OMC VISIONING

• Respond • Retool • Refurbish/Replace • Restore •

Activities Performed, Efficiencies and Benchmarking

Karen Estock
Division Director, Field Operations and Land Management
Operations, Maintenance & Construction

Governing Board
December 11, 2014

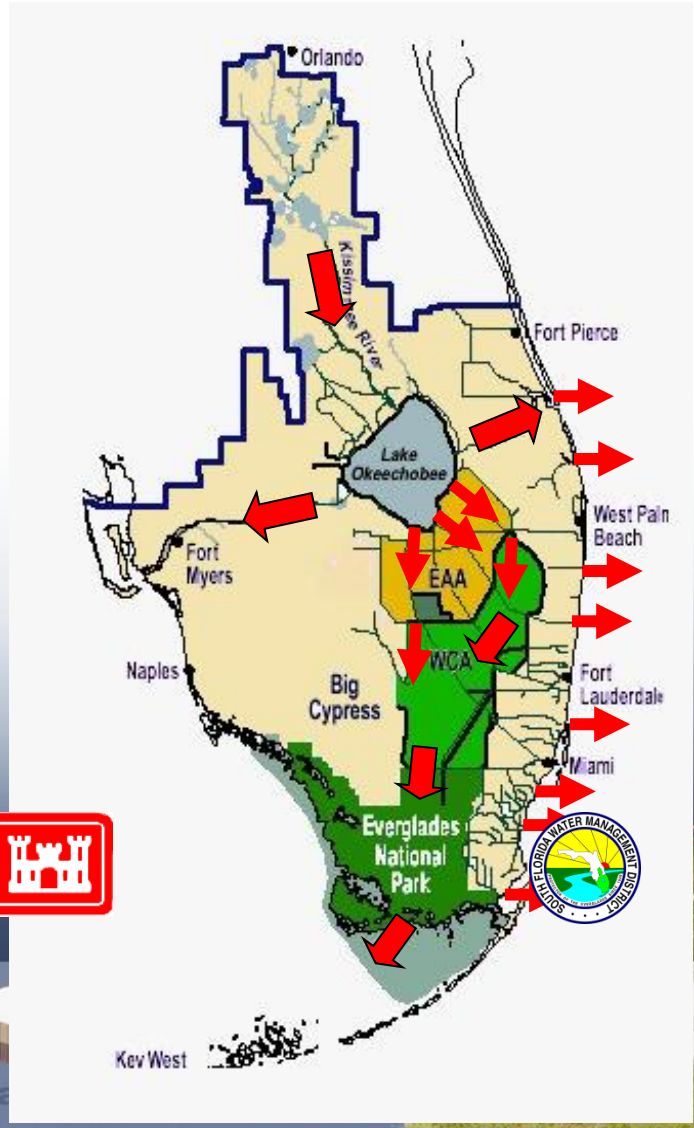
Operations, Maintenance & Construction

- Series of presentations over the next few months
- Early presentations include:
  - ✔ November: Infrastructure and Facilities
  - December: Activities Performed, Efficiencies and Benchmarking
  - January: Visioning of Future Infrastructure and OMC Responsibilities
  - February: Recommendations

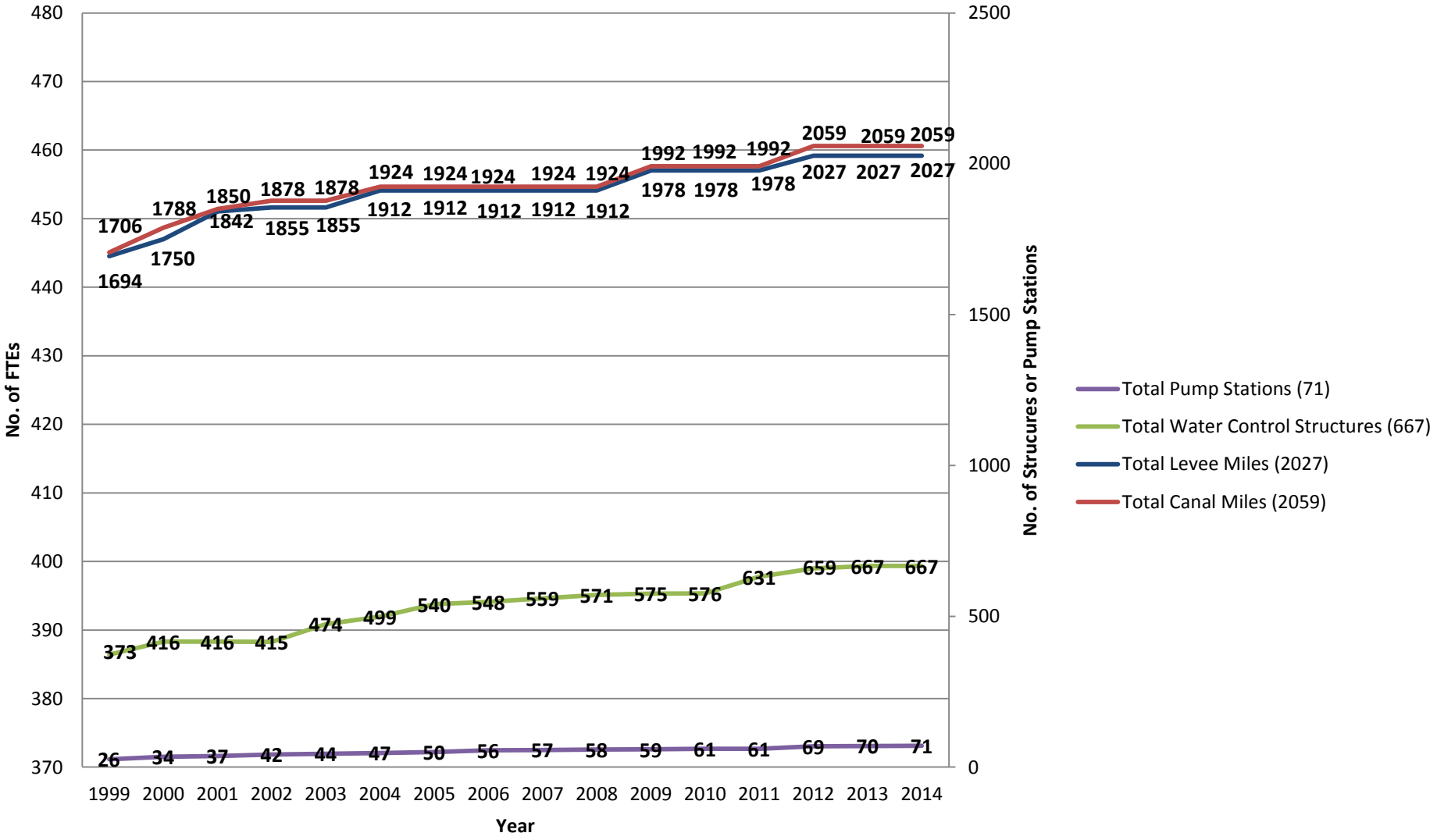
U.S. Army Corps of Engineers Design Regional Flood Control System

- "Central and Southern Florida Project for Flood Control and Other Purposes"
- Authorized by Congress in 1948*

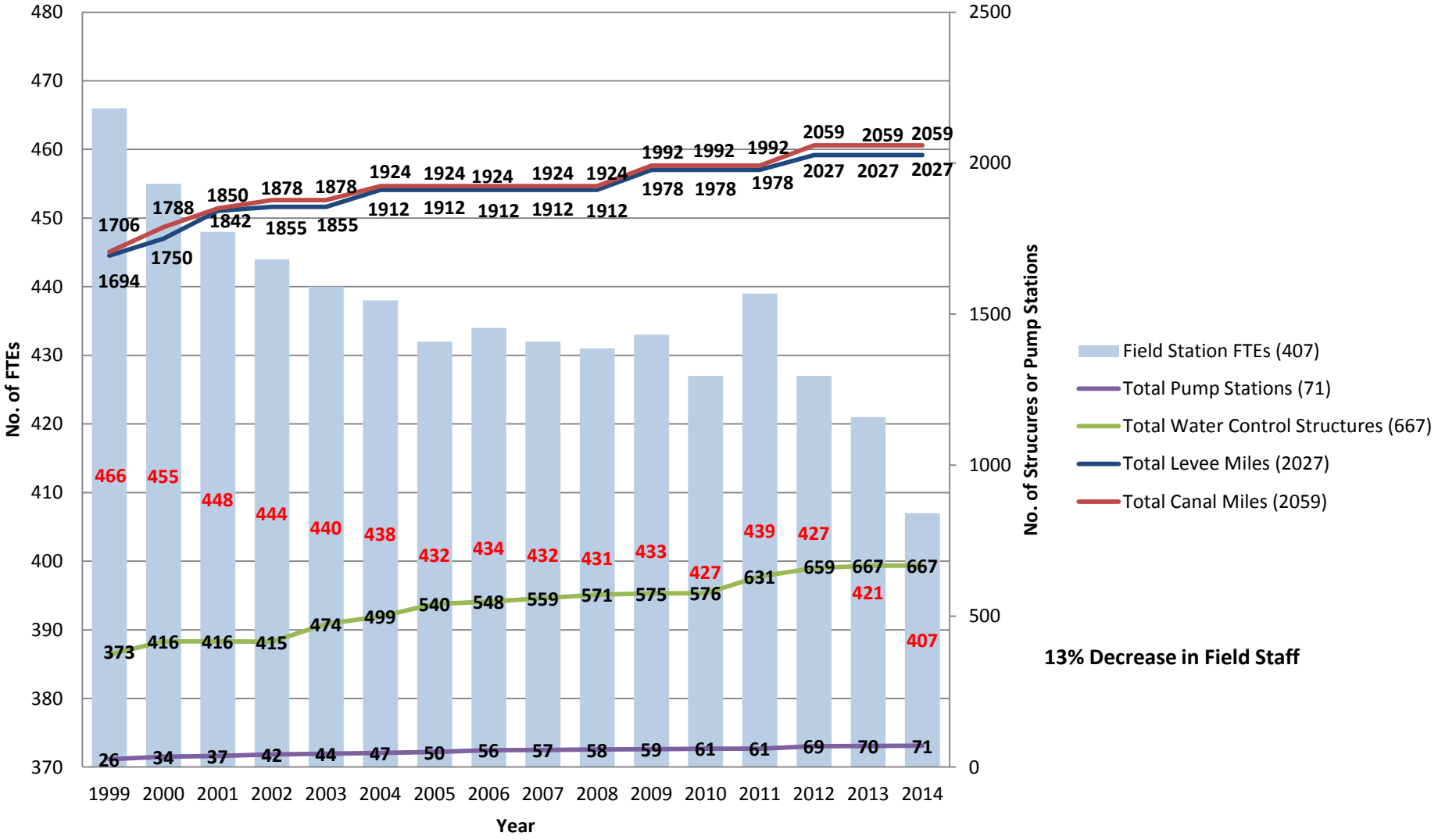
(* Everglades National Park established six months before)



