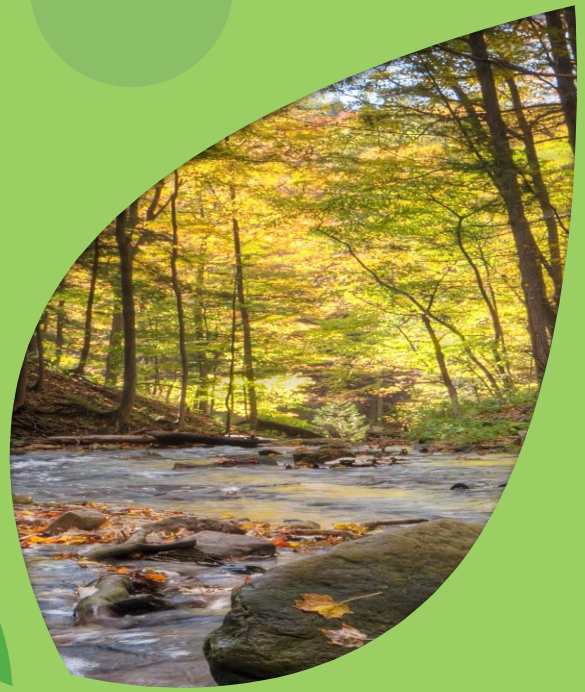
Pennsylvania's Riparian Forest Buffer Strategy

June 20th, 2018

Overview:

- Background
- Innovative Buffer Strategies
- Ongoing Challenges and Lessons Learned



Background

Buffers: 1983-2014

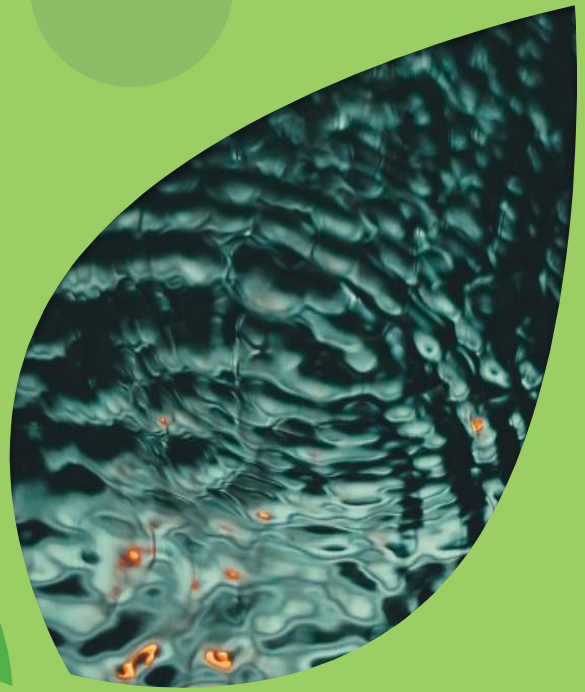
- **1983**- Chesapeake Bay Watershed Agreement signed.
- **1997**- DEP launched the original Stream ReLeaf Program to promote buffers across the Commonwealth.
- **2000**- Chesapeake 2000 signed; guide for restoration efforts through 2010.
- **2010**- EPA established Bay TMDL; first WIPs created by jurisdictions.
- **2013**- Buffer installation in PA slows.
- **2014**- Only 64 miles of buffers planted in entire Bay watershed- 836 miles short of goal.

Since 2014, we've:

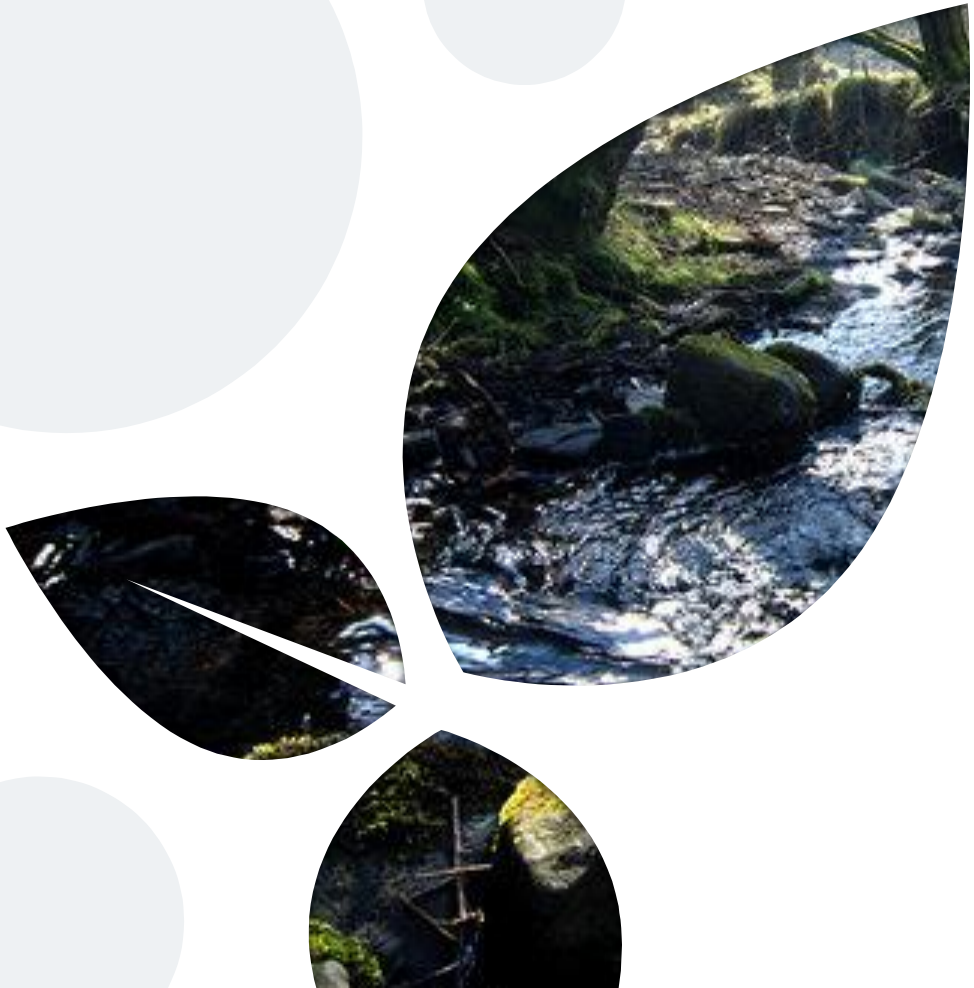
- Formed the Riparian Forest Buffer Advisory Committee.
- Provided a modest amount of additional funding through grants made possible by DCNR, NFWF, and PennVEST.
- Promoted the concept of multifunctional, income-producing buffers as way to provide incentives to landowners.
- Engaged our 3 cabinet secretaries (DCNR, DEP, PDA), the Governor's Policy Office, PA General Assembly members, and US Senator Casey's office on the importance of RFBs.
- Challenged DCNR Service Foresters to engage in RFB work.
- Hired a buffer team (made possible by USDA and NFWF).
- Held two Buffer Summits- internal in 2016, statewide and open to partners in 2018. Hoping to host 3rd (external) in early 2019.

