

CON 24-05

MEMORANDUM

TO: Surface Water Management Permit File 43-00069-S

FROM: Edward J. Maciejko, Senior Engineer *E.M.*
Environmental Resource Compliance Division
Environmental Resource Regulation Department

DATE: August 17, 2001

SUBJECT: **Evergreen Club Surface Water Management System**
Permit Application Number 05137-A and 10237-E
S1, 2 & 3 / T38S / R40E, Martin County

Background:

Some of the existing lake configurations and conveyance facilities at this 500 +/- acre site (see attached location map and site plan) differ from the design plans. A letter in the file references "record drawings", although they were not located, but should be available from the design engineer.

The project consists of 11 sub-drainage areas, each with different control elevations cascading from elevation 13.5' NGVD to 3.0' NGVD. The failure of the C-23 levee occurred in the lowest downstream drainage basin, Sub-Drainage Area X, and east of their Control Structure No. 1. The original permit and the subsequent modification note a 10-year design stage of 8.55' at Sub-Drainage Area X.

Control Structures:

The permit issued in 1977, notes that the applicant's discharge capacity should not exceed 72 cfs. This appears to be the discharge capacity of the original outfall culvert (Control Structure No. 1, a.k.a. Project Culvert No. 2, a 36" X 66' CMP), at the design flood stage of 8.55'. It appears that Control Structure No. 1 has been replaced, since certified by the design engineer in 1989. A flashboard riser has also been attached to the culvert.

The status of the boards at the time of the C-23 levee failure (Tropical Storm Barry - August 2, 2001) is unknown. Per field observations on August 15, 2001 there were no boards (down to 6 feet below the top of the riser) in Control Structure No. 1. The boards and bleeder orifice need to be replaced.

The permit modification of 1988 authorized one additional outfall structure, Control Structure No. 2. Both structures are to have risers, for a combined flow of 76 cfs. On December 5, 1989 a benchmark elevation of 6.25' NGVD was established on the top of the southerly riser of Control Structure No. 2 located on the West of Murphy Road. This structure is a 36" diameter CMP, and appears to be a roadway cross-culvert with a flashboard riser.

The screen over the rectangular bleed-down orifice of Control Structure No. 2 was covered with debris. This needs to be maintained to prevent obstruction of flow. Another type of baffle over the bleeder orifice, similar to a half culvert section, may function better. A small sediment trap/sump around and below the orifice would also help prevent blockage.

The feeder swales leading to Outfall Structure No. 2 should be cleared of excessive vegetation that would restrict flow, and deepened down to elevation 1' NGVD. At the time of my observations portions of the swale were high and dry, with some areas above elevation 3' NGVD.

Field Observations:

Before development, the site generally sloped from west to east. Construction of lakes, lot filling, golf course, street, and swale grading have changed the topography. We do not have current topographic data.

The configuration of the lakes, location, and sizes of the internal swales, weirs, and culverts vary from the design plans. Some of the conveyance ditches and swales are overgrown with vegetation and filled with sediment. The bottom of the swale inverts, have grown up from a few inches to a few feet. Regrading/excavation of the conveyance ways is necessary to maintain the design flow lines. Selective clearing of vegetation, especially exotics in the existing slough, is needed to convey the design stormwater flows.

Perimeter detention berms or off-site stormwater inflows are not specified in the permit. It appears that C-23 Canal forms a berm on the north side of the project and Murphy Road berms the site on the northeast. A sound barrier berm and the Florida Turnpike, border the site on the west.

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There are interconnected swales throughout the site. Off-site stormwater can inflow to the site, notably from the southeast. It appears that approximately 120 acres of off-site adjacent lands (Hidden Bay, Canoe Creek, Westwood Country Estates, and Murphy Road) have the potential to inflow to the Evergreen Club drainage system as flood stages increase.

Summary:

Maintenance is needed in the Evergreen Club development. The permit does not specify a perimeter berm, or identify off-site inflows. The site was designed for flood protection of the roads, for a 10-year 1-day storm event consisting of 6 inches of rainfall. Tropical Storm Barry exceeded this design storm.

I recommend the Evergreen Club design/permit/construct a high stage overflow structure, for storm events above the 10-year design storm. This was discussed with the president of the homeowner's association.

