

Incorporating agroforestry into Virginia's nutrient trading program

John Munsell



Nutrient credit trading in Virginia

C-CAP overview and initiatives

Obstacles and opportunities

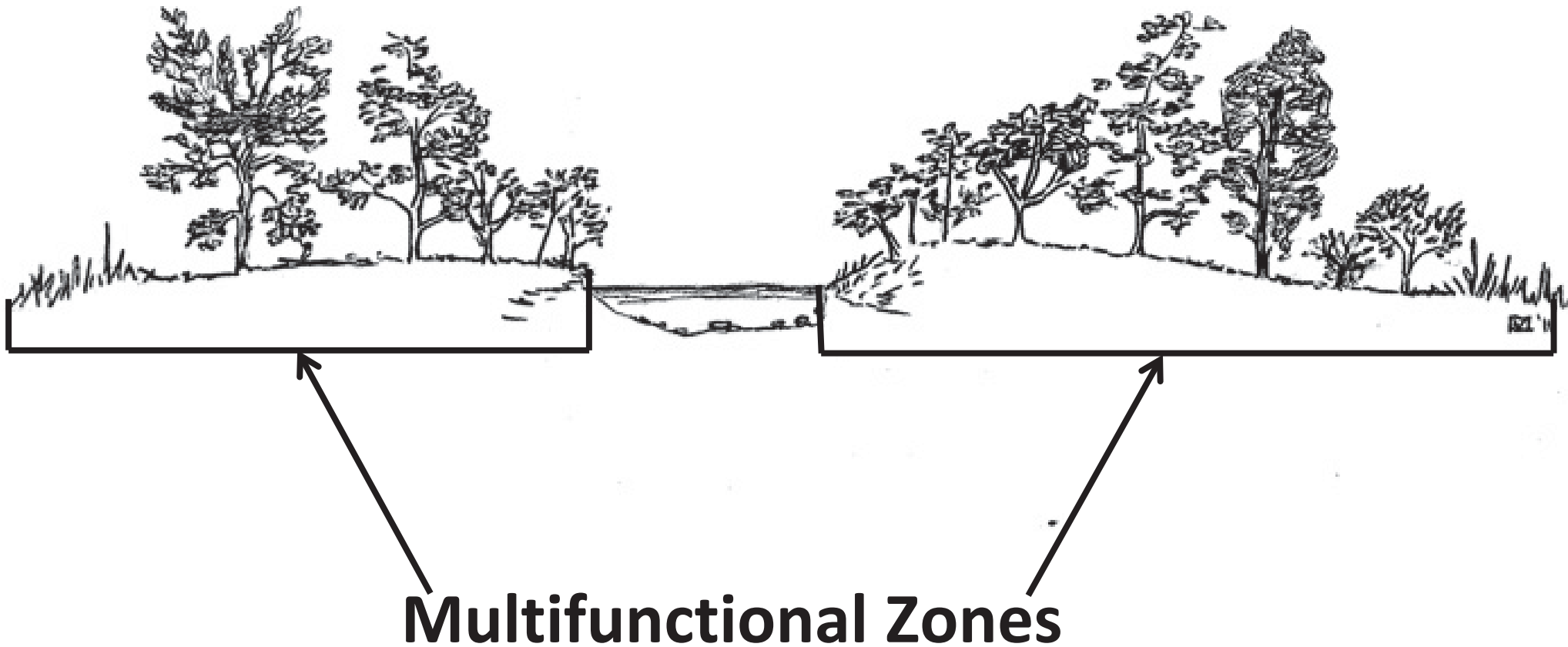


National
Agroforestry
Center



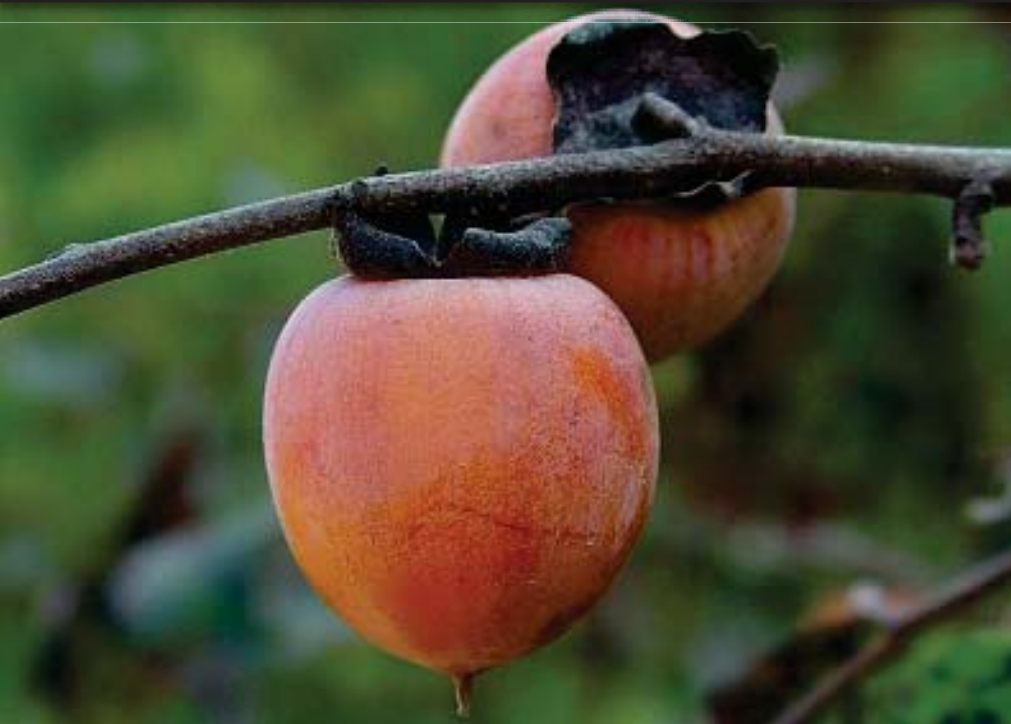
Agroforestry merges

Production and Conservation





Fruit trees and shrubs





Nut trees and shrubs





Floral crops





Woody crops, too



Phosphorus (P) an agroforestry product?