DCNR Buffer Funding Opportunities

	Award Amount	Match	Focal Area
C2P2 RFBs	Min. $50K	1:1	Statewide
PennVEST MFRFBs	Prequalification Dependent	Not required	Statewide
Stream ReLeaf (NFWF->DCNR)	$4,000/acre	Not required	Adams, Cumberland, Franklin, Fulton, Huntingdon, Lancaster, York
TreeVitalize "Urban" Buffers	Max $25K	1:1	Public Spaces Statewide



Innovative Buffer Strategies



Riparian Forest Buffer Advisory Committee- Seeking Input from the Experienced Experts

- 70+ Individuals from 40+ organizations
- NGOs, PDA and DEP, Land Trusts, CCDs, Contractors, etc.
- Many years of experience in all aspects of RFB work.
- Advise, Inform, Liaise, and Learn.

Multifunctional Buffers

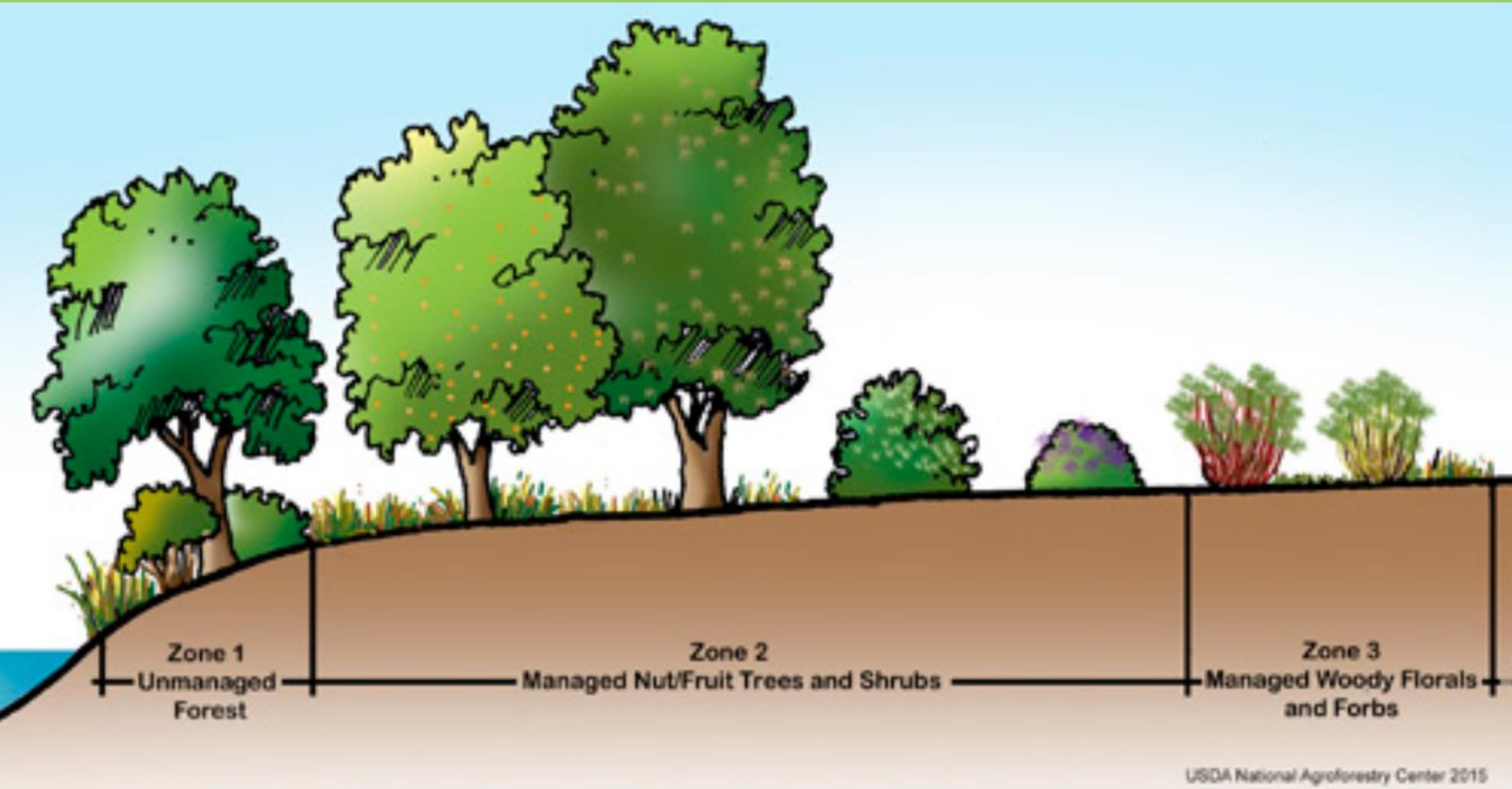
- “Buffers that serve functions beyond conservation.”
- More specifically: buffers that have the potential to generate income somehow, some way, as incentive to landowner.

Why MFRFBs?

- Incentivize landowners in a small way.
- Potential income source/supplement.
- Encourage landowners to be actively engaged with buffer- more likely to maintain?

Forest Farming

- Food—fruits, nuts, mushrooms, syrups, seasonings
- Medicinal—mushrooms, roots, teas, tinctures
- Decoration—flowers and dried berries
- Crafts—wreaths, baskets
- Other specialty


Zone 1
Unmanaged
Forest
Zone 2
Managed Nut/Fruit Trees and Shrubs
Zone 3
Managed Woody Florals
and Forbs
USDA National Agroforestry Center 2015

PennVEST's Buffer Investment

- DCNR collaborated with PENNVEST, sparked interest in the potential to generate income from MFRFBs.
- PennVEST invests $3M in grants through DCNR to "test" MFRFBs.
- $1.1 Million Awarded in early 2018
- New Round Opening this Summer

