



STA-1E PSTA DEMONSTRATION PROJECT

U.S. Army Corps of Engineers
Jacksonville District



Introduction

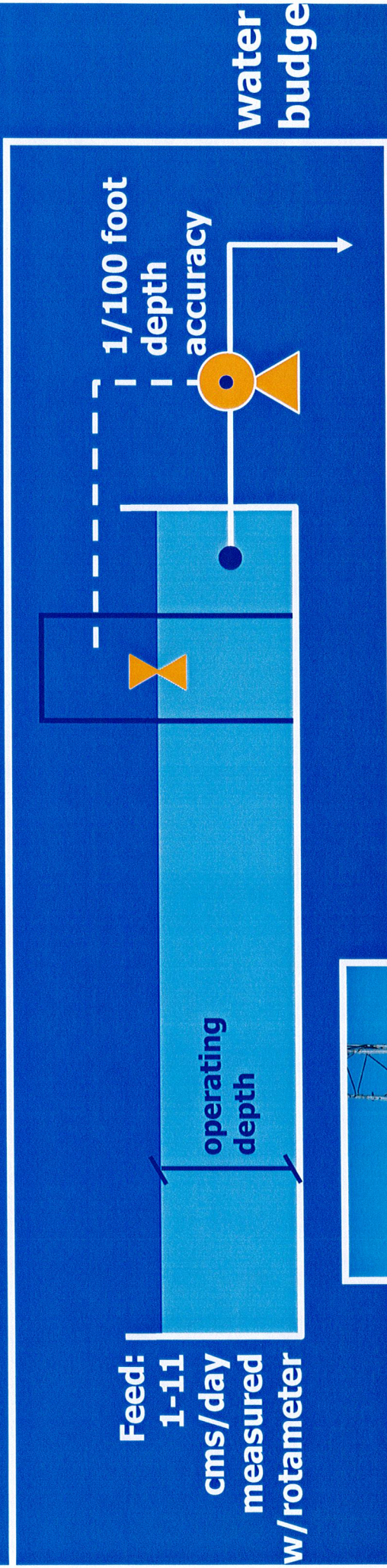
Part 1: STA-1E Demonstration Project

- STA-1E PSTA Test Facility
- Monitoring
- Results
- Summary

Part 2: STA-1E Project Status

- STA-1E Field Scale Conceptual Plan

PSTA Test Facility



rainfall and evaporation monitoring

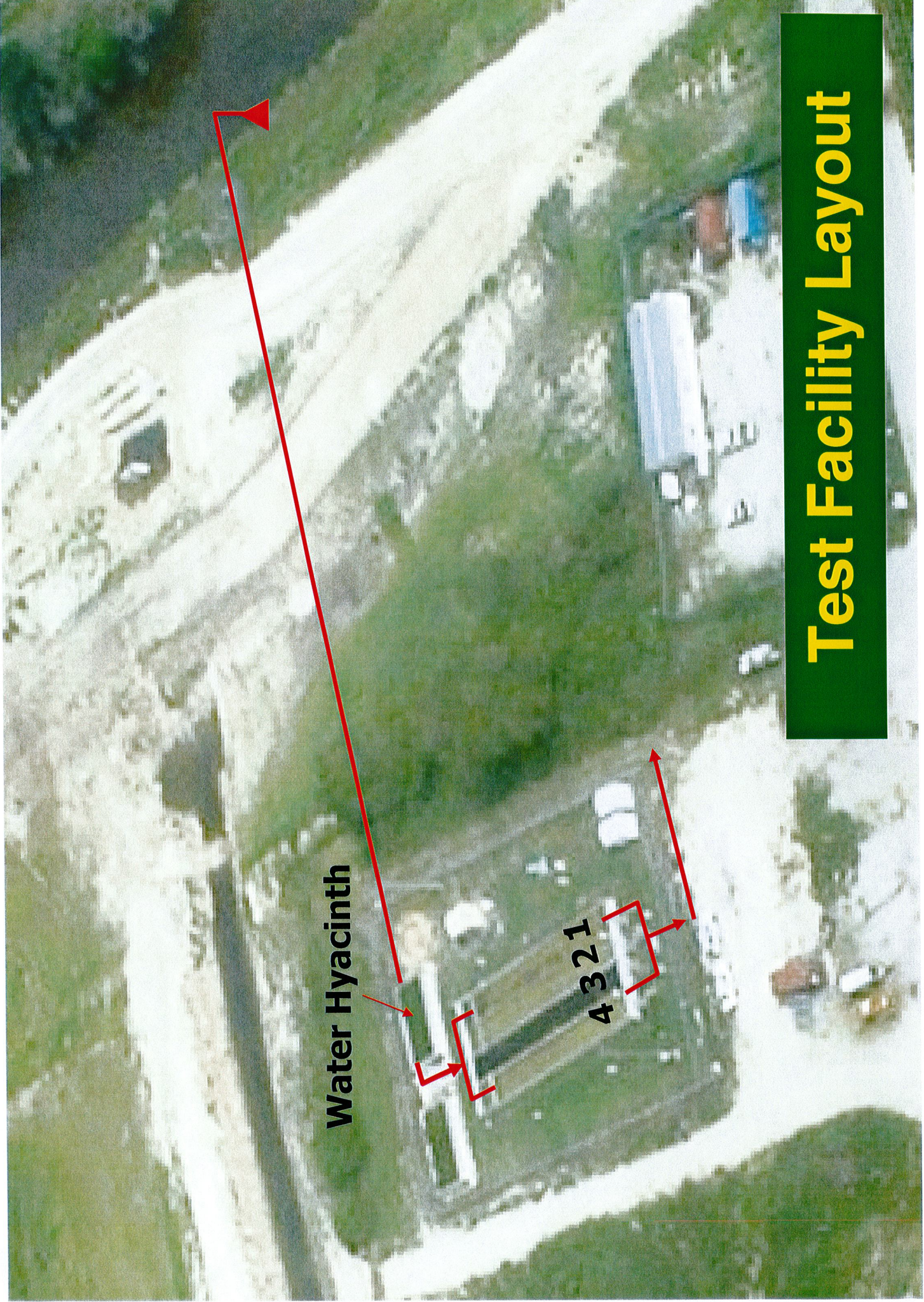


composite sampling (200 hrs; 1400 hrs)

