



Implementing Precision Conservation in the Susquehanna River Watershed

Chesapeake Conservancy, Bloomsburg University,
Chesapeake Bay Foundation, Pennsylvania Dept. of
Conservation and Natural Resources, Susquehanna
University





Pre- and Post-Monitoring



Student Engagement

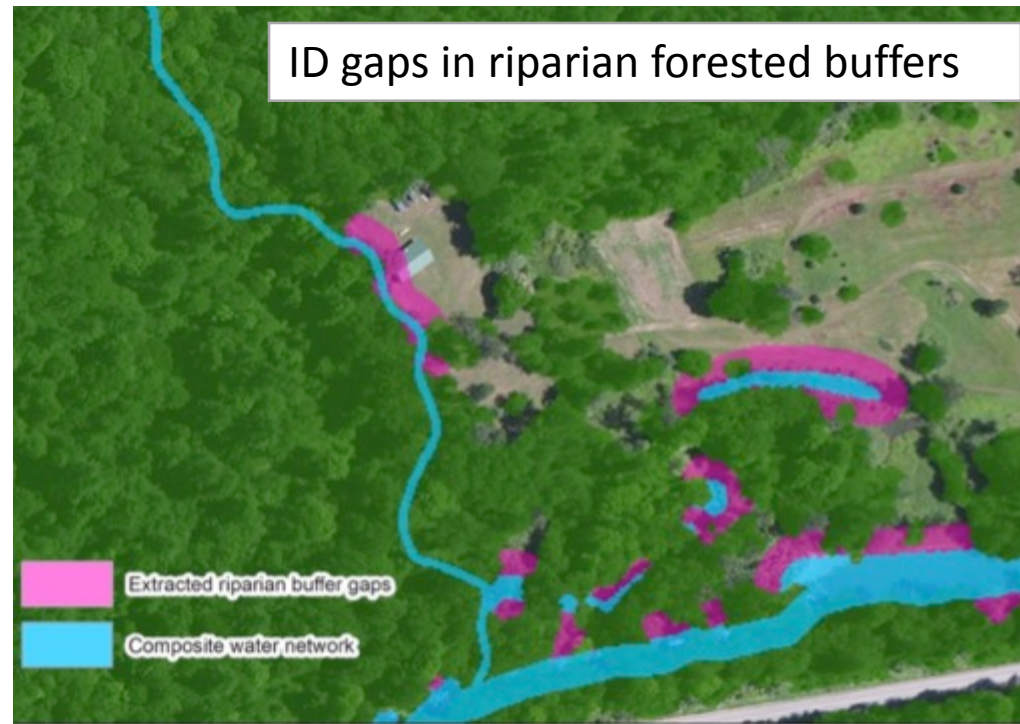
Clinton and Centre Counties, Pennsylvania