Streamlining Outreach

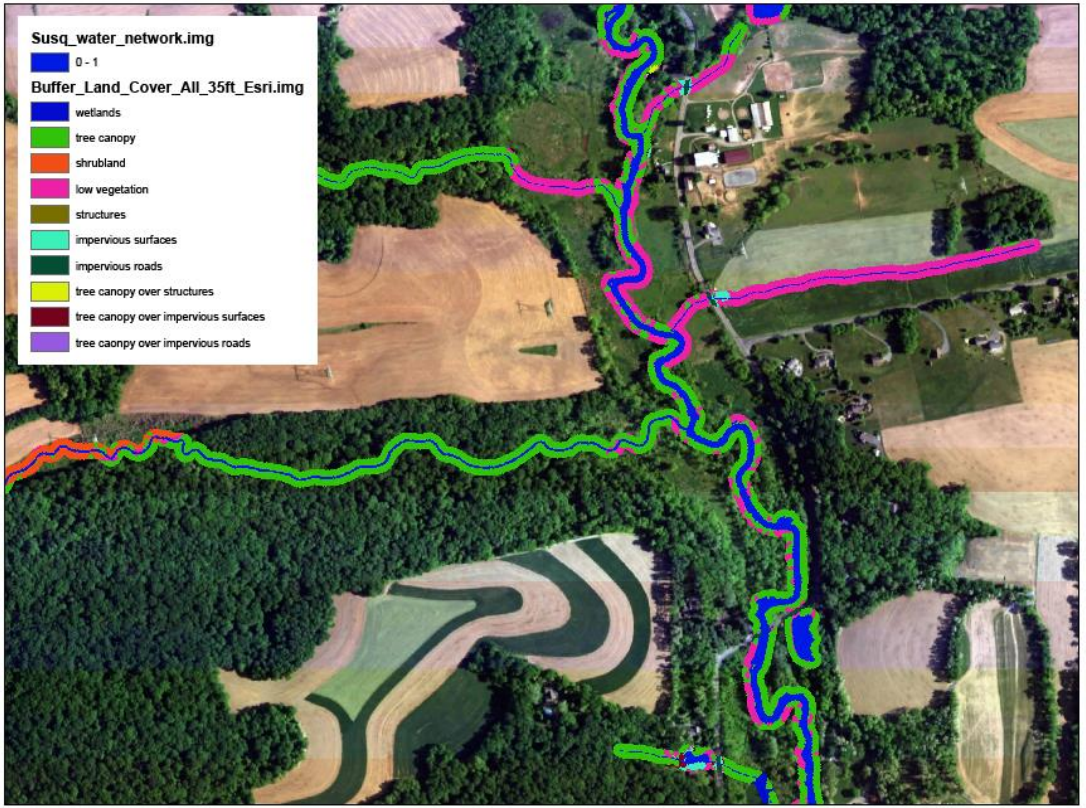
- Studying Human Dimensions of Riparian Buffer Restoration.
- Conservation as much as a social endeavor as biological.
- PSU, University of Montana, RK Melon Foundation, DCNR.

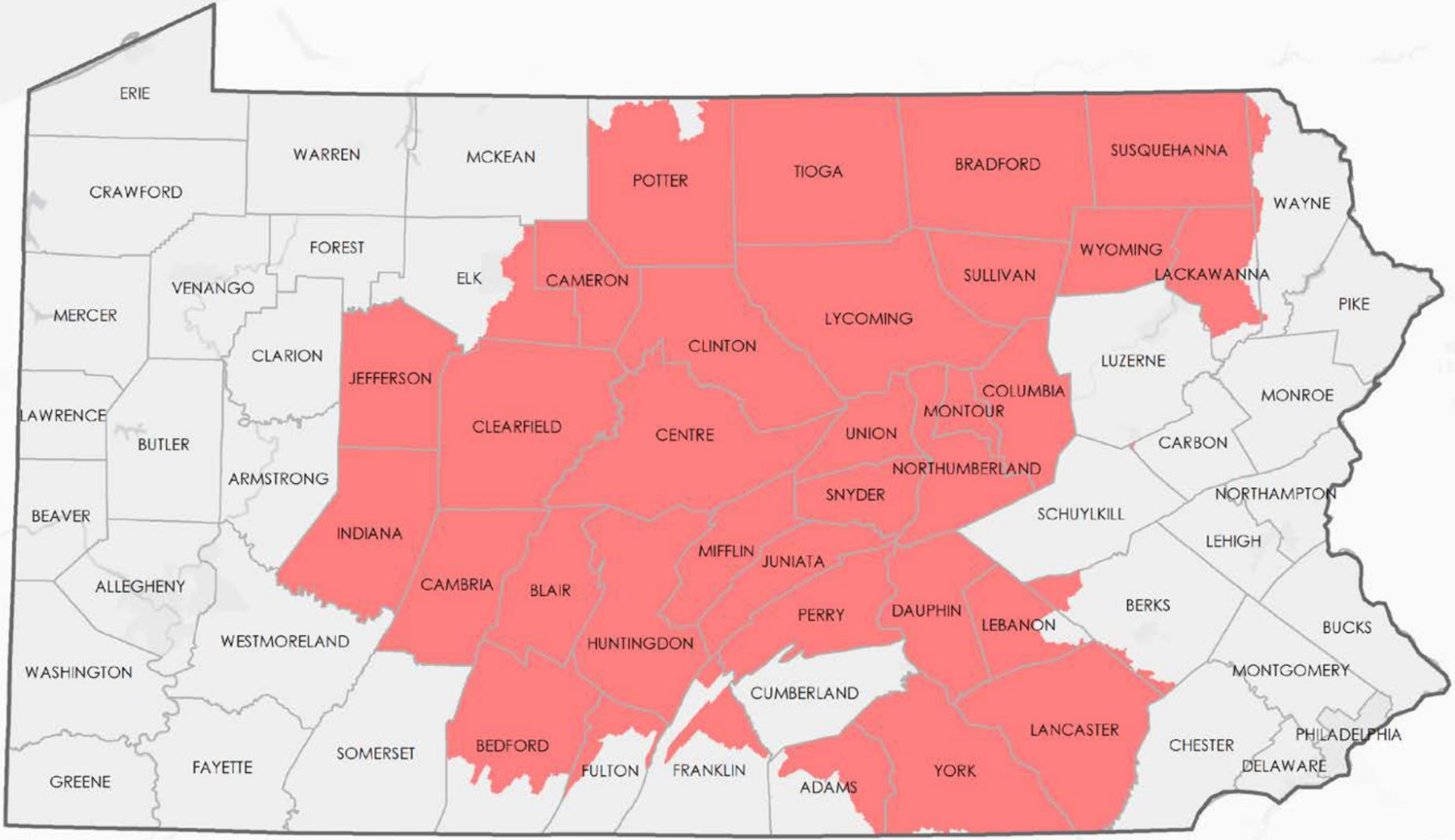
Prime Prospects Project

- Using publicly available consumer data
- Methods used by philanthropists and politicians
- Match riparian landowners to previous buffer participants to identify those most likely to install a buffer
- Research and proof-of concept; applied social science