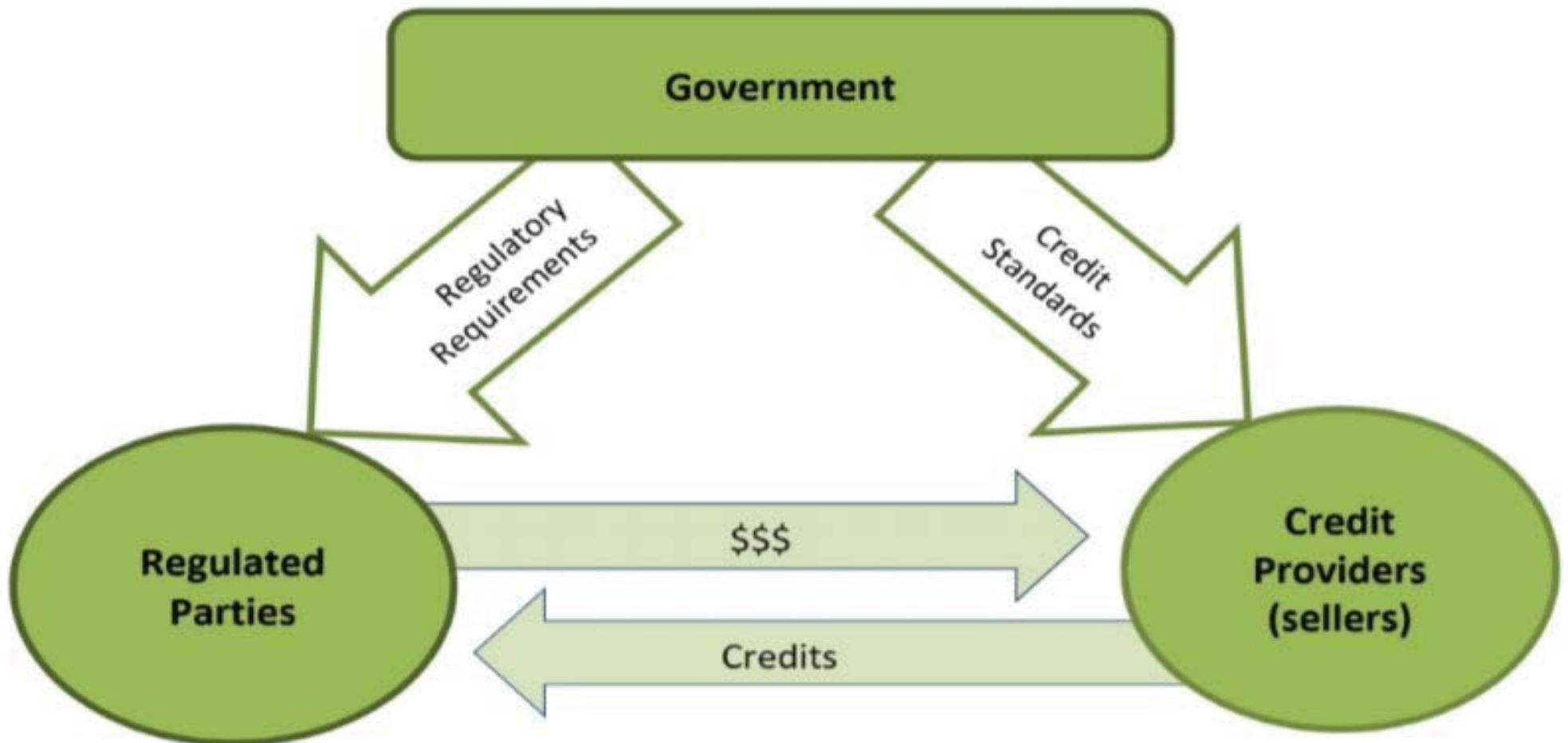
Virginia Nutrient Credit Trading Program



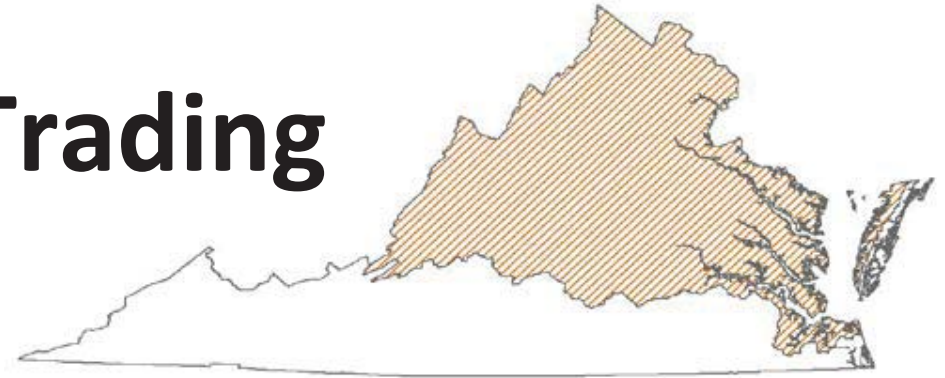
Agroforestry as accepted best practice being tested in Virginia...

Basic proposition is a private market

Financial exchange between two actors that helps regulated parties come into compliance



VA Nutrient Credit Trading Program



Began in 2009 – point- (\$) and non-point (\$\$\$\$\$) credits

Regulations – TMDL; MS4 (new)

Significant catalyst – UVA study and VDOT

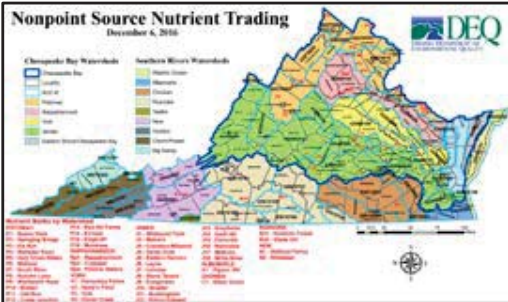
80 non-point facilities (~80% CBW, ~20% SR, ~10-750 lb. P)

5,265 pounds of P released from non-point, 52% purchased

\$10.6k to \$67.3k (average ~\$20k; \$100+million)

VDOT (~35%), private development (~55%), municipalities

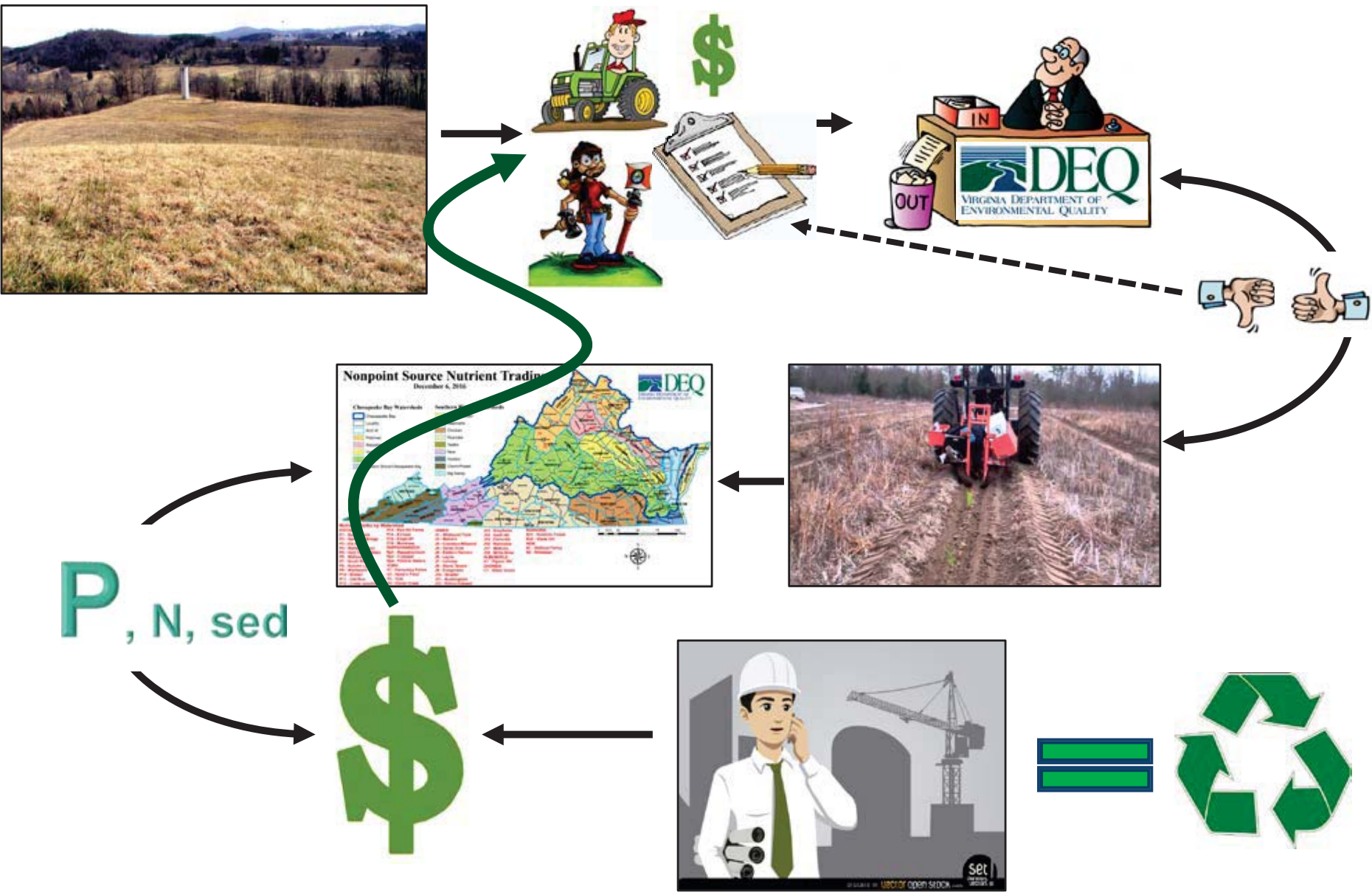
Non-point front-loaded – reduces risk?



