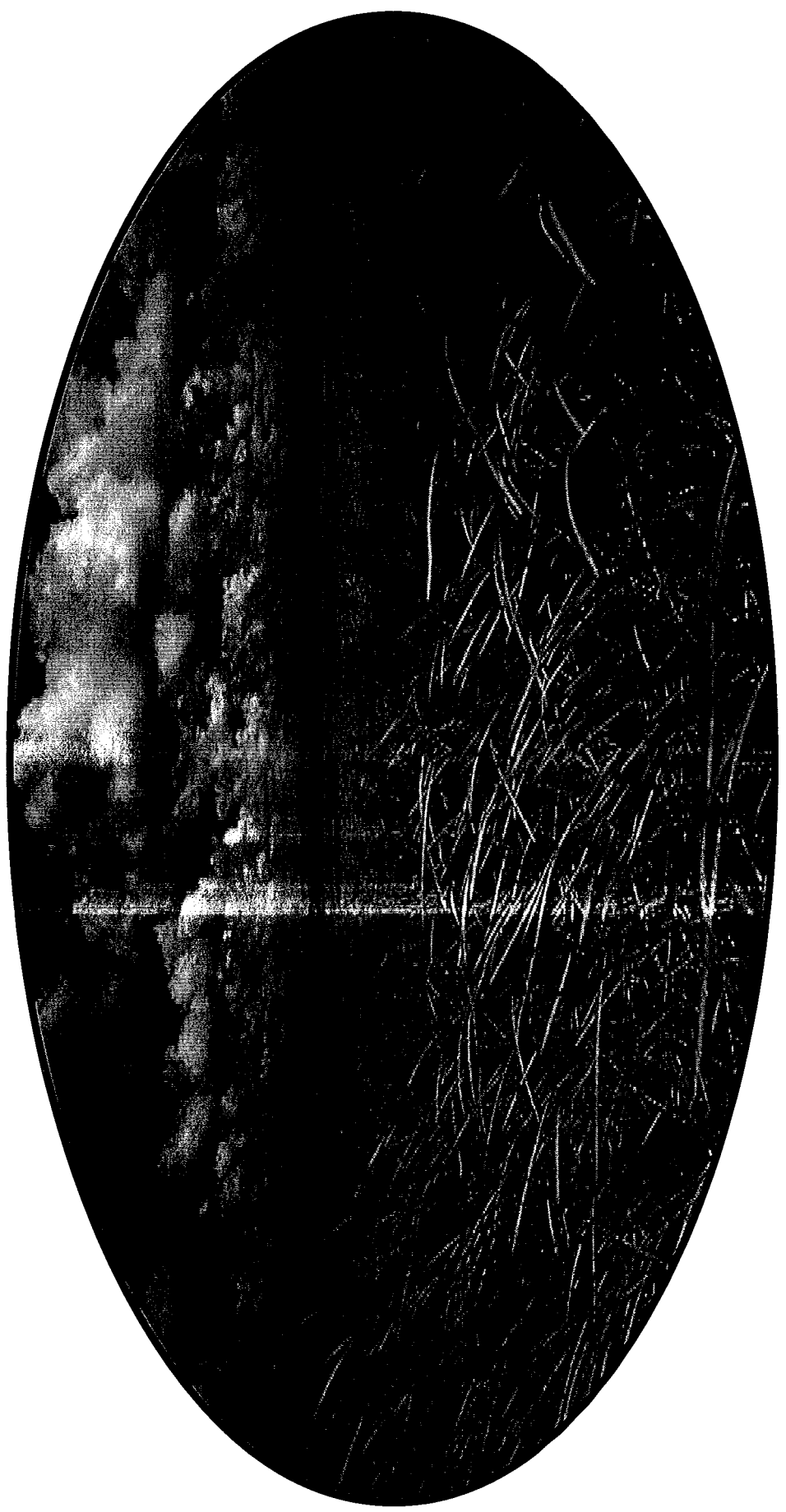


Atacama E

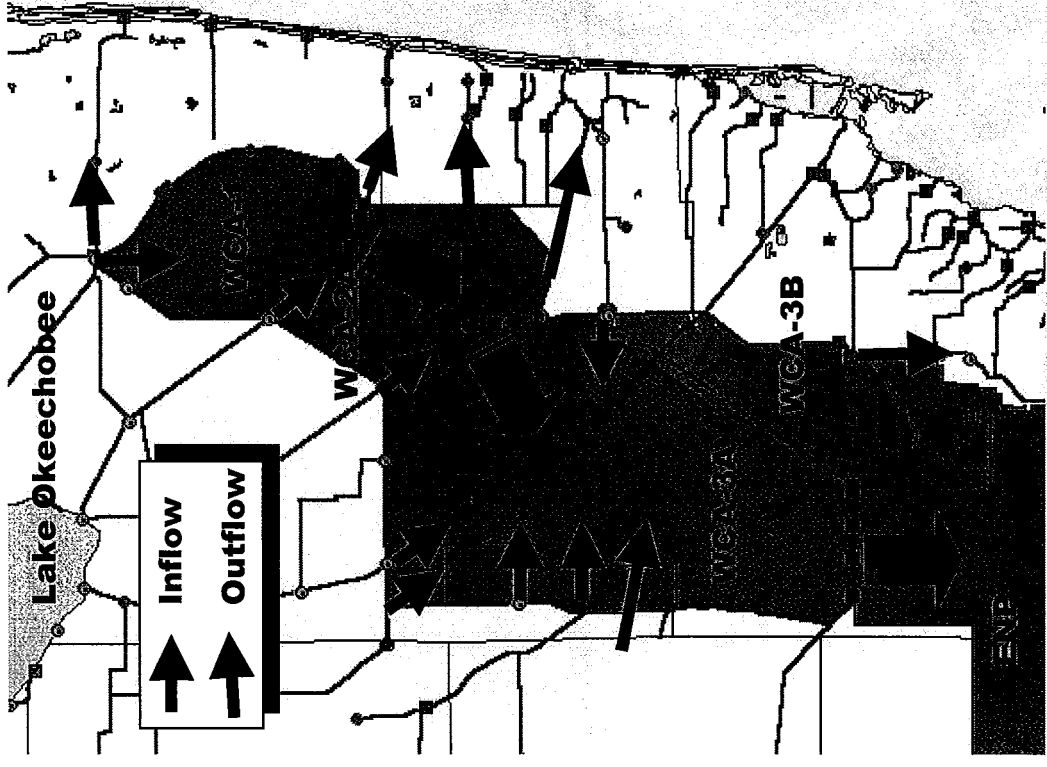


August 6, 2002

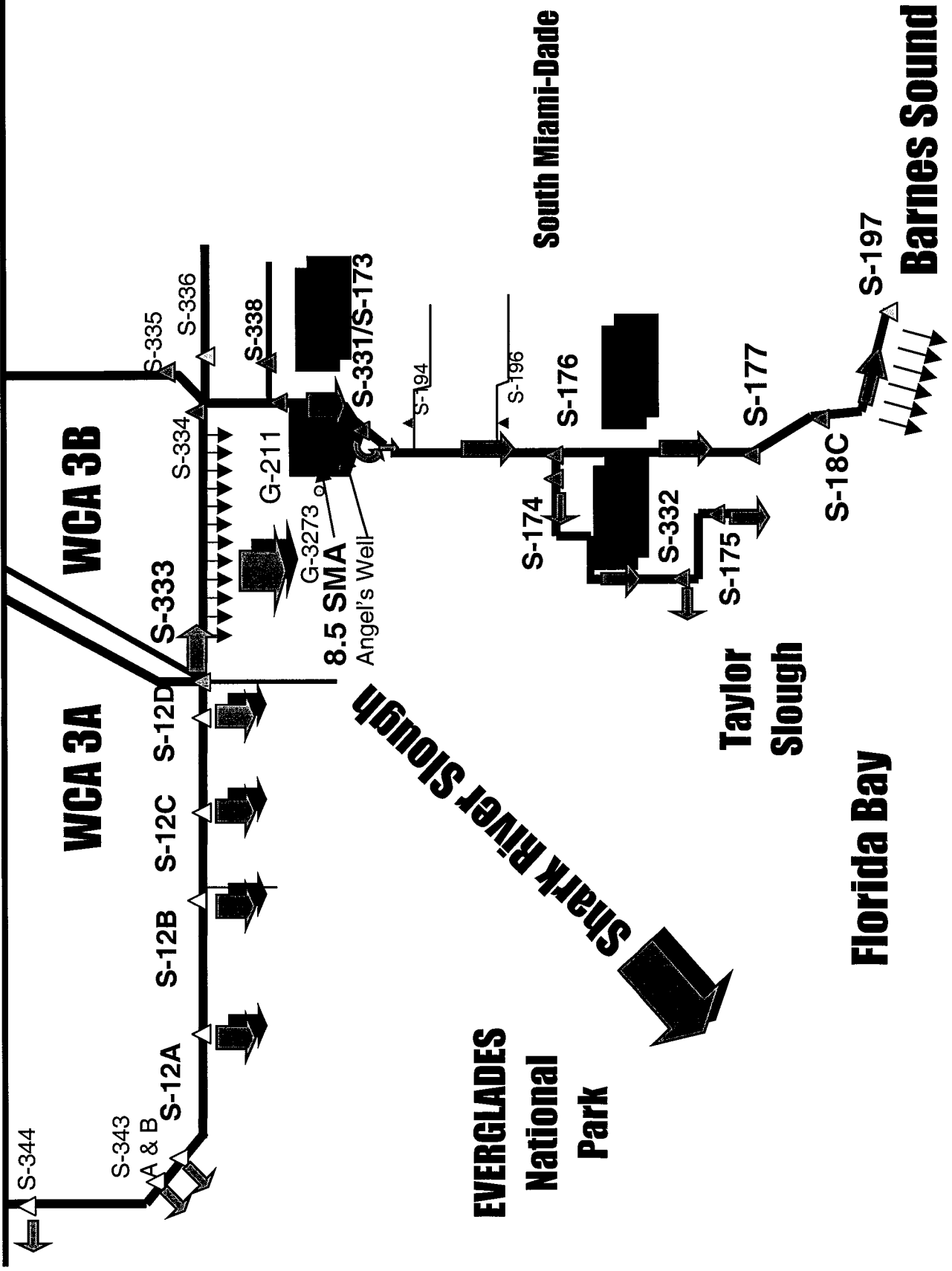
# Water Conservation Areas

## Flow Patterns

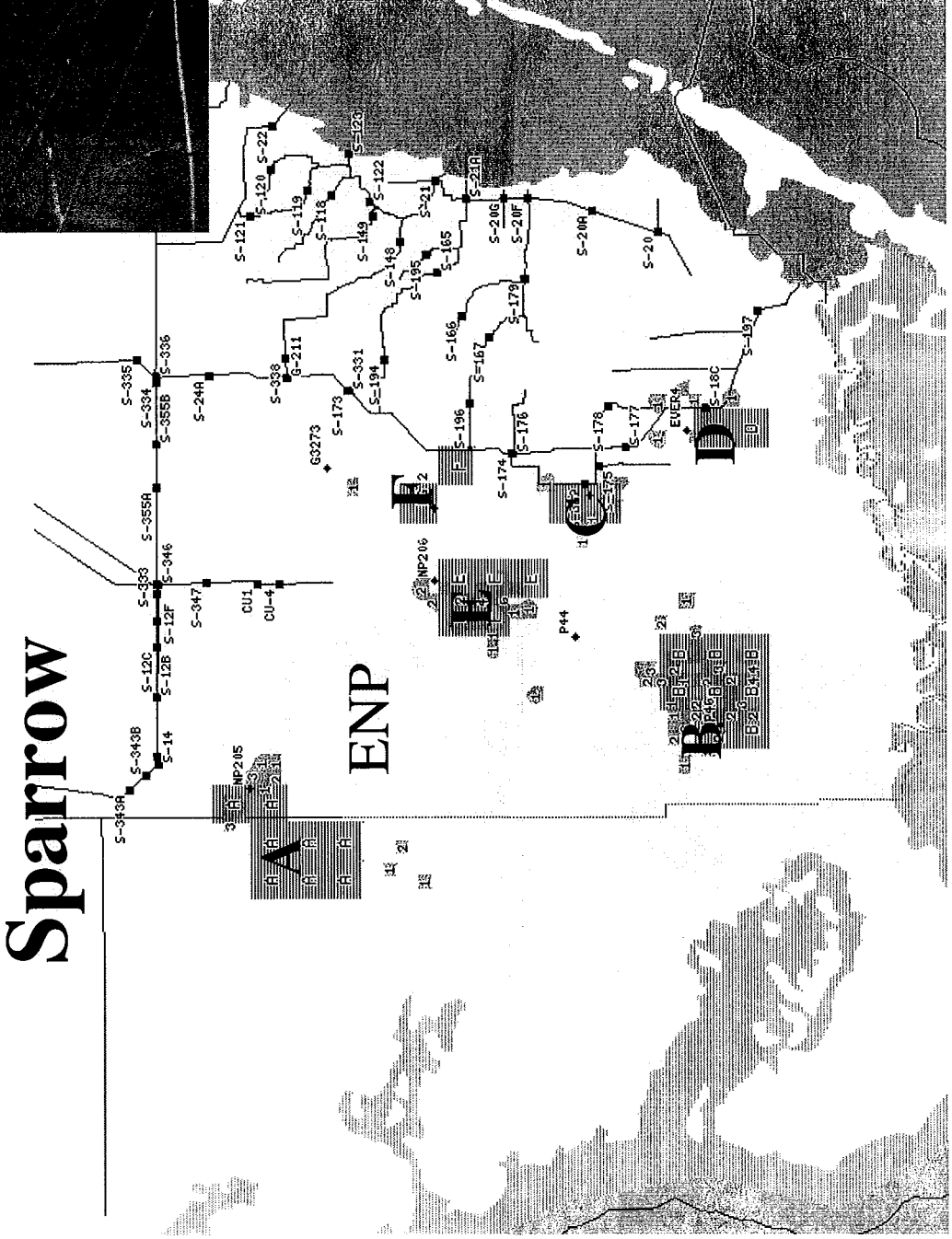
