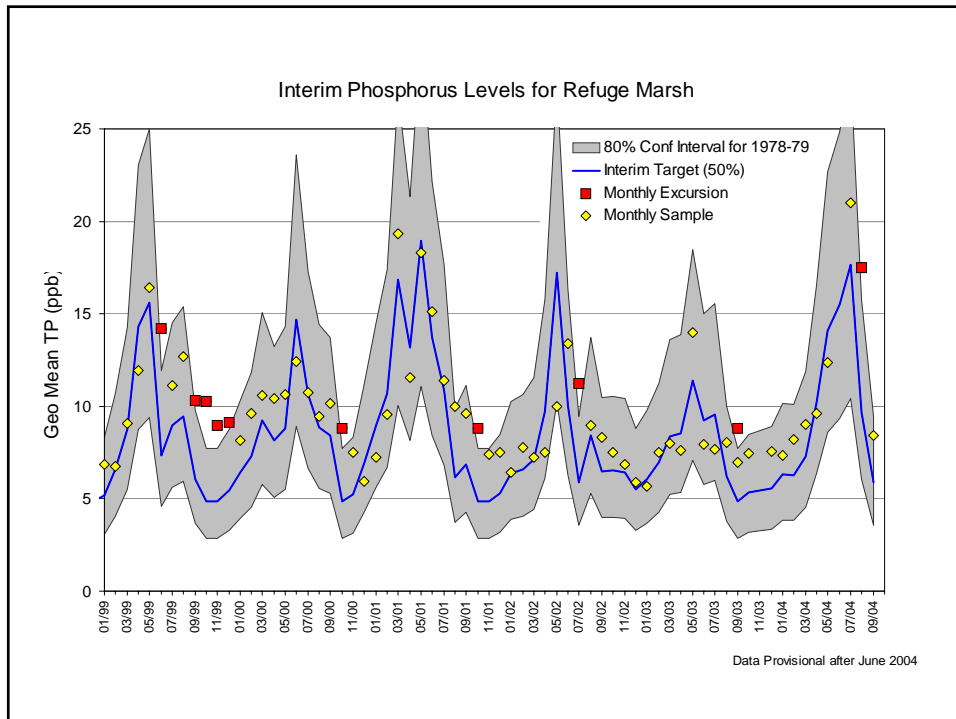


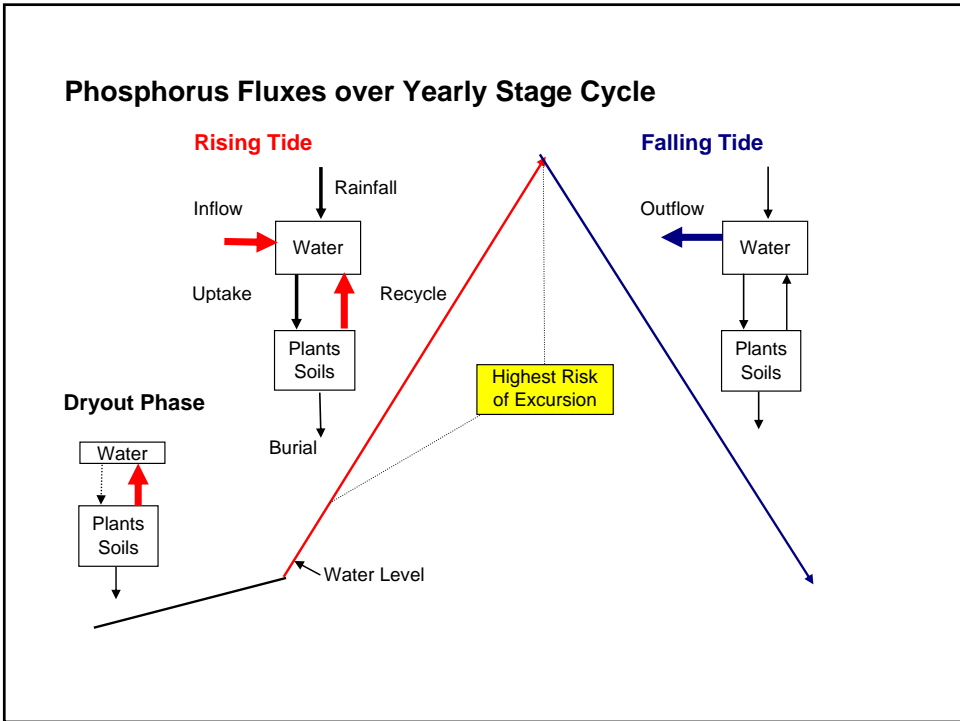
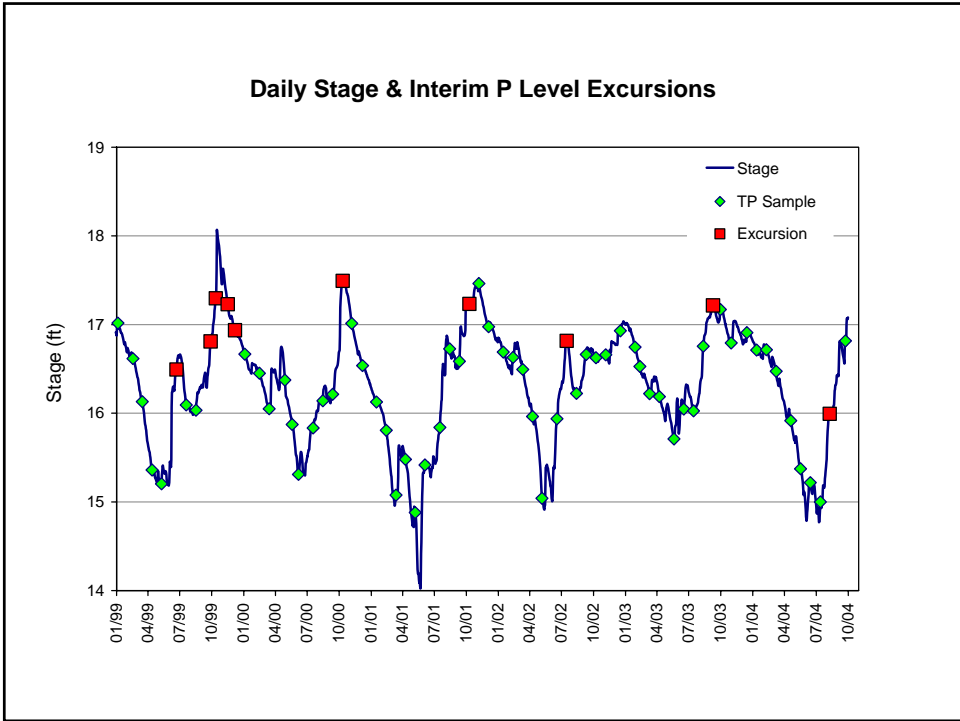
Analysis of Refuge Interim P Level Excursions September 2003 & August 2004