P, N, sed



Non-point front-loaded – reduces risk?





Additionality

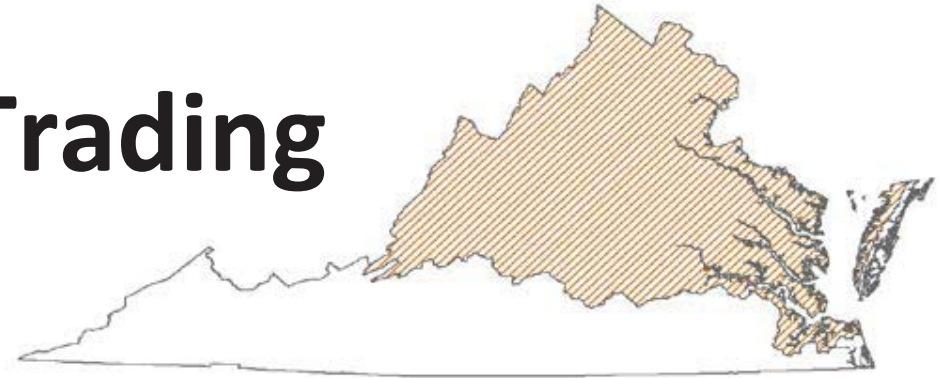
Virginia Nonpoint Source Nutrient Credit Registry

Municipality	Urban/ Ag BMPs	Bank Sponsor	Broker	Broker Contact	Phone No.	Email	County	HUC Code	Certification No.	Credits Released		Credits Used/Retired		Credits Available	
										Phosphorus	Nitrogen	Phosphorus	Nitrogen	Phosphorus	Nitrogen
Wildwood Farm	Ag land conversion	Chesapeake Bay Nutrient Land Trust LLC	Chesapeake Bay Nutrient Land Trust, LLC	Scott Reed	(804) 222-5114	sreed@esowetlands.com	Appomattox	02080203	James-001	111.95	412.64	105.08	283.39	0.87	29.25
Malvern Landbank	Ag land conversion	Le Moulin, LLC	Stadia Development	Ron Green	(804) 908-4171	rongreen116@gmail.com	Fowhatan	02080205	James-002	62.04	278.66	61.85	277.67	0.19	0.99
Cranston Millpond	Urban BMP	Cranston Mill Pond, LLC	Chesapeake Bay Nutrient Land Trust, LLC	Scott Reed		sreed@esowetlands.com	James City	02080206	James-003	752.00	1655.00	381.41	839	370.59	815.01
Swiss Dike	Ag land conversion	R&J Investments, LC	R&J, LC	Ron Green	(804) 908-4171	rongreen116@gmail.com	Amelia	02080207	James-004	328.78	1100.41	268.46	563	60.32	201.88
Eastern Henrico Nutrient Bank	Ag land conversion	Deminson Golf, LLC	Matthew Management Corp.	Scott Reed	(804) 387-7781	sreed@esowetlands.com	Henrico	02080206	James-005	88.30	365.33	50.76	138.70	47.34	176.63
Layne	Ag land conversion	Osborne Green, LLC	Wilton Family Investment Trust	Henry Wilton	(804) 285-2191	hwilton@wiltoncorp.com	Henrico	02080206	James-006	78.25	646.24	78.01	644.05	0.22	2.19
Leinster	Ag land conversion	Leinster Nutrient Exchange, LLC	Leinster Nutrient Exchange, LLC	Herbert Fitzgerald	(804) 514-7551	herbert@nug.com	Henry	02080207	James-007	23.66	103.51	23.66	103.51	0.00	0.00
Stone Tavern Nutrient Bank	Ag land conversion	Stone Tavern, LLC	Stone Tavern, LLC	David Whitmore	(540) 466-2944	davidwhitmore@stone-tavern.com	Rockbridge	02080201	James-008	20.11	26.94	19.37	19.90	2.74	7.04
Dungeness Nutrient Bank	Ag land conversion	Sara M. Grattan	Sara M. Grattan	Sara M. Grattan	(804) 347-8755	sgrattan5@gmail.com	Goodland	02080205	James-009	22.81	103.48	7.75	35.06	15.06	67.42
Shafer Nutrient Bank	Ag land conversion	Joy P. Shafer and James P. Mazze, Jr. (revoked 12/12/12 w/e December 21, 2012)	R&J, LC	Ron Green	(804) 908-4171	rongreen116@gmail.com	Goodland	02080205	James-010	120.29	540.44	104.18	488.15	16.11	72.17
Buckingham Nutrient Bank	Ag land conversion	Overland VA, LLC	Overland VA, LLC	Harison Hill	(804) 814-1229	hahill@overlandva.com	Buckingham	02080203	James-011	38.29	157.44	38.29	121.46	0.00	0.00
Prince Edward	Ag land conversion	Leinster Nutrient Exchange, LLC	Leinster Nutrient Exchange, LLC	Herbert Fitzgerald	(804) 514-7551	herbert@nug.com	Prince Edward	02080207	James-012	50.17	143.48	46.43	131.57	3.74	11.91
Prince Edward	Ag land conversion	ME Nutrient Holdings, LLC	ME Nutrient Holdings, LLC	Jay Sikorski	(804) 742-9883 x348	jsikorski@eaglefe.com	Prince Edward	02080207	James-013		40.14	3.30	11.06	8.70	29.10
Greyfields	Ag land conversion	James K. Timmons Jr., Trustee and Marian Free Timmons	James K. Timmons Jr., Trustee and Marian Free Timmons	Ken Timmons Jr.	(804) 258-1150	ktimmons@wellcolemans.com	Fowhatan	02080205	James-014	22.58	101.43	12.87	37.79	9.71	43.64
Gold Hill	Ag land conversion	Hood Street Capital, LLC	HCC-NOTE, LLC	Tom Ross	(540) 247-1000	TJRoss@MRWLawFirm.com	Buckingham	02080203	James-015	27.30	92.04	14.56	42.68	12.74	49.36
Nanozine	Ag land conversion	R&J Investments, LC	R&J Investments, LC	Ron Green	(804) 908-4171	rongreen116@gmail.com	Amelia	02080207	James-016	23.94	80.20	19.19	64.24	4.77	15.96
Farmville	Ag land conversion	Sterling Investments, LLC	VCCCE, LLC	Todd Hochwein	(434) 953-8105	todd@vccce.net	Prince Edward	02080207	James-016	44.02	187.13	10.32	45.06	33.70	142.07



