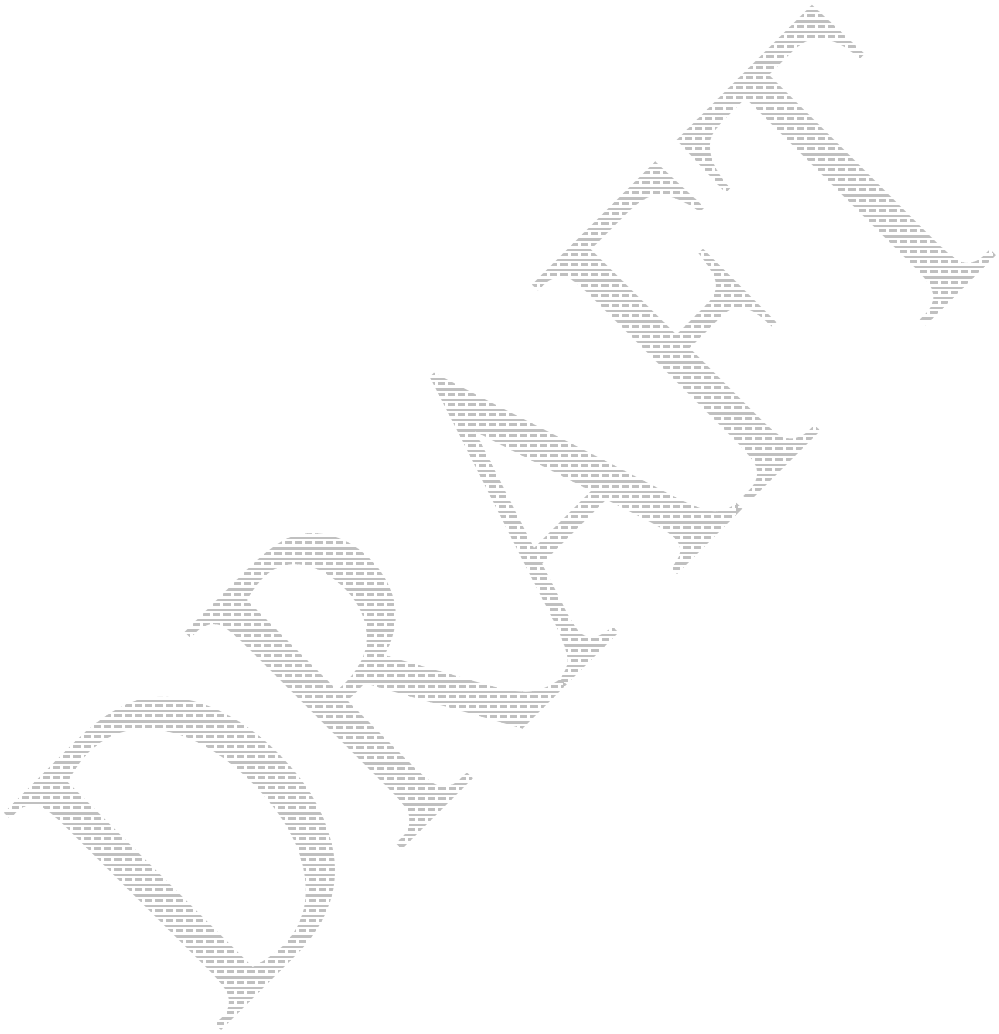
APPENDIX G

MANATEE PROTECTION PLAN



DEPARTMENT OF THE ARMY CESAJ SOP-1130-2-3
Jacksonville District, U.S. Army Corps of Engineers
P.O. Box 4970
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CESAJ SOP No. 1130-2-3

Construction Operations Division
MANATEE PROTECTION PLAN FOR WATER CONTROL STRUCTURES

1. Authority and Applicability.

The Project Operations Manatee Protection Plan for the Jacksonville District is prepared in accordance with ER 1130-2-540, Environmental Stewardship Operations and Maintenance Policies, 15 November 1996; EP 1130-2-540, Environmental Stewardship Operations and Maintenance Guidance and Procedures, revised 30 November 2001; the Marine Mammal Protection Act of 1972; and the Endangered Species Act of 1973, as amended; and the approved water control plans and manuals for the Central and Southern Florida Project; and is applicable to all Jacksonville District field projects, having Civil Works water control structure responsibilities.

2. Purpose and Objectives.

Water control structure-related manatee deaths (navigation locks, flood spillway gates, culverts and other structures) are second only to boat and barge collisions as an identified source of human-caused mortality. This plan provides policies, guidelines, and operating procedures for the effective long-range management and operation of water control structures to reduce manatee risk.

