South Miami - Dade Issues Coordination Meeting
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FPL Monitoring Plan Implementation Status

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Outline

1. Background
2. Monitoring Plan (2009)
3. Implementation of Monitoring Plan

FPL Turkey Point Power Plant: Site Location

FPL Turkey Point Power Plant: Overview

Existing Units

- Two oil/gas steam electric generating (1 and 2)
- Two nuclear (3 and 4)
- One natural gas-fired (5)

Cooling Canals:

Became operational in 1973. Re-circulated water used to cool units 1 through 4. Water cools as it travels through the canals

Cooling Canal System

1970: US District Court Southern District of Florida - U.S.A. versus Florida Power and Light.

- Adverse environmental effects due to hot water discharge to Biscayne Bay

1971: EPA and FPL settlement

- No discharges to Biscayne Bay
- Construct re-circulating cooling canals

Canal water concerns of the time

- Hypersaline (2 times above salinity of seawater)
- Westward migration of salty water in the cooling canals could degrade surface or ground water

Early Agreements - 1972

1972: Agreement with Central and Southern Flood Control District (SFWMD)

<u>A Key Objective</u>

- "restrict saline water from CCS westward… to those amounts which would occur without the existence of the cooling area"

<u>Established</u>

- Western seepage control (interceptor ditch & pumps maintain seaward gradient)
- Groundwater monitoring program

Early Agreements - 1983

1983: Agreement with SFWMD

- Recognized FPL had performed obligations since 1972 agreement
- Continued seepage control
- Reduced groundwater monitoring requirements
- Added enforcement provision

Uprate Application - 2008

- FPL files application to Uprate two existing nuclear units (3 and 4)

- Undergoes multi - agency review, and as one of the conditions of certification requires:
  - SFWMD approved surface water, ground water, and ecological monitoring
  - Development of new agreement with SFWMD

- Specifies that Revised Monitoring Plan:
  - Determine the extent of cooling canal water surrounding Turkey Point under existing conditions (delineation)
  - Detect changes associated with Uprate

Current Agreement - 2009

October 14, 2009 Agreement with SFWMD

- Carries forward & expands on previous requirements- seepage control, enforcement and monitoring

- Specifies Monitoring Provisions
  - Implement 2009 Monitoring Plan
  - Revisions to the Plan may be required (expanded locations and parameters, modeling)
  - All collected raw data to SFWMD and FPL to retain data
  - Annual reports
  - SFWMD access of monitoring sites

2009 Monitoring Plan

- Monitoring locations within cooling canal system and surrounding wetlands, mangroves, and Bay
  - Ground water
  - Surface water
  - Pore water (soils)
  - Ecological (vegetation, seagrass, fish)
- Key Components
  - Water budget
  - Fingerprinting/ tracer suite monitoring
  - Salinity and temperature surveys - manual & automated

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

FPL Turkey Point Power Plant Groundwater, Surface Water, and Ecological Monitoring Plan

South Florida Water Management District
Florida Department of Environmental Protection
Miami-Dade County Department of Environmental Resource Management
October 14, 2009

Implementation of Monitoring Plan

Phase I

1. Develop approved documentation for Quality Assurance and Control: (*Quality Assurance Project Plan)*
2. Installation of ground water and surface water monitoring stations
3. Data interface development

