

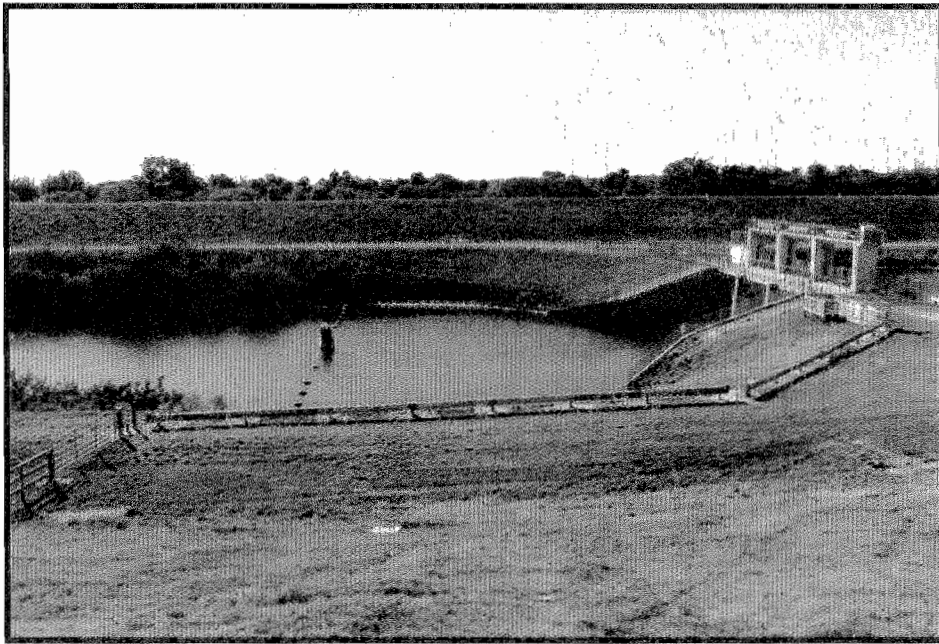
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# **PROJECT WORKS**

the

## **Physical Mechanisms of Water Management**

A guide to water control structures, pump stations, levees, and canals used to manage water within the St. Johns River Water Management District Upper Basin.



Structure 157

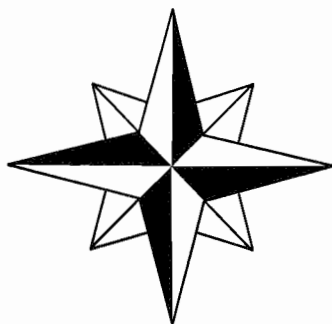
by  
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Field Inspector  
July, 1999 Rev 2; April, 2001

# **PROJECT WORKS**

**the**

## **Physical Mechanisms of Water Management**

A practical guide to the water control structures, pump stations, canals, and various water management areas that are used to manage water within the St. Johns River Water Management District, Southern Division. Included is a comprehensive listing of sites within the Upper Basin, with area maps and statistical data. Photographs of structures and other points of interest are also provided.



Department of Operations and Land Resources.  
St. Johns River Water Management District.

Photographs of Upper Basin Sites by D.R. Armstrong  
Cover photo: Structure 157, St. Johns River Upper Basin.  
Rev 2, April, 2001.

## **Public Works-Southern Region General Statistics**

### **I. Levees:**

1. Corps levees; **105** miles, under **1699** acres of grass maintenance.
2. Non-Corp levees; **36** miles, **237** acres of grass maintenance.

### **II. Major Canals:**

1. Associated with above levees; **4**.
2. Marsh flow-ways; **2**.

### **III. Roadways:**

1. Levee top rock roadways; approximately **90** miles.
2. Access roads, maintained with rock surface; approximately **15** miles.

### **IV. Bridge:**

Mary-A bridge (across C-54).

### **V. Structures:**

1. Major gated water control structures; **8**.
2. Minor structures, including three minor weirs; **23**.

### **VI. Weirs:**

1. Major weirs; **4**.

### **VII. Pump Stations:**

1. Locations; **6**.
2. Total number of pumps; **8**.

### **VIII. Recreational Pads:**

1. Tom Lawton; west end of Malabar Road.
2. Stick Marsh; west end of C-54.
3. Blue Cypress, on L-77-E (CR-512).
4. Ft. Drum; SR-60 (Twenty-Mile-Bend).

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## I. MAJOR WATER CONTROL STRUCTURES

**S-96:** Sec. 12; Twp. 31S; Rng. 36E (west end of C-54). Structure 96 was built in 1968 as part of the original flood control plan that was later incorporated into the St. Johns River Water Management Upper Basin Project. The structure is a two bay, hydraulically controlled vertical gate spillway (each gate measures 25.0' x 14.3' and has an estimated weight of 23,000 lbs.), with a total maximum discharge capacity of 6,000 cubic feet per second. Weir top elevation is set at 11.2 feet. S-96 is located at the western end of C-54, six miles west of SR-507 (Babcock Street). Good roads access the structure from Babcock Street on either side of C-54. Note: The canal's south side (Old Fellsmere Grade) is open to public use and serves as the entrance route to the Stick Marsh Recreational Pad.

Structure-96 is designed to augment S-96-B by discharging water from the St. Johns Water Management Area into C-54 in times of high water. A regular maintenance program is in place to keep it operational at all times. The structure has been overhauled twice since its original construction, the latest during the Spring of 1995. Major mechanical upgrades have also been made in that commercial electric power was installed, and the original standby generator was replaced with a new propane powered unit in 1997. The structure bridge approach ramps were also reinforced to accommodate increased traffic as more of the local area is opened to public use. *Photo on page 13.*

**S-96-B:** Sec. 10; Twp. 31S; Rng. 36E (west end of L-74-E). Completed in 1990, structure 96-B is located at the western end of L-74-E, just north of S-96-C. The structure is a single vertical gate, (20.0' wide x 10.9' high, 9,000 lbs.) hydraulically controlled spillway with a maximum flow capacity of 1000 cubic feet per second. Elevation of the gate weir top is set at 13.1 feet. Structure 96-B is the main outlet from the St. Johns Water Management Area (6,500 acres) into the historic St. Johns River flood plain. St. Johns W. M. A. outflow is also augmented by S-96 into C-54, and then into Sebastian Creek. The structure is maintained on a regular basis to ensure operational readiness at all times and received a complete overhaul in 1997. There has been some earth settlement in the area of the water level stilling wells, which is monitored by the US Army Corps of Engineers. *Photo on page 13.*

**S-96-C:** Sec. 10; Twp. 31S; Rng. 36E (east end of L-74-W). Structure 96-C is located at the eastern end of L-74-W at the tie back levee that connects to the south side of S-96-B. Completed in 1992, the structure consists of one hydraulically operated vertical gate (25.75' wide x 13.75' high; weight, 24,000 lbs.) with a flow capacity of 1,500 cubic feet per second. Structure 96-C serves as the main outlet for the Blue Cypress Marsh Conservation Area. Elevation of the gate weir top is set at 11.8 feet. Major rework was contracted in 1996 by the US Army Corps of Engineers to correct original construction deficiencies. The hydraulic lift cylinder, gate finish, vandalism shields, and LP gas detection systems were refurbished. The structure is operated on a regular basis and a standard preventative maintenance program is in place to ensure operational readiness at all times. *Photo on page 14.*

**S-96-D:** Sec. 1; Twp. 32S; Rng. 36E (intersection of L-76 and L-75). Structure 96-D is designed to release water from the Blue Cypress Water Management Area to the St. Johns Water Management Area through C-65, a canal formed between parts of L-76 and L-75. Construction was complete in 1993. The gate is 15.75 feet wide x 12.25 feet high, and weighs 11,160 lbs. Maximum flow is 1000 cubic feet per second over a weir set to an elevation of 15.3 ft. There were some major defects in the original construction which were corrected by a US Army Corps of Engineers repair contract in 1995.

The gate was repainted and the lift cylinder was rebuilt to correct rust pitting and an overall poor finish. Bullet shielding and LP gas detection equipment were also upgraded during the repairs. The structure is maintained on an ongoing basis to keep it in operational readiness at all times. Structure 96-D is located on L-75, five miles south of Structure 96, and is normally accessed by way of L-75. A gate on the south side of S-96 controls admittance to the levee. An arrangement with Sun-Ag Farms also allows entrance through their property from Fellsmere. *Photo on page 14.*

**S-96-E:** Sec. 4; Twp. 31; Rng. 36 (C-40). **Future project.**

**S-157:** Sec. 10; Twp. 31S; Rng. 38E (east end of C-54). Located on the eastern end of C-54, Structure 157 was completed in 1968. This is our largest hydraulically operated gated structure, with three gates that have a combined water flow capacity of 6,500 cubic feet per second. Each gate measures 25.0' wide x 12.5' high, and weighs an estimated 20,000 lbs. Structure 157 serves as an outlet for the release of flood waters from the St. Johns Water Management Area through C-54, and into the Indian River by way of Sebastian Creek. The structure was overhauled in 1984 and again in 1993. In both cases the gates and all major mechanical components were removed, sandblasted to bare metal, and new paint applied. Critical gate seals were also replaced. New automatic gate control relays were installed in 1995, and the original emergency generator was replaced with a new propane powered unit in 1997.

Structure 157 has become the focal point for fishing in the Sebastian River Buffer Preserve, and as such was modified in 1997 to make access easier to the general public. All of the original chain link fencing has been replaced with a new *fisherman friendly* barrier of vertical bars. A person can reach through them with a fishing pole, which has eliminated the problem of vandalism to the old style fencing. An observation deck and parking area have also been constructed, complete with handicapped access and steel guard railing to prevent cars from rolling into the river. Both fishing and manatee observation are popular pastimes in the area. *Photo on page 15.*

**S-161:** Sec. 13; Twp. 28S; Rng. 34E (Jane Green Creek). Completed in 1971, deactivated in 1996. The southernmost major structure on L-73-S, Structure 161 is a double vertical gate, (20.0' wide x 16.0' high; estimated weight, 22,000 lbs. each) hydraulic controlled spillway. Top elevation of the gate weir is set to 35.0 feet. The structure is located on L-73-S, 1.5 miles south of the US-192 entrance gate to the levee, and is maintained in mothballed storage. *Photo on page 15.*

**S-161-A:** Sec. 13; Twp. 28S; Rng. 34E (Jane Green Creek). Structure 161-A was finished in 1990 and is located .5 mile north of S-161. The structure is a double gate, hydraulically controlled spillway, (each gate is 21.5' wide x 16.25' high, 23,900 lbs. each) with a total maximum designed discharge of 8,465 cubic feet per second. Top elevation of the gate weir is set to 26.1 feet. There are also two manually operated slide gate flumes that allow draw-down of the Jane Green Swamp to a level below the gate weir top. Structure 161-A is designed to reduce high St. Johns River water stages by holding floodwaters behind L-73 in the Jane Green Detention Area, and then releasing them over a controlled period of time. Both gates and other major components were overhauled in 1996. The structure is operated on a regular basis with a standard preventative maintenance program in place to ensure operational readiness at all times. *Photo on page 16.*

**S-164:** Sec. 5; Twp. 25S; Rng. 34E (Taylor Creek). Completed in 1970, this is the northernmost structure on levee 73. Structure 164 is a single vertical gate, (24' wide x 12' high, 9,300 lbs.) hydraulic controlled spillway with a maximum discharge rate of 3,000 cubic feet per second. Two manual slide gate flumes allow draw-down below the main gate weir. The gate weir top elevation is set to 39.0 feet. Structure 164 is located 1.2 miles northwest of the SR-532 bridge over Taylor Creek, and serves to regulate water levels in the Taylor Creek Impoundment area. Access to the structure (and L-73-N) is arranged with a private landowner (Desseret Ranch) through a District lock on a gate located at SR-532 (Nova Rd.).

Taylor Creek is part of an original US Army Corps of Engineers flood control plan that was drafted in the early 60s. This plan was later modified to address new water management needs, and S-164 as well as parts of L-73 were incorporated into the upgraded design. The large reservoir controlled by the structure has become a fishing lake that is managed by the Desseret Ranch. In the future it will also become an additional source of drinking water for the City of Cocoa. Since its original construction the gate and other major components have been overhauled twice, the latest in 1996. The original on-site generator was also replaced with a new propane powered unit in 1997.

The structure is operated on a regular basis with a standard preventative maintenance program in place to ensure operational readiness at all times. *Photo on page 16.*



## II. MINOR WATER CONTROL STRUCTURES

**CS-1 through 4:** (C-54). These structures were installed in 1968 as part of C-54. All four pass under the Fellsmere Grade and connect between the Old Fellsmere Canal and C-54. Each consists of two 72" culverts with screw operated slide gates on their north ends. The Fellsmere Grade bridges each set of culverts with a simple concrete slab and DOT steel guard railing. All four structures are spaced between Babcock Street and S-96. These culverts were originally designed to allow farm water to drain from the Old Fellsmere Canal into C-54, however the water level in the western end of the old canal has now been raised. Water levels in the Fellsmere Canal west of CS-3 are now controlled by S-2, located at the north end of L-75. All four structures are maintained on a regular basis. *Photos on pages 17-18.*

**S-2:** Sec. 12; Twp. 31S; Rng. 36E (north end of L-75). Structure 2 was built as part of L-75 in 1993 to serve as a connection between the western end of the Old Fellsmere Canal and the St. Johns Water Management Area. S-2 is located on the northwest end of L-75, just inside of the north gate to the levee, where it intersects with S-96. The structure consists of three 72" corrugated metal culverts with manually operated screw gates. Maximum discharge flow is estimated at 400 cfs. *Photo on page 19.*

**S-3:** Sec. 1; Twp. 32S; Rng. 36E (east side of S-96-D). Structure 3 consists of three screw gate controlled 72" culverts. The structure is located on the east side of S-96-D to augment flow from C-65 into the St. Johns Water Management Area. Maximum flow is estimated at 300 cfs. *Photo on page 19.*

**S-4:** Sec. 2; Twp. 32S; Rng. 36E (west side of S-96-D). Located directly west of S-3 on L-76, this was an existing privately owned structure when S-96-D was constructed. Structure 4 consists of two separate 72" screw gate controlled culverts that serve as a connection between the Blue Cypress Marsh Conservation Area and Canal 65. *Photo on page 20.*

**S-231:** Sec. 28; Twp. 25S; Rng. 34E (Cox Creek). Structure 231 was built in 1973 to serve as a southern outlet for the Taylor Creek Reservoir. The structure consists of one 48" concrete pipe with reinforced concrete headwalls that is equipped with a manually operated slide gate. The culvert is set at an invert elevation of 33.3 feet and designed to pass a maximum flow of 100 cfs. Access is by way of a gate across the south end of L-73-N, where it terminates at SR-532. *Photo on page 20.*

**S-250 Series.** Built in 1993. Structures **A** through **C** are located along the eastern end of L-74-W at the northern boundary of the Blue Cypress Marsh Conservation Area (21,300 acres). Structure **D** is located near the west end of the levee. Access is by way of Levee-74-W. The 250 series structures are designed to augment S-96-C during water discharge from the marsh conservation area. Structures **A** through **C** each consist of one 72" metal culvert with a 96" diameter riser set at an elevation of 22 feet, and an adjacent 135 foot concrete and sheet pile weir set to an elevation of 25 feet. Maximum culvert discharge flow is 100 cfs with an additional 516 cubic feet available if the weir crest is reached. Structure **D** consists of three 72" culverts. West of the structure there is a fourth culvert that was originally fitted with a screw gate. The gate was removed in 1996. *Photo on page 21-22.*

**S-251:** Sec. 27; Twp. 32S; Rng. 37E (L-77-E). Located on L-77-E, next to CR-512 and between the Ansin-East and Ansin-West sections of the Blue Cypress Water Management Area, Structure 251 consists of four screw gate controlled 72" culverts that control water flow under a bridge between the two properties. Culvert inverts are set at 16.0 feet, with a maximum discharge capacity of 400 cubic feet per second. The structure can be accessed by way of L-77-E or through a gate located on the north end of the CR-512 Bridge. An ongoing maintenance program is in place to keep the structure in operational readiness at all times. Recent modifications have included replacement of the original metal screw rod covers with clear plastic for better visual indication of gate position, as well as permanent wiring with ground fault protection for safer operation while using a portable generator to power the gate gear boxes. *Photo on page 23.*