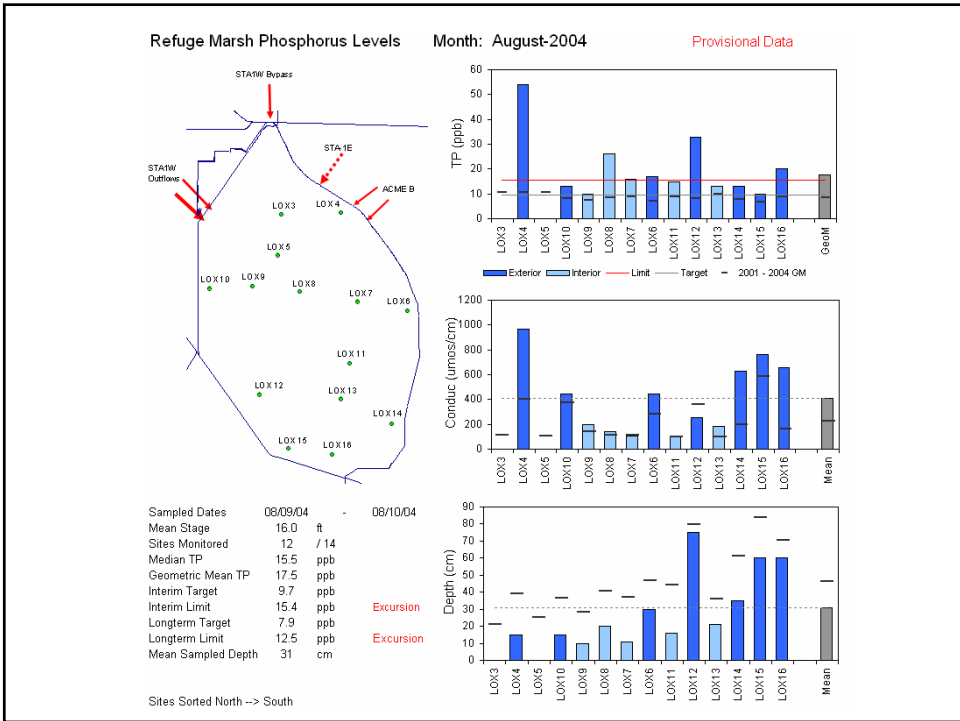
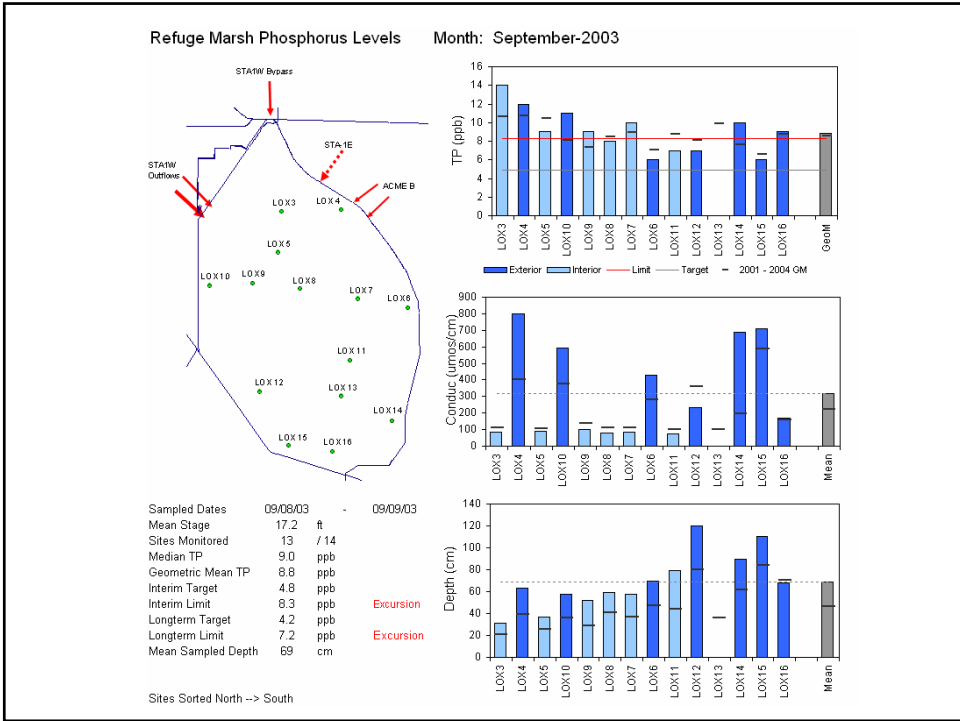
W. Walker for U.S Dept of the Interior