The objective of this Standard Operating Procedure (SOP) is to prevent U.S. Army Corps of Engineers (Corps) water control structure-related manatee mortality by taking the following actions:

a. Identify problem structures through site-specific structure-related mortality investigations.

b. Implement alternative operational methods, schedules, and/or partial or complete structural modifications.

c. Ensure manatees receive safety consideration when in the vicinity of Corps water control structures by following proper operational protocol and procedures.

d. Ensure the Corps coordinates with the Jacksonville and Vero Beach U.S. Fish and Wildlife Service (USFWS) Offices and with the Florida Fish and Wildlife

Conservation Commission (FWC) the addition of any new water control structure operated by the Jacksonville District.

3. Background.

The Corps missions must be integrated with natural resource laws, values, and sound environmental practices. They are meant to give "corporate coherence" to the Corps work, so that people everywhere recognize the Corps roles in, and responsibilities for, sustainable use, stewardship, and restoration of Our Nation's natural resources. The Corps is enjoined under Section 2 of the Endangered Species Act of 1973, as amended (the Act) to conserve endangered and threatened species. The Corps partnered with the FWS and other Federal, State and local agencies to provide for an environment whereby the Florida subspecies of the West Indian Manatee is assured consideration regarding safety and recovery in our Nation's waterways.

The Jacksonville District, working directly with these agencies, responded by implementing and incorporating recommended actions to protect the Florida Manatee. These actions include:

1) Screens placed on lock gates to prevent manatee access to sector gate recesses, 2) Reduced lock gate closure speeds, 3) Establishment of spillway gate operational protocols, 4) Installation of grates on lock chamber floors, barriers on spillway gates, acoustic array systems on lock gates, 5) A manatee watch program and a public outreach program in cooperation with the FWC, and 6) Reviewing the use of piezo-electric strips and determining if remaining vertical lift gates are to be added in the future.

These types of actions result in less risk to the manatee and a balance and synergy among human development activities and natural systems. As a partner in the Florida Manatee Recovery Plan, the Jacksonville District is committed to meeting its charge under Section 7 of the Endangered Species Act by reducing manatee risk caused by Corps water control structures.

4. Policies and Procedures.

It is the policy of the Jacksonville District to investigate specific cases of reported structure-related mortality by conducting site-specific investigations to identify the precise problem(s) at structures; to comply with established procedures as set forth in this plan for navigation locks, spillways, culverts and other structures; and to comply with District reporting requirements.

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a. Investigate specific cases of reported structure-related mortality by conducting site-specific investigations to identify the cause(s) at water control structures.

(1) Upon official notification by the FWC and/or FWS, the Corps with the assistance of both FWC and FWS, conduct investigations of reported structure-related mortality to identify the cause at Corps structures.

(2) Operations Technical Support Branch, Multi Project Section provides Planning Division, Environmental Branch, South Florida Studies Section (Planning) (the District point of contact for endangered species and a District representative on the Manatee Protection Task Force), and the affected field projects, a copy of the official FWC notification. Upon receipt of a manatee necropsy report attributing a manatee death to a Jacksonville District water control structure, Planning provides a copy of said report to the Multi Project Section. (See Appendix A, Manatee Protection Plan Point of Contact List)

(3) The field project conducts a preliminary onsite investigation of the incident.

(4) Upon completion of the preliminary onsite investigation a written report, including an analysis of the incident and recommendations for corrective actions, is completed by the field projects and forwarded to the Multi Project Section for coordination with both Engineering and Planning Divisions prior to submittal to FWC and FWS.

(5) When a structure is identified as a responsible agent in manatee mortality, the affected field projects implements corrective actions as soon as it is reasonably possible.

(6) When determined the corrective action is beneficial to the safety of the manatee, does not adversely affect the structural integrity of the structure, and does not alter the water management function of the structure, modifications are made permanent as soon as possible within the scope of authorities and funding. All similar structures posing an immediate risk are similarly modified within a period of twelve months, if reasonably possible.

b. Operational protocol for locks, flood control spillway gates, culverts and other structures.

c. Corps personnel responsible for implementing the SOP receive annual training from a Corps Biologist.

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Safety consideration is given to all manatees that approach Corps navigation locks, spillways, culverts and other water control structures. Each lock, spillway or culvert may differ due to operational design. The following procedures are designed to decrease the risk manatees experience when in the vicinity of water control structures.

5. Summary.

The Manatee Protection Plan provides policy and procedure for the effective long-range management and operation of water control structures to minimize manatee risks. This plan accurately addresses structure-related problem areas, and presents workable standard operating procedures to assist in the recovery of the Florida Manatee. In order to meet the objective of this plan, everyone involved must continually monitor and recommend necessary revisions for updates to minimize conflicts between the manatee and the intended purpose of Corps structures.

FOR THE COMMANDER:

RANDY L. TURNER
LTC, Corps of Engineers
Deputy Commander

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FIGURE 1

Distribution:
A

APPENDIX A

Lock Operations

The following safety SOP is in effect for locking manatees at Canaveral Lock, St. Lucie Lock, Port Mayaca Lock, Moore Haven Lock, Ortona Lock and W.P. Franklin Lock:

(a) Lock operators are attentive as to the location and number of manatees in the lock chamber and approaches and aware that manatees may be present even if not visible.