High resolution data



ID gaps in riparian forested buffers



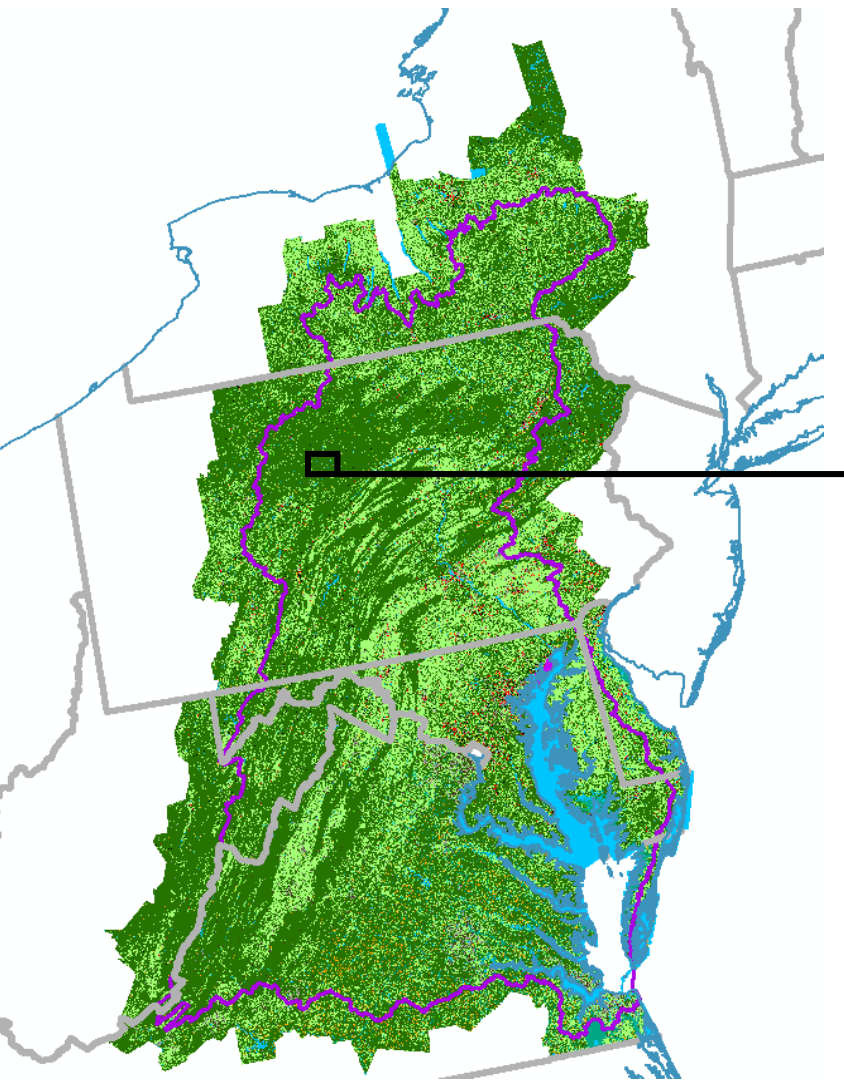
Prioritizing restoration



Implementing high-value projects