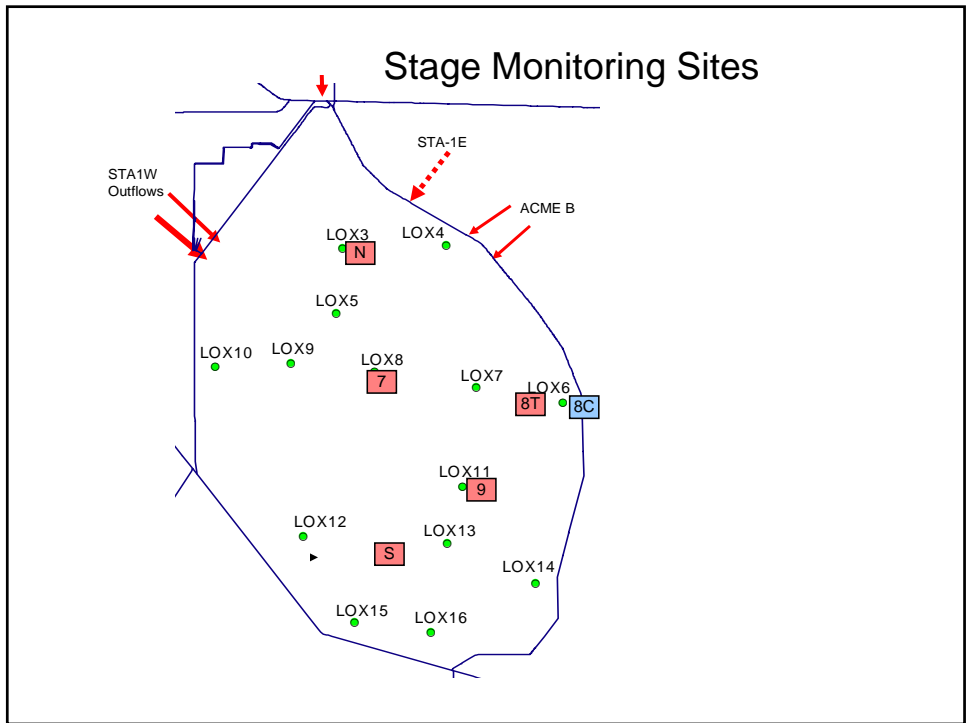
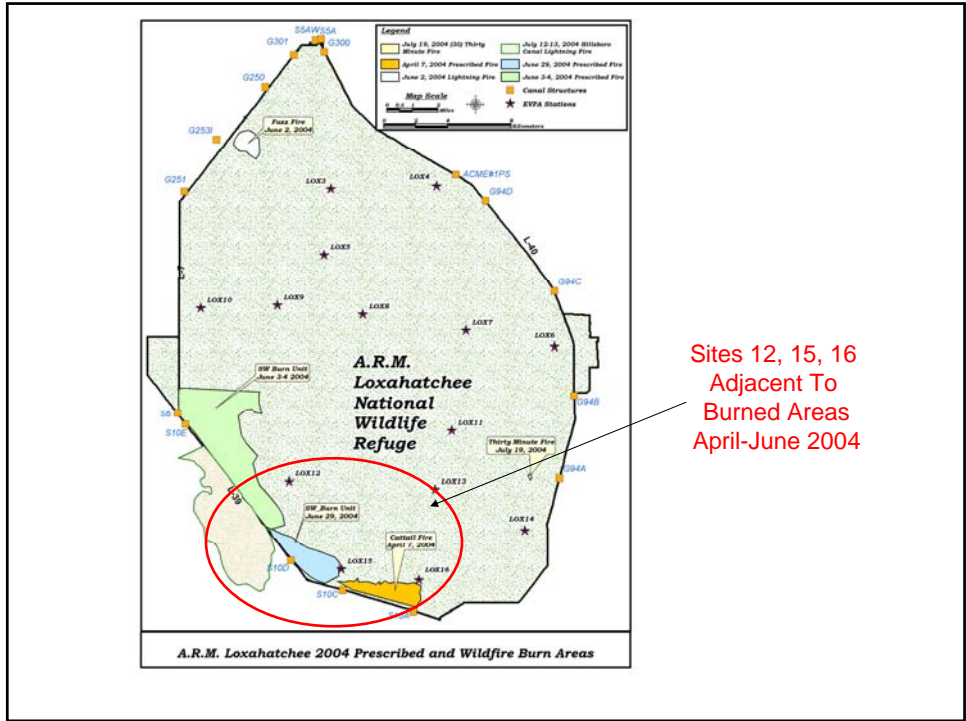
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