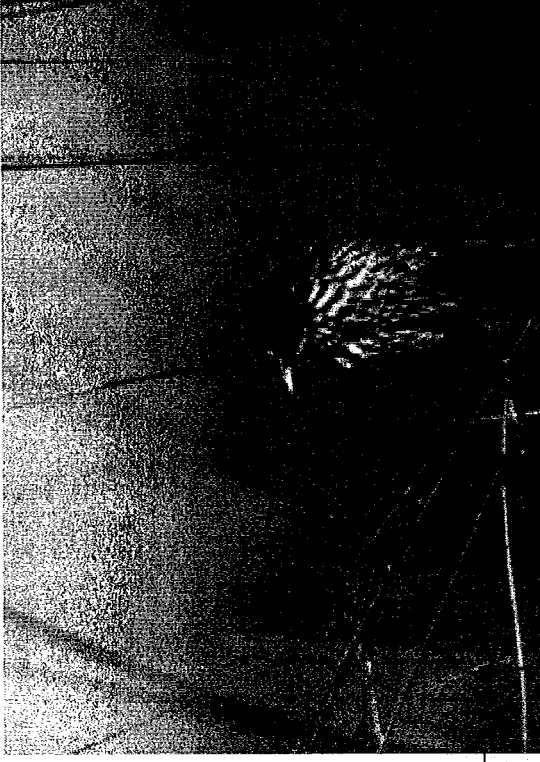
- Major structures within the WCAs discharge south toward Everglades National Park
- Smaller structures discharge east, primarily for water supply purposes



