



# **Building educational collaborations in Northwest Indiana through GLISTEN.**

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***the Great Lakes Innovative Stewardship  
through Education Network.***

A small group of thoughtful people could change the world.  
Indeed, it's the only thing that ever has - Margaret Mead

**Service-Learning** is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities.

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Indiana Tourism Association



As the only state to border Lake Michigan's southern shore, Indiana has a responsibility to **protect, restore, and enhance** the watershed. The region would benefit from a cohesive initiative to advance scientific studies, pursue funding, and promote education specifically related to Great Lakes' issues.

# What is GLISTEN?

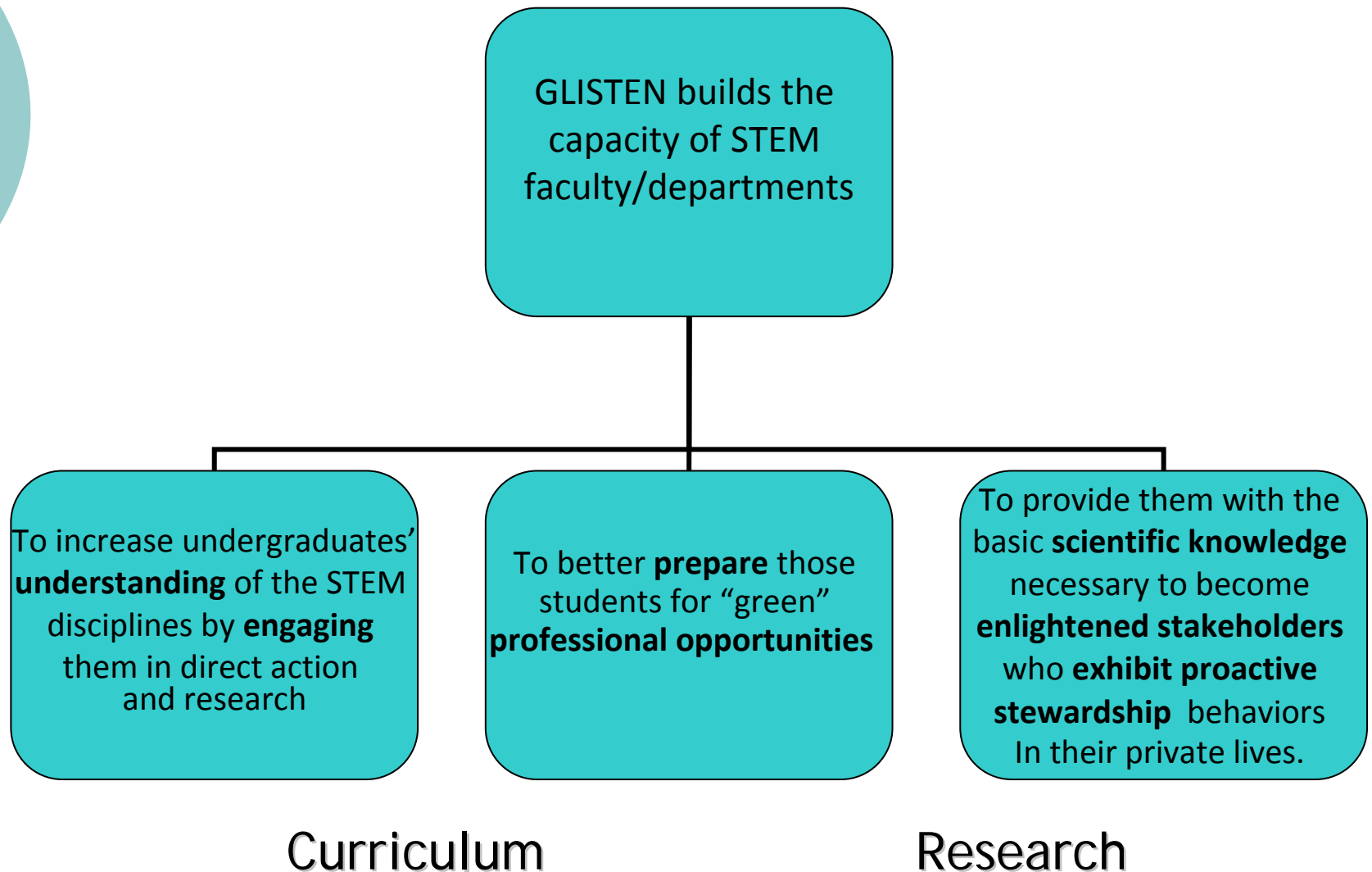
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- Funded in August, 2009 by the Learn and Serve America Higher Education program of the Corporation for National and Community Service, GLISTEN is an initiative of the N.C.S.C.E. at the Harrisburg University of Science and Technology that focuses on **undergraduate education** in the fields of science, technology, engineering, and mathematics (STEM).
- **GLISTEN** is a three-year project that is designed to harness the expertise and innovation of college faculty and undergraduate students in 8 states and 2 Canadian provinces to promote stewardship of the Great Lakes.



