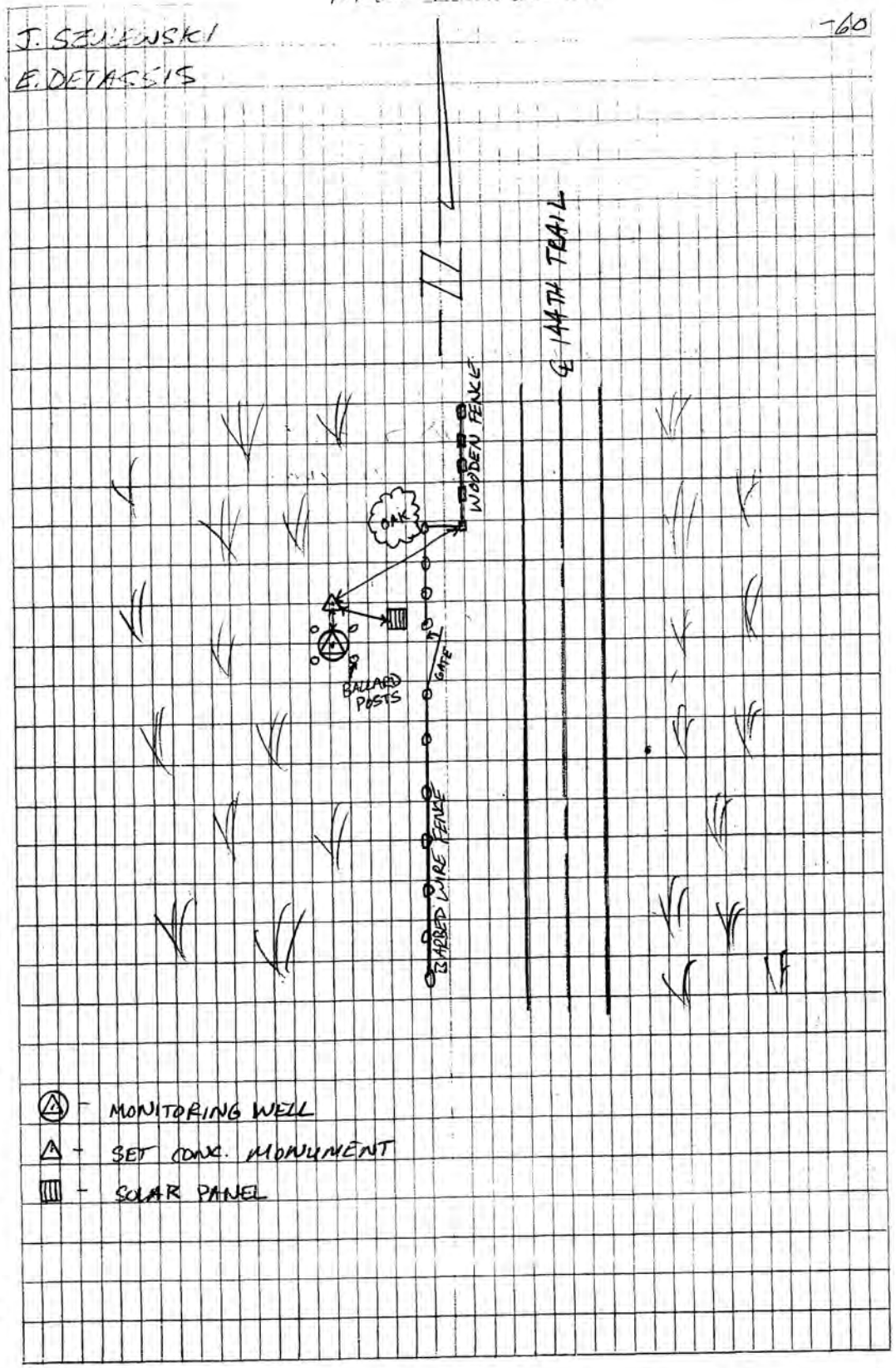
SET MAGNET 1' NORTH OF SET MONUMENT

COORDINATES ON SET MONUMENT
US STATE PLANE 1983

METERS	US SURVEY FEET
N. 332275.455	N. 1090140.234
E. 197856.664	E. 649135.192

WGS 1984

METERS	US SURVEY FEET
N. 27°19'57".996	N. 27°19'57".995
W. 081°01'17".959	W. 081°01'17".962



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RECON BENCHMARKS & SETTING
CONC. MONUMENTS

