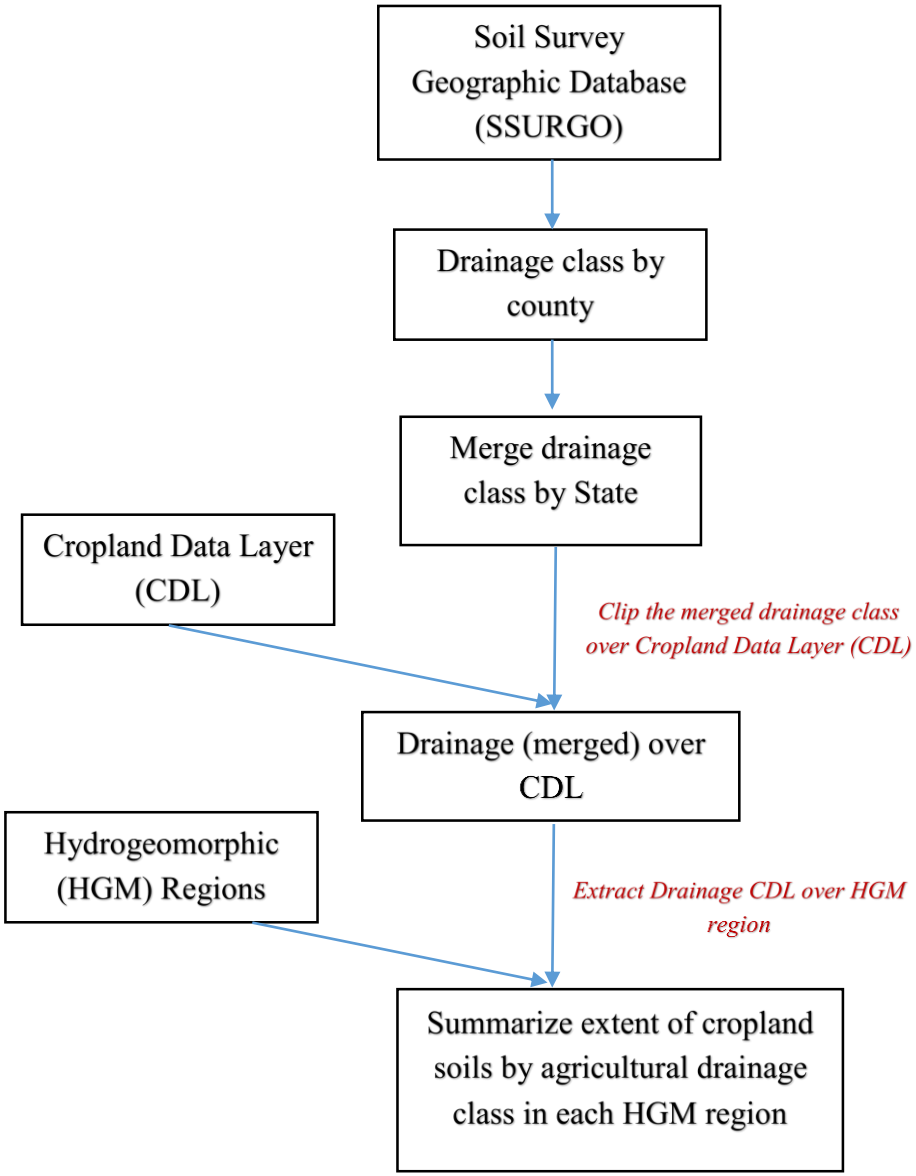
Low residue, strip till/no-till	Conservation Tillage	High Residue, Min Soil Disturbance
16-29% residue	30-59% residue	≥60% residue
Sediment Losses		
Low residue, strip till/no-till	Low Till/Mulch Till	High Residue, Min Soil Disturbance
Load Reduction Rel to High-Till -18%	Load Reduction Rel to High-Till -41%	Load Reduction Rel to High-Till -79%
Surface N Losses		
Low residue, strip till/no-till	Low Till/Mulch Till	High Residue, Min Soil Disturbance
Load Reduction Rel to High-Till Uplands -5% Coastal Plain -2%	Load Reduction Rel to High-Till Uplands -10% Coastal Plain -4%	Load Reduction Rel to High-Till Uplands -14% Coastal Plain -12%