# Experimental Program - Test 7 Phase I



# Fish & Wildlife Biological Opinion of 1999 on Cape Sable Seaside Sparrow

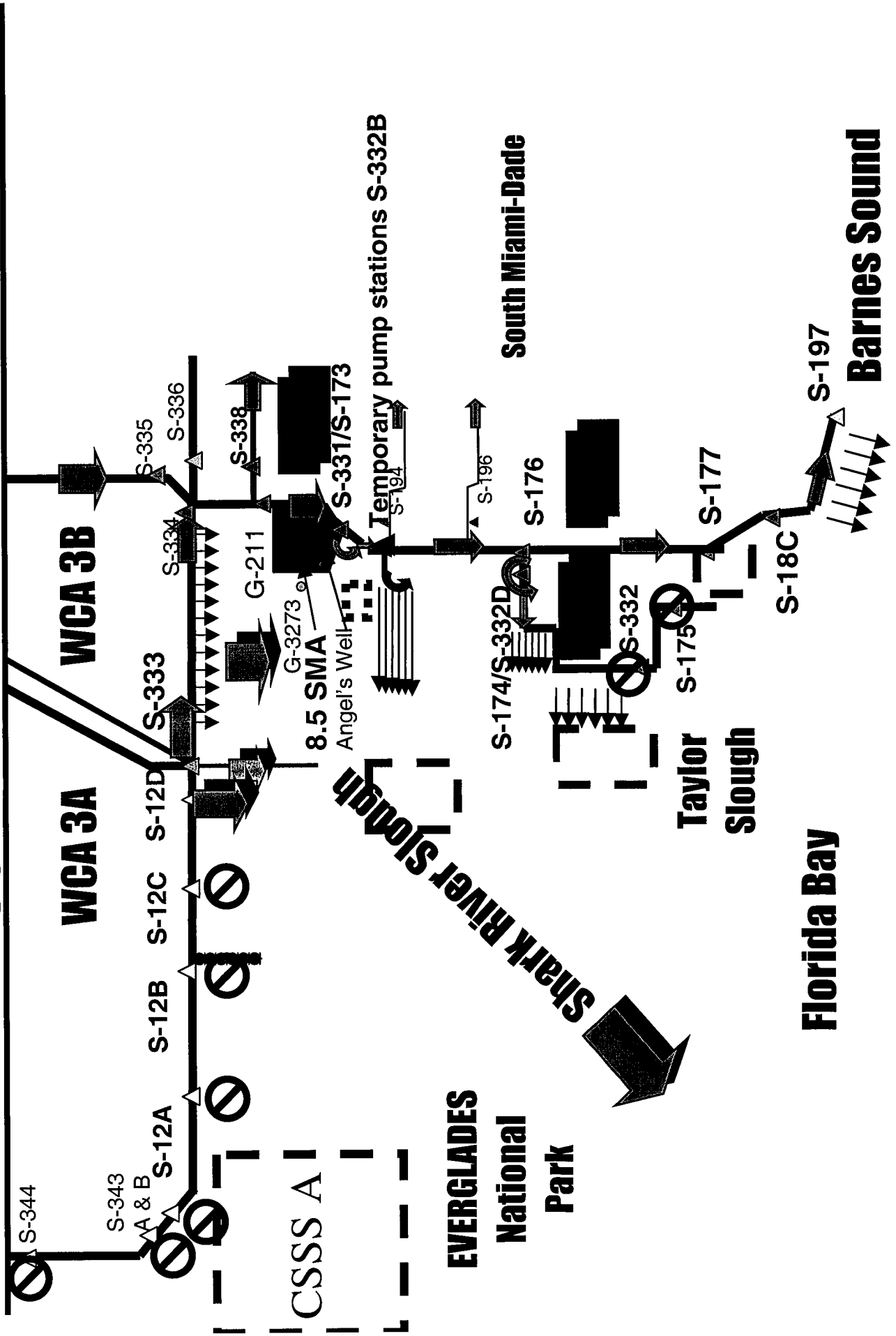


- Jeopardy on Experimental Program (Test 7 operations)
- No Jeopardy on Modified Water Deliveries to ENP or C111 Project

# Reasonable & Prudent Alternative - Phased-In Approach

- Mar 99 - NP205 - 6 ft - 45 days
- May 99 - Fire Management Strategy
- Mar 00 - NP205 - 6 ft - 60 days
  - Eastern - Test 7, Phase II
  - 30% Regulatory in NESRS
- Mar 01 - 45% Regulatory in NESRS
- Mar 02 - 60% Regulatory in NESRS

# ISOP - 2001



S-344

WCA 3A

WCA 3B

S-343

S-12A

S-12B

S-12C

S-12D

S-333

S-334

S-335

S-336

CSSS A

8.5 SMA  
Angel's Well

G-211

S-331/S-173

Shark River Slough

EVERGLADES  
National  
Park

South Miami-Dade

S-174/S-332D

S-176

S-177

S-175

S-18C

Taylor  
Slough

Florida Bay

S-197

Barnes Sound

Temporary pump stations S-332B

S-194

S-196

# Why Change from ISOP to IOP?

- Infiltration rate for S-332B lower than expected - need additional detention area to increase flow distribution & reduce overflow
- Minimize impacts to ENP resources due to low canal levels in ISOP
- To increase system capacity to remove storm water from L31 N canal (*offset higher canal stages*)

# IOP Status

- Feb 01 - Draft IOP EIS (Six Alternatives)
- President's CEQ suggested we engage facilitators from U.S. Institute of Environmental Conflict Resolution to address FWS concerns
- Oct 01 - Supplemental Draft IOP EIS (Alt 7)
- Alt 7 modified to better address flood protection based on comments from public and SFWMD
- Apr 02 – Final IOP EIS (Alternative 7R)
- July 02 – Record of Decision for IOP signed



# IOP Recommended Plan Alternative 7R

Includes operation of C-111 and MWD project features currently under construction

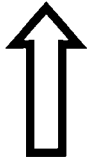
Will be in place until MWD and C111 Projects are completed and ROD signed (Dec 05) on Combined and Structural Operation Plan (CSOP)

# C-111 and MWD Project Features

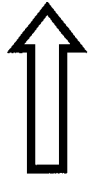
## Under Construction

- Degrade 4 miles of L67 Extension Levee
- S356 Pump Station (500 cfs)
- S333 Structural Modification
- S332B North Seepage Reservoir (240 Acres)
- S332C Pump Station (575 cfs)
- S332C Seepage Reservoir (300 Acres)
- S332B/S332C Connector (141 - 1,262 Acres)
- Frog Pond Seepage Reservoir (810 Acres)
- 2000-ft Degradation of Southern End L31W Levee
- S332D to L31W Divider Levee & Outlet Flowway

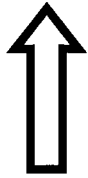
S356  
Pump



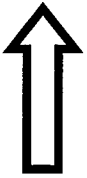
L67 Ext



S332B  
North



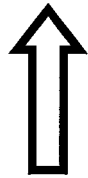
S332B/C  
Connector



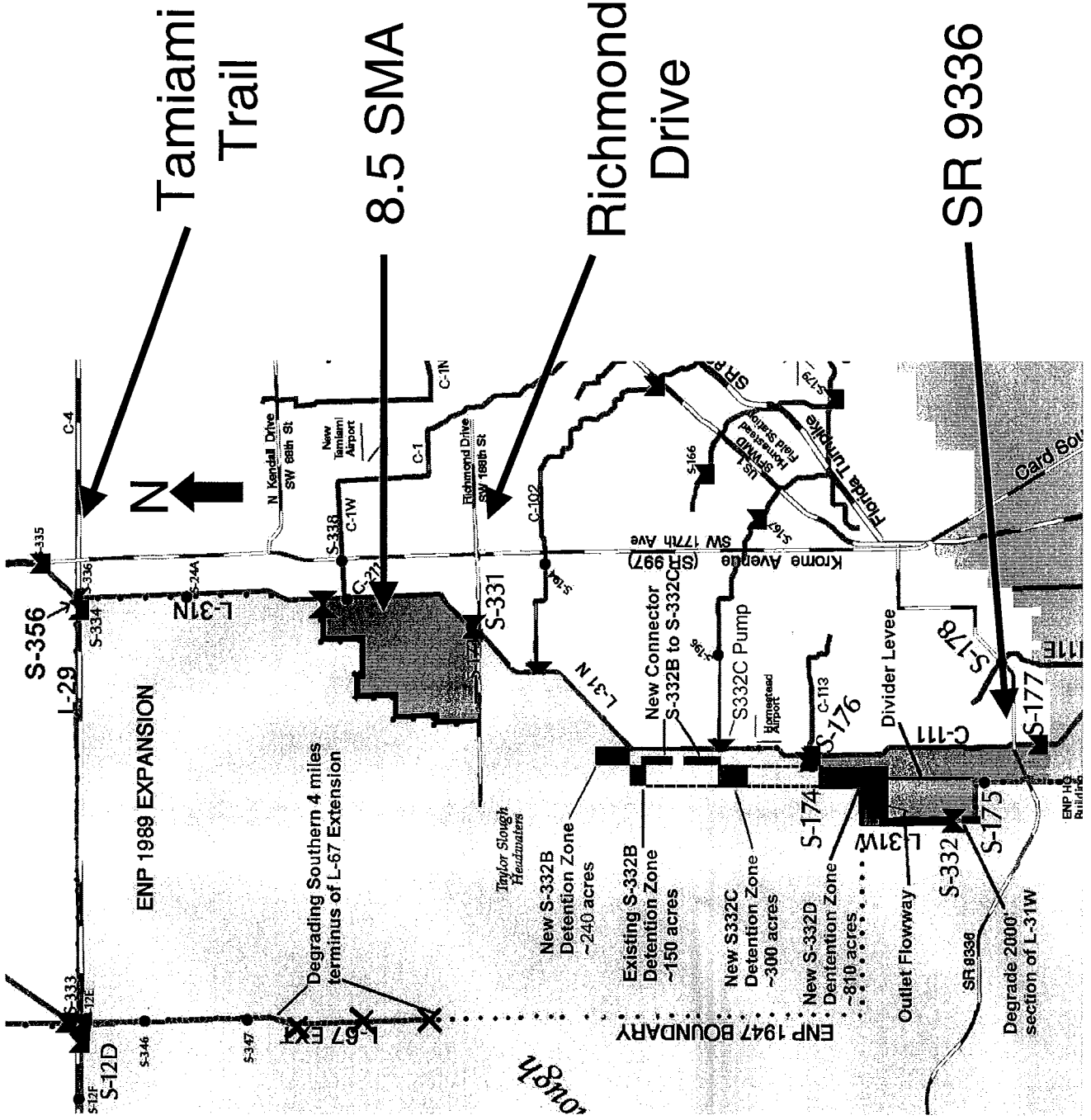
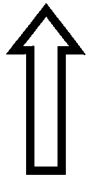
S332C