PSTA Test Facility

- 10 ft x 100 ft, maximum operating depth: 3 ft
- Cell 1 – riviera sand, 4 cu in/m² lime sludge
- Cell 2 – limerock
- Cell 3 – peat
- Cell 4 – limerock over peat





Water Hyacinth

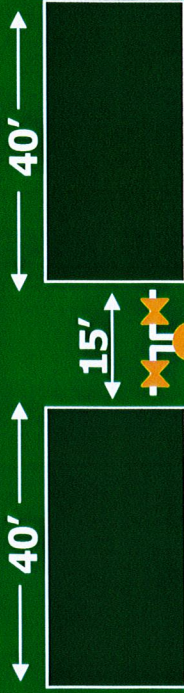
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Test Facility Layout

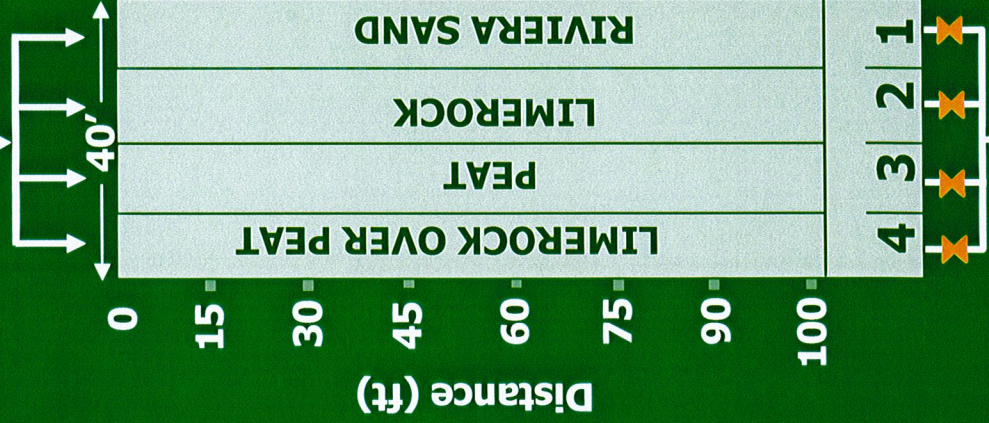
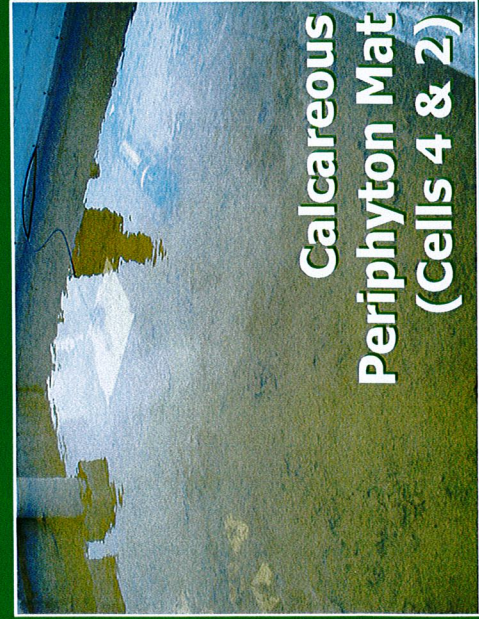
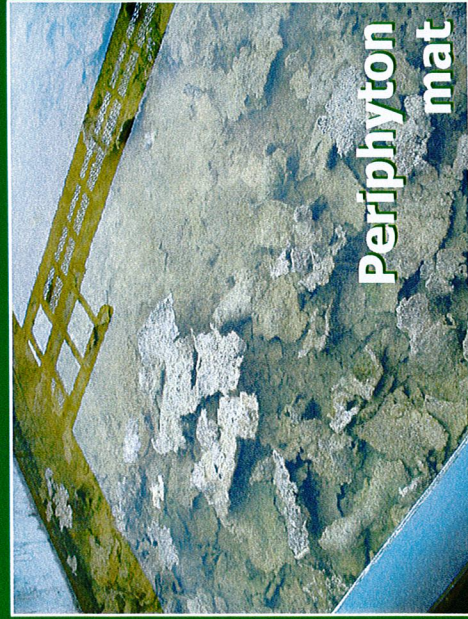
PSTA

Water Hyacinth

PRE-TREATMENT POOLS



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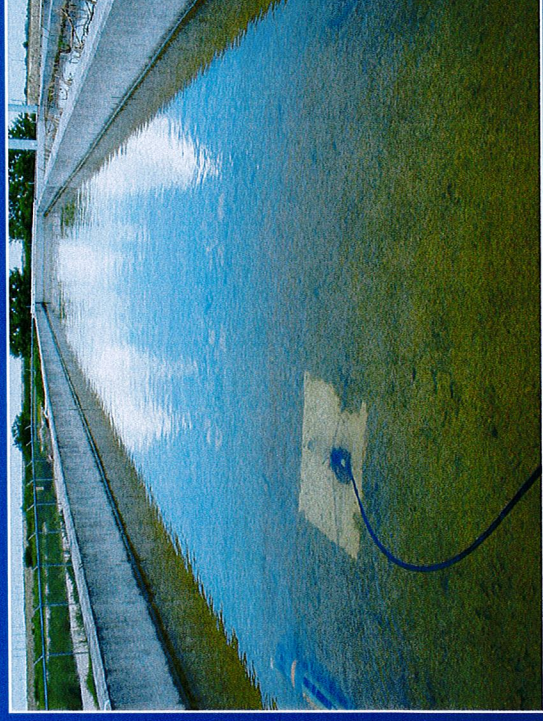
Agricultural Ditch