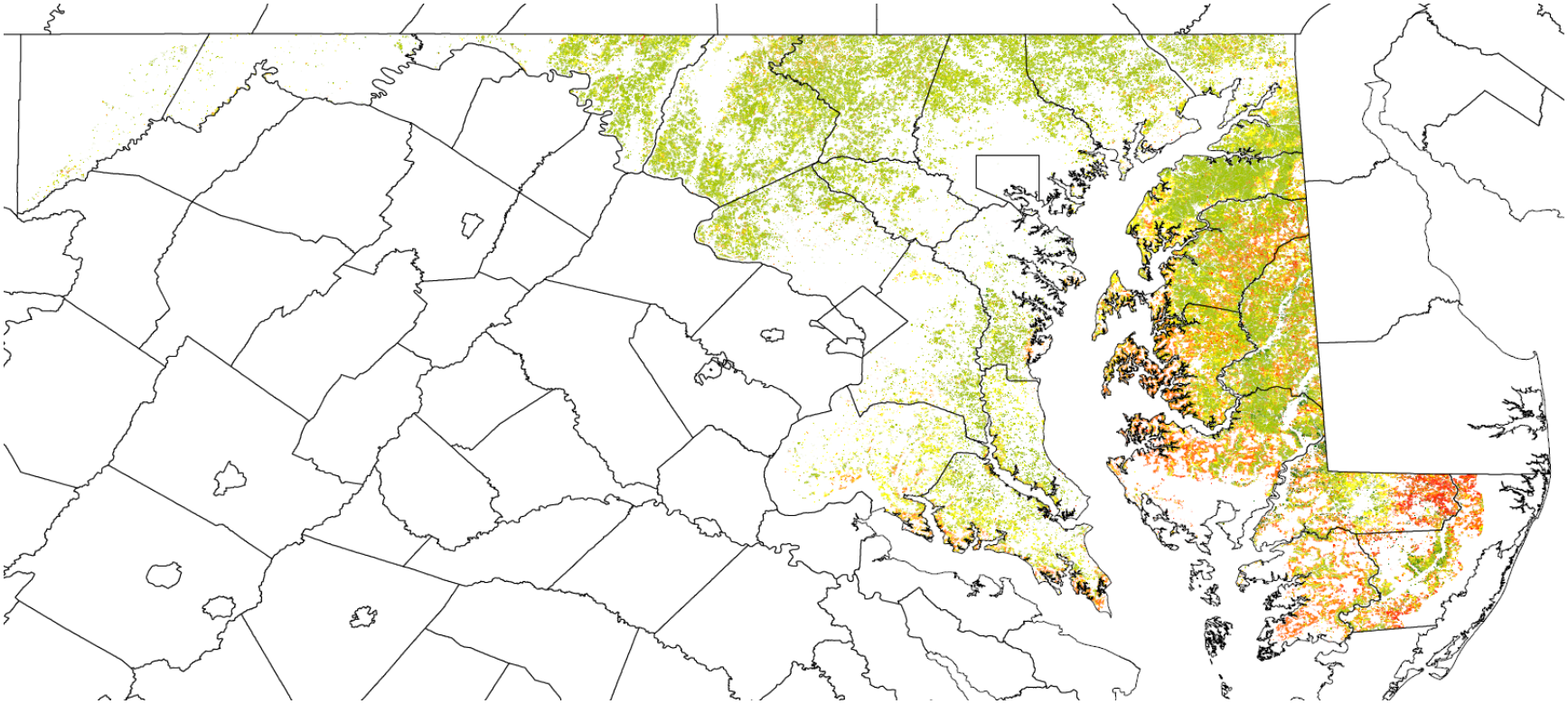
Approved via unanimous panel vote, 8-29-16

Phosphorus

- Entirely too much variation of P loss by tillage practice to combine all data
- Separated by agricultural drainage class
  - Excessively well drained, well drained, moderately well drained
    - 12 observations from peer-reviewed literature from w/i the Bay watershed
  - Somewhat poorly drained, poorly drained, very poorly drained
    - 5 observations from peer-reviewed literature from w/i the Bay watershed


Soil Survey Geographic Database (SSURGO)
Drainage class by county
Merge drainage class by State
Cropland Data Layer (CDL)
Clip the merged drainage class over Cropland Data Layer (CDL)
Drainage (merged) over CDL
Hydrogeomorphic (HGM) Regions
Extract Drainage CDL over HGM region
Summarize extent of cropland soils by agricultural drainage class in each HGM region

