# South Florida Water Management District Study Specific Survey for the

St. Lucie Estuary and Indian River Lagoon Groundwater/Surface Water Interaction Study Survey Compilation Date: July 23, 2003

Created for

Cynthia Gefvert 561-682-923 cgefvert@sfwmd.gov

Steve Krupa 561-682-6923 skrupa@sfwmd.gov

Additional Maps and Plates added by Steve Krupa

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

### Important Note on Drawings Scales

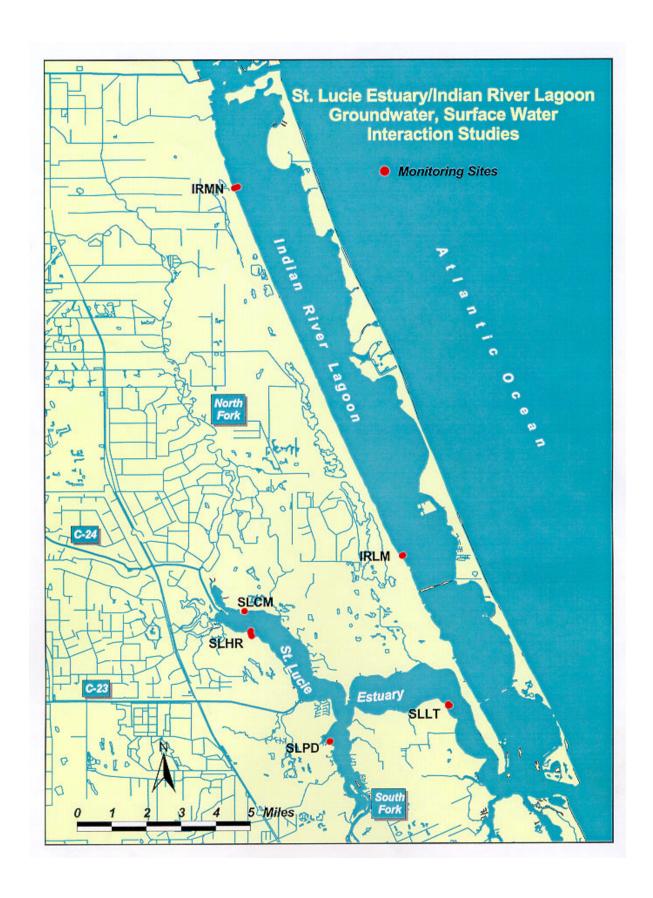
Survey Work is Plotted 12 inches by 18 inches

If you would like the plots larger you must scale them.

Divider pages are 8.5 inches by 11 inches

Generalized Site Map of Station Names and Survey Locations

St. Lucie Estuary and Indian River Lagoon



Cover Sheet of Survey

# **SOUTH FLORIDA** WATER MANAGEMENT DISTRICT

**ENGINEERING AND CONSTRUCTION DEPARTMENT SURVEY SECTION** SPECIFIC PURPOSE SURVEY ST. LUCIE STUDY WELLS

### SURVEYOR'S NOTES

- THE ELEVATIONS SHOWN HEREON REFER TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929, (NGVD29) AND ARE BASED ON THE FOLLOWING BENCHMARK.
- a. BENCHMARK "C-401" IS STAINLESS STEEL ROAD WITH OUT SLEEVE, TO REACH FROM THE INTERSECTION OF U.S. HIGHWAY 1 AND SAVANNAH ROAD, 31.0 M (101.7 FT) EAST OF AND LEVEL WITH THE CENTERLINE OF THE NORTHBOUND LANES OF THE HIGHWAY, 18.6 M (61.0 FT) WEST OF THE SOUTH END OF A CULVERT HEADWALL, 16.6 M (54.5 FT) SOUTH OF THE ROAD CENTERLINE, AND O.8 M (2.6 FT) WEST OF A UTILITY DUE NUMBER 565. NOTE--ACCESS TO THE DATUM POINT IS THROUGH A 5-INCH LOGO CAP. STAMPED " C 401 1991" ELEVATION = 18.04'
- b. BENCHMARK "B.M.", STATION IS A S.F.W.M.D. BRASS DISC SET ON THE SOUTHERLY SEOUL AT THE SNUG HARBOR YACHT
- c. BENCHMARK "M.C. BENCHMARK", STATION IS A PK NAIL WITH A BLUE TIN TAB, TO REACH FROM THE INTERSECTION OF MARTIN DOWNS BOULEVARD (STATE ROAD 7.14) AND MAPP ROAD, GO NORTH ON MAPP ROAD 0.8 MILE TO THE INTERSECTION OF CHAPMAN WAY. THEN GO EAST, NORTHEAST ON CHAPMAN WAY 0.6 MILE TO THE BOAT RAMP IN PENDARVIS PARK. STATION IS LOCATED ON THE NORTHERLY SIDE OF THE SIDEWALK THAT GOES TO THE WOOD DOCK AT THE BOAT RAMP. STATION IS STAMPED "M.C. BENCHMARK" ELEVATION = 3.74'
- d. BENCHMARK "TIDAL 5" STATION IS DISK SET FLUSH IN CONCRETE DOCK OF THE ST. LUCIE HILTON COUNTRY CLUB MARINA, 51.2 FEET EAST OF THE NORTHEAST CORNER OF THE DOCK, 9.5 FEET NORTH OF THE SOUTH EDGE OF THE DOCK, AND 0.4 FOOT SOUTH OF THE NORTH EDGE OF THE DOCK. STATION STAMPED "NO 5 1972" ELEVATION =4.05'
- 2. THE BEARINGS AND DISTANCE REFER TO THE FLORIDA STATE PLANE COORDINATE SYSTEM TRANSVERSE MERCATOR PROJECTION, EAST ZONE, NORTH AMERICA DATUM 1983 (NAD83), AND ARE BASED ON SOUTH FLORIDA WATER MANAGEMENT GPS CONTROL POINTS ESTABLISHED FOR EACH INDIVIDUAL SITE USING THE TRIMBLE PATHFINDER PRO-XR REAL TIME GPS UNIT, THE EXPECTED HORIZONTAL ACCURACY IS  $(\pm)$  5.0 FEET. CAUTION SHOULD BETAKEN IF COORDINATES ARE USED FOR ANYTHING OTHER THAN THESE SPECIFIC
- 3. NO RIGHT OF WAY OR BOUNDARY SURVEY WAS PERFORMED AS A PART OF THIS SURVEY.
- 4. THE PICTORIAL REPRESENTATION SHOWN HEREON IS A DIGITAL AERIAL PHOTOGRAPH OBTAINED FROM USGS NATIONAL AERIAL PHOTOGRAPHY PROJECT (NAPP), SCANNED AT 100 DOTS PER INCH: DATE 2000 AND IS NOT A PART OF THIS SURVEY.
- 5. THERE WAS NO CLOSED TRAVERSE ESTABLISHED AS PART OF THIS SURVEY.
- 6. THE GROUND ELEVATIONS AND LOCATIONS FOR THIS SURVEY WERE ESTABLISHED BY TRIGONOMETRIC MEANS USING THE TOPCON GTS 610 & 700 TOTAL STATIONS AND MC5 DATA COLLECTOR WITH C & G FIELD AND OFFICE SOFTWARE.
- UNLESS IT BEARS THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER, THIS DRAWING, SKETCH, PLAT, OR MAP IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT VALID.

