

Land Management Breakout Group

Room: Caucus II

Lead: Paul Capel

Staff: Cuiyin Wu

Overall Question: What are the land management and landscape properties and processes (classifications) that determine the timing and speciation of nutrients delivered to the tidal waters of the CB?

- 1) Do land use practices, stream/river distance (times of concentration) and vegetation at and in the terrestrial-aquatic interface affect transformation, amelioration, and attenuation of P processing, and if so what are those dynamics?
- 2) What are the dominate N and P species that come out of their important sources (urban runoff, agricultural runoff, groundwater, point sources (WWTP), reservoir sediments). Can the N and P speciation be controlled by intervention (designs of urban and ag BMPs, changes in engineering of WWTP)?
- 3) How do different land uses, management practices, and watershed characteristics affect the timing and seasonality of delivery of nutrient species (EOS)? What are the knowledge gaps/uncertainties?
- 4) What is the importance of extreme hydrologic events (flooding events, very heavy rainfalls, hurricanes, etc.) to the movement of N and P species off the landscape? What portions of the landscape are involved in the delivery of N and P species during extreme events? If these short duration events are important to the overall loads of N and P to the Bay, how can their effect be decreased?
- 5) How would the timing and speciation of nutrient applications to the landscape affect the timing and speciation of nutrients delivered to the stream system? Or, can timing and speciation of watershed delivery be managed?
- 6) Is there a single (classification) or groups of segments (classifications) of the drainage system where the biogeochemical changes in N and P speciation are most important (or govern) what the CB ecosystem receives?
- 7) How would N & P speciation change our concept of hot spots and hot spot management?
- 8) What is the importance of hot spot identification, perhaps using variable source area analysis, in this context of speciation?
- 9) How does water-soluble soil organic matter (including detritus, microbes, bacteria, etc.) alter phosphorus adsorption to soil mineral surfaces? Does the presence of such organic

materials increase the solubility and bioavailability of phosphorus by affecting mineral bonding?

- 10) What are the transformations that occur following application of an N or P source as a function of management, soils, hydrology. Can these be reliably predicted?

- 11) What are the roles of shallow groundwater processes in the context of landscape classifications discussed here?

- 12) Why is this broad set of issues important to managers?