SET CONC. MONUMENT AT THE SITE OF MONITORING WELLS (LKBD2B) REF. PG 33, FB. 3-48

LOCATION OF SET MONUMENT
- SET MONUMENT 11.6' NORTH OF NORTHERN MONITORING WELL
- SET MONUMENT 34' SOUTH OF EOW
- SET MONUMENT 157' SE OF CULVERT
- SET MONUMENT 119' NW OF PALM TREE

SET MAGNET 1' NORTH OF SET MONUMENT

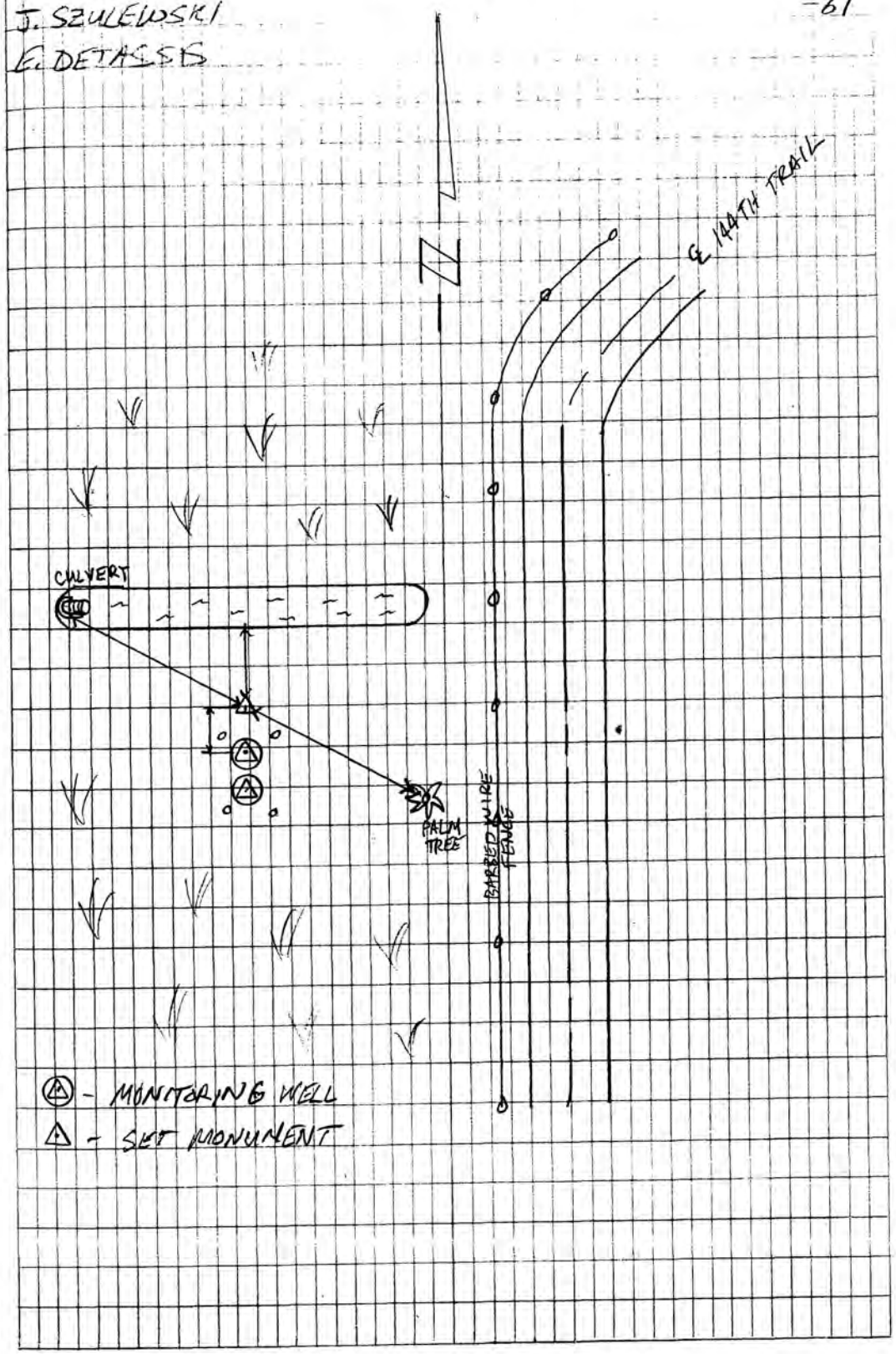
COORDINATES ON SET MONUMENT

US STATE PLANE 1983

METERS	US SURVEY FEET
N. 334803.085	N. 1098431.899
E. 198641.230	E. 651709.782

WGS 1984

METERS	US SURVEY FEET
W. N. 27° 21' 20".100	W. N. 27° 21' 20".094
W. 081° 00' 49".425	W. 081° 00' 49".433



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RECON BENCHMARKS & SETTING CONC. MONUMENTS.