THIS CERTIFICATION IS MADE TO THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT FOR THE SPECIFIC PURPOSE OF GATHERING ELEVATIONS TO SUPPORT THE INSTALLATION OF WATER MONITORING AND GUAGING EQUIPMENT, AS REQUESTED BY STEVE KRUPA, SENIOR HYDRO GEOLOGIST WATER RESOURCE EVALUATION DEPARTMENT, SOUTH FLORIDA WATER MANAGEMENT DISTRICT.

NO RESPONSIBILITY OR LIABILITY IS ASSUMED BY THE UNDERSIGNED SURVEYOR AND MAPPER FOR USE OF THIS SURVEY FOR ANY PURPOSE OTHER THAN STATED ABOVE OR FOR ANY USE BY ANY PERSON OR ENTITY OTHER THAN THE SOUTH FLORIDA MANAGEMENT DISTRICT.

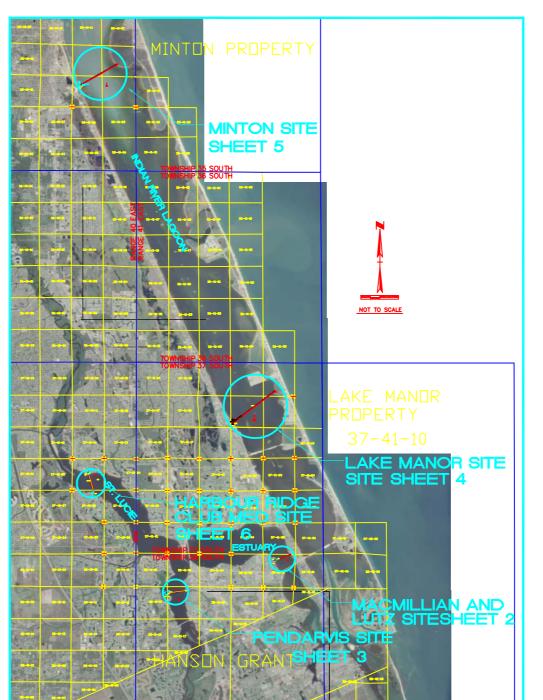
#### **CERTIFICATION**

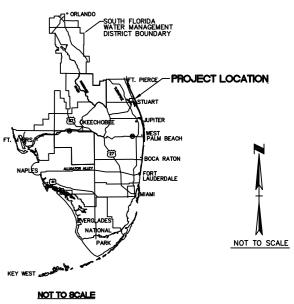
I HEREBY CERTIFY THAT THIS TOPOGRAPHIC SURVEY WAS MADE UNDER MY RESPONSIBLE CHARGE AND MEETS THE APPLICABLE MINIMUM TECHNICAL STANDARDS FOR SURVEYS AS SET FORTH BY THE FLORIDA BOARD OF LAND SURVEYORS IN CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATE STATUES

RICHARD E. BARNES Jr. PROFESSIONAL LAND SURVEYOR FLORIDA CERTIFICATION NUMBER 5173

### INDEX OF SHEETS

- 1. COVER SHEET AND LOCATION MAP
- 2. 6. PLAN VIEW
- 7. 8. CROSS SECTIONS





### LEGEND

DIA. = DIAMETER

BM = BENCHMARK

CMP = CORRUGATED METAL PIPE

ELEV. = ELEVATION

FCE = FLOOD CONTROL EVERGLADES

GPS = GLOBAL POSITIONING SYSTEM

NGS = NATIONAL GEODETIC SURVEY

NGVD = NATIONAL GEODETIC VERTICAL DATUM

P.O.L. = POINT ON LINE

R/W = RIGHT OF WAY

SFWMD = SOUTH FLORIDA WATER MANAGEMENT DISTRICT

USGS = UNITED STATES GEOLOGICAL SURVEY

→ BENCHMARK

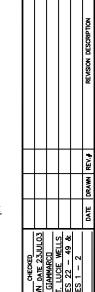
× 20.3 = SPOT ELEVATION

21 22 = APPROXIMATE SECTION CORNER

⊕ WELL

O = PIEZOMETER

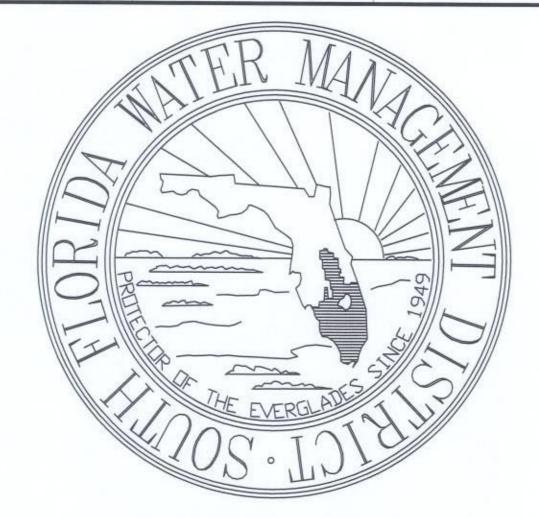
= SEAPAGE METER



SOUTH FLORIDA MANAGEMENT DISTRICT

SPECIFIC PURPOSE SURVEY
STUDY WELLS AND CROSS
SECTIONS
COVER SHEET

CAD FILE NO. 0000.dwg SHEET



# SOUTH FLORIDA WATER MANAGEMENT DISTRICT

# ENGINEERING AND CONSTRUCTION DEPARTMENT SURVEY SECTION SPECIFIC PURPOSE SURVEY ST. LUCIE STUDY WELLS

## SURVEYOR'S NOTES

1. THE ELEVATIONS SHOWN HEREON REFER TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929, (NGVD29) AND ARE BASED ON THE FOLLOWING BENCHMARK.

