



Indiana Conservation Partnership

2013 Conservation Workload and Region 5 Model Load Reduction Report

December 11, 2014

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Indiana Conservation Partnership:



[Indiana Association of Soil and Water Conservation Districts and our 92 SWCDs](#)



[Indiana Department of Environmental Management](#)



[Indiana Department of Natural Resources](#)



[ISDA Division of Soil Conservation](#)



[Purdue Cooperative Extension Service](#)



[State Soil Conservation Board](#)



[USDA Farm Service Agency](#)



[USDA Natural Resources Conservation Service](#)

Introduction:

The Indiana Conservation Partnership is comprised of eight Indiana agencies and organizations who share a common goal of promoting conservation. To that end, the mission of the Indiana Conservation Partnership is to provide technical, financial and educational assistance needed to implement economically and environmentally compatible land and water stewardship decisions, practices and technologies.

In 2013, members of the Indiana Conservation Partnership (ICP) began using the Environmental Protection Agency's (EPA) Region 5 Nutrient Load Reduction model to determine the impact of installed conservation practices implemented by the ICP Conservation Implementation Teams on Indiana's water quality. The ICP adopted the Region 5 Nutrient Load Reduction model to analyze conservation practices funded by state programs such as the Indiana State Department of Agriculture's Clean Water Indiana Program and the Indiana Department of Natural Resources' Lake and River Enhancement Program, as well as federally funded programs including EPA's Section-319 Program and USDA's Farm Bill Program.

For calendar year 2013, the ICP Conservation Implementation Teams installed 30,775 conservation practices. A total of 15,322 of those practices could be analyzed using the Region 5 Nutrient Load Reduction Model, which estimated annual reductions of sediment, as well as nitrogen and phosphorus tied to sediment erosion (brown, green and blue maps, respectively). These reductions continue for the life of the practices modeled (e.g., grassed waterways are designed to be 10-year practices, while cover crops are 1-year practices, established annually). Reductions in dissolved nutrients, such as dissolved reactive phosphorus (DRP) and nitrate (NO₃), are not accounted for by the Region 5 Model. The remaining ICP practices were not modeled because they were not associated with sediment loss or were not covered by the EPA Region 5 Model. This effort represents ICP-assisted conservation in Indiana.

Indiana is the only state in the country to adopt a model among so many partners to estimate conservation impact on a statewide scale. As part of Indiana's Nutrient Reduction Strategy, this modeling effort illustrates the continued success and challenges of conservation and serves as a tool to help set watershed priority and reduction targets, manage conservation resources, and to further stakeholder involvement at all levels of government within and across Indiana.

Methodology:

The Indiana State Department of Agriculture's (ISDA) use of the EPA Region 5 load reduction model to estimate Nutrient and Sediment load reductions in Indiana is part of a collective effort by the Indiana Conservation Partnership (ICP) <http://iaswcd.org/icp/> to generate a comprehensive statewide picture of voluntary conservation impact across the state. Cooperation in this effort by local, state and federal partners in the ICP allows for conservation tracking and load reduction estimation at an order of magnitude greater than any single agency or entity could achieve alone. The ICP utilizes the end products of this process to establish baselines and measure load reduction trends by watershed for each calendar year, allowing for prioritization of workload and staffing needs, all while serving as a tangible component of the Indiana Nutrient Reduction Strategy.

The collection of practice data for the model is the first step in this effort. Several members of the ICP participate on this front end, which makes the Division of Soil Conservation's (hereafter referred to as the Division) use of the model and subsequent mapping possible. Practice information from several sources is consolidated by our Accountability and Technology Program Manager and then run through the model by Division field staff¹. These data include Clean Water Indiana and CREP conservation tracking data in Microsoft SharePoint (ISDA, Soil and Water Conservation Districts), practice data from Farm Bill programs (NRCS/FSA), practice data from EPA-319 funded projects (IDEM) and practice data from the Lake and River Enhancement program (IDNR).² It should be noted that data not related to the Region 5 model is also consolidated in this way, though it is instead published in reports online.³ These include tillage transect data and ICP financial reports. For utilizing the Region 5 model, practice data from ICP partners is collated into an Annual ICP Conservation Workload datasheet, which included Best Management Practice (BMP) types, practice locations, measurements and other necessary attributes to enter into the Region 5 model. Practice data are then divided up by county and assigned to Division staff (4-6 assigned counties each).⁴ By distributing workload on a county basis, practice data can be run through the model by Division staff on a manageable timeline. All practices within a given calendar year are modeled with maps and reports generated in March of the following year.