(b) Manatee sightings are recorded on a FWC Manatee Sighting Form. These forms are to be submitted monthly to the FWC, Bureau of Protected Species Management, 620 Meridian St., Tallahassee, Florida 32399-1600, with the field project retaining a file copy for record.

(c) Make every effort to avoid hindering the passage of manatees through the locks and to assure their safety around vessels. Provide special lockages for manatees that demonstrate a desire to pass in one particular direction. According to the judgment of the lock operator on duty, vessels may be locked with manatees or delayed until the next lockage.

(d) Lock operators advise approaching vessels of manatee presence and their location. Vessel operators are urged to use extra caution. Lock operators insist that vessels be at idle, speed upon entering the approach channels and communicate manatee movements to vessel operators.

(e) Lock Operators make every effort not to crowd manatees in the lock chamber and maintain sufficient distance between vessels.

(f) Take precautions to assure manatee safety around sector gates. Avoid leaving one gate closed for any reason other than an emergency or malfunction.

(g) Delay vessels or lockage temporarily if imminent danger to a manatee exists. When locking manatees and vessels together, delay vessels after lockage to assure manatees have enough time to clear the area and gain access to safe water. Vessel operators should then be warned to proceed with caution at idle speed.

(h) The field project performs inspections of manatee exclusion-screening devices on lock gates when damage is suspected and corrects deficiencies as soon as possible.

(i) The design of the Manatee Protection System (MPS) detects submerged obstacles in the crush zone of closing sector gates at navigation locks. The technical manual for the Piezoelectric Copolymer (PECOP) Acoustic MPS for Navigation Locks is adhered to at locks that have MPS installed (See Appendix B, MPS Locations).

APPENDIX B

Flood Control/Spillway Gate Operations

The Spillway Operation Decision Flowchart for Manatee Protection (Figure 1), in conjunction with the operating criteria contained in the approved water control plans and manuals for the Central and Southern Florida Project, are designed to reduce manatee risk during spillway operations at the following structures: S-77, S-78, S-79, S-354, S-351, S-352, S-308, S-80, S-10A, S-10C, S-10D, S-11A, S-11B, S-11C, S-12A, S-12B, S-12C, S-12D, S-355A, and S-355B.

In addition to the Decision Flowchart, spillway gates should be operated in accordance with the operating criteria set forth in the water control plans and manuals. When a structure is identified by the Corps, FWS, and FWC to be a high risk for potential manatee mortality, injury and/or entrapment, the affected project implements physical barriers to preclude manatee movement as soon as possible. Only qualified operators perform Spillway operations.

At structures where the head difference is less than or equal to 3 feet, one or more gates may be opened to 2.5 feet, subject to the following constraints: The operator should open the more central gates of the structure first, proceeding outward to those gates further from the center. The operator should also open gates on alternating sides of the structure. Thus, if there are four gates numbered 1 through 4 from left to right, a correct sequence for opening them would be Gates 2, 3, 1, and 4. An equally correct sequence would be Gates 3, 2, 4, and 1. Gates should be closed in reverse order.

Gate openings greater than 2.5 feet should not be made until all gates have been opened to 2.5 feet, at which time additional gate openings may be made following Maximum Allowable Gate Opening (MAGO) curves. The operator may increase each gate opening in equal increments, in accordance with the MAGO curves until the predetermined opening is attained. At the end of the gate opening sequence, all the gates must be set at approximately equal gate openings, in accordance with the MAGO curves. As a practical consideration the spillway gates should not be adjusted such that gate openings differ by more than one foot.

Operate Spillways to achieve the smallest possible opening across all gates. The minimum gate opening when more than 1 gate is open, will be 0.5 feet. This allows debris to be flushed through the gate without being caught. When only one gate is in operation, the maximum gate opening is 0.9 feet.

If a physical barrier is present and functional and the desired gate opening is greater than 2.5 feet, then the physical gate barrier is removed before the initial gate opening.

If the desired gate opening is less than or equal to 2.5 feet (replace the physical barrier if previously removed), then follow procedures listed below for that structure.

(A) S-78, Ortona; and S-80, St. Lucie.

The following procedures are designed to reduce manatee risk during spillway operations and based on the water surface profile (difference between the upper and lower pools under normal operating conditions) of the S-78 spillway (8 feet to 9 feet) and S-80 spillway (11 feet to 14.5 feet).

(1) On initial gate openings stop gate for a 30 second period upon the first sign of water movement. (Approximately 0.1 to 0.3 feet) The operator continuously observes for obstructions in the gate opening during this procedure.