Monitoring


- Influent and effluent composite samples – 2 samples per day, analyzed in duplicate weekly
- 4 hydro labs for continuous analysis (DO, conductivity, pH, eH, temperature)
- 5 week cell transects



Sampling



Growth tile

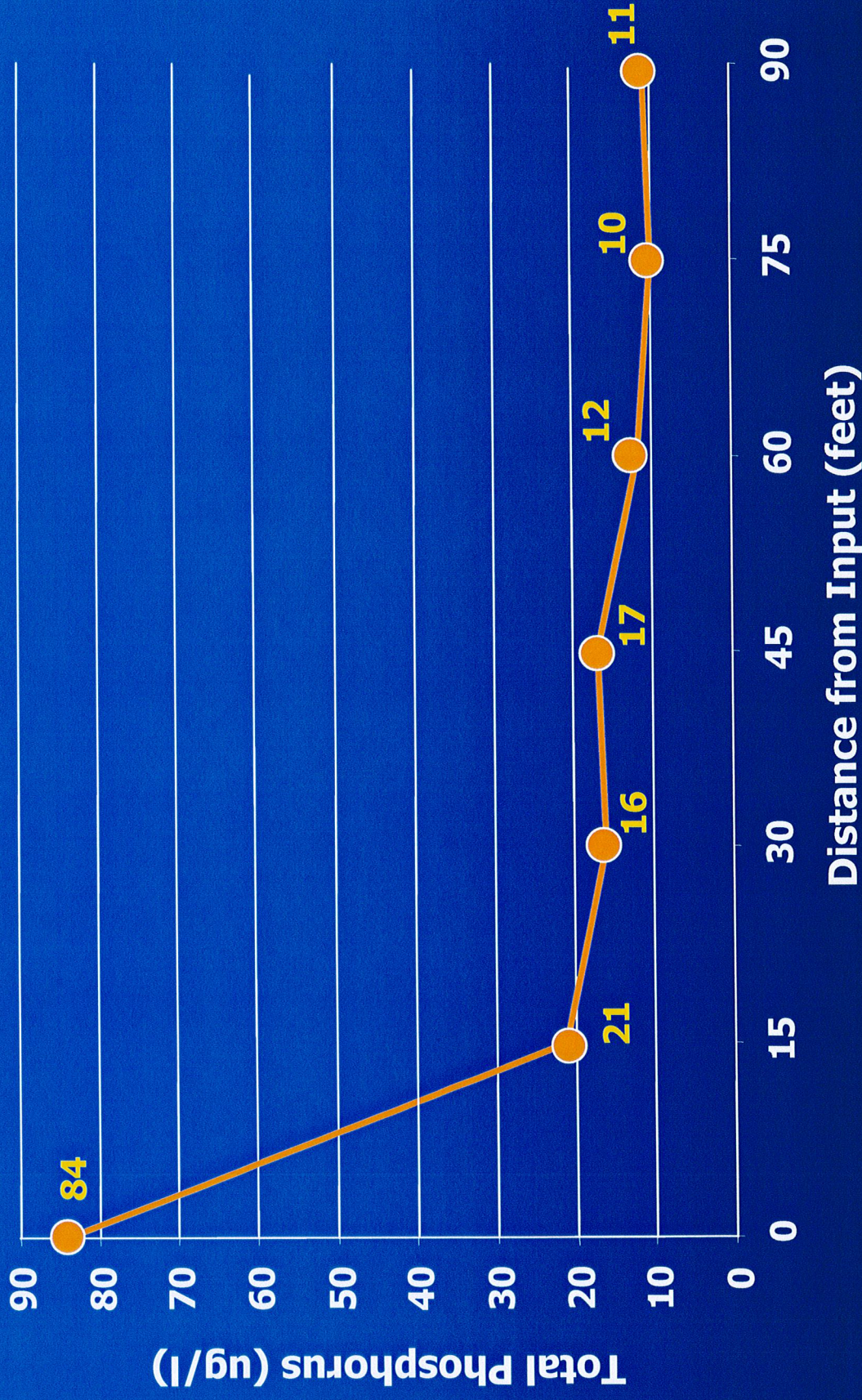


Calcareous Periphyton Mat Development

- Cycle cell - wet and dry
- 6 – 8 weeks community is ready for treatment
- Operate cell at 20-30 ppb P , excess P will shift community