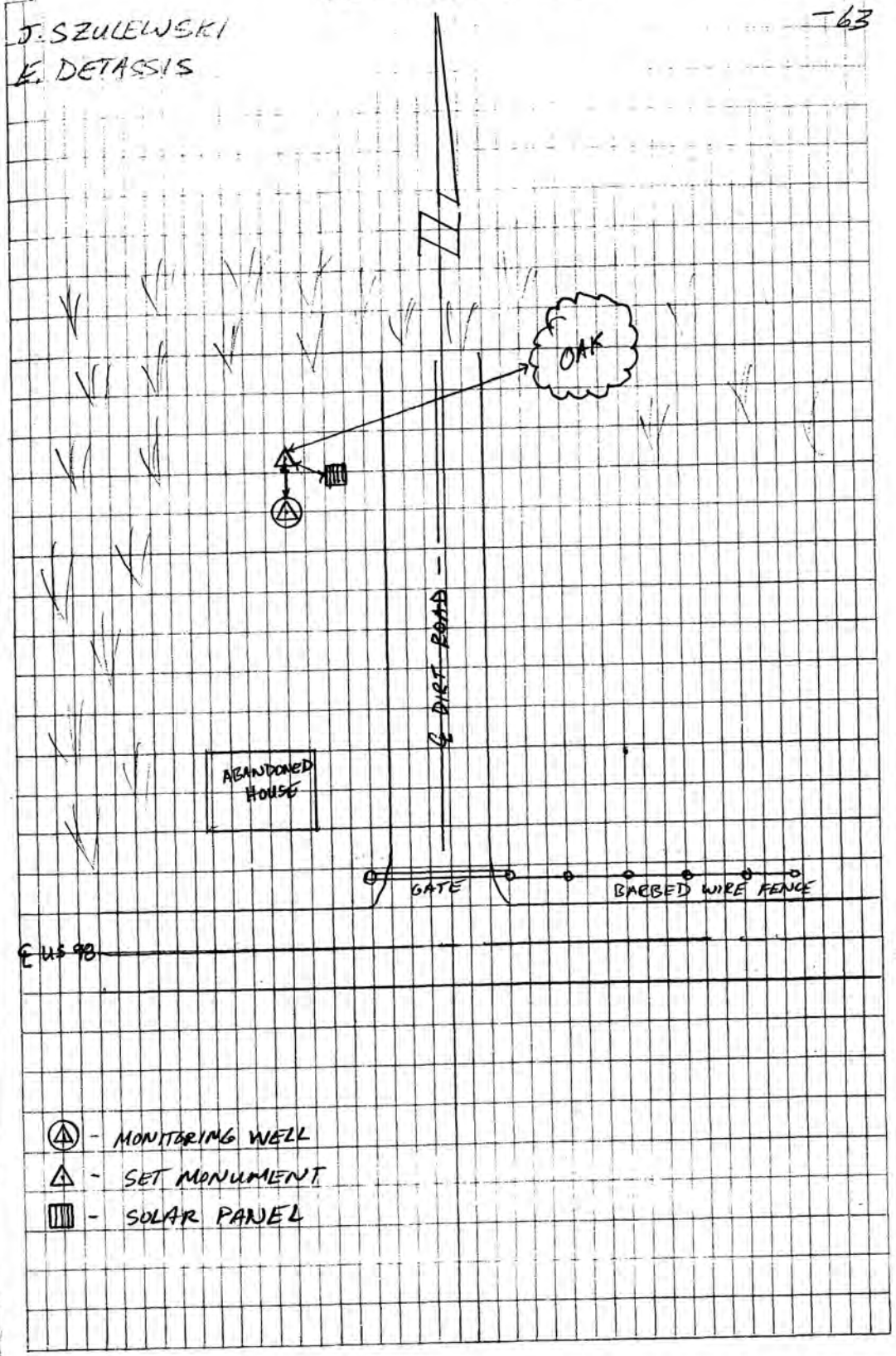
SET CONC. MONUMENT AT THE SITE OF MONITORING WELL (LKBD5R) REF. PG. 33, FB. 3-49