Damage to the C-23 levee appears to be due to a combination of factors:

1. High tailwater conditions in Bessey Creek,
2. Design limitations of the Evergreen Club drainage system,
3. Lack of a high-stage overflow discharge structure to serve the site,
4. Off-site inflows entering the Evergreen Club drainage system,
5. Maintenance needs within the Evergreen Club system, and
6. Possible low levee elevations, or seepage/piping through the dike.

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Attachments (2)

Additional Attachments:

August 15, 2001 Photos (27 pages)



August 3, 2001 Photos (11 pages)

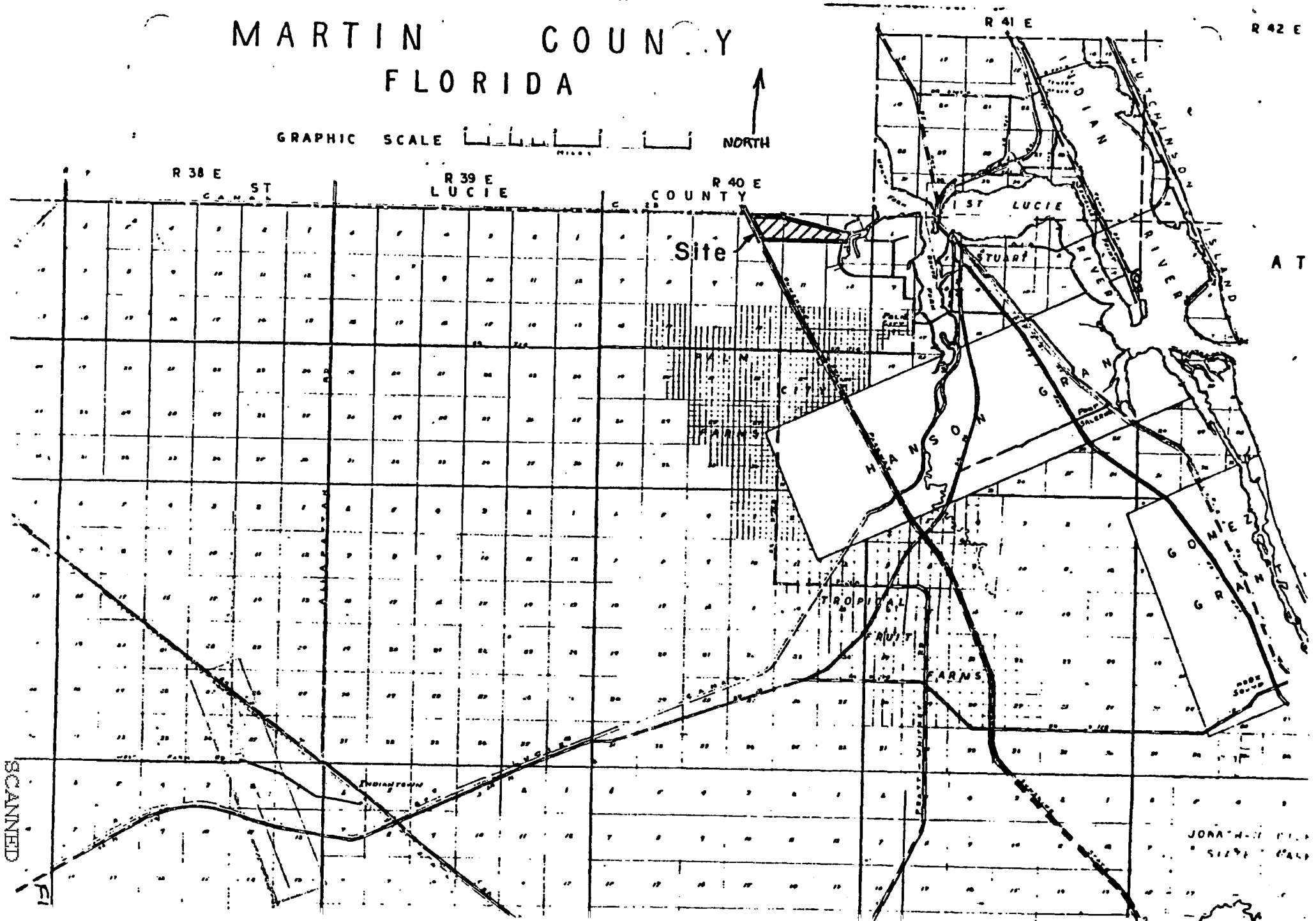
File Summary (6 pages)

