NATIONAL ACADEMIES Sciences Engineering Medicine

Committee on Independent Scientific Review of Everglades Restoration Progress

Subgroup Meeting: Phosphorus Dynamics in the Central Everglades

October 31, 2023

Draft agenda

ZoomGov link:
https://nas-sec.zoomgov.com/j/1613644186?pwd=VFFsbUh3YmFBODA2NGxXZi82blZDUT09
Password: 997048

2:00 pm **Welcome, objectives**

Jim Saiers, Committee chair

2:05 pm **Context for scientific discussions**

Nick Aumen, USGS

2:10 pm **High level overview of changing hydrology in Central Everglades in COP and CEPP**

- Emphasis on changes in total flow volumes, timing, velocity and flow paths in WCA 3 and ENP; canal vs. marsh flow (including the contributing roles of the Miami Canal, L67A, and L67C), understanding inflows and outflows from WCA 3A and WCA 3B.

Dan Crawford, USACE

2:20 pm **Shark River Slough Inflow Water Quality: Sub-regional and Local Dynamics** (15 min + Q&A)

- What has been learned about the inputs/mechanisms driving phosphorus changes in surface water at the ENP boundary?
- What is the quantitative understanding of the relative contribution of phosphorus loading from canal vs. overland flow?
    - What is the contributing role of the Miami Canal, L67A, and L67C in TP loads delivered through WCA3 to ENP?

Dilip Shinde, NPS

2:50 pm **Lessons learned in DPM for understanding phosphorus loading effects on the ecosystem** (~15 min overview + Q&A)

- What is known about the stored and transported forms of phosphorus (particulate, dissolved, organic, soluble reactive) associated with areas of increasing flow volumes/velocity, and what mechanisms might explain their distribution across space and time?
- What are the mass balances of the P forms within system components (I.e., wetland versus canal, in the water column versus storage in sediment, periphyton, macrophytes)?
- In DPM, at what rate is the elevated-TP sediment front advancing, and what are the factors involved in controlling the rate?
- What are the ecological implications of these effects in relation to hydrological restoration?
- What are the target windows for flow, TP concentration, and P loading that will inform whether adaptive management is needed, and under what time frames?
- What have you learned from DPM and your ongoing modeling about loads and concentrations and potential downstream effects from CEPP under different designs?
- What additional data or analyses are needed to better understand the phosphorus dynamics and ecological response to enhanced nutrient availability and transport? Are any of these studies currently underway?

Sue Newman, SFWMD
Colin Saunders, SFWMD

3:20 pm **Q&A/discussion**

- Are the panelists concerned about increases in total phosphorus concentrations and/or loads? Or is this an expected, localized side effect offset by the benefits of increased flows?
- How might a fully constructed CEPP change/impact current phosphorus dynamics in the Central Everglades?
- The DPM recommendation document implies that flow and concentrations may need to be highly controlled (for example, experimental flume study conditions were generally 4-6 ppb). What are some options for minimizing the ecological impacts of not meeting a “goldilocks” targeted range?
- What are some possible triggers that might initiate an adaptive management approach and what might be some possible management options? (*note to committee that this is also discussed in Section 7 of the DPM Recommendations document*)
- What is the likelihood that adaptive management can be a mechanism to accommodate changes in nutrient availability and transport and what steps would need to be taken?

- What are the observed trends of phosphorus and associated ecological response in other parts of the Everglades Protection Area receiving higher inflow volumes due to restoration?
- What additional data or analyses are needed to better understand the phosphorus dynamics and ecological response to enhanced nutrient availability and transport? When and where should this work be done to meaningfully inform decision making?

4:00 pm **Adjourn**