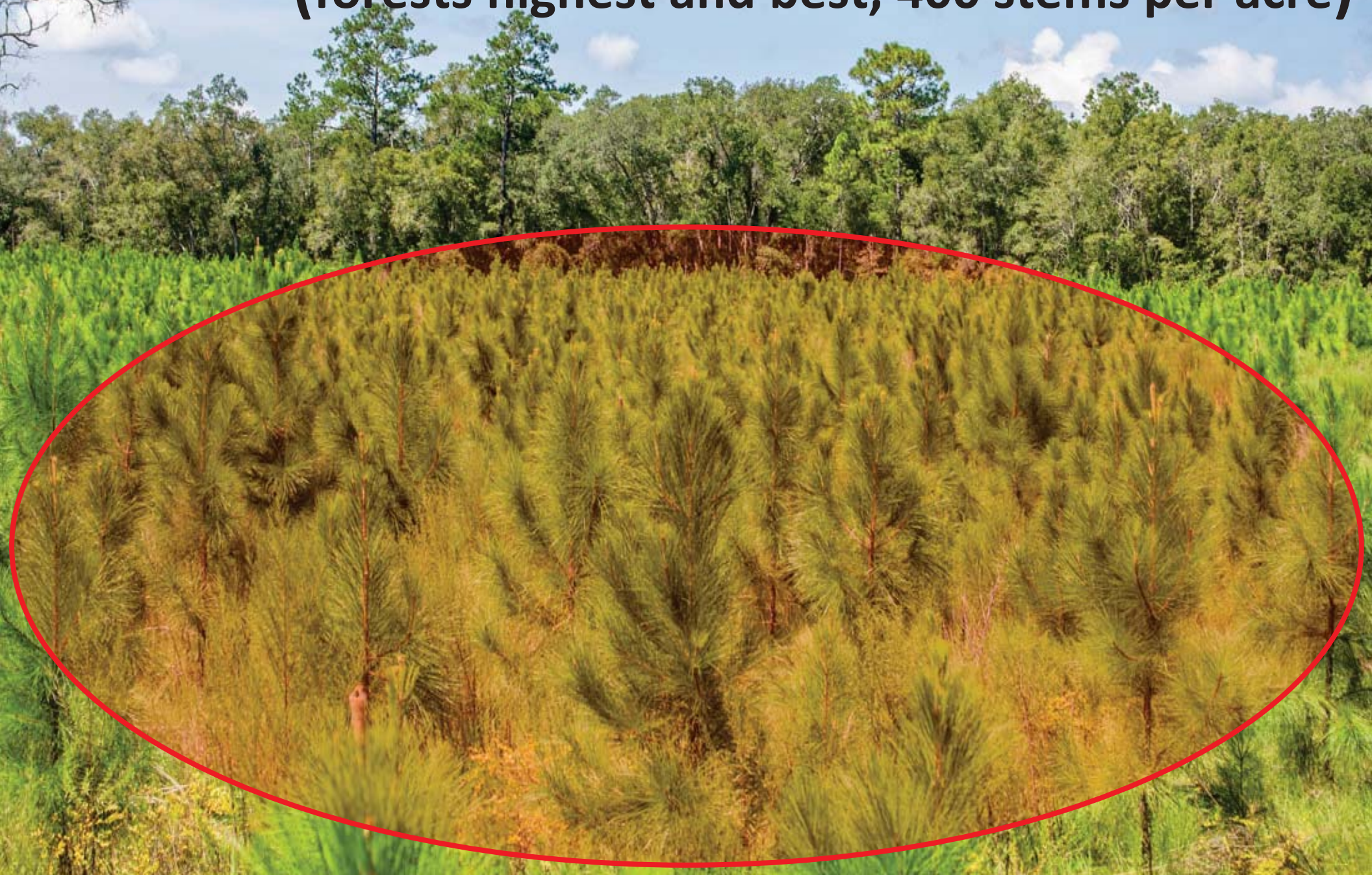
Additionality

VA Nutrient Credit Trading Program



So what does this look like on the ground?

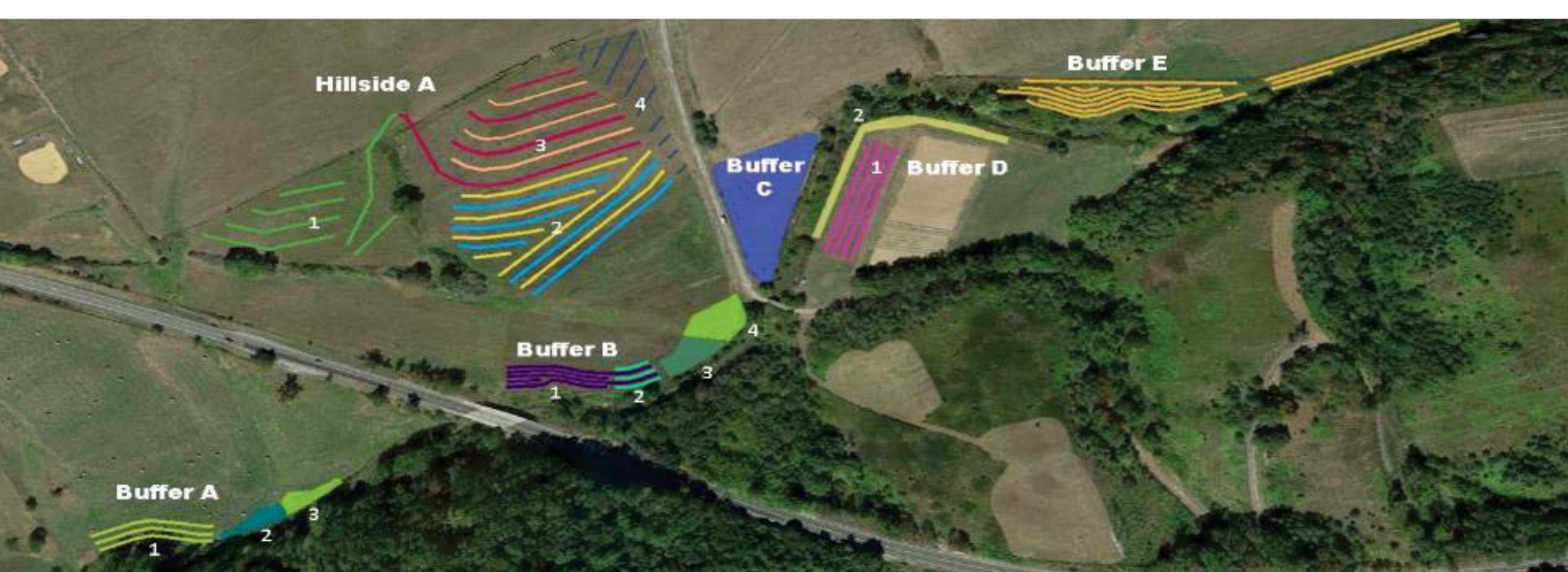
Deed restricted, agricultural retirement (forests highest and best, 400 stems per acre)





So why not an agroforest?