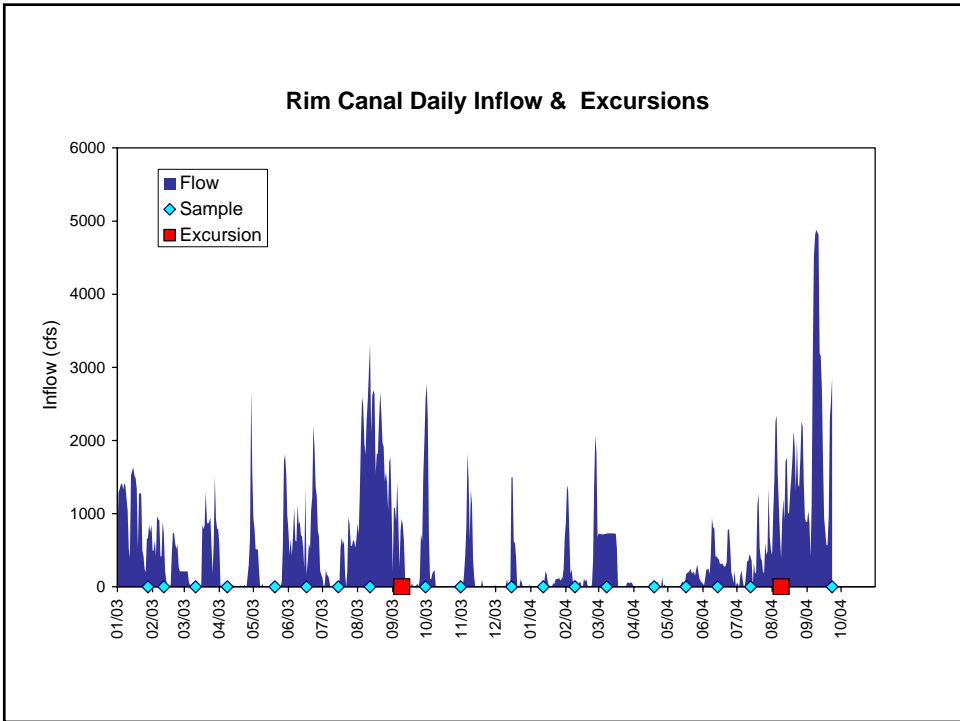
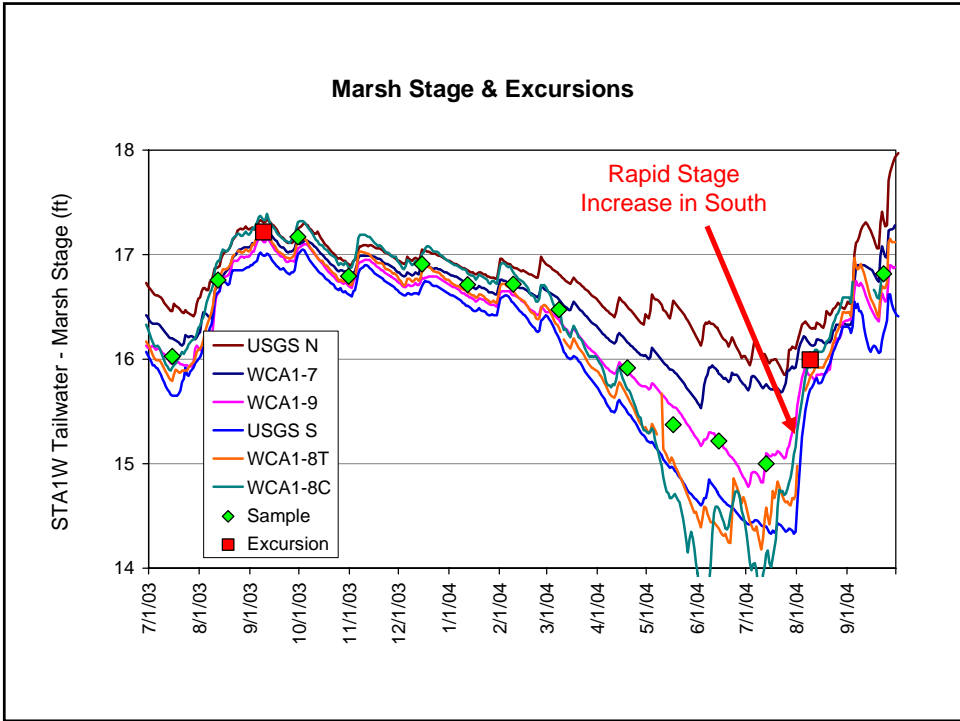