a. BENCHMARK "C-401" IS STAINLESS STEEL ROAD WITH OUT SLEEVE, TO REACH FROM THE INTERSECTION OF U.S. HIGHWAY 1 AND SAVANNAH ROAD, 31.0 M (101.7 FT) EAST OF AND LEVEL WITH THE CENTERLINE OF THE NORTHBOUN LANES OF THE HIGHWAY, 18.6 M (61.0 FT) WEST OF THE SOUTH END OF A CULVERT HEADWALL, 16.6 M (54.5 FT) SOUTH OF THE ROAD CENTERLINE, AND 0.8 M (2.6 FT) WEST OF A UTILITY POLE NUMBER 565. NOTE—ACCESS TO THE DATUM POINT IS THROUGH A 5-INCH LOGO CAP. STAMPED "C 401 1991" ELEVATION = 18.04'

b. BENCHMARK "B.M.", STATION IS A S.F.W.M.D. BRASS DISC SET ON THE SOUTHERLY SEOUL AT THE SNUG HARBOR YACHT BASIN. STATION IS STAMPED "S.F.W.M.D. MARKER SURVEY" ELEVATION = 3.38'

c. BENCHMARK "M.C. BENCHMARK", STATION IS A PK NAIL WITH A BLUE TIN TAB, TO REACH FROM THE INTERSECTION OF MARTIN DOWNS BOULEVARD (STATE ROAD 714) AND MAPP ROAD, GO NORTH ON MAPP ROAD 0.8 MILE TO THE INTERSECTION OF CHAPMAN WAY. THEN GO EAST, NORTHEAST ON CHAPMAN WAY 0.6 MILE TO THE BOAT RAMP IN PENDARVIS PARK. STATION IS LOCATED ON THE NORTHERLY SIDE OF THE SIDEWALK THAT GOES TO THE WOOD DOCK AT THE BOAT RAMP. STATION IS STAMPED "M.C. BENCHMARK" ELEVATION = 3.74'

d. BENCHMARK "TIDAL 5" STATION IS DISK SET FLUSH IN CONCRETE DOCK OF THE ST. LUCIE HILTON COUNTRY CLUB MARINA 51.2 FEET EAST OF THE NORTHEAST CORNER OF THE DOCK, 9.5 FEET NORTH OF THE SOUTH EDGE OF THE DOCK, AND 0.4 FOOT SOUTH OF THE NORTH EDGE OF THE DOCK. STATION STAMPED "NO 5 1972" ELEVATION =4.05'

2. THE BEARINGS AND DISTANCE REFER TO THE FLORIDA STATE PLANE COORDINATE SYSTEM TRANSVERSE MERCATOR PROJECTION, EAST ZONE, NORTH AMERICA DATUM 1983 (NAD83), AND ARE BASED ON SOUTH FLORIDA WATER MANAGEMENT GPS CONTROL POINTS ESTABLISHED FOR EACH INDIVIDUAL SITE USING THE TRIMBLE PATHFINDER PRO—XR REAL TIME GPS UNIT, THE EXPECTED HORIZONTAL ACCURACY IS (±) 5.0 FEET. CAUTION SHOULD BE TAKEN IF COORDINATES ARE USED FOR ANYTHING OTHER THAN THESE SPECIFIC SITES.

NO RIGHT OF WAY OR BOUNDARY SURVEY WAS PERFORMED AS A PART OF THIS SURVEY

4. THE PICTORIAL REPRESENTATION SHOWN HEREON IS A DIGITAL AERIAL PHOTOGRAPH OBTAINED FROM USGS NATIONAL AERIAL PHOTOGRAPHY PROJECT (NAPP), SCANNED AT 100 DOTS PER INCH: DATE 2000 AND IS NOT A PART OF THIS SURVEY.

5. THERE WAS NO CLOSED TRAVERSE ESTABLISHED AS PART OF THIS SURVEY.

6. THE GROUND ELEVATIONS AND LOCATIONS FOR THIS SURVEY WERE ESTABLISHED BY TRIGONOMETRIC MEANS USING THE TOPCON GTS 610 & 700 TOTAL STATIONS AND MC5 DATA COLLECTOR WITH C & G FIELD AND OFFICE SOFTWARE.

7. UNLESS IT BEARS THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER, THIS DRAWING, SKETCH, PLAT, OR MAP IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT VALID.

THIS CERTIFICATION IS MADE TO THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT FOR THE SPECIFIC PURPOSE OF GATHERING ELEVATIONS TO SUPPORT THE INSTALLATION OF WATER MONITORING AND GUAGING EQUIPMENT, AS REQUESTED BY STEVE KRUPA, SENIOR HYDRO GEOLOGIST WATER RESOURCE EVALUATION DEPARTMENT, SOUTH FLORIDA WATER MANAGEMENT DISTRICT.

NO RESPONSIBILITY OR LIABILITY IS ASSUMED BY THE UNDERSIGNED SURVEYOR AND MAPPER FOR USE OF THIS SURVEY FOR ANY PURPOSE OTHER THAN STATED ABOVE OR FOR ANY USE BY ANY PERSON OR ENTITY OTHER THAN THE SOUTH FLORIDA MANAGEMENT DISTRICT.

### CERTIFICATION

MADE UNDER MY RESPONSIBLE CHARGE AND MEETS THE APPLICABLE MINIMUM TECHNICAL STANDARDS FOR SURVEYS AS SET FORTH BY THE FLORIDA BOARD OF LAND SURVEYORS IN CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 1472,027, FLORIDA STATE STATUES

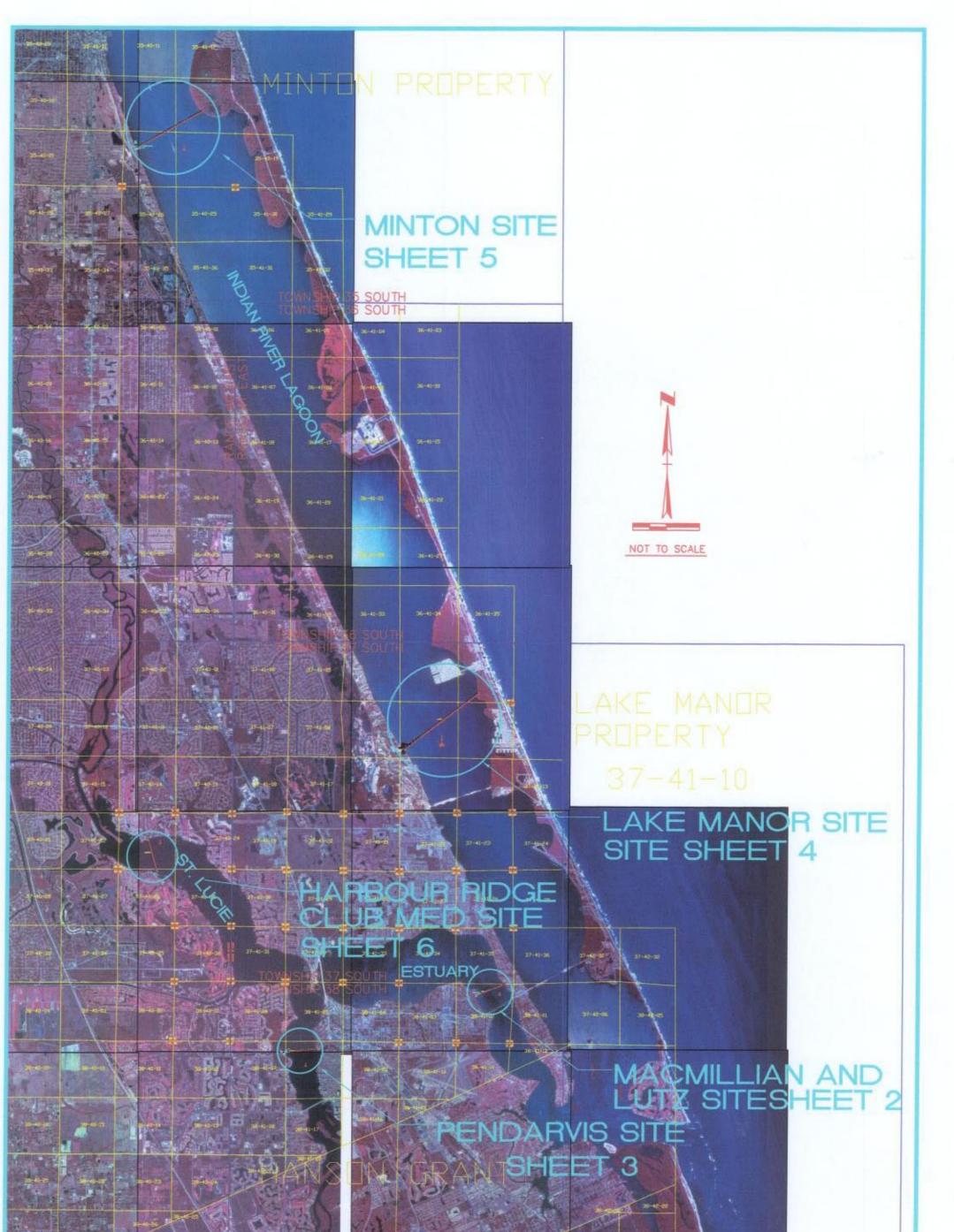
RICHARD E. BARNES Jr.
PROFESSIONAL LAND SURVEYOR
FLORIDA CERTIFICATION NUMBER 5173