1m Landcover Data & Buffer Gap Analysis

Buffer Gap Analysis




ERIE
WARREN
MCKEAN
POTTER
TIOGA
BRADFORD
SUSQUEHANNA
CRAWFORD
WAYNE
FOREST
WYOMING
VENANGO
ELK
CAMERON
SULLIVAN
LACKAWANNA
MERCER
PIKE
LYCOMING
CLARION
CLINTON
LUZERNE
JEFFERSON
COLUMBIA
MONROE
LAWRENCE
CLEARFIELD
MONTOUR
BUTLER
CENTRE
UNION
CARBON
ARMSTRONG
NORTHUMBERLAND
SNYDER
NORTHAMPTON
BEAVER
SCHUYLKILL
INDIANA
LEHIGH
MIFFLIN
JUNIATA
ALLEGHENY
CAMBRIA
BLAIR
BERKS
PERRY
DAUPHIN
LEBANON
BUCKS
WESTMORELAND
HUNTINGDON
WASHINGTON
MONTGOMERY
CUMBERLAND
LANCASTER
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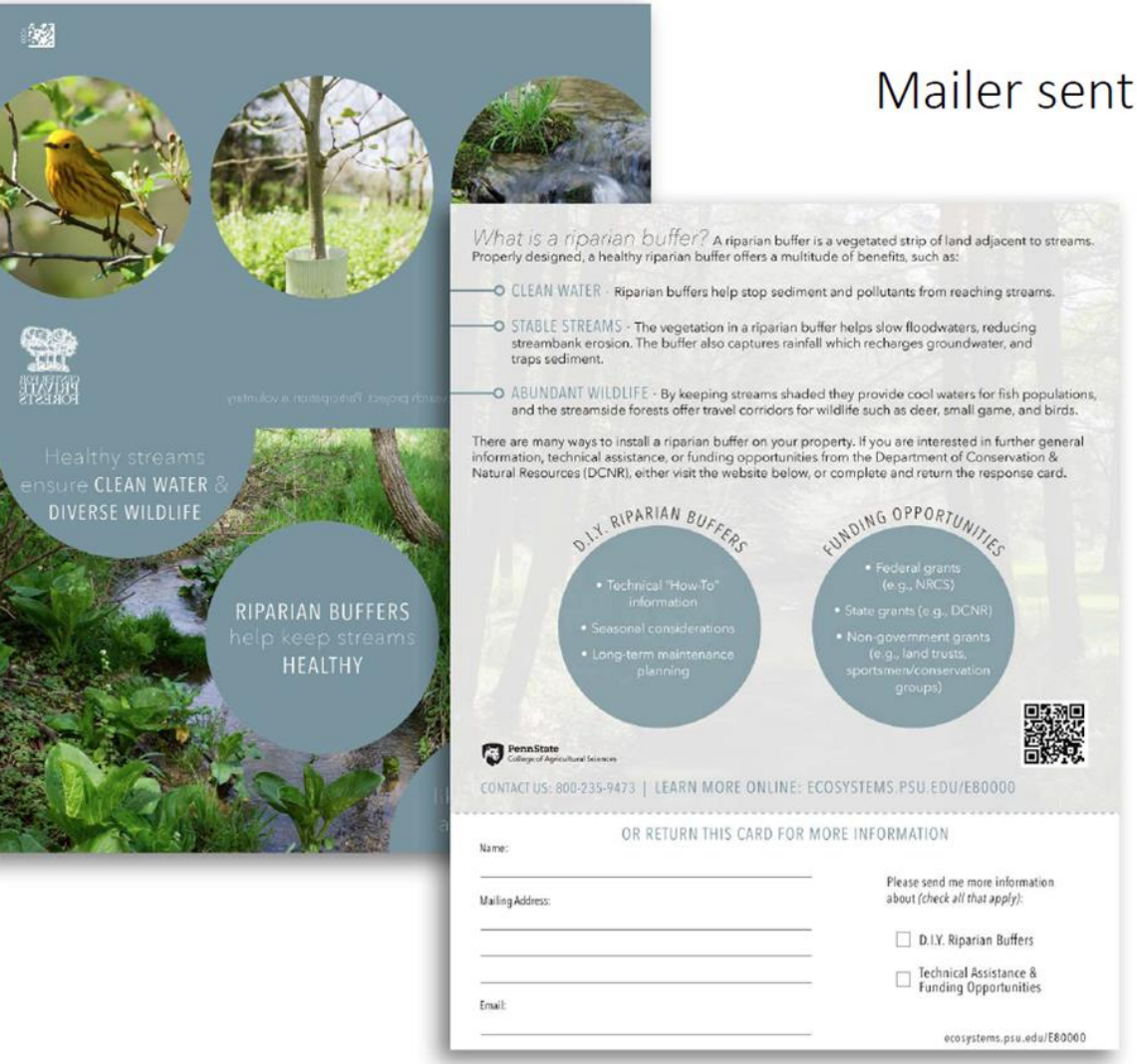
PHILADELPHIA
SOMERSET
FULTON
FRANKLIN
YORK
DELAWARE
GREENE
FAYETTE
ADAMS



Mailer sent to ~5,000 Riparian Landowners

50% Prime Prospects (“10s”)
50% Random Owners (1-10s)

