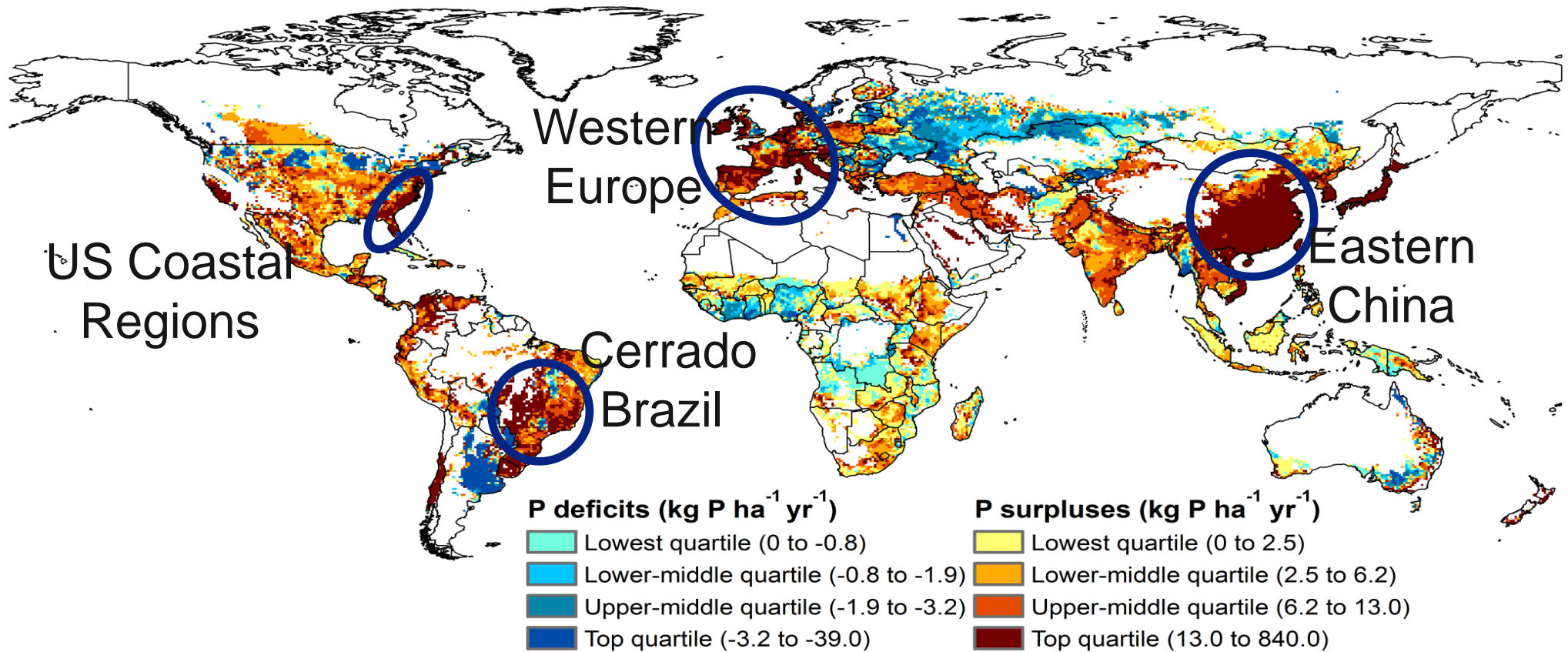
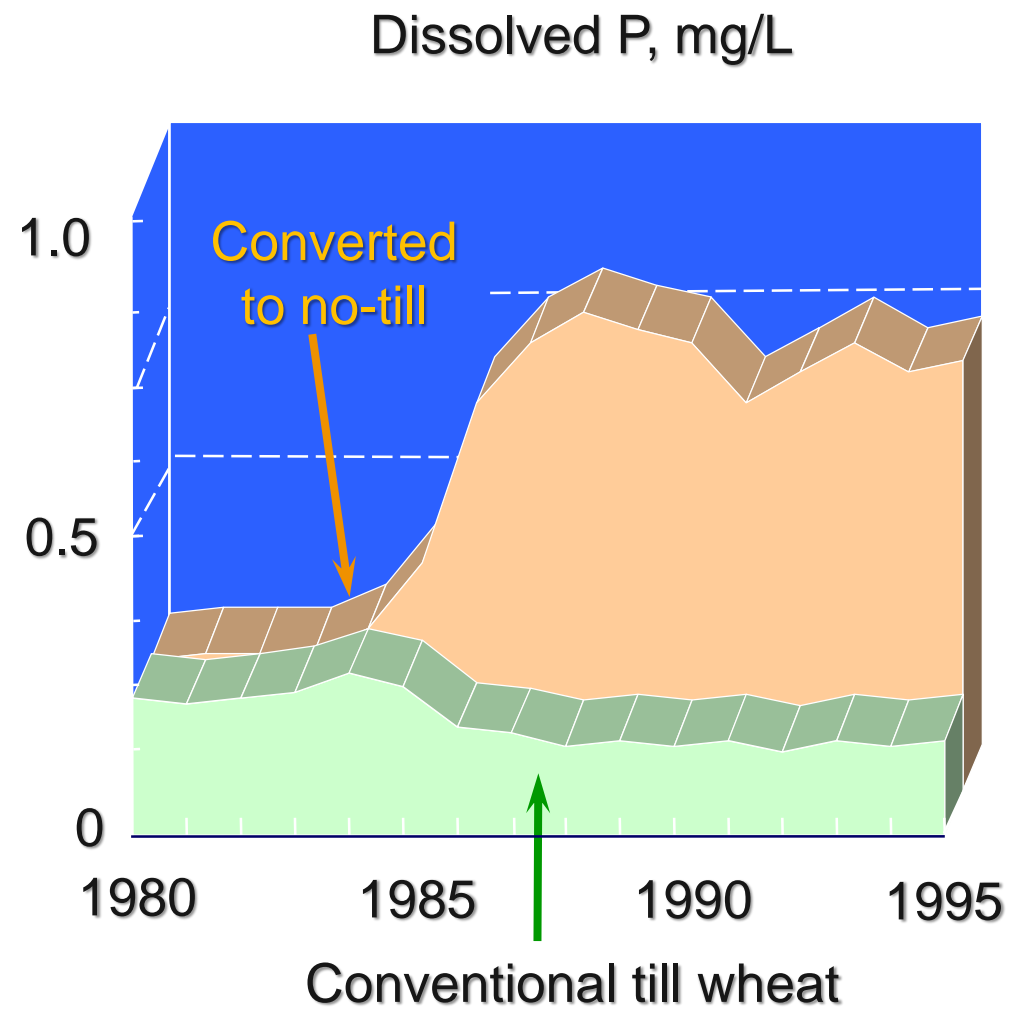