(2) If voids appear (interruptions of even water flow across the full gate width), the operator determines to the best of his/her ability the source of the voids and makes the following decision:

(a) If it appears to be trash or debris that is caught in the gate (aquatic plants, trees or other such debris), the operator continues to open the gate in increments not to exceed 0.3 feet during 30 second periods until the debris has passed through the gate. The gate shall then be lowered until the desired gate setting is obtained.

(b) If it appears that a manatee is entrapped on the grating the gate should be operated as follows: If the current gate opening is less than or equal to 0.5 feet, the gate is to be lowered so the manatee is able to free itself. Once the manatee leaves the area, the gate may then be raised to the desired opening, during which time operator continues to observe for obstructions.

(c) If manatee barriers are present and functional and/or not present or determined nonfunctional and the gate opening is greater than 0.5 feet then the gate should be immediately opened to allow the manatee to pass through (up to a maximum of 2.5 feet) and then adjusted to the desired opening.

(B) SINGLE OR MULTIPLE GATES at S-77, Moore Haven; S-79, W.P. Franklin; S-308, Port Mayaca; S-351; S-352; and S-354, when the difference between headwater and tail water elevations, is less than or equal to 3.0 feet.

(1) To allow manatees to pass under the gates, the minimum opening for any gate under the "less than or equal to 3.0 feet of head" condition is 2.5 feet.

(2) If during the adjustment process, the head across the structure should exceed 3.0 feet, the gates should be closed in reverse order to openings permitted by the MAGO curves and the operating procedures applicable to head greater than 3.0 feet should then be used.

(C) SINGLE GATE AT S-77, S-79, S-308, S-351, S-352, and S-354, when the difference between headwater and tailwater elevations, is greater than 3.0 feet.

(1) If the desired gate opening is ≤ 2.5 feet, then the gate may be initially opened to a maximum of 2.5 feet and held at that opening for up to one (1) minute. The forces of the water should precipitate the passage of any manatee that may be resting against the gate or in the immediate vicinity while the gate is at the 2.5 feet opening.

(2) If the predetermined opening is not permitted by the MAGO curves, the operator must lower the gate to a permitted opening and wait until the discharge raises the tailwater elevation so the opening can be adjusted to the predetermined opening. After holding the gate open, the gate should be adjusted to the predetermined opening in accordance with the MAGO curves.

(D) Multiple gates at S-77, S-79, S-308, S-351, S-352, and S-354, when the difference between headwater and tailwater elevations, (head) is greater than 3.0 feet.

(1) If the desired gate opening is ≤ 2.5 feet, one gate may be opened to a maximum of 2.5 feet and held at that opening for one (1) minute to precipitate the passage of any manatee that may be resting against the gate or in the immediate vicinity. After one minute, the gate may be adjusted to the desired setting.

(2) If the desired opening(s) is not permitted by the MAGO curves, the operator must close the gate to a permitted opening and wait until the discharge raises the tailwater elevation so the opening can be adjusted to the desired opening. As the tailwater rises, the operator may adjust each gate opening in equal increments until the desired opening is attained. As a practical consideration the spillway gates should not be adjusted such that gate openings differ by more than one foot.

(3) If it is predetermined that an opening greater than 2.5 feet would be needed for the gates, then the operator will follow the gate opening sequence described above in 2c. (1) (2) and (3). At the end of the gate opening sequence, all of the gates must be set at approximately equal gate openings, all in accordance with the MAGO curves.

(4) Operate spillways to achieve the smallest possible opening across all gates. The minimum gate opening when more than 1 gate is open, will be 0.5 feet. This allows debris to be flushed through the gate without being caught. When only one gate is in operation, the maximum gate opening is 0.9 feet.

