

The logo features a stylized river winding from the left towards the right. The river is depicted with a white center and blue outer banks. The background on the left is green, representing land, and on the right is blue, representing water. The text 'St. Joseph River Basin Commission' is written in white, sans-serif font over the blue water background.

St. Joseph River
Basin Commission

2017 River Basin Roundup



2017 River Basin Roundup

Adam Bowden

*St. Joseph County, IN
Public Works*

The background is a dark gray gradient with several translucent, realistic-looking bubbles of various sizes scattered in the corners. The bubbles have highlights and shadows, giving them a three-dimensional appearance.

ADAM BOWDEN, P.E.

PROJECT ENGINEER

ST. JOSEPH COUNTY, IN

DEPARTMENT OF PUBLIC WORKS

The background is a dark, gradient grey with numerous realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. The text is centered horizontally.

MY STORY:

STORMWATER ADVOCATE CONVERT

BACKGROUND

- BORN AND RAISED IN ANGOLA, IN
 - STEUBEN COUNTY – LAND OF 101 LAKES
- GRADUATE OF TRINE UNIVERSITY
 - B.S. IN CIVIL ENGINEERING – 2010

LAND OF 101 LAKES???





I WAS JUST LIKE THE REST OF SOCIETY...

- IGNORANT
 - MISINFORMED
 - RELIED ON SOMEONE ELSE (TECHNOLOGY) TO FIX IT
- 

BACK IN 2014...





“

WE NEED YOU TO TAKE ON ADDITIONAL
RESPONSIBILITIES...

”

– MY BOSS







“
...HOW WOULD YOU LIKE TO BE THE
MS4 COORDINATOR?
”

– MY BOSS







NETFLIX

MISSION

BULLIE



“

A WORLD WITHOUT THE OCEAN,
IS A WORLD WITHOUT US.

”

– DR. SYLVIA EARLE





“

ST. JOSEPH COUNTY WITHOUT THE RIVER,
IS ST. JOSEPH COUNTY WITHOUT US.

”

— ME

PUT IT INTO PERSPECTIVE

I HAD TO GET INVOLVED!



SIGN CAMPAIGN



GOAL

- DRAW ATTENTION TO LOCAL WATERWAYS
- HOPE RESIDENTS WOULD BE MORE COGNIZANT OF THEIR ACTIONS
- PROVIDE OUR WEBSITE AS A RESOURCE FOR STORMWATER INFORMATION

OUTCOME

- WEBSITE VIEWS HAVE INCREASED
- POSITIVE FEEDBACK
 - “I NEVER KNEW I LIVED THAT CLOSE TO JUDAY CREEK...”
 - “I REALLY LIKE THE RESOURCE WORTH PROTECTING SLOGAN!”



2017 River Basin Roundup

Thank You!



2017 River Basin Roundup

Questions?
(only 3 minutes...)



2017 River Basin Roundup

Jason Kauffman

City of Goshen

Stormwater Department



City of Goshen Storm Drain Art

Why do we Educate?



City of Goshen Storm Drain Art

Why do we Educate?

MS4s are required to...

- Educate the public on stormwater issues
- Identify & eliminate illicit discharges



How do we educate?

- Print media (e.g. newsletters, newspaper articles, etc.)
 - Digital media (e.g. e-newsletters, websites, Facebook, etc.)
 - Public events
 - Movie theater commercials
 - Radio
 - Other ways
-
- BUT, people still do things that harm water quality. Why?

How do we get People's attention?

- In today's world we are confronted or interact with information all the time.
- To convey a new message to people, it must be done in a unique way.
- Solution – Storm Drain Art





Storm Drain Art





Storm Drain Art



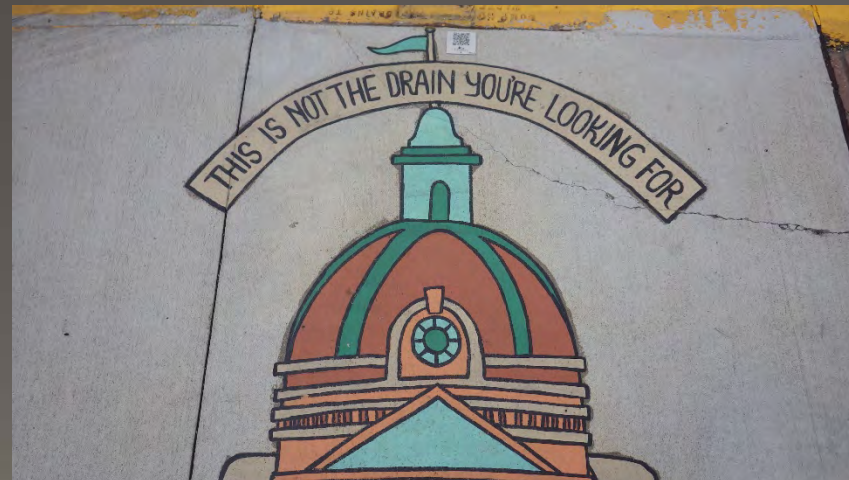
Why Storm Drain Art?

- The key to storm drain art is you are bringing to the public's attention something they see everyday but really don't see.
- Some people believe storm drains go to the wastewater treatment plant or the water just goes into the ground.



Why Storm Drain Art?

- Storm drain art helps people understand that stormwater just doesn't disappear.
- Storm drain art amplifies what happens to the water that flows in the gutter, down a storm drain, and to a creek, river, or lake.
- Storm drain art catches the eye and is unique.



Artist and Location Selection

- Request proposals from local artists, art guilds, etc. and choose the best ones.
- Select ideal painting locations but make sure the surrounding property owners are ok with the painting.
- Many unique lids, valves, cracks, vegetation, etc. that can be turned into amazing pieces of art.



Credit: Endsville Roll

Artist and Location Selection

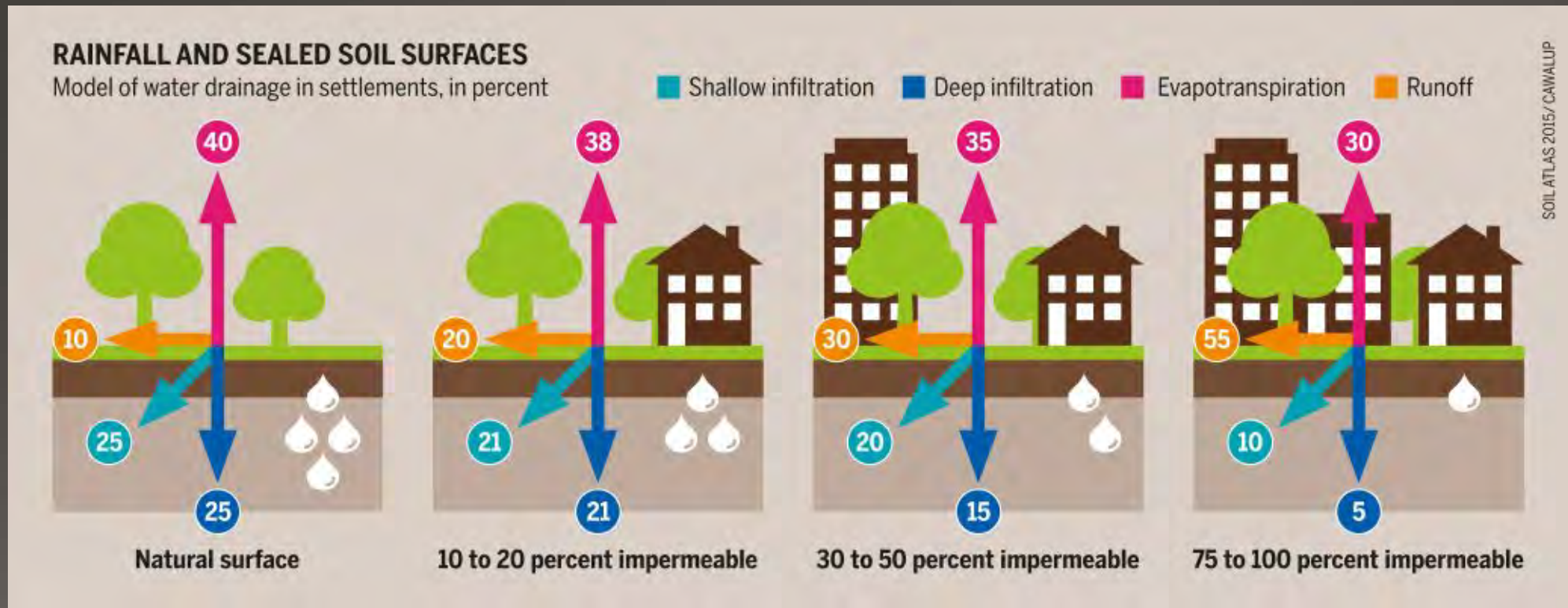
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Credit: Endsville Roll

When do we Educate?

- Whenever and wherever we can, we tell the story of stormwater and why it is important to keep it clean.



Goshen First Fridays

- Thousands of people gather downtown once a month
- It is a great place to provide education



Lynne Zehr Photography

Storm Drain Art Walk

Goshen Storm Drain Art Walk Map 2016

The map shows a grid of streets in Goshen, Indiana, with a blue river flowing through it. A north arrow is located at the top center. The streets shown include New St, 2nd St, Main St, Clinton St, Lincoln Ave, Washington St, Jefferson St, Purcell St, Emerson St, and 3rd St. Highway markers for 15, 33, and 15 are also present. Seven blue stars on the map indicate the locations of art installations, each with a line pointing to a descriptive text box. Surrounding the map are seven inset photographs of the art pieces themselves.

Designer: Adrian Sharp
Artist: Brian Whirledge
(N. 3rd St and W. Lincoln Ave)
Sponsor: Blank Space

Artist: Mark Daniels
(N. 5th and E. Clinton streets)
Sponsor: Jeremy, Maja, Boden & Pippin Stutsman

Carrie Beachey
(100 block of S. 2nd St)
Sponsor: RC3 Realty

Artist: Leah Borden
(S. 5th and E. Jefferson streets)
Sponsor: Jeremy, Maja, Boden & Pippin Stutsman

José Elizalde and Christina Elizalde
(S. 2nd and W. Washington streets—Farmers Market)
Sponsor: Urban Water Resources

Artist: Jairo Jimenez,
(S. 5th and E. Jefferson streets)
Sponsor: Dustin & Theresa Sailor Family

Artist: Jessica King,
(S. 5th and E. Purcell streets—Goshen Public Library)
Sponsor: Michelle & Steve Kercher Family

Artist: Thavisak Mounsthiraj
(S. 5th and E. Monroe streets)
Sponsor: Lisa & Richard Heller Family

Educational Opportunity for Schools



Storm Drain Art Issues

- Snow cover can create slippery conditions
- Peeling paint



Other ways we Educate

- Mobile billboards – Sewer Camera Truck



Other ways we Educate

- Digital stormwater messages



ONE Drop of This.....

.....Can Pollute **ONE MILLION** Drops of This

Fix The Drip



Goshen
THE MAPLE CITY



[goshenindiana.org/
stormwater-management](http://goshenindiana.org/stormwater-management)



Rainbows Belong in the Sky.....

.....Not on the Pavement
(don't drip and drive – fix leaking vehicles ASAP)

goshencity.com/stormwater-management
bit.ly/leaking-vehicles



Why do we educate?