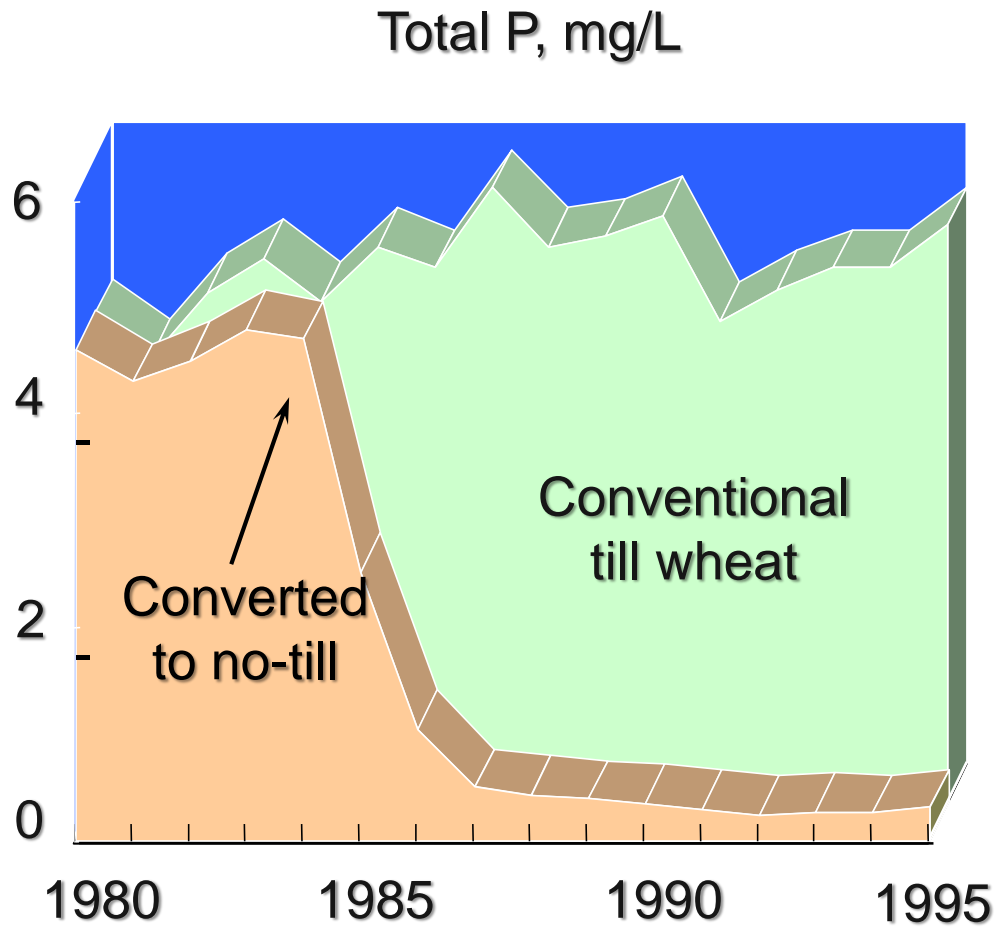