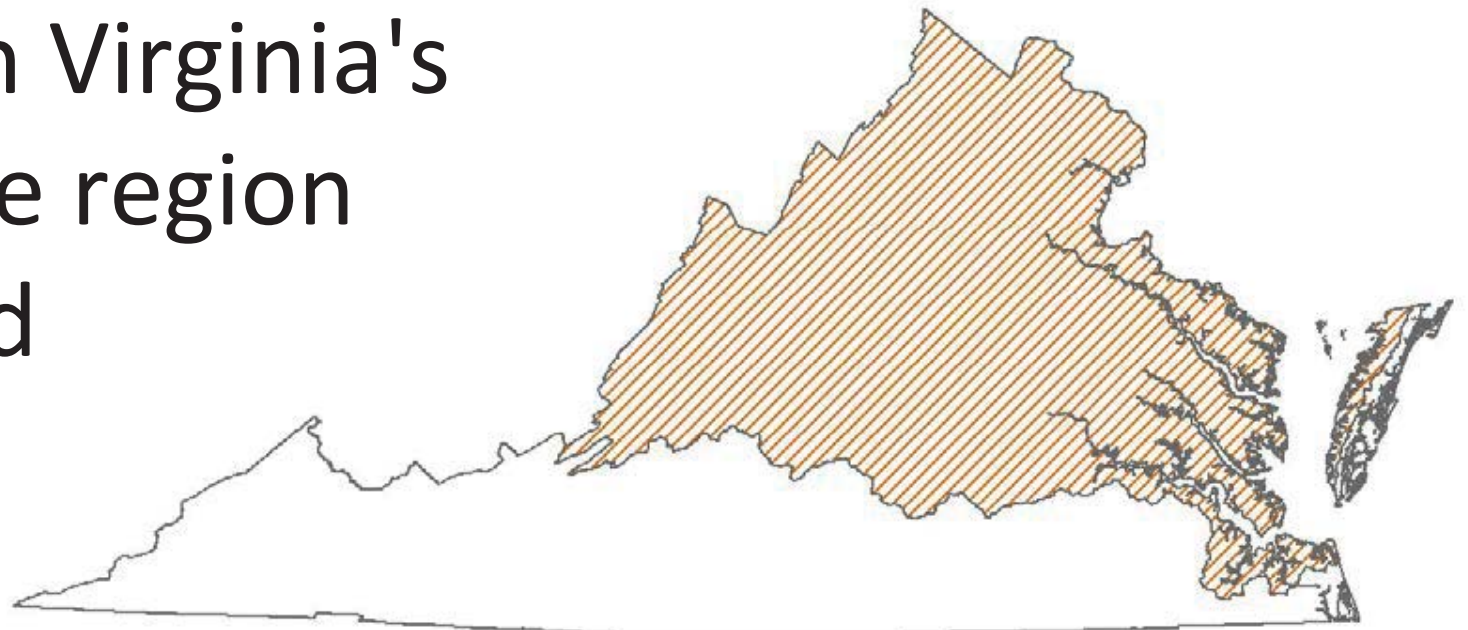
Management allowed



Conservation Credit for Agroforestry Production

C-CAP Objective

**Improve opportunities for
agroforestry nutrient offsets on
farmland in Virginia's
Chesapeake region
and beyond**





CIIG Purpose

Develop **recommendations** and **practical tools** for **agroforestry nutrient offsets** in Virginia



CIIG Goals

An agroforestry **task force** will draft a **report** with input from **EQIP-eligible landowners** including:

A matrix that quantifies nutrient reductions based on the agroforestry system and site location

Best practices for agroforestry nutrient credit projects in Virginia



NFWF Purpose

Demonstrate and evaluate agroforestry systems as generators of tradable credits in Virginia's market