Anticipate higher interest among 10s

Mailed on July 19, 2017

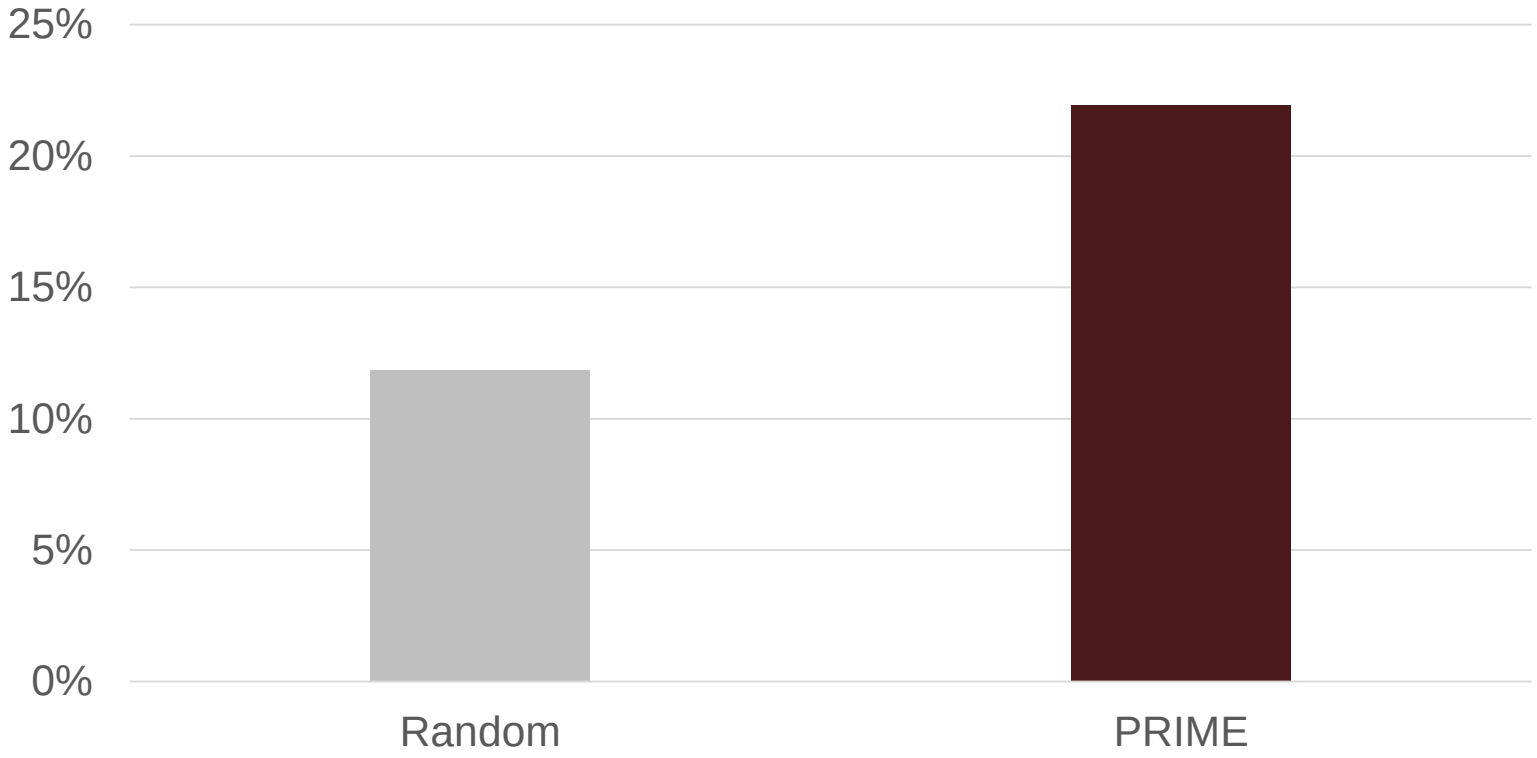
5,000 Gap Owners

2,500 Prime Prospects

183% increased response

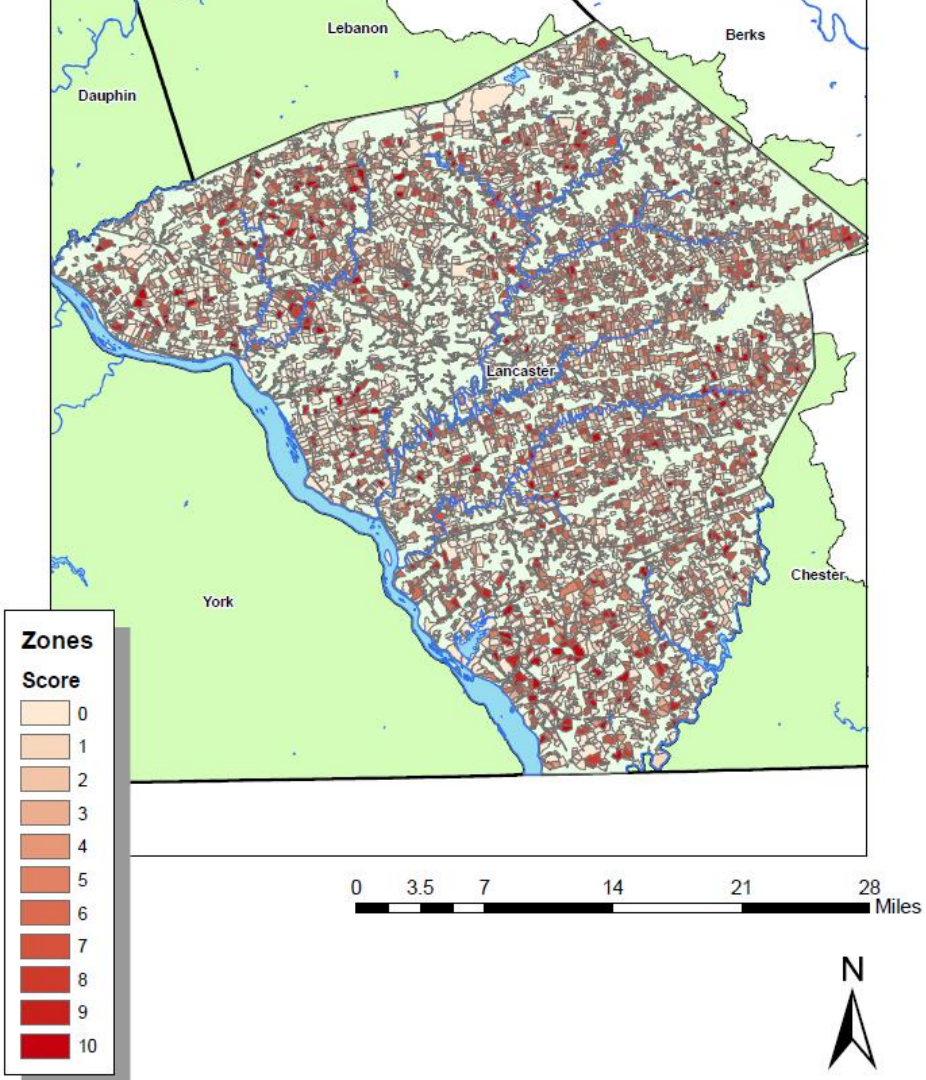
Prime Prospects vs. Random

Response rates for PRIME PROSPECTS vs RANDOM



HUMAN DIMENSIONS LAB
UNIVERSITY OF MONTANA

UNIVERSITY OF MONTANA


Lebanon
Berks
Dauphin
Lancaster
York
Chester
Zones
Score
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3
4
5
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8
9
10
0
3.5
7
14
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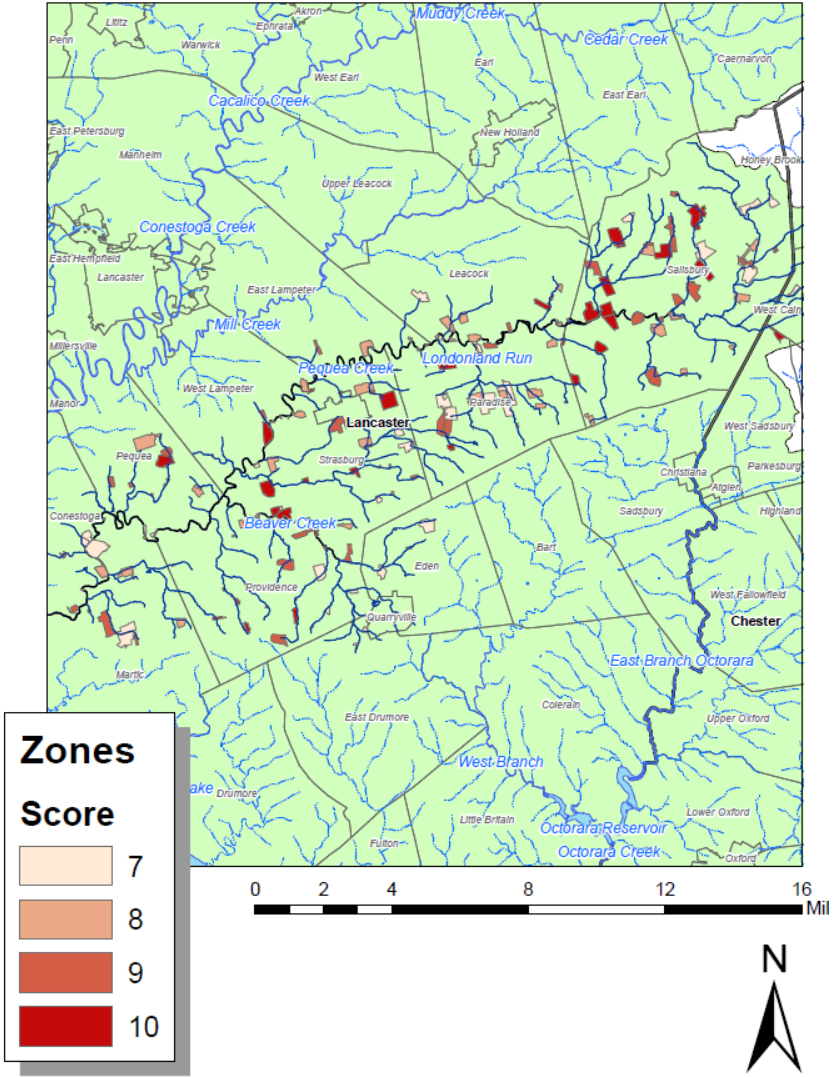
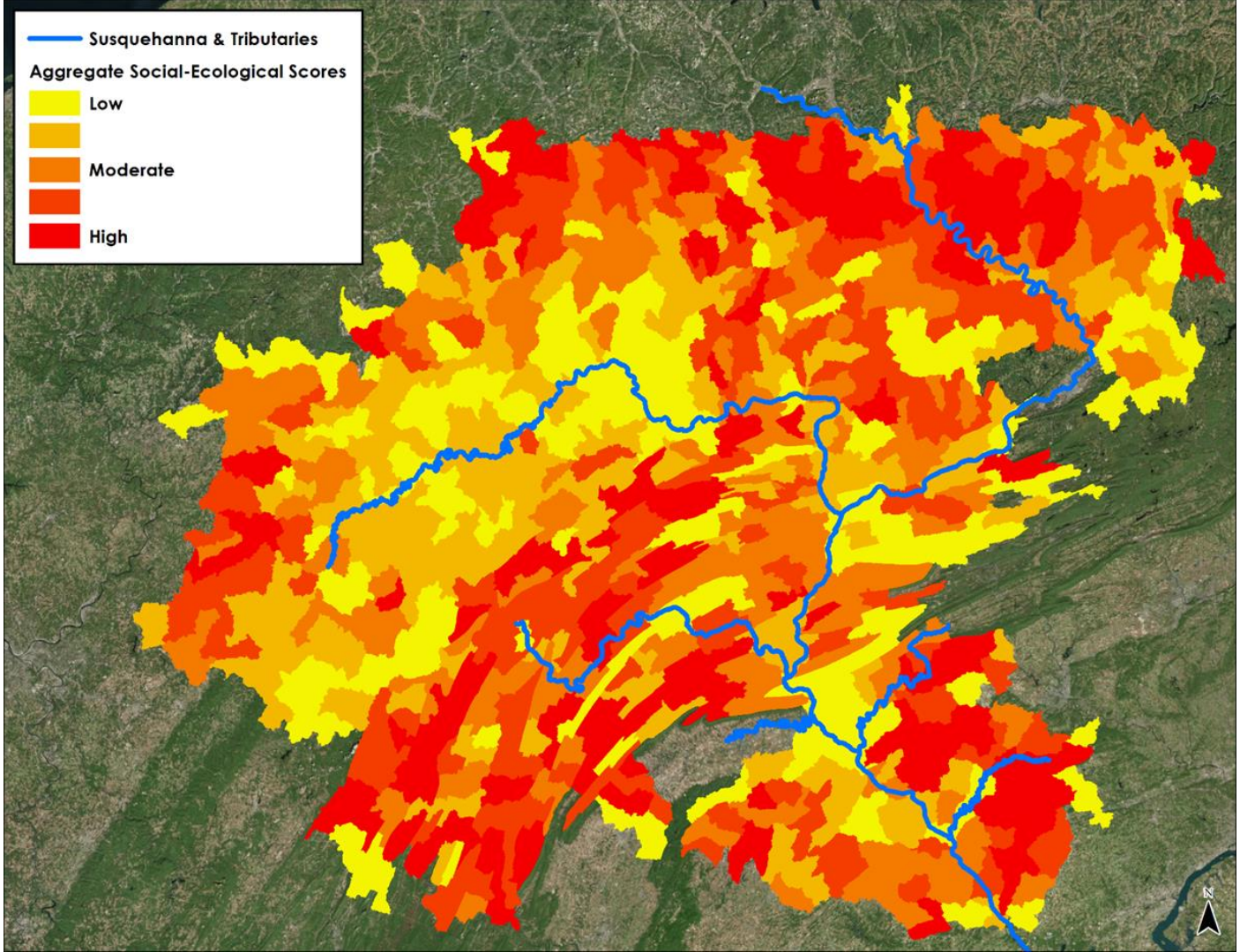
28
Miles
N


Zones
Score
7
8
9
10
Muddy Creek
Cedar Creek
Cacalico Creek
Conestoga Creek
Mill Creek
Pequea Creek
Londonland Run
Beaver Creek
West Branch
East Branch Octorara
Octorara Reservoir
Octorara Creek
Lancaster
Chester
Lititz
Warwick
Ephrata
Akron
Earl
West Earl
East Earl
Caernarvon
New Holland
Honey Brook
East Petersburg
Manheim
Upper Leacock
East Hempfield
Lancaster
East Lampeter
Leacock
Salisbury
West Cain
Millersville
West Lampeter
Manor
Paradise
West Sadsbury
Pequea
Strasburg
Christiana
Parkesburg
Atglen
Conestoga
Sadsbury
Highland
Bart
Eden
Providence
Quarryville
West Fallowfield
Martic
Colerain
East Drumore
Upper Oxford
Drumore
Little Britain
Lower Oxford
Fulton
Oxford
0
2
4
8
12
16
Mil
N