Field Operations Infrastructure & Staff

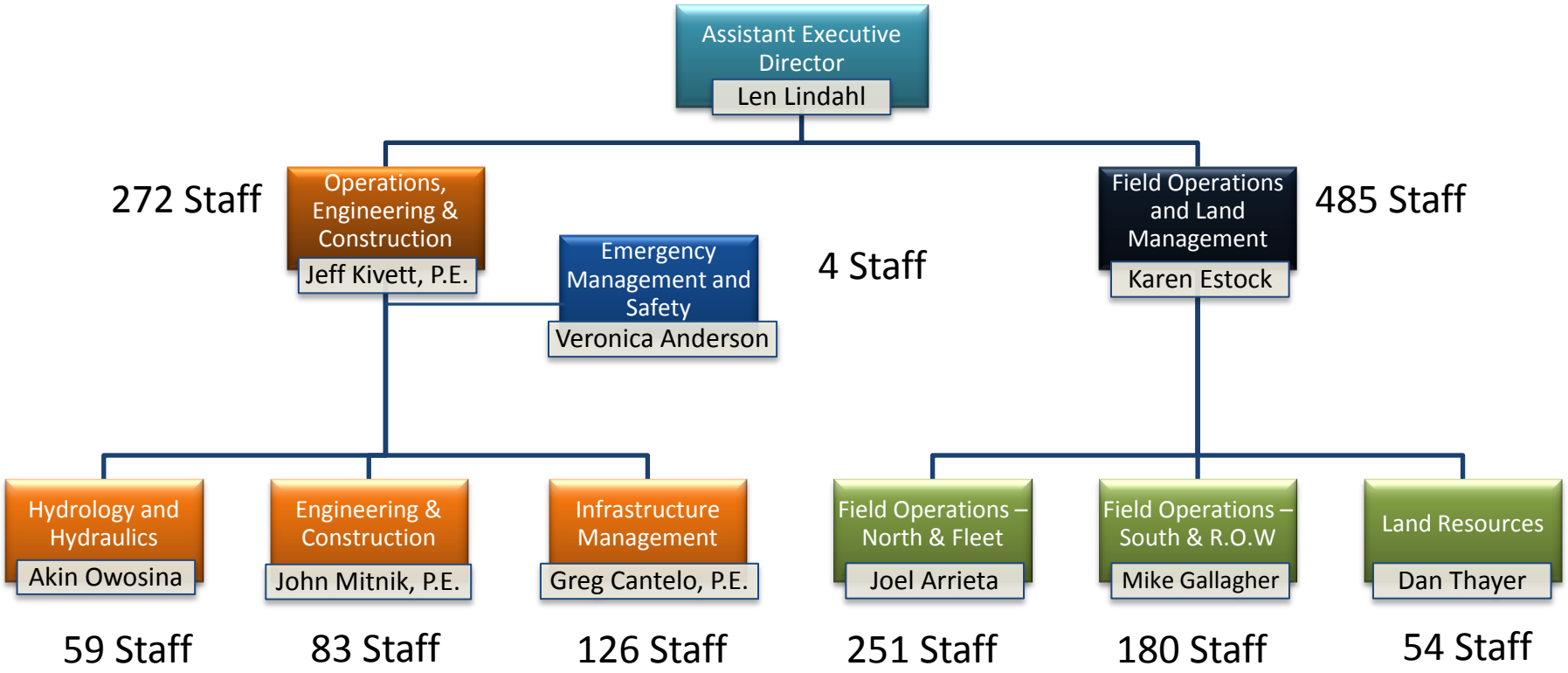


Field Operations Infrastructure & Staff

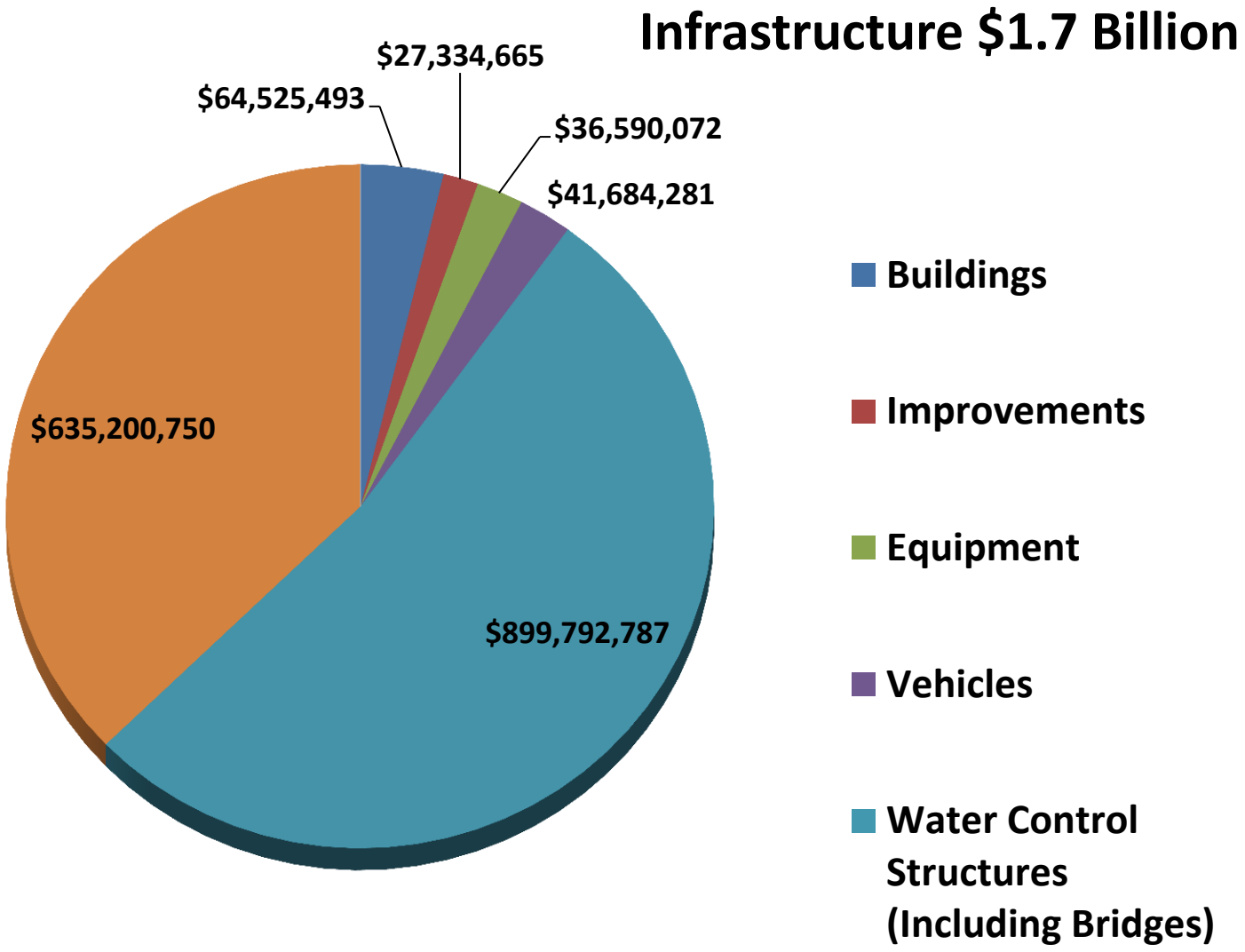


OMC Organization

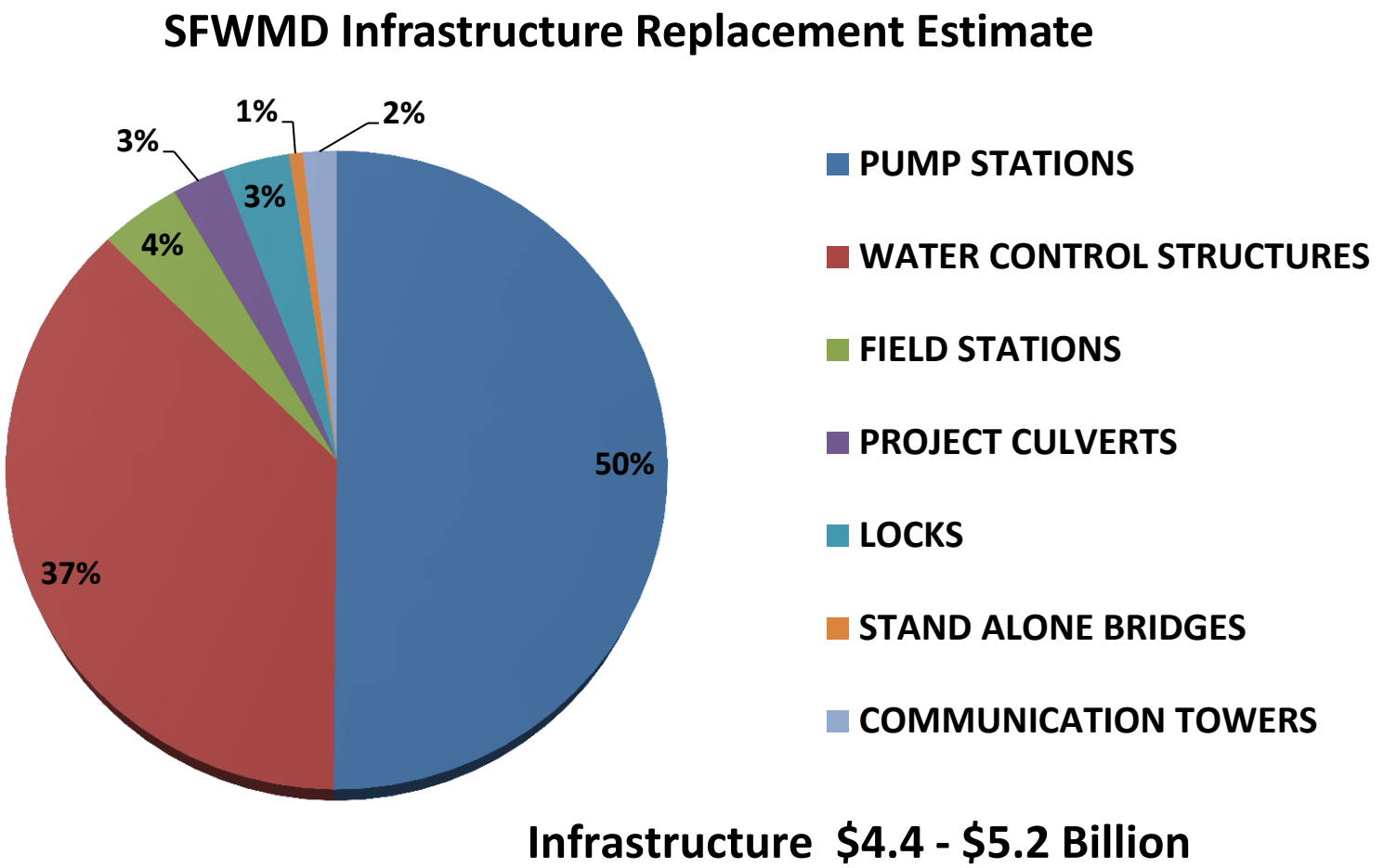
1529 Total District Staff



Infrastructure Assets



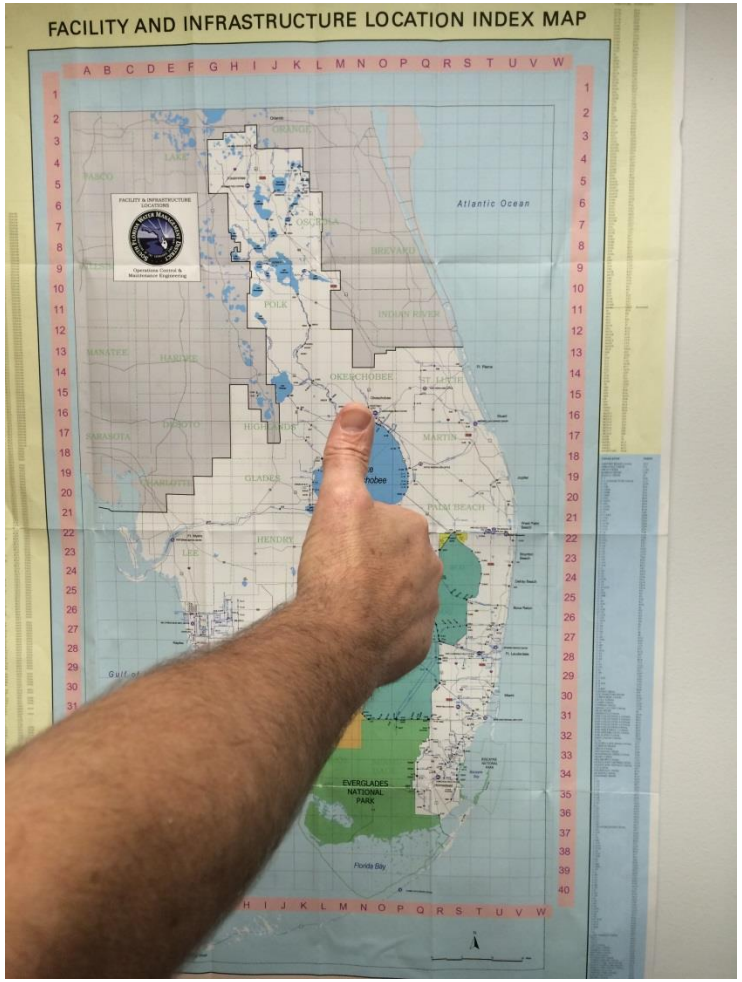
Infrastructure Assets



Infrastructure $4.4 - $5.2 Billion

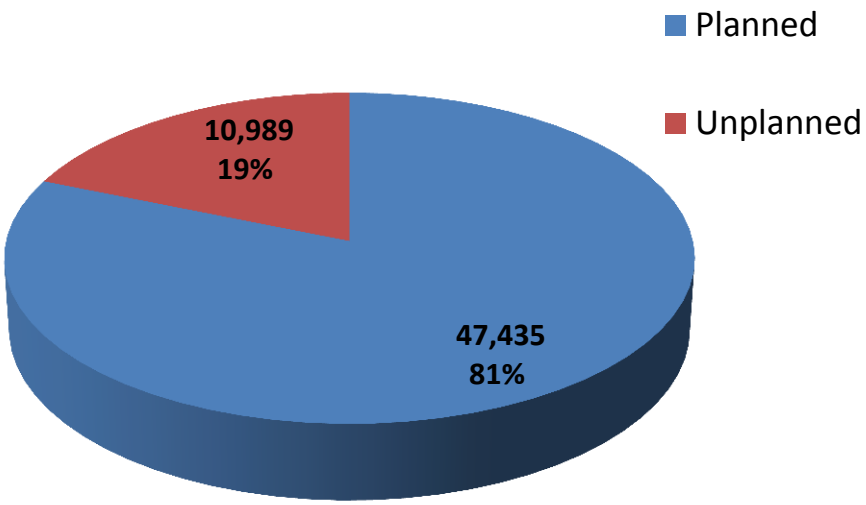
Benchmarking Maintenance – Past

Thumb nailing it…

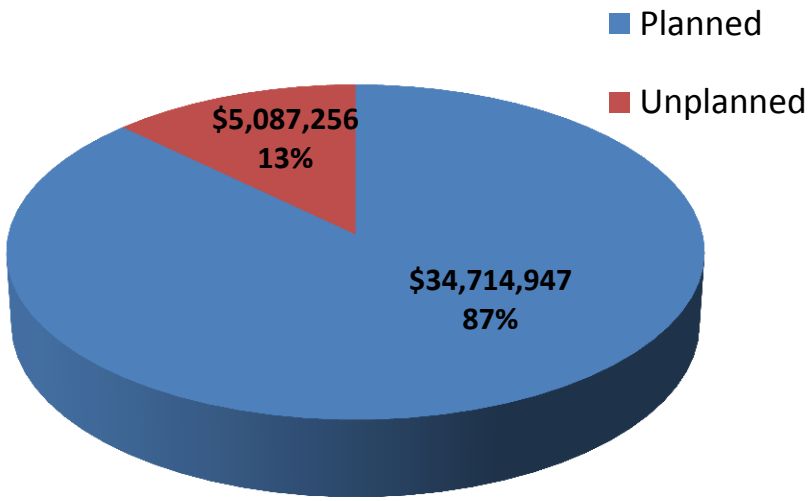


Benchmarking Maintenance – Present

Planned vs. Unplanned Work Order Count

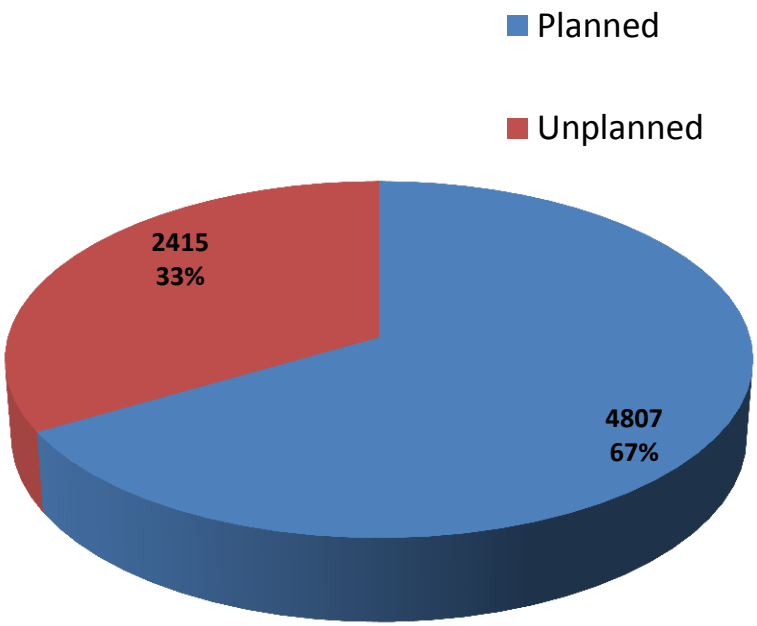