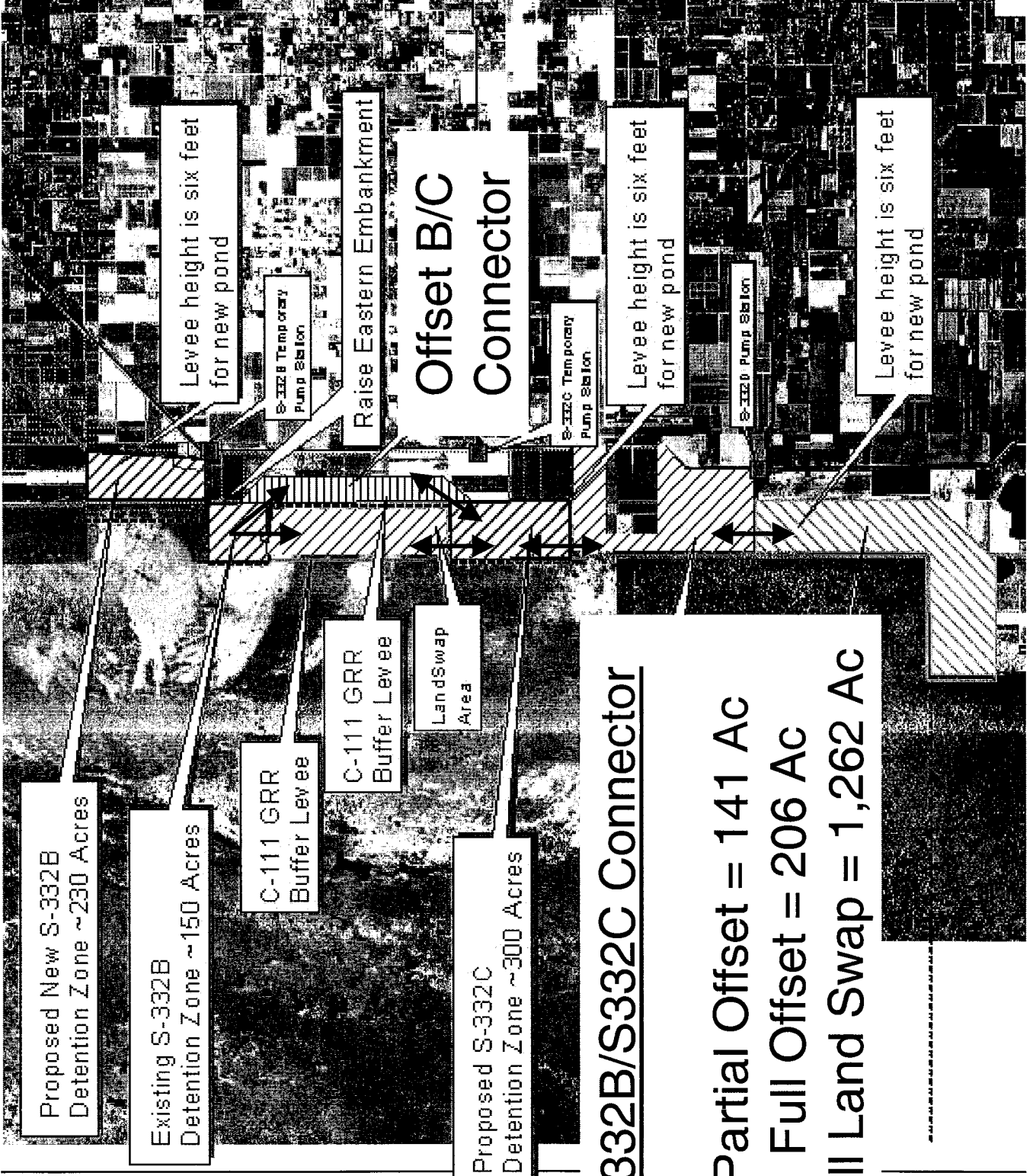


Frog  
Pond



L31W  
levee

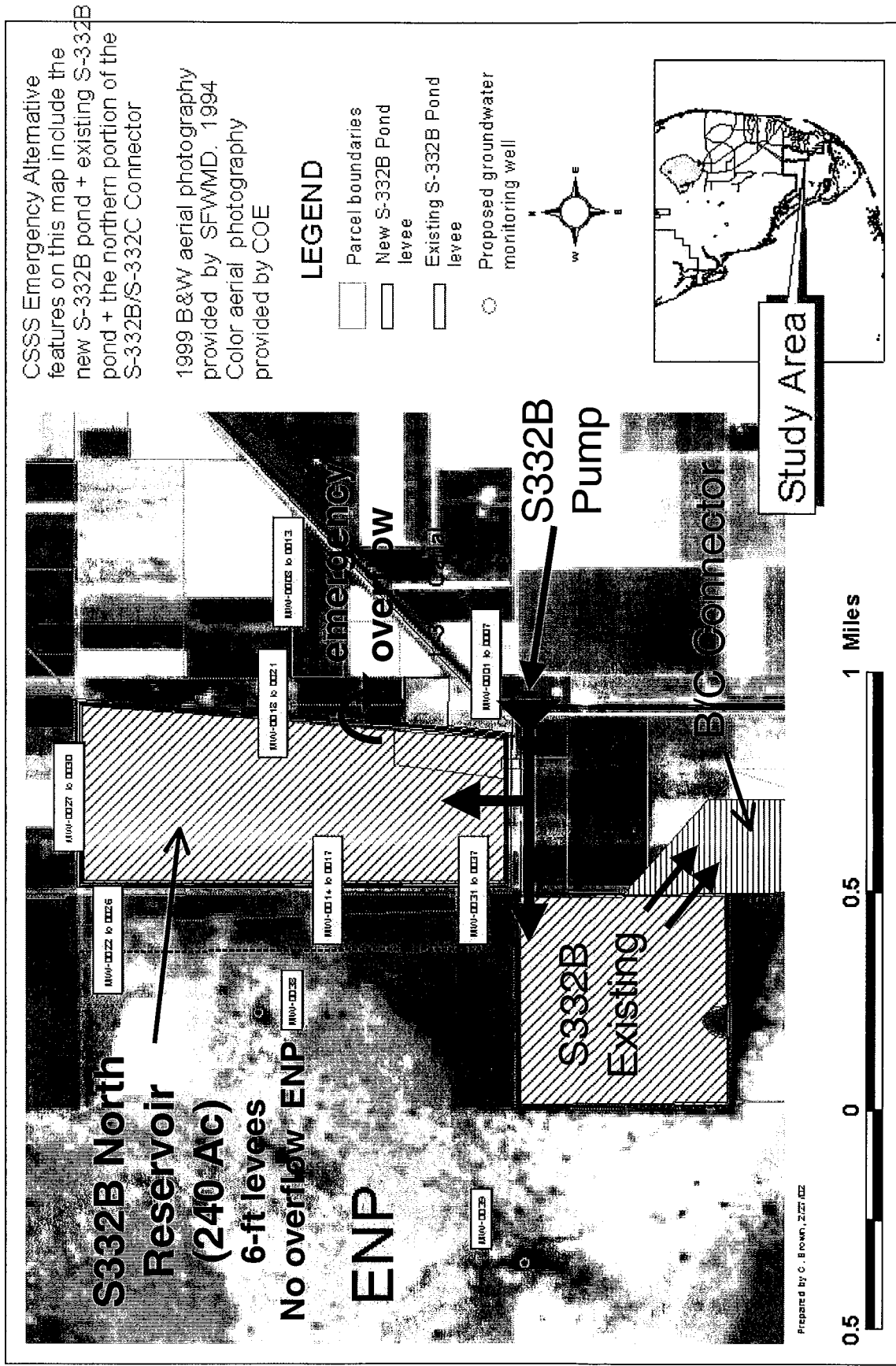




**S332B/S332C Connector**

**Partial Offset = 141 Ac**  
**Full Offset = 206 Ac**  
**Full Land Swap = 1,262 Ac**

Figure 2-2: S-332B Project Area  
 Prepared by the U.S. Army Corps of Engineers



CSSS Emergency Alternative features on this map include the new S-332B pond + existing S-332B pond + the northern portion of the S-332B/S-332C Connector

1999 B&W aerial photography provided by SFWMD, 1994 Color aerial photography provided by COE

**LEGEND**

- Parcel boundaries
- New S-332B Pond levee
- Existing S-332B Pond levee
- Proposed groundwater monitoring well