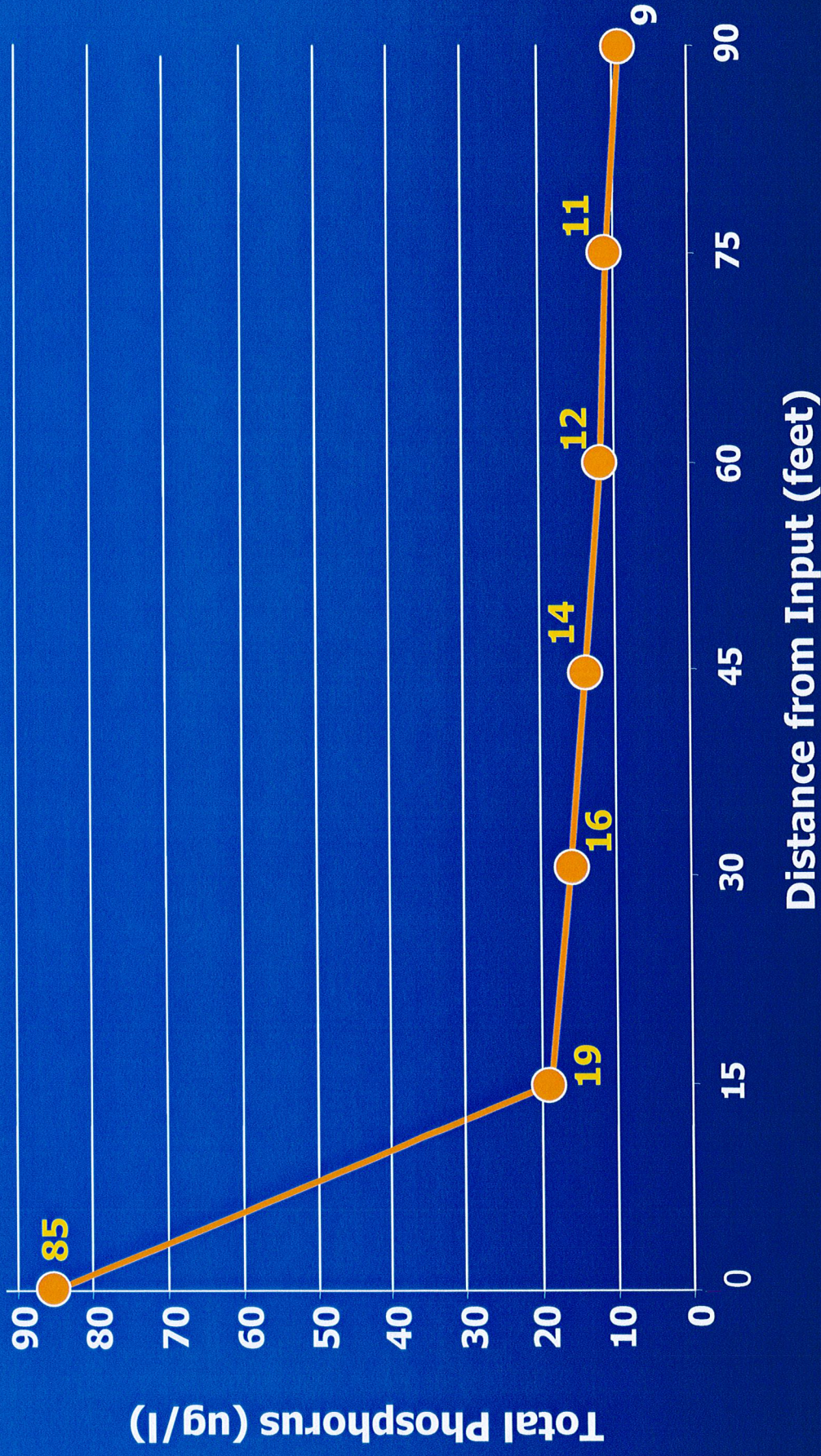
Cell 1 Phosphorous Transect

6" depth, 14 day HRT - 4/25/03



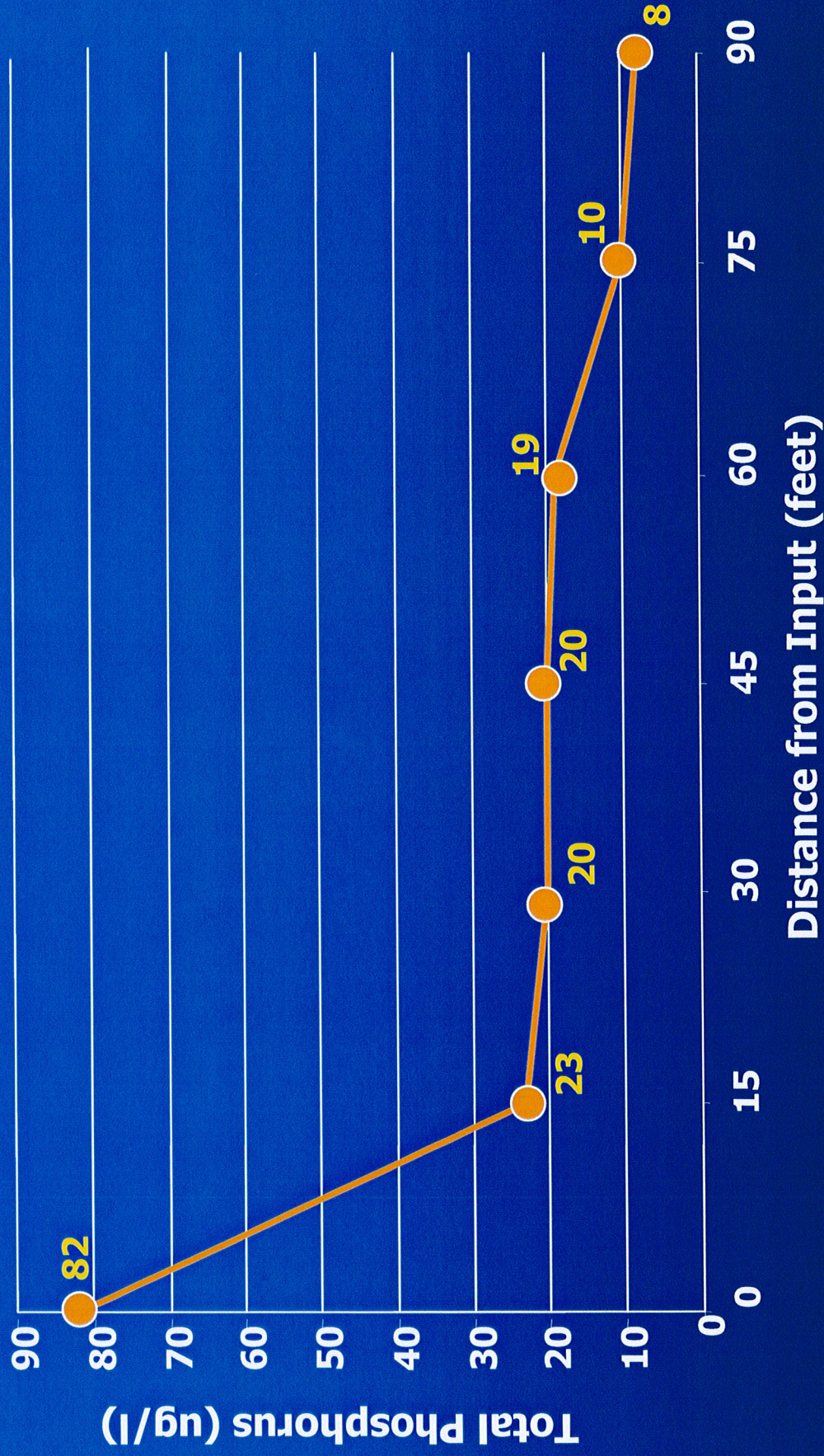
Cell 2 Phosphorous Transect

6" depth, 14 day HRT – 4/25/03



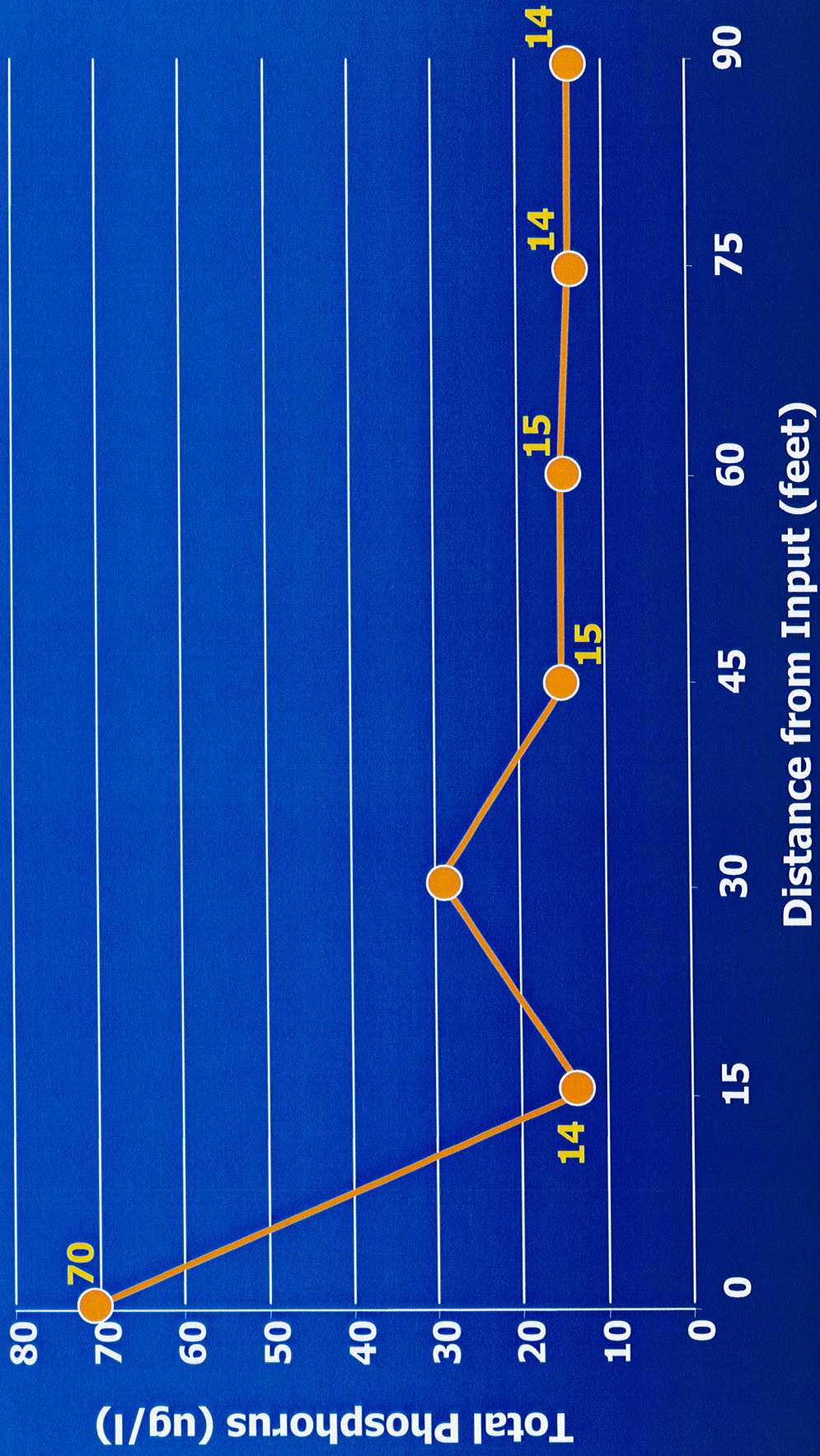
Cell 4 Phosphorous Transect