As practice reduction estimates are completed in the model by Division staff, the nitrogen, phosphorus and sediment load reduction numbers are entered back into the Annual ICP Conservation Workload datasheet.⁵ Once completed, the Accountability and Technology Program Manager lays over watershed or county layers in GIS with

¹ All Division staff are trained to use the Region 5 Model with initial instruction of the Model as well as refresher training and Q&A. A training webinar has been completed for new and existing users of the model, which illustrates examples and explains the equations behind the model's function(s). The Division of Soil Conservation Team Leaders also developed a guidance document for the Region 5 Model, which serves to maintain consistency in the Model's use and to reduce and avoid human error where possible. The guidance document includes specific practice notes and comments, and includes a tab to assist with the "coverage factor" in the model.

²This data collection process is represented with the green boxes at the top of the ICP Workload Accountability Data flow chart.

³ Represented in the yellow rectangular boxes in the Workload Accountability flow chart. These are published on ISDA and ICP websites (small purple rectangle, lower left quadrant of the Workload Accountability flow chart).

⁴ Represented in the two small orange circles on the Workload Accountability flow chart.

⁵ Represented in the two small orange circles on the Workload Accountability flow chart.

practice locations and their respective nutrient and sediment reductions. In this way, a cumulative picture of conservation impact is created at watershed scales.⁶ Value ranges are assigned for load reduction to illustrate the load reductions across the state by watershed at the HUC-8 level.

Conclusion:

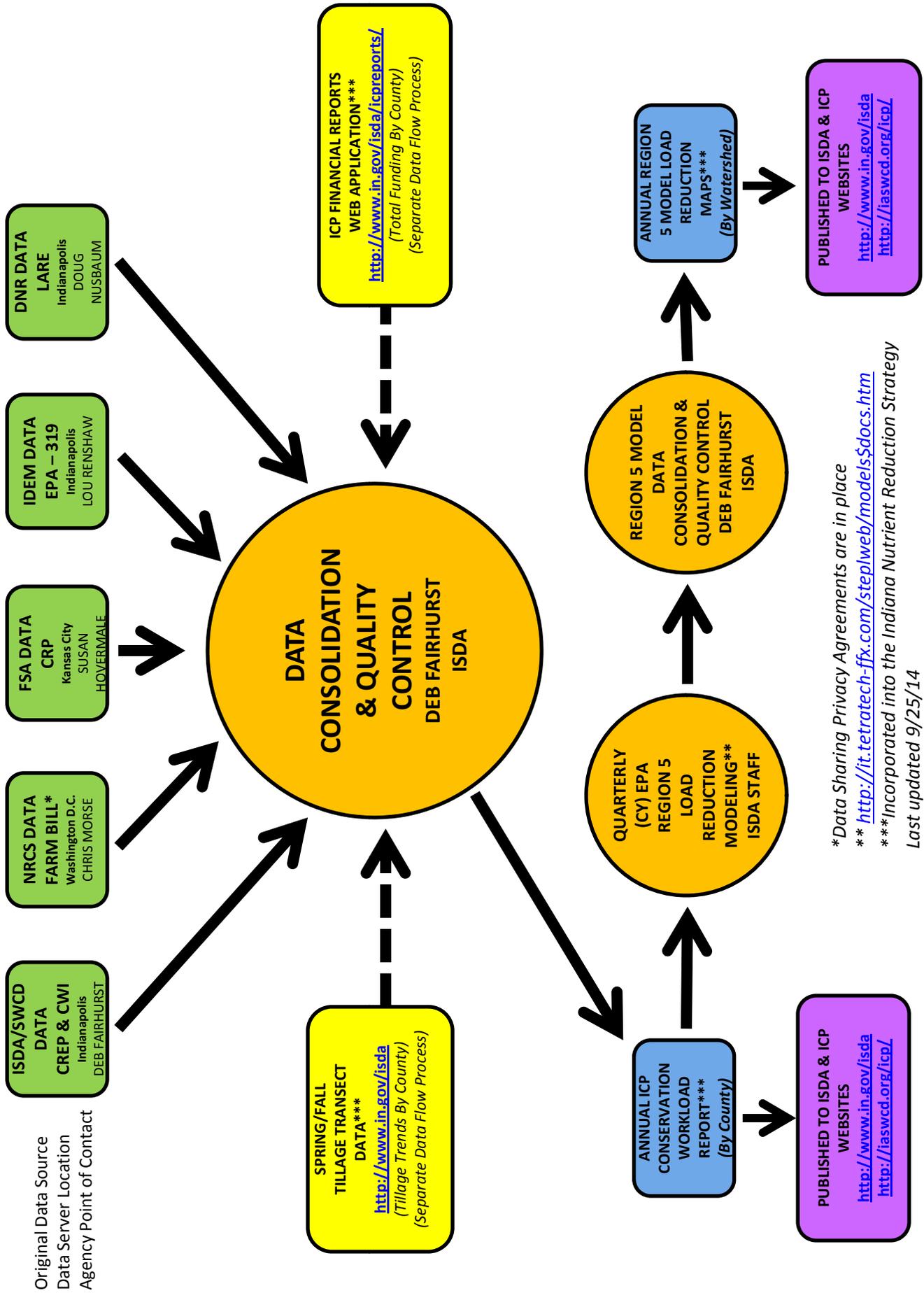
The primary value in partnership adoption of the EPA Region 5 model lies in benchmarking conservation impact and management of conservation resources across the state. As an additional result, the Indiana State Department of Agriculture has tied Key Performance Indicators and conservation goals to the Indiana State Office of Management and Budget. Use of the model for tracking impacts and goals has also had an internal benefit for ISDA; an atmosphere of healthy competition has arisen amongst field staff, who are eager to show positive water quality and sedimentation impacts in their respective watersheds. On a larger scale, The Indiana Conservation Partnership utilizes this model to set program/project goals, quantify impacts and estimate load reductions before a project ever begins.

Future plans include the addition of visual impacts of load reductions. For example, how many dump trucks of sediment were kept out of Indiana's waterways. Another goal is to place a dollar value on the amount of nitrogen and phosphorus kept on the land based on values provided by ongoing Water Quality Trading Projects and fertilizer costs. In addition, USEPA (Region 5) is currently updating the model to include fifteen more Best Management Practices (BMPs) as well as a water quantity component. In the future, estimates of water volumes kept on the landscape from various practices would help to assess and manage water quantity conservation efforts at county and watershed scales, both in times of drought and flooding. As these components of the model become available, ISDA and its partners intend to utilize them to their fullest possible potential within the partnership.

The Indiana Conservation Partnership plans to continue utilizing the Region 5 Model and methodology for future years to come. The partners encourage other organizations to share their data as well. With the goal to assemble similar reports in March of each year.

⁶ Represented in the small blue rectangle in the lower right quadrant of the Workload Accountability flow chart.

Indiana Conservation Partnership Annual (CY) Workload Accountability Data Flow



*Data Sharing Privacy Agreements are in place
 ** <http://it.tetrattech-ffx.com/step/web/models/docs.htm>
 *** Incorporated into the Indiana Nutrient Reduction Strategy
 Last updated 9/25/14