- So people know they have a choice:
 - A choice for clean water
 - A choice for their community
 - A choice for future generations



Why do we educate?

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 - A choice for clean water
 - A choice for their community
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2017 River Basin Roundup

Thank You!



2017 River Basin Roundup

Questions?
(only 3 minutes...)



2017 River Basin Roundup

Janel Meyer

*Steuben County Soil & Water
Conservation District*



Steuben County Soil and Water Conservation District



Janel Meyer
janel.meyer@in.nacdnet.net



Steuben
County, IN



“Northern Indiana Lakes Country”

Downtown View of Angola, IN



Managing Your Stormwater

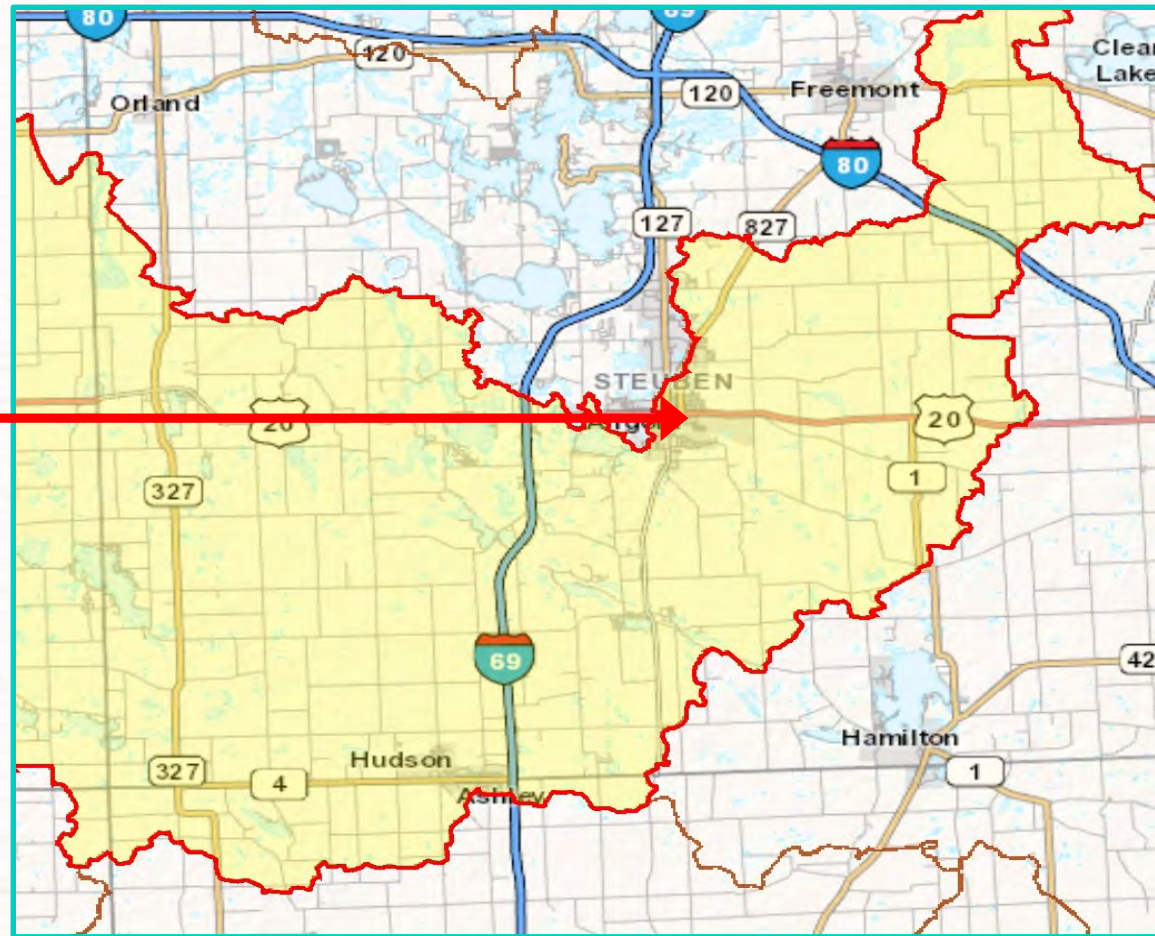




GOAL:

Protect
Water
Quality

City of
Angola





Raintainer

Rain Barrel

Bioswale
Parking Lot
with
Impervious
Concrete

Construction
Phase





One Year after Project Completion



Northeast Quad



NE
Quad
Rain
Garden

Completed
August 2012



Southeast Quad

SE Quad Drainage Improvement Project



Before Construction



During Construction

SE Quad Drainage Improvement Project

Completed August 2016



South Martha Street and Wall Street Parking Lot Improvement Plan



Parking Lot Construction



Construction Completed



South Martha
& Wall Street
Parking Lot
Improvement
Plan -
Rain Garden/
Bio-retention

Completed
August 2016

Commons Park/John Leach Drain Wetland Restoration Project



Diversion Channel Construction



Diversion Channel Completion

Commons Park/John Leach Drain Wetland Restoration Project





- Integrated into existing infrastructure; more aesthetically pleasing
- Educational Component
- Decreased pollutant loads going into Pigeon Creek
- Partnerships/Collaboration



- Partnerships/Collaboration
- Cost
- Steep learning curve

- Urban BMPs provide numerous benefits
- Successful partnerships work
- Pro's and Con's





2017 River Basin Roundup

Thank You!



2017 River Basin Roundup

Questions?
(only 3 minutes...)



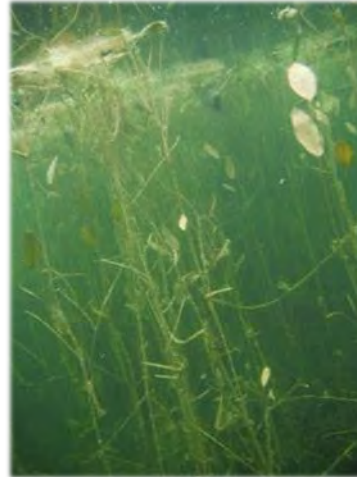
2017 River Basin Roundup

Grant Poole

Pokagon Band of Potawatomi

Pokagon Band of Potawatomi Indians

Department of Natural Resources
Water Quality Program Summary



Grant Poole
Water Quality Specialist



Department of Natural Resources

- Pokagon Band DNR functions cover those of the USFWS, NPS, EPA or a State DNR and DEQ



Department of Natural Resources

- Jennifer Kanine, PhD, AWWB[®]- Director
- Vic Bogosian, PhD- Natural Resources Manager
- Grant Poole, BS- Water Quality Specialist
- Kyle Boone, MS- Environmental Specialist
- David Ferris, BS- Invasive Species Technician
- Walter Peters- Natural Resources Technician
- Dale Keene- Natural Resources Technician
- Mindy Morseau- Administrative Assistant



– Conservation Officers



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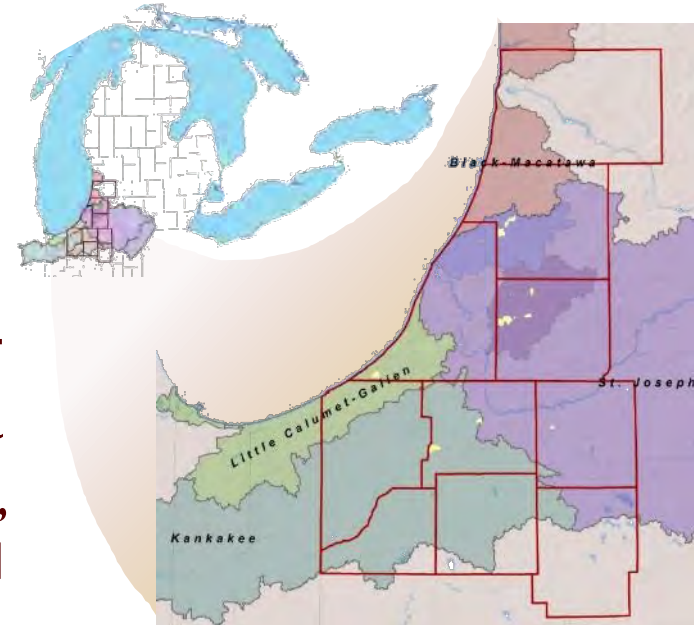
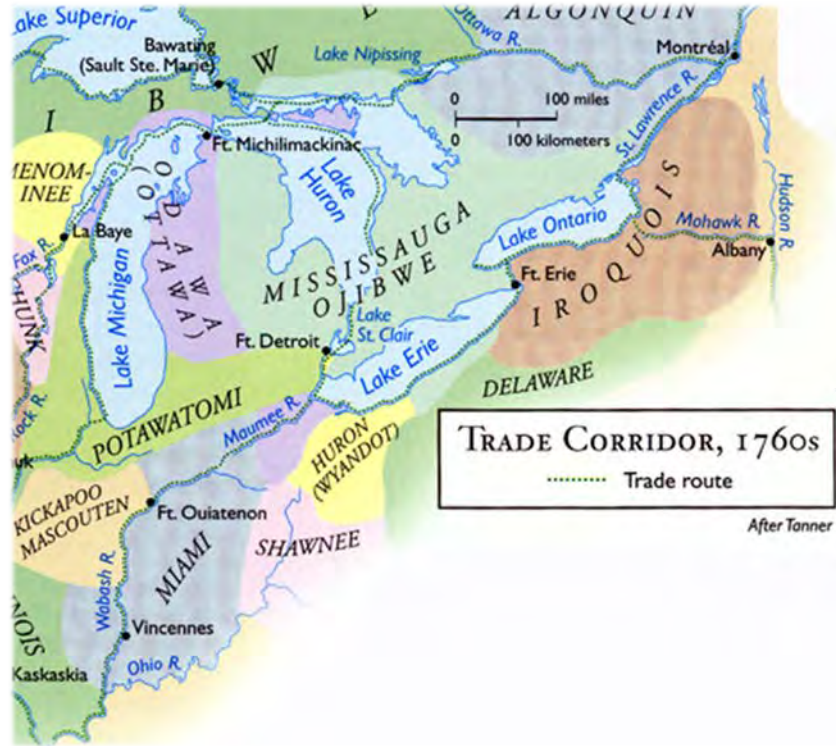


– Conservation Officers



Pokagon Band of Potawatomi

Historic Potawatomi Territories



Federally Recognized in 1994
Within 10 County Service Area
Historical village sites of South Bend,
Dowagiac, New Buffalo, and Hartford



Water Quality Program

- Baseline Monitoring of Surface Waters
 - Biological, Physical, Chemical
- Watershed Base Planning
- Permit / Regulation Reviews and Development