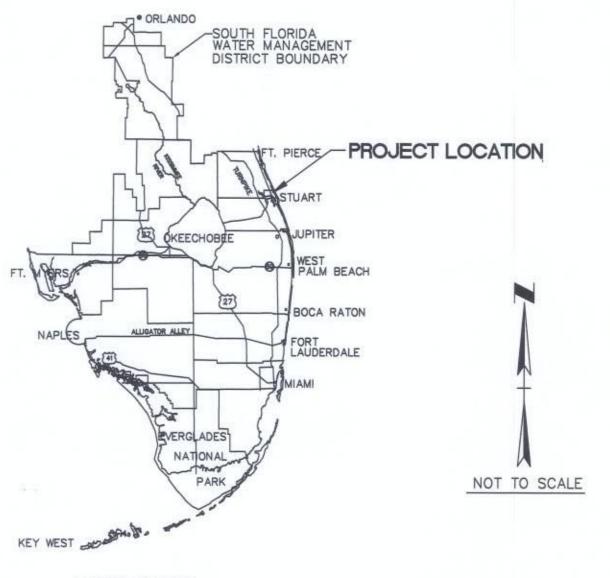
# INDEX OF SHEETS

1. COVER SHEET AND LOCATION MAP

2. - 6. PLAN VIEW

7. - 8. CROSS SECTIONS





NOT TO SCALE

### **LEGEND**

DIA. = DIAMETER

BM = BENCHMARK

CMP = CORRUGATED METAL PIPE

ELEV. = ELEVATION

FCE = FLOOD CONTROL EVERGLADES

GPS = GLOBAL POSITIONING SYSTEM

INV. = INVERT

NGS = NATIONAL GEODETIC SURVEY

NGVD = NATIONAL GEODETIC VERTICAL DATUM

P.O.L. = POINT ON LINE

R/W = RIGHT OF WAY

SFWMD = SOUTH FLORIDA WATER MANAGEMENT DISTRICT

USGS = UNITED STATES GEOLOGICAL SURVEY

→ BENCHMARK

 $\times$  20.3 = SPOT ELEVATION

21 22 = APPROXIMATE SECTION CORNER

■ WELL

= PIEZOMETER= SEAPAGE METER

■ = ENCODER

SPECIFIC PURPOSE SURVE STUDY WELLS AND CROSS SECTIONS COVER SHEET

WATER

DRAWNG NO. 0000 CAD FILE NO. 0000.dwg SHEET

1 of 8

Surveying Transect for Club Med (North Side) to Harbour Ridge (South Side)