**S-252-A:** Sec. 11; Twp. 33S; Rng. 36E (L-78). Structure 252-A is located on L-78, approximately three miles west of the SR-60 entrance. The structure serves as an outlet from the Fort Drum Conservation Area, under SR-60, and into the Blue Cypress Marsh Conservation Area. S-252-A consists of two slide gate controlled 60" culverts with inverts at 16 feet and a total estimated flow of 100 cubic feet per second. *Photo on page 23.*

**S-252-B:** Sec. 12; Twp. 33S; Rng. 36E (L-78): Located approximately one-half mile east of S-252-A. One open 60" culvert set at an invert of 16.0 feet with an estimated flow of 100 cfs works in conjunction with 252-A and C. *Photo on page 24.*

**S-252-C:** Sec. 12; Twp. 33S; Rng. 36E (L-78): Structure 252-C is built approximately one half mile east of S-252-B and consists of a single 60" uncontrolled culvert with its invert set at 16.0 feet. Total estimated flow is 100 cfs. S-252-C works in conjunction with S-252-A and B. *Photo on page 24.*

**S-252-D:** Sec. 7; Twp. 33S; Rng. 37E (north end of L-79). Completed in 1998. Structure 252-D is located near the SR-60 entrance to L-78 and consists of one 72" screw gate controlled culvert set to an invert elevation of 18.0'. *Photo on page 25.*

**S-252-E:** Sec. 17; Twp. 33S; Rng. 36E (western end of L-78). 1999. Structure 252-E is located at the west end of L-78, due south of the Ft. Drum entrance from SR-60. The structure consists of five 60" culverts with controllable flap gates on their east ends. Inverts set at 19.0'. *Photo on page 25.*

**S-252-F:** Sec. 17; Twp. 33S; Rng. 36E (western end of L-78). 1999. Structure 252-F is located near the northwest side of S252-E and consists of two 60" culverts set to an invert of 18.0'. A screw gate controls each culvert. *Photo on page 26.*

**S-255:** Sec. 27; Twp. 30S; Rng. 36E (L-74-N). This structure was built in 1992 and is located under L-74-N to control the 255 flow-way. Access is by way of L-74-N. The structure consists of four 72" metal culverts set at an invert elevation of 13.0 feet with flap gates on their western ends. Maximum total flow is estimated at 350 cubic feet per second. *Photo on page 26.*

**S-256:** Sec. 10; Twp. 30S; Rng. 36E (L-74-N). Completed in 1992. Structure 256 consists of three 84" metal culverts set at an invert elevation of 10.5 feet with flap gates on their western ends. S-256 is located on L-74-N, 2.5 miles north of S-255. Access to the structure is by way of L-74-N. The structure is designed to prevent back flow of river water onto farm lands to the east, while allowing farm drainage when necessary. Hand cable winches have been added to each flap gate to allow opening if reverse flow is needed. Maximum discharge capacity is estimated at 300 cubic feet per second under normal daily conditions.

Due to a severe rusting problem the 84" culverts will be sleeved with 72" culverts, and the resulting annular space will be grouted solid (future US Army COE contract). *Photo on page 27.*

**S-257:** Sec. 20; Twp. 29S; Rng. 36E (C-40). **Future construction project.** To be located on Levee-40, approximately ten miles north of C-54. Structure-257 is to consist of one 600' weir set with a crest of 21' msl, and one 72" culvert set to an invert of 15' msl. The Three Forks Marsh Conservation Area is designed to discharge through the structure into the St Johns Marsh Conservation Area.

**S-258:** Sec. 11; Twp. 31S; Rng. 36E (L-74-E). This structure is located approximately one-half-mile west of S-96 and was built as part of L-74-E. Structure 258 consists of four 72" corrugated metal pipes, each with a manually operated screw gate, and has a maximum discharge capacity of 750 cubic feet per second. Invert elevation is set at 14.5 feet. The structure is designed to discharge water from the St. Johns Water Management Area into the C-54 Retention Area (Duck Pond). S-258 is used in conjunction with S-96-B. The structure is maintained on a regular basis and has recently been upgraded with new electric motors and commercial power to operate the gates. A portable generator can also be connected to ground fault safety outlets if commercial power is lost. *Photo on page 27.*

**S-259:** Sec. 25; Twp. 31S; Rng. 36E (L-75). Constructed as part of L-75 in 1993, S-259 is located three miles south of S-96 and is accessed by way of the levee. Structure 259 consists of two 72" culverts. One is fitted with a manually operated flap gate on its western end and the other with a screw gate. The structure provides a connection to the St. Johns Water Management Area for a diesel-electric pump station located on private farm land east of L-75. Maximum flow through both combined culverts is estimated at 200 cubic feet per second. *Photo on page 28.*

**S-261:** Sec. 9; Twp. 29S; Rng. 36E (L-74-NW). **Future construction project.**

**S-262:** Sec. 20; Twp. 28S; Rng. 36E (L-40). **Future construction project.** To be located on the north end of L-40, the structure is to consist of four 60" cnp culverts that will discharge from the St. Johns Water Management Area into C-40.

### III. MAJOR WEIRS

**S-253 Weir:** Sec. 29; Twp. 33S; Rng. 37E (C-52 flow-way). Weir-253 was completed in 1996. Structure-253 is located across C-52, 3.5 miles south of SR-60, and is accessed by way of SR-60 and L-79. The structure is a 238-foot-long sheet piling weir that controls water flowing from south of the Florida Turnpike, through C-52, and eventually into the Blue Cypress Water Management Area. The weir crest is set at 25.5 feet. *Photo on page 28.*

**S-254 Weir:** Sec. 29; Twp. 32S; Rng. 37E (L-77-W, *Joe Hill Weir*). The structure was completed in 1991 as part of L-77-W and is located 3.5 miles north of SR-60, at the north end of L-77-W. Structure 254 is a 1,541 foot long concrete and sheet pile weir with a crest elevation of 26.6 feet that is placed between the Blue Cypress Water Management and the Blue Cypress Marsh Conservation Areas. Maximum discharge flow across the weir is 2,757 cubic feet per second. The structure is wide enough to allow vehicular traffic along L-77W and is accessed from either end of the levee. S-254 also serves as the dividing point between Levee-77-W and Levee-76-S. A new airboat crossing has been constructed north of the structure, across L-76. *Photo on page 29.*

**Fellsmere Weir:** Sec. 10; Twp. 31S; Rng. 38E (east end of Fellsmere canal). The weir was constructed in 1965 by the US Army Corps of Engineers and is located at the east end of the Fellsmere Canal, on the south side of C-54. Access is across Structure-157.

The structure is designed to hold minimum water levels at the eastern end of Fellsmere Canal at 2.0 feet above mean sea level and release excess water into Sebastian Creek below S-157. The 240 foot weir is built of two sheet steel piling walls driven into a sandy bottom, anchored together, and protected with rip-rap on both sides. The higher downstream wall forms the weir crest. Regular maintenance is performed on the structure and its surrounding area. All exposed sheet piling was cleaned of rust and painted in 1995. *Photo on page 29.*

**Lake Washington Weir:** Sec. 17; Twp. 27S; Rng. 36E (Lake Washington). Located at the north outlet of Lake Washington, a few hundred yards south of an original mortar and rip-rap dam, a temporary sheet piling structure was completed as a joint project between the District and Brevard County in 1976.

Construction on a replacement concrete weir just south of the existing structure began in 1998 and was complete in 2001. The new dam incorporates a weir set at 14.0' at each end with its center set to 13.5 feet above msl. The sheet metal weir was removed after the new installation was complete. *Photo on page 30.*

### IV. BRIDGE

**Mary-A Bridge:** Sec. 9; Twp 31S; Rng. 37E (C-54). Mary-A is a single lane concrete span across C-54 that originally provided access between farm lands on both sides of the canal. The bridge was built in 1968 and is located approximately three miles west of Babcock Street. The bridge is closed to public traffic. *Photo on page 30.*

## V. PUMP STATIONS

**Broadmoor;** Sec. 26; Twp. 30S; Rng. 37E. Installed in 1999. This station serves to pump water into the 255 flow-way, from the Broadmoor Marsh restoration Area. The unit consists of one 36" diesel driven pump. Access is off of the Sartori Centerline Road or along the north side of the 255 flow-way. *Photo on page 31.*

**C-54 Retention Area; 12386E and 12384W:** Sec. 27; Twp. 30S; Rng. 36E. Located approximately 7 miles west of SR-507 (Babcock St.) at the intersection of L-74-North and L-75-North. There are two 48" propane powered pumps (90 cfs each), and two 48" screw gate flumes that serve to regulate high water in the C-54 Retention Area (TM Goodwin Duck Pond). Both pumps were rebuilt in 1995/96 and the drive engines have been replaced with new propane powered units. Both Waterman screw gates have also been replaced. *Photo on page 31.*

**Tucker-E; (5903):** Sec. 25; Twp. 30S; Rng. 35E. This pump station is an existing farm unit that was refurbished by the District in 1997. The pump is a diesel driven 36" unit located on the west side of the St. Johns Marsh, approximately 2.5 miles north of the west end of Levee-74-W. The station serves to control flooding on private farm land west of the area, and also to regulate plant growth in wet cells of previous farm land now owned by the District. Average flow through the pump is estimated at 15 cubic feet per second. Access is by way of unimproved farm roads leading north from the Kenansville Lake public parking and boat launch facility located at the west end of L-74-W. *Photo on page 32.*

**Tucker-W; (9232NE and 9232NW):** Sec. 18; Twp. 30S; Rng. 36E. Located west of Tucker-E, the two units have been renovated by the District. Two 36" diesel driven pumps with an estimated flow of 15 cfs, each. See Tucker map for access roads. *Photo on page 32.*

**Sartori-West; 9232W:** Sec. 19; Twp. 30S; Rng. 36E. Located approximately 1.5 miles north of Tucker-E near the Wolf Creek property, the 36" diesel driven station was installed by the District in 1997. The pump station serves to augment water regulation north of the Tucker area with an estimated flow of 15 cfs. See Tucker map for access. *Photo on page 33.*

**Mary-A; (MAF1):** Sec. 28; Twp. 30S; Rng. 36E. Not to be confused with the old C-54 Retention Pump Station, which used to be called Mary-A, this new station was installed in 1995 to control water levels in the old Mary-A farm cells located on the east side of Levee-40. The unit is a refurbished 48" pump that has an estimated flow of 30 cfs at full capacity. Access is by way of the 255 flow-way (south side) road leading from the corner of Levee-74-N, directly north of the C-54 Retention Area Pump Station. *Photo on page 33.*

## VI. LEVEES, PLUGS

**L-1:** Sec. 4, Twp. 29S, Rng. 36E. (runs east-west). This is a short one-mile-long levee that is part of an existing farm levee running along the north side of Canal-1. It was rebuilt in 2000 as part of the C-1 Retention Area improvement plan. Six acres of grass cover. *Photo on page 34.*

**L-40:** Twp. 28S; Rng. 36E to Twp. 31S; Rng. 36E (runs north-south). Levee 40 is one of the original farm drainage levees constructed during the late 1920s. It runs northwest from S-96-B for two miles and then turns due north for an additional 13 miles to terminate at a point south of SR-192 near Sawgrass Lake. Levee 74-N will eventually terminate approximately two miles east of this point to form the Sawgrass Lake Water Management Area (2,080 acres). Levee-40 also defines the eastern boundary of the 29,705 acre St. Johns Marsh Conservation Area. The levee is maintained under 147 acres of grass cover. *Photo on page 40.*

**Plug E-7:** Sec. 8; Twp. 30S; Rng. 36E. (north of 256 flow-way). Constructed in 1999. The plug consists of an earthen dike and one 48" screw gate to control flow in C-40. A wooden airboat crossing is also provided. Located just north of the S-256 flow-way. *Photo on page 35.*

**L-54:** Twp. 31S; Rng. 37E (runs east-west). Levee 54 forms the north and south sides of C-54, which serves as a principal flood relief mechanism for the SJWMA. Reverse flow through Structure-96-B provides flood relief for the BCMCA. The levee and canal were constructed in 1968 by the US Army C.O.E. Both sides of the canal have a combined length of 23 miles that are maintained under 493 acres of grass cover.

The eastern end of L-54-N has been recently incorporated into the Sebastian River Buffer Preserve. Many parts of this new preserve on the north side of C-54 are open to the public, who may access the area from Babcock Street where it crosses the canal. The south side, east of Babcock Street, is not open for public use. The Old Fellsmere Grade west of Babcock St. on the south side is open, and picnic areas as well as limited boat launching facilities are available. The Grade also provides access to the Stick Marsh Rec Pad located six miles to the west. *Photo on page 35.*

**L-73-N:** Twp. 25S; Rng. 34E (runs north-south). Levee 73 was completed in 1970 and was intended as a major part of an original US Army Corps of Engineers flood control plan for the Upper St. Johns River Basin. This early plan incorporated a levee more than 25 miles long that ran from the Jane Green Swamp south of SR-192, and then north past the Taylor Creek Impoundment Area. Under the current plan, approximately eight miles of the original levee north of SR-192 was abandoned and returned to private land owners. The abandoned section also included Structures 163 and 221.

The levee is now divided into L-73-N and L-73-S. Levee 73-N starts from SR-532 and runs nine miles north, past the Taylor Creek Impoundment Area. Normal maintenance includes washout repairs and 192 acres of mowing. *Photo on page 36.*

**L-73-S:** Twp. 28S; Rng. 34E (runs north-south). (Jane Green Detention Area, 23,500 acres). Levee 73-S starts at SR-192, approximately 13 miles west of Melbourne (I-95), and runs nine miles south past the Jane Green Swamp. The levee is designed to control water flowing from the Jane Green Detention Area into the St. Johns River. The levee is maintained under 259 acres of grass cover. *Photo on page 36.*

**L-74-E:** Twp. 31S; Rng. 36E (runs east-west). Levee 74-E was built in 1993 and forms a two-mile-long divide between the C-54 Retention and St. Johns Water Management Areas. Structure-258 serves as an interconnecting structure. This levee is also used as a main roadway between S-96 and other levees and structures west of C-54. Maintained under 20 acres of grass. *Photo on page 37.*

**L-74-N:** Twp. 28S; Rng. 36E to Twp. 31S; Rng. 36E (runs north-south). The first phase of this levee was completed in 1992, a second in 1996, and the last phase is still in the planning stage. Eventually the entire levee will run north from S-96-B and terminate east of the northern end of L-40. At the present time a total of 17 miles of levee form the western edges of the C-54 Retention Area (3550 acres), the Three Forks Marsh Conservation Area (13,746 acres), the Sawgrass Lake Water Management Area (2080 acres), and the C-1 Retention Area (1280 acres).

The Tom Lawton Recreation Pad has been built next to the levee in the upper end of the Three Forks Marsh Conservation Area. Access is by way of an improved road running along the levee toe at the western end of Malabar Road. Public boat docks, picnic facilities, and ample hard surface parking are provided. Note: This area is not flooded for boat facility usage as yet (2001). To date, the levee is maintained under 215 acres of grass cover. *Photo on page 37.*

**L-74-W:** Twp. 31S; Rng. 36E (runs east-west). Also completed in 1993. Levee 74-W is four miles long and separates the north end of the Blue Cypress Marsh Conservation Area (21,300 acres) from the St. Johns Marsh Conservation Area (29,705 acres). Structures 250-A, B, C, and D connect the two marshy waterways. The levee is maintained under 60 acres of grass cover. Kenansville Lake now occupies much of the land south of the levee and has become prime fishing grounds for public use. Access to the levee is by way of the Old Fellsmere Road that connects to SR-441, or by way of S-96-C. Public parking and boat launch facilities are located at the levee's western end for Kenansville Lake. Public vehicle travel on the levee itself is prohibited. *Photo on page 38.*

**L-75-N:** Twp. 30S; Rng. 36E (runs south-north, then east-west). Levee 75-N is a five-mile-long original farm levee that impounds the east and north sides of the 3,550 acre C-54 Retention Area. L-75 begins at S-96 and connects to L-74-N near the C-54 Retention Area Pump Station. It also serves as an alternate route to the pump station, as well as northern sections of L-74-N. This levee was reconstructed under outside contract in 1995 to bring it up to modern standards. The levee is maintained under 25 acres of grass cover. *Photo on page 38.*

**L-75:** Twp. 31S; Rng. 36E to Twp. 32S; Rng. 36E (runs north-south, then west-east). Modern reconstruction was finished in 1993 by the US Army Corps of Engineers. Levee 75 runs south from S-96 for nine miles and then turns due east for another two miles to a point directly north of S-254 (Joe Hill Weir). A large pump station (PS-6) is maintained on private farm land at this location by Sun-Ag Farms. The levee then continues on as L-77. L-75 is maintained under 143 acres of grass cover. Levee-75 serves as an eastern boundary to separate the St. Johns Water Management Area (6500 acres) from private farm land to the east, and on its southern end forms the north and east banks of C-65. Approximately four miles of rock rip-rap was added along open water areas on the levee's northern end by the Corps in 1996. This section of water is known locally as the Stick Marsh, and has become a prime fishing area. *Photo on page 39.*

**L-76:** Twp. 31S; Rng. 36E (runs north-south, then west-east). Levee 76 is one of the oldest and most historic earthen structures in the Upper Basin. It was originally known as Lateral-M and was formed by spoil taken from the old Zig-Zag and main drainage canals leading north from the Blue Cypress Lake Basin. Early parts of the levee were in place by 1928. The old levee was upgraded by the US Army Corps of Engineers in 1993.