COUNTY	AWEP	CREP	CRP	CSP	CWI	EQIP	IDEM	LARE	OFN	OTHER	WHIP	WRP	TOTAL
ADAMS	12	0	75	272	0	666	19	0	21	0	1	61	1,127
ALLEN	0	0	7	48	0	437	3	0	45	0	73	6	619
BARTHOLOMEW	0	0	15	9	0	137	17	0	11	0	3	0	192
BENTON	0	0	13	3	6	396	0	0	6	0	6	1	431
BLACKFORD	0	0	0	0	0	64	1	0	1	0	0	0	66
BOONE	0	0	13	0	0	73	0	2	4	1	11	0	104
BROWN	0	0	0	0	0	82	0	0	0	0	9	0	91
CARROLL	0	0	0	0	1	448	0	0	15	0	7	0	471
CASS	0	0	120	0	0	183	0	0	11	0	8	0	322
CLARK	0	0	0	0	5	114	27	0	0	0	0	0	146
CLAY	0	0	80	0	19	270	0	0	2	0	97	0	468
CLINTON	0	0	89	0	1	298	4	0	29	0	10	0	431
CRAWFORD	0	0	0	0	0	122	0	0	0	0	0	0	122
DAVISS	0	0	0	33	0	542	0	0	6	4	54	0	639
DEARBORN	0	0	3	0	11	142	36	0	1	6	14	0	213
DECATUR	0	0	69	20	0	254	0	0	12	0	9	0	364
DEKALB	0	0	0	6	32	387	12	0	6	0	3	0	446
DELAWARE	0	0	0	0	0	50	0	0	24	0	1	0	75
DUBOIS	0	0	9	0	1	297	0	0	17	2	19	0	345
ELKHART	354	0	5	60	0	77	0	0	0	0	0	6	502
FAYETTE	0	0	0	0	0	173	0	0	0	0	1	0	174
FLOYD	0	0	0	0	0	20	0	0	0	0	0	0	20
FOUNTAIN	0	0	196	60	14	90	1	0	3	0	4	0	368
FRANKLIN	0	0	14	0	0	147	0	0	0	0	0	0	161
FULTON	0	1	8	51	53	50	0	0	0	6	1	0	170
GIBSON	0	3	0	3	0	239	0	3	15	0	7	0	270
GRANT	0	0	0	2	0	119	0	0	0	0	2	0	123
GREENE	0	0	2	462	0	334	1	0	5	0	101	10	915
HAMILTON	0	0	5	0	0	98	6	0	19	36	1	0	165
HANCOCK	0	0	2	20	0	27	1	0	0	0	0	0	50
HARRISON	0	0	0	0	0	350	0	0	0	0	0	0	350
HENDRICKS	0	0	34	88	0	123	0	0	3	0	5	0	253
HENRY	0	0	10	0	0	185	0	0	3	0	0	1	199
HOWARD	0	0	41	0	1	158	0	0	18	0	2	0	220
HUNTINGTON	0	9	1	0	0	397	0	0	0	0	19	2	428
JACKSON	0	0	0	18	0	270	0	0	0	0	18	17	323
JASPER	0	0	0	0	31	31	1	0	36	36	0	4	139
JAY	0	0	5	0	0	156	0	0	1	0	0	0	162
JEFFERSON	0	0	6	0	28	277	23	0	0	0	6	4	344
JENNINGS	0	0	1	0	19	161	2	0	10	0	1	0	194
JOHNSON	0	0	69	129	3	37	0	0	0	0	0	0	238
KNOX	0	0	1	30	0	582	0	0	5	4	127	0	749
KOSCIUSKO	28	3	3	2	10	879	16	0	25	0	160	0	1,126
LAGRANGE	461	0	0	2	3	287	10	0	0	0	16	0	779
LAKE	0	0	22	0	12	38	0	0	0	16	0	0	88
LAPORTE	26	0	26	0	0	129	0	0	1	0	0	32	214
LAWRENCE	0	1	4	0	9	206	0	0	0	0	143	0	363
MADISON	0	0	0	1	2	59	4	0	26	0	0	0	92
MARION	0	0	0	22	0	20	4	0	0	1	4	0	51
MARSHALL	0	0	0	20	0	88	0	0	0	0	4	0	112
MARTIN	0	0	0	6	18	239	0	0	0	0	25	0	288
MIAMI	0	0	100	0	1	421	4	0	1	0	19	0	546
MONROE	0	0	5	0	0	155	0	0	0	0	5	0	165
MONTGOMERY	0	0	60	0	0	90	0	0	0	0	22	0	172
MORGAN	0	0	17	88	1	48	0	0	0	0	0	9	163
NEWTON	0	0	6	0	29	27	1	0	0	4	0	7	74
NOBLE	423	0	172	772	0	606	5	0	0	0	154	4	2,136
OHIO	0	0	0	0	7	14	4	0	0	2	2	0	29