# GLISTEN Objectives

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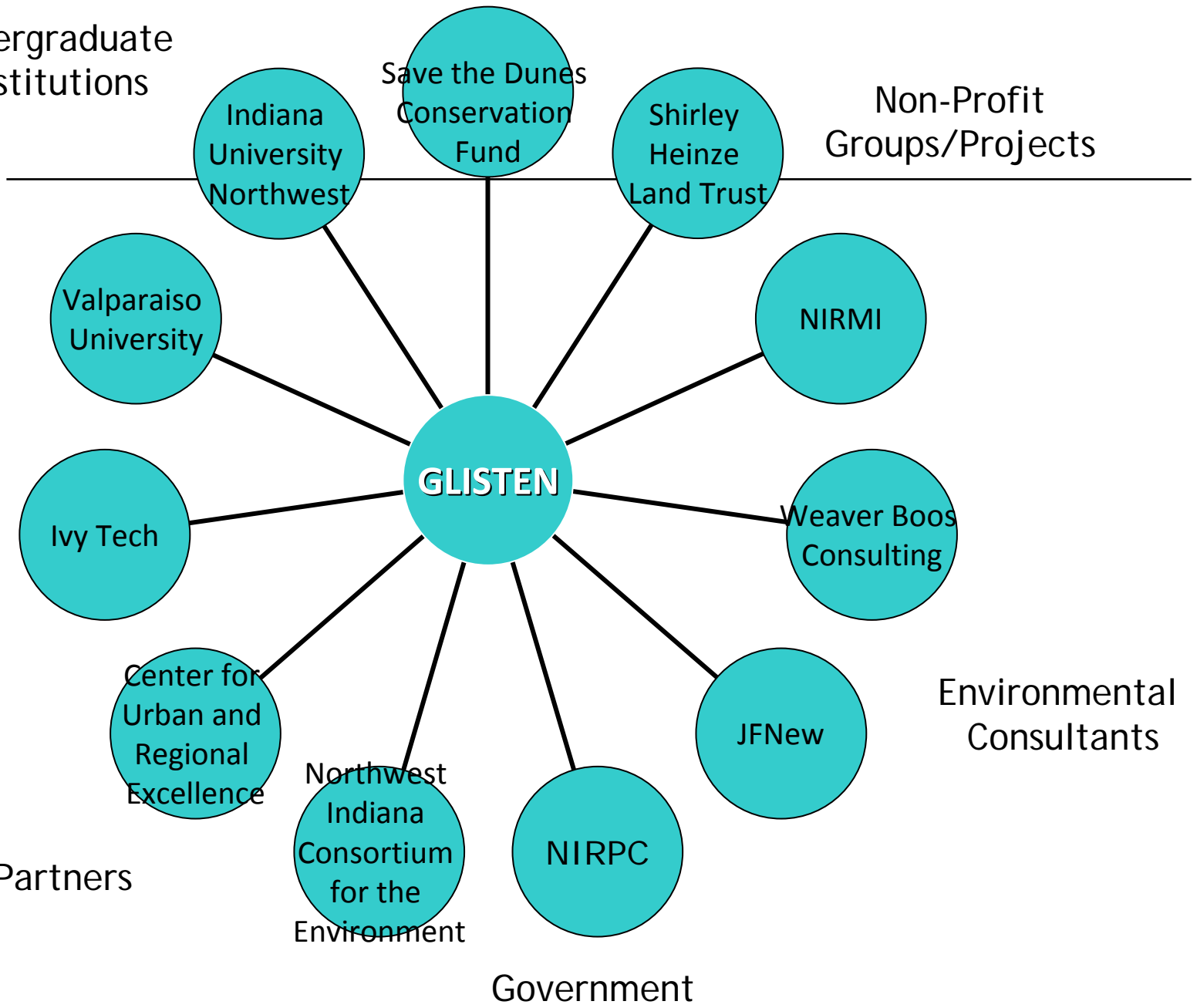




Undergraduate  
Institutions

Save the Dunes  
Conservation  
Fund

Non-Profit  
Groups/Projects



Partners


Environmental  
Consultants

Government

# What are we gaining through institutional collaboration?

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- Cross-institutional collaboration
  - Student interaction
  - Data synthesis, analysis, and comparison
  - Sharing ideas, interests, and expertise between faculty in various disciplines
  - Sharing of equipment and instrumentation
- Questions to be explored:
  - Integrating service-based learning in to courses at both the introductory and advanced levels.
  - Applying service-based learning in small and large enrollment classes