P accumulation in soils is a global success/problem *a legacy of past agricultural management*



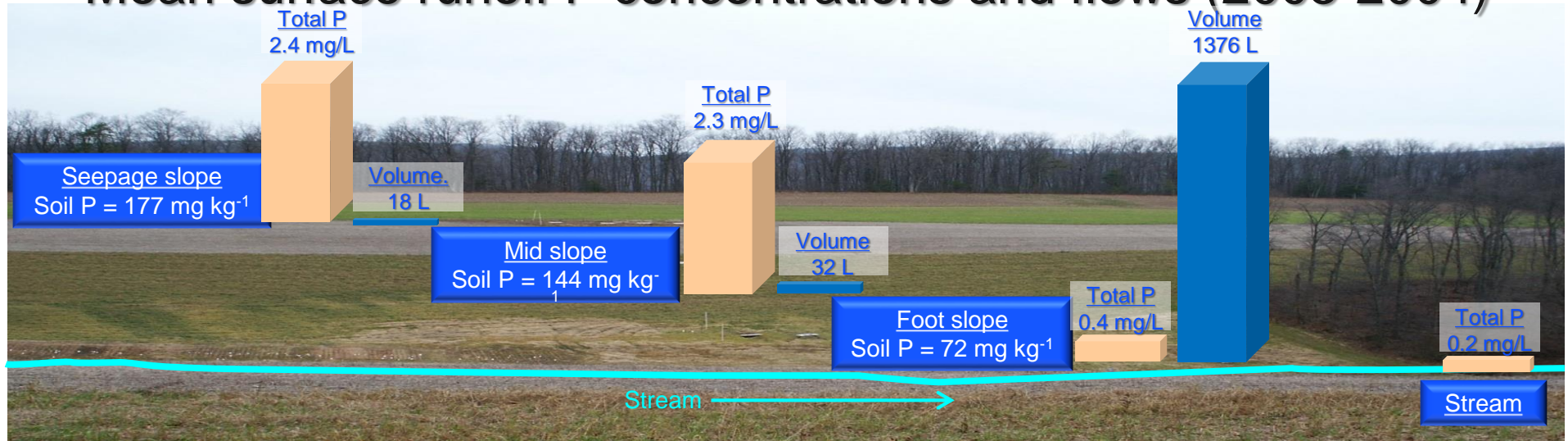
Control erosion first, then deal with dissolved P