The rebuilt levee runs south from S-96-C for five miles to form the western side of the St. Johns Water Management Area, and then turns east to mark its south boundary for two miles before linking with S-96-D. It then runs south for four miles, turns east for another two, and finally connects to the north end of S-254 (Joe Hill Weir). These two southern sections form the west and south banks of C-65. The levee serves as a separation line between the Blue Cypress Marsh Conservation Area and the St. Johns and Blue Cypress Water Management Areas. The south end of the levee is maintained under 47 acres of grass mowing. A four-mile section on the western side of the St. Johns Water Management Area is against open water and was reinforced with heavy rip-rap between 1998 and 2001. *Photo on page 39.*

**L-77 (N, S, E, W):** Twp. 32S; Rng. 37E (forms a rectangular enclosure around part of the Blue Cypress Water Mgt. Area). Completed by the US Army Corps of Engineers in 1991, this 12 mile levee forms a rectangular enclosure around the western half of the Blue Cypress Water Management Area (Ansin-W, 4,920 acres). Its northern section becomes L-75 directly across from S-254 (Joe Hill Weir). Both the western and eastern sections of the water management area total 10,750 acres.

The western portions of the Blue Cypress Water Management Area have become prime fishing grounds and are open to the public by way of an improved parking and boat launching facility located on the eastern section of the levee (CR-512 Rec Pad). This facility was completed by the US Army Corps of Engineers in 1997. The levee can be accessed directly from CR-512, approximately eight miles southwest of Fellsmere, or from SR-60 near the entrance to L-78/79. The entire levee is maintained under 110 acres of grass coverage. *Photo on page 40.*

**L-78:** Twp. 33S; Rng. 36E (runs east-west). The first phase of Levee 78 was completed by the US Army Corps of Engineers 1991. The western remainder was constructed in 1998. The levee runs for seven miles along the south side of SR-60 to form a dividing line between the Blue Cypress and Fort Drum Marsh Conservation Areas. Structures 252-A, B, C, E, and F are placed in the levee to connect the two areas. A total of 92 acres of grass cover the levee.

Access is by way of a locked gate off of SR-60, approximately 13 miles south of Fellsmere. Access to the western end of the levee, as well as public access to the Ft. Drum Marsh Conservation Area, is through a gate at the Twenty Mile Bend on SR-60. Public parking and other facilities are provided. *Photo on page 40.*

**L-79:** Twp. 33S; Rng. 37E to Twp. 34S; Rng. 36E (runs north-south, then east-west). Levee 79 was completed in 1991, is 11 miles long and is maintained under 115 acres of grass cover. Structure 252-D at the SR-60 end was added in 1998. L-79 serves as the eastern and southern boundaries of the 20,650 acre Fort Drum Marsh Conservation Area. The southern section runs along the north side of the Florida Turnpike. Access to the levee is through the same gate on State Road-60 that serves L-78. *Photo on page 41.*

**L-251:** Twp. 32S; Rng. 37E (runs east-west). Forms two miles of C-251's north side. Accessed by a gate on CR-512, north of Structure-251. Twelve acres of grass coverage. *Photo on page 41.*



## VII. CANALS

**C-1:** Twp. 29S; Rng. 36E to Twp. 29S; Rng. 37E (runs east-west). Canal-1 is under the authority of the Melbourne Tillman Drainage District and is one of the older canals in the area. It was constructed to drain low lands in the Sawgrass and Three Forks area into Turkey Creek. Plans are underway to re-engineer water levels in the canal so more water is retained in the Sawgrass Lake Management Area. *Photo on page 42.*

**C-40:** Twp. 28S; Rng. 36E to Twp. 31S; Rng. 36E (follows the western side of L-40). *Photo on page 42.*

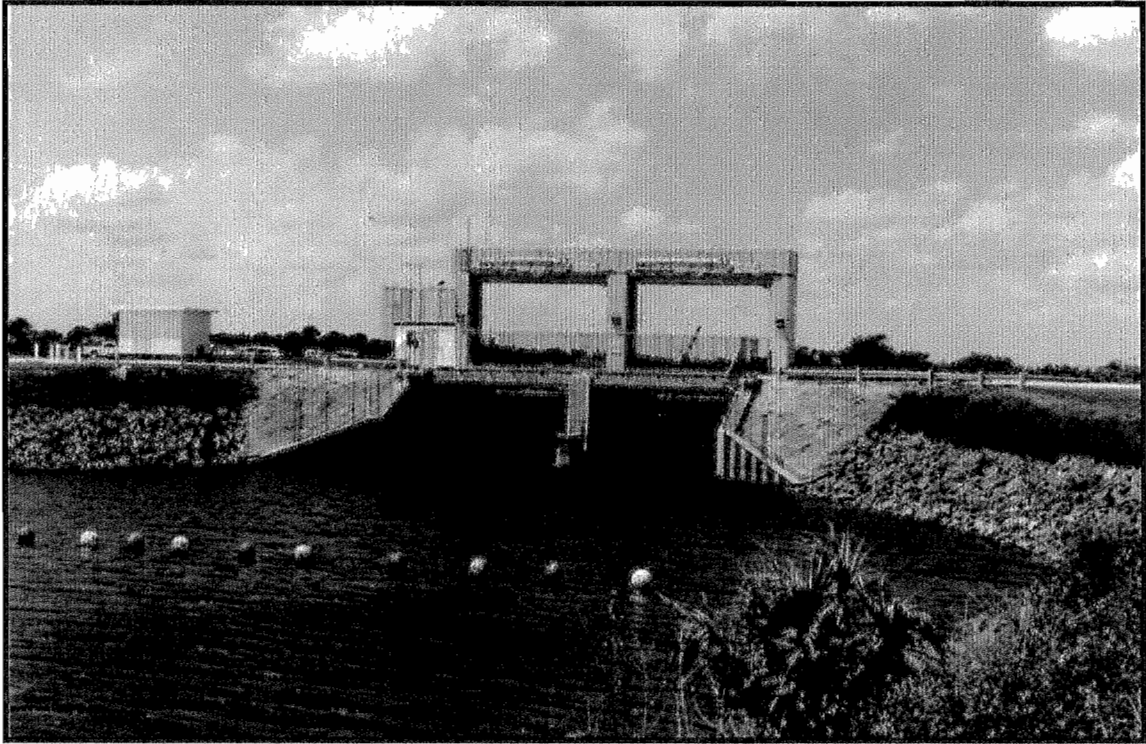
**C-52:** Twp. 33S; Rng. 37E (runs north-south). Canal 52 is part of the St. Johns Water Control District that is located on the eastern side of the north-south portion of L-79. Water flows through it from south of the Florida Turnpike, under a bridge on SR-60, and into the Blue Cypress Water Management Area. A gated structure that belongs to the St. Johns Water Control District is located near SR-60 and connects the flow-way to marshlands east of L-79. This flow-way was upgraded by the US Army Corps of Engineers in 1997 to increase water flow. Structure-253 (Weir) was also added to control minimum water levels south of the Turnpike. *Photo on page 43.*

**C-54:** Twp. 31S; Rng. 37E (runs between L-54-N, S). Formed between Levees 54-North and South. See L-54. *Photo on page 43*

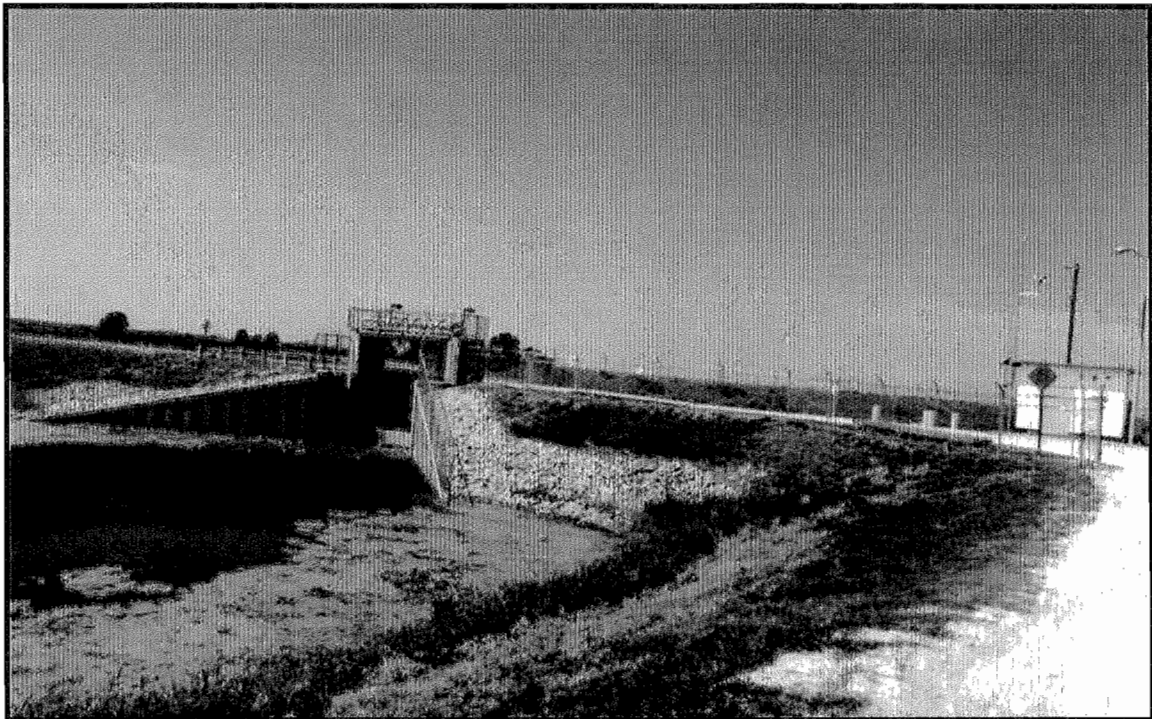
**C-65:** Twp. 32S; Rng. 36E (runs north-south). Formed between parts of L-75 and L-76. See L-75 and L-76. *Photo on page 44.*

**C-251:** Twp. 32-S; Rng. 37E (runs east-west). This canal is a two-mile-long original farm canal that runs along Levee-251 to route water out of the old Ansin-East property through Structure-251. The canal was cleaned out in 1995 to ensure an unobstructed water flow from the Ansin area. *Photo on page 41.*

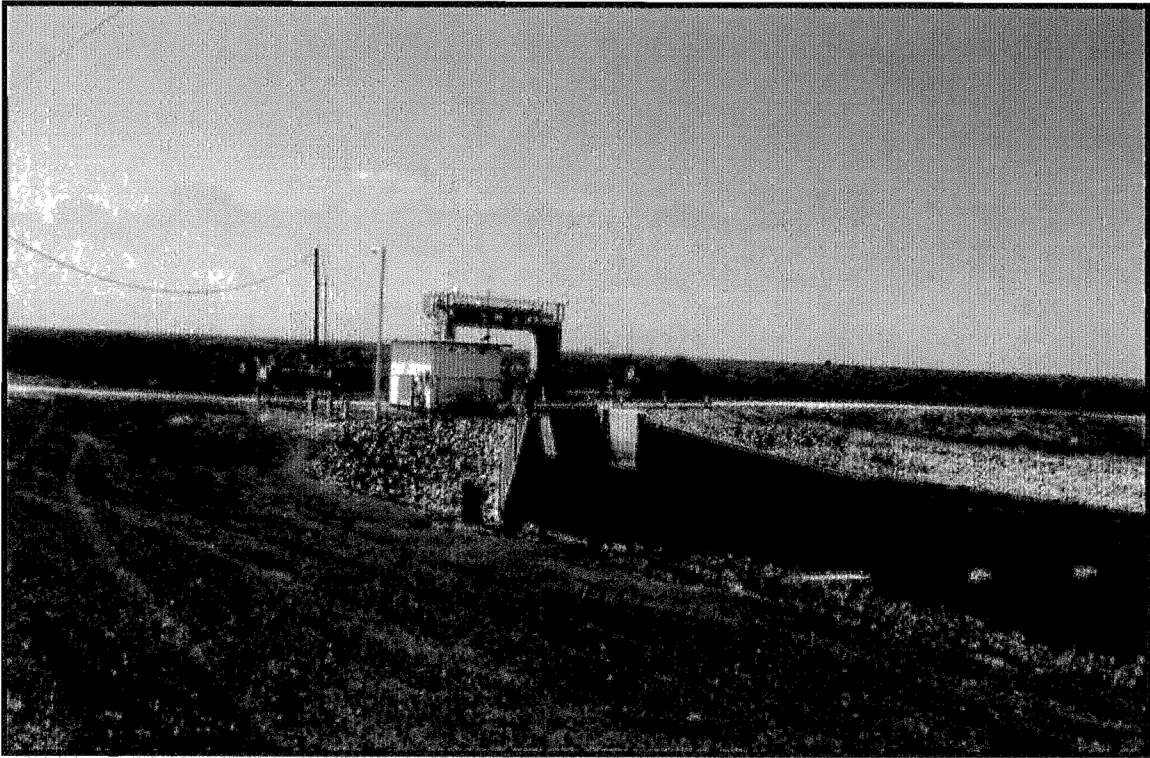
**C-252:** Twp. 33S; Rng. 36E (runs east-west). Constructed in 1998. Flow-way along north side of SR-60, between L-79 and S-252-A. Water discharging under SR-60 through the 252 series structures flows east along the north side of the road to a point west of L-77-W. *Photo on page 44.*