Planned vs. Unplanned Expenditures

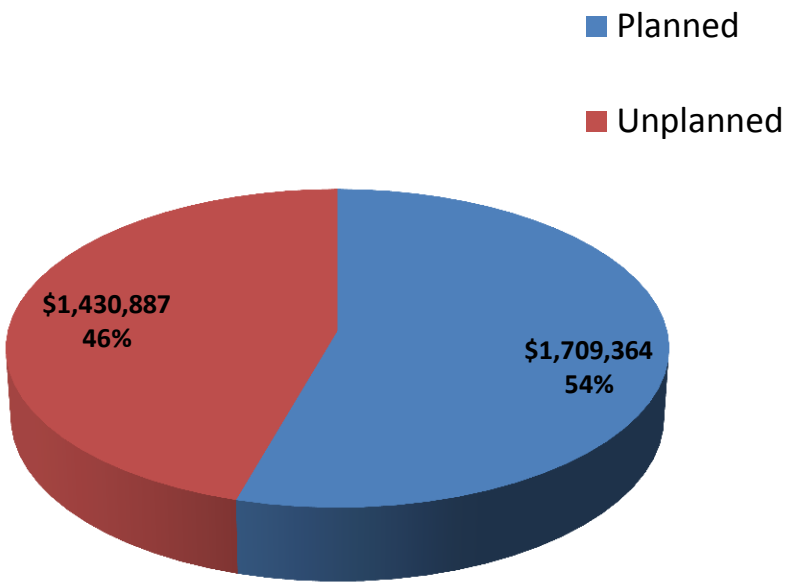


Benchmarking Maintenance – Present

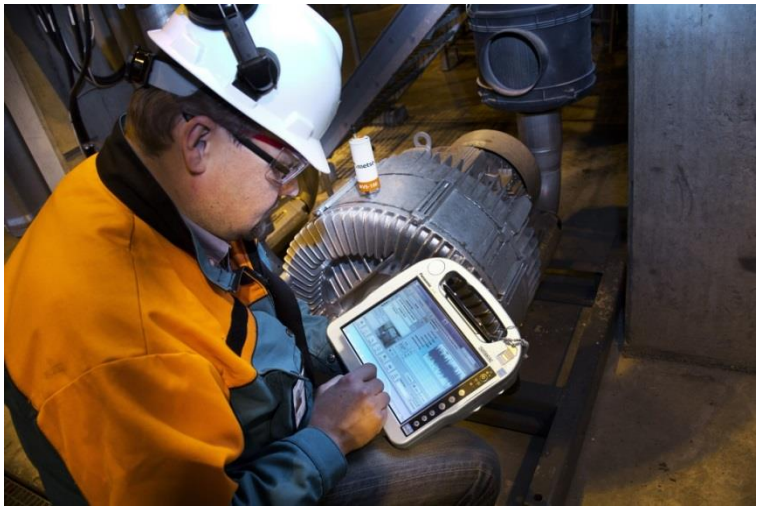
Fleet Planned vs. Unplanned Work Order Count



Fleet Planned vs. Unplanned Expenditures



Benchmarking Maintenance & Capital – Present & Future



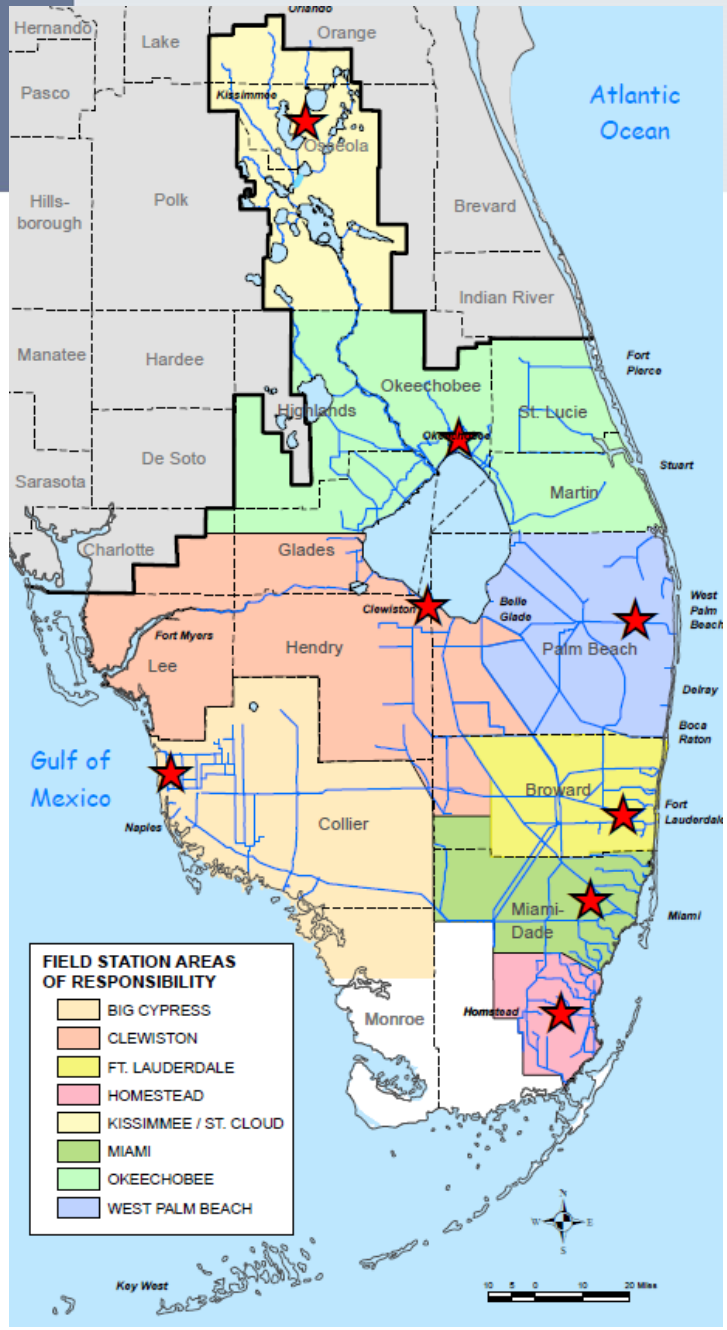
- Flow Weighted

$$\frac{\sum(SIP\ "C"\ Rating\ x\ Structure\ Capacity)}{\sum Structure\ Capacities}$$

- Non-Flow Weighted

$$\frac{\sum(SIP\ "C"\ Rating\ x\ Structures\ with\ rating)}{Total\ Number\ of\ Structures}$$

C-Rating	GPA Range		
C-1 = 4.0	A	4	3.83
	A-	3.82	3.50