LOCATION OF SET MONUMENT
- SET MONUMENT 9' NORTH OF MONITORING WELL
- SET MONUMENT 5.6' NW OF SOLAR PANEL
- SET MONUMENT 70' SW OF PK NAIL & DISK SET IN SOUTH SIDE OF OAK TREE TRUNK. OAK TRUNK SPLITS INTO TWO TRUNKS ABOVE SET PK NAIL & DISK LB 4318

SET MAGNET 1' NORTH OF SET MONUMENT

COORDINATES ON SET MONUMENT

US STATE PLANE 1983	
METERS	US SURVEY FEET
N. 337959.403	N. 1108789.524
E. 188777.549	E 619347.126
WGS 1984	
METERS	US SURVEY FEET
N. 27°23'02".509	N. 27° 23' 02." 504
W. 081°06'48".471	W. 081° 06' 48." 482



SFWMD
1078 SFWMD

RECON BENCHMARKS & SETTING
CONC. MONUMENTS

SET CONC. MONUMENT AT THE SITE OF
MONITORING WELL (LKRD4R) REF. PG 33, FB. 3-49

LOCATION OF SET MONUMENT
- SET MONUMENT 7.9' WEST OF BARBED WIRE FENCE
- SET MONUMENT 8.25' NORTH OF MONITORING WELL
- SET MONUMENT 162.7' NE OF PALM TREE

SET MAGNET 1' NORTH OF SET MONUMENT

COORDINATES ON SET MONUMENT
US STATE PLANE 1983

METERS	US SURVEY FEET
N. 337378.049	N. 1106883.840
E. 190616.752	E. 625381.903

WGS 1984

METERS	US SURVEY FEET
N. 27°22'43".703	N. 27°22'43".704
W. 081°05'41".514	W. 081°05'41".516

FRI. JAN. 21, 2005

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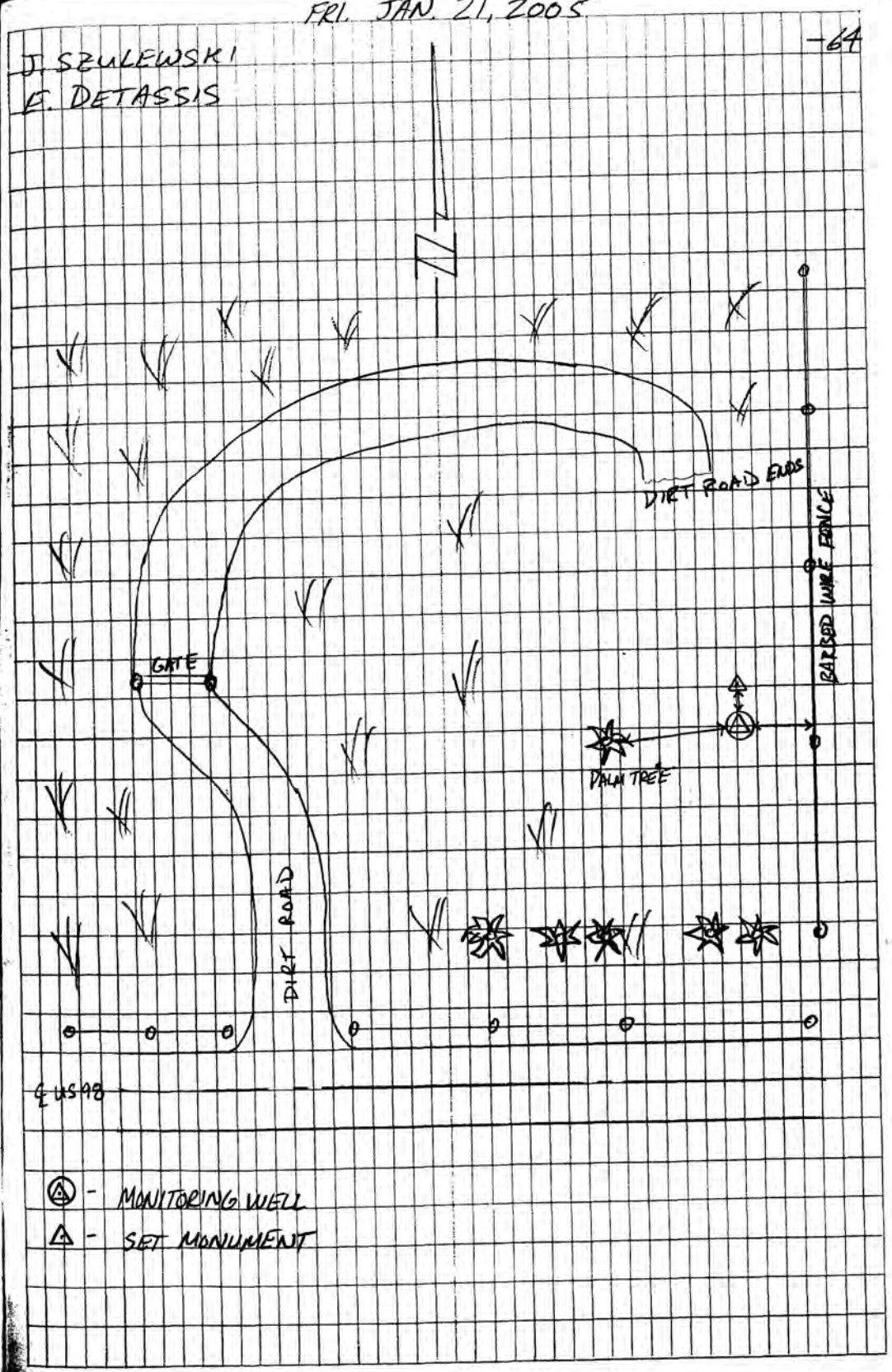