6" depth, 14 day HRT - 4/25/03



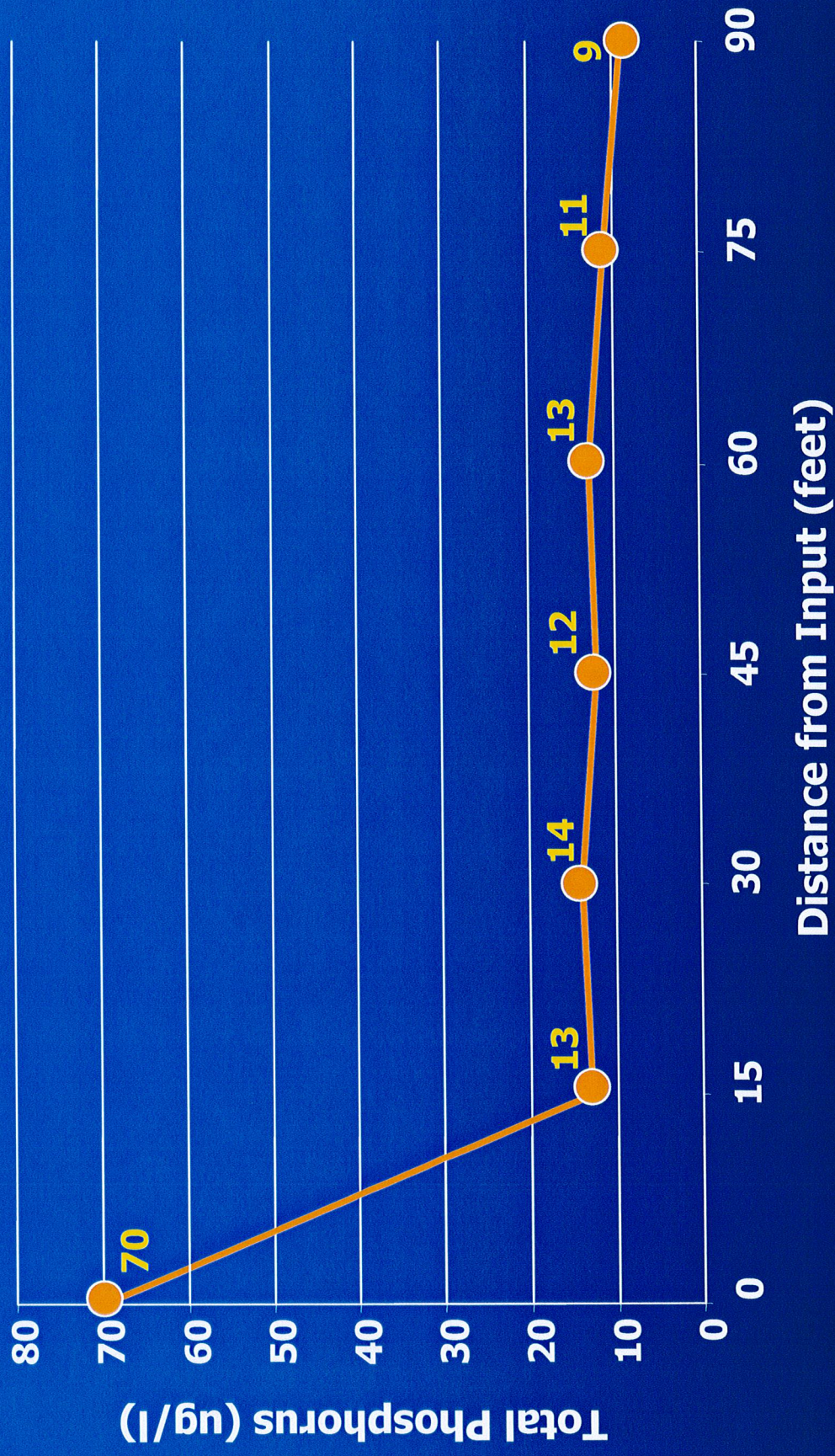
Cell 1 Phosphorous Transect

1' depth, 14 day HRT – 6/06/03



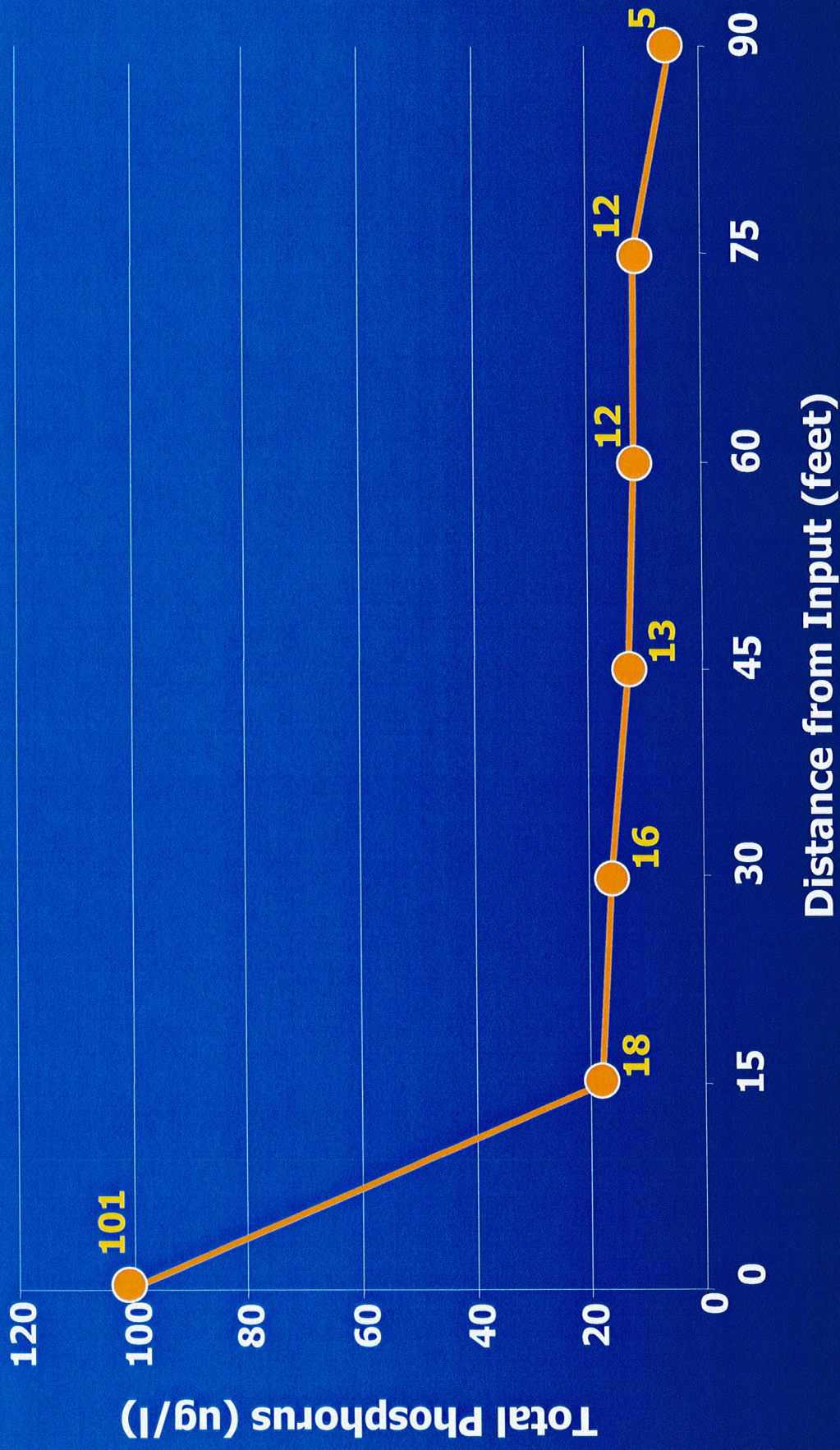
Cell 2 Phosphorous Transect

1' depth, 14 day HRT – 6/06/03



Cell 4 Phosphorous Transect

1' depth, 7 day HRT – 6/06/03