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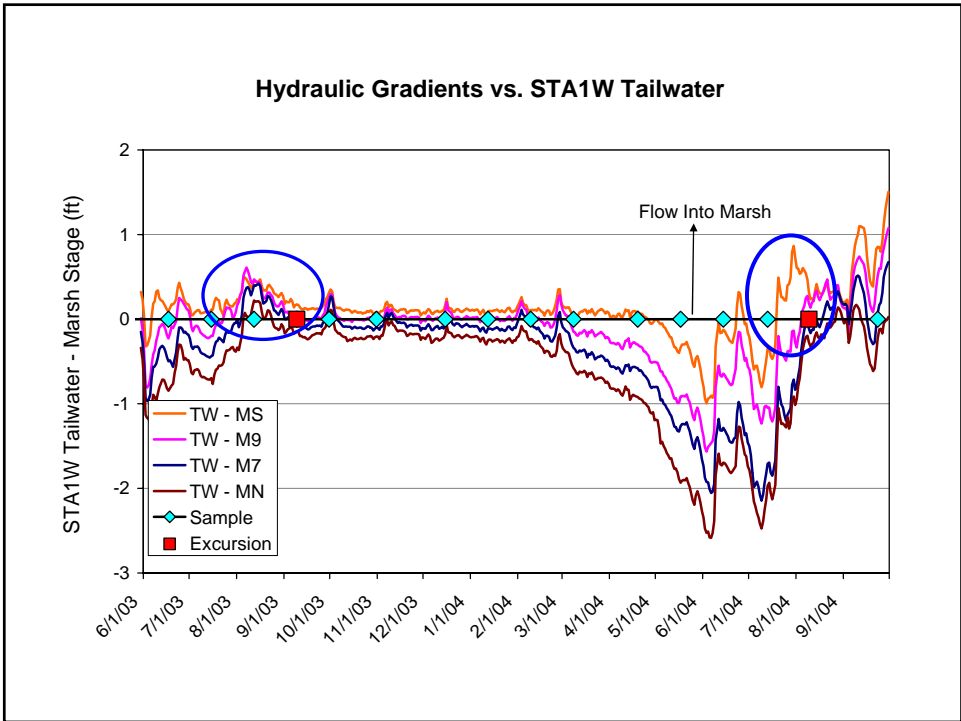
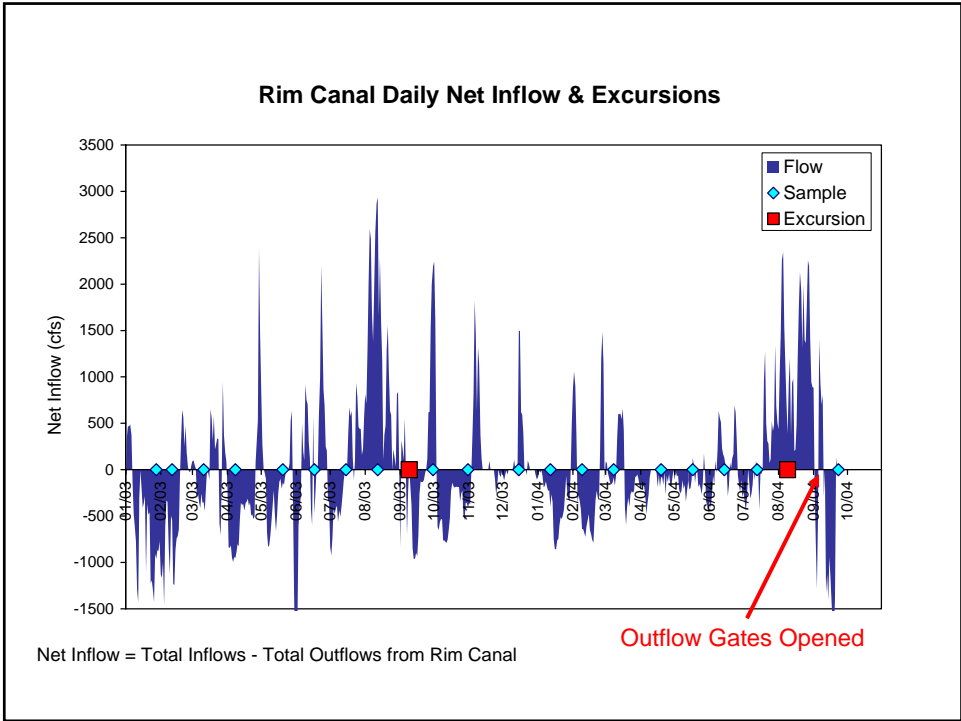