1078 SFWMD

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FRI JANUAR / 25 2005

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COLLECT ELEVATIONS AND COORDINATES @ OKEELTL

- CONCRETE POURED-IN-PLACE MONUMENT REF: Pg 33
- SFWMD ALUM DISK SET IN CONCRETE REF: Pg 26
- MAGNET SET IN CONCRETE

COLLECT ELEVATION ON MONITORING WELL

STA	+	HI	-	ELEV.	DESC.
BM	6.41	22.41		16.00	SFWMD ALUM. DISK
M.W.			3.44	18.97	M.W. OKEE UTL
"	2.98	21.95			MW. OKEE UTL
BM			5.95	16.00	SFWMD ALUM. DISK
BM	5.67	21.67		16.00	SFWMD ALUM. DISK
M.W.			2.70	18.97	MW OKEE UTL
M.W.	2.26	21.23			MW. OKEE UTL
BM			5.23	16.00	SFWMD ALUM. DISK

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FRI JANVARY 21, 2005

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1078 SFWMD

COLLECT COORDINATES ON MONITORING WELL @ OKEE UTL.

US STATE PLANE 1983

METERS	US SURVEY FT
N: 317337.737	N: 1041131.646
E: 215884.781	E: 708281.700

WGS 1984

METERS	US SURVEY FT
N: 27° 11' 50".328	N: 27° 11' 52".335
W: 080° ~~60~~ 50' 22".812	W: 080° 50' 22".816

SFWMD

1078

TDOT → WELL (1ST SETUP)

TDOT = + " 16.00 " ★ NOTE: ASSUMED EL. ★

+	H.I.	-	Pt. ID
6.11	22.11'	2.88	

TDOT → WELL (2ND SETUP)

TDOT = + " 16.00 " ★ NOTE: ASSUMED EL ★

+	H.I.	~~Pt. ID~~ -	Pt. ID
4.75	20.75'	1.52	

S. McMAHON WED. JAN 19, 2005
J.L. RAGER
J. CAMPBELL

3.12

ELEV.	DESC.
19.23'	REF. PT. ON TOP OF P.V.C. MARKED W/ BLACK PERMANENT MARK W/ ARROW " REF PT.

ELEV.	DESC.
19.23'	" " " " "

SFWMD

1078

LAKE MARION → WELL

LAKE MARION = "+16.00" *NOTE: ASSUMED ELEV. *

1ST

+	H.I.	−
3.70	19.70'	1.885

2ND

+	H.I.	−
5.485'	21.485'	3.655'
~~5.485~~		~~3.655~~

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3, 13

ELEV.	DESC.
17.825'	BLACK PERMANENT MARKER ON TOP OF P.V.C. PIPE UNDER CAP INDICATED "REF. PT."