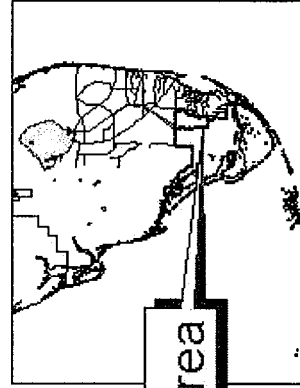
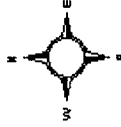
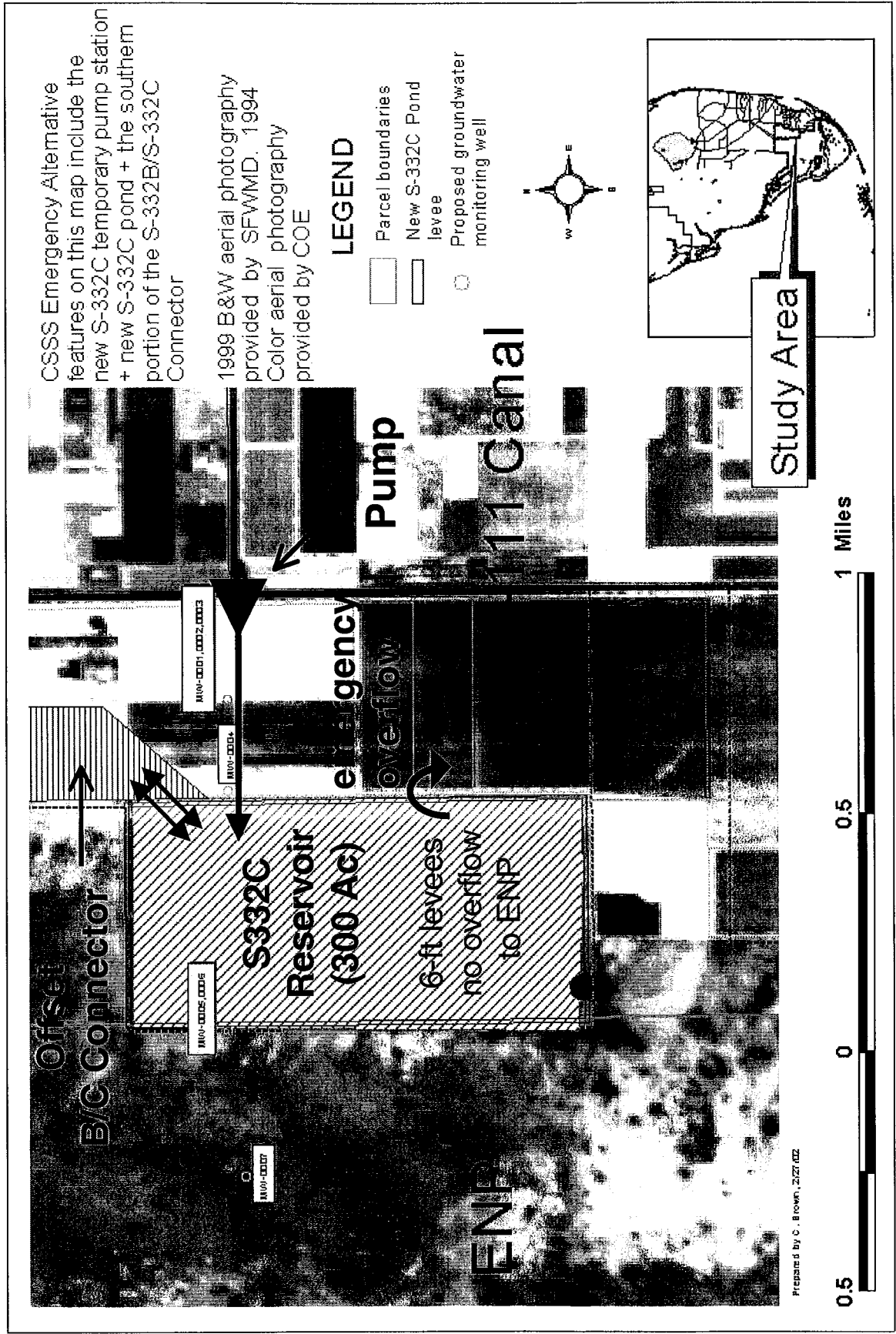


Figure 2-3: S-332C Project Area  
 Prepared by the U.S. Army Corps of Engineers

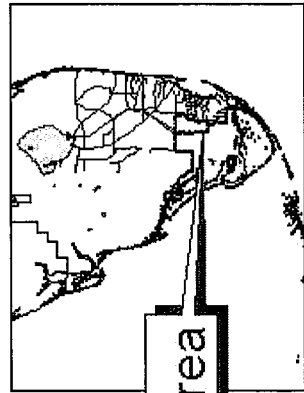
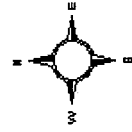


CSSS Emergency Alternative features on this map include the new S-332C temporary pump station + new S-332C pond + the southern portion of the S-332B/S-332C Connector

1999 B&W aerial photography provided by SFWMD, 1994 Color aerial photography provided by COE

**LEGEND**

- Parcel boundaries
- New S-332C Pond levee
- Proposed groundwater monitoring well



Study Area

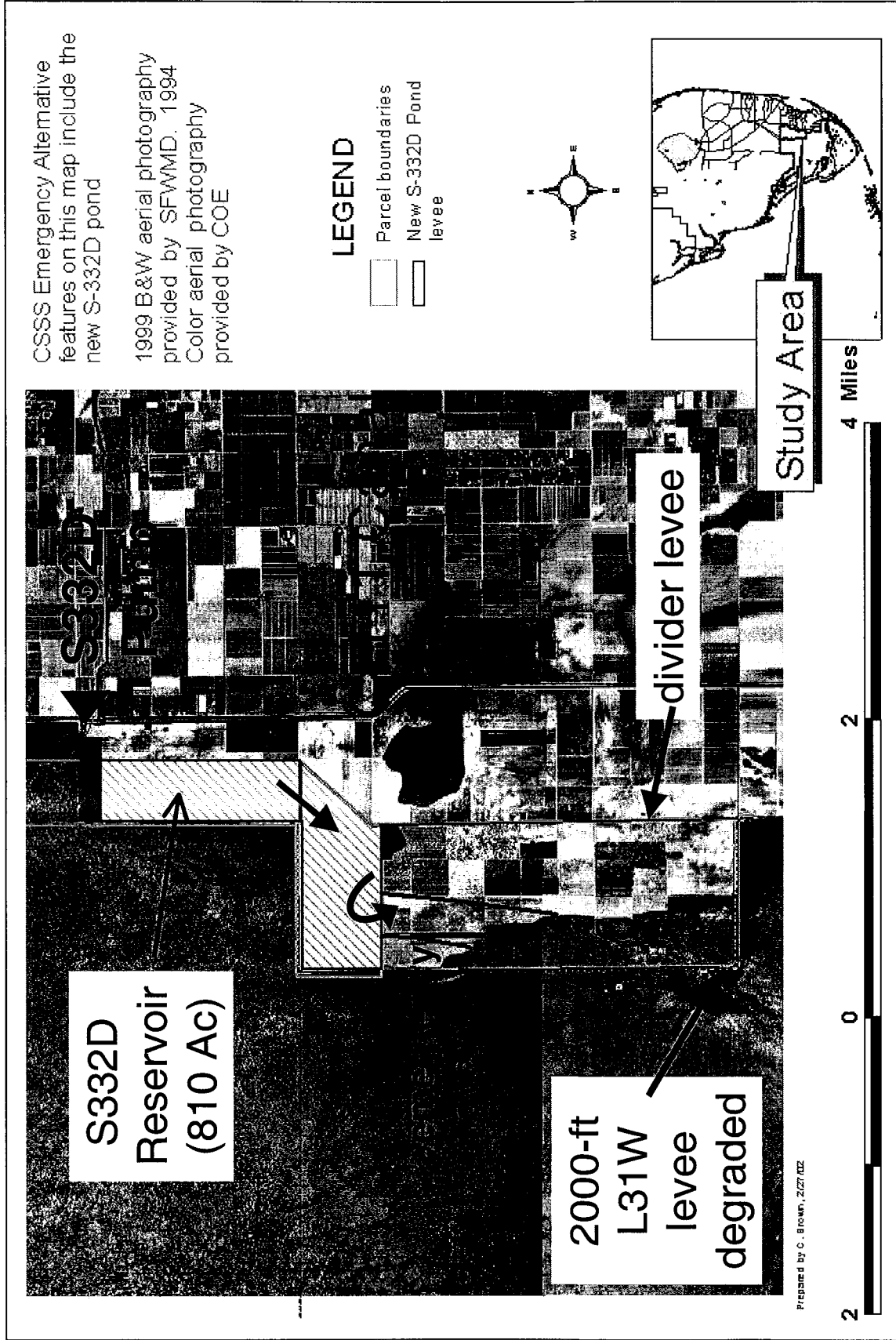
1 Miles

0.5

0

0.5

Figure 2-4: FrogPond/S-332D Project Area  
 Prepared by the U.S. Army Corps of Engineers