ORANGE	0	0	1	0	0	282	0	0	0	0	32	0	315
OWEN	0	0	5	127	0	45	0	0	0	0	68	0	245
PARKE	0	1	47	214	13	132	0	0	29	0	9	0	445
PERRY	0	0	50	0	0	159	0	0	0	0	56	0	265
PIKE	0	0	1	0	22	161	16	0	0	0	29	0	229
PORTER	0	0	34	0	5	143	0	0	4	6	17	9	218
POSEY	2	2	0	0	1	163	0	0	17	0	45	20	250
PULASKI	0	0	51	0	84	45	0	0	28	0	0	7	215
PUTNAM	3	0	128	128	0	61	0	0	35	3	13	0	371
RANDOLPH	0	0	131	105	0	226	0	0	7	0	0	0	469
RIPLEY	0	0	101	0	0	560	18	0	1	5	0	0	685
RUSH	0	0	8	168	0	58	0	0	0	0	0	0	234
SCOTT	0	0	32	0	16	18	0	0	0	0	7	3	76
SHELBY	0	0	0	11	0	32	0	0	1	1	0	0	45
SPENCER	0	0	21	0	3	350	0	0	1	4	34	0	413
ST JOSEPH	10	0	20	57	0	86	0	0	0	2	0	4	179
STARKE	0	1	18	0	0	71	0	0	0	0	0	24	114
STEUBEN	111	0	0	0	9	22	0	17	7	3	2	0	171
SULLIVAN	0	2	1	15	0	212	41	0	10	0	41	0	322
SWITZERLAND	0	0	33	0	5	65	12	0	0	5	40	0	160
TIPPECANOE	0	0	56	0	0	164	21	0	6	4	34	3	288
TIPTON	1	1	0	0	1	45	0	0	21	0	3	0	72
UNION	0	0	0	0	0	23	0	0	0	0	1	0	24
VANDEBURGH	0	1	0	0	0	374	0	0	9	0	0	0	384
VERMILLION	0	1	16	70	13	35	0	0	44	0	5	0	184
VIGO	0	0	80	3	0	48	2	0	2	0	54	7	196
WABASH	0	5	139	1	133	899	6	0	2	0	14	0	1,199
WARREN	0	0	23	0	0	114	1	0	2	0	6	7	153
WARRICK	0	0	9	0	0	816	0	0	10	0	20	0	855
WASHINGTON	0	2	148	0	6	530	0	0	0	0	17	0	703
WAYNE	0	0	44	0	0	134	0	0	0	0	10	0	188
WELLS	0	2	109	12	0	602	0	0	4	0	8	0	737
WHITE	0	0	6	15	14	88	1	0	0	0	0	0	124
WHITLEY	0	0	33	6	0	518	19	0	21	0	63	0	660
TOTAL	1,431	35	2,653	3,159	642	19,650	339	22	643	151	1,802	248	30,775

Indiana Conservation Partnership Initiatives – Program Descriptions

AWEP – [Agricultural Water Enhancement Program](#) - The USDA Agricultural Water Enhancement Program (AWEP) is a voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land for the purposes of conserving surface and ground water and improving water quality.

CREP – [Conservation Reserve Enhancement Program](#) - The Conservation Reserve Enhancement Program (CREP) is a federal-state natural resources conservation program that addresses agricultural-related environmental concerns at the state and national level. CREP participants receive financial incentives to voluntarily enroll in the Conservation Reserve Program (CRP) in contracts of 14 to 15 years. Participants remove cropland from agricultural production and convert the land to native grasses, trees and other vegetation.

CRP - The [Conservation Reserve Program](#) is a land conservation program administered by the Farm Service Agency (FSA). In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat.

CSP - [The Conservation Stewardship Program](#) is a voluntary program that encourages agricultural producers to improve conservation systems by improving, maintaining, and managing existing conservation activities and undertaking additional conservation activities. The Natural Resources Conservation Service administers this program and provides financial and technical assistance to eligible producers.