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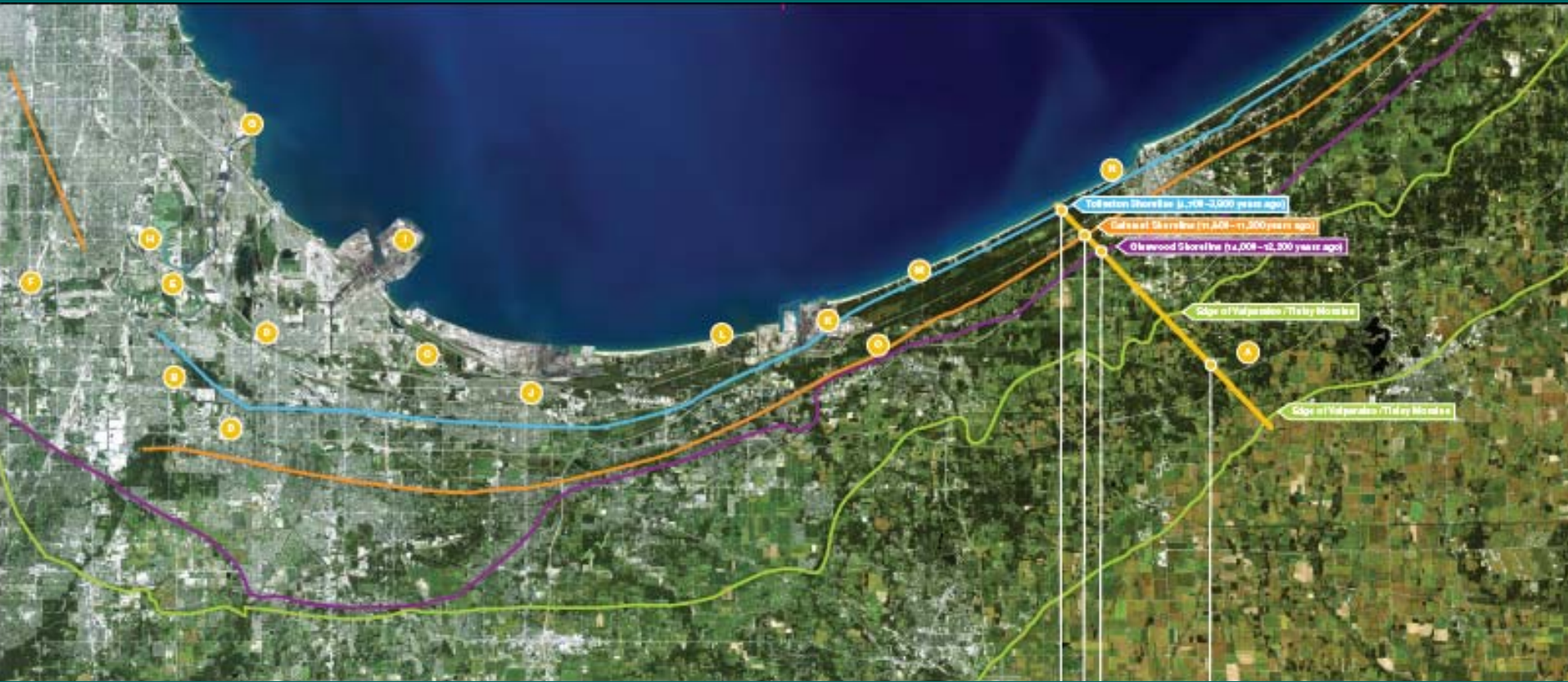
GLISTEN will build the capacity of STEM faculty and departments to . . .

engage students in direct action (i.e., service-learning) and community-based research to benefit resource-strapped governmental and community-based organizations



*Translation* – Through GLISTEN we will work collaboratively to do what we have been doing, but with additional resources





# Curriculum component - Stormwater education example

**Figure ES.1**

## Location of CSO Communities in the Lake Michigan Basin

The shaded area defines the Lake Michigan basin, which includes portions of Indiana, Michigan, Wisconsin, and Illinois. The white circles (○) indicate Lake Michigan CSO communities. The black circle (●) indicates Chicago.



EPA Report to Congress on Combined Sewer Overflows to Lake Michigan

[http://www.epa.gov/npdes/pubs/cso\\_reporttocongress\\_lakemichigan.pdf](http://www.epa.gov/npdes/pubs/cso_reporttocongress_lakemichigan.pdf)

## Water Quality and Stormwater Post-Lecture Questionnaire

**Instructions:** Now that you have learned a bit more about water and water quality, please complete this post survey. Thank you.

Several ways that residents can help reduce pollution of local lakes, rivers and streams (including the Great Lakes) are listed below. Please use the 5-point scale to indicate your willingness to do each of the following using a 5 to indicate “very willing” and a 1 to indicate “against”

		Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post Test
How willing would you be to:		Very willing		Willing		Somewhat willing		Not Willing		Against	
a	Change your car washing practices	23	26	19	25	14	9	4	0	1	0
b	Promptly pick up and dispose of pet waste	24	44	17	11	22	5	3	1	2	0
c	Have your septic tank serviced every 3-5 years	17	27	23	23	26	10	5	0	2	0
d	Sweep grass clippings off paved surfaces back in to yard or disposal site	18	41	15	15	15	6	0	0	0	0
e	Have your soil tested	25	29	30	15	10	18	0	2	1	0
f	Use low-phosphorous or slow-release nitrogen fertilizer on your lawn	30	35	11	19	2	9	5	0	1	0
g	Use environmentally friendly lawn services	17	32	19	21	11	6	3	1	1	0
h	Landscape your yard with native plants	22	32	14	17	8	11	3	2	1	0
i	Change your lawn watering practices (e.g. water at night)	15	32	17	22	35	4	0	0	2	1
j	Dispose of household hazardous wastes, electronic waste, pesticides, and batteries at a community collection day	10	35	14	18	22	8	11	0	3	0
k	Recycle your motor oil or use oil change facility	30	41	21	12	17	8	2	0	1	0