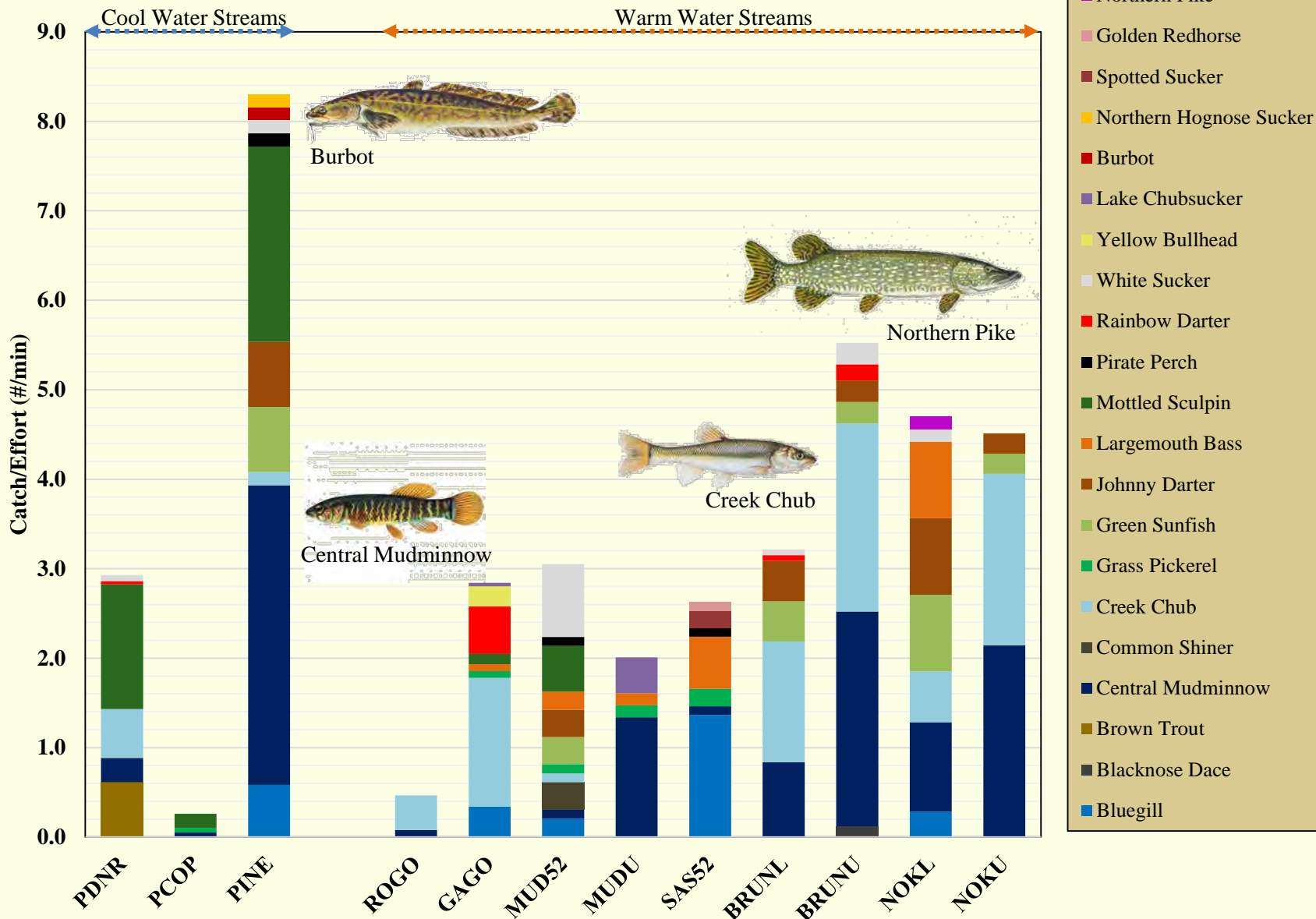


Pokégnek Bodéwadmik · Pokagon Band of Potawatomi



Fish Surveys

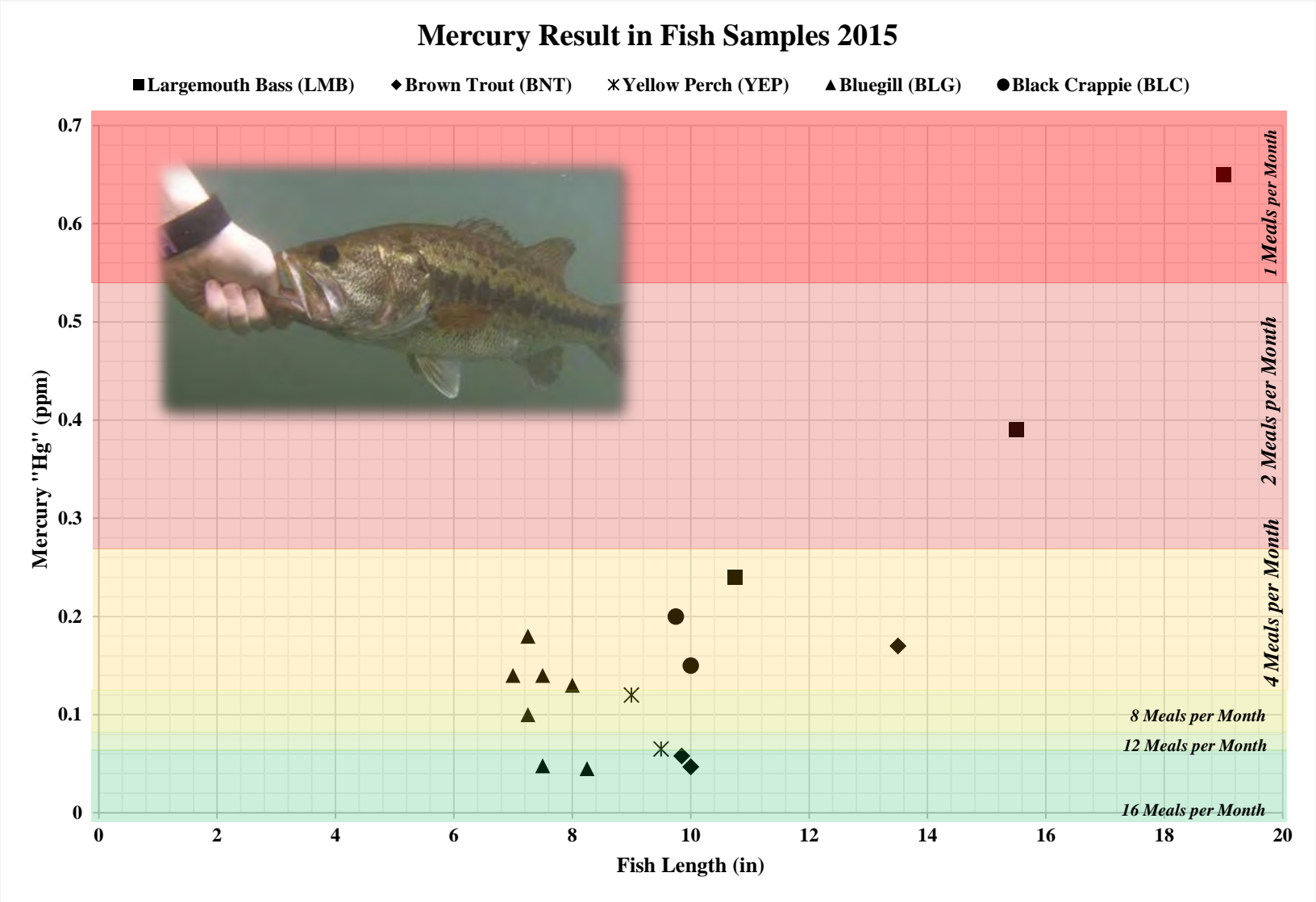
2016 Stream E-Fishing Survey Results



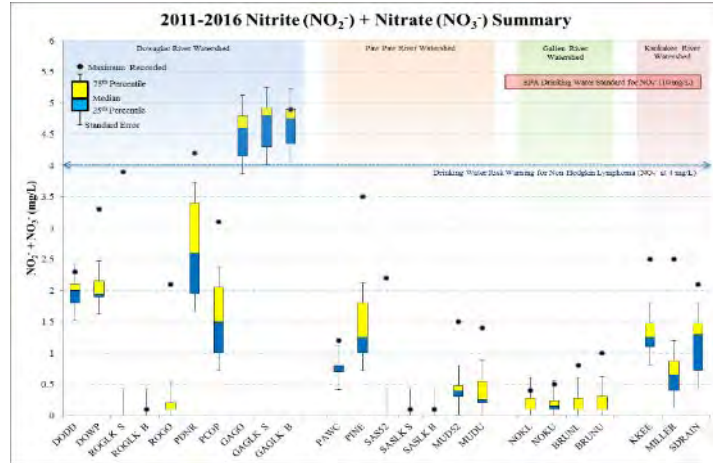
Whole Fish Consumption Surveys

– Tested fish for contaminants

- PCBs, Arsenic, Mercury



CWA 106 Assessment Report



Metric	Noknes Creek Near West Drain Pond	Noknes Creek Near West Drain Pond	Noknes Creek @ Mauldin Rd	Noknes Creek @ Mauldin Rd	Noknes Creek @ Mauldin Rd	Noknes Creek @ Wilson Rd	Bloodum Creek @ Wilson Rd	Bloodum Creek Near Bus Parking	Bloodum Creek Near Bus Parking	Bloodum Creek Near Bus Parking	Bloodum Creek Near Bus Parking
	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score	Procedure 5.1 Score
Average D-net Sample Size (n=3)	138	210	105	160	131	152	610	86	367	159	0
Total Taxa	19	15	19	17	16	17	0	18	15	0	19
% EPT	5.6%	0.5%	2.5%	2.3%	2.3%	3.5%	6.6%	3.5%	2.0%	6.7%	0
% Chironomidae	27.6%	47.4%	27.9%	21.0%	19.0%	58.8%	42.4%	29.6%	6.5%	22.6%	0
% Hydropsychidae/Trichoptera	40.0%	0.0%	0.0%	100.0%	100.0%	0.0%	75.0%	100.0%	100.0%	50.0%	0
Shannon's Diversity	1.61	1.42	1.38	1.53	1.44	1.41	1.49	1.64	0.62	1.37	0
% Ephemeroptera (mayflies)	0.0%	-1.03%	-1.3%	-0.2%	-1.0%	-1.2%	-1.60%	0	2.7%	-1.03%	-1.63%
% Trichoptera (caddisflies)	1.2%	-1.0%	-0.6%	-1.0%	-1.0%	-0.2%	-1.04%	-0.8%	-1.5%	-1.04%	-1.0%
% Isopod, Snail, Leech	0.5%	1.6%	2.9%	9.1%	0.8%	1.0%	0.2%	0.0%	1.0%	0.2%	0
% Surface Dependent	0.0%	1.0%	0.3%	0.6%	1.0%	1.0%	0.1%	0.4%	1.0%	0.1%	0
% Dominant Taxa	48.9%	-1.47%	-1.55%	-1.52%	-1.47%	-1.58%	-1.42%	-1.38%	-1.86%	-1.57%	-1.0%
Ephemeroptera (mayflies) Taxa	0	-1	0	2	1	0	1	-1	1	-1	2
Trichoptera (caddisflies) Taxa	3	1	0	2	0	1	1	2	0	1	2
Plecoptera (stoneflies) Taxa	2	1	1	1	1	1	1	0	-1	1	0
Year / Score	2011 / 1	2015 / 0	2011 / 2	2013 / 0	2015 / 1	2011 / -1	2015 / 0	2011 / -4	2013 / -2	2013 / -1	2013 / -1