C-2 = 3.0	B+	3.49	3.17
	B	3.16	2.83
	B-	2.82	2.50
C-3 = 2.0	C+	2.49	2.17
	C	2.16	1.83
	C-	1.82	1.50
C-4 = 1.0	D+	1.49	1.17
	D	1.16	0.83
	D-	0.82	0.50
C-5 = 0.0	F	0.49	0.00



Field Station Areas of Responsibility

- **Field Operations – North**
  - St. Cloud
  - Okeechobee
  - Clewiston
  - West Palm Beach
- **Field Operations – South**
  - Ft. Lauderdale
  - Big Cypress
  - Miami
  - Homestead
- Locations are based on 2-hour response time
- Average age of field stations: *36 years*

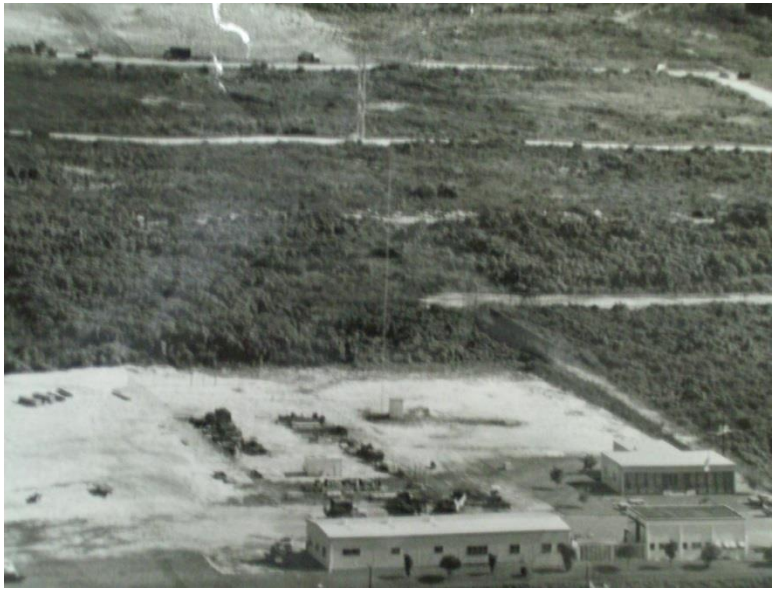
Field Stations

- **8** field stations maintain a total of **130** buildings
- Average age **36** years