# Primary research topics to be tackled by GLISTEN participants

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## Water Quality/Quantity

- Nutrient content
- Dissolved Oxygen
- pH & temperature
- Macroinvertebrates
- Streamflow/Discharge
- Heavy Metals
- E. coli
- Suspended Solids

## Watershed Analysis/Restoration

- GPS
- Vegetation analysis/inventories
- Invasive species
- Soil parameters
- Carbon studies

(Monitoring + Analysis)

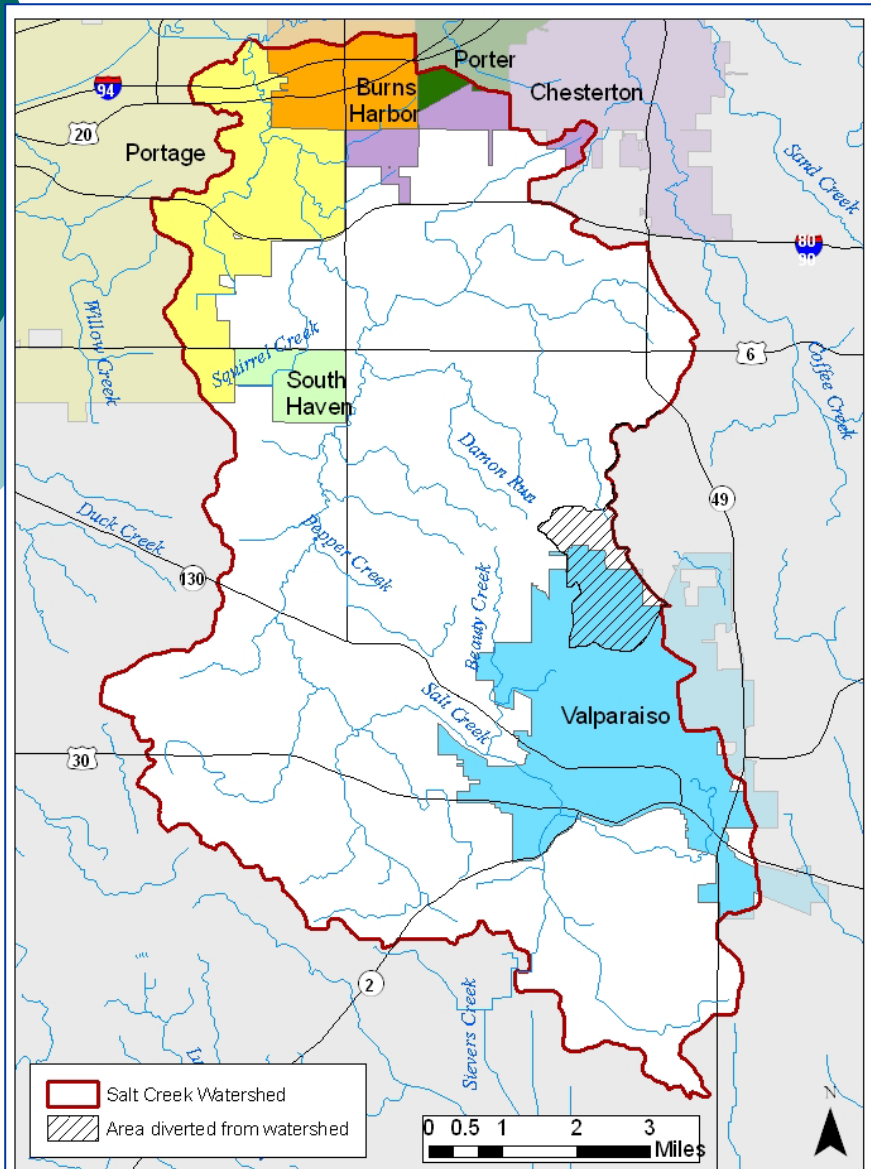


# Save the Dunes

Mission:

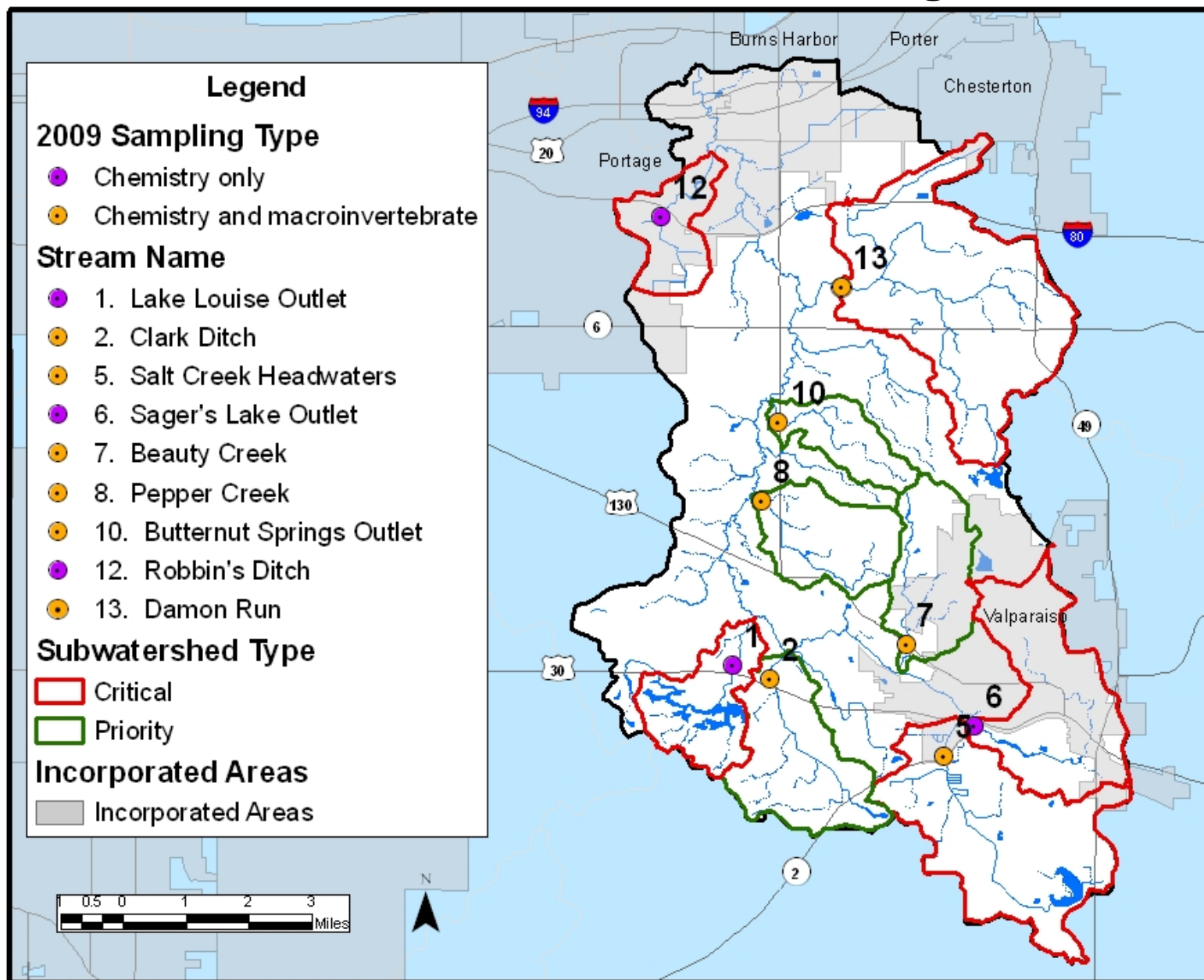
To preserve, protect, and restore the Indiana dunes and all natural resources in Indiana's Lake Michigan watershed for an enhanced quality of life.

# The Salt Creek WMP



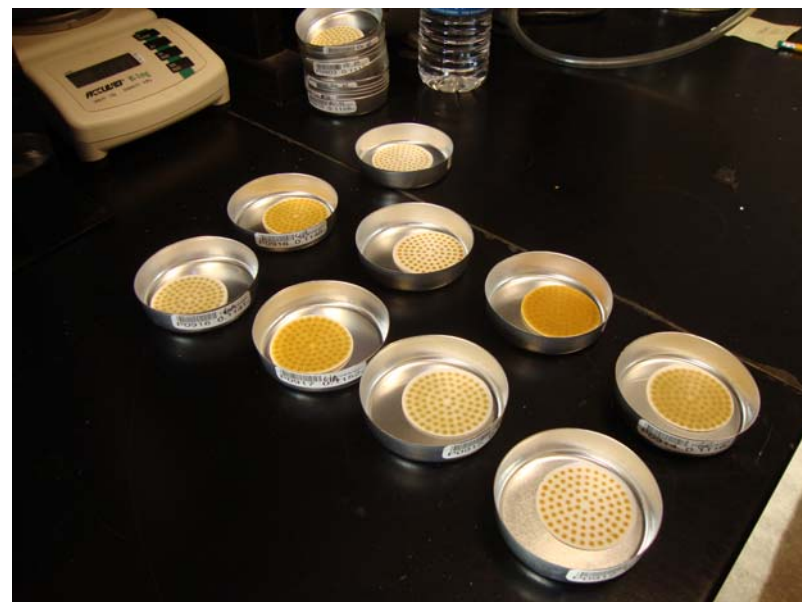
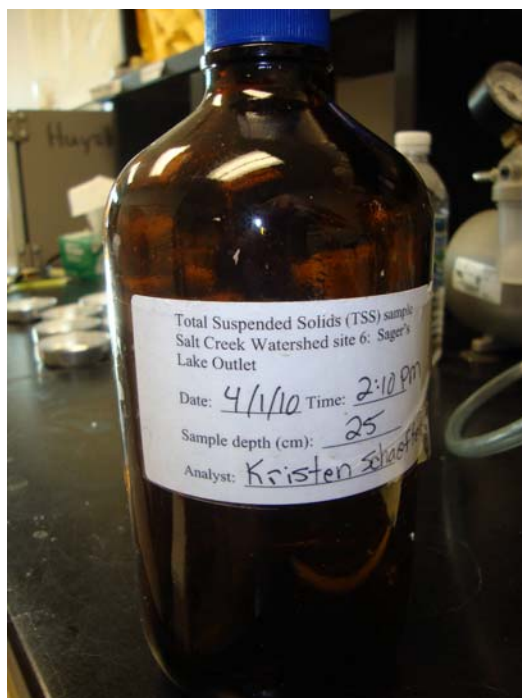
- IDEM-funded plan
- Quarterly meetings
- Gather information
- Water quality testing
- Set goals/activities
- Implementation underway