Phase II

1. Data Collection
2. Data Evaluation

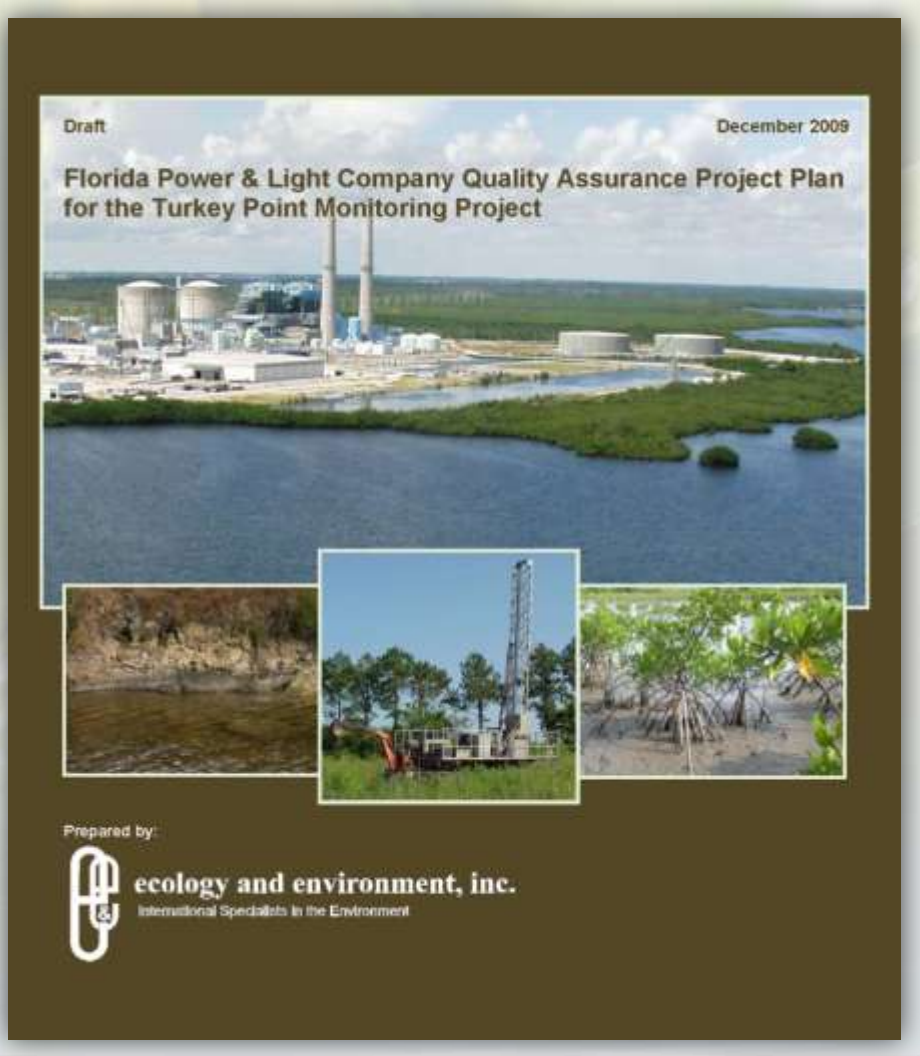
Other Activities:

Quarterly meetings (January 28, April 23)

Quality Assurance Project Plan: Overview

- Documentation that details installation, sampling methods, analyses, and data reporting
- Specifies framework for “defensible monitoring results and quality reporting”
- Requirement of Monitoring Plan
- Must meet Quality Assurance & Quality Control requirements Chapter 62-160 F.A.C., SFWMD, FLDEP.

Quality Assurance Project Plan: Phase I



- Received draft December 2009
- Agencies supplied comments and will re-review
- Some components to be developed and reviewed ahead of main document
- Some components requiring additional detail prior to final approval have been identified

Summary Monitoring Stations

Generalized Monitoring Station Summary

- 14 Groundwater Clusters Monitoring locations (*scheduled to be complete June 2010)*
- 20 Surface Water Monitoring locations (*in progress)*
- Ecologic transects *(in progress)*

Installation of Monitoring Stations: Phase I Ground Water

Groundwater Clusters

- 3 offshore in Biscayne Bay
- 1 in cooling canal
- 9 stations surrounding wetlands
- 13 stations shown in map, 14th station off Card Sound Road