Saint Cloud Field Station

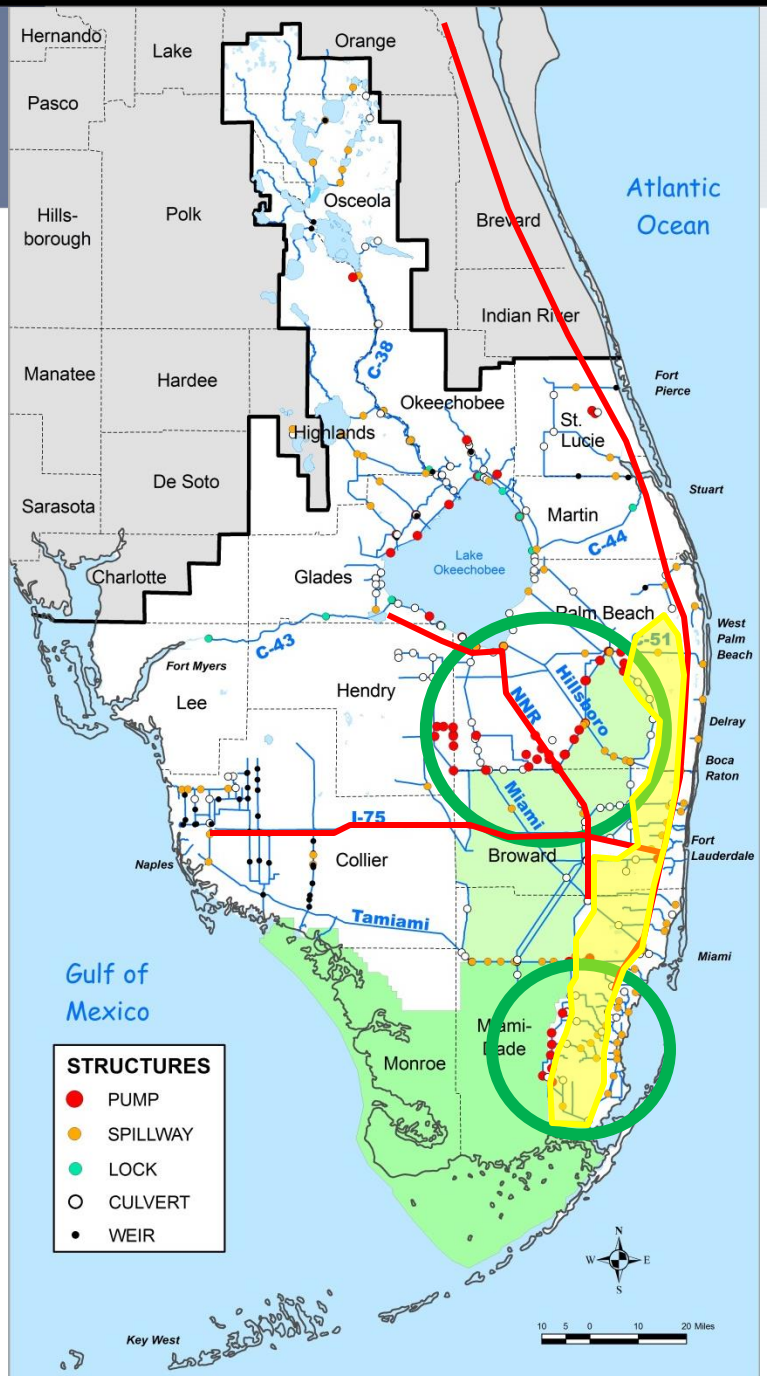

New BCB Field Station Rendering

Field Stations – Past



Field Stations – Present

Field Stations – Present



A Fresh Look at Regional Response

- Technology - Automation
- Infrastructure support
  - I-95, I-75, Sawgrass Exprwy, US27
  - Telemetry communications
  - More robust communications
    - Telephone (Mobile, Sat., etc.)
    - Internet
  - More robust electrical power distribution
- Distribution of new works
  - Remote areas
- Increased risk profile
  - Population growth in poorly drained areas

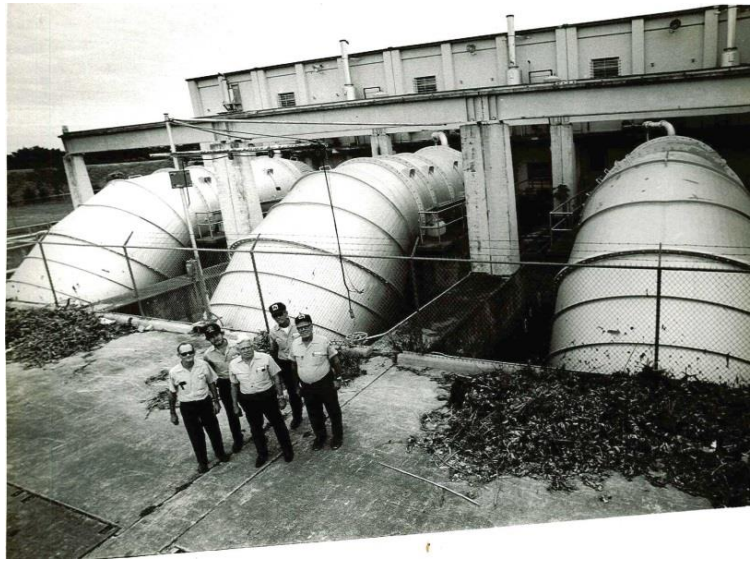
Pump Stations

- 1999: **26** pump stations
- 2014: **71** pump stations
- 173% increase

Pump Stations – Past

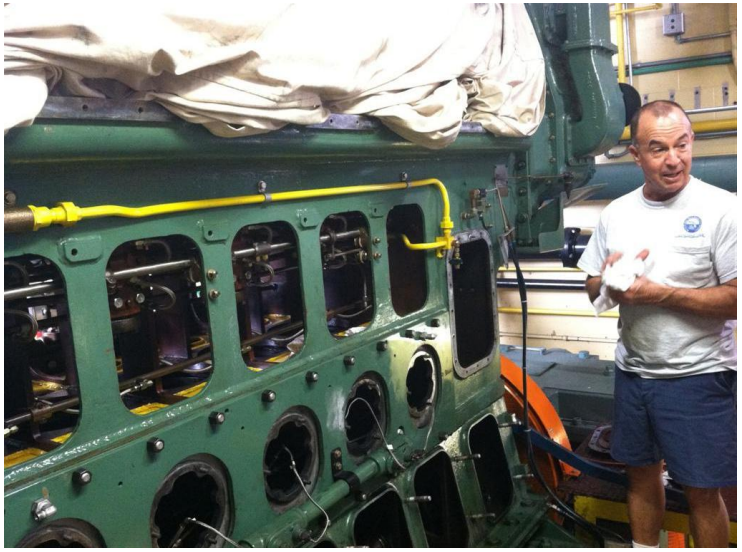
PPENDIX IX Plate 10

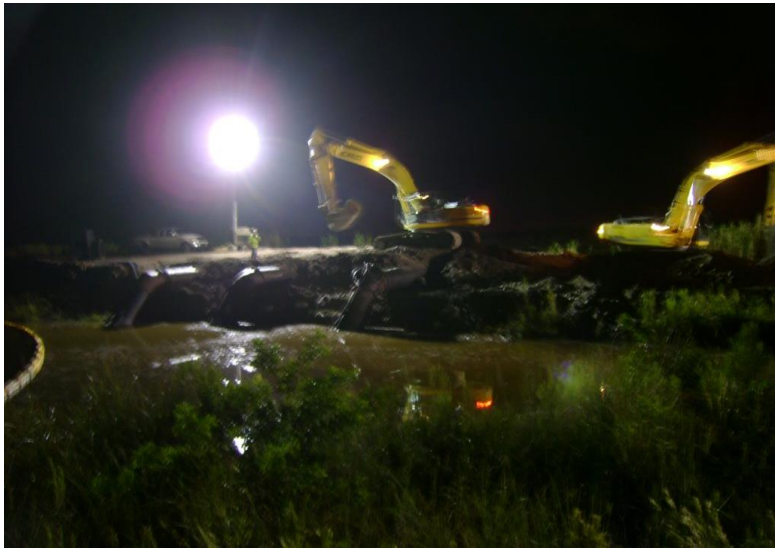
Pumping Station 9 1800 H.P. radial engine and engine control board