Conservation trade-off: No-till reduced erosion by 95%

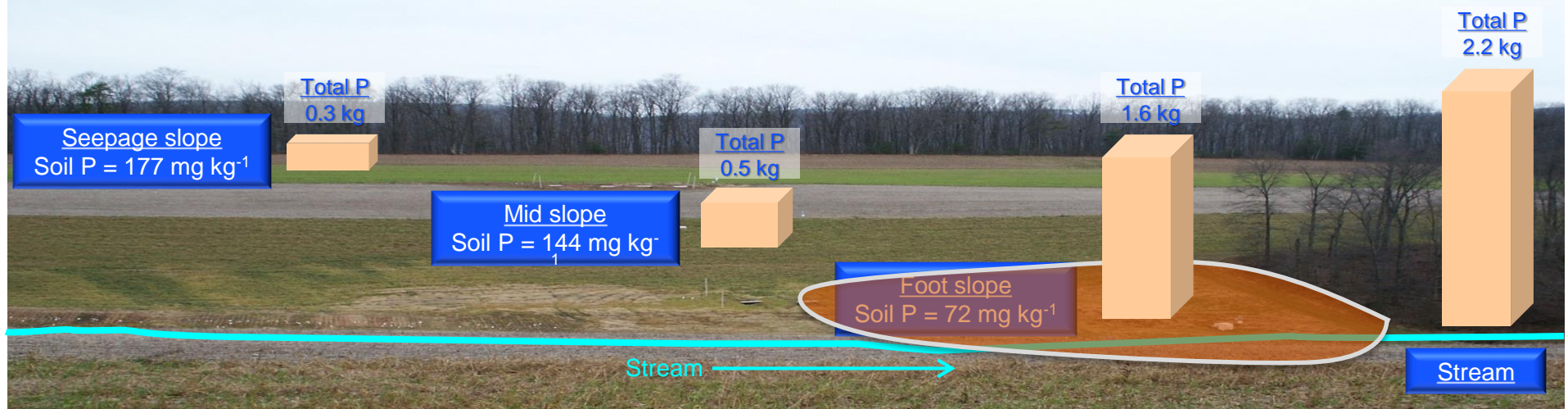


Critical source area - big P loads from small places

Mean surface runoff P concentrations and flows (2003-2004)