## **IOP - Alternative 7R**

### **No Change to Following**

---

- No change to S-12, 343, 344, 333, 334, 151 operations
- No change to operational rules for WCA-3A, 3B, 2A, 2B
- No change to G-3273 and Angels well criteria



# IOP - Alternative 7R

## Primary Operational Changes

---

- L-31N Canal Levels - Two Modes of Operation
  - When bypassing water from WCA-3A slight increase in canal levels above ISOP but less than Test 7 Phase 1 below G211
  - When not bypassing water, levels up to Test 7 Phase 1 levels, similar to levels of 3 years ago
- Priority for flow into L-31N given to releases from S-333/S-334 when WCA 3A above schedule
- S-335 Structure operations return to pre-ISOP operating criteria

# **IOP - Alternative 7R**

## **Primary Operational Changes**

---

- Seepage Reservoirs – normal max depth of 2-ft except in flood emergencies could be increased to 4-ft. No direct overflow to ENP (except @ existing S332B during flood emergencies during construction phase but is also greatly reduced during construction phase)
- Normal operations of S332B, C and D pump stations targeted to achieve marsh restoration – proposed E-W hydraulic gradient

# **IOP - Alternative 7R**

## **Primary Operational Changes**

---

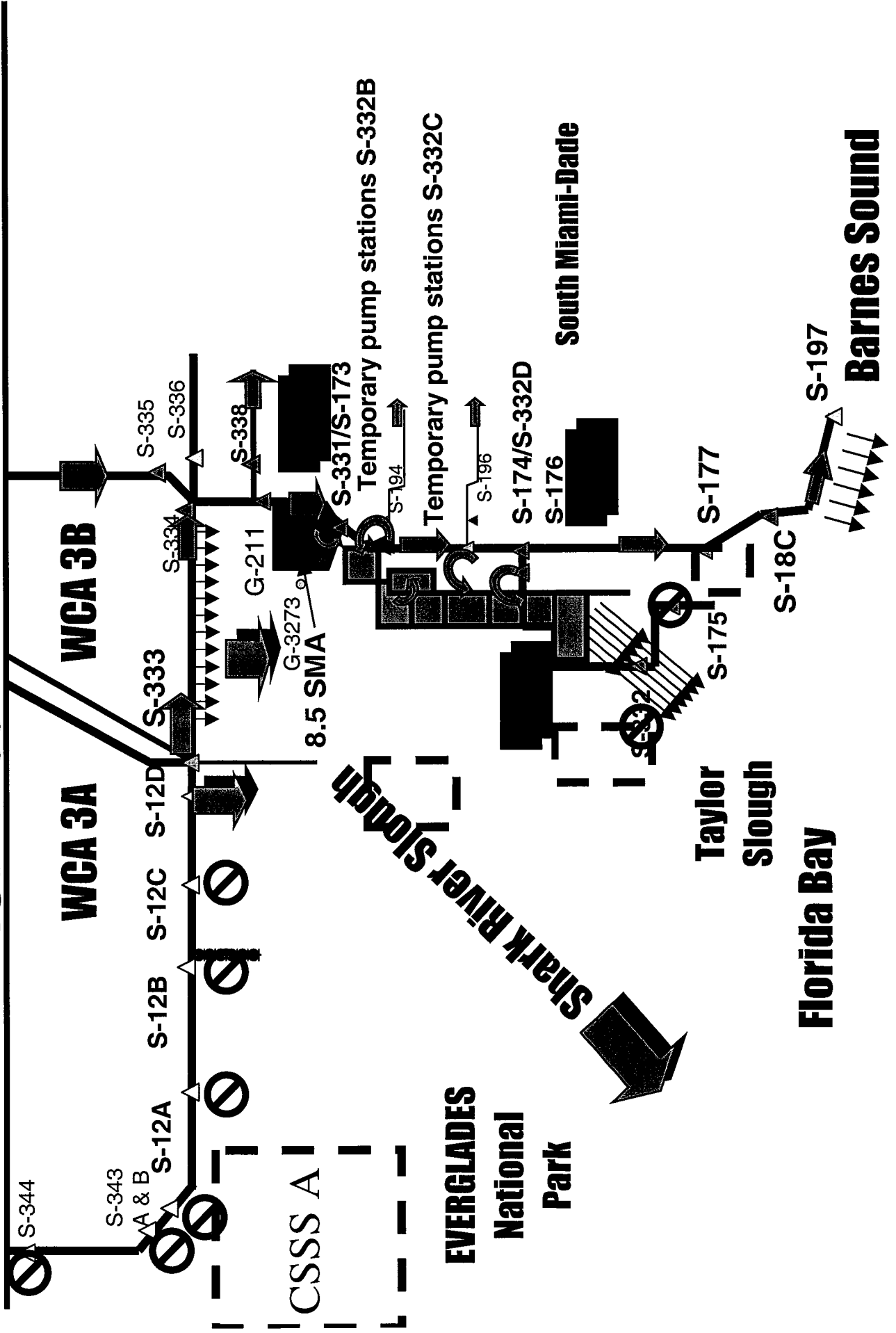
- S356 Pump station limited to seepage rate along reach of L31N between S335 and G211 – BUT cannot operate until 6 weeks after ROD due to judge ruling
- SFWMD to recommend Pre-Storm Draw Down to enhance protection against tropical storms when antecedent conditions already very wet (i.e. *No Name Storm*) – COE to advise other agencies and make decision to implement
- Miccosukee Tribe to recommend operational changes to S-12's when conditions threaten Tribe safety – COE to advise other agencies and make decision to implement

# Canal Level Changes

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	ISOP Operations	IOP W/O Bypass (Test 7, Phase 1)	IOP W/Bypass
• G-211	5.70	6.00	5.70
• S-332B	5.30	5.50	5.30
• S-332D	4.70	5.00	4.80
• S-332D	4.20	4.70	4.50
• S-332D	4.50	4.85	4.70
• S-332D	4.00	4.65	4.50
• S-196	4.70	5.50	4.90
• S-196	4.20	4.80	4.50