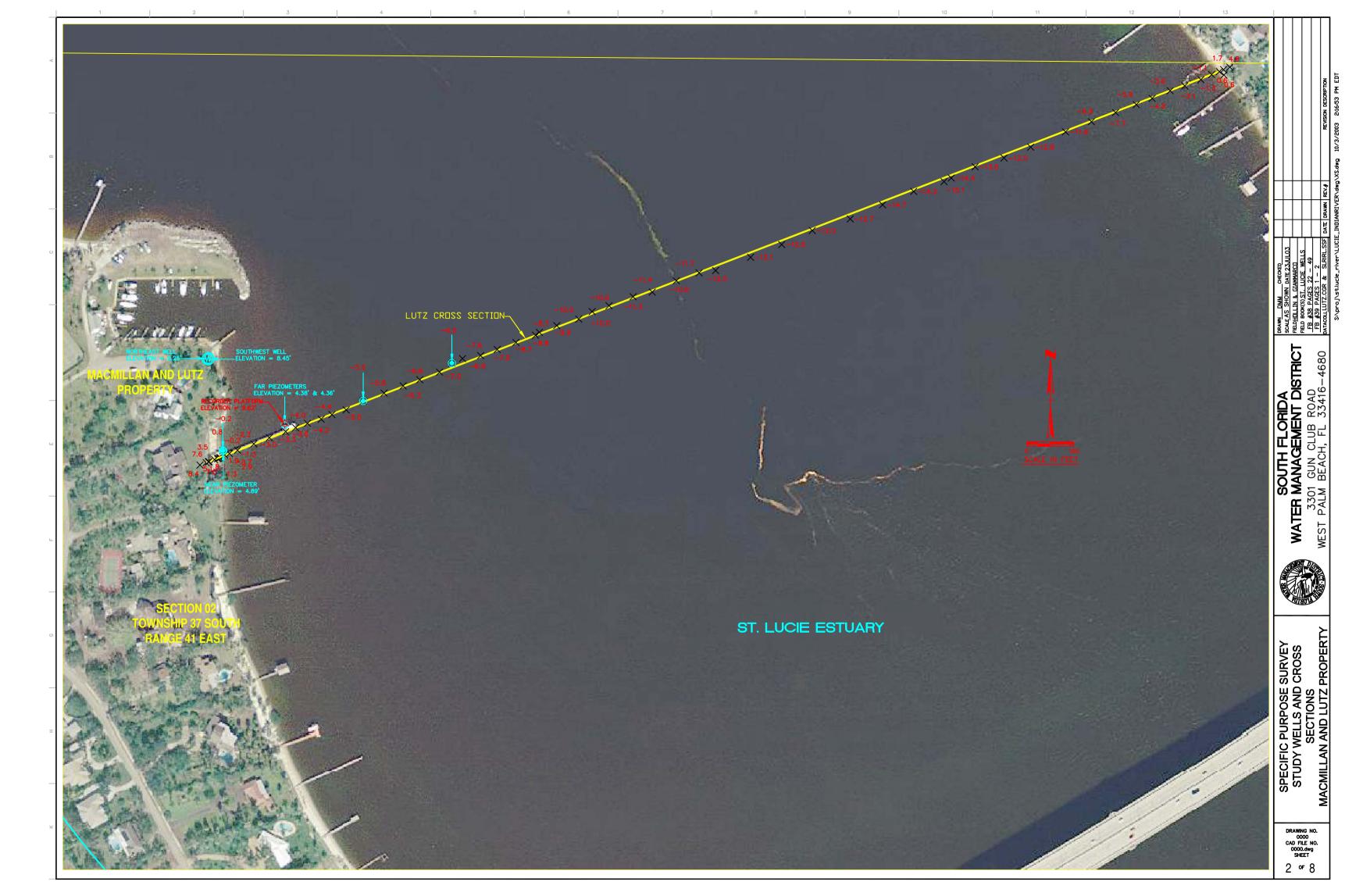
SPECIFIC PURPOSE SURVEY STUDY WELLS AND CROSS SECTIONS HARBOUR RIDGE/CLUB MED

DRAWING NO. 0000 CAD FILE NO. 0000.dwg SHEET

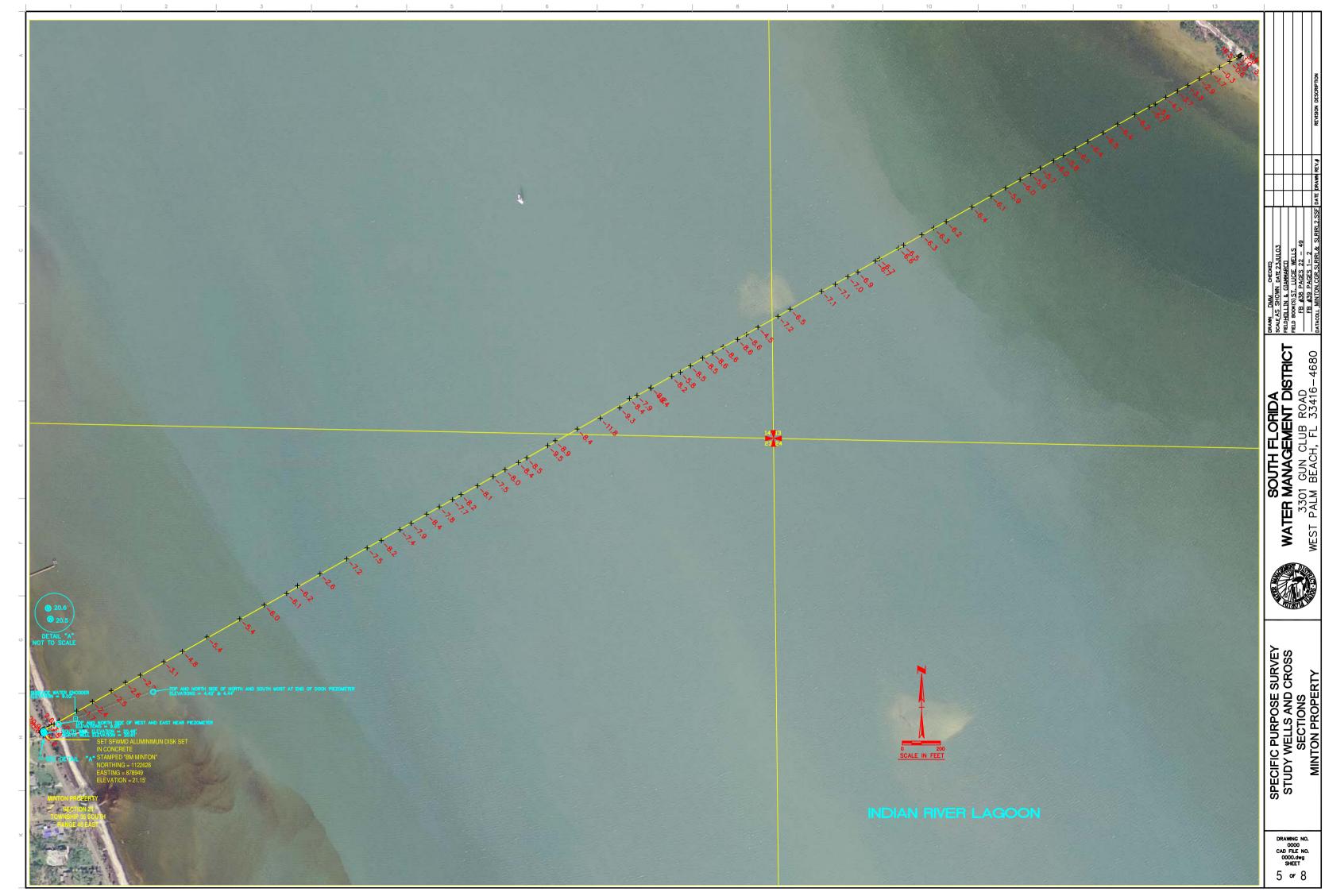
Surveying Transect for Pendarvis Park (West Side) to West Side of Stuart (East Side of Transect)