CWI – [Clean Water Indiana Program](#) - The Clean Water Indiana (CWI) Program was established to provide financial assistance to landowners and conservation groups. The financial assistance supports the implementation of conservation practices which will reduce nonpoint sources of water pollution through education, technical assistance, training, and cost sharing programs. The CWI fund is administered by the Division of Soil Conservation under the direction of the State Soil Conservation Board.

EQIP - [The Environmental Quality Incentives Program](#) is a voluntary conservation program that helps agricultural producers in a manner that promotes agricultural production and environmental quality as compatible goals. Through EQIP, farmers and ranchers receive financial and technical assistance to implement structural and management conservation practices that optimize environmental benefits on working agricultural land.

IDEM Section 205j- The federal [Clean Water Act Section 205\(j\)](#) provides funding for water quality management planning. Funds are to be used to determine the nature, extent and causes of point and nonpoint source pollution problems and to develop plans to resolve these problems.

IDEM Section 319- The 1987 amendments to the Clean Water Act (CWA) established the [Section 319 Nonpoint Source Management Program](#). Section 319 addresses the need for greater federal leadership to help focus state and local nonpoint source efforts. Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects.

LARE – [Lake and River Enhancement Program](#) - The goal of the Division of Fish and Wildlife's Lake and River Enhancement Section is to protect and enhance aquatic habitat for fish and wildlife, to insure the continued viability of Indiana's publicly accessible lakes and streams for multiple uses, including recreational opportunities. This is accomplished through measures that reduce non-point sediment and nutrient pollution of surface waters to a level that meets or surpasses state water quality standards.

OFN - The [Indiana On-Farm Network](#)[®] is a group of crop producers interested in economics, stewardship, and reducing their environmental footprint. The goal of the Indiana On-Farm Network[®] is to advance two critical components to driving improved farm-level performance:

1) access to and education on the use of effective, affordable tools and strategies to assess and verify on-farm environmental and economic performance and

2) coordination of data collection, analysis, and feedback to farmers using these tools at the individual farm level and in aggregate across multiple farms in a geographic region.

WHIP - The [Wildlife Habitat Incentive Program](#) is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. Through WHIP USDA's Natural Resources Conservation Service provides both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat. WHIP agreements between NRCS and the participant generally last from 5 to 10 years from the date the agreement is signed.