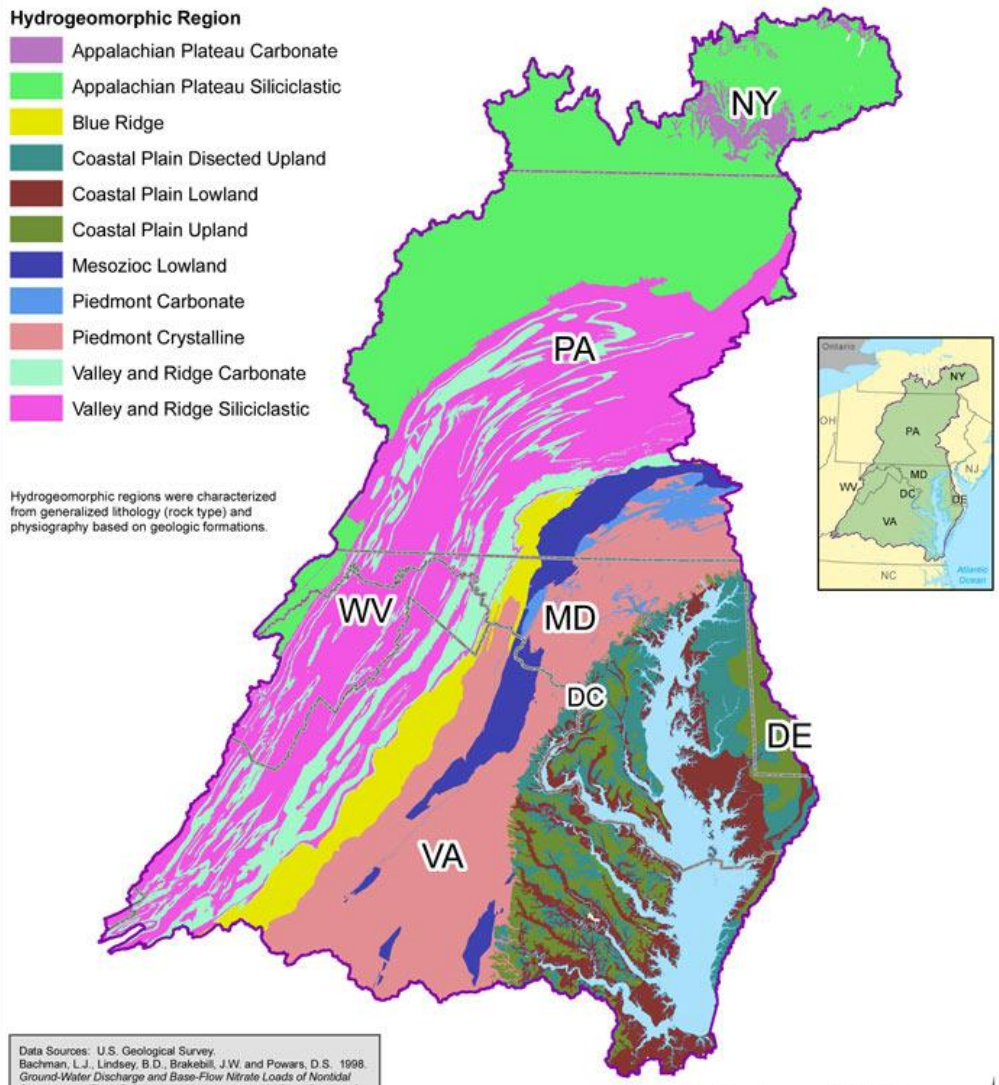
MD Cropland by drainage



Hydrogeomorphic Regions