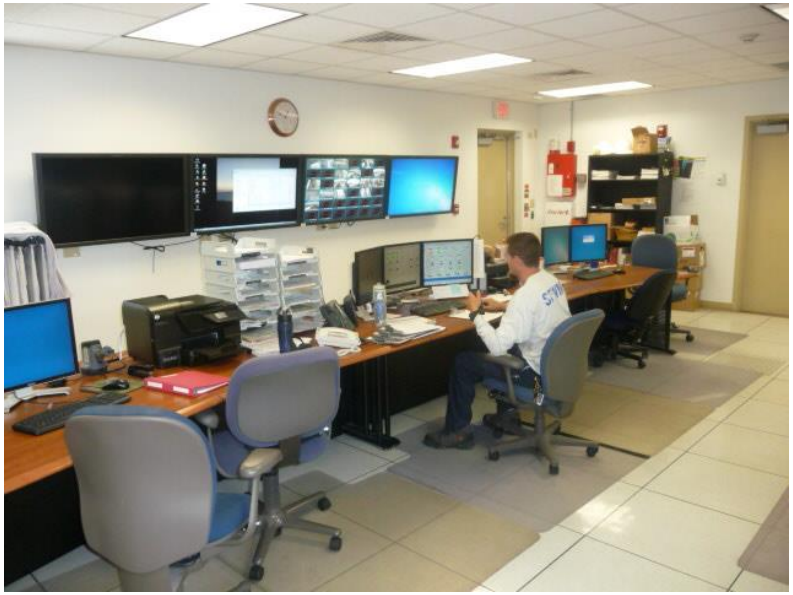
Pump Stations – Present

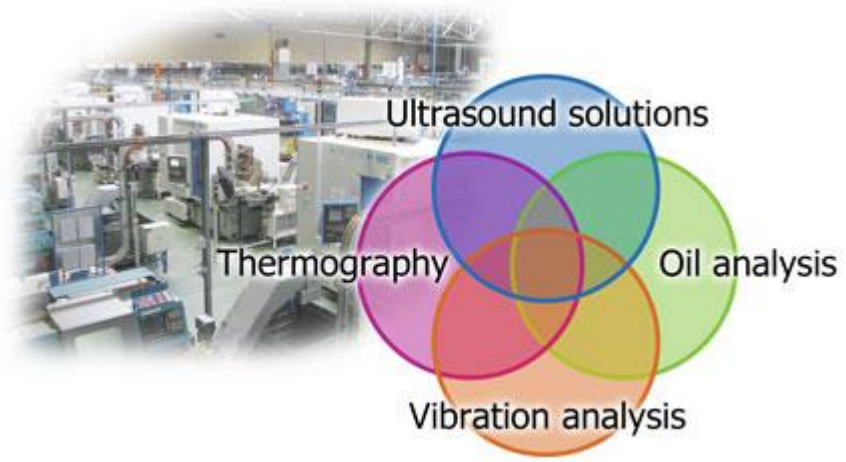
Pump Stations – Present





Pump Stations – Future





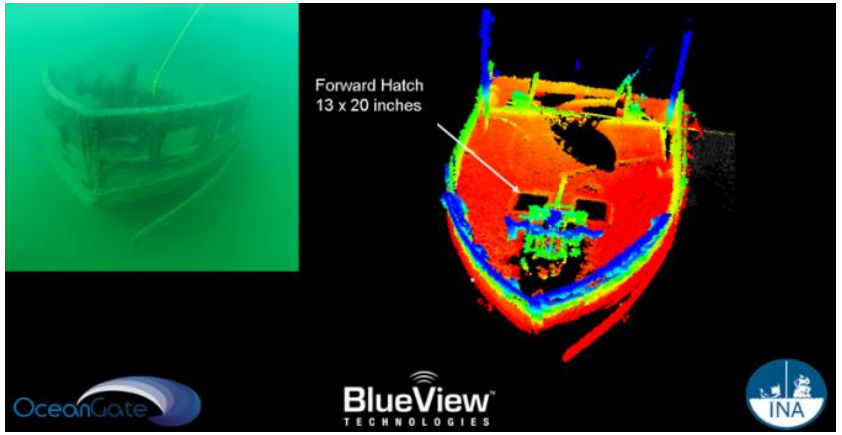
Water Control Structures

- 1999: **373** structures
- 2014: **667** structures
- 79% increase

Water Control Structures – Past

Water Control Structures – Present

Water Control Structures – Future



Efficiencies Implemented to Mitigate Effect of Infrastructure Growth

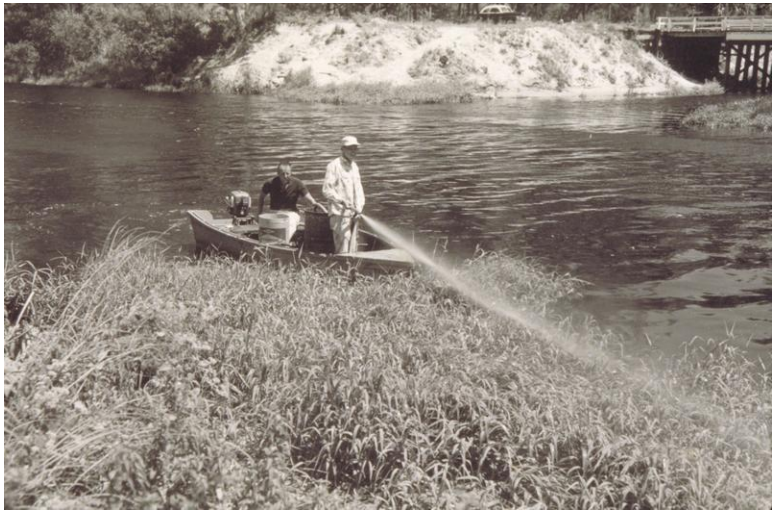
- Reduction of preventative maintenance cycles on all structures and pump stations
- Converting to one-man pumping shifts wherever possible
- Staff directed to new infrastructure
- PSA/PSO Program

Canals

- 1999: **1,706** miles
- 2014: **2,059** miles
- 20% increase

Canals and Vegetation Management – Past

Canals and Vegetation Management – Past



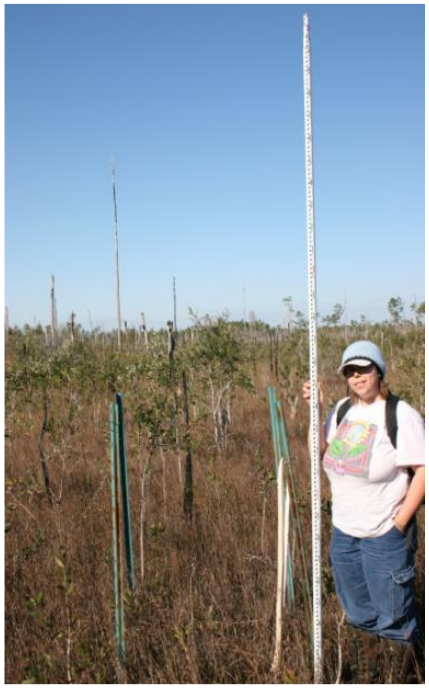
Canals and Vegetation Management – Present

Canals and Vegetation Management – Present

Canals and Vegetation Management – Future

Biocontrol Insects – Melaleuca

Without Biocontrol



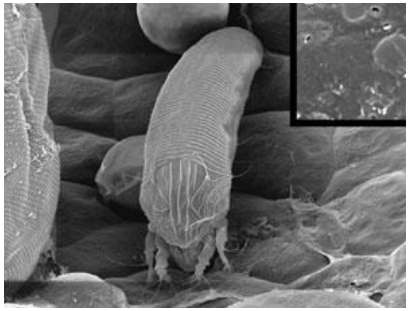
With Biocontrol

Melaleuca gall fly

Melaleuca weevil

Melaleuca psyllid

Biocontrol Insects - *Lygodium*



Lygodium mite

Brown lygodium moth

Invasive Vegetation Biocontrols

Number of insect species released to date on selected invasive plants

- Alligatorweed 3
- Melaleuca 4
- Water hyacinth 4
- Hydrilla 4
- Water lettuce 2
- Giant salvinia 2
- Old World climbing fern 2
- Air potato 1
- Purple loosestrife 4
- Eurasian watermilfoil 3

Levees

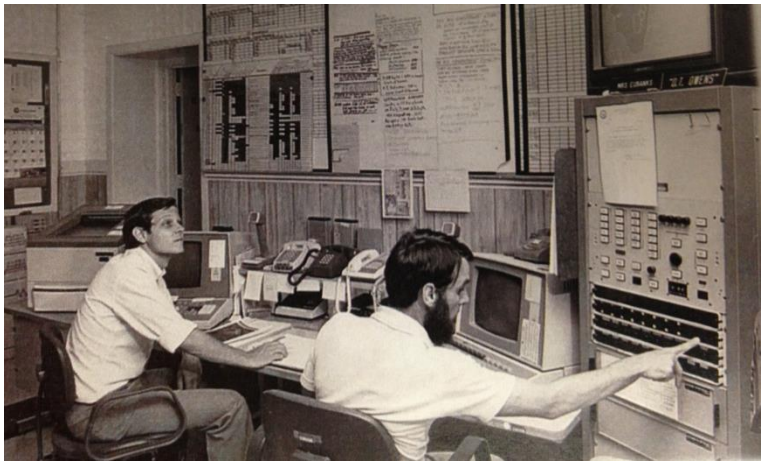
- 1999: **1,694** miles
- 2014: **2,027** miles
- 20% increase