Permits (30 pages)

c: R. M. Brown (4230)
G. Horne (5100)
D. Loving / MSL Field File (1670)

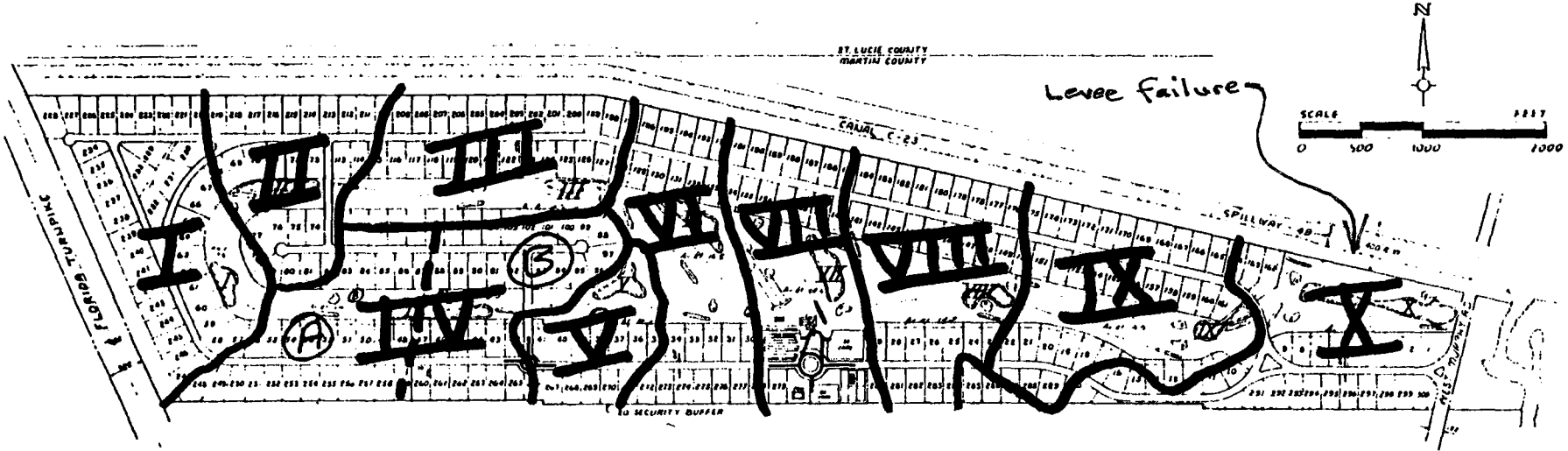
MARTIN COUNTY FLORIDA

GRAPHIC SCALE  NORTH 



SCANNED

ST LUCIE COUNTY
MARTIN COUNTY



SUB-DRAINAGE AREA
(REFER TO TABLE 1)

MICROFILMED

EXHIBIT 2
SCANNED

CON 24-05

MEMORANDUM

TO: Surface Water Management Permit File 43-00069-S

FROM: Edward J. Maciejko, Senior Engineer, *E.M.*
Environmental Resource Compliance Department,
Environmental Resource Regulation Division

DATE: August 14, 2001

SUBJECT: **Chronological Summary of Evergreen Club SWM Permit File**
Application Numbers 05137-A and 10237-E
S1, 2 & 3 / T38S / R40E, Martin County

1970 - Construction of the Evergreen Country Club began.

1977 - One 36" BCCMP existed along the C-23 R/W. The consulting design engineer requested 2 - 72" X 44" BCCMP outfalls. Per SFWMD the discharge rate needed to be reduced based upon our allowable inflow formula for C-23.

8/11/77 - SFWMD permit authorized: CONSTRUCTION OF A WATER MANAGEMENT SYSTEM SERVING 500 ACRES RESIDENTIAL LANDS BY INTERNAL LAKES WITH INTERCONNECTING STRUCTURES DISCHARGING INTO C-23 VIA P. C. #2. 17-acres of lakes were proposed.