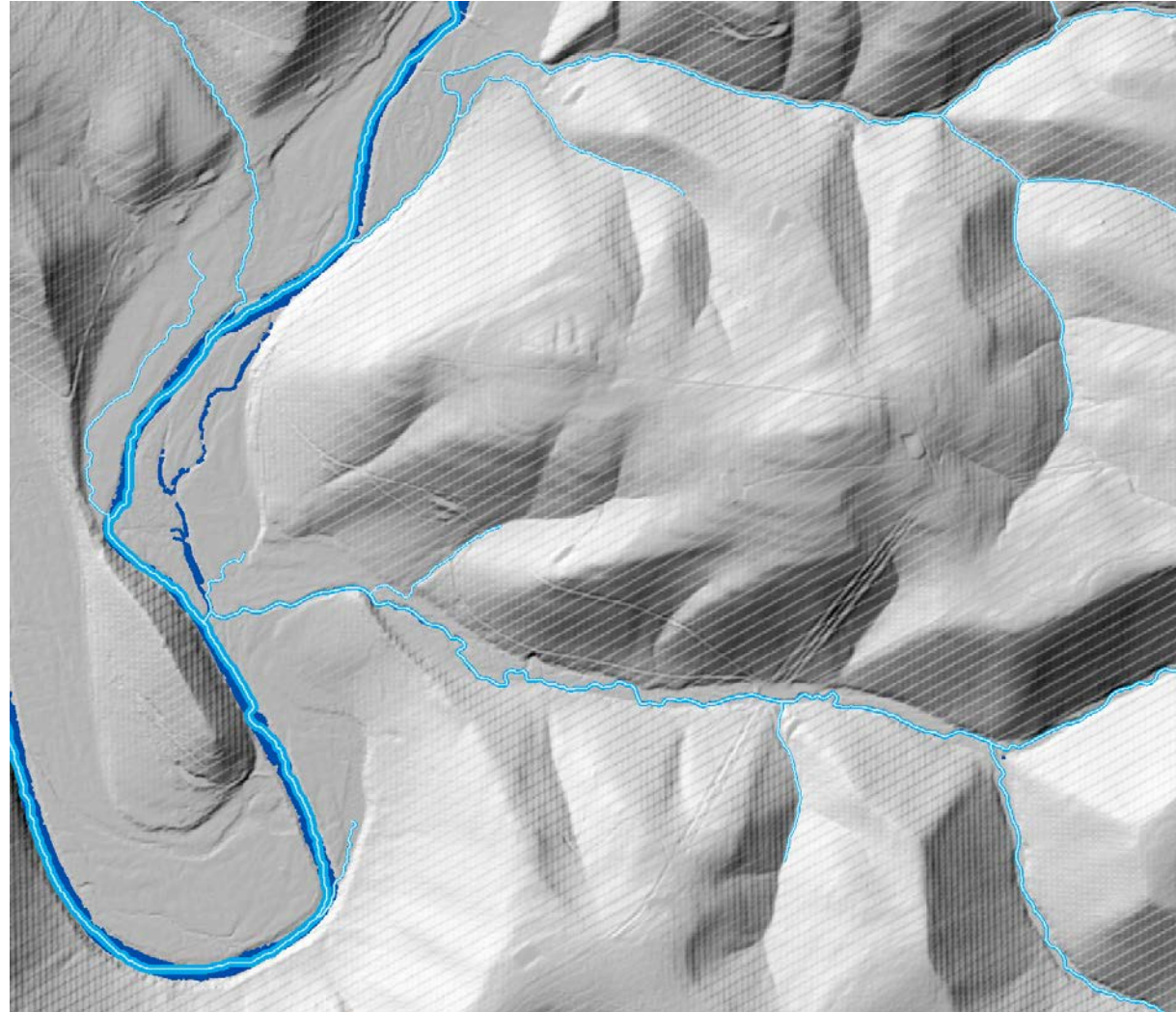
CBPP High-Resolution Land Cover Data



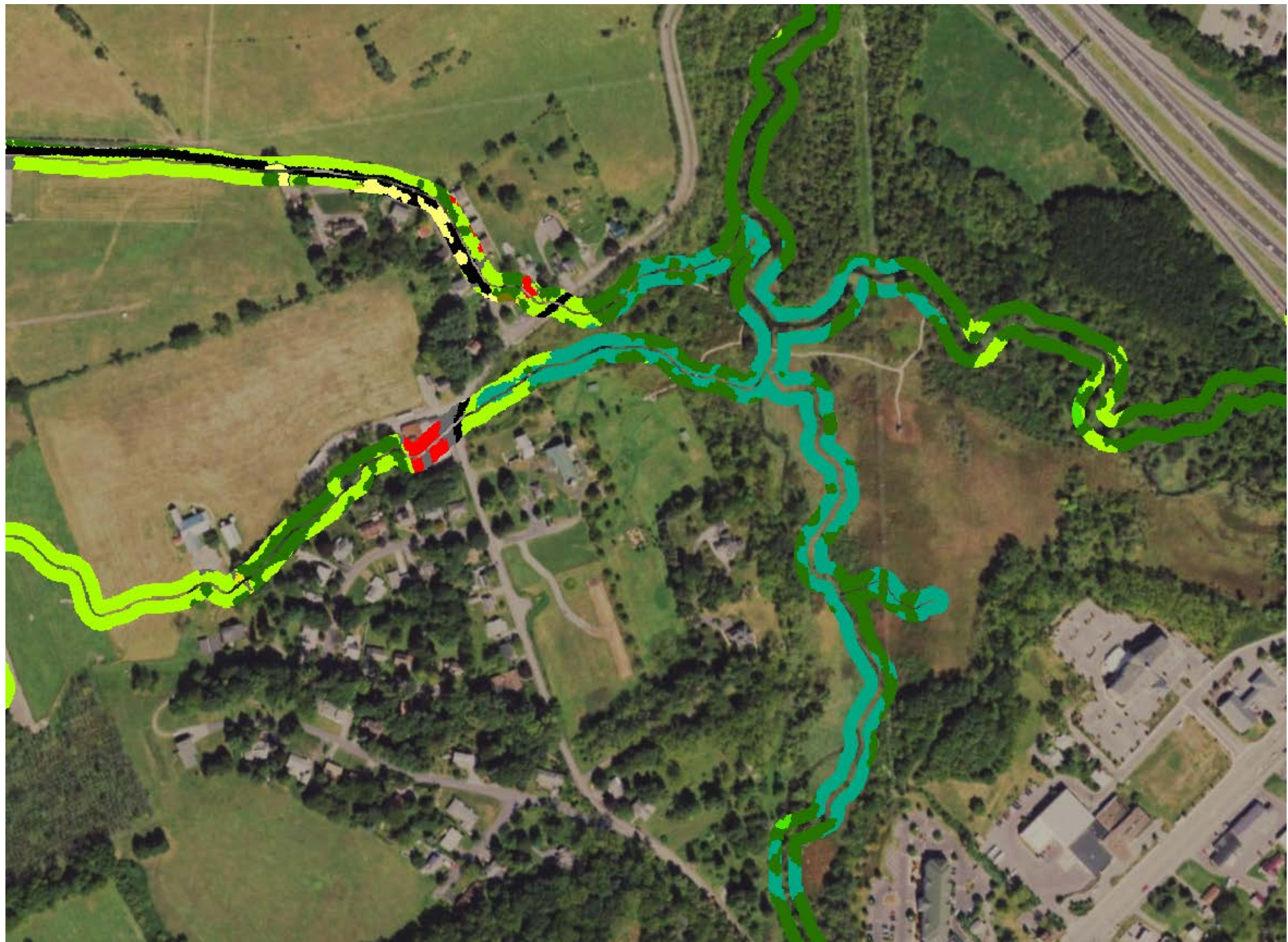
Susquehanna Water Network

Combine DEM blue lines, stream width, and land cover