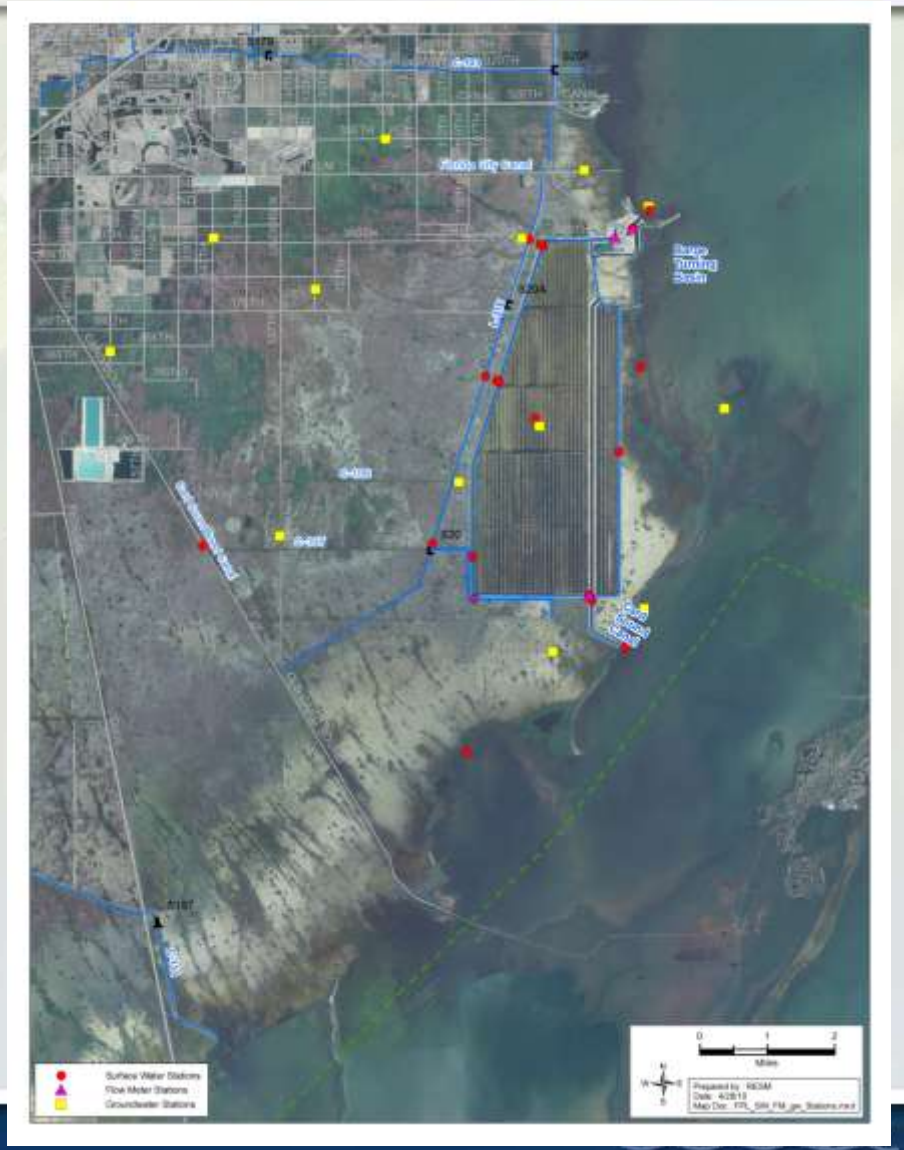
Well Cluster Installation Process

- Deep soil boring advanced with continuous coring at each cluster location to bottom of Biscayne Aquifer (60 to 130 feet bgs)
- Geophysical logging conducted by USGS on the deep boreholes
- Installation of three wells at each location, screened in the upper, middle and lower portions of the Biscayne Aquifer
- Three drill rigs in use – Barge mounted for offshore, track-mounted for wetlands, and truck-mounted onshore

Installation of Monitoring Stations: Phase I Surface Water

Surface Water Stations

- 5 Offshore Biscayne Bay
- 7 Cooling Canal System
- 3 L-31E Canal
- 1 S-20 Discharge Canal
- 2 Card Sound Canal



Additional Monitoring Stations

- 2 Meteorological monitoring locations
- 5 Rainfall locations
  - 3 in the CCS
  - 2 Outside the CCS
- 3 CCS Flow measurement locations (water budget)

Installation of Monitoring Stations: Phase I Ecological

Ecological Monitoring

Components: Marsh Plants, Bay Seagrass and Animals

Transect Design:

- 9 Terrestrial
- 20 Estuarine

Phase I: Data Interface

- Design and specific implementation under development
- FPL transmitted data and reports will be available through SFWMD