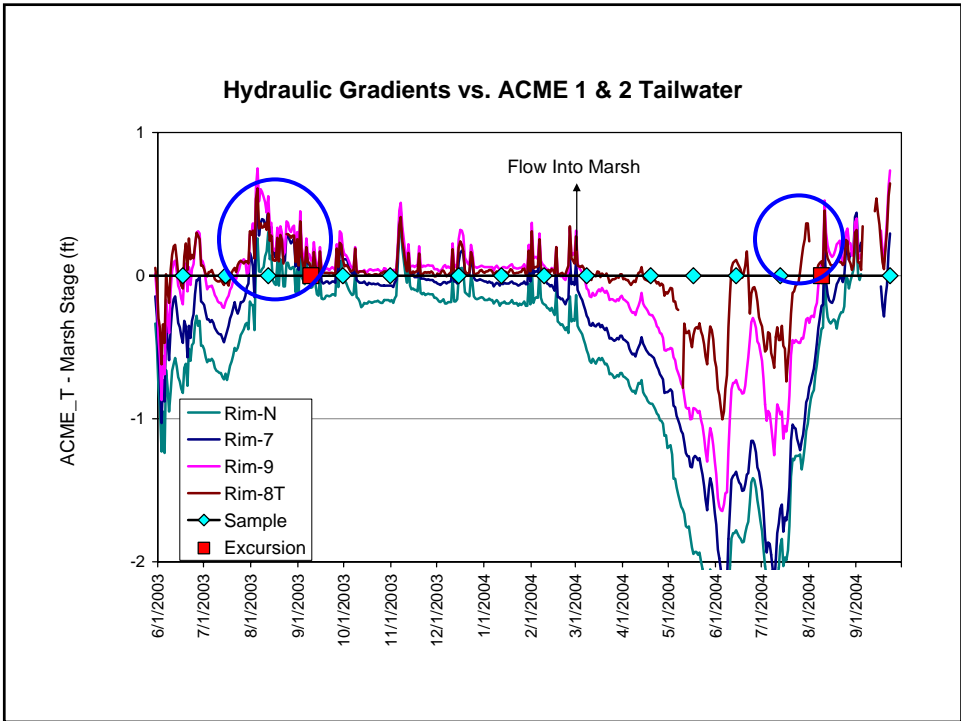
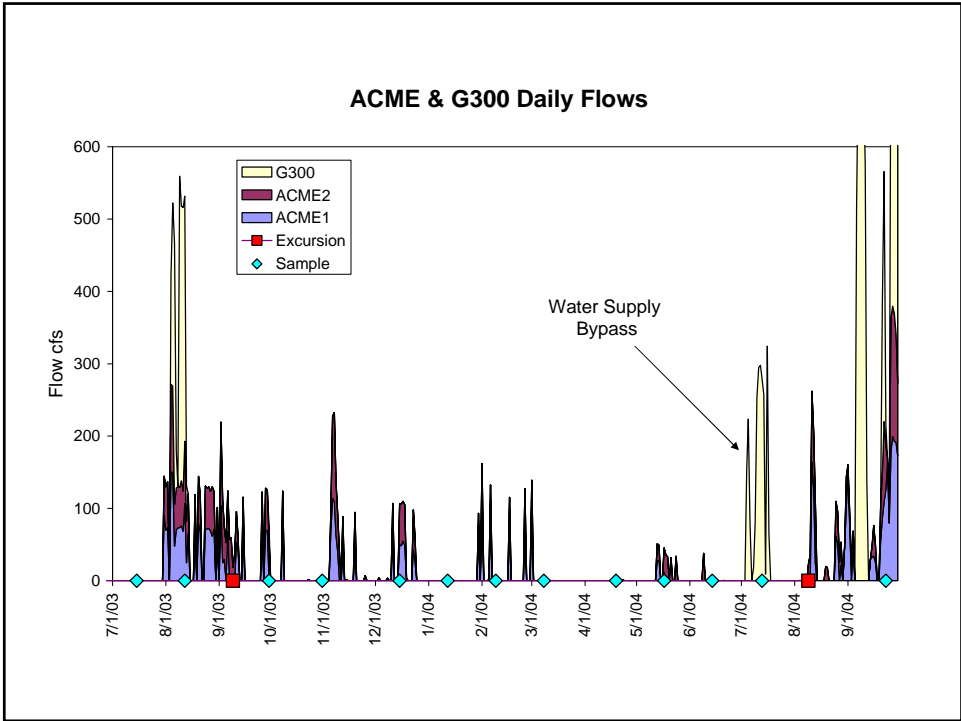