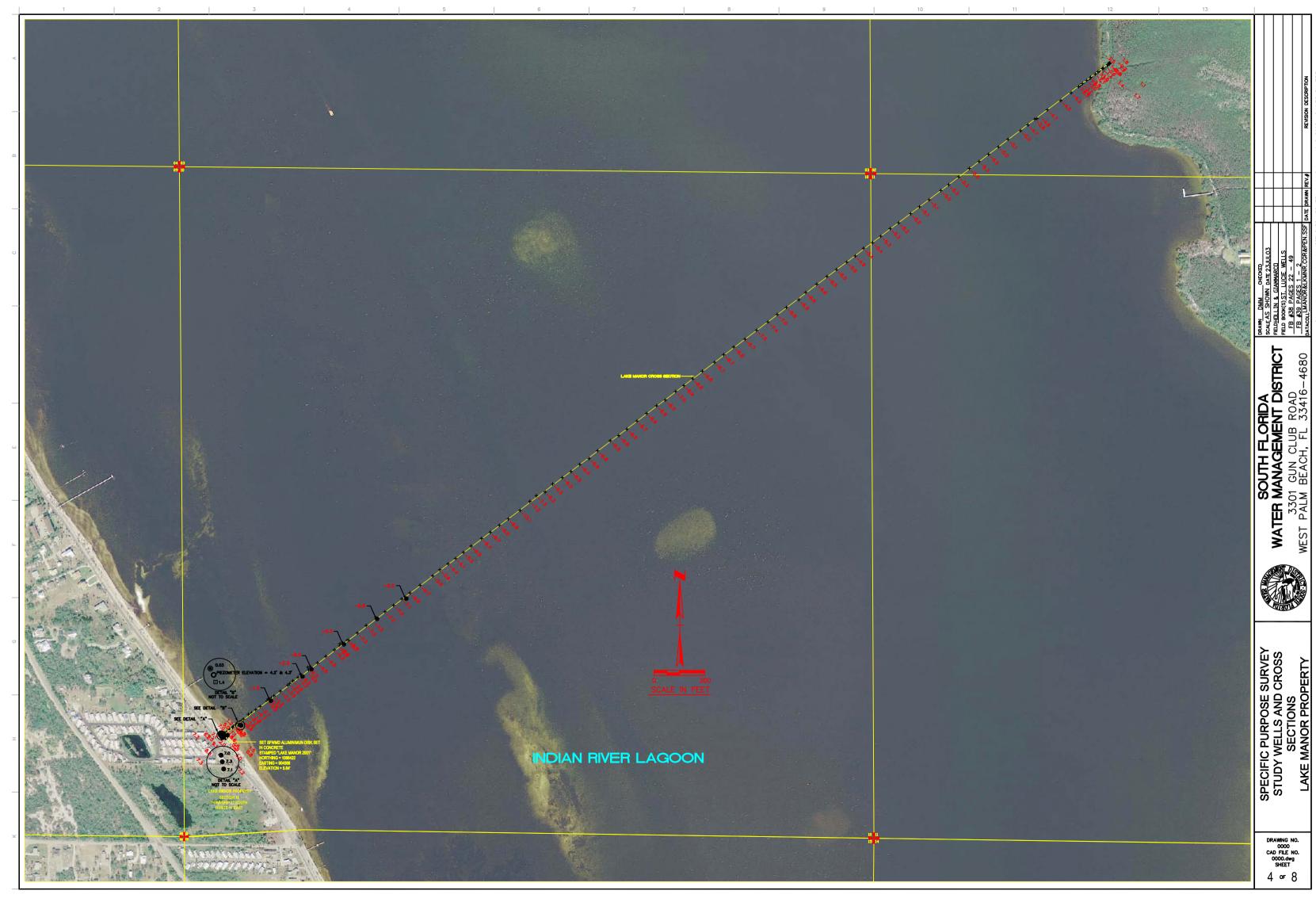
Surveying Transect for MacMillian/Lutz (West Side) to Sewall's Point (East Side of Transect)



Surveying Transect for Lake Manor (West Side) to Hutchinson Island (East Side of Transect)



Surveying Transect for Minton (West Side) to Hutchinson Island (East Side of Transect)



# Cross Sections from Survey Transects for St. Lucie Estuary Sites

Harbour Ridge to Club Med Pendarvis Park MacMillian/Lutz

MEAN WATER SURFACE ELEVATION = -0.19' -10 -15 -15 0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 CROSS SECTION HARBOUR RIDGE SCALE HORIZONTAL: 1\* = 200' VERTICAL: 1\* = 5' CROSS SECTIONAL AREA = 24,020 SQ FT MEAN WATER SURFACT ELEVATION # 0.76' -15 CROSS SECTION PENDARVIS SCALE HORIZONTAL: 1" = 200'
VERTICAL: 1" = 5'
CROSS SECTIONAL AREA = 22,738 SQ FT MEAN WATER SURI ELEVATION # 0.69' -15 -15 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 CROSS SECTION LUTZ SCALE HORIZONTAL: 1" = 200' VERTICAL: 1" = 5' CROSS SECTIONAL AREA = 27,859 SQ FT

SOUTH FLORIDA WATER MANAGEMENT DISTRICT 3301 GUN CLUB ROAD WEST PALM BEACH, FL 33416-4680

DRAWN REV.#

SPECIFIC PURPOSE SURVEY STUDY WELLS AND CROSS SECTIONS COVER SHEET

DRAWING NO. 0000 CAD FILE NO. 0000.dwg SHEET

7 of 8

# Cross Sections from Survey Transects for Indian River Lagoon Sites

Minton Lake Manor

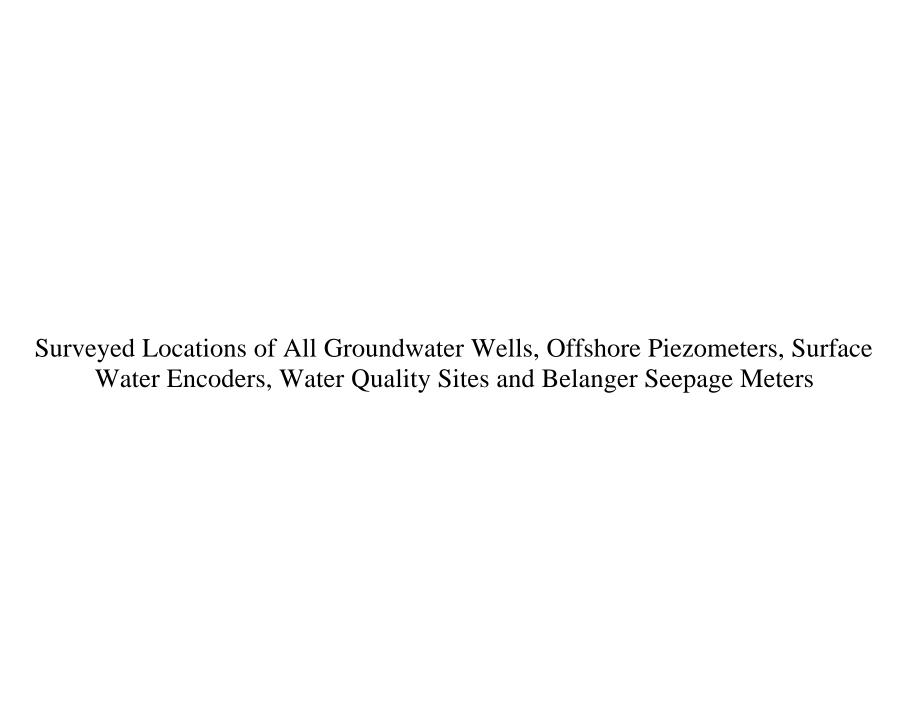
MEAN WATER SURFACE ELEVATION = 0.24' CROSS SECTION MINTON SCALE HORIZONTAL: 1" = 400'
VERTICAL: 1" = 5' CROSS SECTIONAL AREA = 45,955 SQ FT MEAN WATER SURFACE ELEVATION = -0.61' 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3600 3800 4000 4200 4400 4600 4800 5000 5200 5400 5600 5800 6000 6200 6400 6600 6800 7000 7200 7400 7600 7800 8000 8200 8400 8600 8800 CROSS SECTION LAKE MANOR <u>SCALE</u> HORIZONTAL: 1" = 400' VERTICAL: 1" = 5' CROSS SECTIONAL AREA = 44,978 SQ FT