# IOP - 2002



**WCA 3A**

**WCA 3B**

S-343  
A & B

S-12A

S-12B

S-12C

S-12D

S-333

S-334

S-335

S-336

CSSS A

Shark River Slough

EVERGLADES  
National  
Park

S-331/S-173

Temporary pump stations S-332B

S-174/S-332D

Temporary pump stations S-332C

S-176

South Miami-Dade

Taylor  
Slough

S-177

S-175

S-18C

S-197

Florida Bay

Barnes Sound

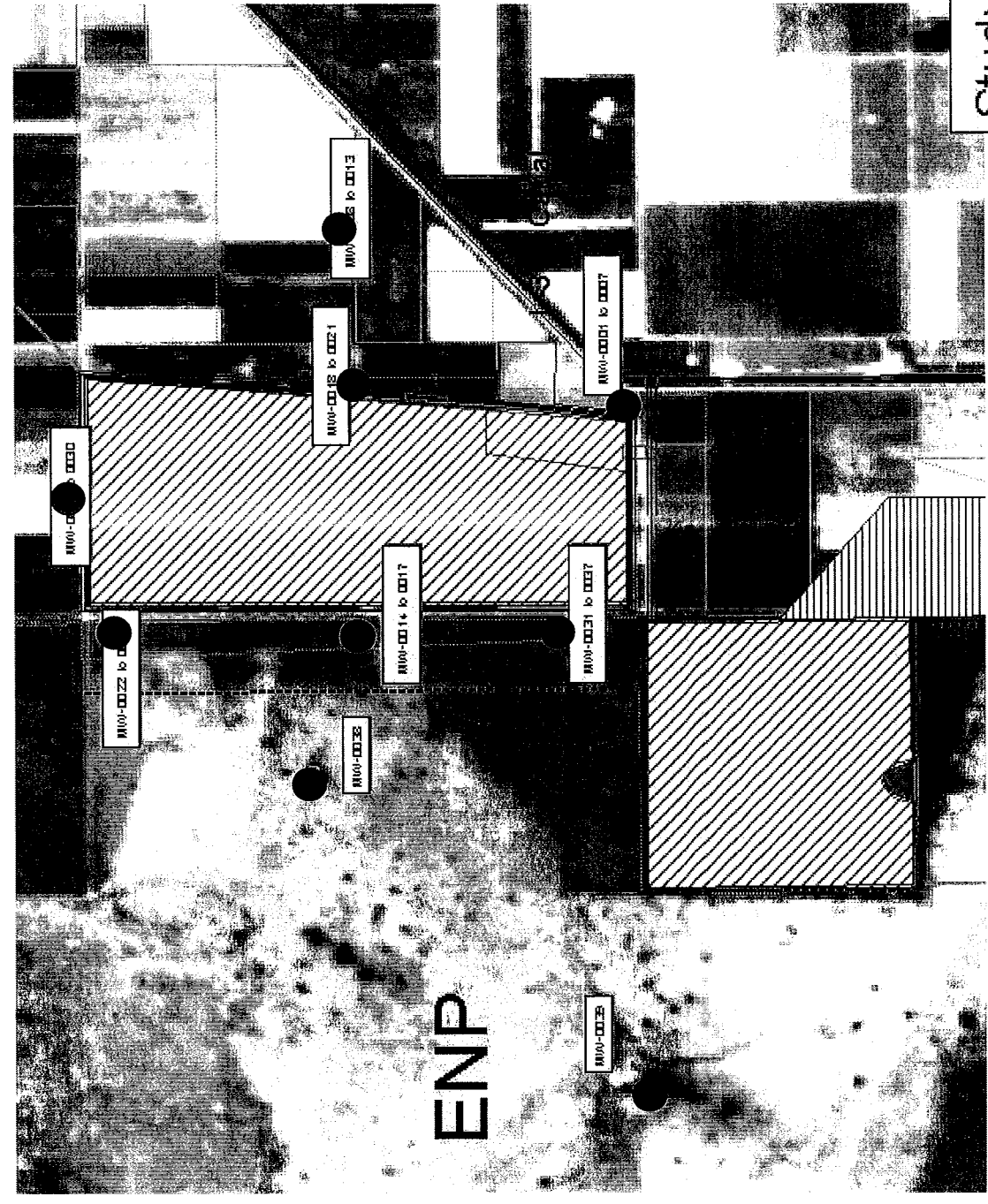
# Operations

## Where Are We Today?

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- 6<sup>th</sup> Amendment State WQC Emergency Order for construction of C-111 & MWD project features and operation of S-332B and S-332D pump stations and pertinent structures in accordance with ISOP until September 28, 2002.
- 7<sup>th</sup> Amendment State WQC Emergency Order signed August 1, 2002 ??? – for operations of S-332B, C & D pump stations and pertinent structures in accordance with IOP until January 03 ??
- Draft WQ Certification plan submitted– monitoring plan under development





# Prepared by the U.S. Army Corps of Engineers

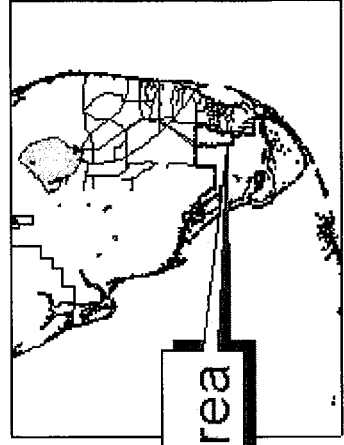
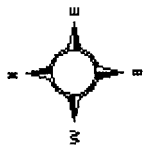


CSSS Emergency Alternative features on this map include the new S-332B pond + existing S-33 pond + the northern portion of the S-332B/S-332C Connector

1999 B&W aerial photography provided by SFWMD, 1994 Color aerial photography provided by COE

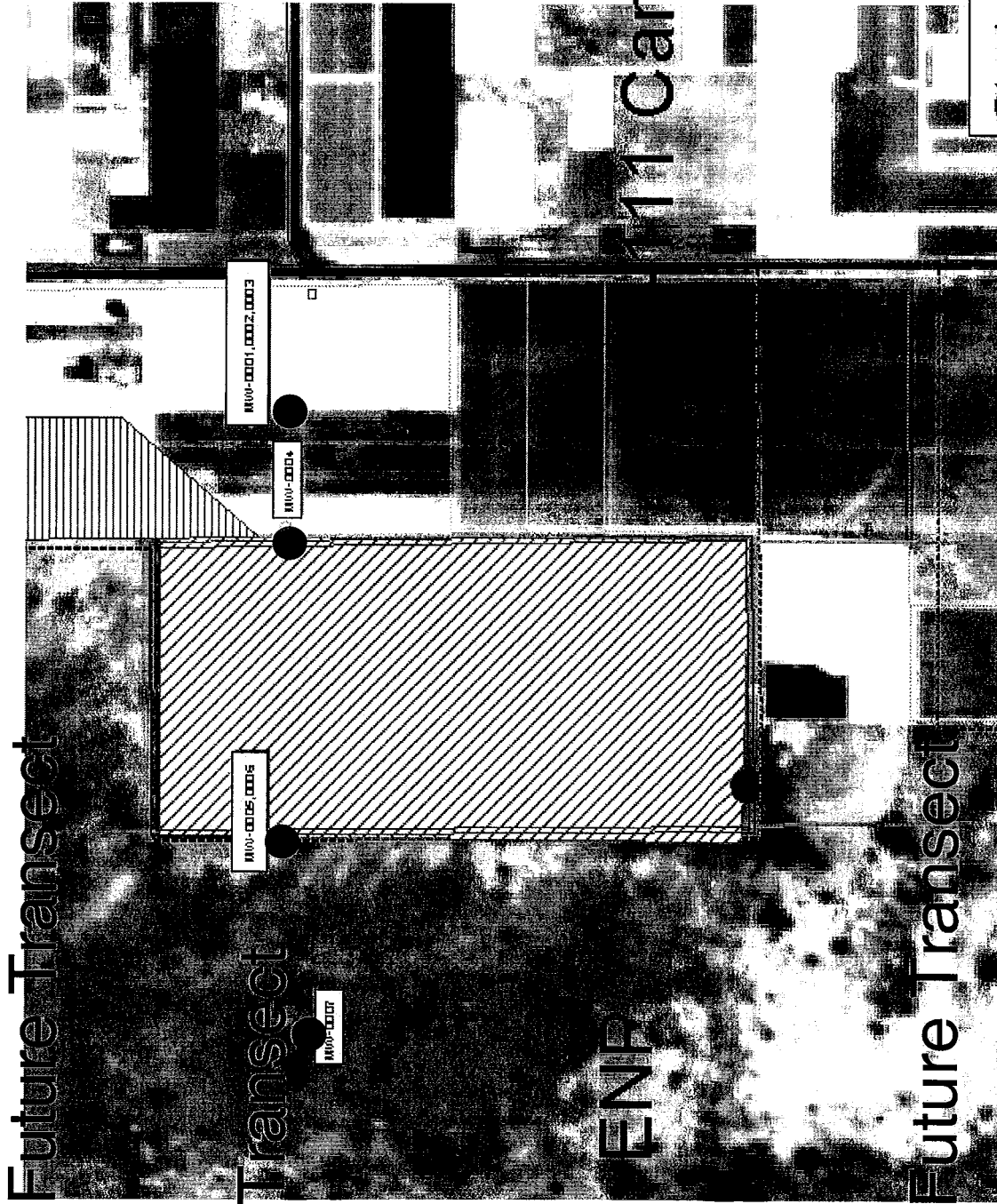
## LEGEND

-  Parcel boundaries
-  New S-332B Pond levee
-  Existing S-332B Pond levee
-  Proposed groundwater monitoring well



Prepared by C. Brown, 2/27/02




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 Prepared by the U.S. Army Corps of Engineers

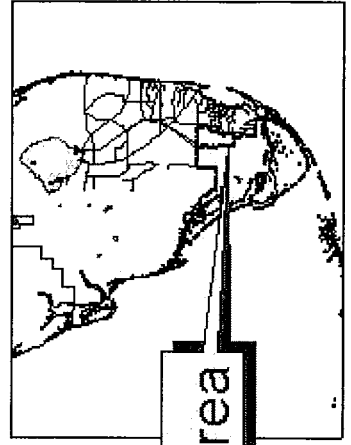


CSSS Emergency Alternative features on this map include the new S-332C temporary pump station + new S-332C pond + the southern portion of the S-332B/S-332C Connector

1999 B&W aerial photography provided by SFWMD, 1994 Color aerial photography provided by COE

**LEGEND**

-  Parcel boundaries
-  New S-332C Pond levee
-  Proposed groundwater monitoring well