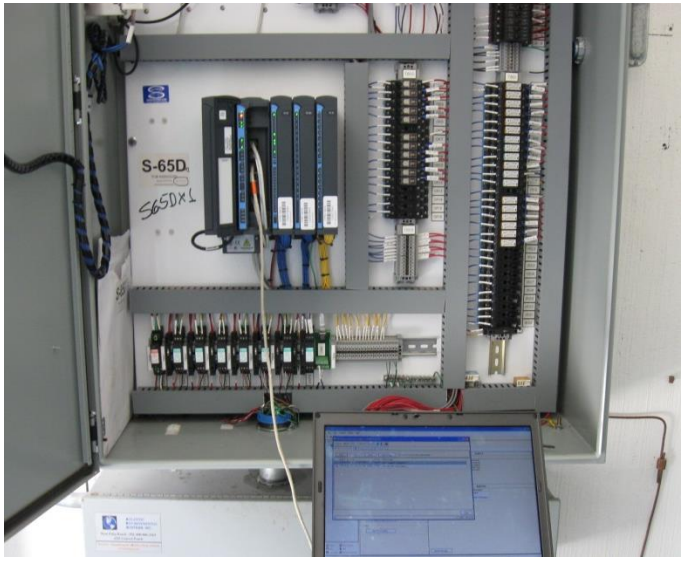
Levees – Past

Levees – Present

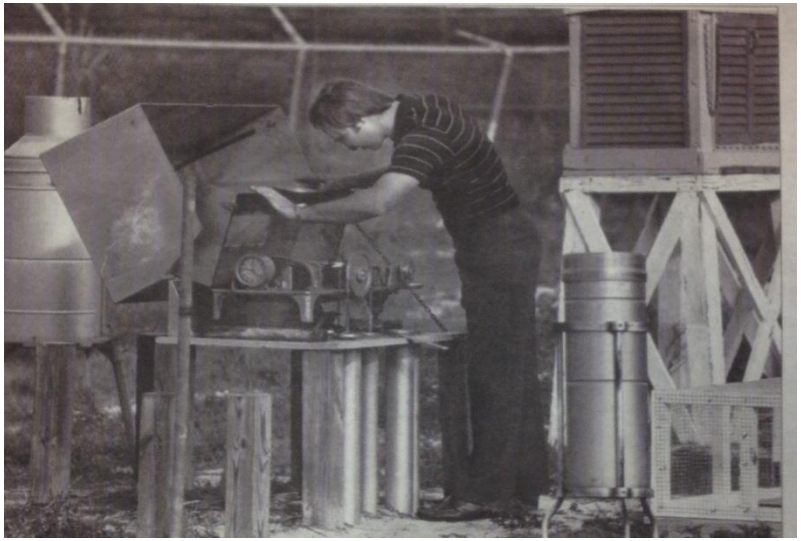
SCADA – Supervisory Control & Data Acquisition

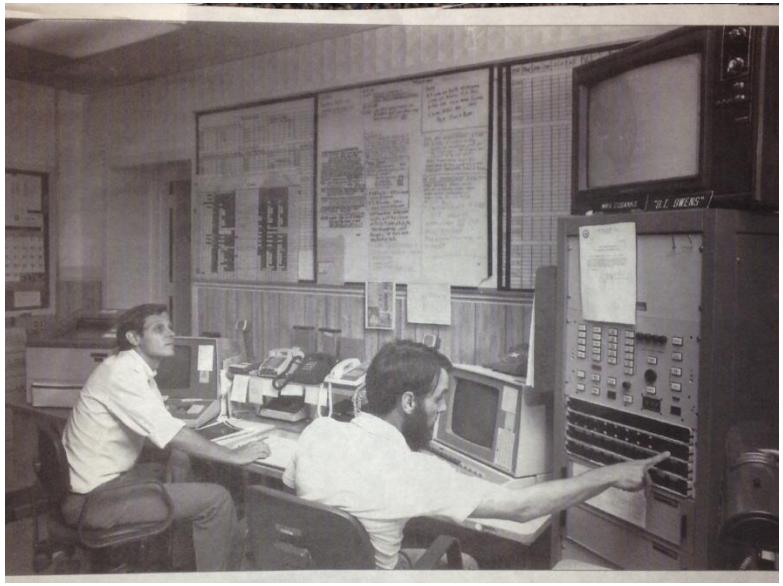
- 1999: **360** remote telemetry sites
- 2014: **1,084** remote telemetry sites
- 201% increase