ELEV.	DESC.
17.83'	

SFWMD

1078

ST. CLOUD POWER PLANT TO WELL

STCPP = + "16.00" ★NOTE: ASSUMED ELEVATION★

+	H.I.	−	ELEV.
2.08'	18.08'	2.39'	15.69'
1.87	17.87'	2.18'	15.69'

S. MCMAHON THURS. JAN. 20, 2005
J.L. RAGER
J. CAMPBELL

3.17

DESC.

1ST SETUP WELL MARKED @ TOP OF P.V.C. W/ BLACK PERMANENT MARKER NOTED REF PT.

2ND SETUP " " " "

SFWMD

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★ NOTE: FROM T-36-FLDNR ★

FH14USE → FTPUTL ★ FH14USE = + 0.9348m ★

	+	H.I.	+	Pt. ID
1	1.4870m [65.96m]	2.4218m	[65.30m] 1.5607m	
2	1.5119m [69.38m]	2.3730m	[69.60m] 1.6017m	
3	1.7320m [69.63m]	2.4433m	[68.03m] 0.9603m	
4	1.6586m [69.71m]	3.1416m	[67.35m] 1.3624m	
5	0.9686m [69.31m]	2.7478m	[69.83m] 1.7325m	
6	1.4944m [69.13m]	2.5097m	[69.80m] 1.6777m	
7	1.3893m [63.93m]	2.2213m	[66.14m] 1.1956m	
8	1.8153m [68.06m]	2.8410m	[69.39m] 1.5447m	
9	1.5417m [69.09m]	2.8380m	[69.60m] 1.3880m	

S. McMAHON MON. JANUARY 24, 2005

J.L. RAGER

J. CAMPBELL

3.24

ELEV.	DESC.
0.8611m	5/8" IR SET IN N. R/W OF SEAWAY DR.
0.7113m	" " " "
1.4830m	5/8" IR SET IN E. R/W OF BINNEY
1.7792m	" " " "
1.0153m	5/8" IR SET IN S. R/W OF CARLETON ST.
0.8320m	" " " "
1.0257m	" " " "
1.2963m	5/8" IR SET IN R/W OF SEAWAY
1.4500m	" " " "

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FH14 → FTPUTL CONT... 9 = + 1.4500m

	+	H.I.	−	RMK
10	1.6263m [69.97m]	3.0763m	[69.40m] 1.1926m	
11	1.4697m [69.59m]	3.3534m	[69.62m] 1.5331m	
12	1.1647m [68.10m]	2.9850m	[68.40m] 1.5865m	
13	1.6499m 501 [67.95m]	3.0486m	[67.95m] 1.6235m	
14	1.5903m [66.06m]	3.0154m	[66.66m] 1.5709m	
15	1.1920m [69.40m]	2.6305m	[69.20m] 1.5086m	
16	1.5353m [67.77m]	2.6632m	[67.22m] 1.3419m	
17	1.5656m [64.23m]	2.8869m	[64.11m] 1.0785m	
18	1.4156m [68.46m]	3.2240m	[68.44m] 1.4340m	

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J.L. RAGER 3.25

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ELEV.	DESC.
1.8837m	5/8" IR SET IN R/W OF SEAWAY DR.
1.8203m	" " " " "
1.3985m	" " " " "
1.4251m	" " " " "
1.4445m	" " " " "
1.1279m	" " " " "
1.3213m	" " " " "
1.8084m	5/8" IR SET IN N. R/W OF CAUSEWAY
1.7900m	

SFWMD

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FH 14 → FTP FTPUTL CONT... 18 = + 1.7900 m

	+	HI.	−	Pt. ID
19	1.5123 m [62.02 m]	3.3023 m	[61.61 m] 1.5323 m	
20	1.4693 m [68.32 m]	3.2393 m	[68.25 m] 0.8731 m	
21	1.3577 m [47.83 m]	3.7239 m	[48.49 m] 1.4727 m	
22	1.5004 m [33.92 m]	3.7516 m	[35.20 m] 2.6298 m	FTPUTL

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ELEV.	DESC.
1.7700 m	5/8" IR SET IN R/W OF COMPLEX ROAD @ FTPUTL
2.3662 m	" " " " " "
2.2512 m	" " " " " "
= 1.1218 m	