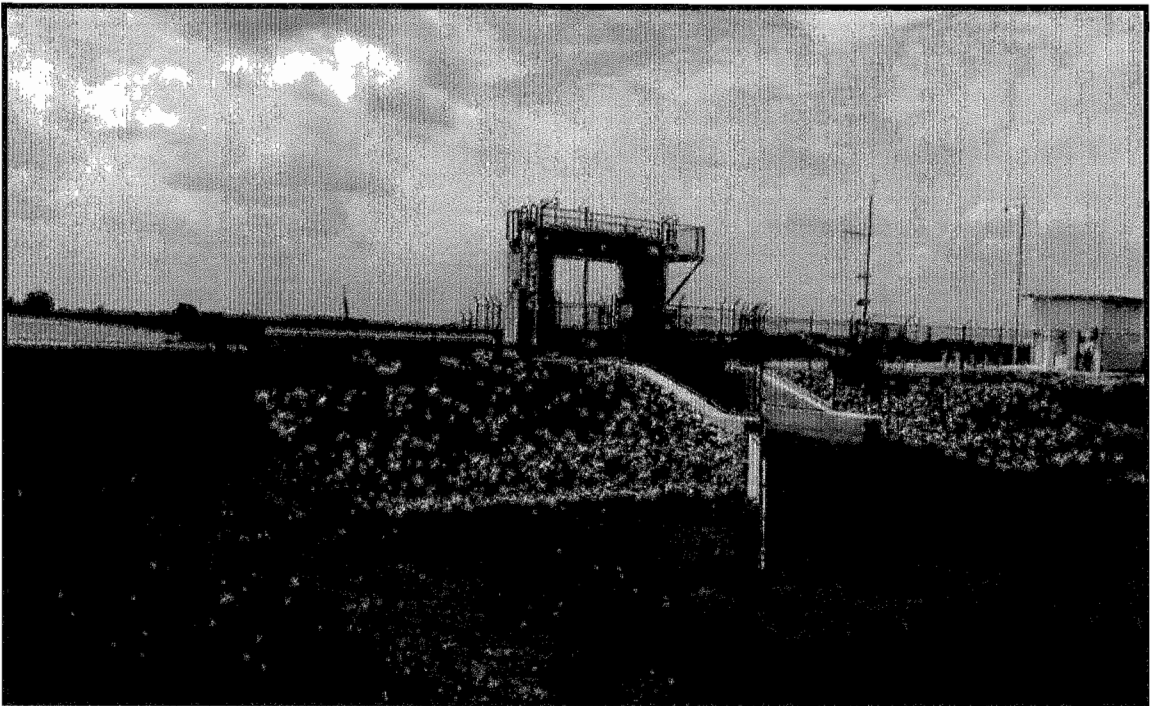
**Structure-96, looking west.**



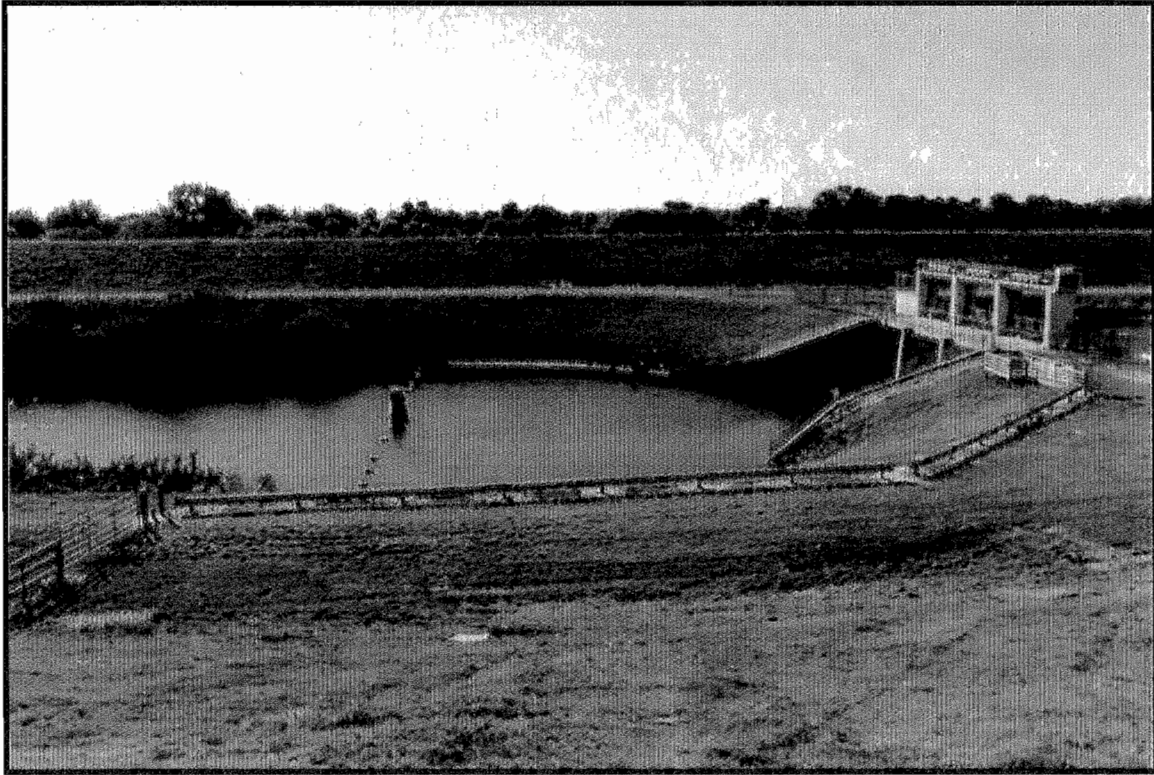
**Structure-96-B, looking west.**



**Structure-96-C, looking southwest.**



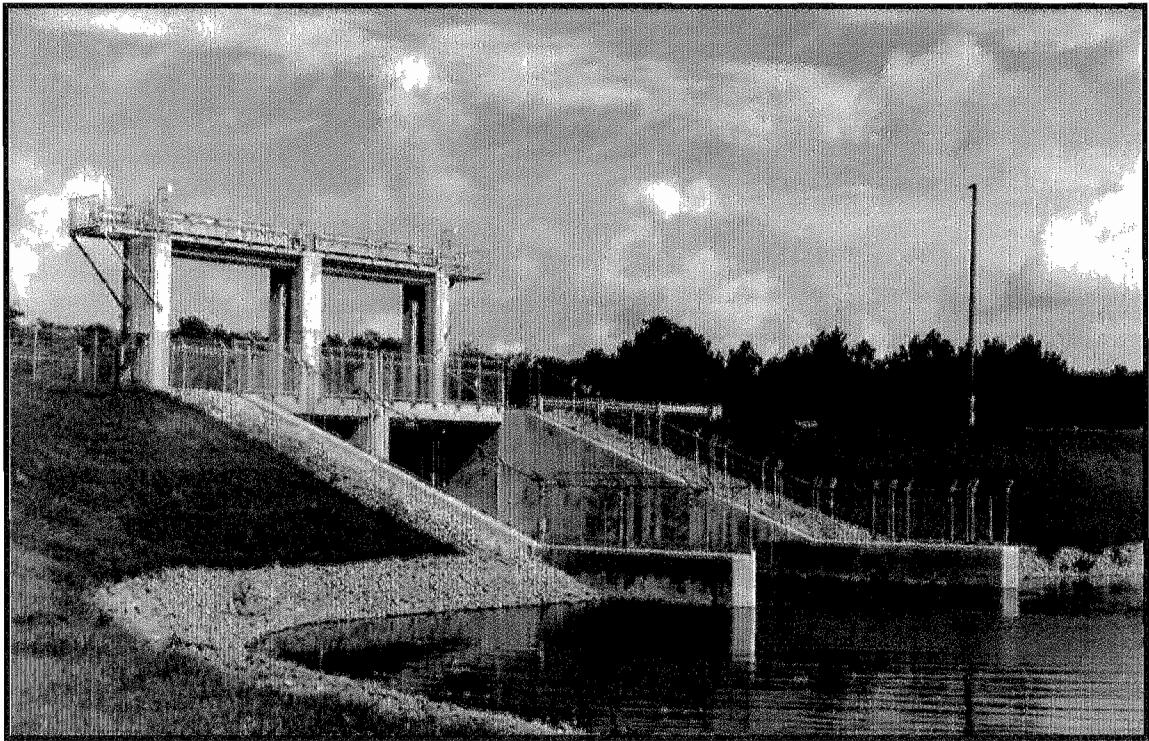
**Structure-96-D, looking southwest.**



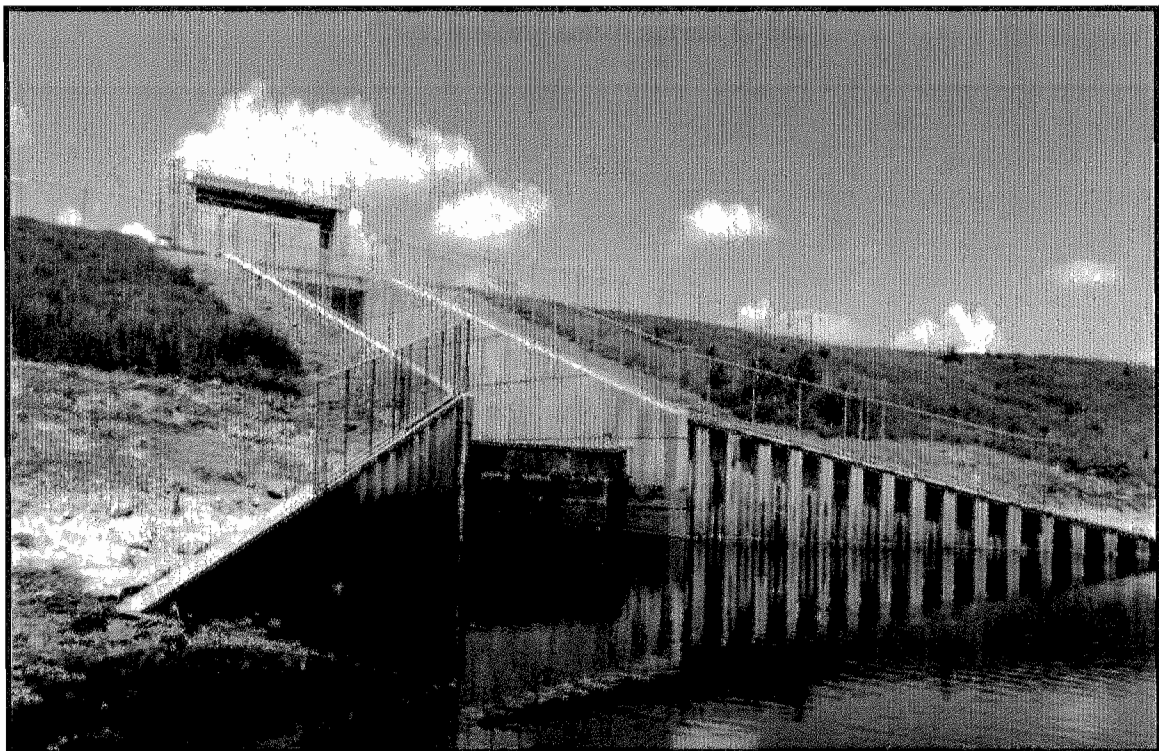
**Structure-157, looking south.**



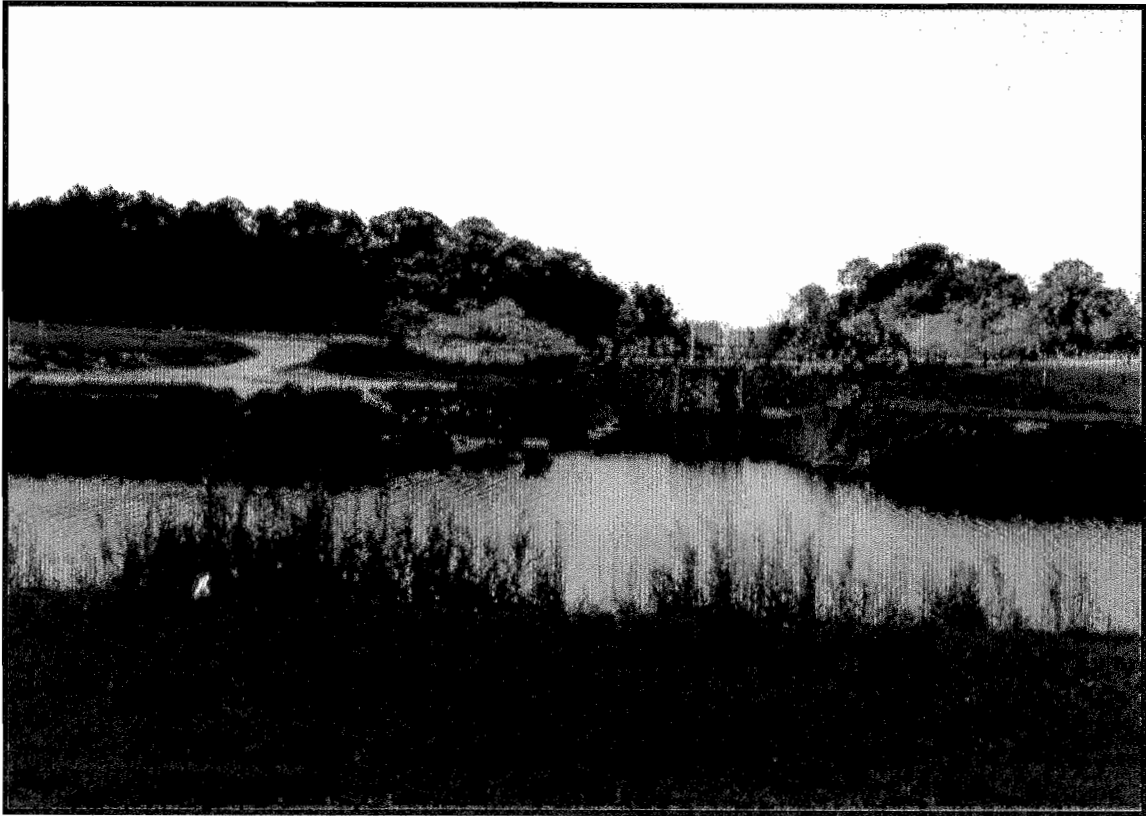
**Structure-161, looking northwest.**



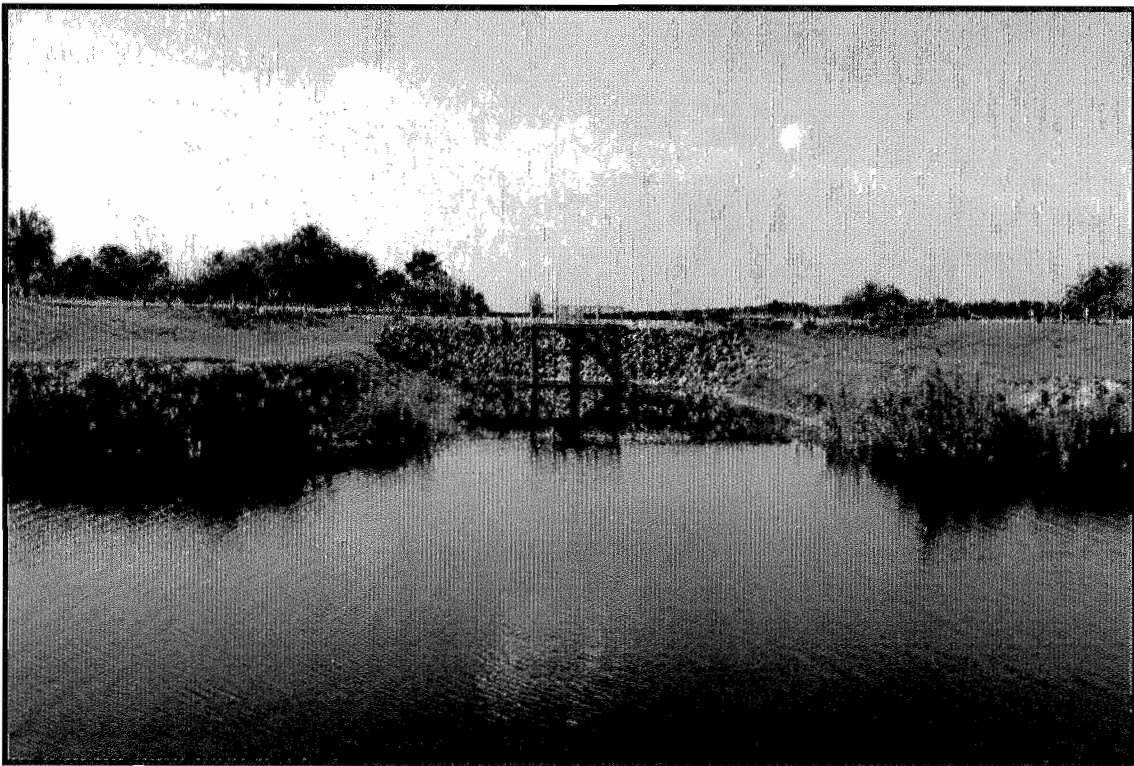
**Structure-161-A, looking northwest.**



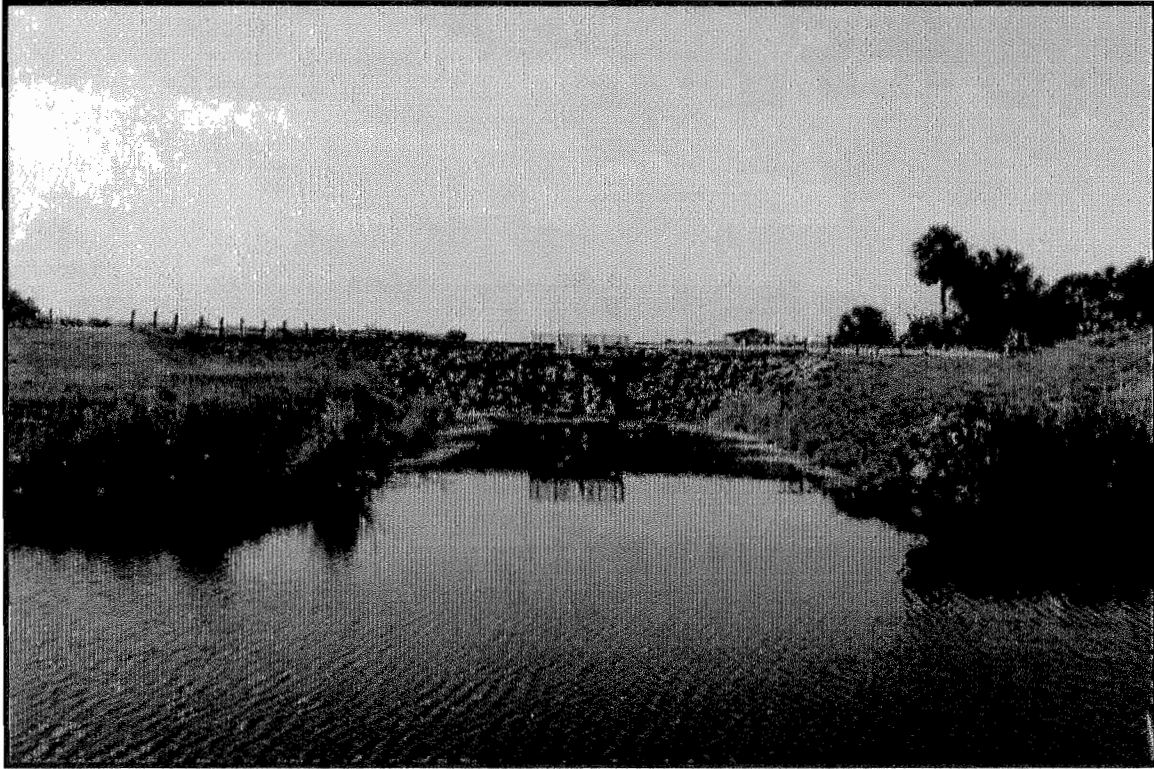
**Structure-164, looking northwest.**



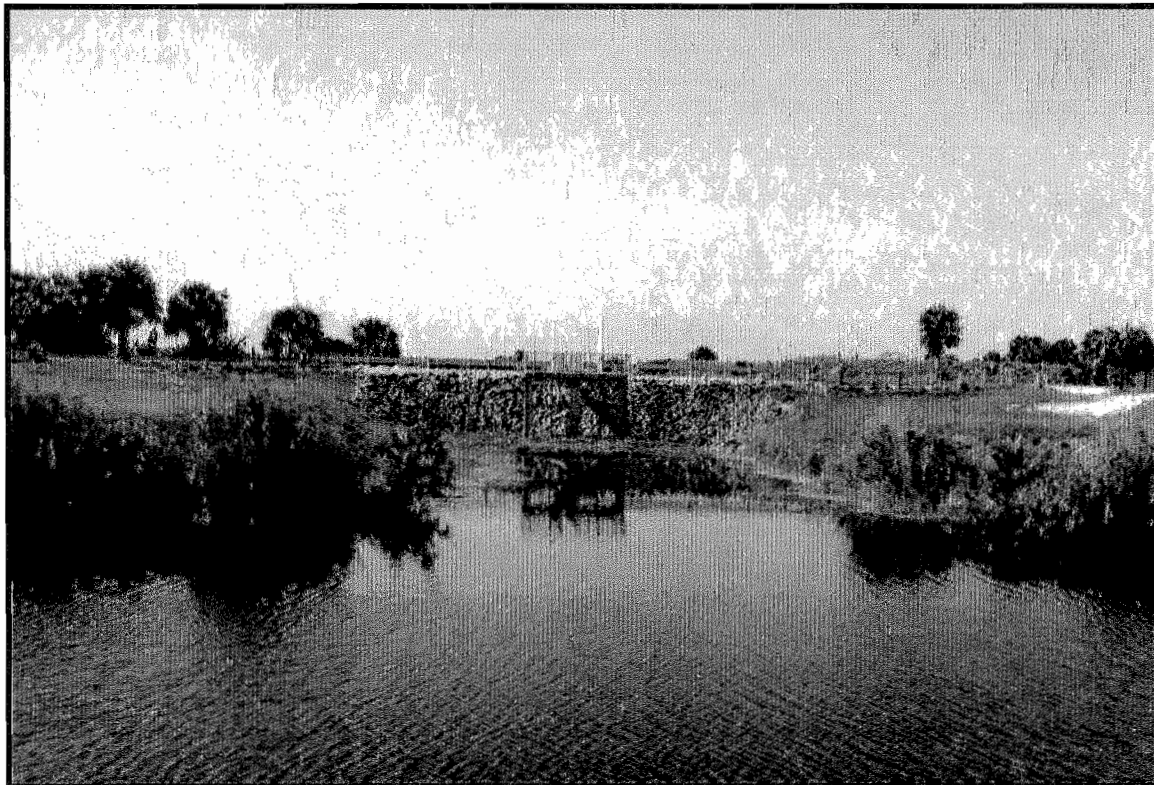
**CS-1, looking south across C-54.**



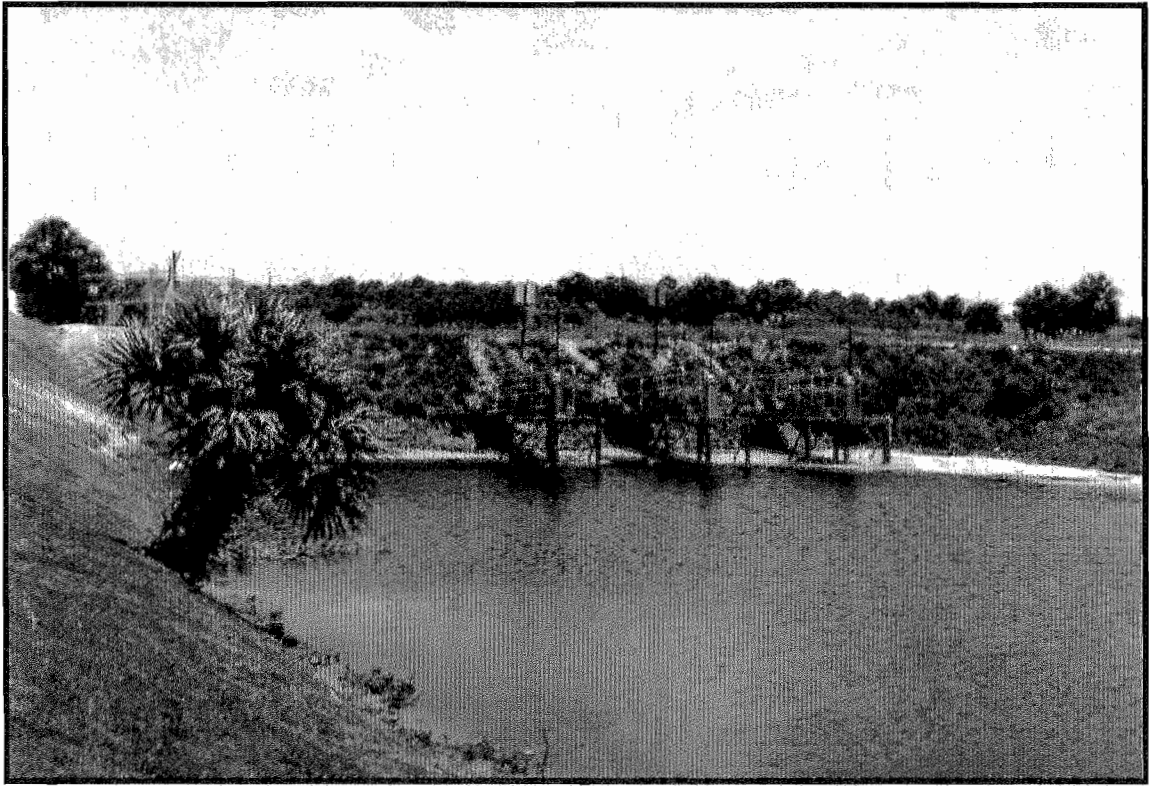