- Land cover
- Stream width
- Flow path







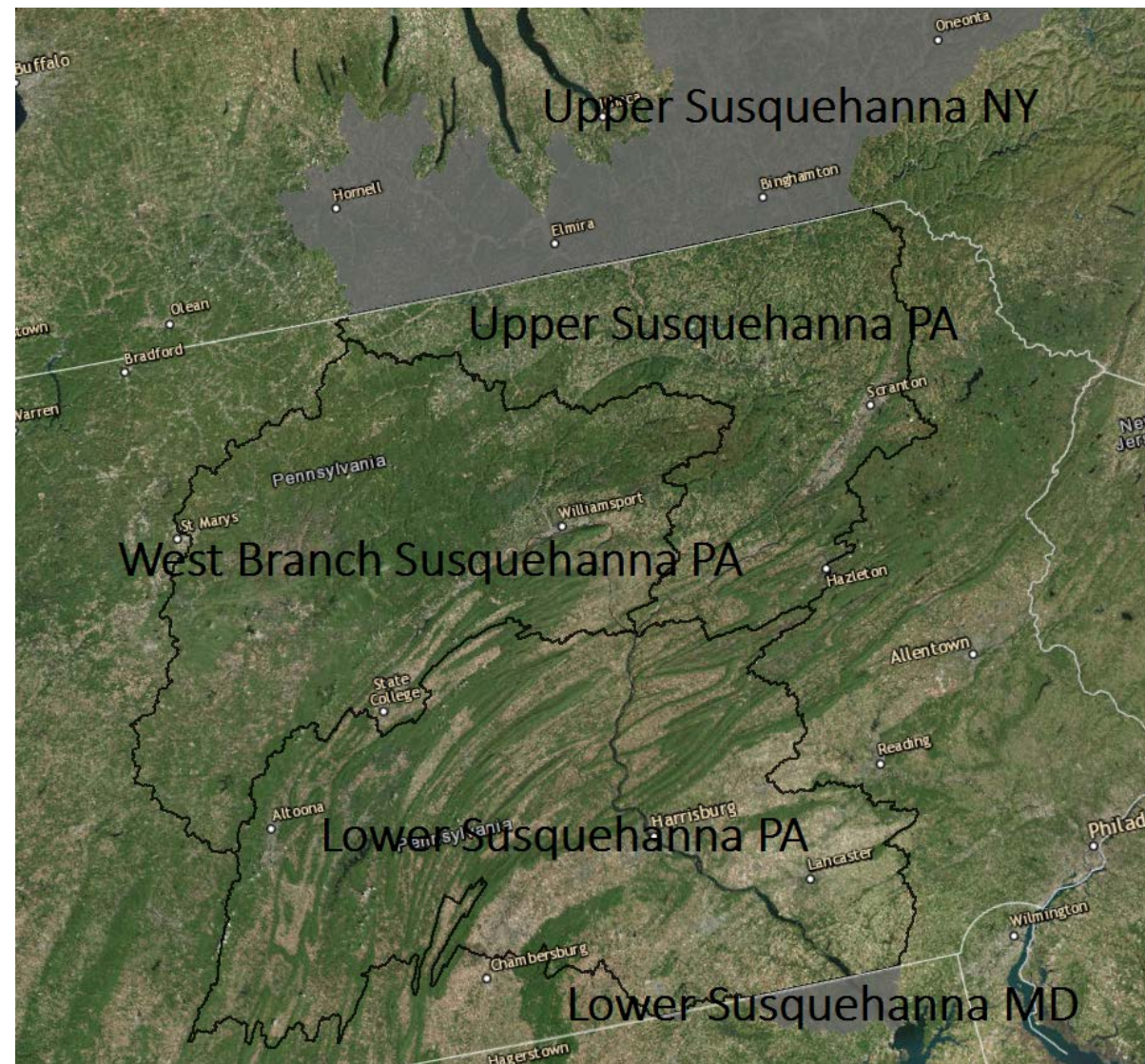
Riparian buffer land cover acres within 35 foot buffer of water network Susquehanna, Pennsylvania

