Spatial Patterns of TP Enrichment in Northern Shark River Slough

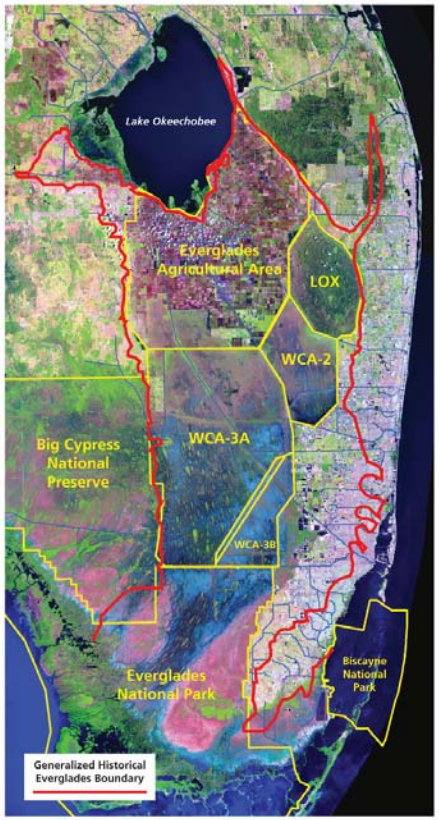
By

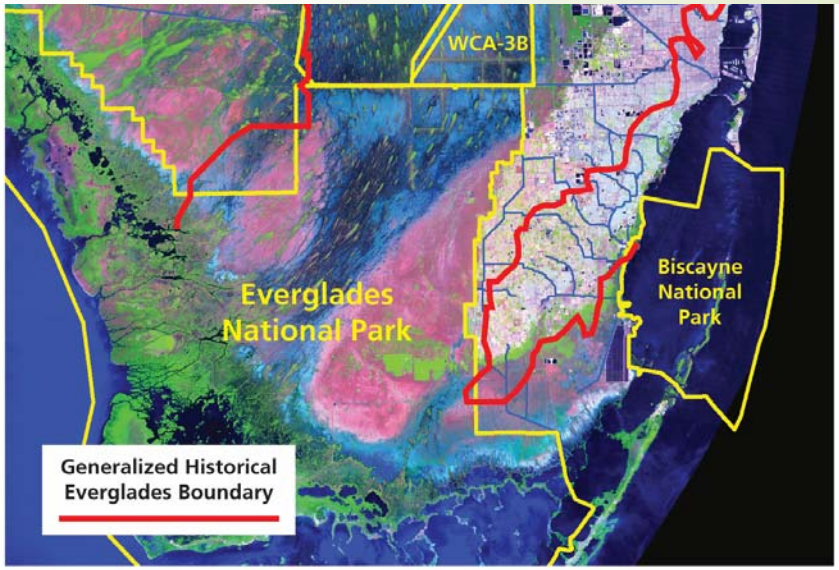
Joffre Castro

Everglades National Park

April 2015

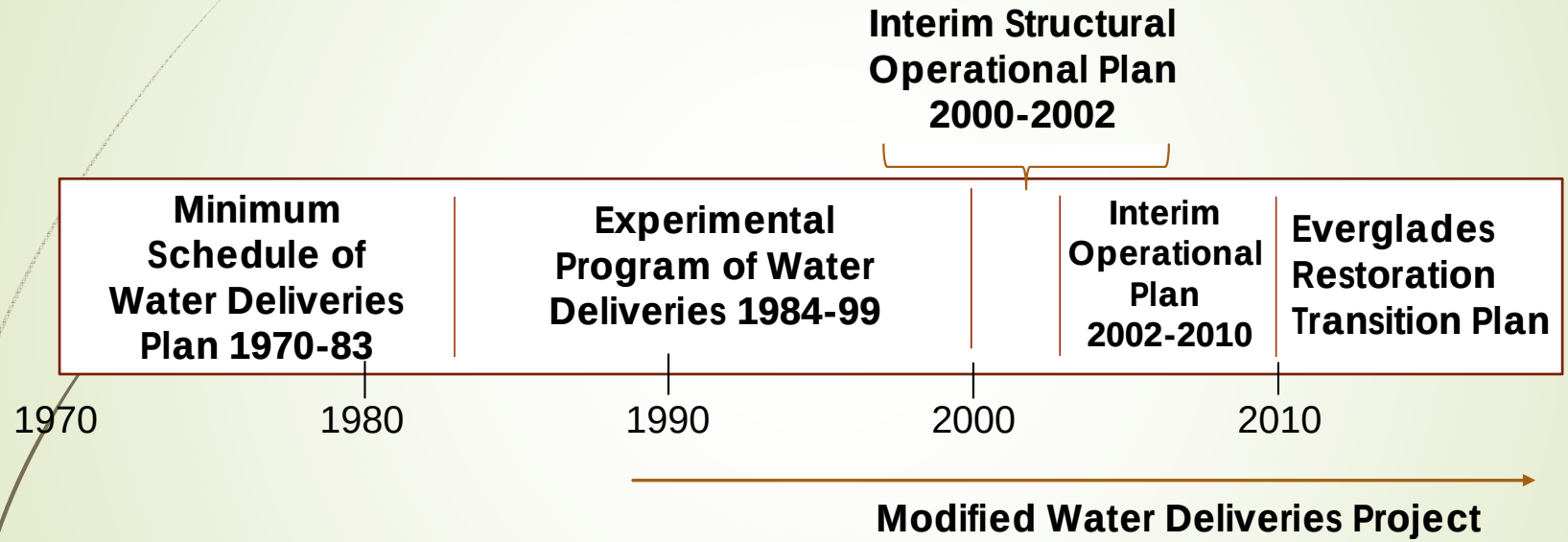
EVERGLADES


Lake Okeechobee
Everglades Agricultural Area
LOX
WCA-2
WCA-3A
Big Cypress National Preserve
WCA-3B
Everglades National Park
Biscayne National Park
Generalized Historical Everglades Boundary


WCA-3B
Everglades National Park
Biscayne National Park
Generalized Historical Everglades Boundary

Western Shark River Slough

Operational Plans Timeline



SRS Monitoring Network

Purposes

Support MDW:

- Operational testing and planning
- Assess performance (ecological indicators)

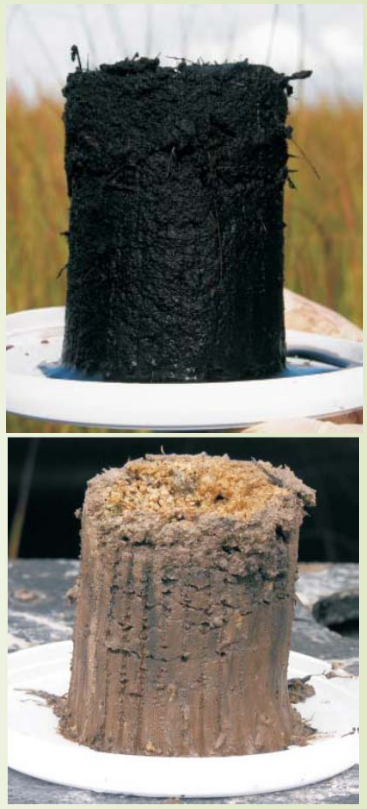
Establish and sustain a long-term ecological network

Complement other monitoring efforts (REMAP, RECOVER)

Assess ecological effects from other restoration projects (CEPP, CERP)

Characterize soil eutrophication

- **Spatial patterns of enrichment**
- **Level of Soil TP**



Source EPA's REMAP

Soil Studies

Large-scale Studies

EPA

Interim, 1996
Technical, 1998
Scheidt et al., 2000
Stober et al., REMAP I/II, 2001
REMAP III, 2007

Reddy et al., 2005
Osborne et al., 2011a

SRS Studies

Doren et al., 1996
Childers et al., 2003
Gaiser et al., 2009
Bramburger et al., 2011
Osborne et al., 2011b
Osborne et al., 2013
Gaiser et al., 2013

Other Studies

Busch et al., 1998
Chen et al., 2000
Songs et al., 2004
Chambers and Pederson, 2006
Reddy et al., 2011

ENP flume studies

1983-1984:

- Flora et al., 1986
- Scheidt et al., 1988
- Walker et al., 1989

1998-2003:

- Childers et al., 2001
- Noe et al., 2001, '02
- Gaiser et al, 2004., '05, '06

Marsh vegetation patterns and soil phosphorus gradients in the Everglades ecosystem, 1996

Doren, Armentano, Whiteaker, and Jones; data 1989

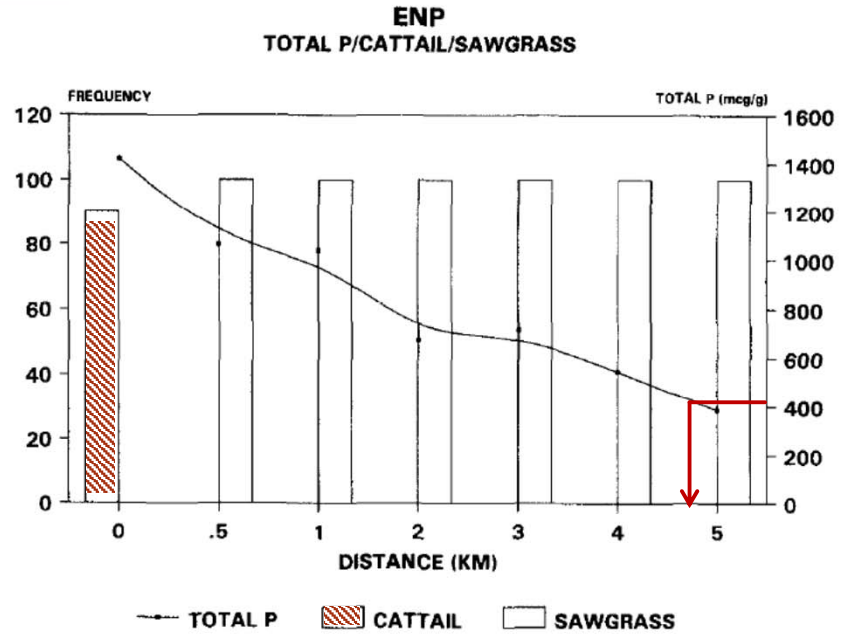
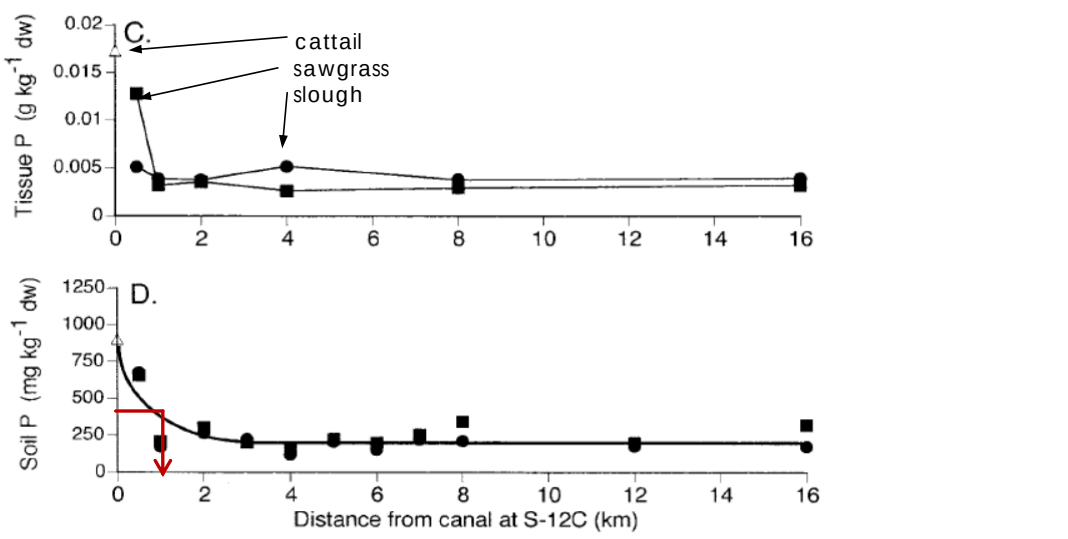