NFWF Goals

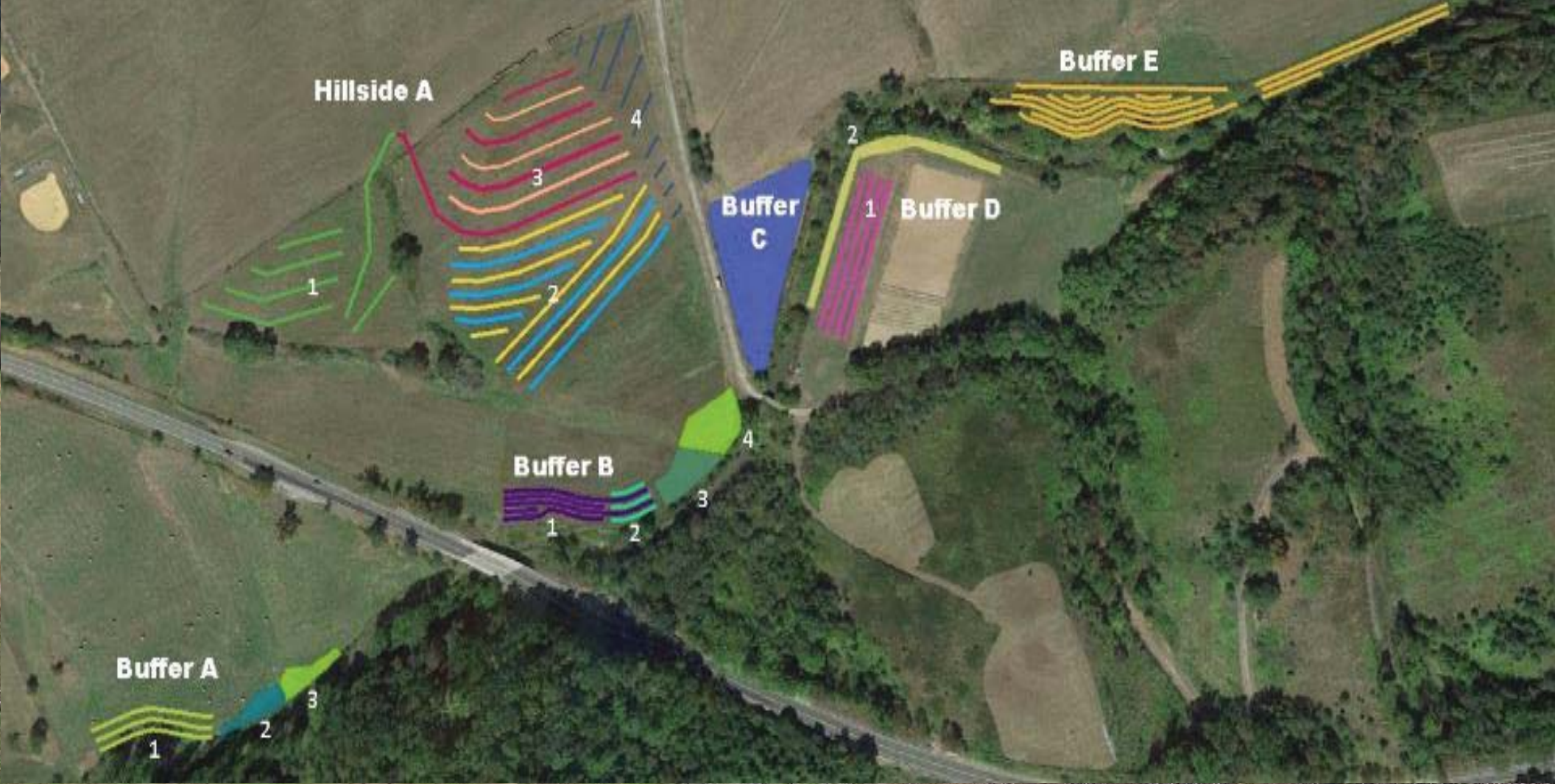



Install 18 acres of agroforestry projects at the CSC and Appomattox that theoretically generate credits

Analyze financial requirements and price the credits for sale in Virginia's water quality market

Publish recommendations for effective and profitable **agroforestry nutrient offset projects**

Use lessons learned to inform **CIG initiative**





SO WHAT
?