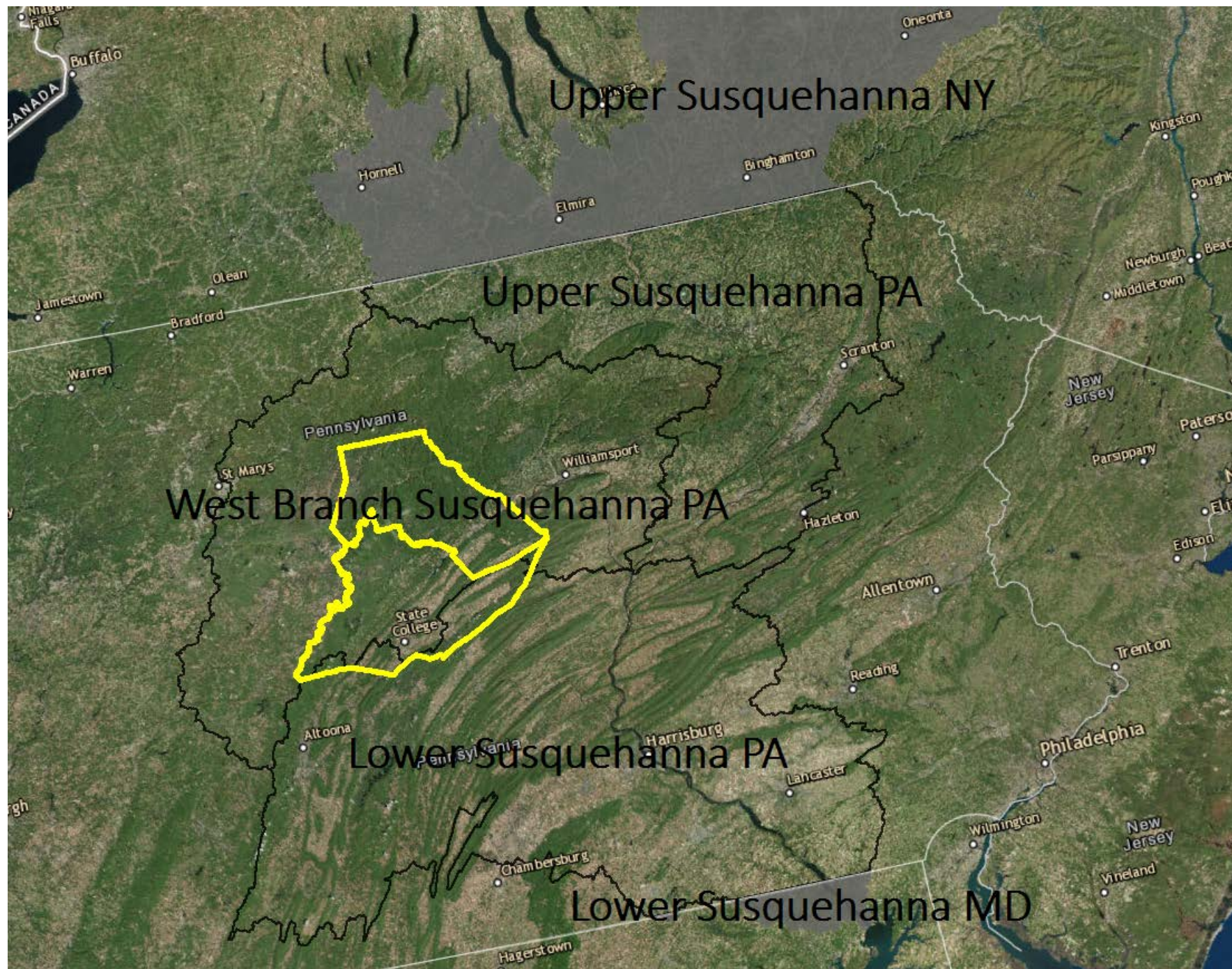
	Upper Susquehanna	West Branch Susquehanna	Lower Susquehanna
Likely emergent wetland	3,707	2,049	925
Tree canopy	69,691	106,858	117,838
Shrubland	905	592	695
Low vegetation	25,996	21,277	52,920
Barren	725	431	950
Structures	291	195	583
Impervious surfaces	1,553	1,009	3,789
Impervious roads	1,867	1,716	3,265
Tree canopy over structures	32	41	69
Tree canopy over impervious surfaces	265	211	537
Tree canopy over impervious roads	331	443	775