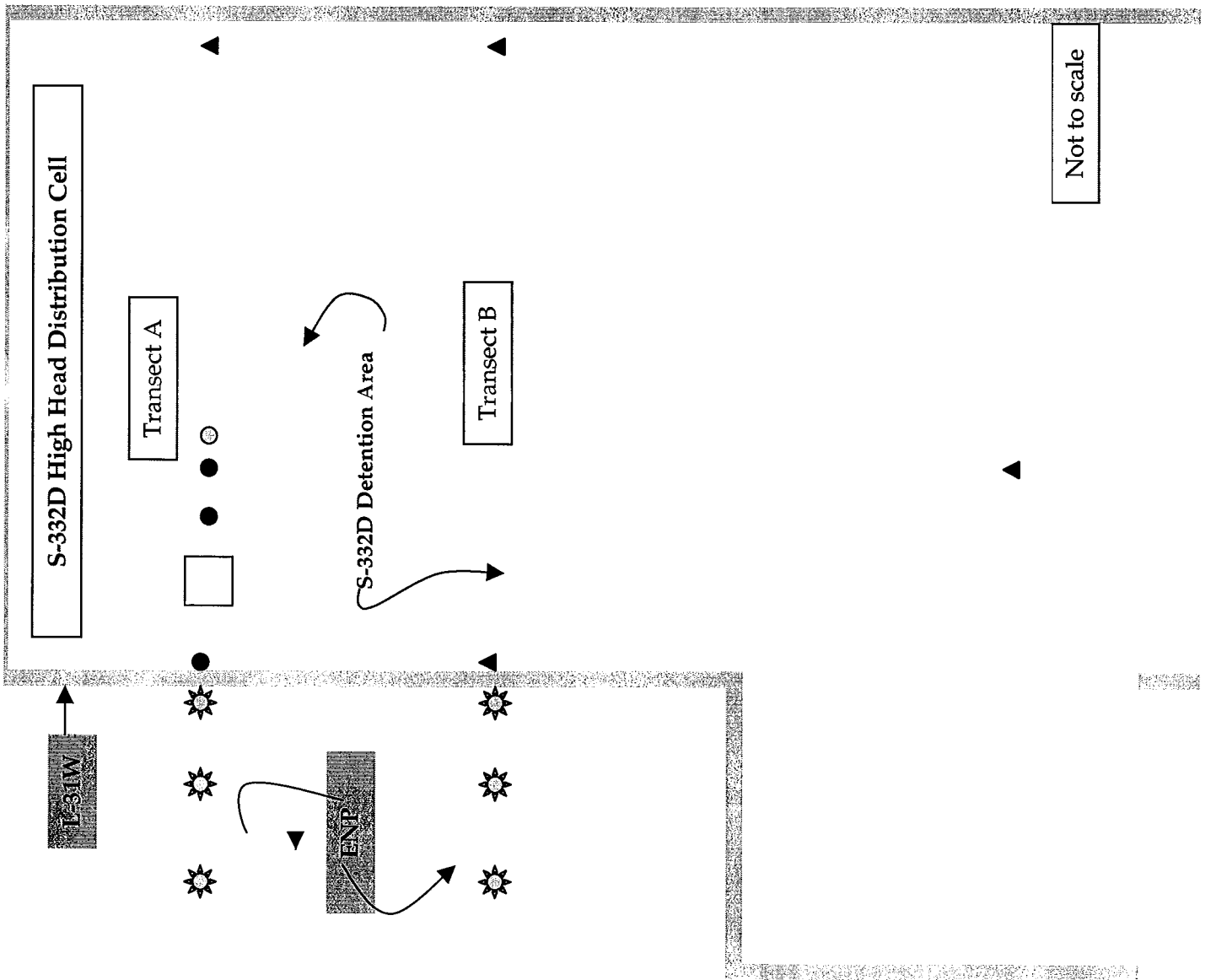


Study Area



Prepared by C. Brown, 2/22/02





Background Control Well

Transect A

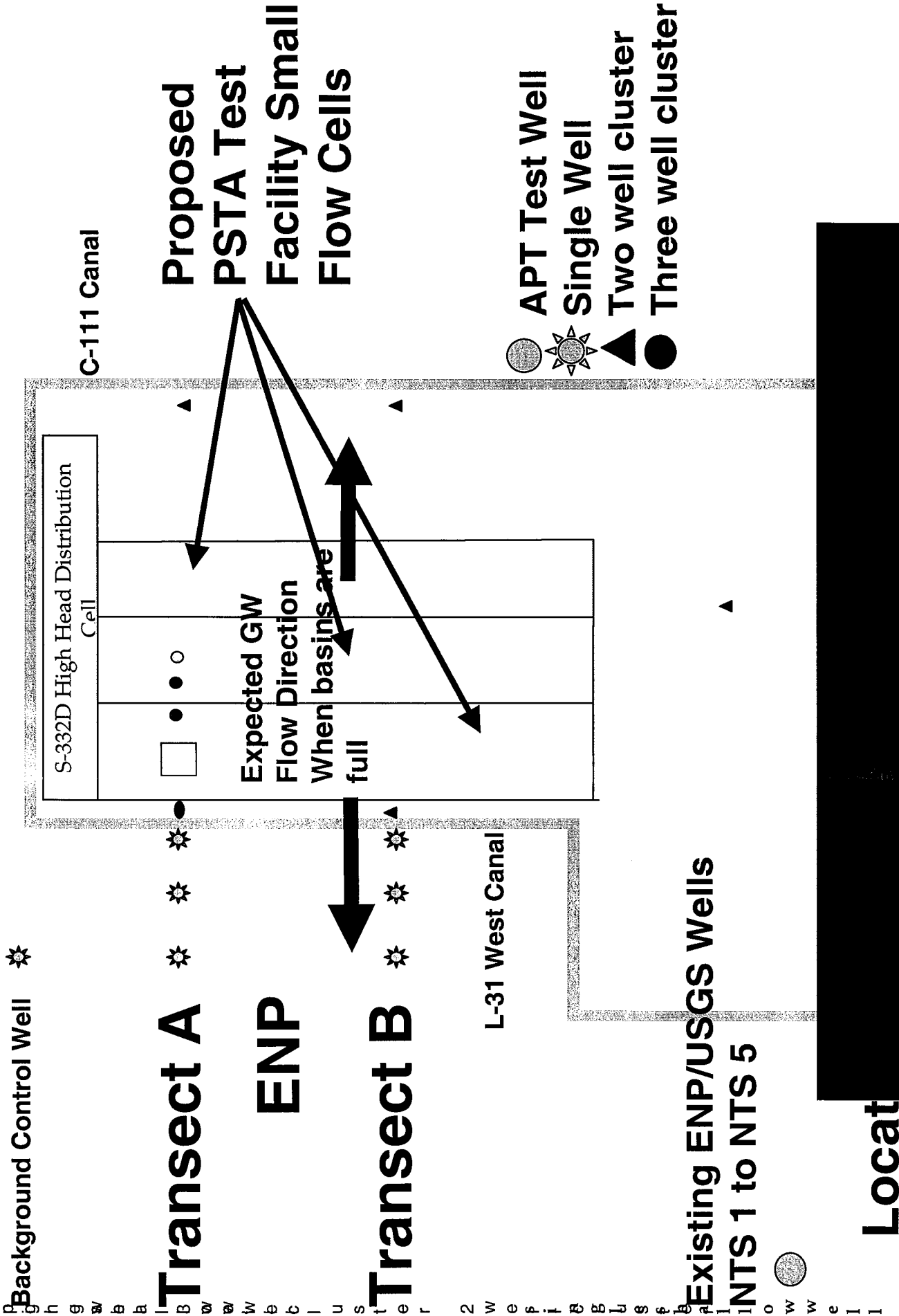
ENP

Transect B

L-31 West Canal

Existing ENP/USGS Wells  
NTS 1 to NTS 5

Location



# Pre-Operations and Start Up Monitoring Plan Components

## Groundwater

- Quality (20 & 40 foot Wells)
  - Grab samples for chemical analysis
  - Instrumentation (selected wells)
- Flow Gradients
  - Stage records along well transects

## Biological

- Periphyton
- General Macrophyte Community

## Surface Water

- L-31W Quality
- ENP Wetland Locations
- Inflow & Outflow Quality (Start Up)
- Inflow Records and Stage Data
  - S-332D Operations and Tailwater
- Rainfall (airport)

# Present Monitoring Parameters At S-332D

## Surface and Groundwater Quality

- Anions (Cl, SO<sub>4</sub>, F<sup>-</sup>)
- Cations (Ca, Mg, Na, K)
- Nutrients (P and N)
- Conductivity, pH
- TDS, TSS
- Color, Turbidity
- Metals (As, Cd, Cu, Fe, Pb, Mn, Zn)
- Pesticides/Organics (Methods 8081, 8141)
- Clean hands mercury

# Monitoring Frequency @ S-332D

- **Preoperational**
- 2 weekly monitoring events @ 17 wells and 9 surface water locations in June 2002
- **Startup**
- 4 weekly monitoring events @ 17 wells, 9 surface water locations and S332D inflow/outflow in July 2002
- **Post Startup**
- SFWMD to comment on monitoring plan by 7/31/02
- Proposed biweekly monitoring @ 17 wells, 6 surface water locations and S332D inflow/outflow from August - October 2002

# The Future - CSOP

## Combined Structural and Operational Plan

Being developed for operations with  
MWD and C-111 in place

Facilitated Collaborative Process being  
employed to obtain ROD in Dec 05