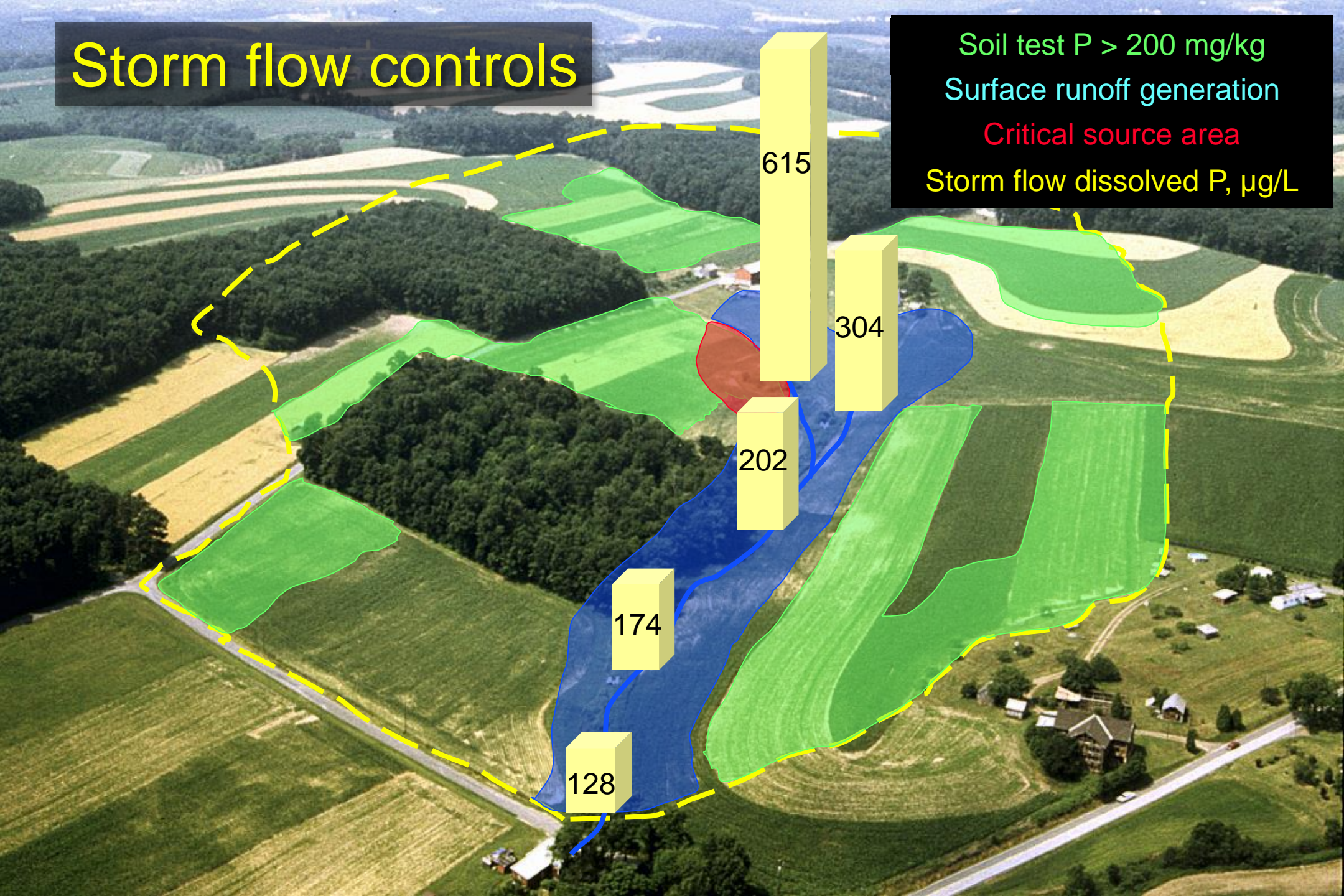


Mean hillslope and watershed runoff P loads (2003-2004)