SFWMD

1078

FTPUTL → FH14USE FTPUTL = + 1.1218m

	+	H.I.	−	PT. ID
23	2.5724m [35.10m]	3.6942m	[34.75m] 1.6912m	
24	1.8406m [67.09m]	3.8436m	[65.01m] 2.0822m	
25	1.4505m [68.58m]	3.2119m	[68.46m] 1.3905m	
26	1.4876m [64.13m]	3.3690m	[65.80m] 1.5223m	
27	1.3450m [69.01m]	3.1317m	[68.91m] 1.3072m	
28	0.9858m [67.03m]	2.8103m	[67.31m] 1.7343m	
29	1.3944m [68.54m]	2.4704m	[69.43m] 1.3369m	
30	1.6664m [69.21m]	2.7999m	[68.23m] 1.3583m	
31	1.6359m [69.45m]	3.0775m	[69.59m] 1.6486m	
32	1.5855m [64.67m]	2.9644m	[65.68m] 1.4884m	

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3, 27

ELEV.	DESC.
2.0030m	5/8" IR SET IN R/W OF COMPLEX RD.
1.7644m	" " " "
1.8214m	" " " "
1.7867m	" " " "
1.8245m	" " " "
1.0760m	5/8" IR SET IN S. R/W OF SEAWAY
1.1335m	" " " "
1.4416m	" " " "
1.4289m	" " " "
1.4760m	" " " "

SFWMD

1078

FTPVTL → FH14USE CONT...

32 = + ~~1.4706m~~ 1.4760m

	+	HI.	+	P.ID
33	1.5207m [64.17m]	2.9967m	[63.65m] 1.5083m	
34	1.4244m [67.73m]	2.9128m	[68.40m] 1.3669	
35	1.7679m [69.11m]	3.3138m	[69.59m] 1.5776m	
36	1.2688m [61.90m]	3.0050m	[61.83m] 1.9439m	
37	1.3586m [67.20m]	2.4197m	[67.06m] 1.5191m	
38	1.3740m [66.01m]	2.2746m	[66.02m] 1.4140m	
39	1.6507m [66.72m]	2.5113m	[65.85m] 1.3113m	
40	1.9297m [67.98m]	3.1297m	[68.07m] 1.3443m	
41	1.3823m [57.91m]	3.1777m	[57.51m] 1.6886m	

S. McMAHON MON. JANUARY 24, 2005
J.L. RALER
J. CAMPBELL

3.28

ELEV.	DESC.
1.4884m	5/8" IR SET IN S. R/W OF SEAWAY DR.
1.5459m	" " " "
1.7362m	" " " "
1.0611m	" " " "
0.9006m	5/8" IR SET IN R/W OF CARLTON CT.
0.8606m	" " " "
1.20 m	" " " "
1.7854m	" " " "
1.4791m	" " " "

SFWMD

1078

FTPUTL → EH14USE CONT...

41 = + 3.4791m

	+	HI.	−	P.ID
42	0.9467m [61.09m]	2.4258m	[61.06m] 1.6493m	
43	1.6058m [60.46m]	2.3824m	[61.25m] 1.4762m	
44	1.6989m [65.15m]	2.6051m	[63.96m] ~~1.7001m~~ 1.6060m	
45	1.6616m [52.45m]	2.6007m	[49.84m] 1.6598m	
46	1.6344m [49.87m]	2.5753m	[50.51m] 1.6435m	FH14USE

S. McMAHON MON. JAN. 24, 2005

J.L. RAGER 3.29

J.CAMPBELL

ELEV.	DESC.
0.7765m	5/8" IR SET IN W. R/W OF DESOTA DR
0.9062m	" " " "
0.9391m	" " " "
0.9409m	" " " "

=+ 0.9318m ACTUAL: 0.9348m

DIFF: 3.0 mm

TOTAL DIST: 6.05091 Km

TOLERENCE: 19.678878 mm

SFWMD

1078

ELEVATE LKBD1B + LKBD2B

LKBD1B = + "16.00" ★ ASSUMED ELEV. ★

	+	H.I.	−	ELEV.
1ST	5.395'	21.395'	1.825'	19.57'
2ND	4.965'	20.965	1.395	19.57'

LKBD2B = + "16.00" ★ ASSUMED ELEV. ★

1ST	5.25'	21.25'	1.64'	19.61'
	"	21.25'	1.92'	19.33'
2ND	5.20'	21.20'	1.585'	19.615'
	5.20'	21.20'	~~1.85~~ 1.865'	19.335'