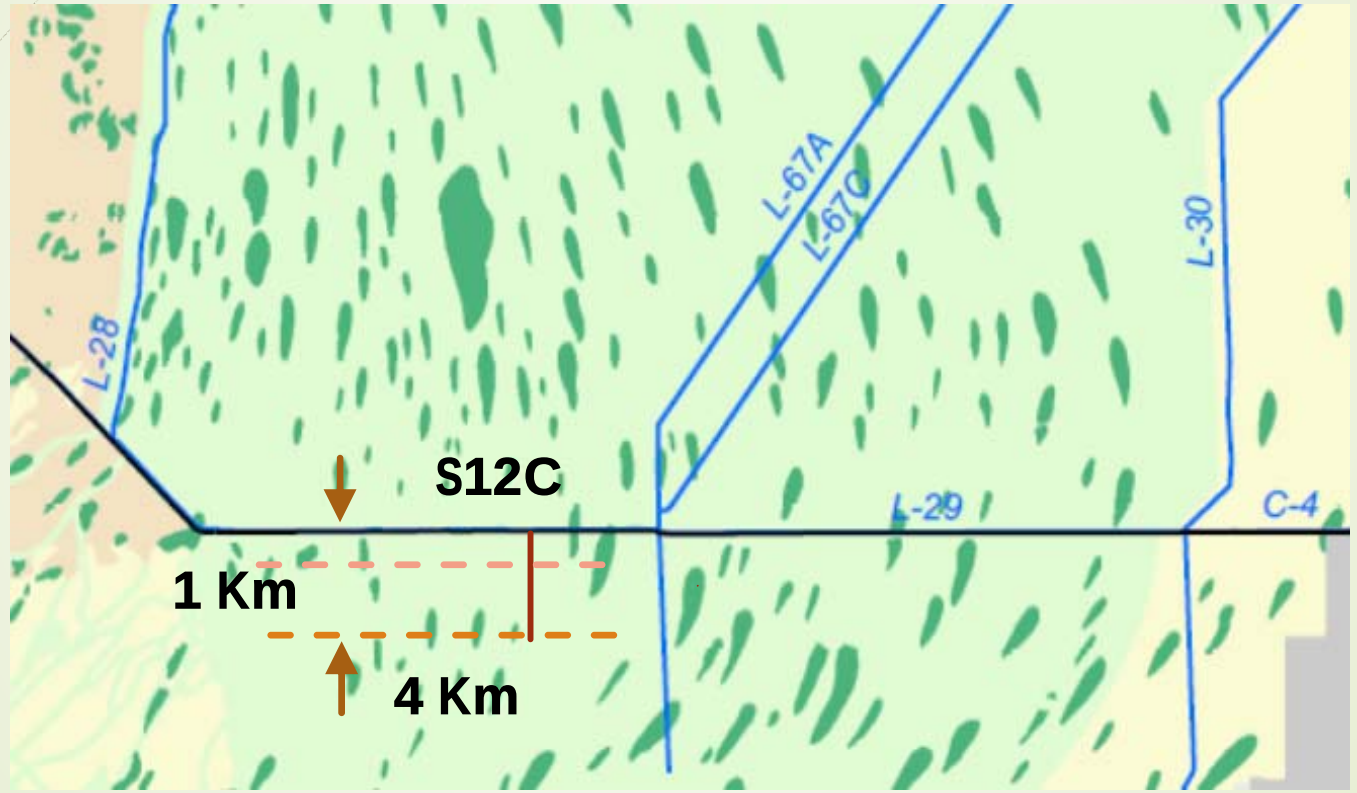
Fig. 9. Histogram comparing presence of *Typha* and *Cladium* with distance from nutrient source and total P concentrations along Transect ENP.

Decadal change in vegetation and soil phosphorus pattern across the Everglades landscape, 2003