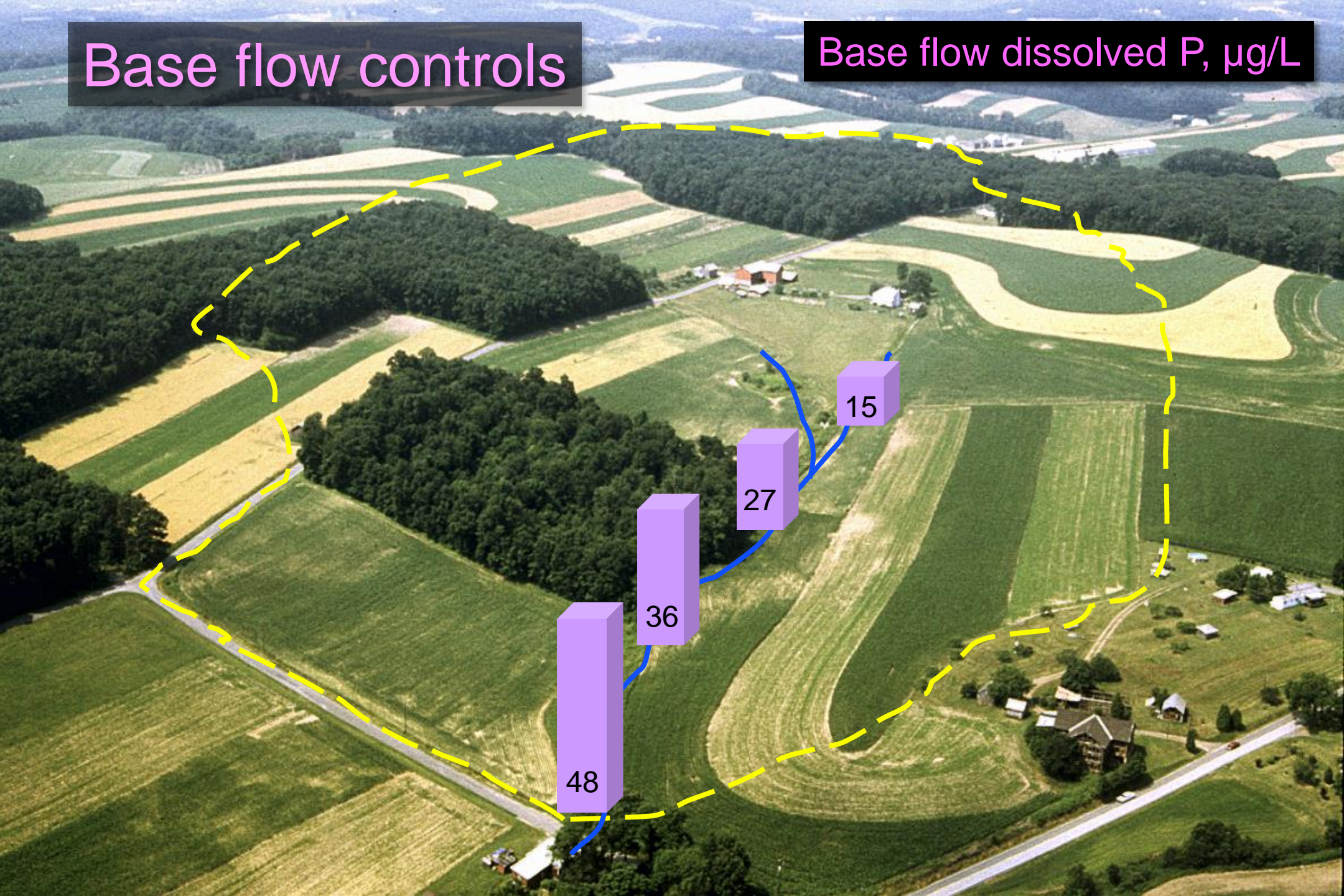
Storm flow controls

Soil test P > 200 mg/kg
Surface runoff generation
Critical source area
Storm flow dissolved P, $\mu\text{g/L}$