Chesapeake Bay Watershed

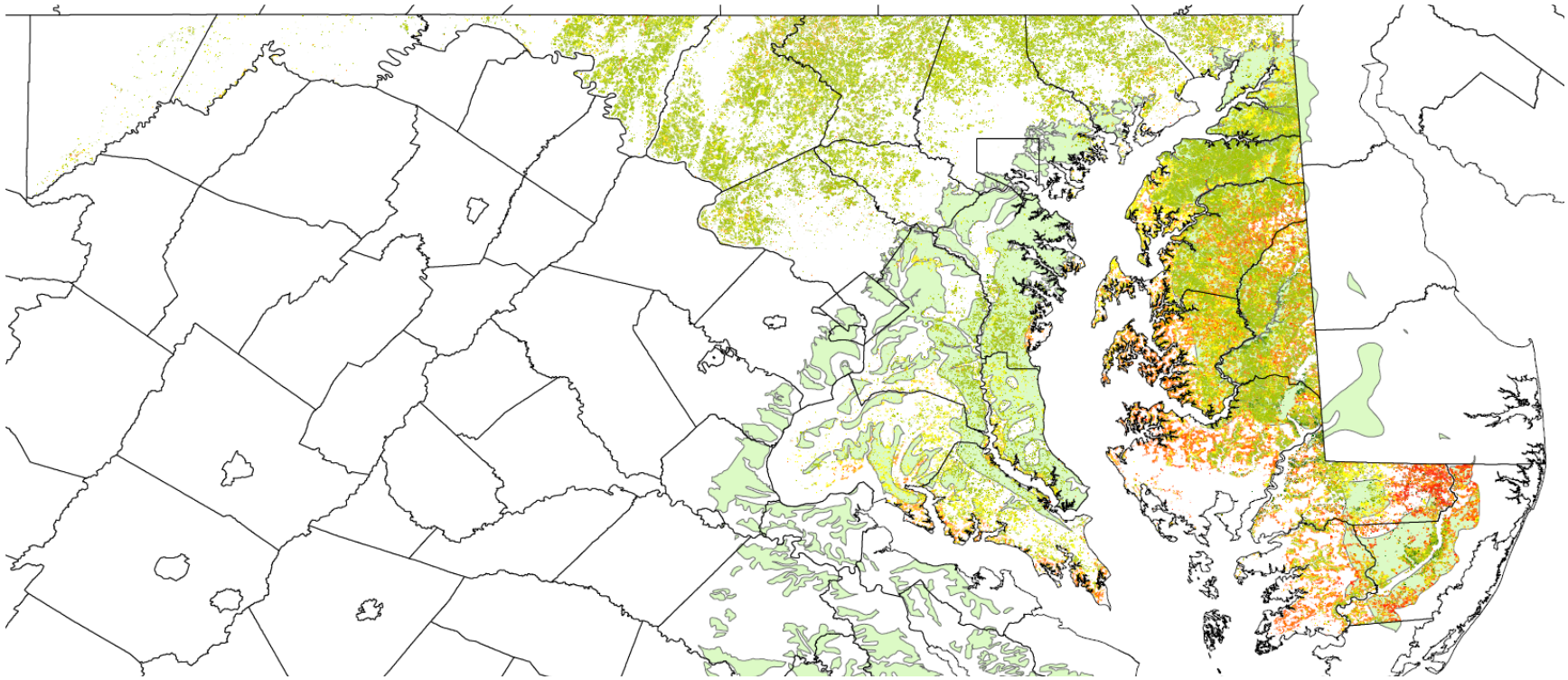
Chesapeake Bay Program
A Watershed Partnership