# Salt Creek Trend Monitoring



# Water Chemistry Monitoring

- Tom Goyne – VU: water chemistry
- Erin Argyilan – IU Northwest: total suspended solids





# Mission

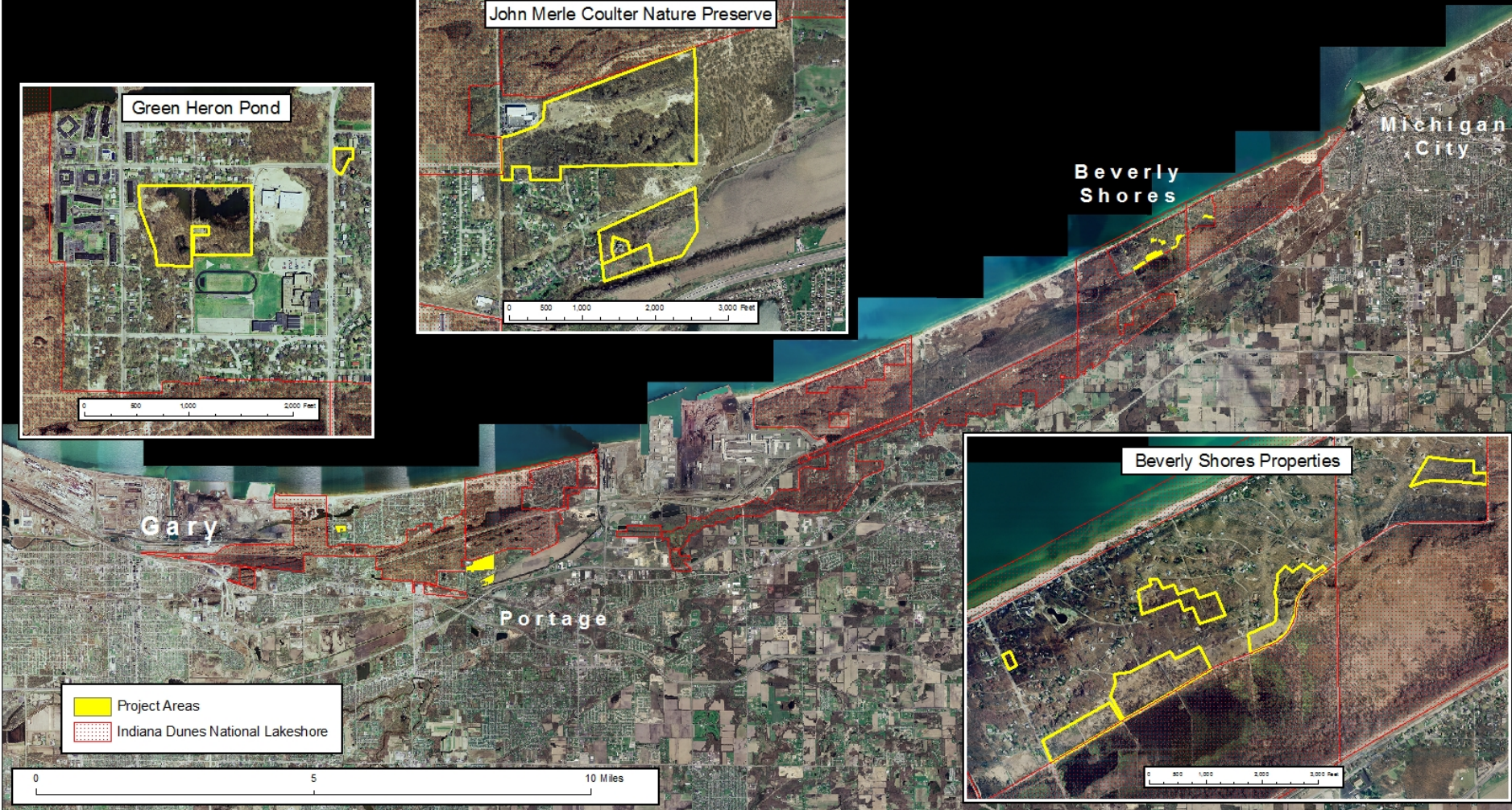
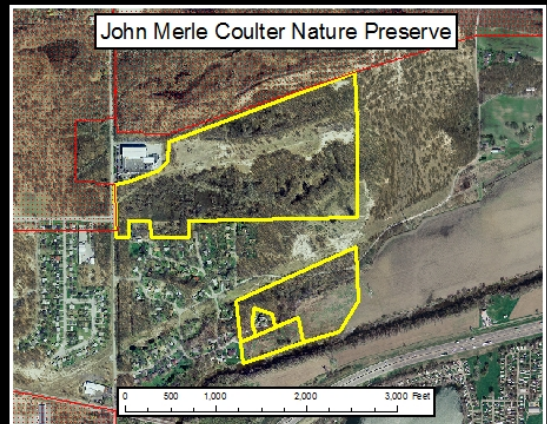
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- To preserve natural areas, educate the public, and promote clean air and water for the people of northwest Indiana