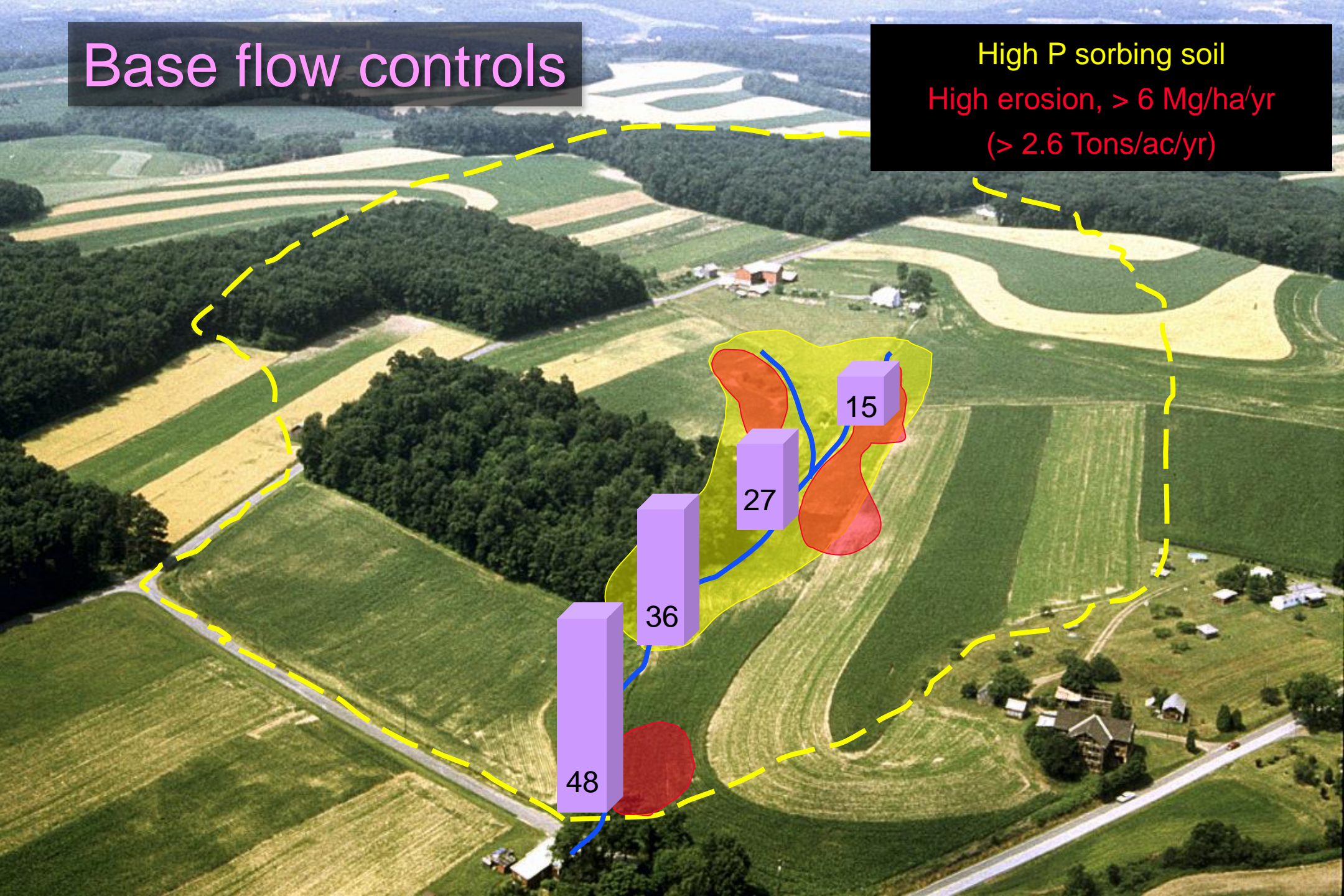
Base flow controls

Base flow dissolved P, $\mu\text{g/L}$



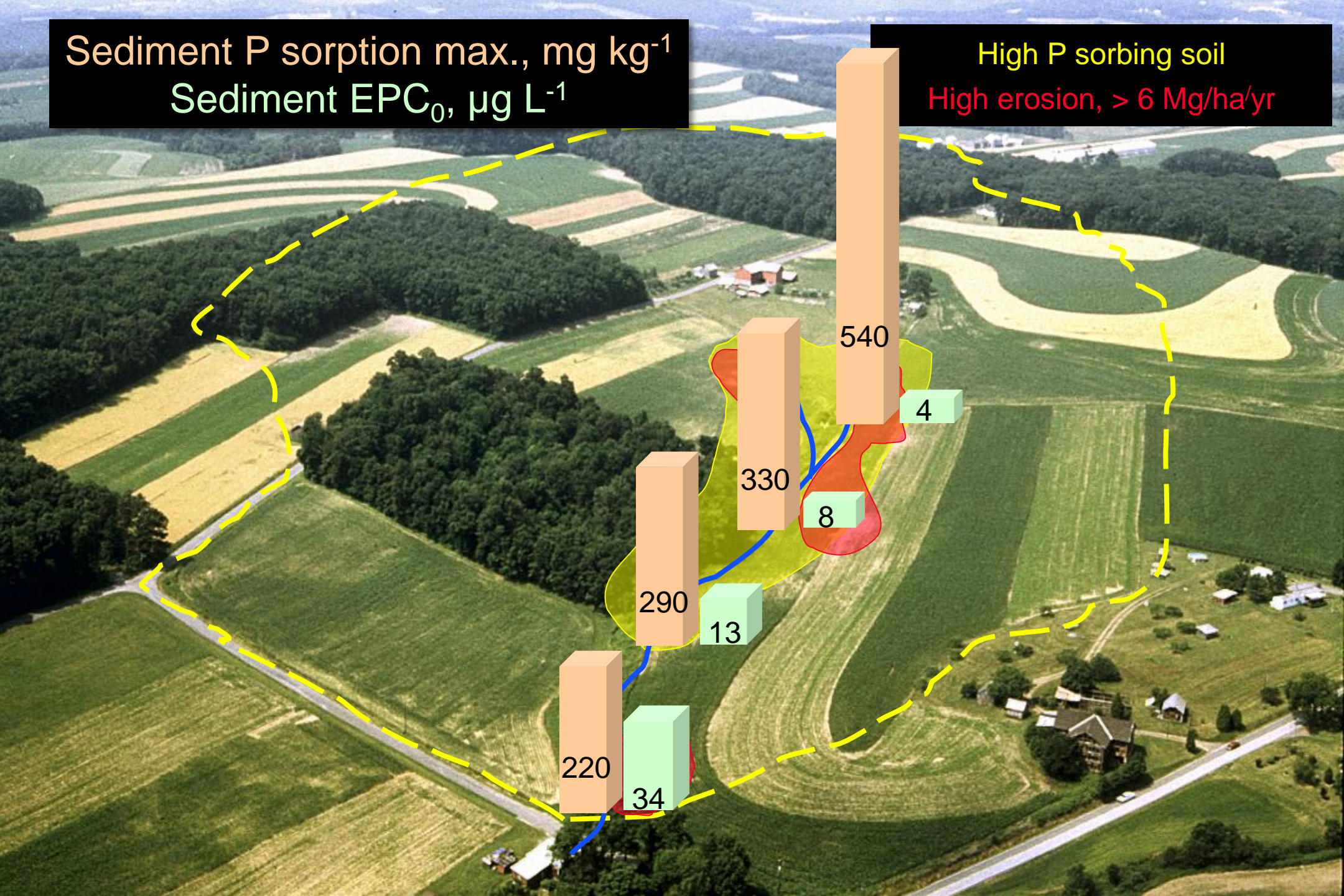
Base flow controls

High P sorbing soil
High erosion, > 6 Mg/ha/yr
(> 2.6 Tons/ac/yr)