Summary

- PSTA can achieve 10 ppb P or less
- Calcareous periphyton mat can be established in 6-8 weeks



STA-1E Project Status



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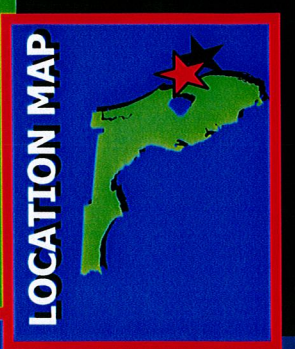
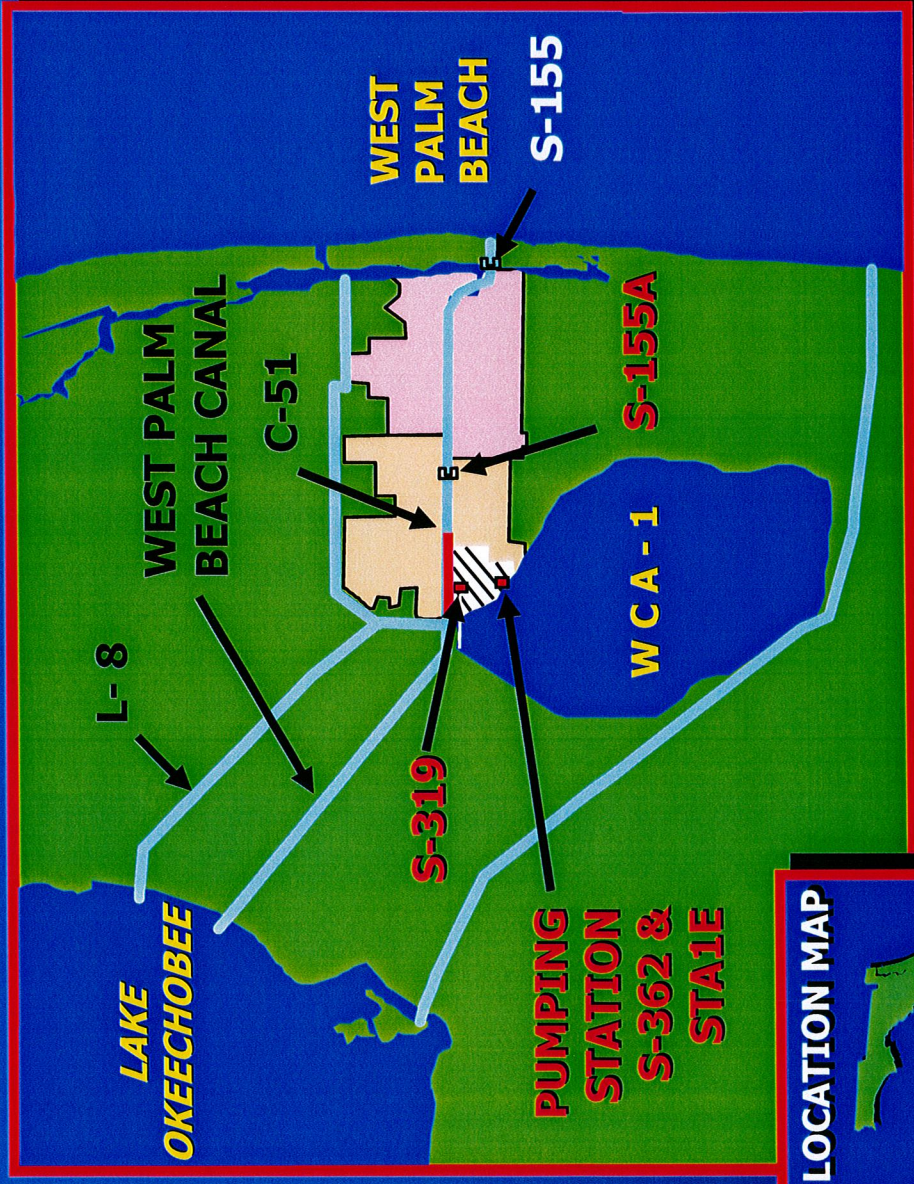


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STA-1E East View

CENTRAL AND SOUTHERN FLORIDA PROJECT West Palm Beach Canal (C-51) / STA 1E



PROJECT COSTS

PED	\$ 22,482,000
Real Estate	\$ 60,440,000
Construction	\$192,578,000
Total	\$275,500,000
Federal	\$249,700,000
Non-Fed	\$ 25,800,000