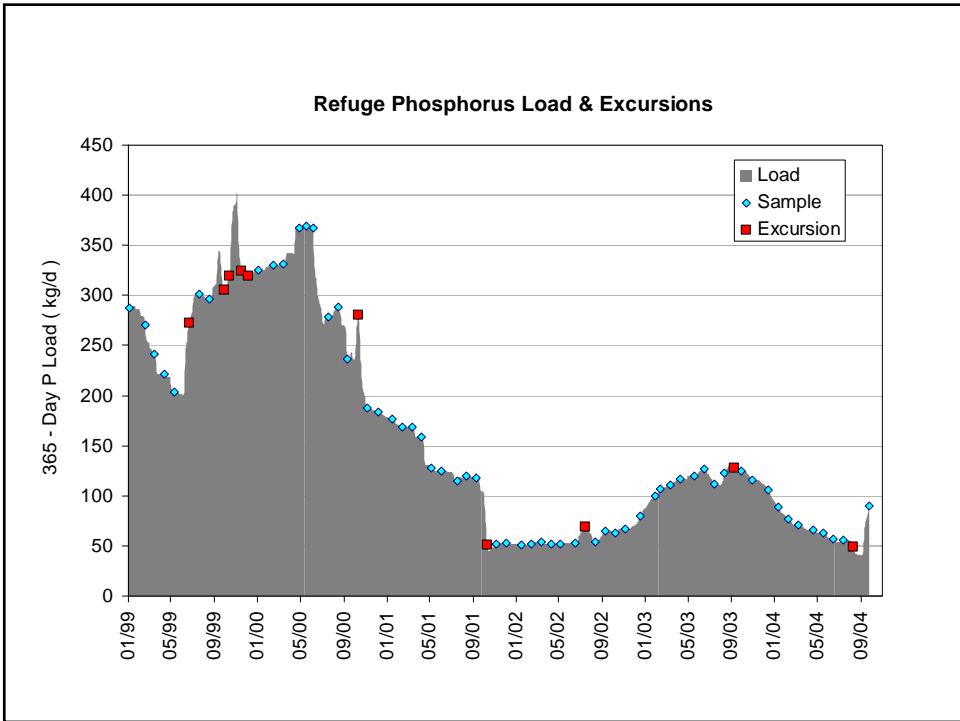
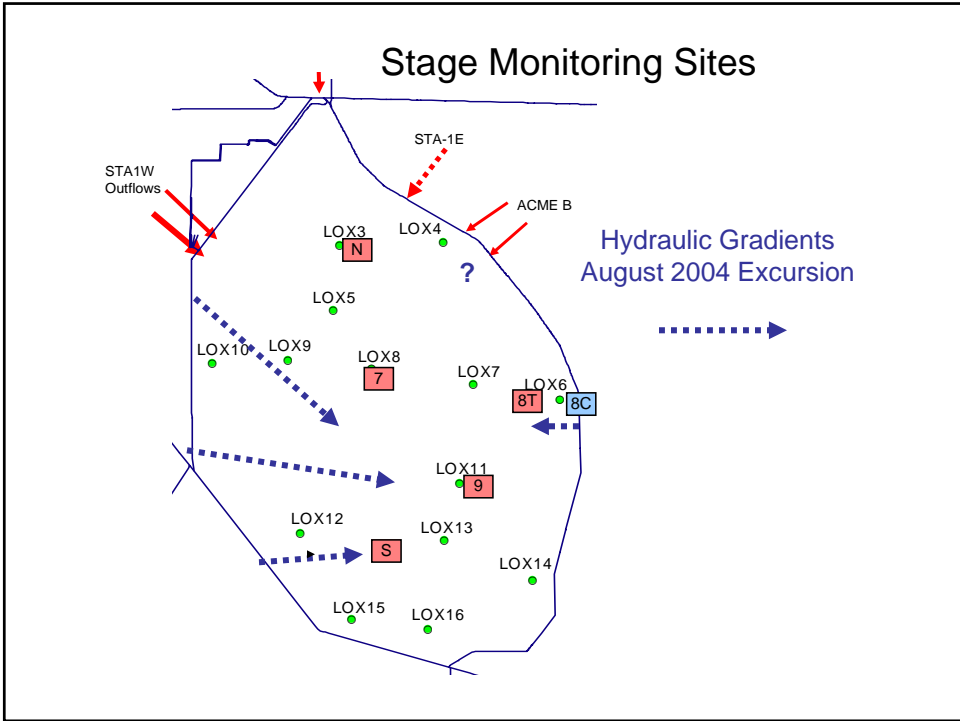