APPENDIX C

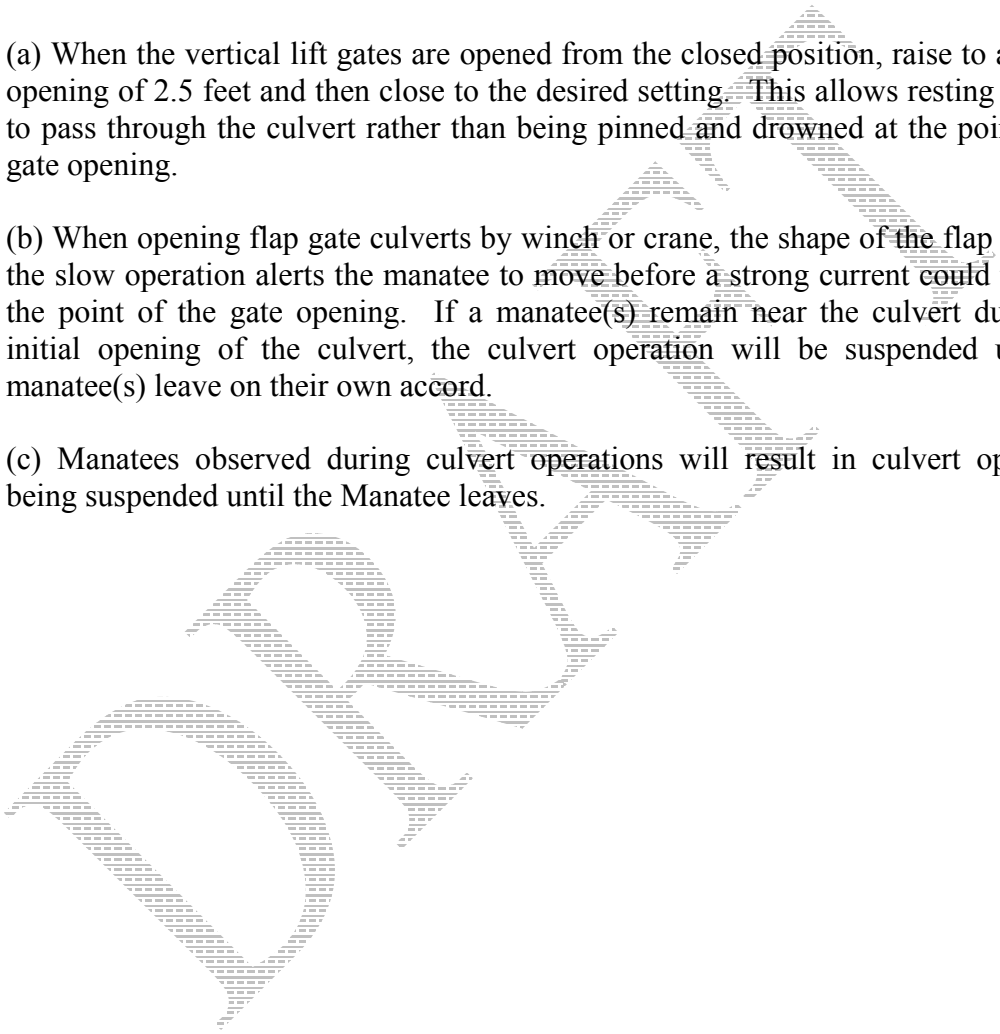
Culvert Operations

The following SOP is in effect to reduce manatee risk at Herbert Hoover Dike culverts; C-l, C-1A, C-2, C-3, C-4A, C-5, C-5A, C-6, C-8, C-10, C-10A, C-l1, C-12, C-12A, C-13, C-14, C-16, and the following culverts on extension levees feeding into Lake Okeechobee; HP-l, HP-2, HP-3, HP-5, HP-6, HP-7 (Harney Pond Canal); IP-l, IP-2, IP-3 (Indian Prairie Canal); KI-1, KI-2, (Kissimmee River) and FC-l (Fisheating Creek).

(a) When the vertical lift gates are opened from the closed position, raise to an initial opening of 2.5 feet and then close to the desired setting. This allows resting manatee to pass through the culvert rather than being pinned and drowned at the point of the gate opening.

(b) When opening flap gate culverts by winch or crane, the shape of the flap gate and the slow operation alerts the manatee to move before a strong current could trap it at the point of the gate opening. If a manatee(s) remain near the culvert during the initial opening of the culvert, the culvert operation will be suspended until the manatee(s) leave on their own accord.

(c) Manatees observed during culvert operations will result in culvert operations being suspended until the Manatee leaves.