S. McMAHON THURS. JAN. 27, 2005

J. L RAGER 3,48

J. CAMPBELL

★ SOUTHERLY WELL

NORTHERLY WELL

SOUTHERLY WELL

NORTHERLY WELL

SFWMD

1078

ELEVATE LKBD4B + LKBD5B

LKBD5B = + 16.00' ★ ASSUMED ELEV. ★

	+	H.I.	−	ELEV.
1ST				
	+5.365'	21.365'		
			-1.97'	+19.395'
2ND				
	+5.26	21.26'		
			1.86'	+19.400'

LKBD4B = + 16.00' ★ ASSUMED ELEV. ★

1ST				
	+5.50	21.50'		
			-1.986'	+19.515'
2ND				
	~~5.31'~~	~~21.31'~~		
	5.44'	21.44'	~~1.785'~~	—
			1.92'	+19.52

S. MCMAHON THURS. JAN. 27, 2005

J.L. RAGER 3, 49

J. CAMPBELL

TOP OF PVC

TOP OF PVC

U.S DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL GEODETIC SURVEY

Charles W. Challstrom
Director

PROJECT REPORT
Second Order Class II Leveling and Mark Setting

February 2006 to March 2006

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

PROJECT TITLE

Kissimmee River Wells

LINE TITLE FOR **L26803**

ESTABLISH BENCH MARKS NEAR WELLS IN HIGHLANDS AND OKEECHOBEE COUNTIES
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**

2560 rca boulevard, suite 105 • palm beach gardens, florida 33410-3335 • ph: 561.627.5200 • fax: 561.627.0983
1933 commonwealth lane • tallahassee, florida 32303-3196 • ph: 850.222.0599 • fax: 850.222.4255
email: info@nickmillerinc.com • web: www.nickmillerinc.com

PROJECT REPORT

I. INTRODUCTION

A. Authority

Bench Mark Setting and Leveling along this level route was authorized by a contract between the SUTRON Corporation and Nick Miller Incorporated.

B. Purpose

The purpose of this leveling project was to establish precise NAVD 88 heights near existing Ground Water Monitoring Wells 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 Highlands County and Okeechobee 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

Two LEICA DNA03 Electronic Digital Level Instruments were used along with two sets of LEICA Digital/Bar-Code Leveling Rods.

III. COMMENTS

A. Reconnaissance

See the To-Reach Descriptions included, for a clear access to all L26803 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

These are all new second order, class 2 level runs by Nick Miller, Inc.

D. Problems

A different elevation was found for monument KR 1746 (AH9316) than what is published. The published elevation is 12.396 meters (NAVD 88). A level route was ran from Q 553 to KR 1744 and then from KR 1744 to KR 1746. The elevation difference between Q 553 and KR 1744 agreed with the published data. The results from the leveling data show the elevation of KR 1746 to be 12.288 meters (NAVD 88), which is 108 mm below the published elevation.

IV. Closures

Loop closures were computed and are included in the package for L26803.

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

U.S DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL GEODETIC SURVEY

Charles W. Challstrom
Director

PROJECT REPORT
Second Order Class II Leveling and Mark Setting

December 2004 to March 2005

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

PROJECT TITLE

HYDROLOGY - UPPER EAST COAST - FLORIDIAN WELLS

LINE TITLE FOR **L26700**

ESTABLISH BENCH MARK NEAR FLORIDIAN WELLS
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 **NM**

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email: info@nickmillerinc.com • web: www.nickmillerinc.com

NICK MILLER, INC.

PROJECT REPORT

I. INTRODUCTION

A. Authority

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

B. Purpose

The purpose of this leveling project was to establish precise NAVD 88 heights near existing Floridian Wells for use by the Water Management District and the citizens of the State of Florida.

II. PROJECT AREA

A. Locality

This project is located in Highlands, Palm Beach, Martin, Okeechobee, Osceola and St. Lucie 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

All monuments are set in concrete with a South Florida Water Management survey disk marker. A Magnetic device was either placed in or near the monuments. Please see descriptions for these 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 L26700 Stations.

B. Specifications

There only deviation from the FGCS Specifications and Procedures to Incorporate Electronic Digital/Bar-Code Leveling Systems was that Temporary Benchmarks (18" iron rod) were placed at 3 km intervals where needed instead of Class C pored in place concrete monuments.

C. Route

The leveling route varied for each leveling part.

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

These are all new second order class 2 level II runs by the Nick Miller, Inc.

D. Problems

No problems were encountered.

IV. Closures

Loop closures were computed and are included in the package for L26700.

A. Status

All records will be kept at the 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:

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