1984 - Various correspondence in file regarding removal of fill, burying of debris, and R/W design specifications.

12/20/85 - SFWMD intervened as plaintiff with Martin Co. vs. developer.

Per an engineering review, there were various differences in the lake sizes, water levels and pipe sizes. In addition, internal weirs were not constructed. The system would not function as intended. During a 10-year storm event, there would be road flooding.

1987 - Martin County sued the developer. Per the Settlement Agreement, the project would be designed to provide flood protection for a 10-year, 1-day storm for the roads.

1/7/88 - SFWMD issued a permit modification authorizing: EXCAVATION OF 7.2 ACRES OF LAKE AREA, IMPROVEMENTS TO GOLF COURSE AND LOT SWALE SYSTEM AND REVISE THE EXISTING CONTROL STRUCTURES DISCHARGING INTO C-23. These improvements were required due to the Settlement Agreement. 10-acres of lake were existing. Plans show Structure No. 1 discharges directly to C-23, while Structure No. 2 discharges to Bessey Creek.

PERMITTED STRUCTURE NO. 1: 1-5.6' WIDE WEIR WITH CREST AT ELEVATION 5.6' NGVD AND 1-9" DIAMETER ORIFICE WITH AN INVERT AT ELEVATION 3.0' NGVD.

PERMITTED STRUCTURE NO. 2: 1-3.6' WIDE WEIR WITH A CREST AT ELEVATION 5.6' NGVD AND 1-3" DIAMETER ORIFICE WITH AN INVERT AT ELEVATION 3.0' NGVD.

PERMITTED RECEIVING WATER: C-23 (BOTH STRUCTURES)

Per a field report, Structure No. 1 is also SFWMD PC-2. Undated sketches in file indicate existing PC-2 is a 36" X 66' pipe and riser.

The plan shows Structure No.2 to consist of a 48" wide riser with a top elevation of 6.0', connected to a 36" CMP culvert with an invert at 2.95' NGVD.

The construction plans show a trash "baffle" over the front and bottom of the control structures' bleeder orifice, consisting of 3/4" #9 expanded wire mesh.

1989 - The file contains various notes regarding meetings and construction punch list items that needed repair.

6/12/89 - Per SFWMD field inspection, the lakes, swales & culverts on the site were found to be in complete compliance with the issued permits.

6/30/89 - Per memorandum by SFWMD staff, aside from the need to stabilize a few culvert installations, rip-rap a conveyance swale and complete seeding/sodding of lots along the lake system, the construction is complete.

12/5/89 - Project certified by consulting engineer (attached). Lakes, conveyance from lake to lake and control structures certified built in accordance with the "Midrivers Drainage Improvements". The consulting engineer noted that two items in the 12/18/87 staff report should be corrected: a) Structure No. 1 should have a weir length of 3.6' not 5.6' - this was an error in the plans, and b) Secondly, the control elevations should be 13.5', 13', 12.2', 12', 12', 11' 10' 8.9', 6.9', 3-6', and 3'.

Per this letter, the permitted additional lake area to be constructed was 7.2 acres. The engineer noted that the "as-built" additional lake area is 13.99 acres.

Control Structure No. 1 has a weir crest elevation of 5.6' NGVD; a weir length of 3.6' and a 0.80'H x 0.56'W rectangular orifice at an invert elevation of 3.0' NGVD.

Control Structure No. 2 has a weir crest elevation of 5.6' NHVD; a weir length of 3.6' and a 0.35'W x 0.31'H rectangular orifice at an invert of 3.0' NGVD.

Two copies of signed and sealed "Record Drawings" were enclosed.

12/12/89 - Final Inspection by SFWMD, notes the weir crest and bleeder invert elevations are acceptable.

01/12/90 - SFWMD telephone call report notes three erosion deficiencies need to be addressed.

6/12/90 - SFWMD permit letter modification (no attachments) indicating that based on the submitted information, a permit will not be required for the proposed activity.

7/12/90 - SFWMD permit letter modification for construction of a Maintenance Building.

7/24/90 - Additional certification by project engineer, noting the 3 erosion deficiencies have been completed in substantial conformance to the approved plans and specifications.