Childers, Doren, Jones, Noe, Rugge, and Scinto; data 1999



Soil Eutrophication



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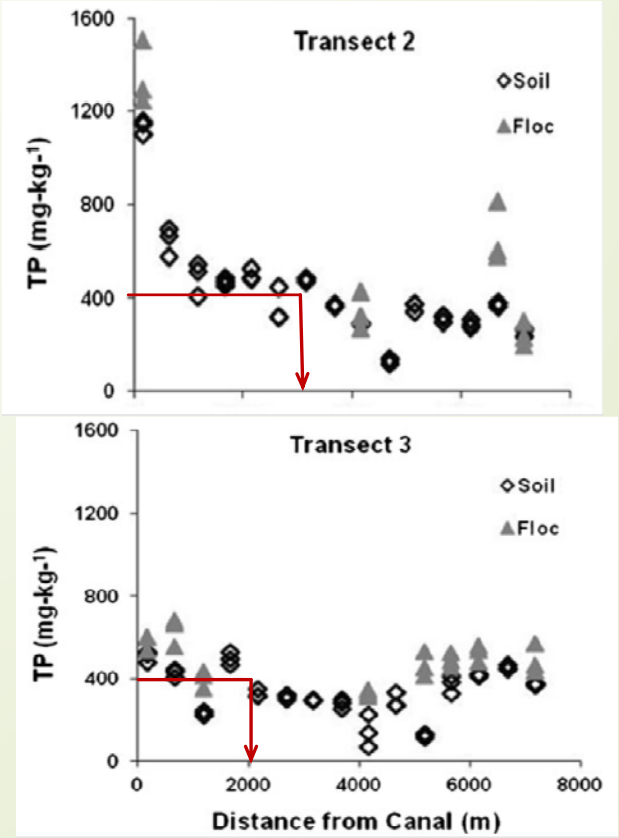
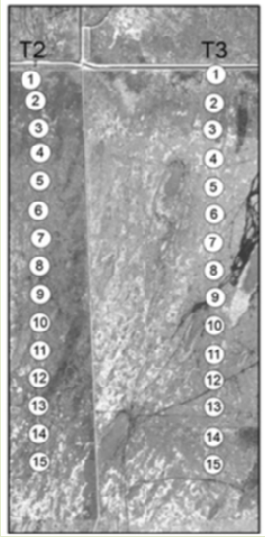
Evidence of recent P enrichment in surface soils of Taylor Slough and northeast ENP, 2013

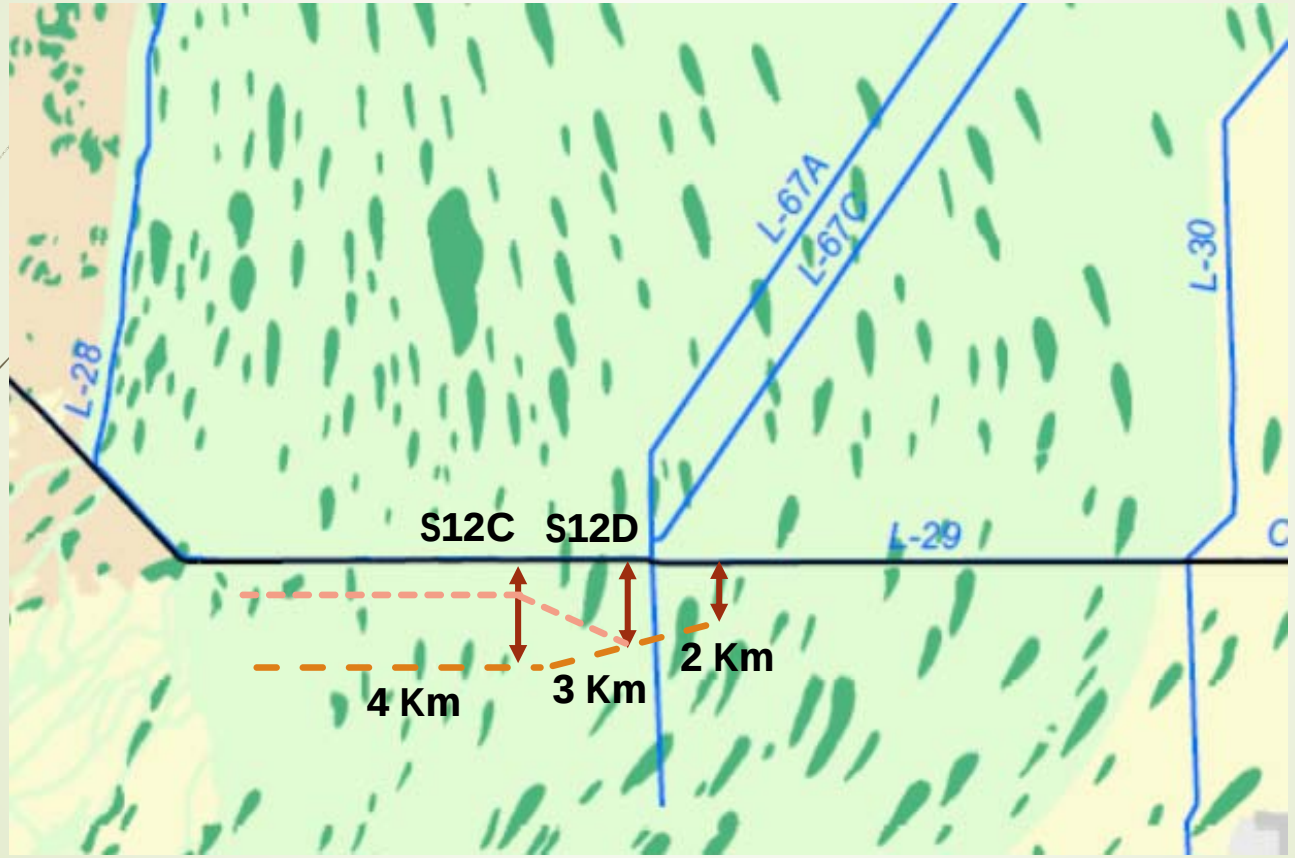
Osborne, Reddy, Ellis, Aumen, Surratt, Zimmerman, and Sadle; data 2003