Landowner Name	Landowner Mailing Address	County	Acreage	GapAcres	BiggestGa	Shape_Le	NumGaps	Score		Latitude	Longitude
BEILER CHRISTIAN & ANNA G	3981 E NEWPORT RD , GORDONVILLE, PA 17529	Lancaste	42.129	1.78377	0.95909	7600.28	4		10	40.0261	-76.0739
BENDER RONALD L & JANE A	7435 RIVER RD , CONESTOGA, PA 17516	Lancaste	0.37282	0.07497	0.06211	654.296	3		10	39.9093	-76.3315
BLANK ISAAC K & ADA M	5189 AMISH RD , KINZERS, PA 17535	Lancaste	69.0637	1.59773	1.47195	7949.13	2		10	40.0182	-76.0363
EVANS JOHN C	64 CLEARVIEW RD , WILLOW STREET, PA 17584	Lancaste	2.55723	0.43868	0.22282	1404.04	2		10	39.9489	-76.2916
FREY JEFFREY R	13 RADCLIFF RD , WILLOW STREET, PA 17584	Lancaste	83.054	0.15345	0.05859	9026.06	12		10	39.9631	-76.284
GEBHART DONALD G	514 SCHOOLHOUSE RD , NEW PROVIDENCE, PA 175	Lancaste	10.9918	0.40258	0.23797	3756.67	8		10	39.903	-76.2458
GRAYBILL RICHARD L	715 TRUCE ROAD , QUARRYVILLE, PA 17566	Lancaste	18.3777	0.15774	0.15385	5241.06	3		10	39.8918	-76.2405
GROFF DAVID J	340 N STAR RD , STRASBURG, PA 17579	Lancaste	4.00511	0.46078	0.23854	1764.78	4		10	39.9907	-76.1863
GROFF DEAN L & DARLENE F	770 HOOVER RD , KINZERS, PA 17535	Lancaste	40.1173	1.38518	0.7191	5684.87	2		10	39.994	-76.0568
GROFF HOWARD E JR	214 W STANTON RD , QUARRYVILLE, PA 17566	Lancaste	0.21065	0.06814	0.03786	556.257	2		10	39.8972	-76.1599
HERSHEY C NEVIN	73 OAK HILL DRIVE , PARADISE, PA 17562	Lancaste	51.5938	1.77442	0.76838	6888.16	5		10	40.0011	-76.1272
HOMSHER DAVID G	3168 LINCOLN HWY E , PARADISE, PA 17562	Lancaste	103.471	2.56275	1.40659	9889.27	10		10	40.0225	-76.0471
HOMSHER DAVID G	3168 LINCOLN HWY E , PARADISE, PA 17562	Lancaste	103.471	2.56275	1.40659	9889.27	10		10	40.0225	-76.0471
HOOVER RAYMOND M & SVEA J	433 S KINZER AVE 138 , NEW HOLLAND, PA 17557	Lancaste	85.6415	1.79058	0.86525	9190.52	4		10	40.0392	-75.9842
HOWETT HOWARD M	400 BRENNEMAN RD , WILLOW STREET, PA 17584	Lancaste	1.25123	0.02394	0.02231	1035.55	2		10	39.9552	-76.2333
HUYETT WILSON	380 KAUFFROTH RD , GAP, PA 17527	Lancaste	103.401	0.3817	0.09365	10255.5	12		10	40.0623	-75.9888
HUYETT WILSON	380 KAUFFROTH RD , GAP, PA 17527	Lancaste	24.7095	0.03209	0.02481	5317.45	2		10	40.064	-75.9841
HUYETT WILSON	380 KAUFFROTH RD , GAP, PA 17527	Lancaste	9.96532	0.00116	0.00107	2957.3	2		10	40.0576	-75.9873
KAUFFMAN RONALD & JULIA S	115 LEARY RD, HONEY BROOK PA, 19344	Chester	1.32229	0.00766	0.00502	967.005	3		10	40.0273	-75.9146
KEEN DANIEL C & PATRICIA M	111 SPRINGVILLE RD , QUARRYVILLE, PA 17566	Lancaste	2.26926	0.00568	0.00544	1266.46	2		10	39.9322	-76.1577
KILLIAN CARL E	410 TRUCE RD , NEW PROVIDENCE, PA 17560	Lancaste	30.0024	0.73926	0.26989	5940.59	17		10	39.8966	-76.214
KING JONAS S & KATHRYN S	122 KRANTZ MILLS RD , NEW PROVIDENCE, PA 1756	Lancaste	66.1313	1.54688	0.75763	9147.91	12		10	39.9393	-76.2186
KING JONAS S & KATHRYN S	122 KRANTZ MILLS RD , NEW PROVIDENCE, PA 1756	Lancaste	32.2122	0.20401	0.04744	4759.61	21		10	39.9408	-76.2237
KING JR JOHN A	245 A HARRISTOWN RD , KINZERS, PA 17535	Lancaste	11.5651	0.36776	0.25547	4291.79	6		10	40.011	-76.063
KING OMAR F JR & SYLVIA E	163 LEARY RD, HONEY BROOK PA, 19344	Chester	90.0634	0.62666	0.32148	9485.61	11		10	40.0291	-75.9245
LAPP DANIEL F	146 IVA RD , RONKS, PA 17572	Lancaste	18.3485	0.63109	0.37405	3755.3	4		10	39.9665	-76.1261
LAPP ELVIN D	5080 MARTIN RD , KINZERS, PA 17535	Lancaste	77.5326	4.73556	1.17663	7723.69	26		10	40.0234	-76.0385
LEED ROBERT E JR & NORMA M	234 CLEARFIELD RD , NEW PROVIDENCE, PA 17560	Lancaste	12.6632	0.01161	0.01161	4739.06	1		10	39.896	-76.256
MARTIN DARYL L & MARIAN S	477 COMPASS RD, GAP PA, 17527	Chester	39.2474	0.34636	0.17391	10388.5	2		10	40.0118	-75.9453
MARTIN JOSEPH E & NANCY T	792 DEITER RD , STRASBURG, PA 17579	Lancaste	12.3308	0.06252	0.0341	3093.24	4		10	39.9537	-76.2065
MECK KENNETH S	1503 BEAVER VALLEY PK , WILLOW STREET, PA 1758	Lancaste	99.4866	0.10785	0.0421	8707.18	8		10	39.9506	-76.2277
MECK ROBERT S	2076 EDISONVILLE RD , STRASBURG, PA 17579	Lancaste	4.95763	0.03475	0.0177	1948.23	3		10	39.931	-76.201
RANCK DARRELL L	249 GAP ROAD , RONKS, PA 17572	Lancaste	127.308	0.8112	0.78771	9622.48	10		10	39.987	-76.16
RINEER HOWARD C & THERESA A	916 STRASBURG PK , STRASBURG, PA 17579	Lancaste	8.16932	0.00099	0.00099	3831.2	1		10	39.9916	-76.2027
ROHRER GEORGE M	1019 LIME VALLEY RD , LANCASTER, PA 17602	Lancaste	86.3469	3.44036	0.64547	9063.73	31		10	39.9738	-76.2271
SMUCKER AMOS L	5160 OLD PHILADELPHIA PK , KINZERS, PA 17535	Lancaste	95.7524	4.74855	1.34341	9075.68	10		10	40.0335	-76.0382
STOLTZFOOS AMOS F & ANNA R	5084 USNER RD , KINZERS, PA 17535	Lancaste	55.5238	2.80281	2.6251	6527.7	4		10	40.0075	-76.0424
STOLTZFUS ELI B	292 MEETINGHOUSE ROAD , GAP, PA 17527	Lancaste	99.7972	3.55098	1.79207	9933.87	3		10	40.0476	-76.0063
STOLTZFUS MELVIN B & FANNIE K	343 SAW MILL RD , STRASBURG, PA 17579	Lancaste	29.9058	1.41678	0.85084	5544.43	15		10	39.9569	-76.1794
TROUT GALEN L & JANE E	2344 BEAVER VALLEY PIKE , NEW PROVIDENCE, PA 1	Lancaste	0.41464	0.03307	0.02901	766.922	5		10	39.9066	-76.1843
ZOOK DANIEL B	5215 PETERS RD , KINZERS, PA 17535	Lancaste	107.202	4.87366	3.27296	9076.68	6		10	40.0543	-76.0324
ZOOK DANIEL B	5215 PETERS RD , KINZERS, PA 17535	Lancaste	11.8838	0.22367	0.12906	4350.29	2		10	40.0507	-76.0313