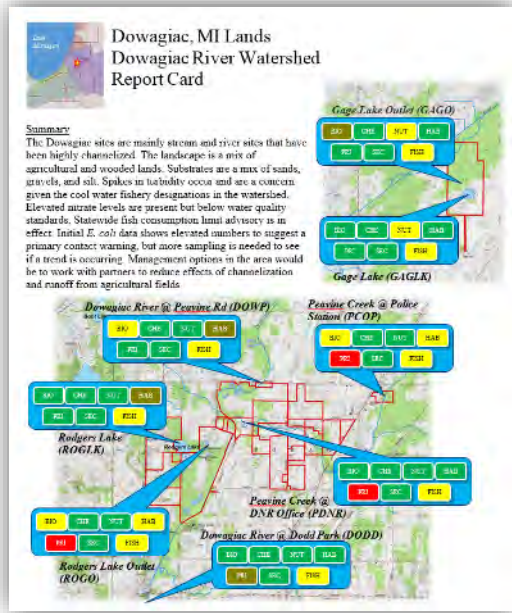
Pokagon Band of Potawatomi Indians
Department of Natural Resources
Water Quality Program

CWA 106 WATER QUALITY NARRATIVE REPORT 2016

Prepared for the U.S. EPA Clean Water Act Section 106 Grant # I-01E01496
January 1, 2016 – December 31, 2016

Submitted by:
Grant Poole, Pokagon Band Department of Natural Resources Water Quality Specialist
Jennifer Kaame, Pokagon Band Department of Natural Resources Director

March 30, 2017



<http://www.pokagonband-nsn.gov>

Pokégnek Bodéwadmik · Pokagon Band of Potawatomi



Dowagiac River Restoration (Phase I)



Pokégnek Bodéwadmik · Pokagon Band of Potawatomi



Dowagiac River Restoration (Phase I)



Pokégnek Bodéwadmik · Pokagon Band of Potawatomi



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Pokégnek Bodéwadmik · Pokagon Band of Potawatomi



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Pokégnek Bodéwadmik · Pokagon Band of Potawatomi



Dowagiac River Restoration (Phase I)



Pokégnek Bodéwadmik · Pokagon Band of Potawatomi



Dowagiac River Restoration (Phase 2)



Dowagiac River Restoration (Phase 2)

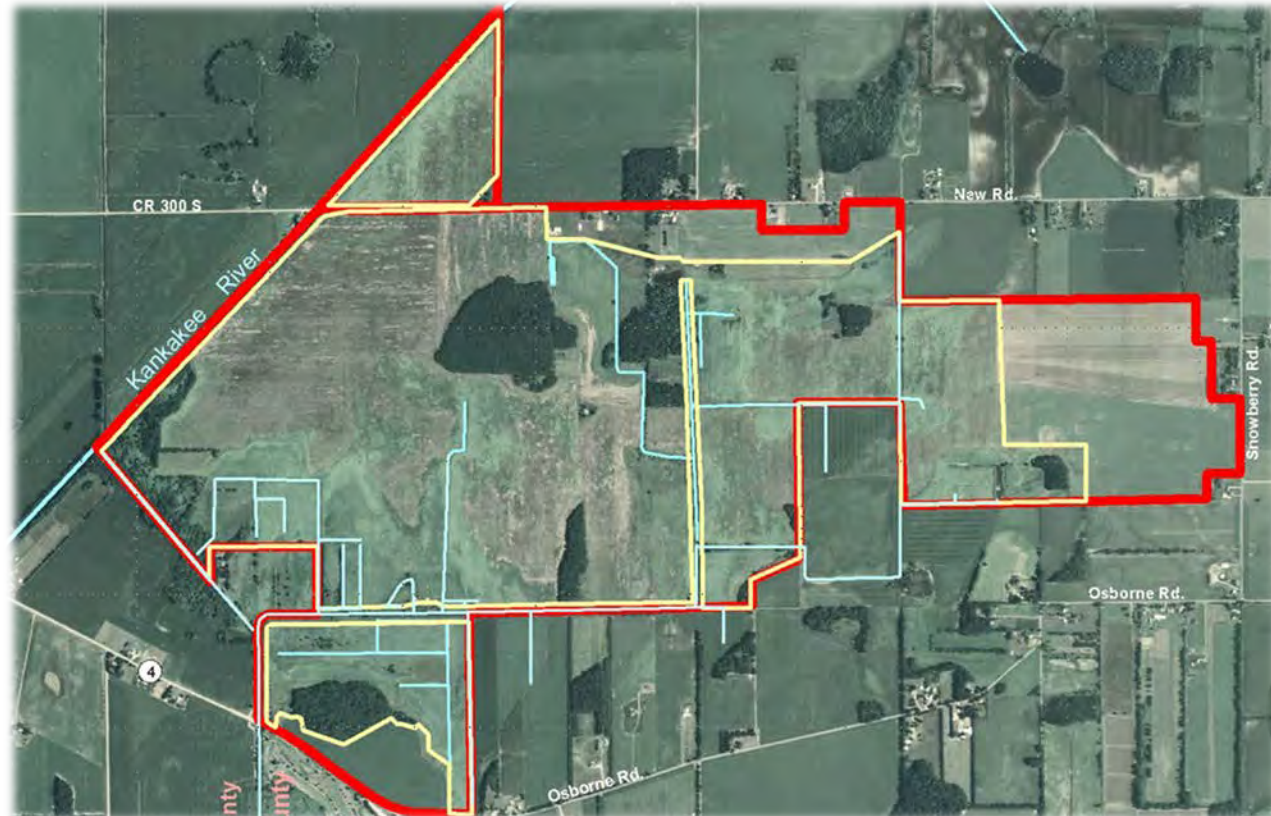


North Liberty Indiana Restoration

A little step towards restoring a once grand marsh

– Pokagon Band purchased 1,447 acres and 1,147 were eligible to enroll into WRE (WRP)

- 75% of the site has restorable wetlands and hydrology

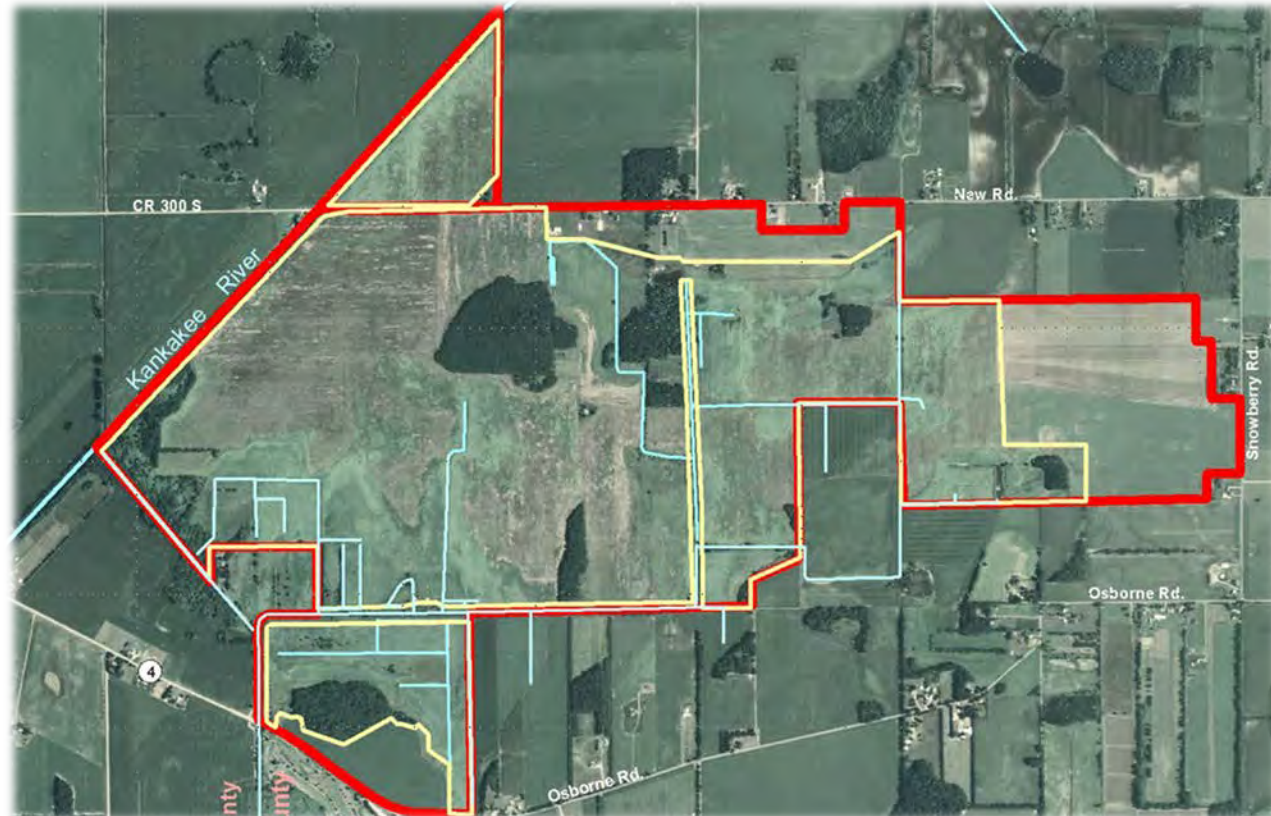


North Liberty Indiana Restoration

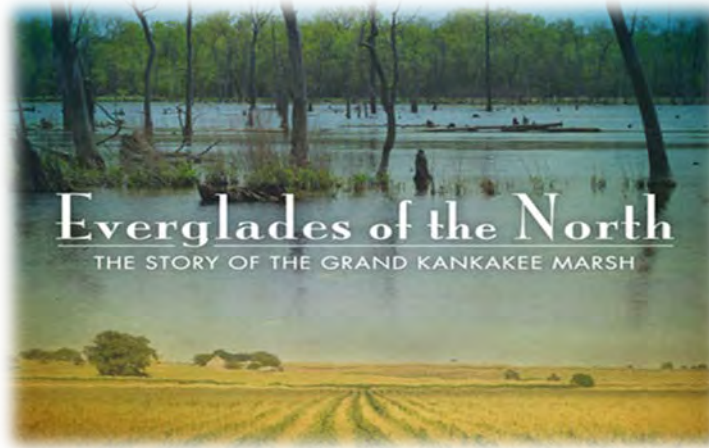
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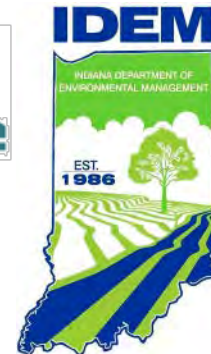
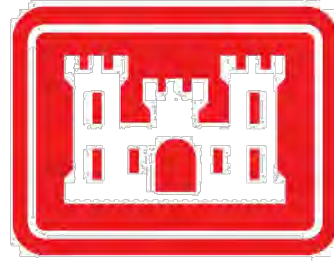
North Liberty Indiana Restoration



Pokégnek Bodéwadmik · Pokagon Band of Potawatomi



Thanks to some of our many Partners





2017 River Basin Roundup

Thank You!



2017 River Basin Roundup

Questions?
(only 3 minutes...)



2017 River Basin Roundup

Eleanor Serocki

*Van Buren County
Conservation District*

Invasive Species: Impacts and Implications



Nor Serocki
SWxSW Corner CISMA
Berrien, Cass, and Van Buren Counties, MI
eleanor.serocki@macd.org



What is an Invasive Species?

An invasive species is one that is ***not native*** and whose introduction ***causes harm***, or is likely to cause harm to the economy, environment, or human health.