Stem density



Stem density

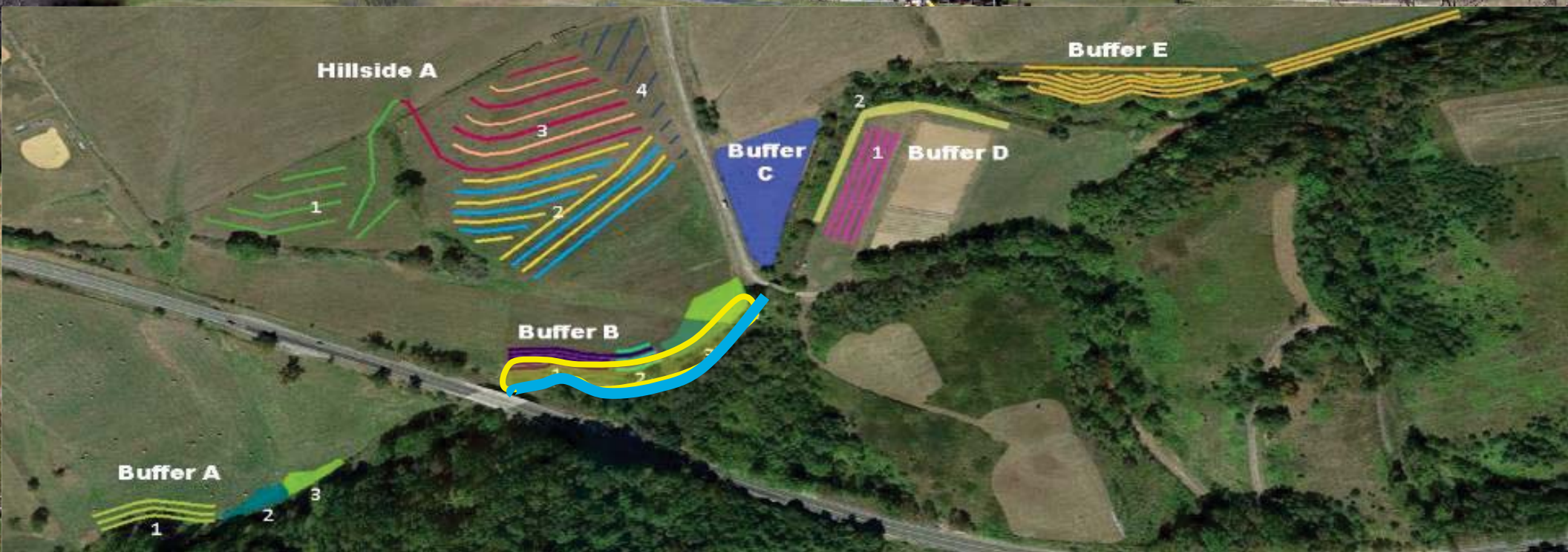
Photo courtesy of John Fike, VT

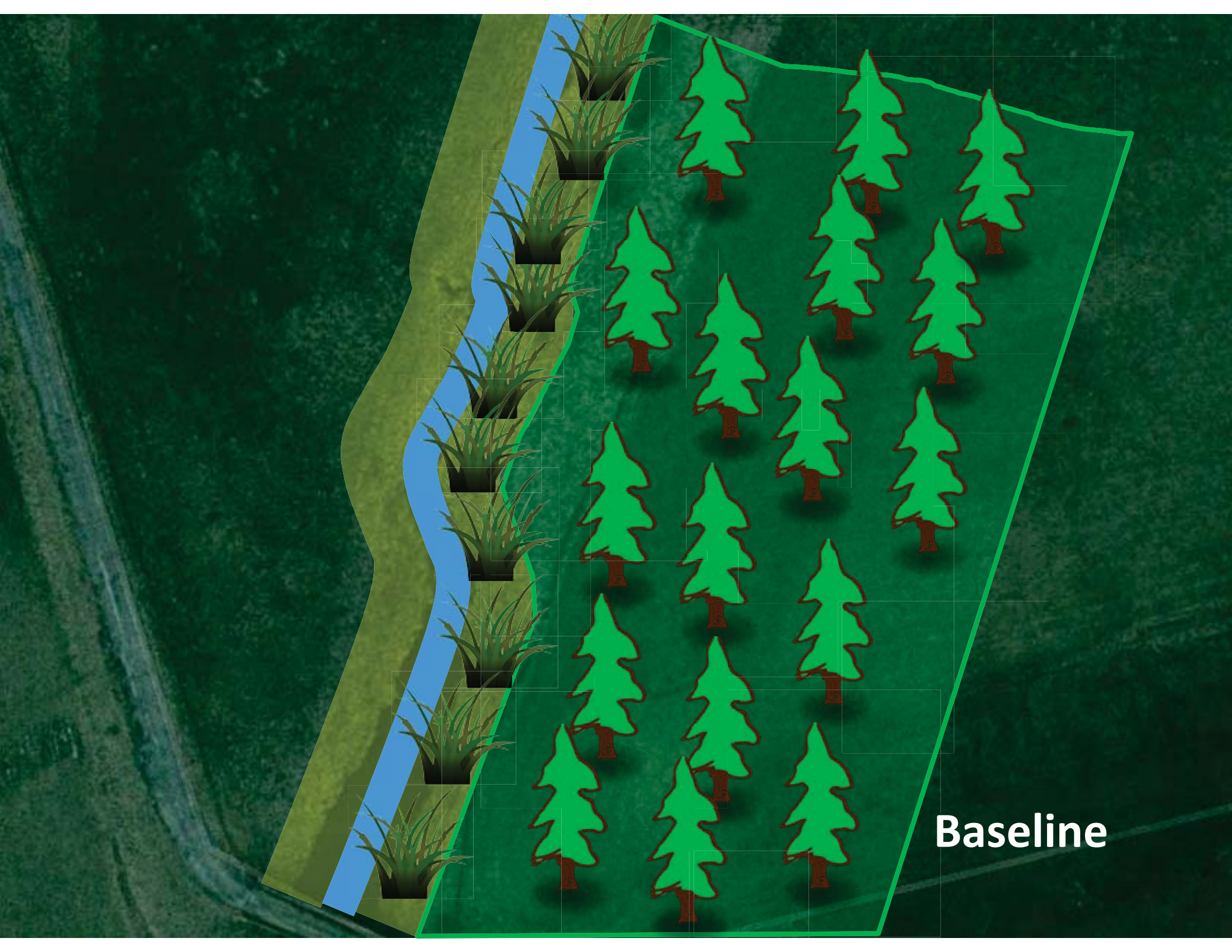
Scale and profitability



Scale and profitability

10+ acres versus 1.2 acres





Baseline

Ratio Trading (Disproportionality)



Shenandoah-Potomac Basin Land Conversion

Land Conversion Type	West of I-95		East of I-95	
	TN	TP	TN	TP
Cropland to Forest	10.91	0.81	11.58	0.74
Cropland to Hay	5.77	0.58	6.40	0.26
Cropland to Mixed Open (fallow)	8.32	0.33	8.55	0.08
Hay to Forest	4.53	0.61	4.64	0.68
Hay to Mixed Open (fallow)	1.94	0.13	1.61	0.02
Pasture to Forest	0.91	0.32	2.85	0.85

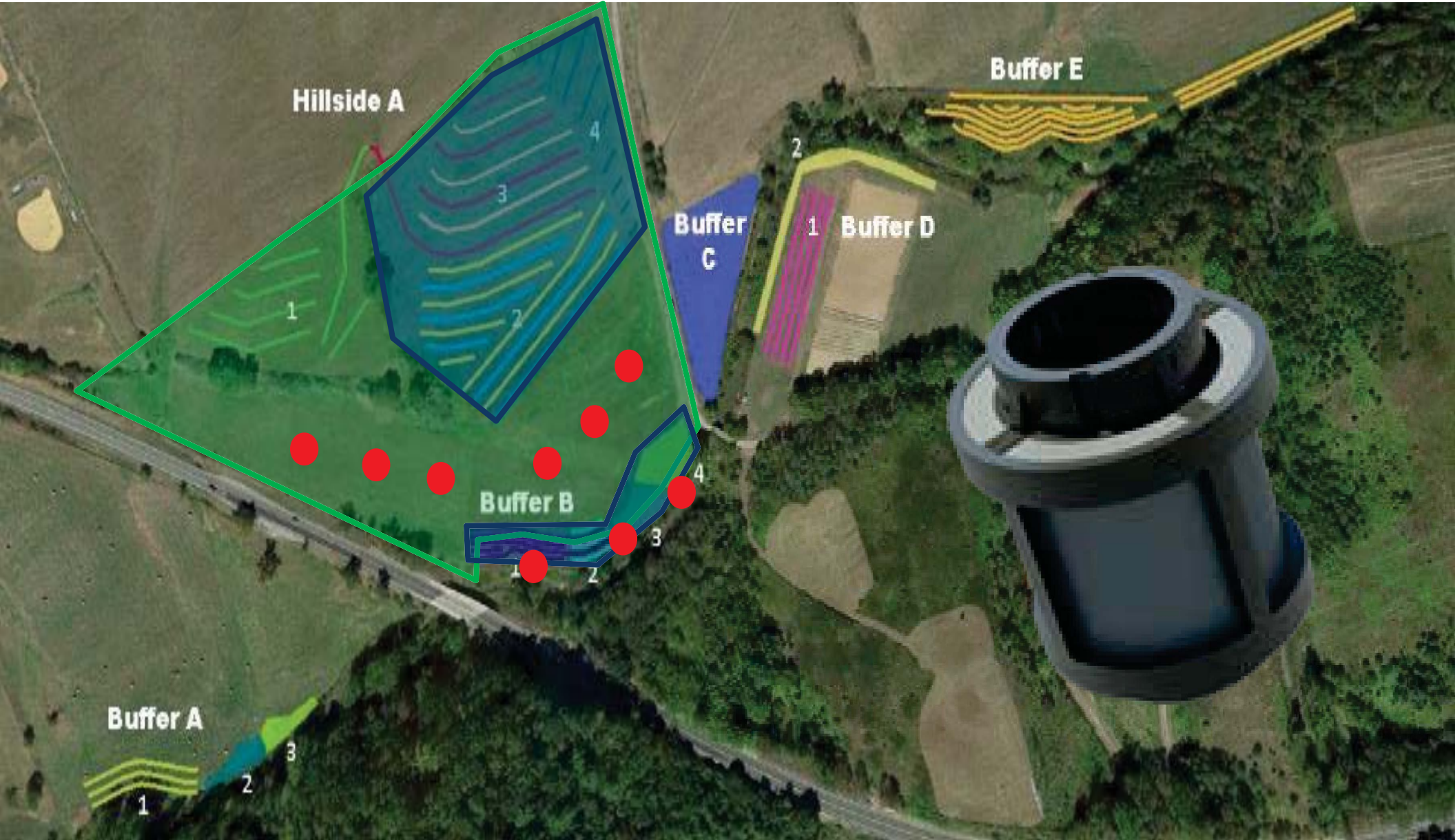


SW311
50%
Class 0
Sediment
No-till
AOI area 7.59 acres
Buffer area 0.99 acres

Ratio Trading (Disproportionality)