SOUTH FLORIDA WATER MANAGEMENT DISTRICT 3301 GUN CLUB ROAD WEST PALM BEACH, FL 33416-4680



SPECIFIC PURPOSE SURVEY STUDY WELLS AND CROSS SECTIONS COVER SHEET

DRAWING NO. 0000 CAD FILE NO. 0000.dwg SHEET 8 of 8

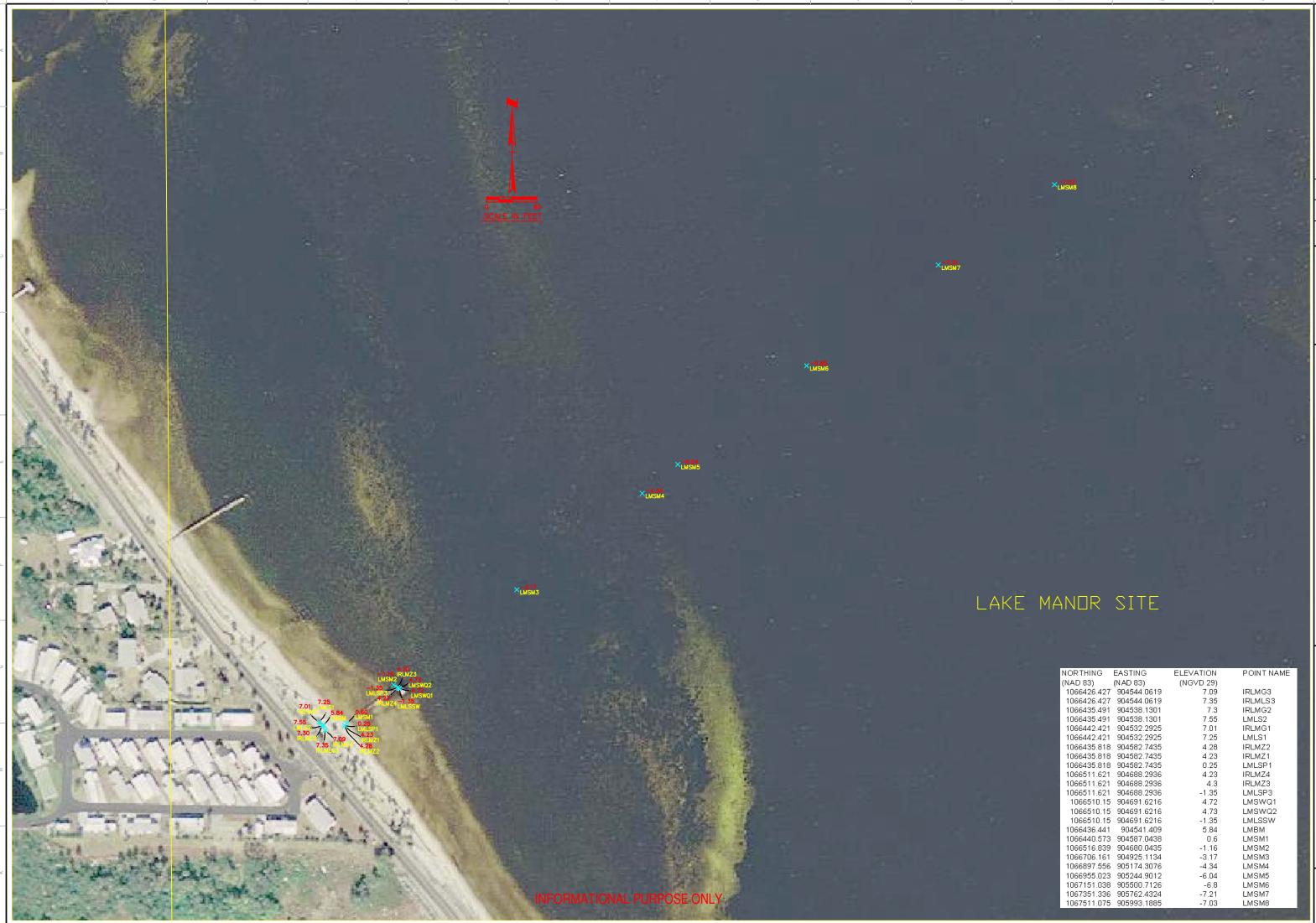


Minton Site



DRAWING NO. 0000 CAD FILE NO. 0000.dwg SHEET

Lake Manor Site



SOUTH FLORIDA
SOLEAS
WATER MANAGEMENT DISTRICT
3301 GUN CLUB ROAD
MEST PALM BEACH, FL 33416—4680

WA-

LAKE MANOR SITE

DRAWING NO. 0000 CAD FILE NO. 0000.dwg SHEET 3 OF 5 MacMillian/Lutz Site