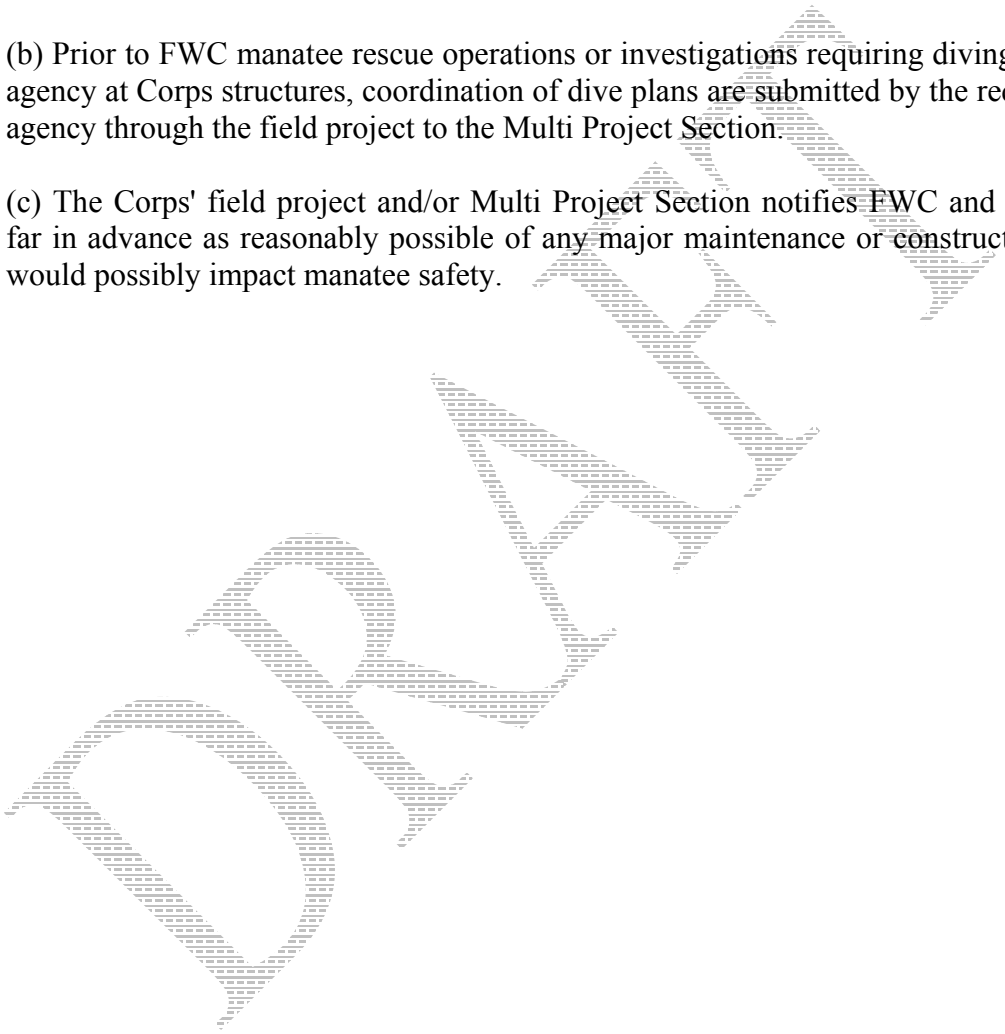
APPENDIX D

District and Interagency Reporting Requirements

(a) Sightings of dead, injured, sick or newly calved manatees, as well as sightings of manatees in smaller, shallower canal systems associated with Corps water control structures but outside Lake Okeechobee and the Okeechobee Waterway, are immediately reported to the Manatee Hotline at 888-404-FWCC (3922). It is the responsibility of the field project to promptly notify Multi Project Section.

(b) Prior to FWC manatee rescue operations or investigations requiring diving by any agency at Corps structures, coordination of dive plans are submitted by the requesting agency through the field project to the Multi Project Section.

(c) The Corps' field project and/or Multi Project Section notifies FWC and FWS as far in advance as reasonably possible of any major maintenance or construction that would possibly impact manatee safety.



APPENDIX E

Manatee Protection Plan Point of Contact List

Florida Fish and Wildlife Conservation Commission
Bureau of Protected Species Management
620 Meridian Street
Tallahassee, FL 32399-1600
Mr. Ron Mezich (850) 922-4330

U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, FL 32960-3559
Mr. Dave Ferrell (772) 562-3909

6620 Southpoint Drive, South
Suite 310
Jacksonville, FL 32216-0958
Ms. Nicole Adimey (904) 232-2580 ext. 123

South Florida Water Management District
Post Office Box 24680
West Palm Beach, FL 33416-43680
Mr. Tom Kosier (561) 687-6631

U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

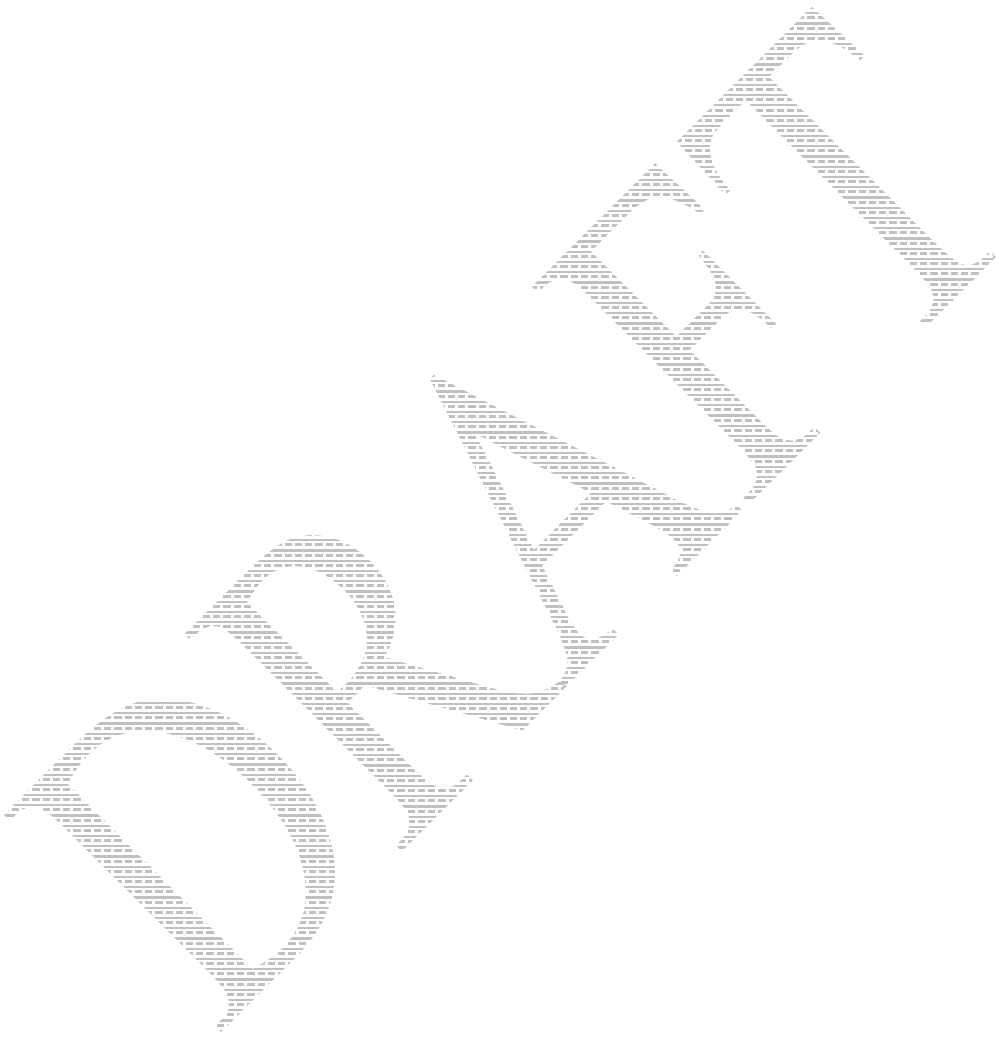
Planning Division, Environmental Studies Section,
(CESAJ-PD-ES)
Ms. Janet Cushing (904) 232-2259