**CS-2, looking south across C-54.**



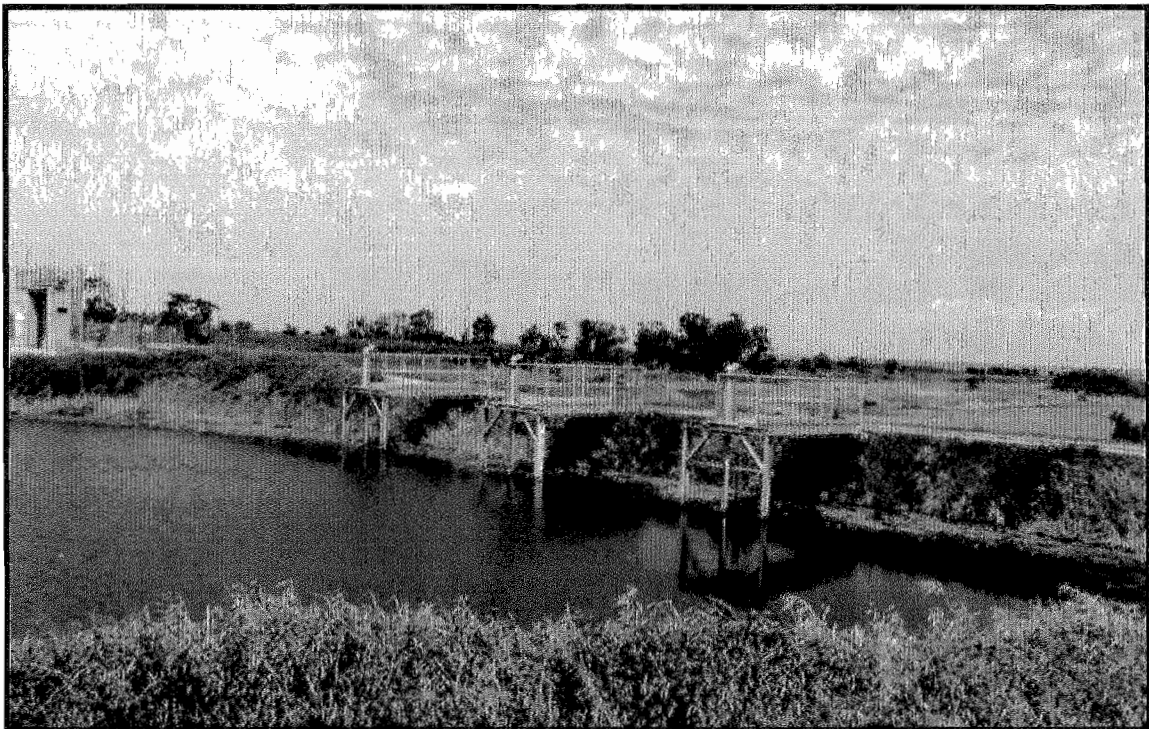
**CS-3, looking south across C-54.**



**CS-4, looking south across C-54.**



**Structure-2, looking east.**



**Structure-3, looking northwest.**





**Structure-4, looking south from S-96-D.**



**Structure-231, looking north (Cox Creek).**



**Structure-250-A, looking west. (Sec. 8; Twp. 31S; Rng. 36E)**



**Structure-250-B, looking west. (Sec. 8; Twp. 31S; Rng. 36E)**



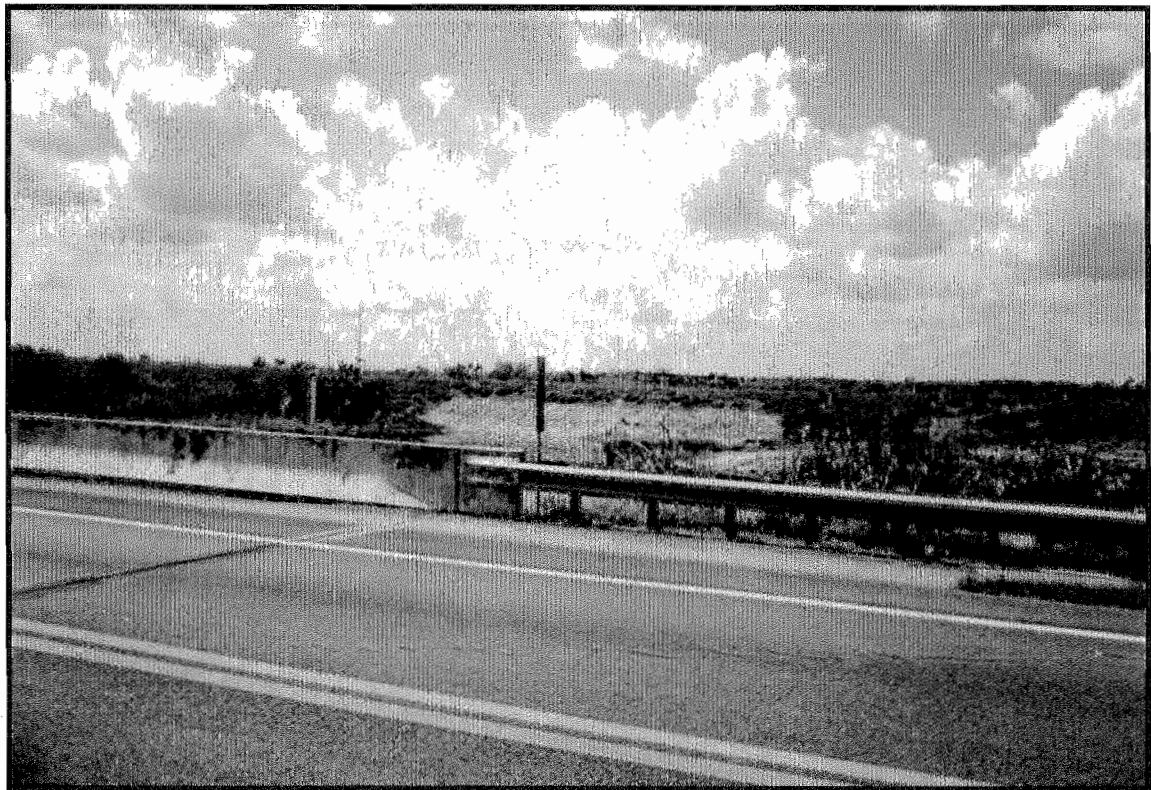
**Structure-250-C, looking east. (Sec. 9; Twp. 31S; Rng.)**



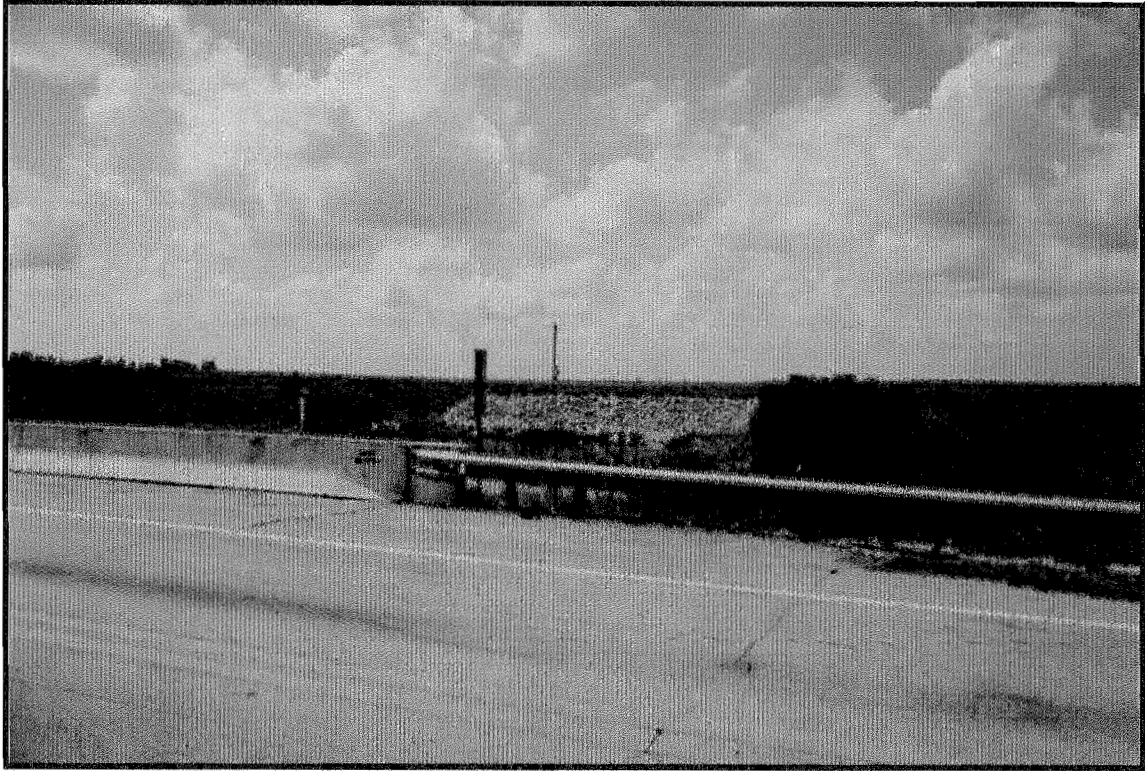
**Structure-250-D, looking west. (Sec. 7; Twp. 31S; Rng. 36E)**