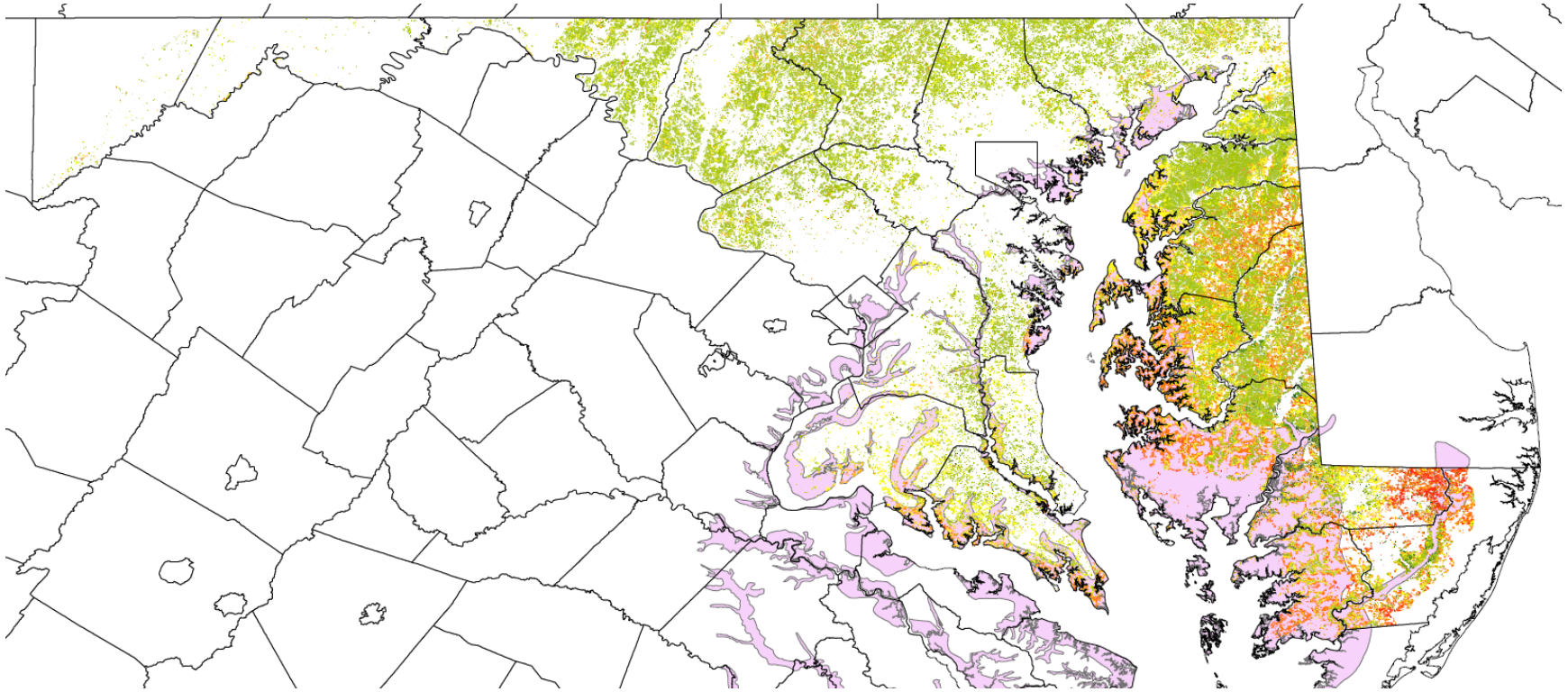
Created by JW, 2/11/08

UTM Zone 18N, NAD 83

MD CPD Cropland by drainage



MD CPL Cropland by drainage



CBW cropland drainage area by HGM region

Proportion of Cropland	%Well drained	% Poorly drained
Appalachian Plateau, Siliciclastic	76%	24%
Appalachian Plateau, Carbonate	81%	19%
Blue Ridge	93%	7%
Coastal Plain Disected Upland	85%	15%
Coastal Plain Lowland	68%	32%
Coastal Plain Upland	75%	25%
Mesozoil Lowland	78%	22%
Piedmont Carbonate	98%	2%
Piecmont Chrystalline	97%	3%
Valley and Ridge Carbonate	97%	3%
Valley and Ridge Siliciclastic	92%	8%

Literature values for Surface P loss reductions (well-drained average)

		Surface P Loss Reduction
Low residue, strip till/no-till	16-29% residue	-9%
Conservation Tillage	30-59% residue	-64%
High Residue, Min Soil Disturbance	≥60% residue	-72%

Literature values for Surface P loss increases (poorly-drained average)

125%

So…for Conservation-Till and High-residue, minimum disturbance

(% well drained cropland)*(lit reduction value) + (% poorly drained cropland)*(lit increase value) = P value for HGMR

Blue ridge, conservation tillage: (0.93*-0.64)+(0.07*+1.25) = -0.595 + 0.0875= --0.5075 ~ **-50% P loss reduction**

HGM Region	Surface P Losses		
	Low residue, strip till/no-till	Conservation Tillage	High Residue, Min Soil Disturbance
	16-29% residue	30-59% residue	≥60% residue
	Load Reduction Rel to High-Till	Load Reduction Rel to High-Till	Load Reduction Rel to High-Till
Appalachian Plateau, Siliciclastic	-7%	-17%	-27%
Appalachian Plateau, Carbonate	-7%	-27%	-38%
Blue Ridge	-8%	-50%	-63%
Coastal Plain Disected Upland	-8%	-35%	-47%
Coastal Plain Lowland	-6%	-2%	-11%
Coastal Plain Upland	-7%	-16%	-26%
Mesozoil Lowland	-7%	-21%	-32%
Piedmont Carbonate	-9%	-60%	-74%
Piecmont Chrystalline	-9%	-58%	-71%
Valley and Ridge Carbonate	-9%	-57%	-71%
Valley and Ridge Siliciclastic	-8%	-49%	-62%