| OATAGOL | DATE | DRAWN REV# | S\rho\_US\_LINCIB\_\_ FIVET\NHED\dwg\VELLS.dwg | 10/6/2003

SOUTH FLORIDA
WATER MANAGEMENT DISTRICT
3301 GUN CLUB ROAD
MEST PALM BEACH, FL 33416-4680

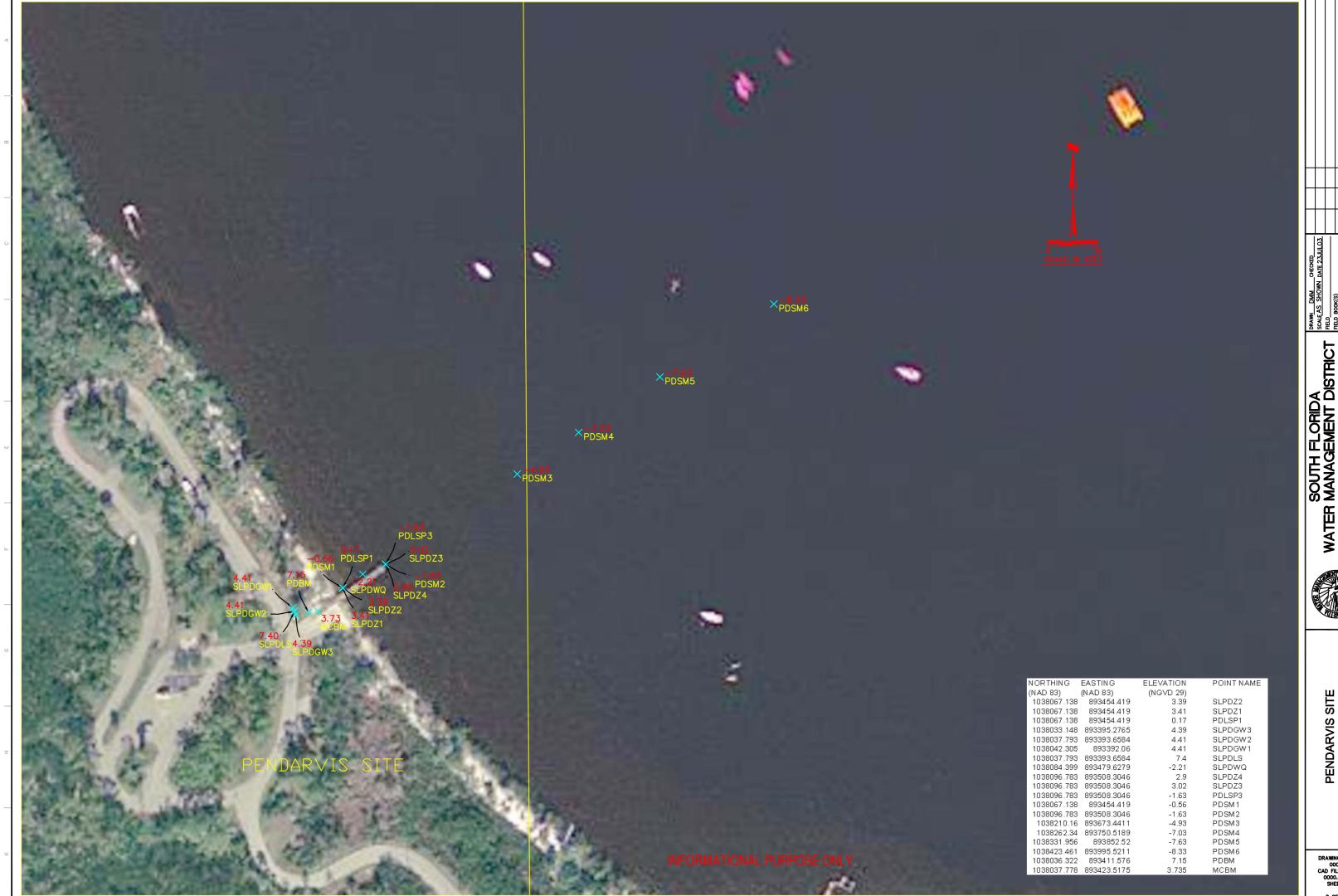


MACMILLAN AND LUTZ SITE

DRAWING NO. 0000 CAD FILE NO. 0000.dwg SHEET

1 OF 5

Pendarvis Park Site

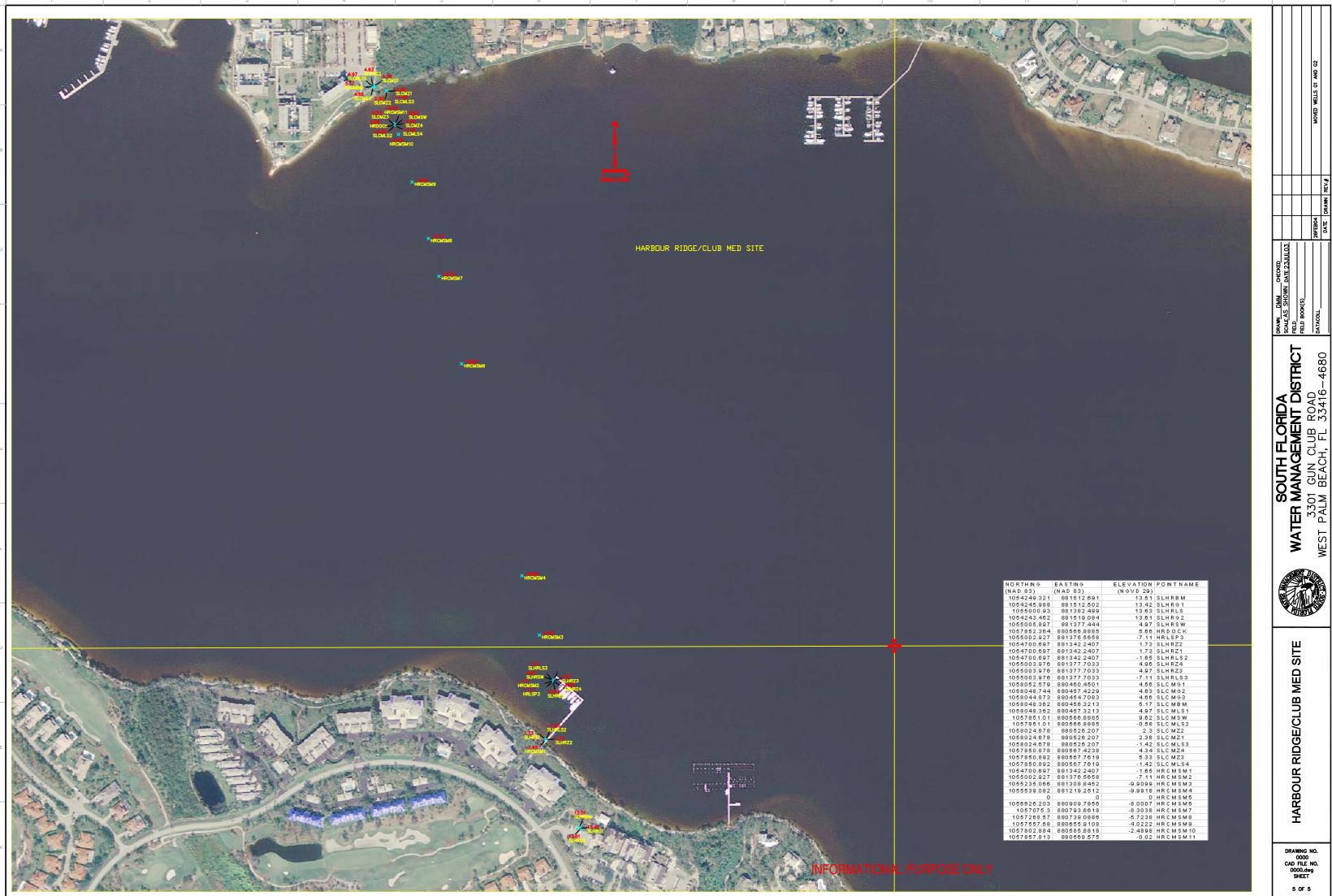


SOUTH FLORIDA
WATER MANAGEMENT DISTRICT
3301 GUN CLUB ROAD
WEST PALM BEACH, FL 33416-4680

DRAWING NO. 0000 CAD FILE NO. 0000.dwg SHEET

2 OF 5

Club Med and Harbour Ridge Sites



HARBOUR RIDGE/CLUB MED SITE

DRAWING NO. 0000 CAD FILE NO. 0000.dwg SHEET