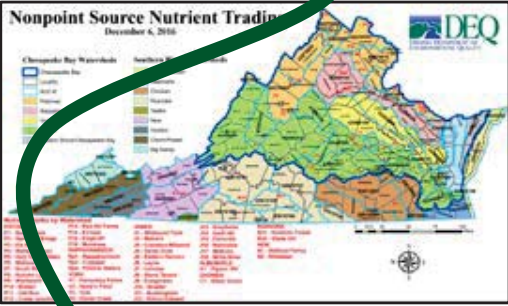


Subsurface/surface nutrient monitoring



Performance investment

External Investment

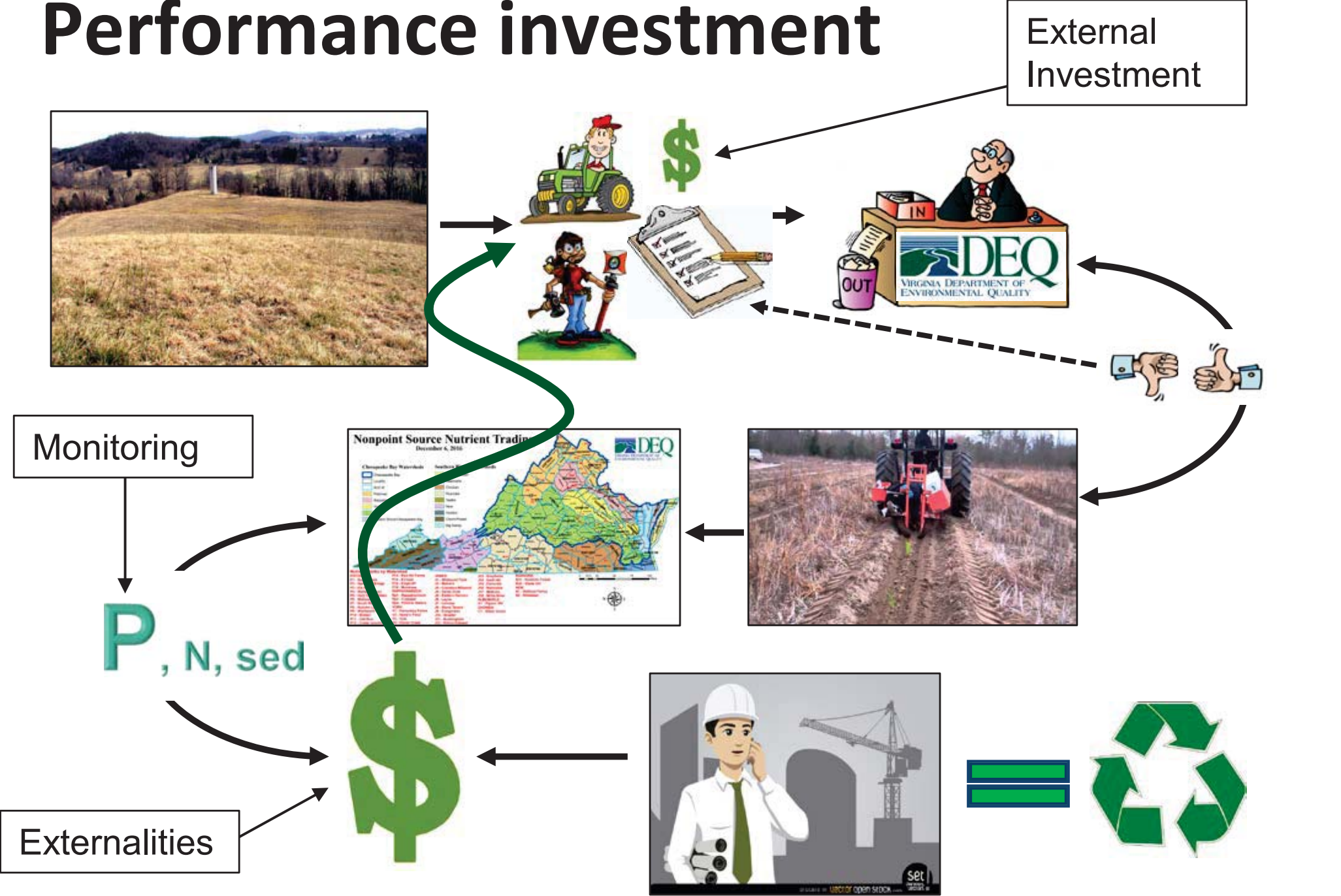
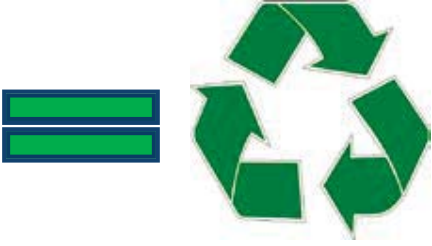


Monitoring

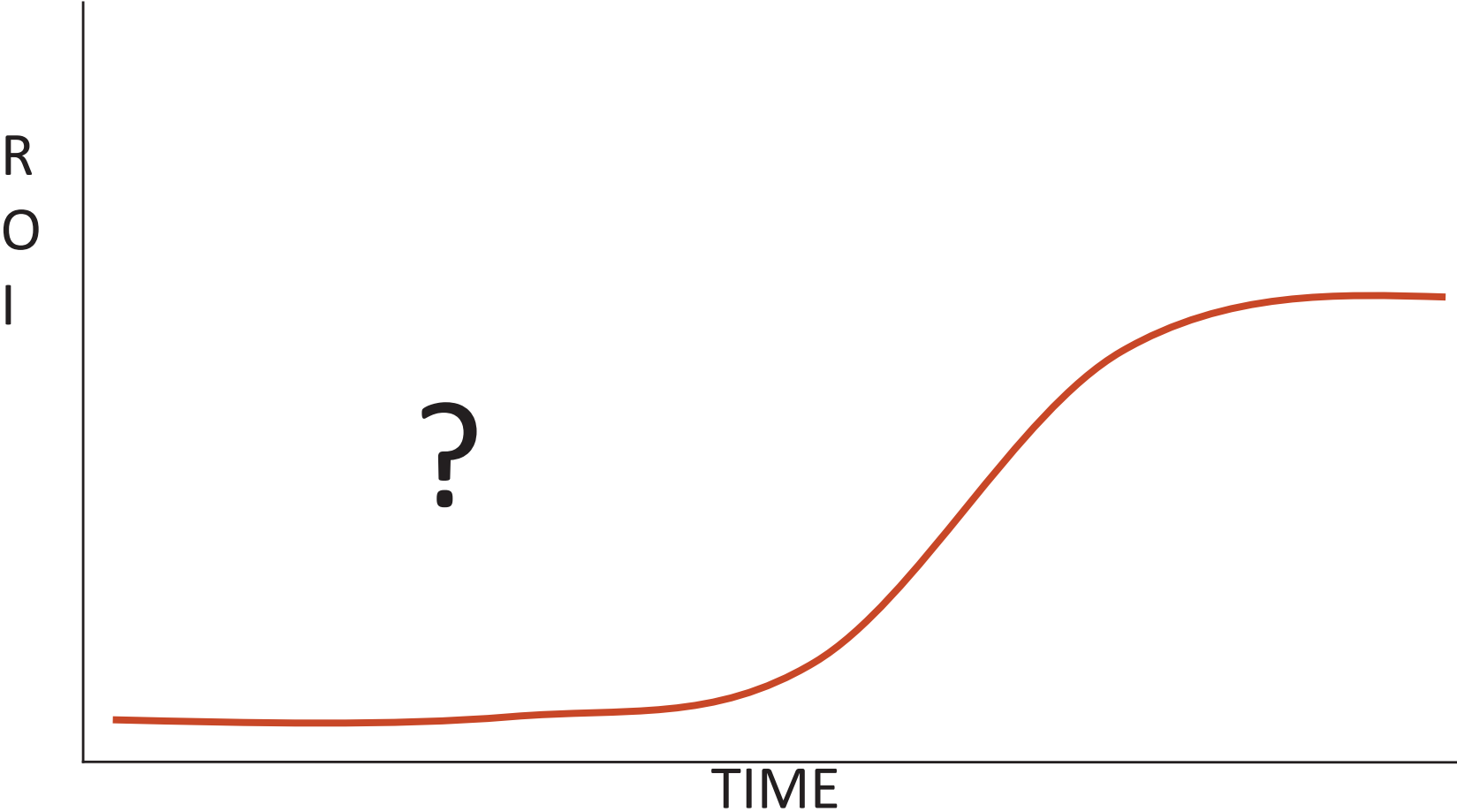
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Externalities



General Goal



General Goal