Shark River Slough



Soil Eutrophication



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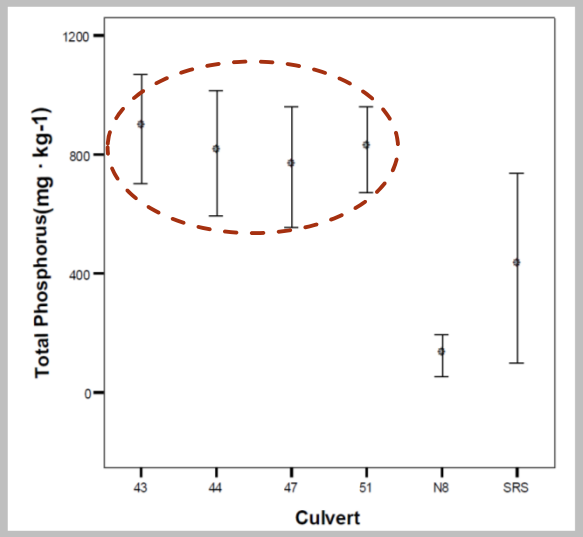
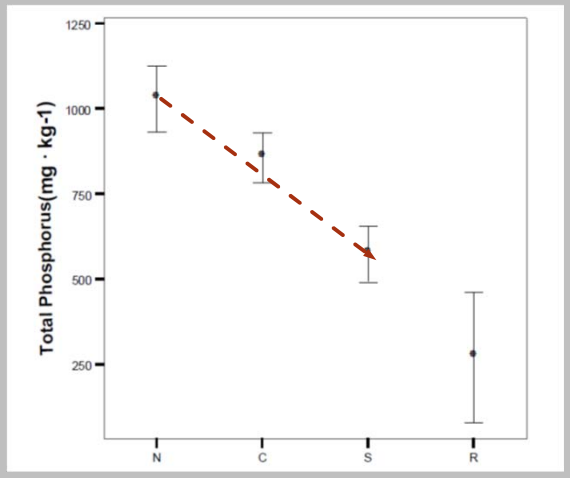
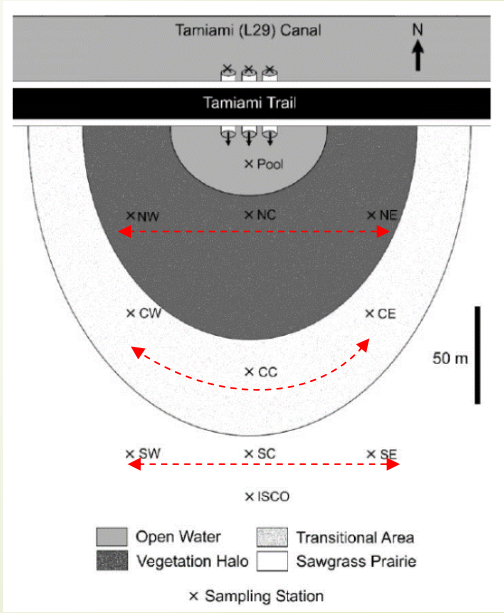
Water quality, soils and ecological effects of pilot spreader swales along the Tamiami Trail, in ENP: Baseline Monitoring Report, 2011