Phase II: Broad - Scale Salinity Survey

Sampling began March 17
Results (*under review*)

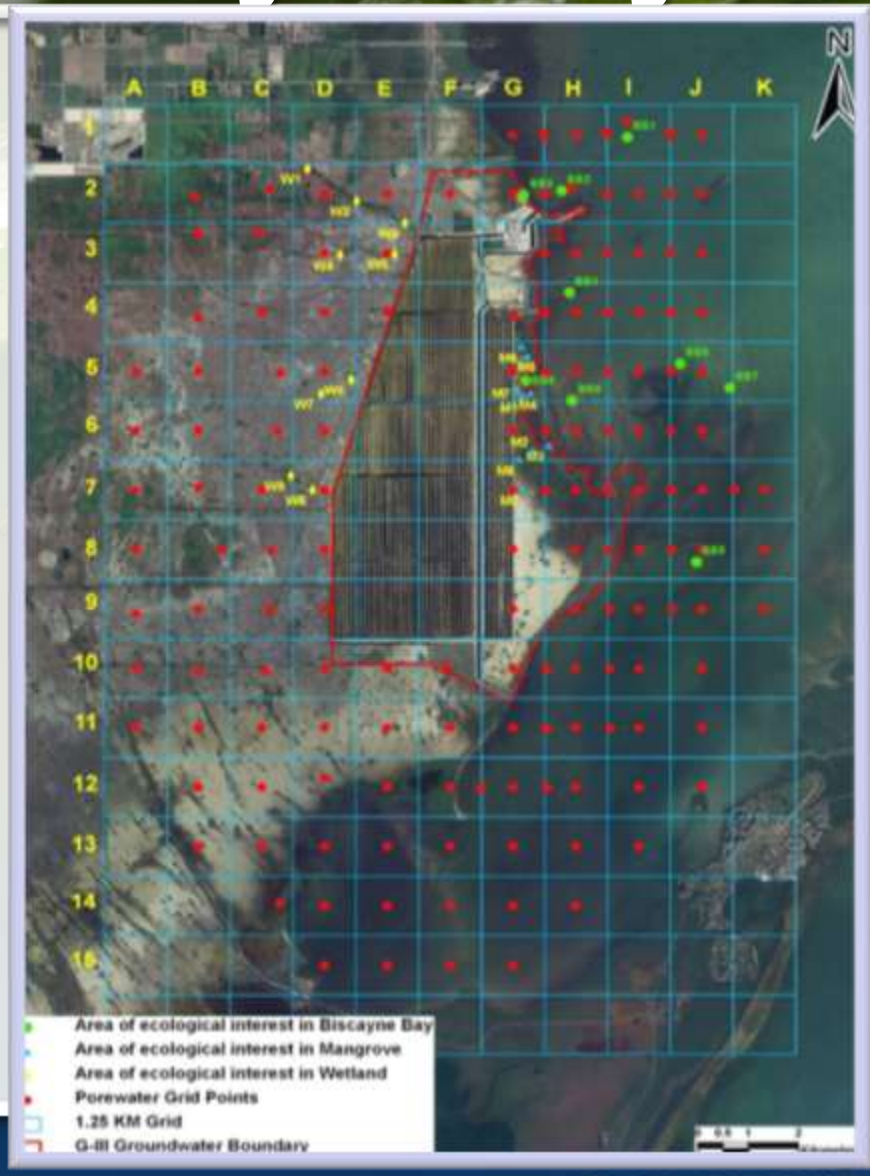
Measurements in soil and sediments (pore water)

Grid design (*red*)

- Freshwater wetlands
- Saline wetlands and mangroves
- Biscayne Bay

Areas of ecological interest (*green* & *yellow*)

- Stressed vegetation
- Bay features



Next Steps

- Continue review of QAPP, finalize and approve
- Approve some parts as needed in advance to initiate sampling activities
  - Tracer Suite Sampling and Analyses (in review)
- Finish installation of monitoring stations and begin surface and ground water monitoring
- Finalize database development and data interface

Questions?

FPL
Monitoring Plan Implementation Update

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