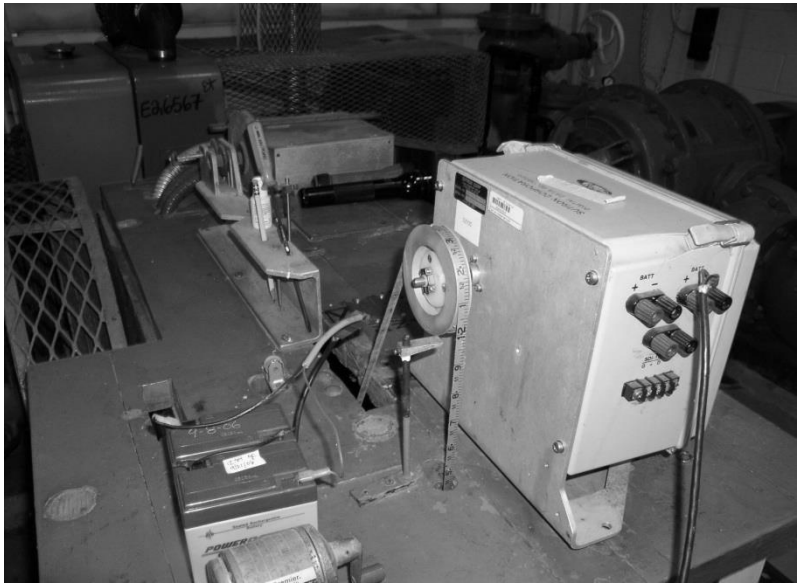




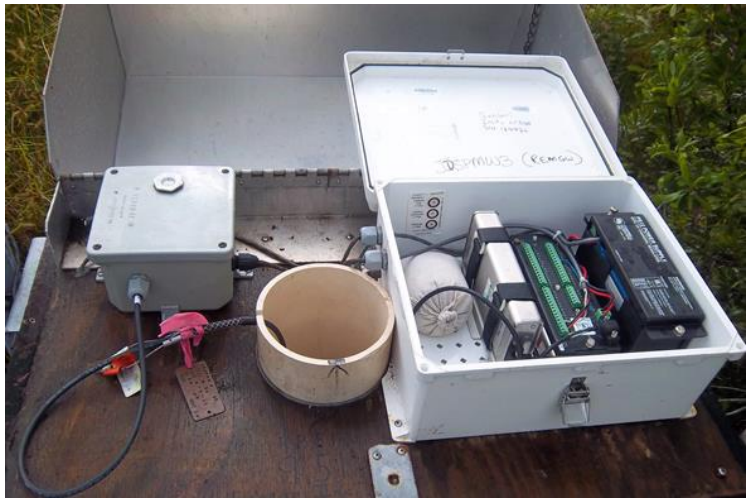
SCADA – Past

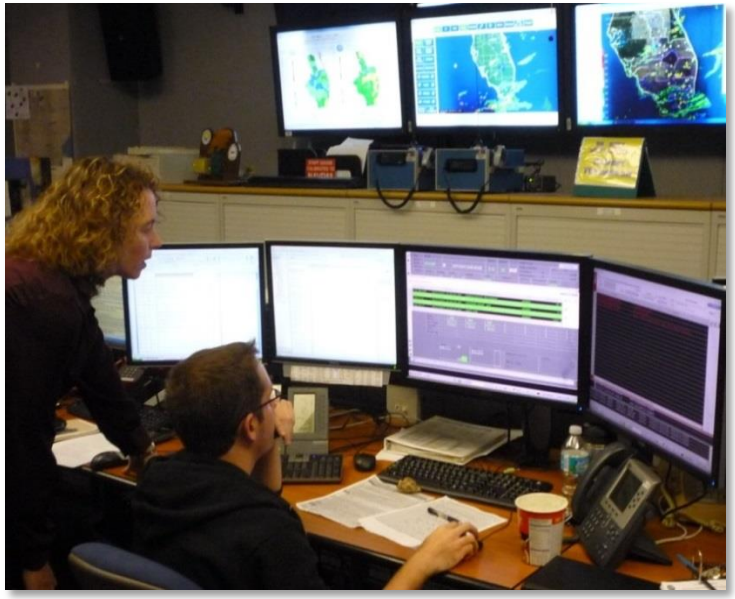


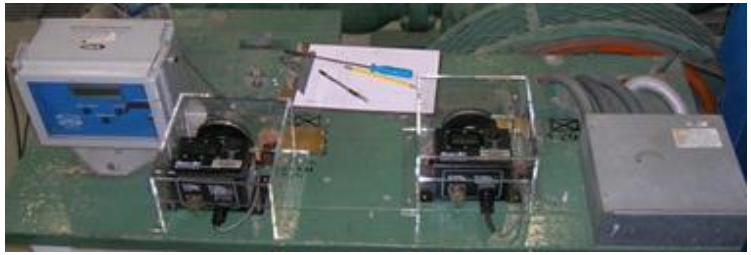




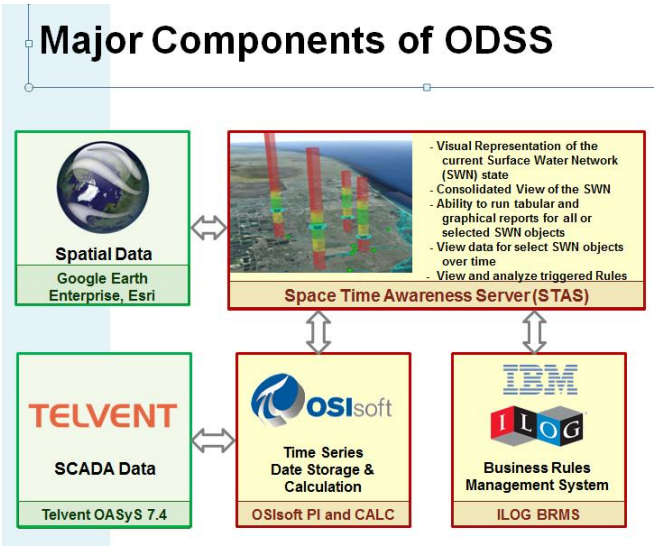
SCADA – Present

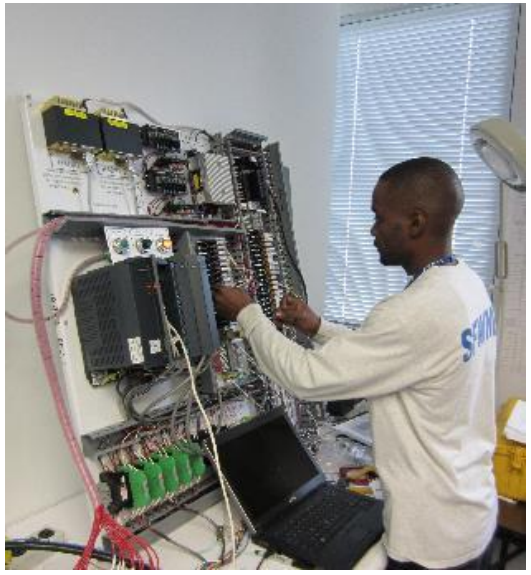






SCADA – Future





Land Management

- Fee-simple lands owned by the District: **759,491** acres
  - *Conservation lands:* ***572,014*** *acres*
  - *Project lands:* ***187,476*** *acres*
- Lands managed by Land Stewardship Section: **389,427** acres

Land Management - Present

- Restore hydrology
- Reintroduce fire
- Remove exotics
- Provide for public use

Land Management - Future

Land Stewardship Condition Class Indexes

Pine Flatwood Condition Class 1

Pine Flatwood Condition Class 2

Land Management - Future

Land Stewardship Condition Class Indexes

Pine Flatwood Condition Class 3

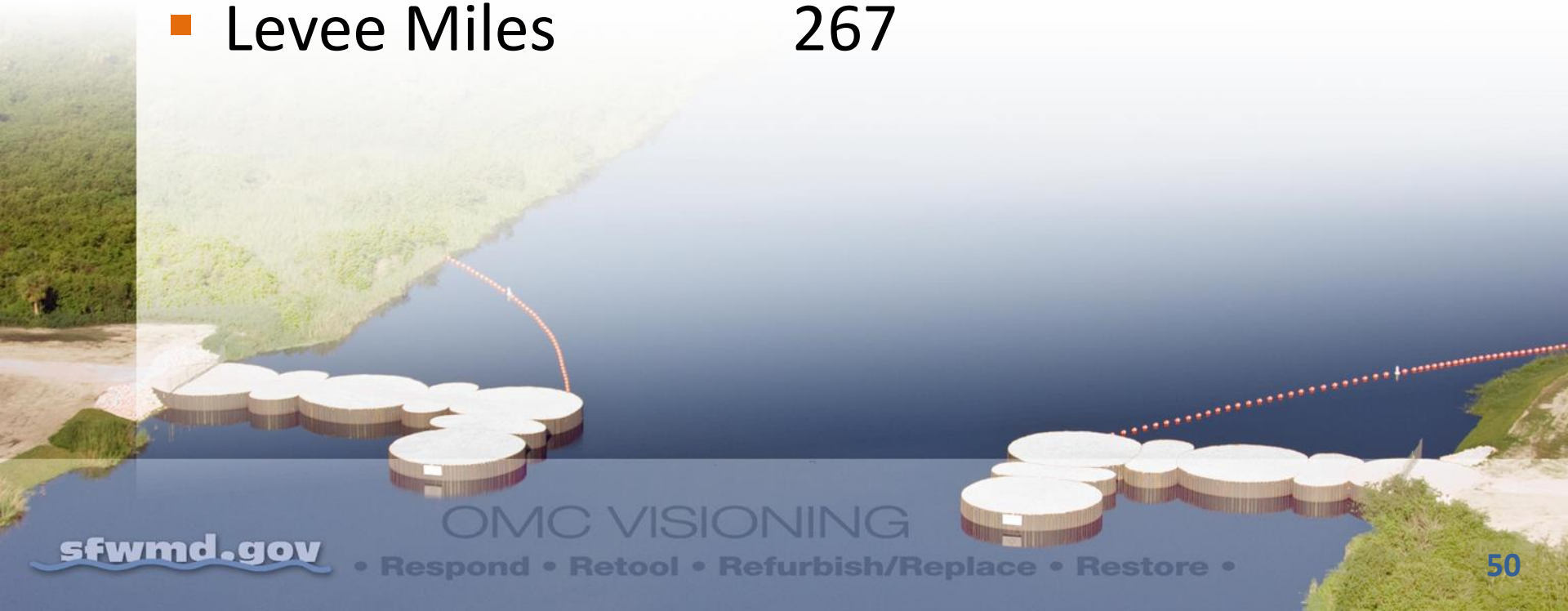
Pine Flatwood Condition Class 4

Land Management

Invite over the neighbors

Future Projects

- Pump Stations 19
- Structures 134
- Canal Miles 116
- Levee Miles 267



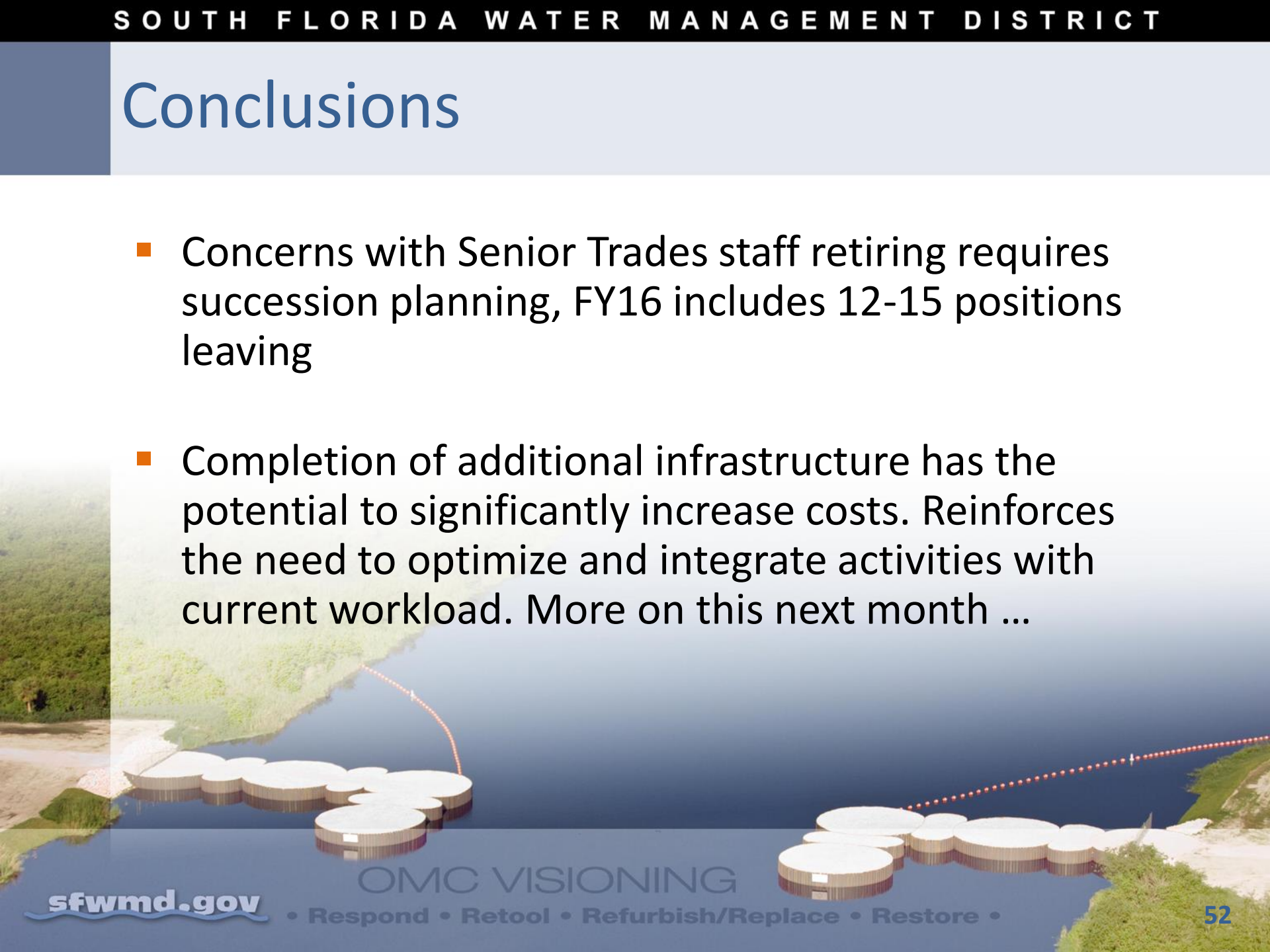
Conclusions

- Technology, SCADA, automation, transportation, communications have allowed staffing to decrease as infrastructure increases
- Reliability Centered Maintenance vs. Routine Maintenance will optimize maintenance activities
- Asset management module will improve cash flow planning and maintenance activities

Conclusions

- Concerns with Senior Trades staff retiring requires succession planning, FY16 includes 12-15 positions leaving

- Completion of additional infrastructure has the potential to significantly increase costs. Reinforces the need to optimize and integrate activities with current workload. More on this next month …



QUESTIONS?