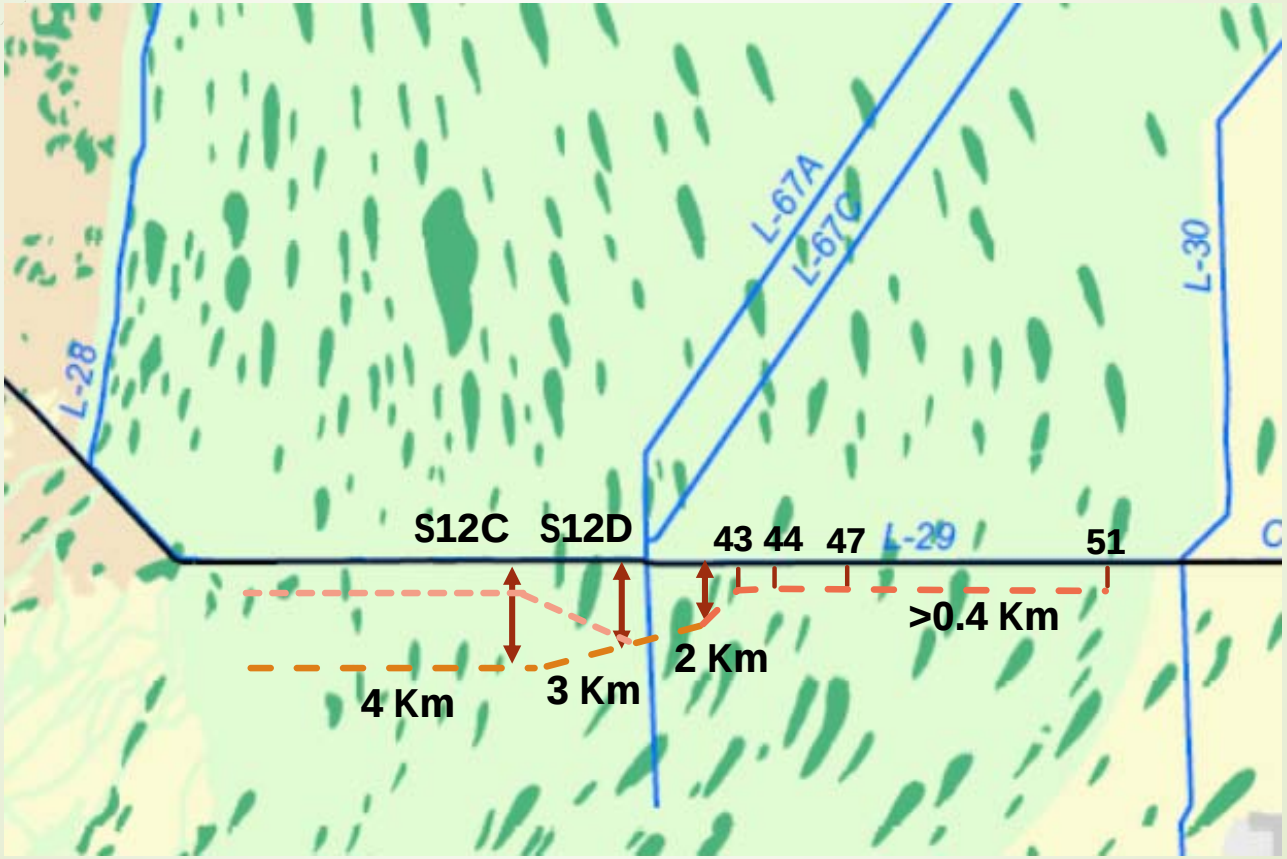
Surface soils 0-2cm



Bramburger, Gaiser, Richards, Hoch, Sokol, Trexler, and Scinto, data 2009-2010



Soil Eutrophication



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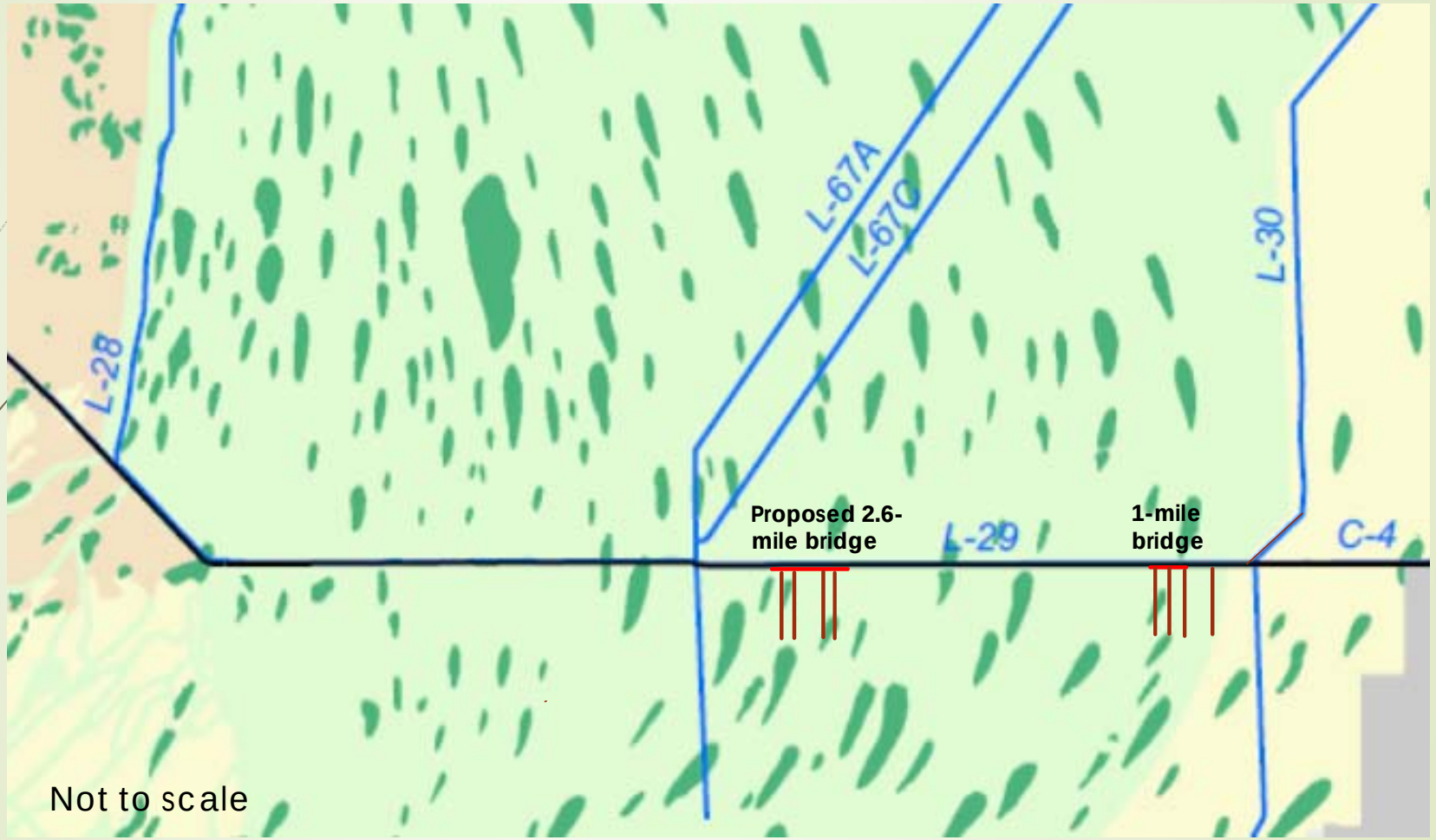
Near Canal Transects



Summary

- ENP has developed a marsh monitoring network for northern SRS
- First two years will be funded by CESI:
  - Initial survey at Near Canal Transects (fall 2015)
  - Full survey at Near Canal Transect (dry, wet seasons) and Sentinel Sites (wet) next year (2016)
- The following six years may be funded by NPS
- Input from other federal agencies, the state, and the scientific community was essential in finalizing the design of the network.