Engineering Division, Water Management and Meteorology
Section (CESAJ-EN-HW)
Ms. Stephanie Jenkins (904) 232-2781

Engineering Division, Mechanical and Electrical Section,
(CESAJ- EN-DM)
Ms. Shashi Makker (904) 232-1112
Mr. Gerald Deloach (904) 232-1050

Construction-Operations Division, Operations Technical Support Branch, Multi Project Section, (CESAJ-CO-OP)
Mr. Kevin Salvilla (904) 232-3187
Mr. Larry Taylor (904) 232-1911

Construction-Operations Division, South Florida Operations Office (CESAJ-CO-S)
525 Ridgelawn Road
Clewiston, FL 33440-5399
Ms. Karen Estock (863) 983-8101



US Army Corps
of Engineers

APPENDIX F
STANDARD OPERATING PROCEDURES FOR REPORTING DEAD, INJURED, SICK OR NEWLY CALVED MANATEES

1. Call the MANATEE HOTLINE to report incident: (888) 404-3922

Please advise dispatcher the county the manatee is located and current condition of the manatee.

2. Notify the Clewiston Office (863) 983-8101 ext. 243, Richard Bailey (or cellular 863-287-2671) or Ryan Peck (cellular 863-412-0530), if neither are available, Karen Estock 863-983-2304 (or cellular 863-227-0224).

3. If the animal is deceased, fill out an initial fatality report; take photos of the carcass and location where it was first observed, and sketch a picture of the carcass with any unusual markings if necessary.

4. If possible secure the manatee until assistance arrives.

5. Fax report to Clewiston Office (863) 983-8579.

APPENDIX G
U. S ARMY CORPS OF ENGINEERS STRUCTURES WITH MANATEE PROTECTION SYSTEMS

W.P Franklin Lock
Manatee screens on the lock sector gates

Ortona Lock
Manatee screens on the lock sector gates
Floor grating on the lock chamber floor

Ortona Spillway (S-78)
Physical barriers in front of the spillway gates

Moore Haven Lock
Manatee screens on the lock sector gates

Port Mayaca Lock
Manatee screens on the lock sector gates

St. Lucie Lock
Manatee screens on the lock sector gates
Acoustic Array Manatee Protection System on lock sector gates
Floor grating on the lock chamber floor

St. Lucie Spillway (S-80)
Physical barriers in front of the spillway gates

Canaveral Lock
Manatee screens on the lock sector gates
Acoustic Array Manatee Protection System on lock sector gates