**Structure-251, looking west.**



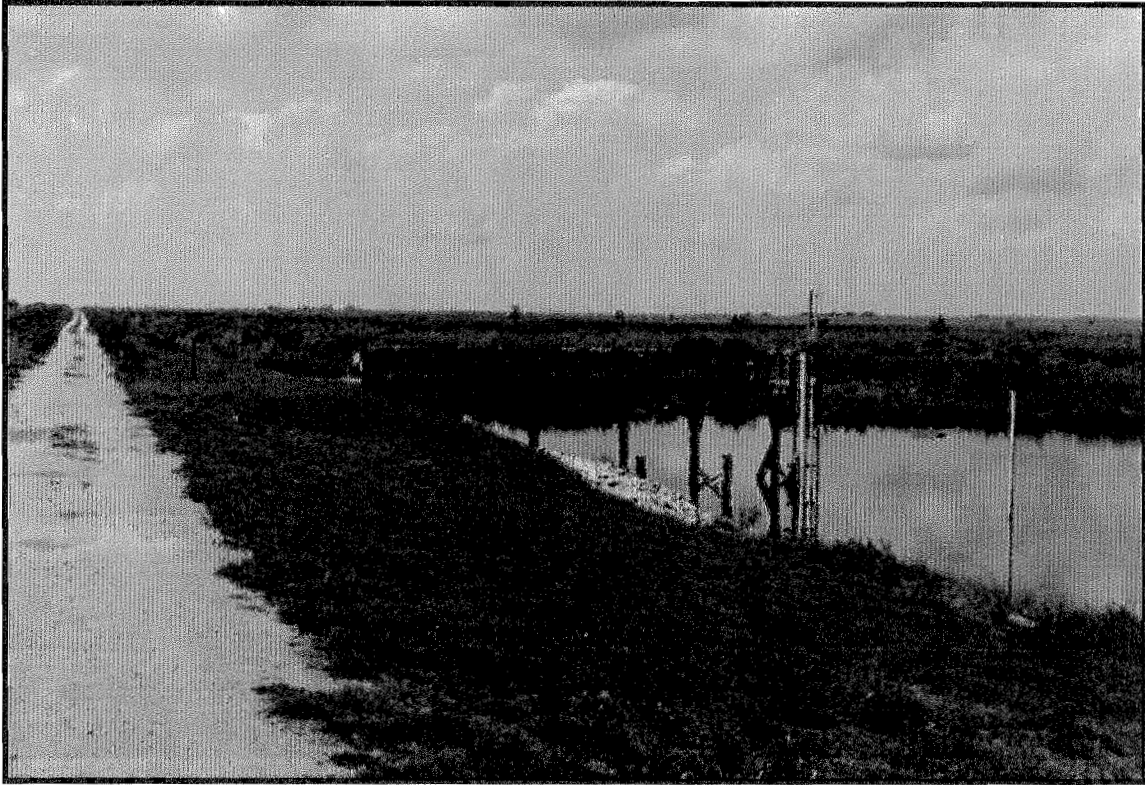
**Structure-252-A, looking south.**



**Structure-252-B, looking south.**



**Structure-252-C, looking south.**



**Structure-252-D, looking south.**



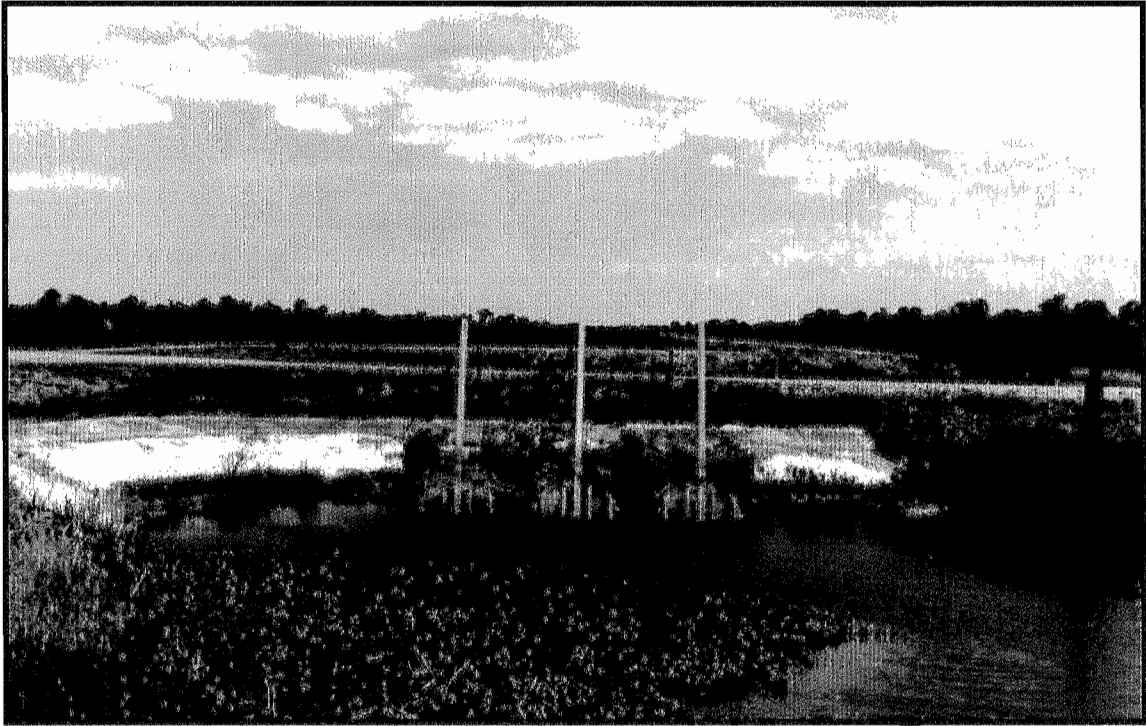
**Structure-252-E, looking southeast.**



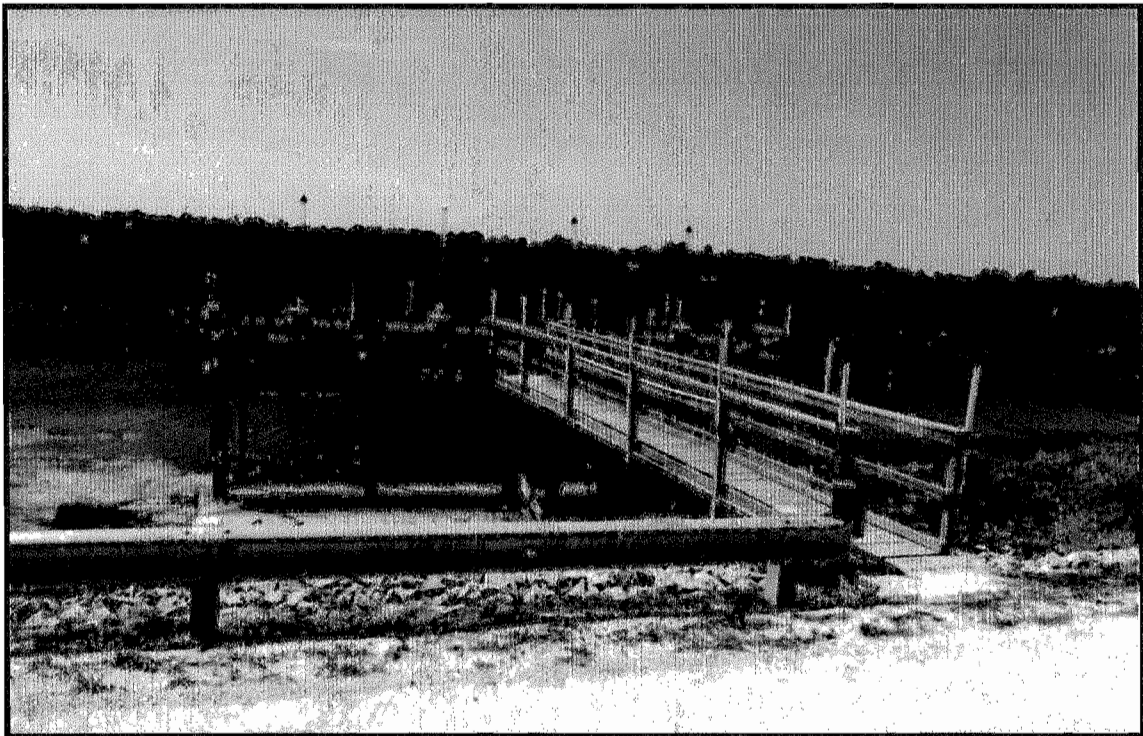
**Structure-252-F, looking northwest from S-252-E.**



**Structure-255, looking south. (Note; only two gates visible in this photo).**



**Structure-256, looking east.**



**Structure-258, looking south from L-74-E.**





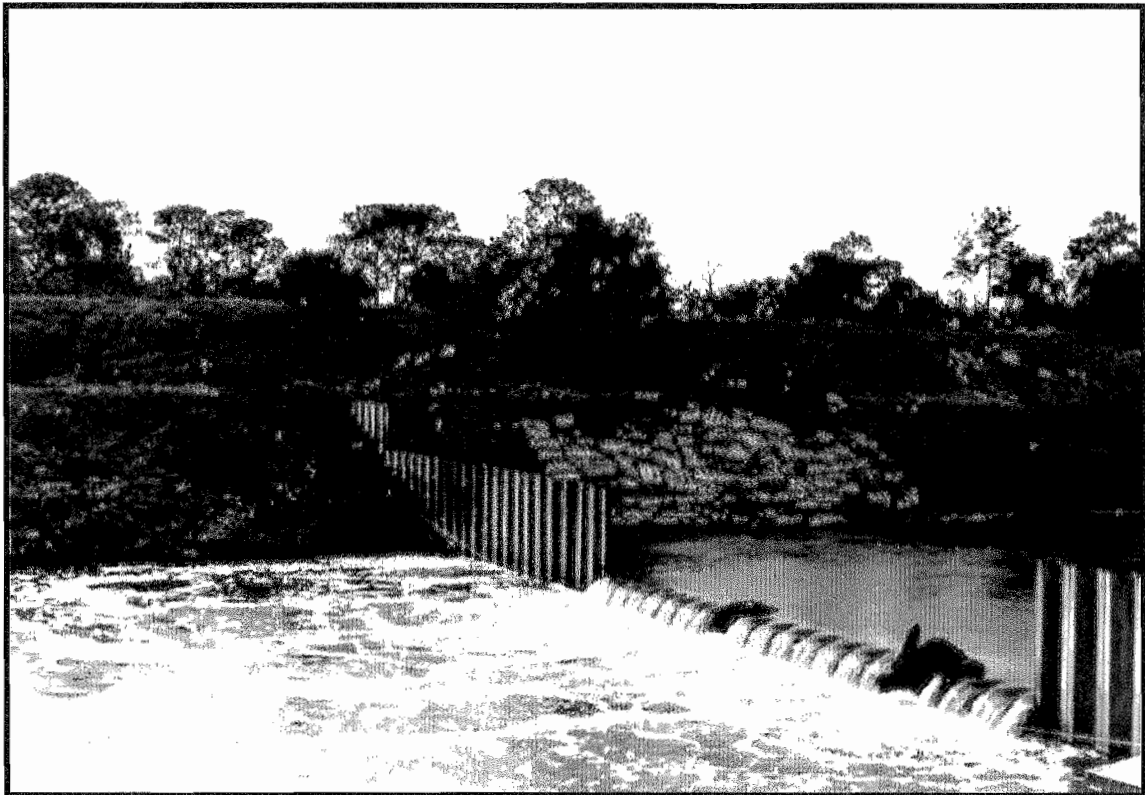
**Structure-259, looking north along L-75.**



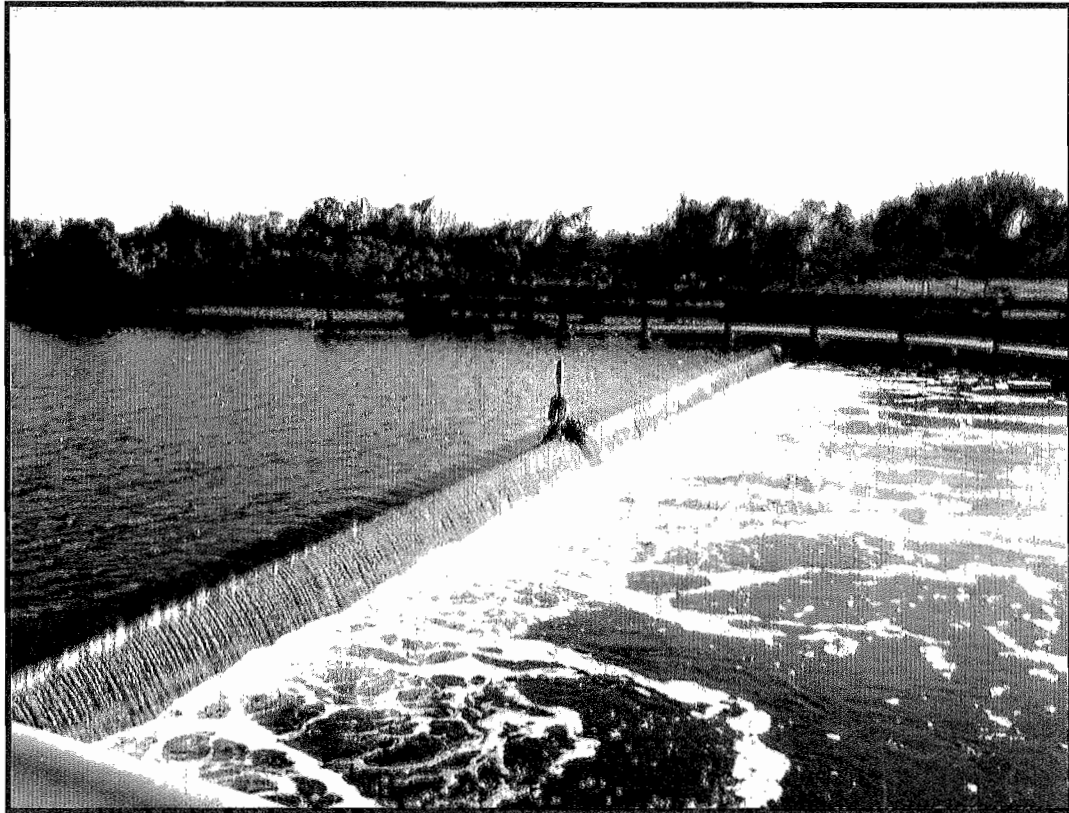
**S-253 Weir, looking southeast from L-79.**



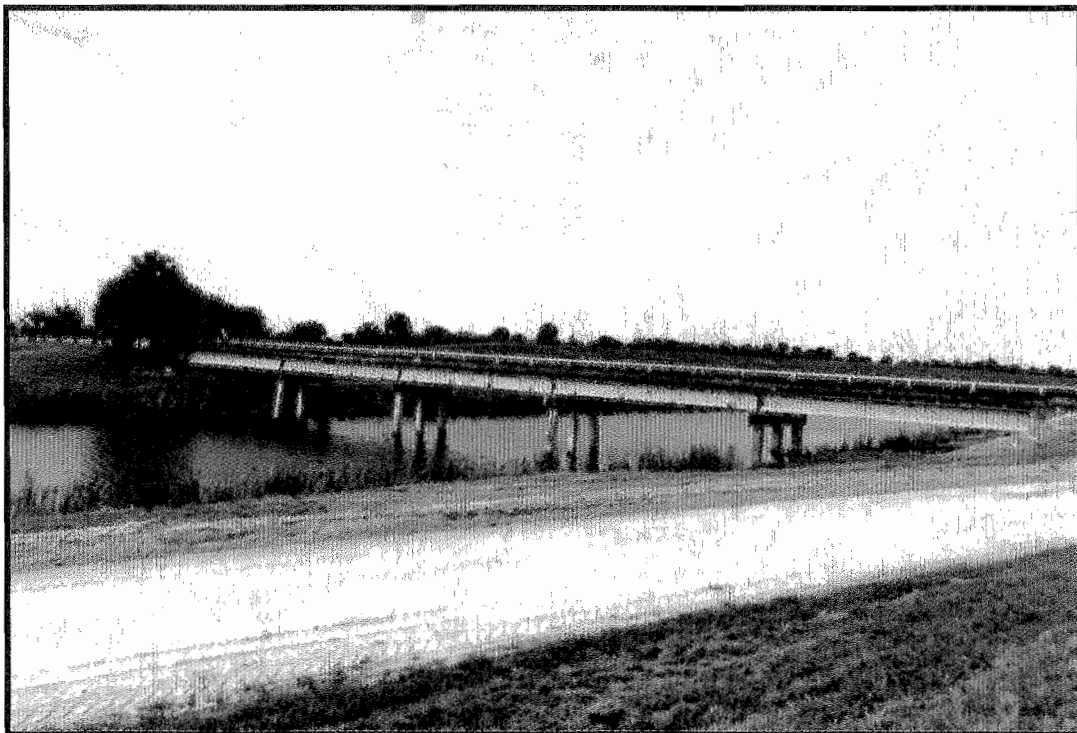
**S-254 Weir, looking southwest from L-77-N.**