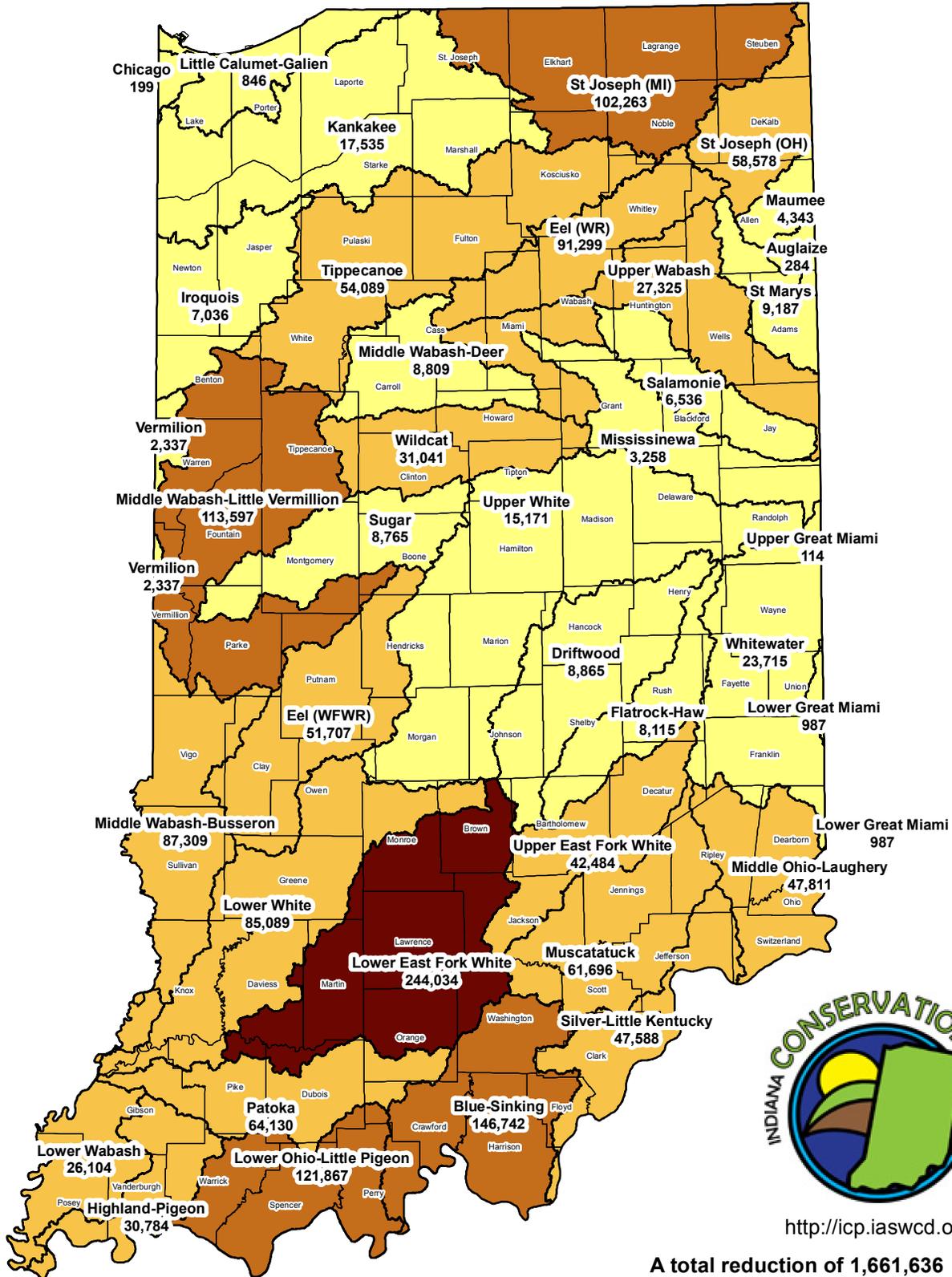
WRP - The [Wetlands Reserve Program](#) is the Nation's premier wetlands restoration program. It is a voluntary program that offers landowners the means and the opportunity to protect, restore, and enhance wetlands on their property. The USDA Natural Resources Conservation Service (NRCS) manages the program as well as provides technical and financial support to help landowners that participate in WRP.

Indiana Conservation Partnership Websites:

[Indiana Conservation Partnership](#) - The Partnership is comprised of eight Indiana agencies and organizations who share a common goal of promoting conservation. To that end, the mission of the Indiana Conservation Partnership is to provide technical, financial and educational assistance needed to implement economically and environmentally compatible land and water stewardship decisions, practices and technologies.

[Indiana Conservation Partnership Reports](#) - Here you can find statewide and county level information on conservation investments made with local, state and federal funding. You can view funding levels, funding specific programs and counties, and county level success stories for Soil and Water Conservation Districts. The statewide information page and each county page can be printed as a pdf document.