- Land Acquisition
- Education
- Stewardship



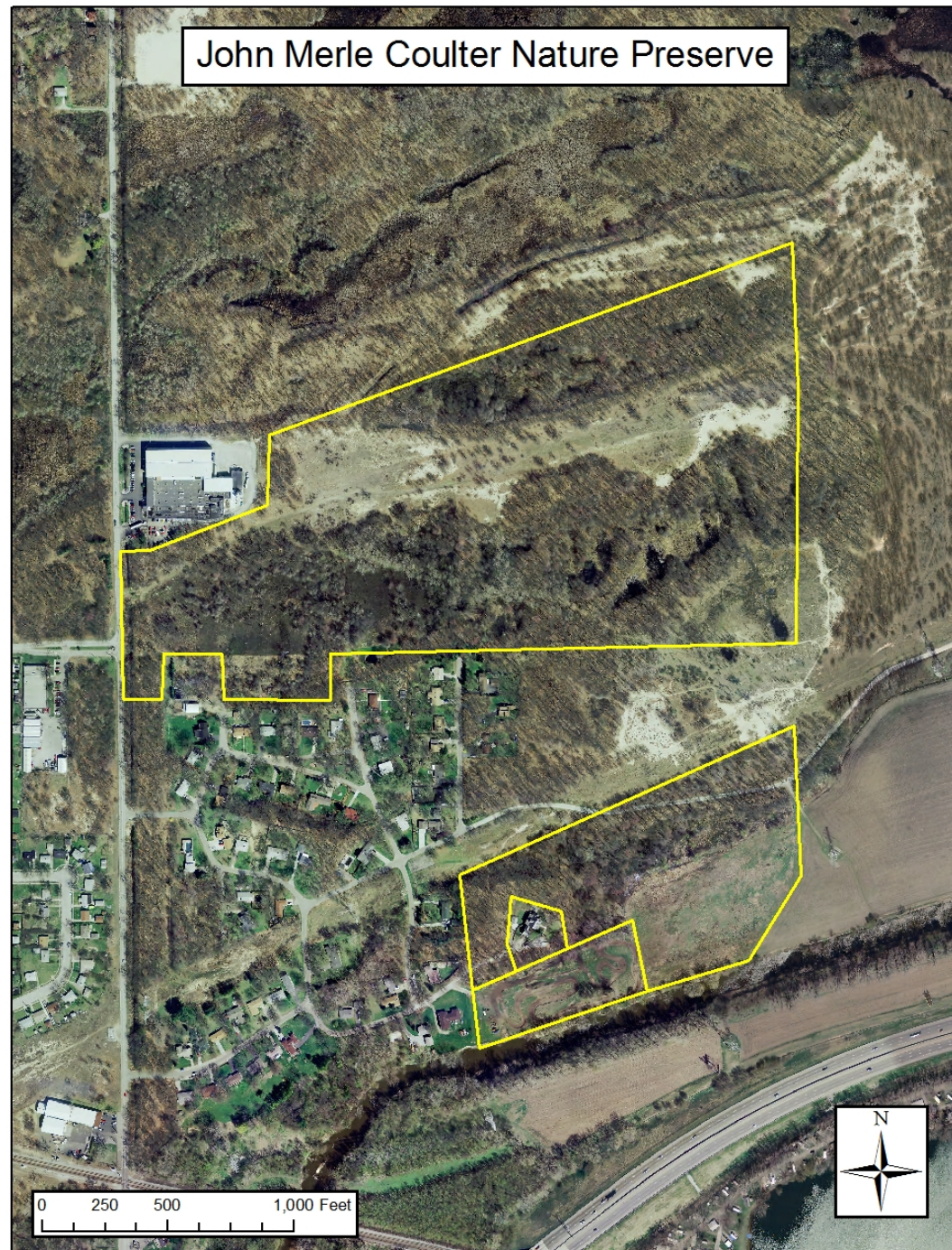
2009 Sustain Our Great Lakes Community Grant  
"Interdunal Wetland Restoration in the Indiana Dunes Region"  
Shirley Heinze Land Trust



 Project Areas  
 Indiana Dunes National Lakeshore



- **Dr. Laurie Eberhardt - VU**
- Implemented in BIO350
- plan spring vegetation monitoring protocols and implement those protocols with students