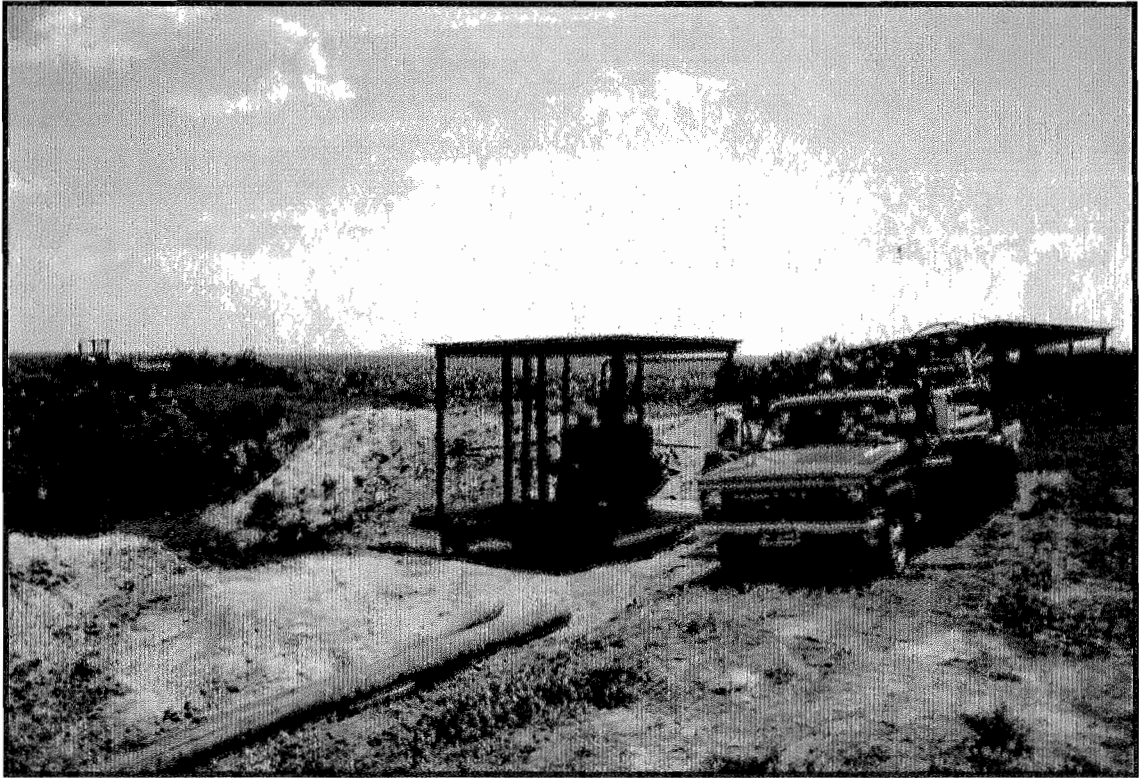
**Fellsmere Weir, looking south from L-54-S.**



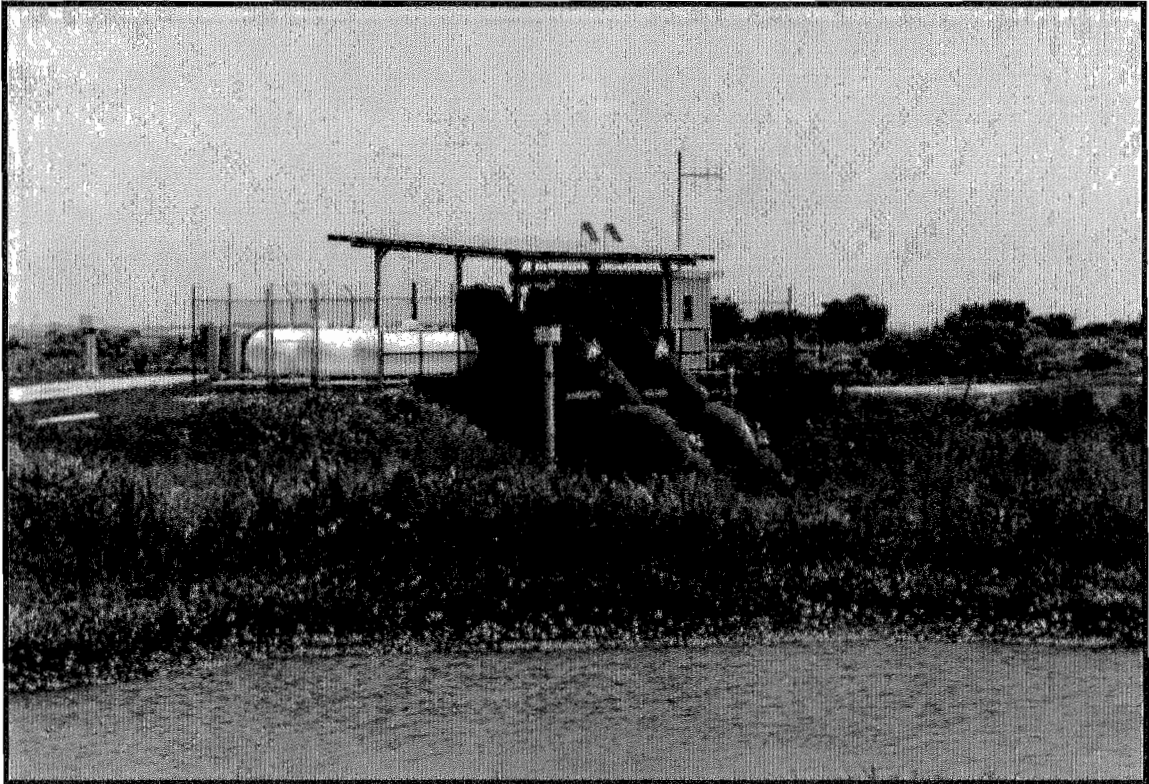
**Lake Washington Dam, looking west.**



**Mary-A Bridge, looking southwest from L-54-N.**



**Broadmoor pump, looking east.**



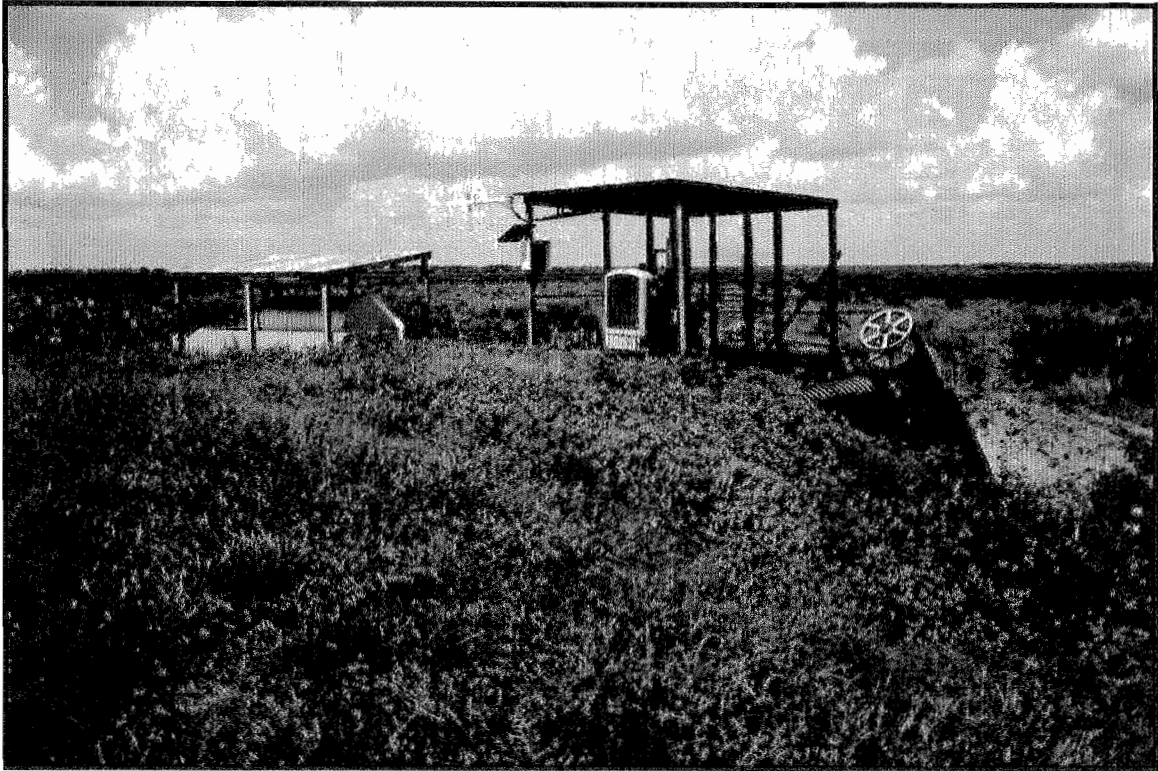
**C-54 Retention Pumps, looking northeast.**



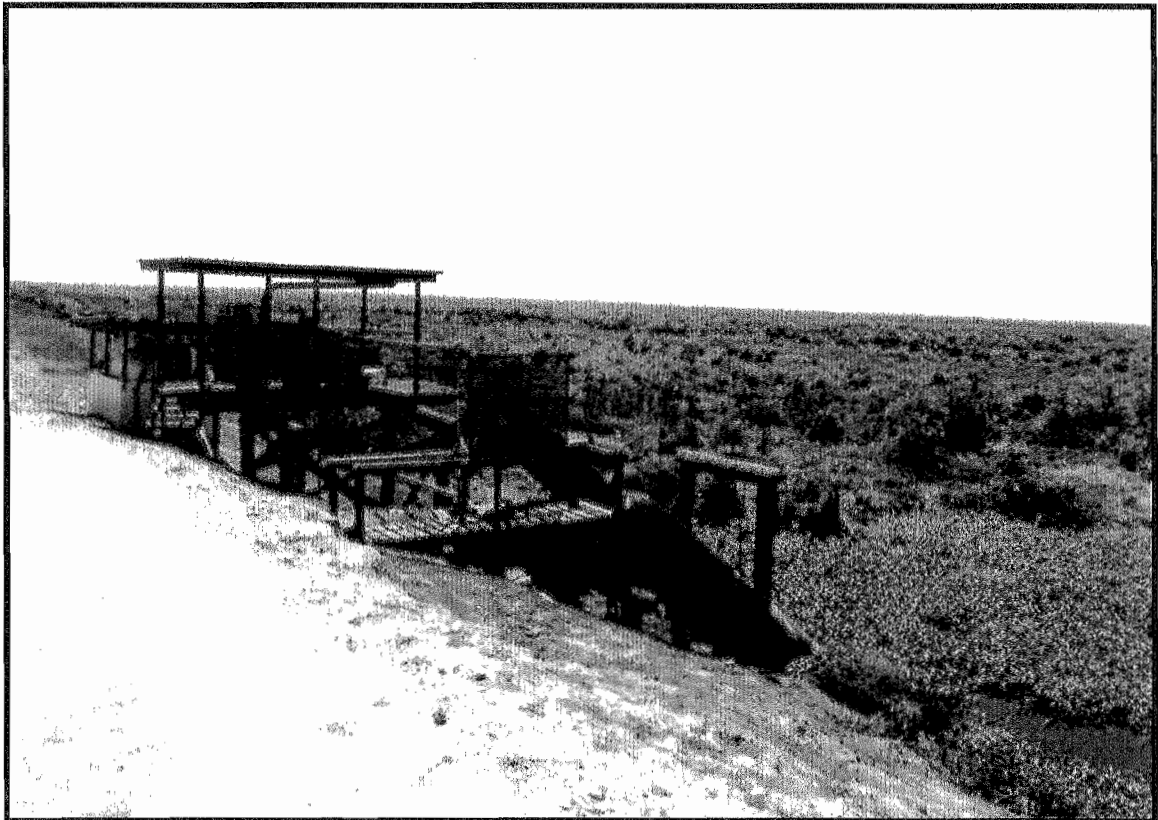
**Tucker-East Pump Station, looking south.**



**Tucker-West Pump Station**



**Sartori-West Pump Station**



**Mary-A Pump Station, looking southeast.**



**Levee-1, looking east from corner of Canal-1/Canal-2**



**Levee 40, looking south in the Three Forks area.**



**Plug E-7, looking west from L-40.**



**Levee-54, looking east on south side, east of S-96.**





**Levee-73-N, looking northwest from Taylor Creek entrance gate.**



**Levee-73-S, looking south at entrance gate off of US-192.**



**Levee-74-E, looking east from western end.**



**Levee 74-N, looking north, just south of the C-54 Retention Pump Station.**



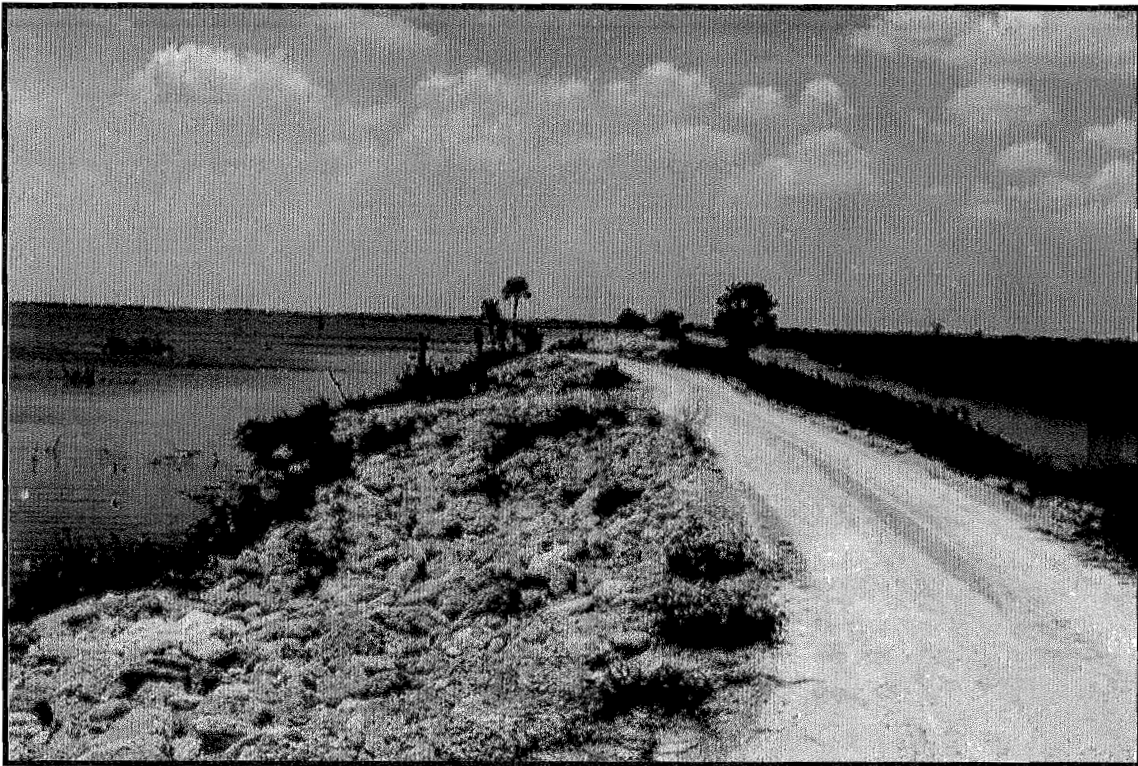
**Levee 74-W, looking west across Kenansville Lake Boat Launch.**