C-10A Culvert
Physical barriers on the lakeside of culvert gates

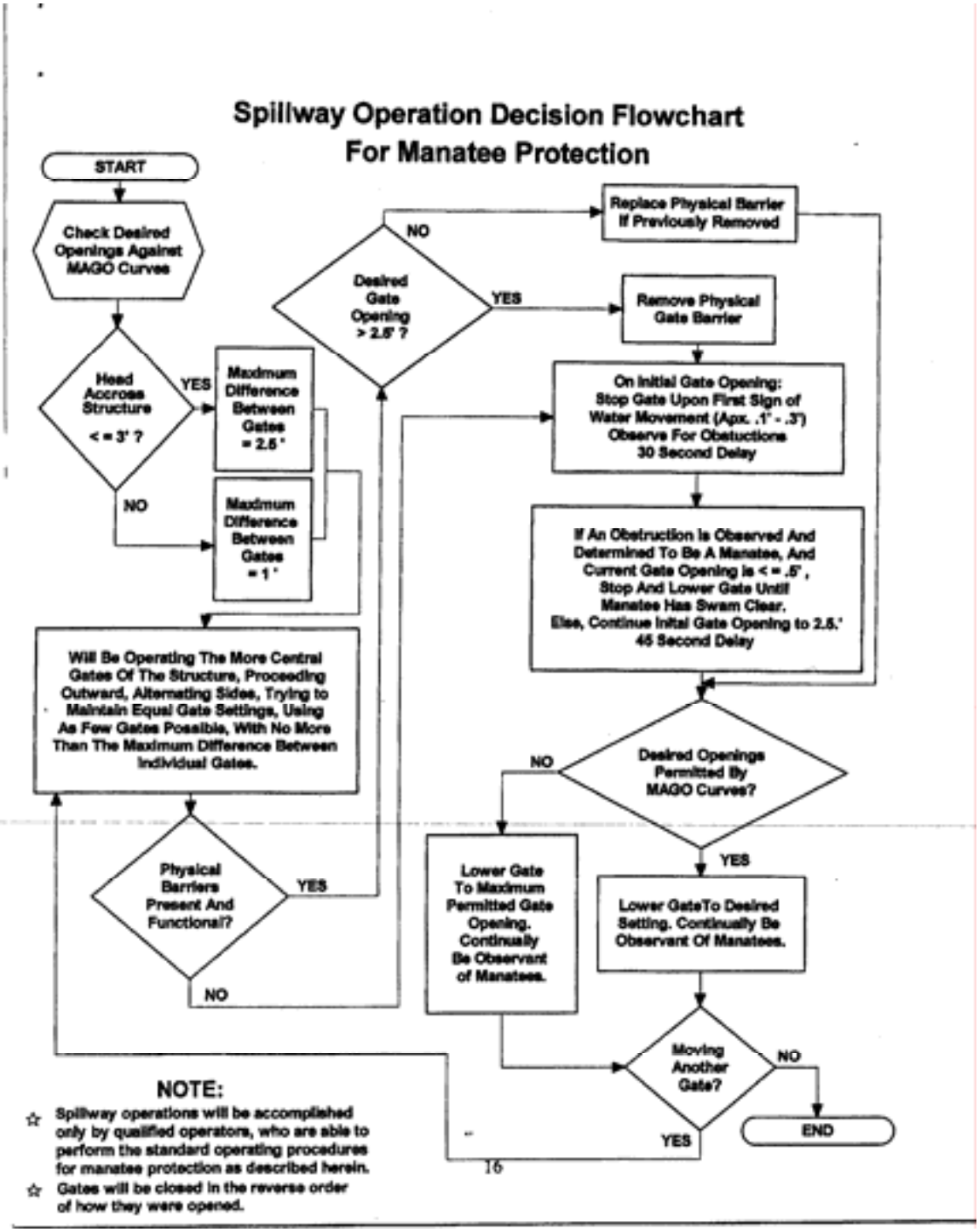

Spillway Operation Decision Flowchart
For Manatee Protection
START
Check Desired Openings Against MAGO Curves
Head Accross Structure < = 3' ?
YES
NO
Maximum Difference Between Gates = 2.5 '
Maximum Difference Between Gates = 1 '
Will Be Operating The More Central Gates Of The Structure, Proceeding Outward, Alternating Sides, Trying to Maintain Equal Gate Settings, Using As Few Gates Possible, With No More Than The Maximum Difference Between Individual Gates.
Physical Barriers Present And Functional?
YES
NO
Desired Gate Opening > 2.5' ?
NO
YES
Replace Physical Barrier If Previously Removed
Remove Physical Gate Barrier
On Initial Gate Opening: Stop Gate Upon First Sign of Water Movement (Apx. .1' - .3') Observe For Obstuctions 30 Second Delay
If An Obstruction Is Observed And Determined To Be A Manatee, And Current Gate Opening Is < = .5', Stop And Lower Gate Until Manatee Has Swam Clear. Else, Continue Inital Gate Opening to 2.5.' 45 Second Delay
Desired Openings Permitted By MAGO Curves?
NO
YES
Lower Gate To Maximum Permitted Gate Opening. Continually Be Observant of Manatees.
Lower GateTo Desired Setting. Continually Be Observant Of Manatees.
Moving Another Gate?
NO
YES
END
NOTE:
☆ Spillway operations will be accomplished only by qualified operators, who are able to perform the standard operating procedures for manatee protection as described herein.
☆ Gates will be closed in the reverse order of how they were opened.
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Figure 1