COST SHARING: 91/9

SPONSOR: SFWMD

PURPOSE: Flood Control,
Water Quality, Water Supply

STATUS: Under Construction,
7 contracts underway

STA-1E

Conceptual Plan to Achieve 10 ppb Phosphorus



Emergent Growth



Submerged Aquatic Vegetation (SAV)

1 yr of sedimentation



Periphyton (PSTA)

2 cm



100 ppb P

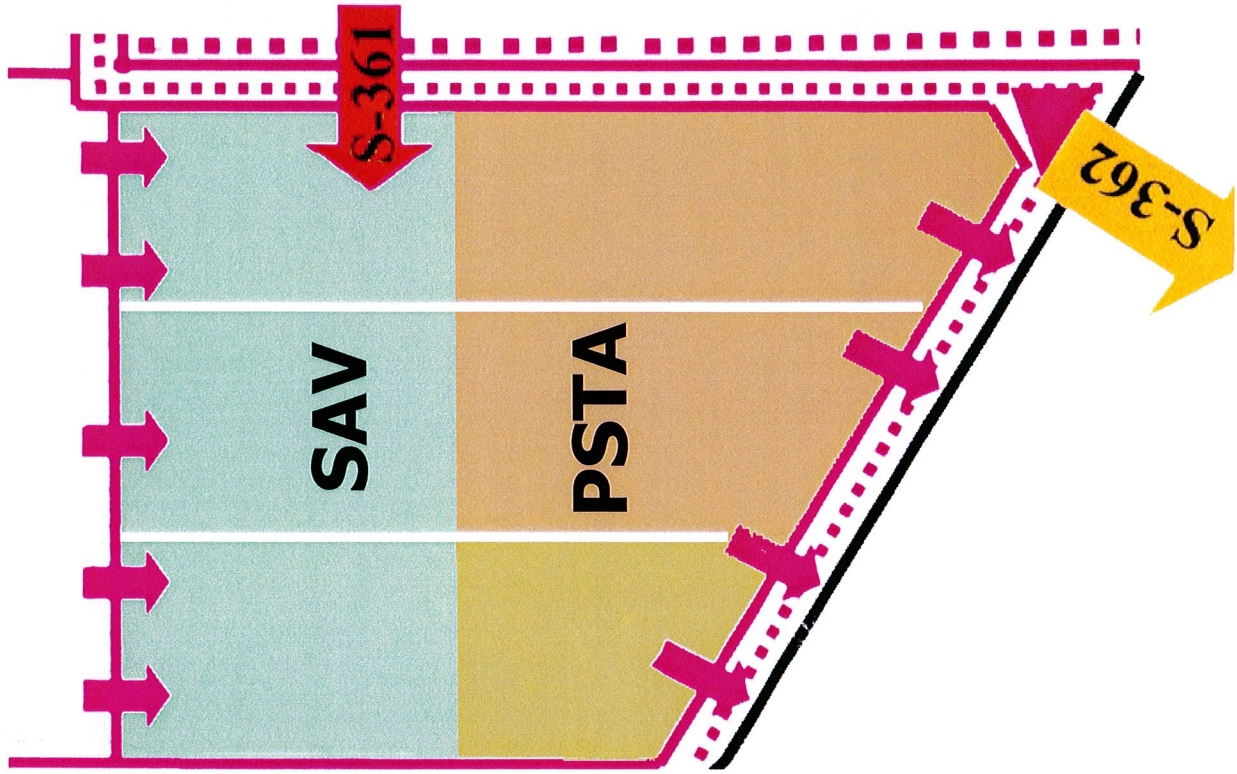
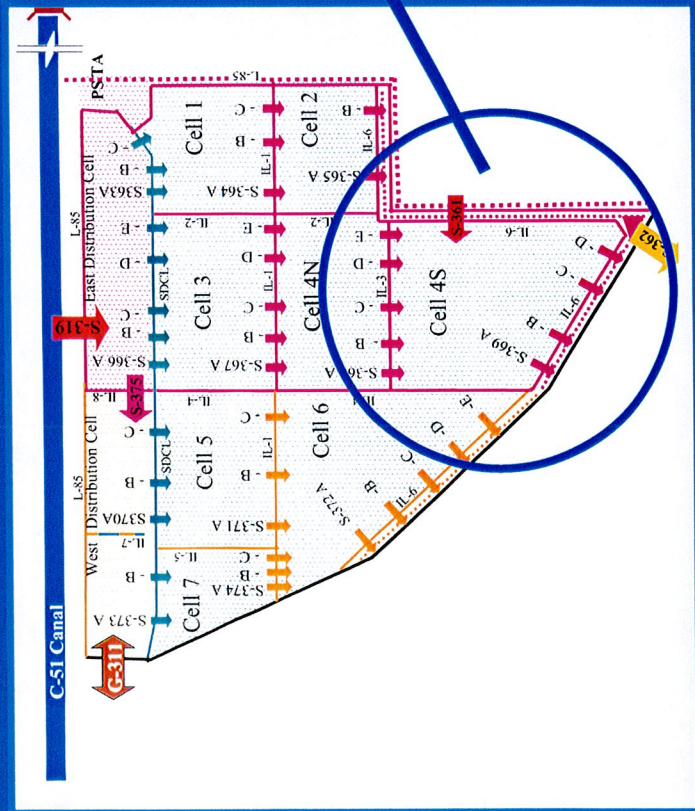
25-50 ppb P

10 ppb P



low phosphorus substrate

STA-1E Cell 4S





Riviera Sand

**Riviera Sand
w/ Lime Sludge**

Limerock

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STA-1E PSTA Field Scale Conceptual Plan