Total riparian area: ~423,000 acres

Total “buffered” (trees & shrubs) area: ~303,000 acres

Acres of planting-ready opportunities: ~102,000-109,000 acres





If you had all of the data and information in the world about a project—how would you prioritize riparian buffer restoration?

What makes something the “biggest bang for the buck?”

How can we have achieve the greatest benefits?

1.

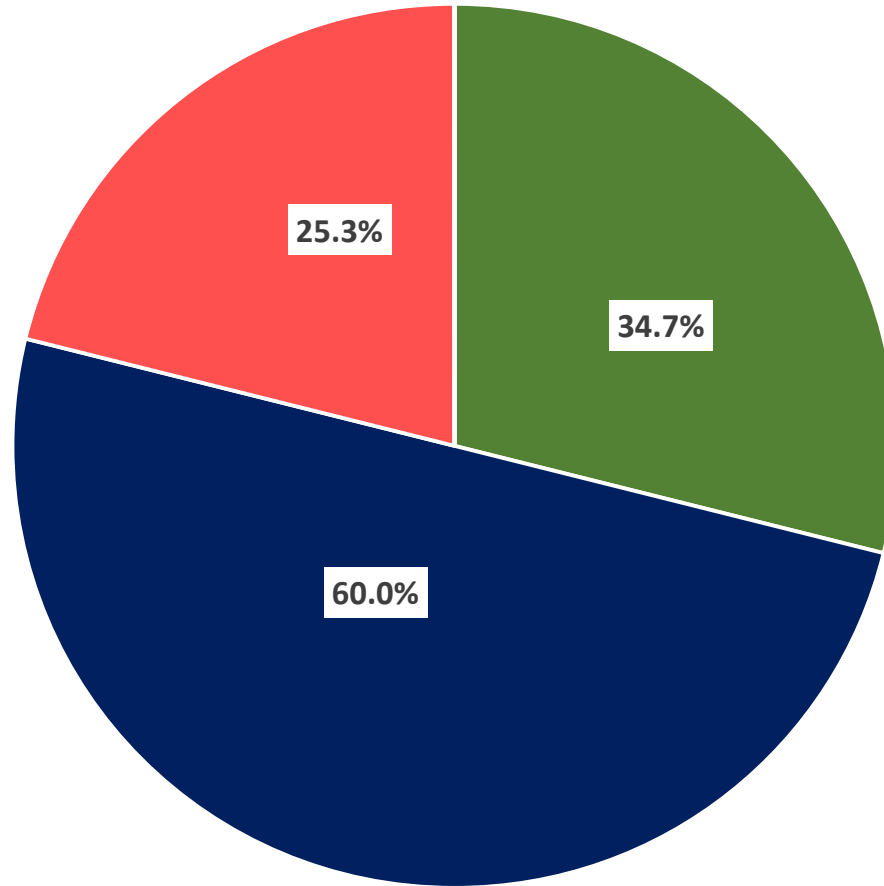
2.