Why do I Care?

- Impact environmental quality
- Impact human use
- Destabilize ecosystems
- Costs \$120 billion in the USA per Year (Pimental et al. 2005)





Photo by M. Wilson



Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Habitat




Rob Routledge, Sault College, Bugwood.org

5474911







Lowered
Biodiversity



← Swallow-wort →
Chinese Yam ↓



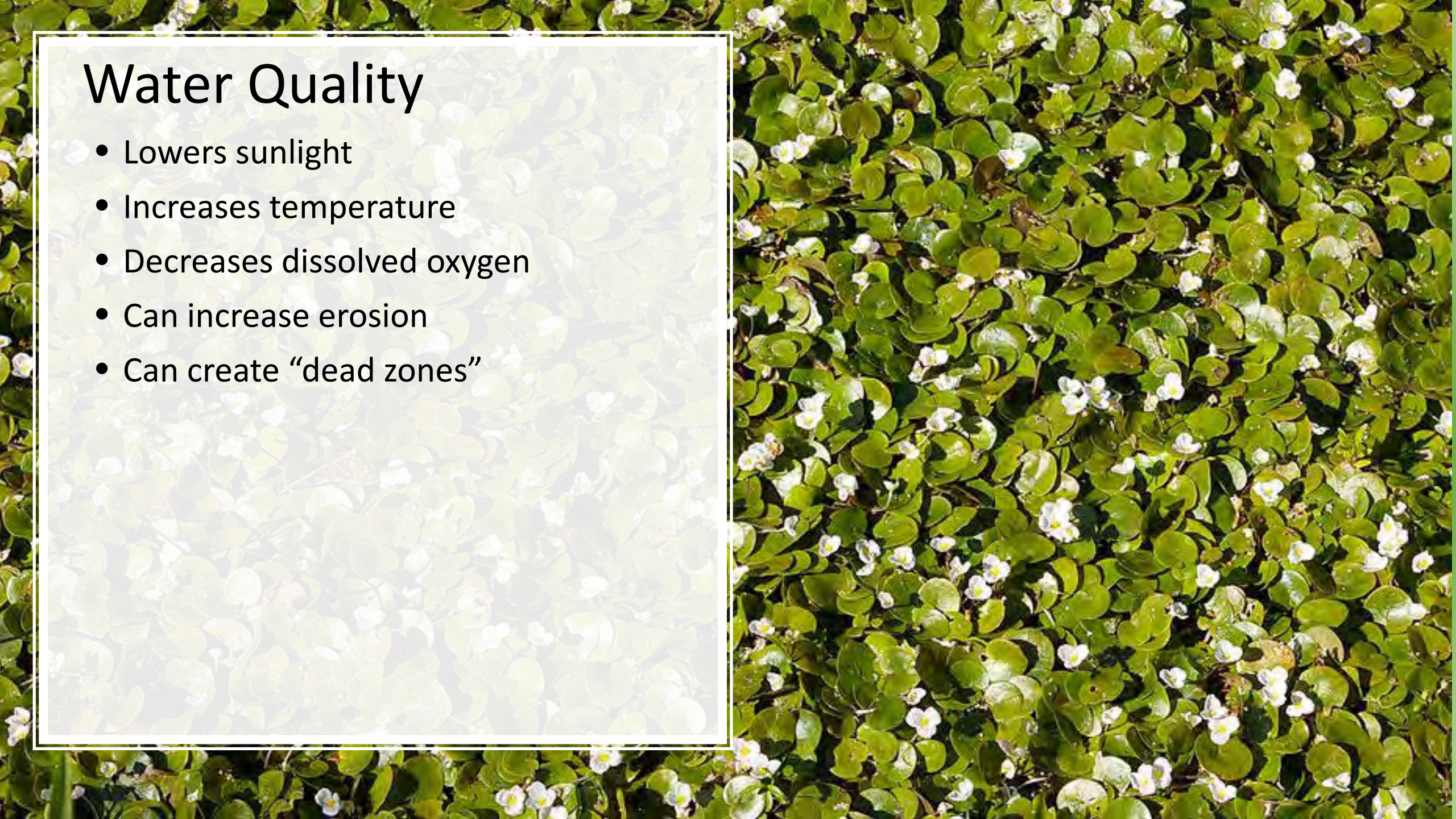


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UGA2136078

Water Quality

- Lowers sunlight
- Increases temperature
- Decreases dissolved oxygen
- Can increase erosion
- Can create “dead zones”







Detroit River International Wildlife Refuge



lakeandwetlandecosystems.com

Access





Philip Rusted, Thurlow Countryside Management (r&d), Bugwood.org **UGA5178013**



Tom Heutte, USDA Forest Service, Bugwood.org

UGA1196112



Philip Rusted, Thurlow Countryside Management (r&d), Bugwood.org

UGA5007012

Damaged Infrastructure



BBC.uk.co



So what can we do?

It isn't totally hopeless!

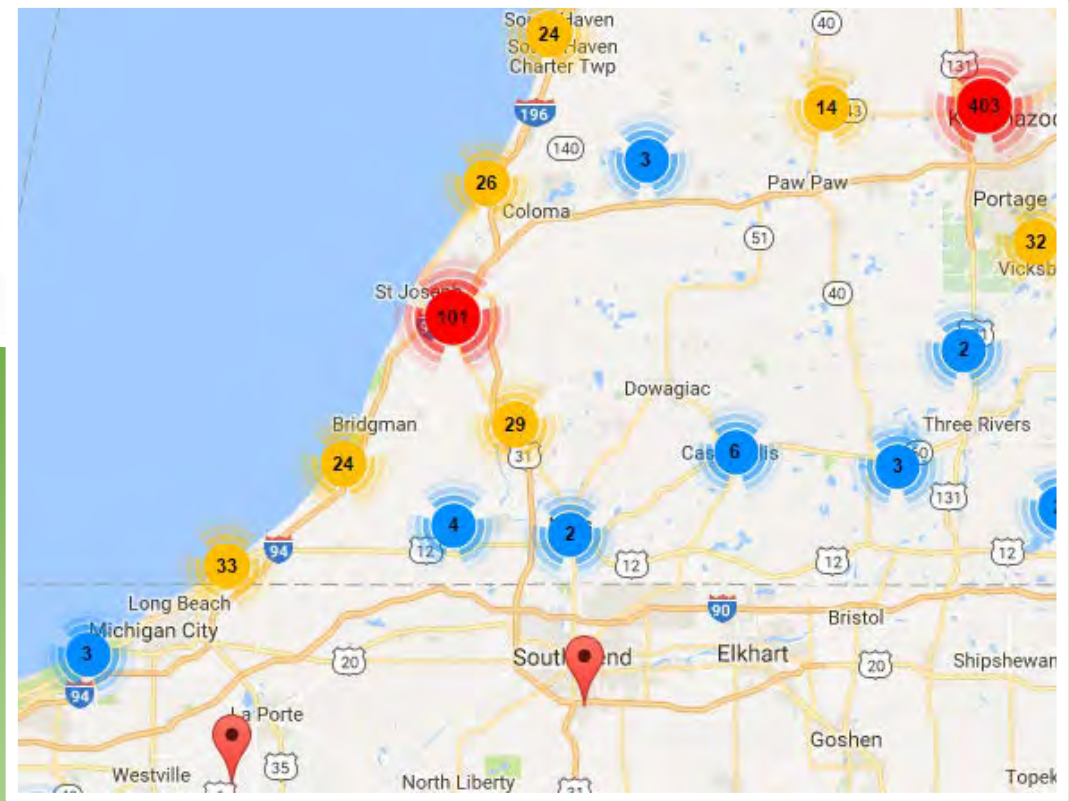


Act Early



Be Consistent (and Patient!)

MISIN Reporting



CenterOnMarker | DeleteMarker | FullExtent

Map Hybrid

United States

Map data ©2017 Google, INEGI | Terms of Use

Map Zoom: Zoom level must be 15 or greater for location to be accepted when verified. Leave map zoomed in after you establish your final location.

Reporting: Detected Not Detected

Observer: Eleanor Serocki

Project:

Latitude:

Longitude:

Common Name:

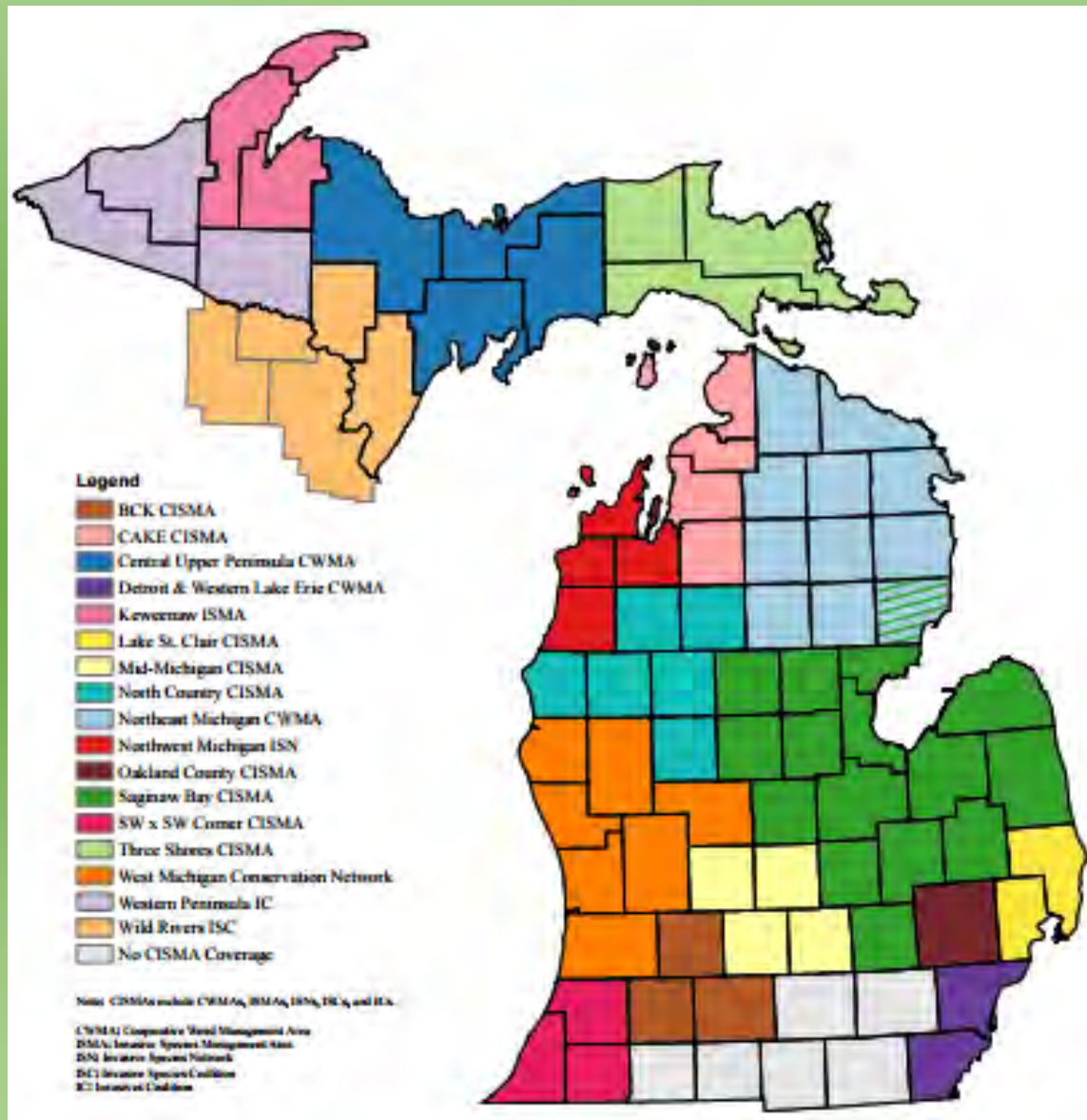
Date: Indicates selected date

Su	Mo	Tu	We	Th	Fr	Sa
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

Area:

Density:

Cooperative Invasive Species Management Areas



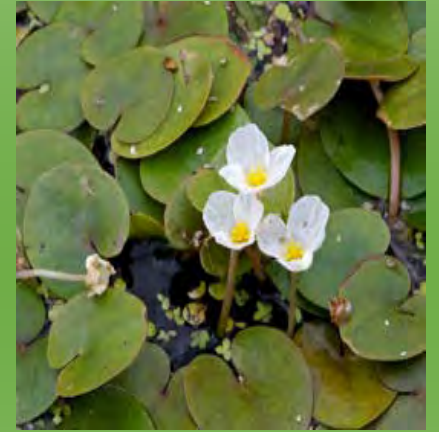
A partnership of federal, state, and local government agencies, tribes, individuals, and various interested groups that manage (or have a stake in managing) invasive species in a defined area

Thank You

Nor Serocki

SWxSW Corner Cisma

eleanor.serocki@macd.org





2017 River Basin Roundup

Thank You!



2017 River Basin Roundup

Questions?
(only 3 minutes...)

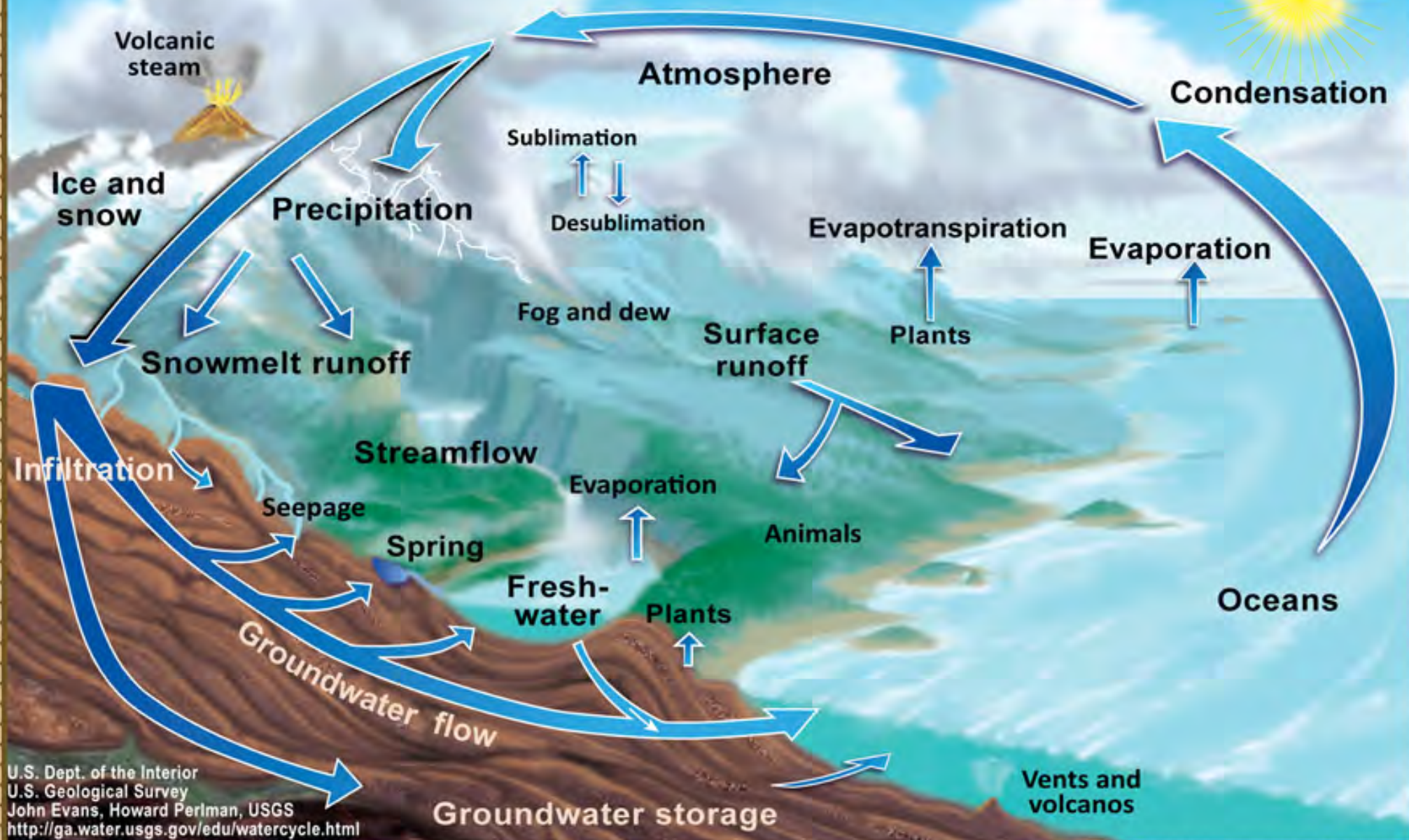


2017 River Basin Roundup

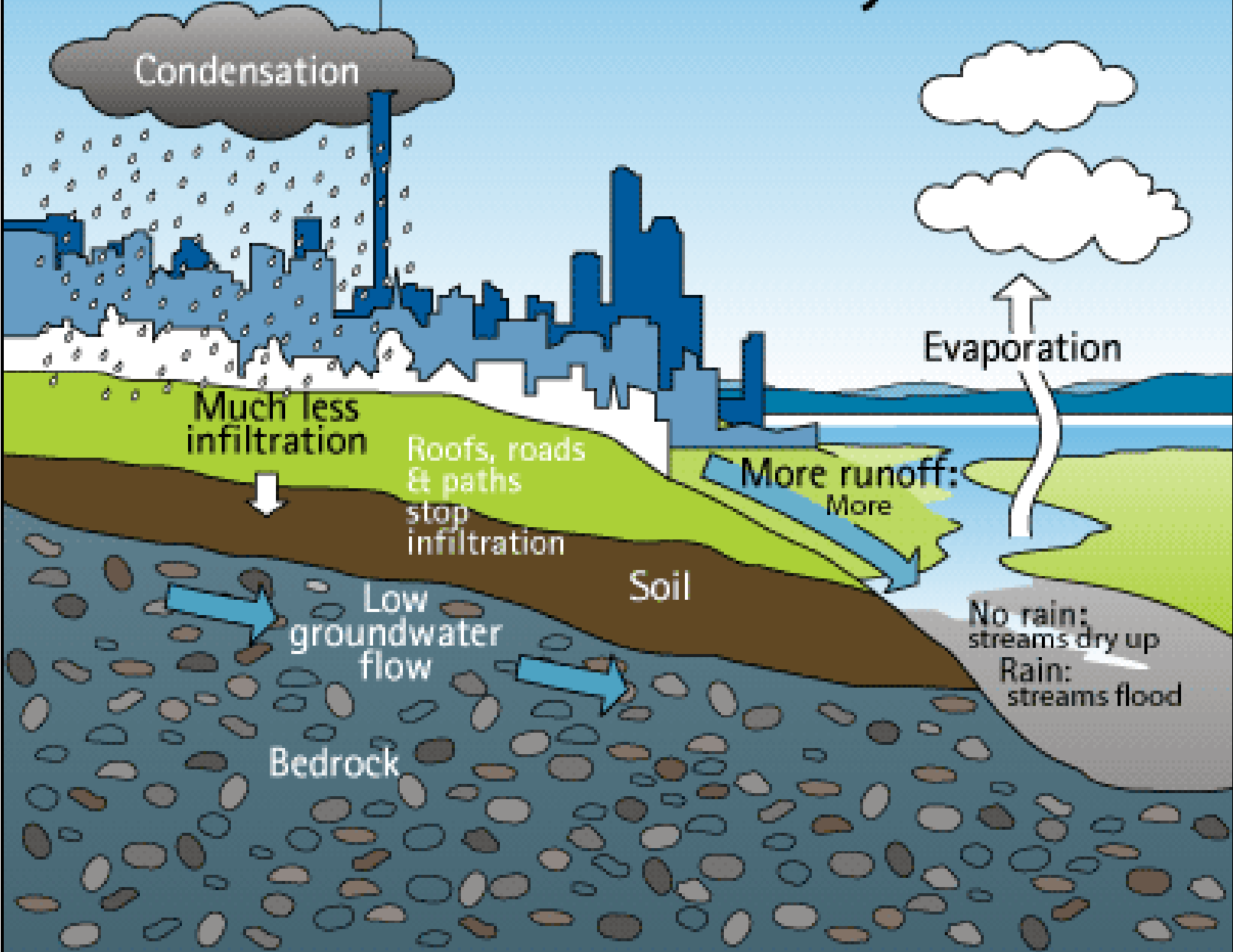
Sheila Wald

*Branch County
Conservation District*

The Water Cycle

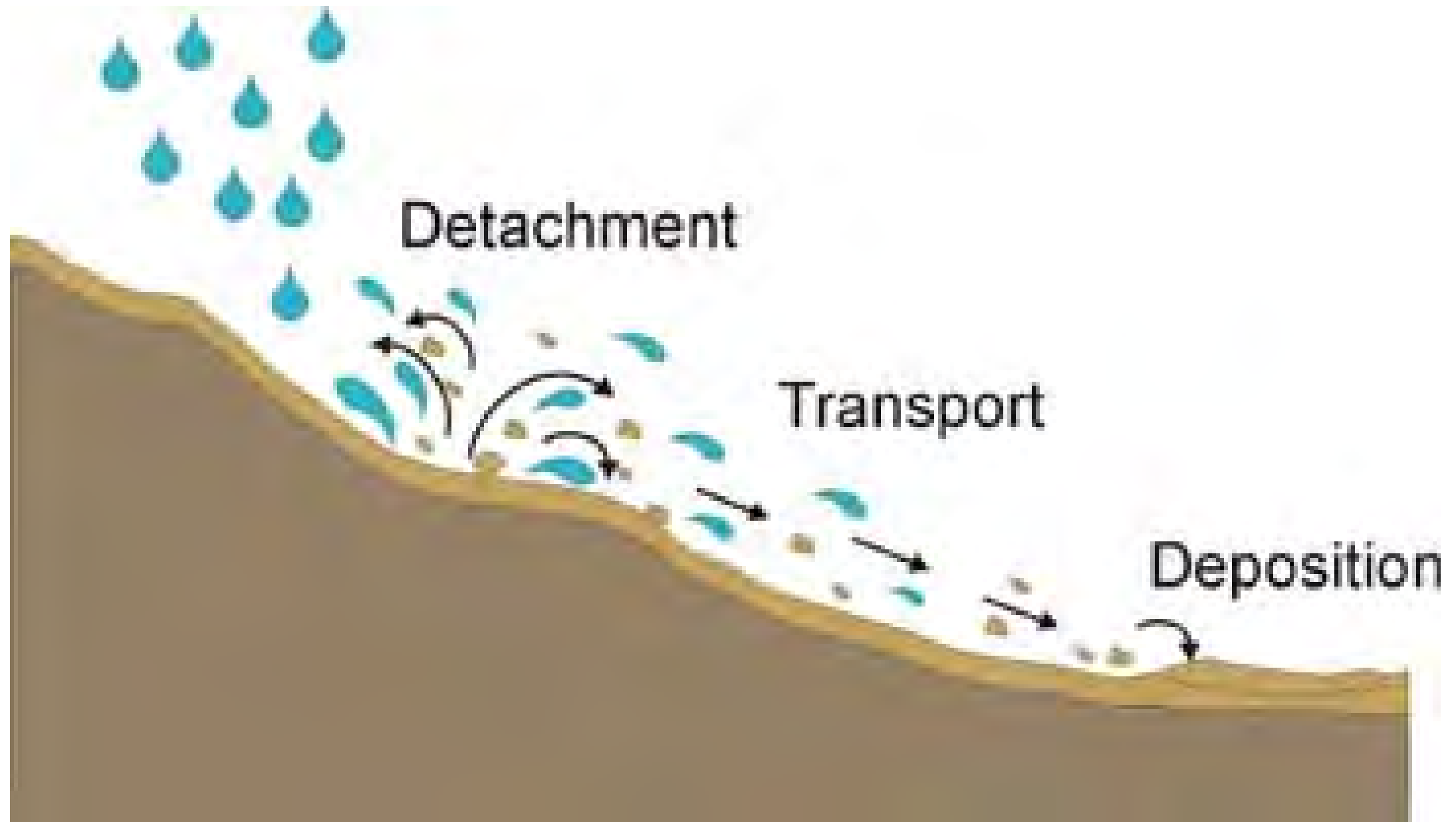


The urban water cycle



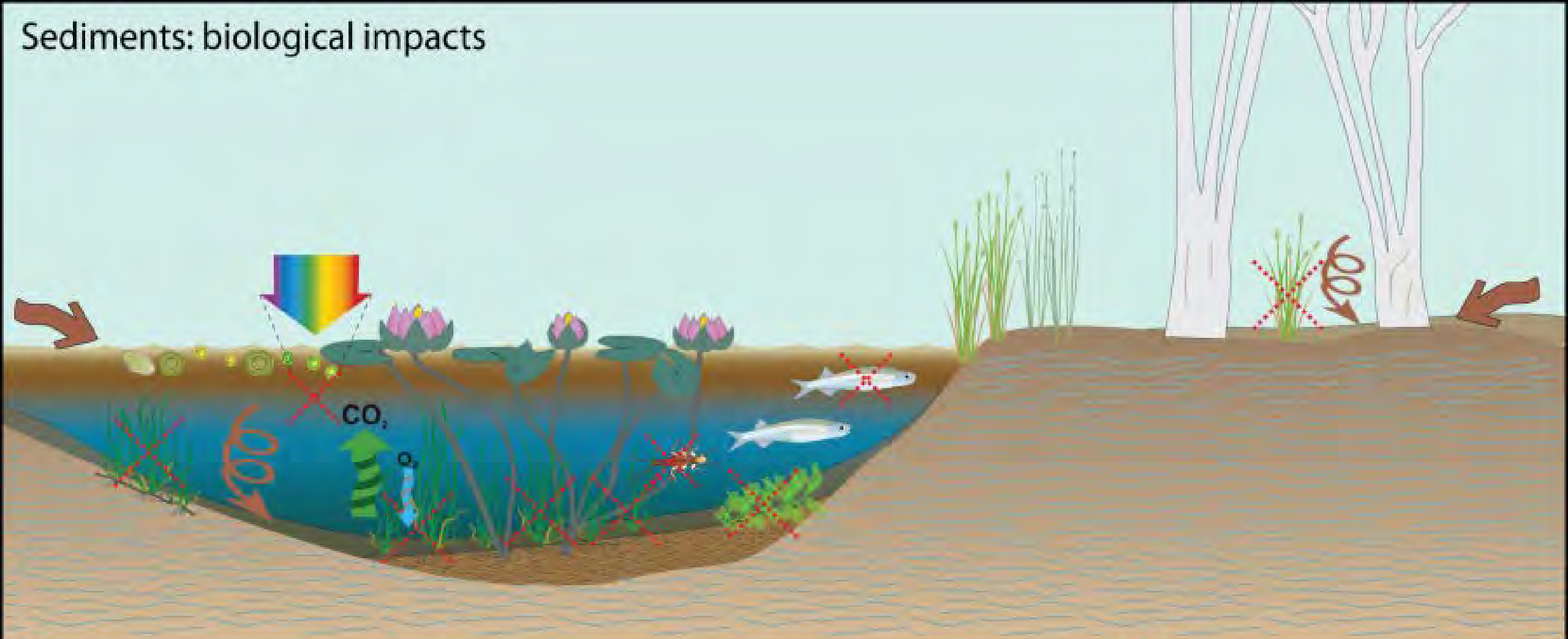








Sediments: biological impacts



-  Sediment input
-  Light
-  Submerged plants
-  Algae
-  Grass/sedge/herbs
-  Infilling
-  Lost
-  Reduced dissolved oxygen

RCP

Regional Conservation Partnership Program



Partnering for

Conservation



Solutions







CAN SOIL SAVE US?