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7/27/90 - SFWMD memo to file, recommending the permit be transferred to the operation phase.

8/13/90 - The surface water management permit was transferred from the construction phase to the operation phase.

EM
Attachments (2)

c: R. M. Brown (4230)
G. Horne (5100)
D. Loving / MSL Field File (1670)

LINDAHL, BROWNING, FERRARI & HELLSTROM, INC.
CONSULTING ENGINEERS, PLANNERS & SURVEYORS

BUILDING 5000, SUITE 104
210 JUPITER LAKES BLVD.
P.O. BOX 727
JUPITER, FLORIDA 33468
(407) 746-9248
FAX: 407-746-0272

December 5, 1989
File #86-250

Mr. Arlan Pankow, Director
Field Engineering Division
South Florida Water Management District
P.O. Box 24680
West Palm Beach, Florida 33416-4680

Re: MIDRIVERS DRAINAGE IMPROVEMENTS
(Evergreen Club)
Martin County, Section 1,2,&3/T38S/R40E
Permit No. 43-00069-S

Dear Mr. Pankow:

As you may know the modification to revise the drainage system was a result of a court order. In that agreement the Martyn Estate was to construct the primary "backbone" water management system and the Evergreen Club and P.O.A. were to construct or repair the secondary system consisting mostly of swales. I am certifying to the primary water management system - namely that the lakes, conveyance from lake to lake, and control structures are built substantially in accordance with the "Midrivers Drainage Improvements" labeled to be constructed by Martyn.

Also, two items in the staff report dated December 18, 1987 should be corrected. See Special Condition #3 - structure #1 should have a weir length of 3.6' not 5.6' - this was an error in the plans, but the calculations (Reach 9) used the correct length.

Secondly, the control elevation should be as follows in lieu of the entire project control elevation of 3.0' NGVD.

Sub-Drainage Area	Control Elevation (NGVD)
I	13.5
II	13.0
III	12.2
IVA	12.0
IVB	12.0
V	11.0
VI	10.0
VII	8.9
VIII	6.9
IX	3.0 - 6.0 (varies)
X	3.0

STUART

JUPITER

FT. PIERCE

To: Arlan Pankow
Re: Midrivers Drainage Improvements

December 5, 1989
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The physical configuration of the lakes went through changes. However, minimum volumes and acreage were maintained to fulfill the intention of the required storage. The permitted total additional lake to be constructed was 7.2 acres. The "as-built" additional lake area is 13.99 acres.

Control structure #1 has a weir crest elevation of 5.6 NGVD; a weir length of 3.6' and a .80'H x .56'W rectangular orifice at an invert elevation of 3.0' NGVD.

Control structure #2 has a weir crest elevation of 5.6 NGVD; a weir length of 3.6' and a 0.35'W x 0.31' rectangular orifice at an invert elevation of 3.0' NGVD.

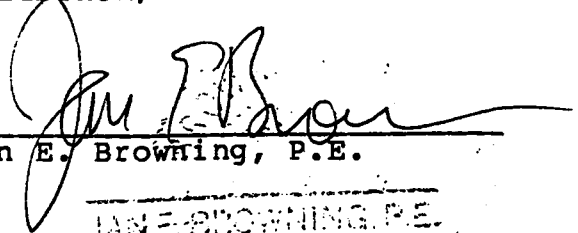
This is to certify that I have conducted a field examination of the referenced project. In my professional opinion, the primary surface water management system is constructed substantially in accordance with the approved plans and should function as designed.

For field inspection a benchmark of elevation 8.14' NGVD has been established on the top of the southerly riser of control structure #1 and elevation of 6.25' NGVD has been established on the southerly riser of control structure #2. In addition Flood Control Everglades (FCE) Monument #2130 is nearby. Its elevation is 16.00' NGVD.

Enclosed are two copies of signed and sealed "Record Drawing" for your use.

Sincerely,

LINDAHL, BROWNING, FERRARI &
HELLSTROM, INC.


Jan E. Browning, P.E.

JEB/rt/dlg
Enclosures
cc: Jack Martyn w/enc.
Bill Neilly, Jr. w/enc.

JAN E. BROWNING, P.E.

DEC 08 1989

NO. 13759

MICROFILM

SCANNED