3.

4.

5

Weighted Priorities for Project Selection



■ Wildlife ■ Water Quality ■ Human Dimensions ■ Other

Water Quality	Ground Features	Bank slope	Bank slope	CC will Create	Full	Prioritization
		Channel sinuosity	subcat: hydrodynamics, feature= cutbank, layer= derived from hydrologic modeling	CC will create	Full?	Prioritization?
		Gap slope	Gap slope	CC will Create	Full	Prioritization
	Surface Soils	Erodibility	Soils	Yes	Full	Prioritization
		Karst features	Karst	Yes	Partial	Prioritization
		Sinkholes	Sinkholes	Yes	Partial	Overlay
	Sub-surface Features	Drainage areas	Drainage areas	CC will Create	Full	Prioritization
		Integrated List Non Attaining		Yes	Partial	Prioritization
		Impaired streams	Chapter 93 classifications (EV or HQ streams)	Yes	Full	Overlay
	Stream Quality		Total Maximum Daily Load	Yes	Partial	Prioritization
			Class A Wild Trout Streams	Yes	Partial	Prioritization
			Wilderness Trout Streams	Yes	Partial	Prioritization
			Trout Natural Reproduction Streams	Yes	Partial	Prioritization
		Monitoring sites	Site Inventory for Pennsylvania/SRBC	Yes	Partial	Overlay

Wildlife (* indicates Species of Interest for the Richard King Mellon Foundation)	Trout Species	Eastern Brook Trout*	Brook Trout Highly Suitable Habitat	Yes	Full	Prioritization
		Brown trout	Stocked Trout Streams	Yes	Full	Prioritization
	Bird Species	Pollinator				Prioritization
		Cerulean Warbler*	Landscape Capability for Cerulean Warbler	Yes	Full	Prioritization
		Golden-Winged Warbler*	Golden-Winged Warbler Suitable Habitat	Yes	Full	Prioritization
		Black-throated Blue Warbler*	Species Distribution Data	Yes	Full	Prioritization
		Louisiana Waterthrush*	Landscape Capability for Louisiana Waterthrush	Yes	Full	Prioritization
		American Woodcock*	Landscape Capability for American Woodcock	Yes	Full	Prioritization
	Plant Species	Wetlands	NWI	Yes	Full	Overlay
		Wildlife Plant Cover	in the soil survey ratings (Table 3 and 4 in paper soil surveys)	?	?	?
	Other Species of Importance	Threatened and endangered mussels*				Prioritization
		Eastern Hellbender*	Eastern Hellbender Suitable Habitat	Yes	Full	Prioritization

Human Dimensions	Protected Lands	Easements	Conservation Easements	Carly and Adrienne to ask	Full	
		Parcels	Parcels	Carly and Adrienne to ask		Prioritization
	Land Use	Agricultural land use	Cropland, Pasture (Agricultural land use-prime farmland, limitations to class 1, soil survey data. Are there data sets of farms in agricultural protection from development? Agricultural land use-prime farmland, limitations to class 1, soil survey data. Are there data sets of farms in agricultural protection from development?	Yes	Full	Prioritization
			Agricultural Easements	Carly and Adrienne to ask	Full	
		Crossings	Crossings	Yes	Full	Overlay
	Hunting and Fishing Clubs	Land Ownership	Parcels	Yes	?	Prioritization
	Second home owners	Land Ownership	Parcels	Yes	?	Prioritization
	Gap size	Gap size	Gap size	CC will create	Full	Prioritization??
	Owner information	Land ownership--double check privacy issues	Land ownership	Yes	Full	Overlay
	Publicly owned lands	Land Ownership	Parcels	Yes	?	Prioritization

Funding	CREP		Highly erodible soils			Future assessment
	EQIP					Future assessment
	Growing Greener		Impaired Streams			Future assessment
	DCNR-Buffer					Future assessment
	Richard King Mellon Foundation	Focal watersheds within the Susquehanna: Conemaugh and Clearfield Headwaters, Upper Juniata River, Bald Eagle to Penns Valley, Moshannon				Future assessment