# Savanna restoration sequence at John Merle Coulter Nature Preserve

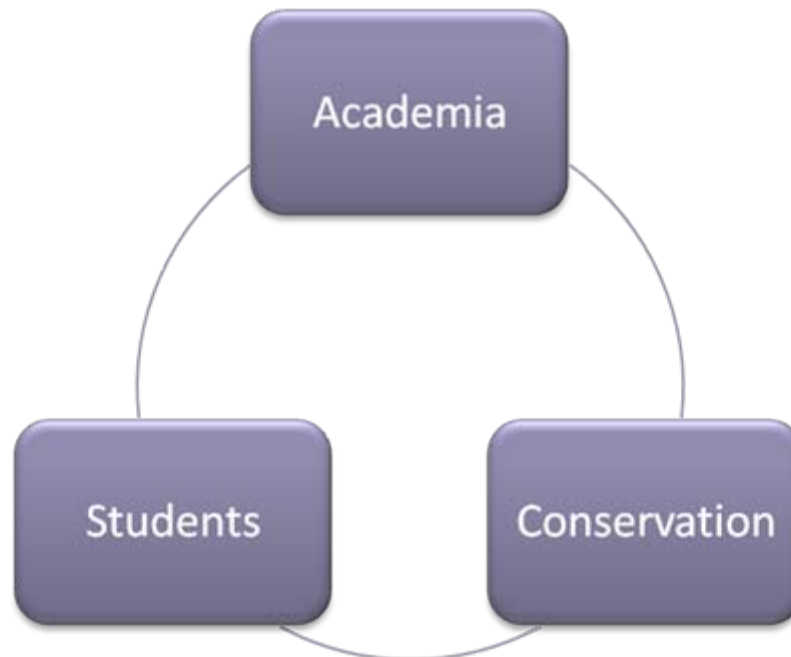


# NIRMI - Northwest Indiana Restoration Monitoring Inventory (Jason Pelagi)

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## Primary Goal

- A sustained system of evaluating species composition in local habitat restoration projects



# NIRMI - Northwest Indiana Restoration Monitoring Inventory (Jason Palagi)

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## Field Data Collected

- Plant Species
- Canopy Cover
- Soil pH
- Soil Moisture
- Soil Horizon Measurements
- 1" diameter soil cores for DNA extraction and nutrient analysis
- Ambient Weather Conditions
- Photographic Documentation

## Soil Nutrient Analysis

- Nitrogen
- Potassium
- Phosphorous
- Magnesium
- Carbon
- %Sand, Silt, Clay



# Timeline and Project Implementation

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- Spring 2010
  - Service-based curriculum development *and* implementation
  - 5 student-stewards are employed for project planning, coordination, and research
- Summer 2010
  - 6 student stewards employed for full-time projects with Shirley Heinze Land Trust, Save the Dunes Conservation Fund, and NIRMI
  - May24-27 – GLISTEN workshop
- Fall 2010
  - Service-based curriculum development *and* implementation
  - 6 student-stewards are employed for project planning, coordination, and research

# Primary topics to be tackled by GLISTEN participants

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- GPS
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What will we do with the data?

- development of sampling and monitoring protocols
- long-term data collection and monitoring
- data analysis and interpretation
- help the development of best management practices





# What will we do with the data?

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- refining sampling and monitoring protocols
- focus on long-term data collection and monitoring for trend analysis
- focus on data analysis and interpretation
- formulate new research questions to guide sampling
- help in the development of best management practices for individual sites and the region



# What is the long-term vision for GLISTEN?

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- Create a program for the advancement of undergraduate education related to the Great Lakes that is based in service-learning
- Attract and retain students in STEM disciplines
- Create alternative career options for students interested in STEM disciplines
- Increase scientific instrumentation and equipment available to collaborative partners
- Coordinate environmental efforts in Northwest Indiana
- Collaborate with proposed research in the region
- Secure additional funding for Great Lakes restoration and research projects in Northwest Indiana

# Public Outreach

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We'll share the interests and work performed by scientists in the region and by undergraduates with the general public to empower citizens to engage more effectively in scientifically-informed stewardship behaviors in northwest Indiana.



the Great Lakes Science Seminar Series held the 3<sup>rd</sup> Thursday of each month at the Northwest Indiana Regional Planning Commission at 7pm.

# Special Thanks To . . . .

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- Glenn Odenbrett – Program Director for GLISTEN at NCSCE, Harrisburg, PA.
- Valparaiso University - Jon Schoer, Laurie Eberhardt, Tom Goyne
- Ivy Tech - R. Keith Howard, Deborah Halik, Louis Fadel, Laura Rosillo
- Indiana University Northwest - Pete Avis, Spencer Cortwright, Jason Palagi
- Northwest Indiana Consortium for the Environment (NICE)
- CRE – Deborah Thomas & Victoria Brockett
- Center for Excellence in Teaching and Learning – IU Northwest
- Save the Dunes
- Shirley Heinze Land Trust
- Weaver Boos Consulting (Eric Neagu)
- JFNew (Steve Barker)
- Amy O’Hair – IU Bloomington