Making the Case for Cover Crops as
Extreme Weather Risk Management

P.A. White
June 2015

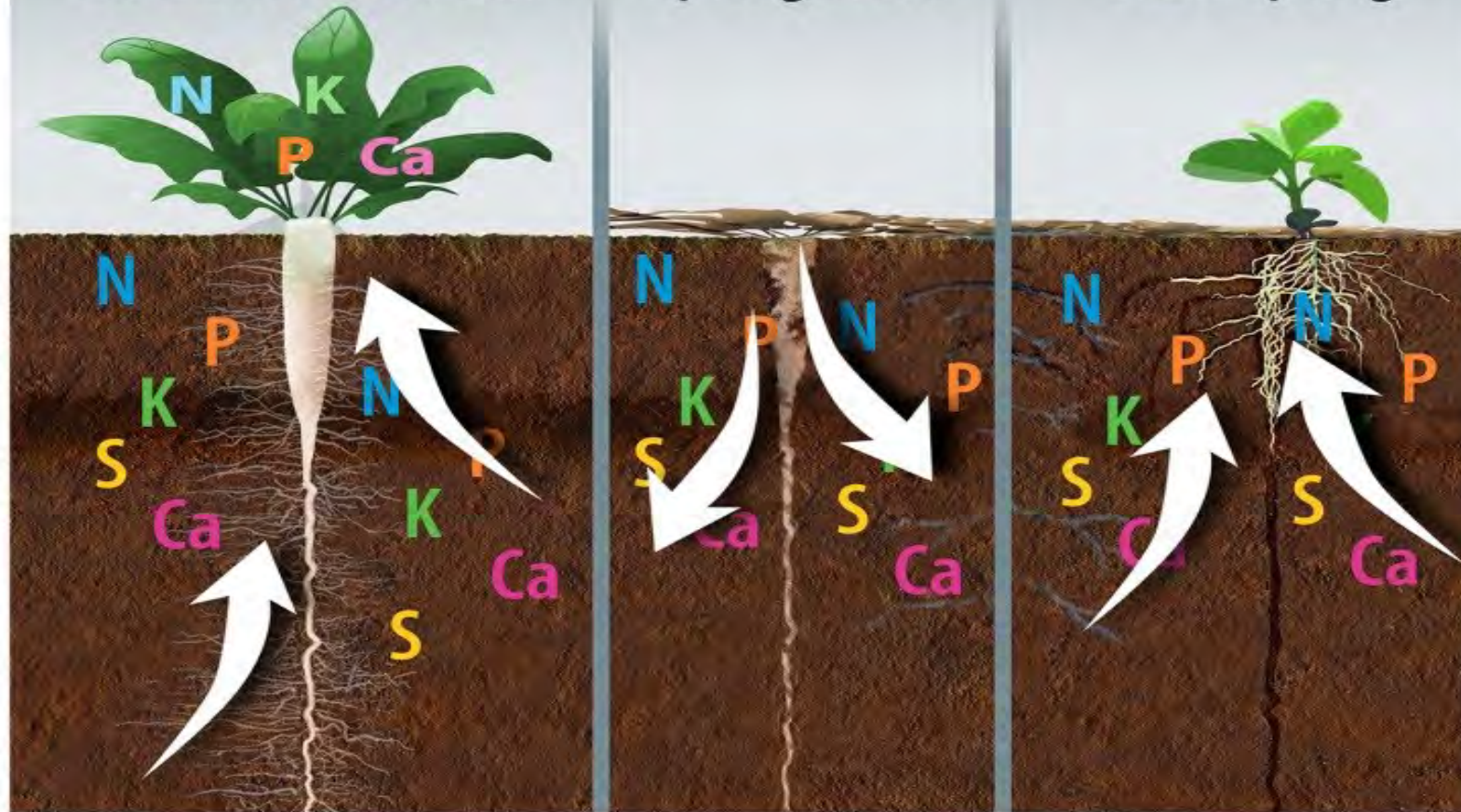


Cover Crops and Nutrient Capture

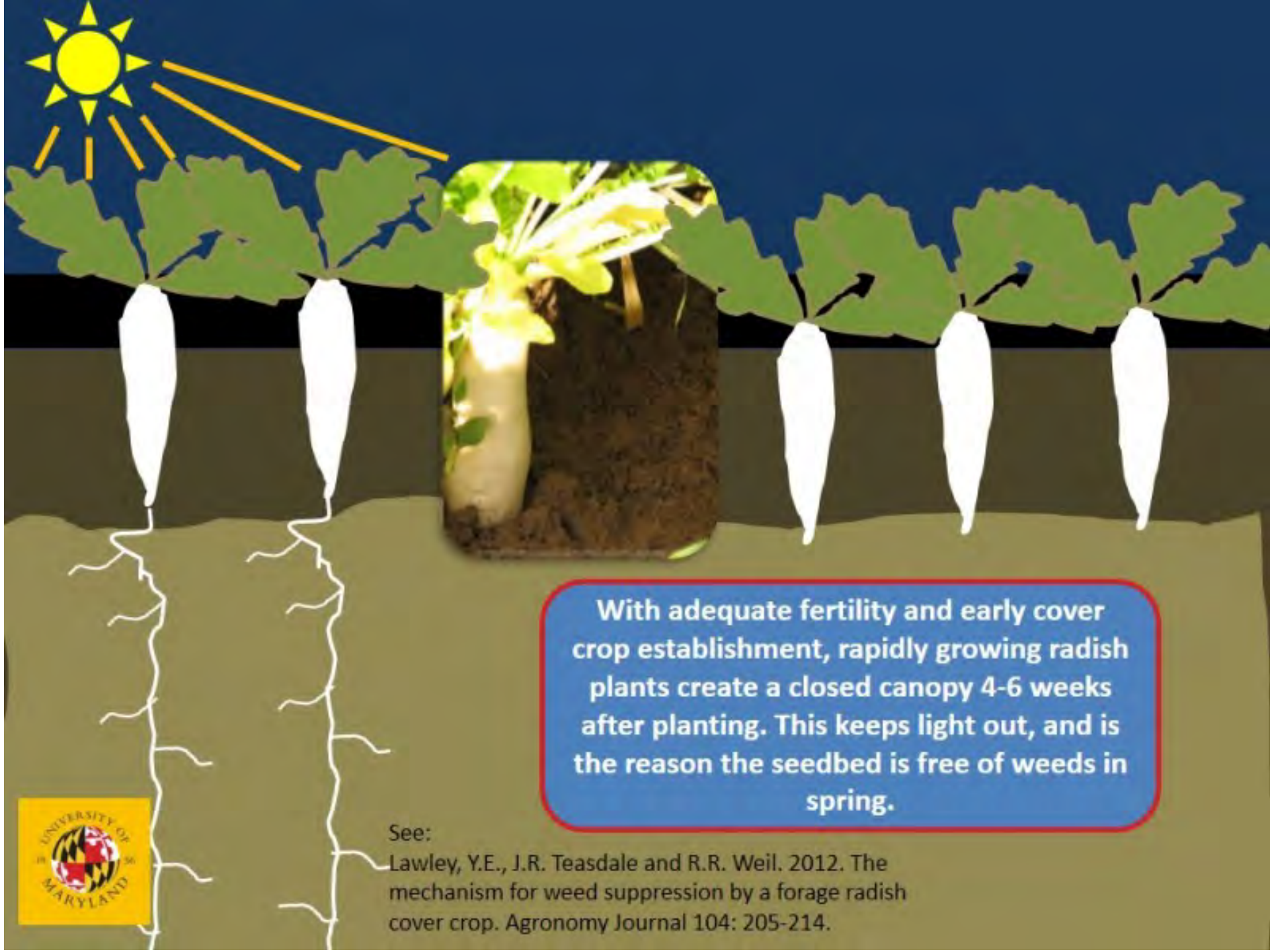
Late Summer /Fall

Spring Thaw

Late Spring



Cover crops can increase the amount of nutrients available for the next crop by taking up nutrients that remain in the soil and holding them in plant tissue until they are released the next spring, when they can be used by the following crops. *Courtesy: Cover Crop Solutions*

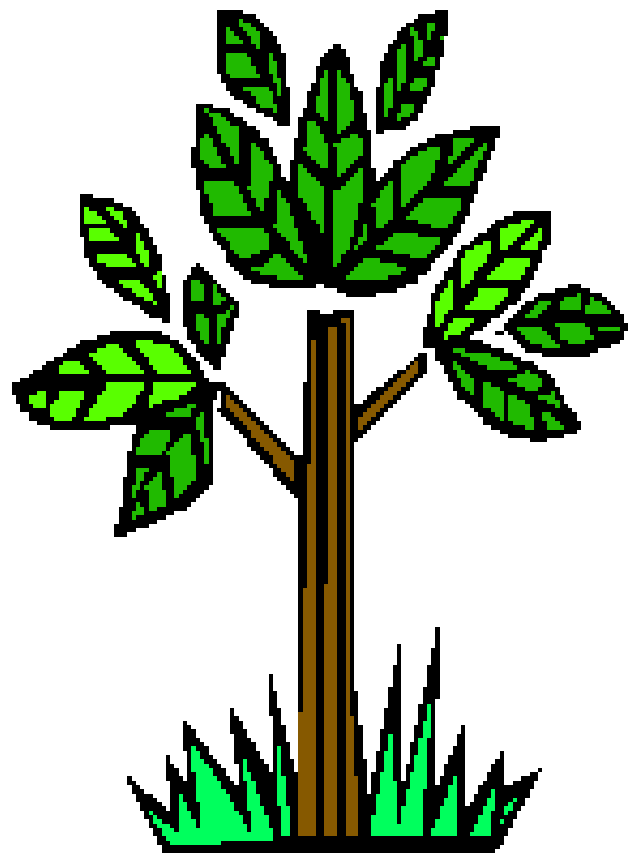


With adequate fertility and early cover crop establishment, rapidly growing radish plants create a closed canopy 4-6 weeks after planting. This keeps light out, and is the reason the seedbed is free of weeds in spring.



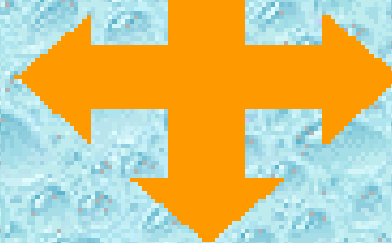
See:

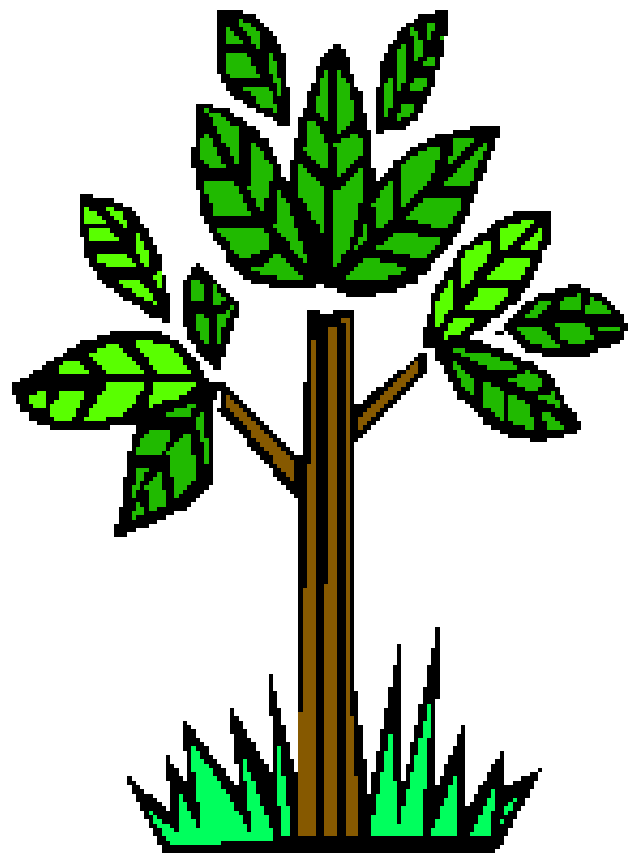