Susquehanna & Tributaries
Aggregate Social-Ecological Scores
Low
Moderate
High
N

Ongoing Challenges and Lessons Learned

Tracking

Keeping track of and taking credit for planted RFBs.

Maintenance

Ensuring funding and TA for ensuring survivability.

Communications

Inter-agency, cross-sector, and consistent messaging to landowners.

Sustainable, Flexible Funding

Robust programs that meet demand, and meet landowner needs.

Lessons Learned- Talking About Buffers

Information Then

- Voluntary
- They filter runoff
- Nutrients & sediment
- Plant trees & leave
- Buffers < 35 ft OK
- Buffers = CREP
- We got low hanging fruit
- Buffers = Farmers' loss

Information Now

- Voluntary
- Restore Streams
- Bay AND Local TMDLs
- Early Tree Care **Essential**
- 100ft is Best
- CREP & Other Options
- Good Programs = Demand
- Easier, May Save $, Ongoing reductions

Lessons Learned- True Cost of Buffers

- Approx. $4,000/ac. used by Bay Program.
- Based on NRCS rates.
- Includes capital costs, some maintenance.
- May not be enough for NGOs to operate with their indirect costs, etc. ?
- More maintenance money needed!
- Outreach $$ not included (for any BMP).

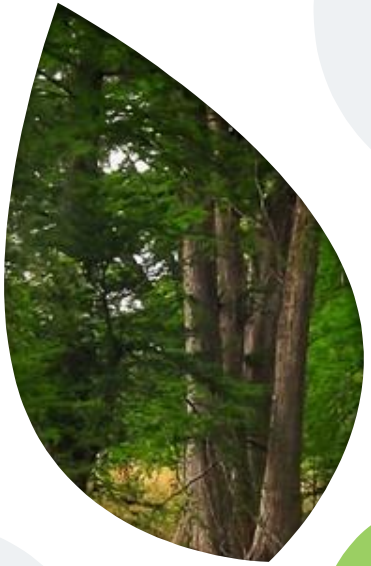
Strategies that Work For Selling and Establishing RFBs

- RFBs that are fully integrated into farm plan, paired with upland BMPs
- **Maintenance provided/compensated for**
- Vouchers, additional incentives
- Emphasis on buffer “multifunctionality”
  - Production, personal use, hunting, fishing, pollinators
- Partnerships, gap-filling by NGOs
  - Non-CREP programs to offer flexibility

Strategies that Work For Buffer Maintenance

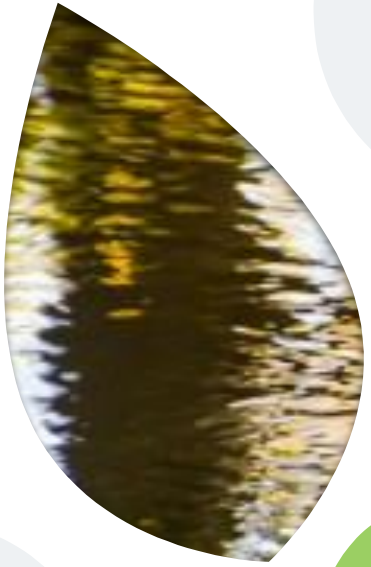
- ID landowner needs and strengths.
- Explain tasks for years 1-4 .
- ID who will do what (contractor?).
- Provide support, material, follow-up visits.
- Replant dead trees by year two.
- Plan for 85-90% survival – 70% is *min*.
- Establish nursery-like “clean culture”.
- Keep up with latest science- new tubes, new spraying methods, plant to


four-year old trees:
herbicide strips + mowing
Photo: Chesapeake Bay Foundation



There are still substantial barriers. WIP III is one opportunity to overcome.

- CREP can be improved (or gaps filled by state/other new program).
- Improve capacity – Agencies, NGOs, Contractors.
- Sustain funding for non-CREP buffers.
- Address farmers' economic realities.
- Support Maintenance!
- Reliance on agencies or NGOs to sell RFBs.
- New Opportunities like REAP.



Legacy Sediment Restoration and Riparian Forest Buffers

- Forested buffers may not be the ultimate solution for restoring *every* riparian area.
- Buffers *are* a proven solution in most riparian areas.
- Plenty of restorable acres- find the best practice for each area.
- Wrong practice in wrong area will fail.
- **We're all trying to get to the same goal- cleaner water in PA, and cleaner water in the Chesapeake Bay.**

Photo: Chesapeake Bay Journal


We CAN Build Buffers to Succeed!

Thank you!

Any Questions?

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c-tstark@pa.gov