UF Frog Pond Hydrology Network:

Monitoring groundwater flow and water quality along the eastern boundary of Everglades National Park

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Objectives

• Study hydrology and water quality at the farm scale

• Establish the reach of canal elevations and their seasonal relationship to field water table depth (WTD) on a 1-mile transect between two canals, and how WTD affects soil moisture

• Determine direction and speed of groundwater and chemical flow in the field and their seasonal changes

• Calibrate and test field/farm scale computer models to aid in evaluating management scenarios that are developed based on regional scale models

• Bridge the gap between the current regional model (2x2 mi) and the field scale
(Objectives, cont.)

- Assess water quality by bi-weekly sampling at canals, ditches and wells (F, Cl, Br, SO4-S, NH4-N, NO3-N, PO4-P, pH, EC, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Na, Ni, P, Pb, Zn, Al, As, Mn, Mo, Se).

- Aid in “adaptive management” and RECOVER processes.

- Make results and recommendations accessible to stakeholders through the University of Florida Extension.
Frog Pond hydrological monitoring network

- Distributed throughout the Frog Pond to monitor the hydrological components that best explain water and chemical flow in the area.

- Supported by a Geographical Information System (GIS) to allow study of interactions between hydrology and land type/use
UF Monitoring Network

Everglades National Park

New CERP storage pond

USGS, SFWMD wells

Phase I:
• sampling at ditch
• transect for ’02 study

Phase II:
• spatially distributed stations ’03
UF Monitoring Network

Phase I: Transect for study

L-31W

Water table
recorders

Unsaturated zone
monitoring
equip.

Rain2

ET

Flooding

Rain1

Canal stage
recorders

C-111

1

5

5000'

10

15'

UF Monitoring Network

Institute of Food and Agricultural Sciences
Installation of 10 monitoring wells (March’02)

Installation of 2 canal monitoring platforms (Feb’03)
Raingauge (2)
Well (10)
Canal platform (2)
(sampling and stage recording)
Pressure transducer
ET weather station (1)
Preliminary results: canal/rainfall/field interactions
Groundwater Modeling in the Frog Pond

- Modeling with Visual MODFLOW
- First estimation of parameters from values derived from studies in the area
- Calibration and optimization of parameters from:
  - inverse modeling
  - field tests

Results from a simulation showing effect of closed gate at structure S-175. The lines indicate piezometric surfaces and the arrows show flow direction and velocity.