Lawley, Y.E., J.R. Teasdale and R.R. Weil. 2012. The mechanism for weed suppression by a forage radish cover crop. *Agronomy Journal* 104: 205-214.



Sources of Nitrate in Our Groundwater:

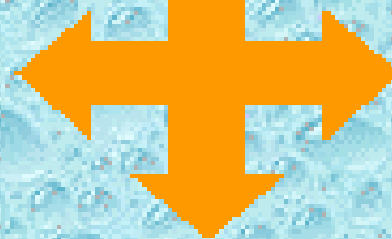
Fertilizer
Manure
Waste Water Application
Septic Systems
Decaying Organic Matter
Natural

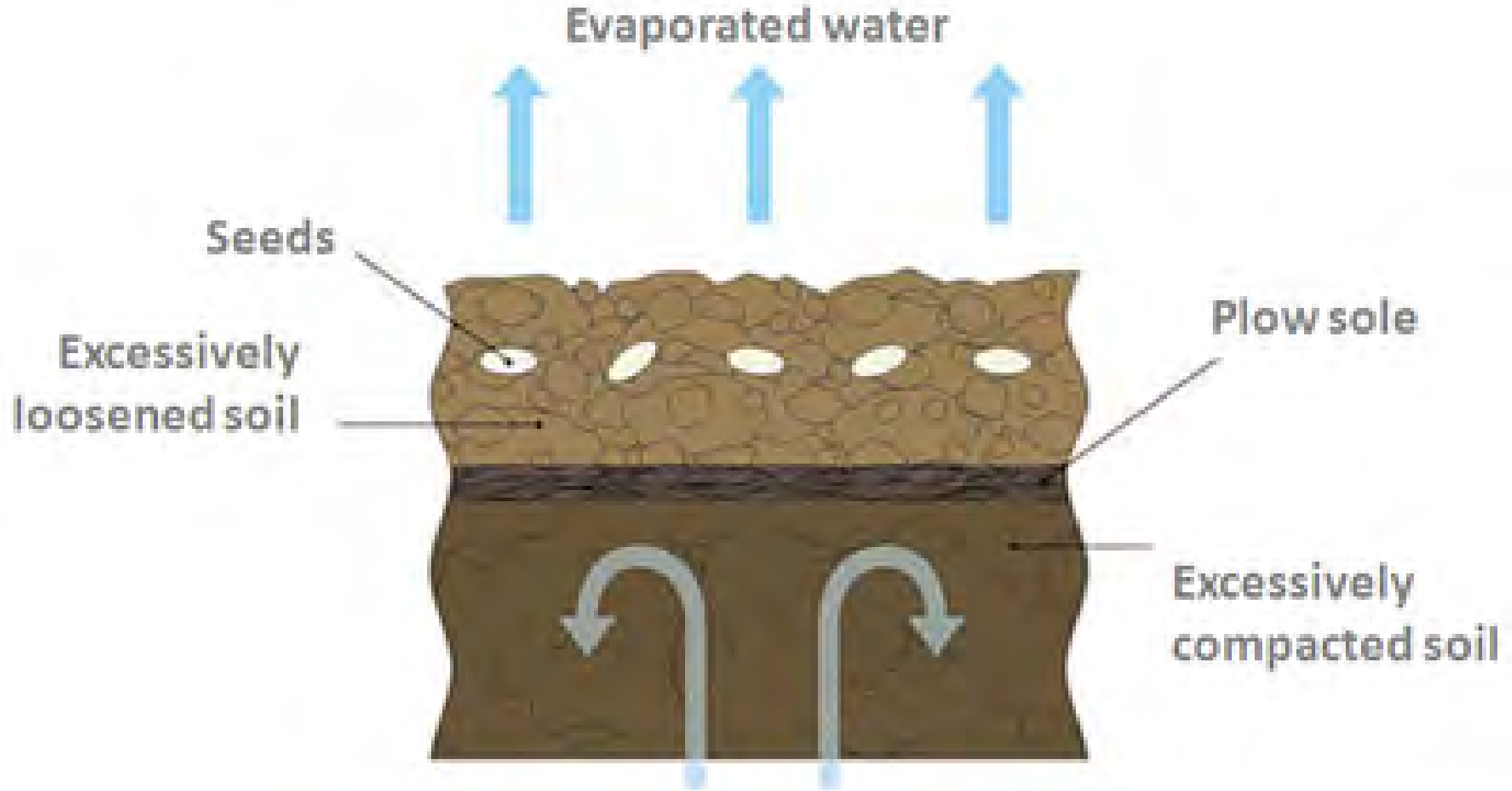




Sources of Nitrate in Our Groundwater:

Fertilizer
Manure
Waste Water Application
Septic Systems
Decaying Organic Matter
Natural









Lake Michigan Basin







2017 River Basin Roundup

Thank You!



2017 River Basin Roundup

Questions?
(only 3 minutes...)

A stylized graphic of a river or stream. It features a green bank on the left, a white channel in the middle, and a blue section on the right that contains the text. The blue section is a solid blue shape that tapers to the right.

2017 River Basin Roundup

Thank You Everybody!