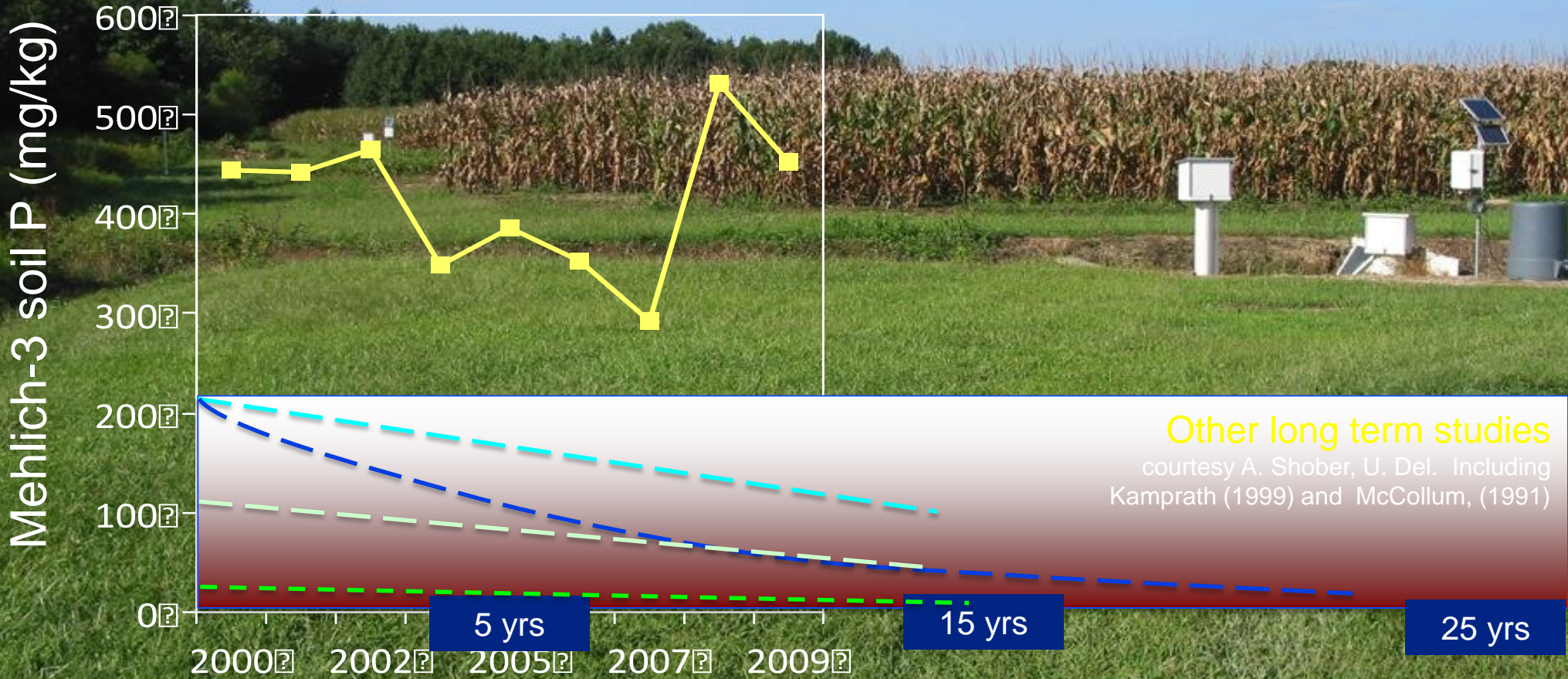
Sediment P sorption max., mg kg⁻¹
Sediment EPC₀, μg L⁻¹

High P sorbing soil
High erosion, > 6 Mg/ha/yr



“Mining” legacy P

Don't let it build up in the first place!



Kleinman et al., 2010 (Canadian J. Soil Science)

Legacy P – consider phyto-mitigation (slow) or mixing/tillage (fast but near term erosion concerns)