**Levee 75-N, looking north at Fish and Game office entrance gate.**



**Levee-75, looking north, just south of S-96.**



**Levee-76, looking south from north end near S-96-C.**



**Levee 77-S, looking east near the SR-60 entrance gate.**



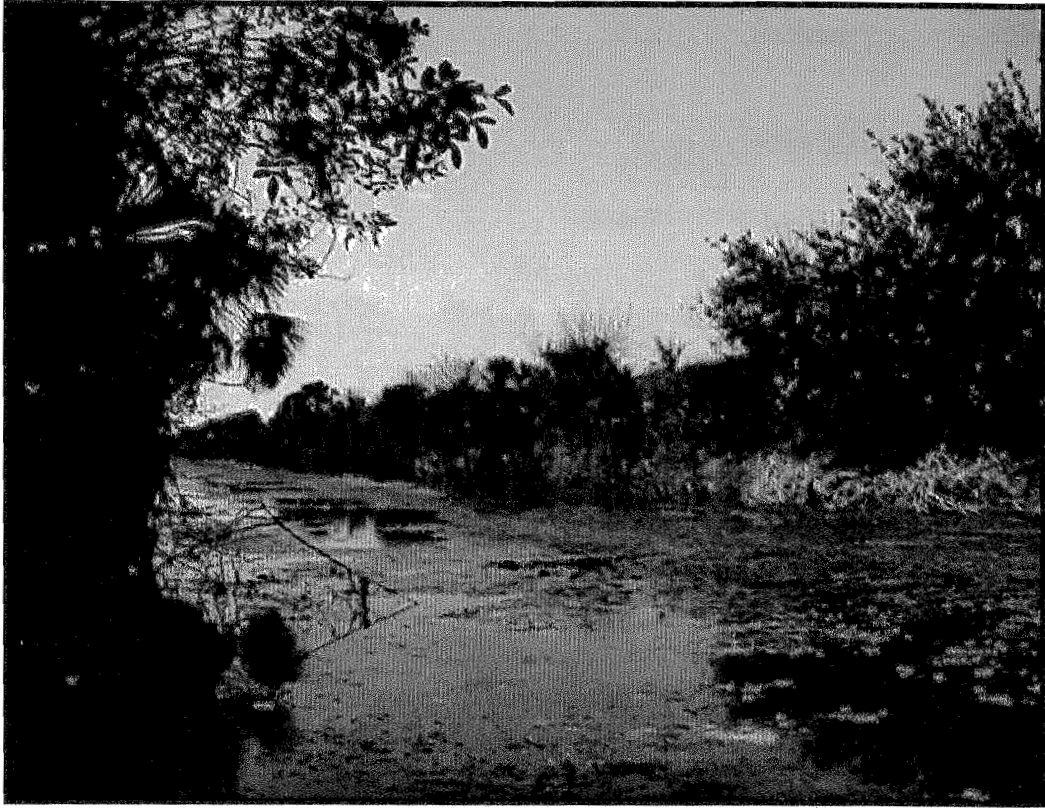
**Levee-78, looking west from entrance gate near L-79.**



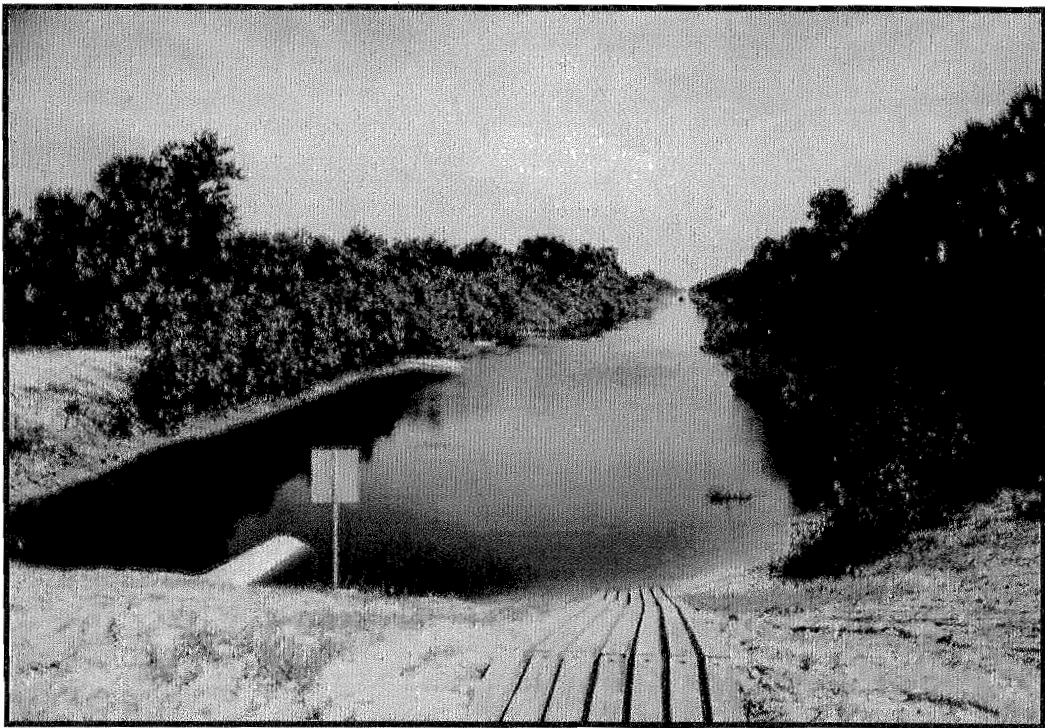
**Levee-79, looking south from SR-60 entrance gate.**



**Levee-251/ Canal-251, looking east from CR-512 north of S-251**



**Canal-1, looking west from the end (2001) of L-74-N**



**Canal 40, looking north from Plug E-7**



**Flow-way 52, looking south from SR-60 bridge.**

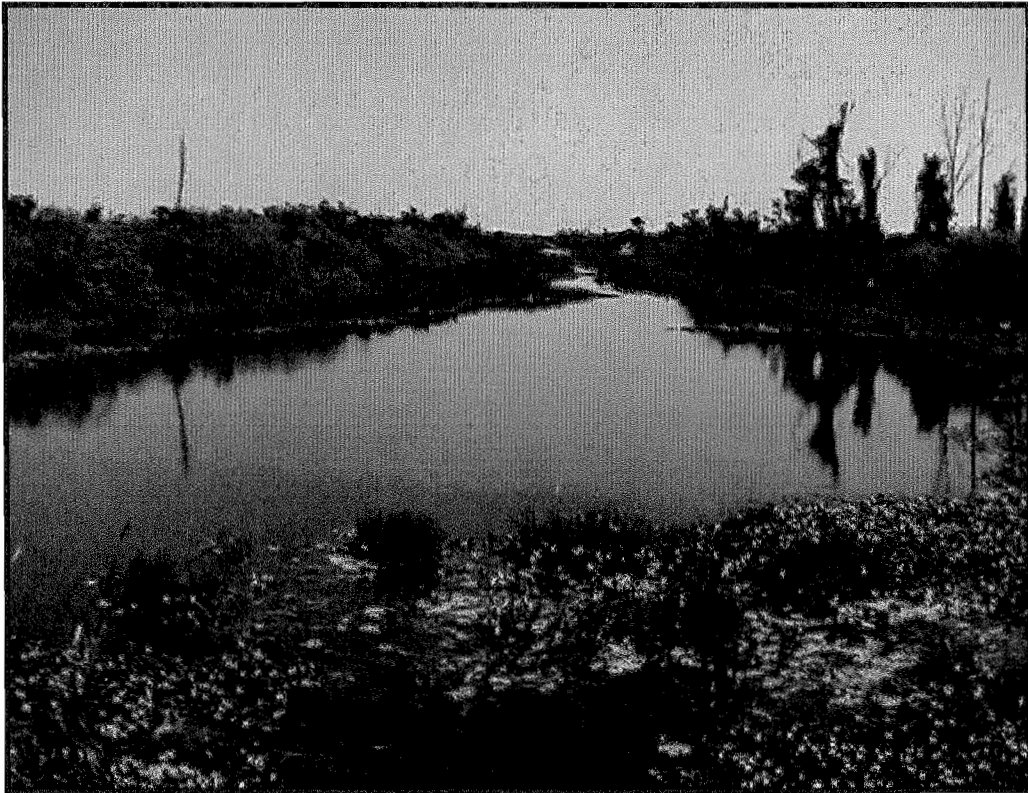


**Canal 54, looking east from S-96.**





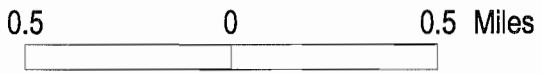
**Canal-65, looking south from S-96-D.**

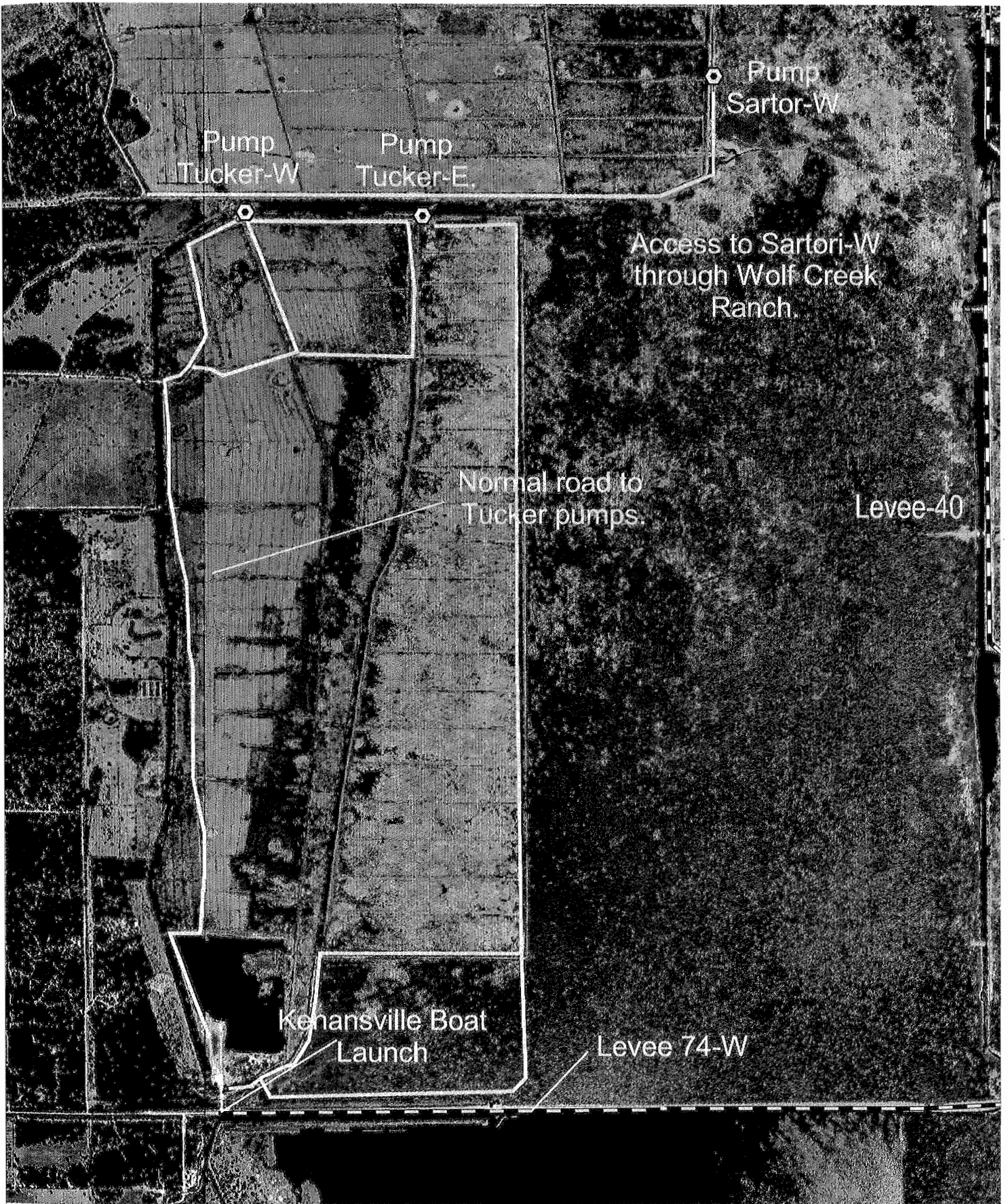


**Canal-252 flow-way (north end), looking east along SR-60**



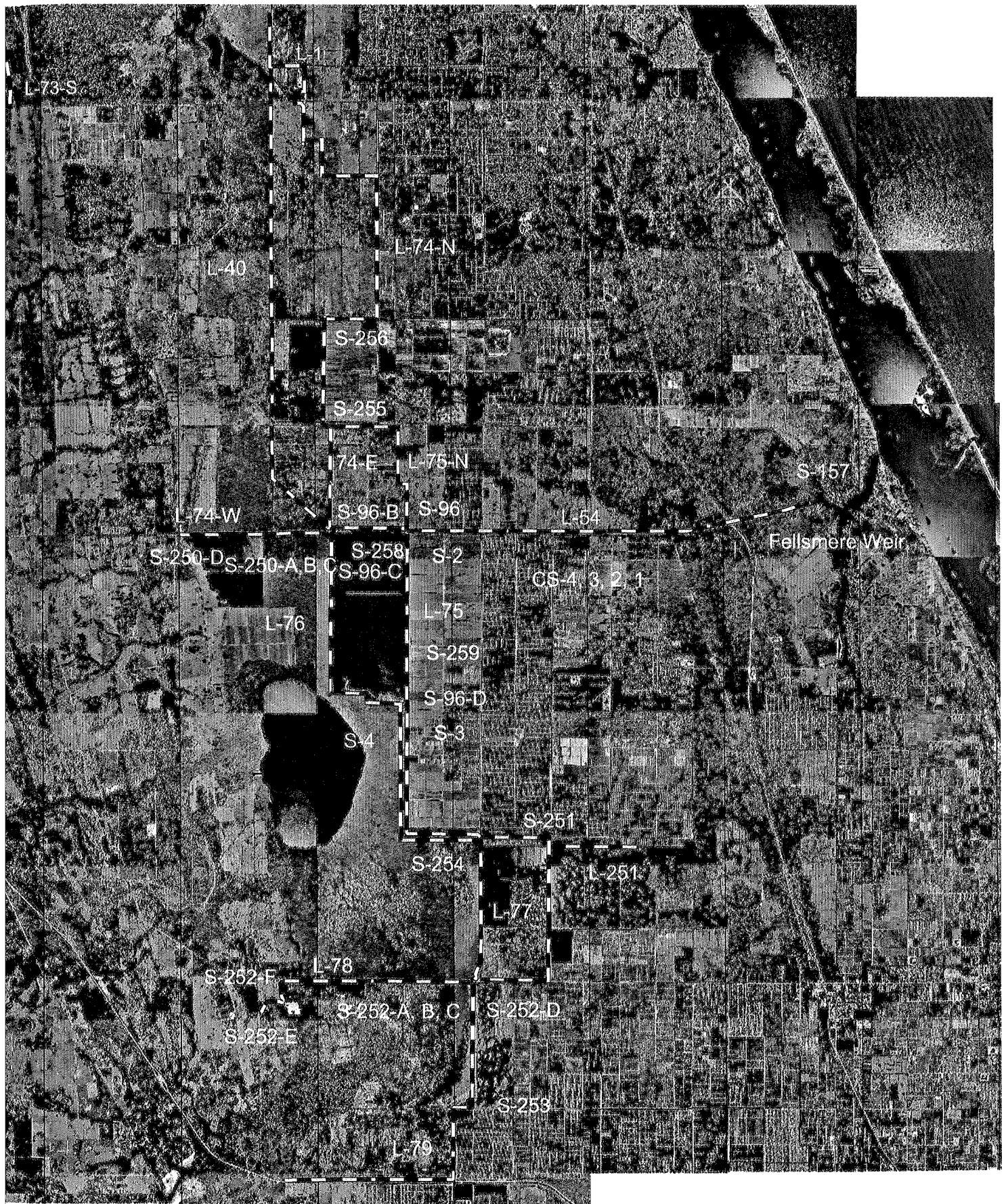
Pump Stations:  
Eastern.  
April 2001. Rev. 0. shp





Pump Stations-Western:  
 Road access.  
 April 2001. Rev. 0. shp





Levees and Structures  
 East  
 April, 2001. Rev. 0 shp

5 0 5 Miles



Levees and Structures:  
West.  
April 2001. Rev. 0. shp