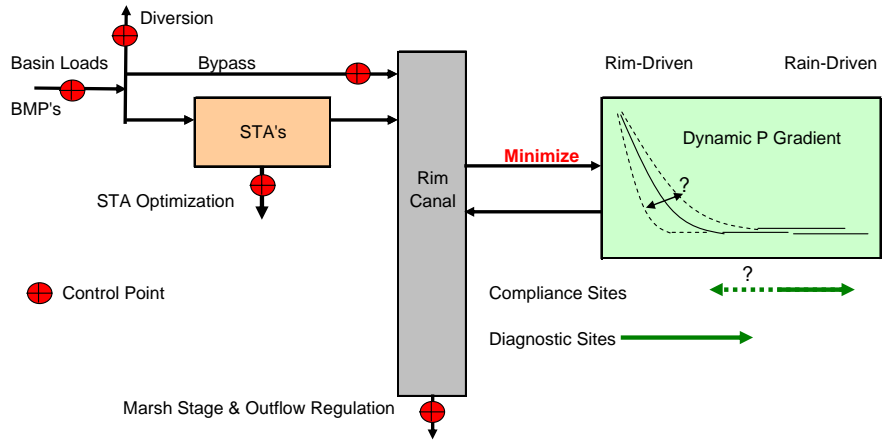








Conceptual Phosphorus Transport Model



Summary

Factors Contributing to P Excursions

Phosphorus Sources

Atmospheric Deposition

External Inputs

Transport Mechanisms Linked to Both Sources

Recycling from Plants/Soils Enhanced by Drought

Surface Flows

Direct Inflows Cannot be Discounted in Either the 9/03 or 8/04 Excursions

Antecedent Inflows & Hydraulic Gradients

Transport Model Needed to Assess Magnitude

Cumulative Data Suggest that Site 4 is Impacted by External Loads

Controlled Burn in April-June 2004 Potentially Contributed to 8/04 Excursion

Confounded by Extreme Drought

Need for Further Diagnostics (Outer Marsh Monitoring, Modeling)

Continued Focus on Reducing Total and Net Loads to Marsh

External Load Controls

Stage/Outlet Regulation