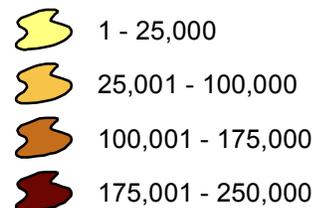
2013 Nutrient Load Reductions Sediment



<http://icp.iaswcd.org/>

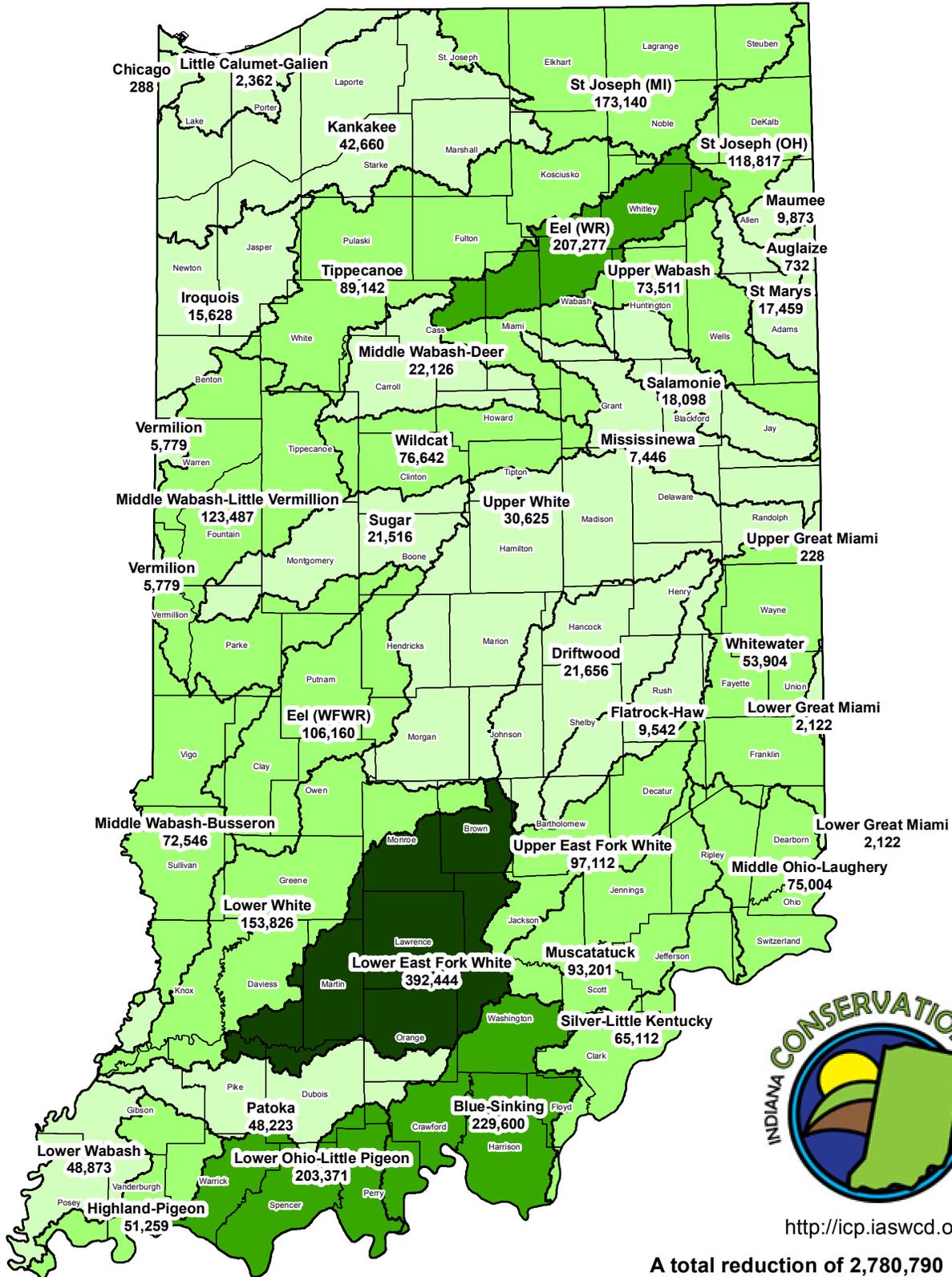
A total reduction of 1,661,636 tons of sediment statewide.

Sediment Reduction (tons/year)



Based on Region 5 Model analyses conducted on 15,332 conservation practices installed by the Indiana Conservation Partnership January 2013 thru December 2013.

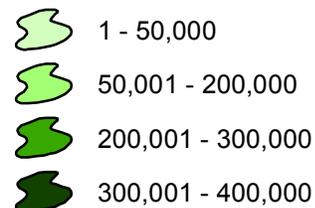
2013 Nutrient Load Reductions Nitrogen



<http://icp.iaswcd.org/>

A total reduction of 2,780,790 pounds of nitrogen statewide.

Nitrogen Reduction (lbs./year)

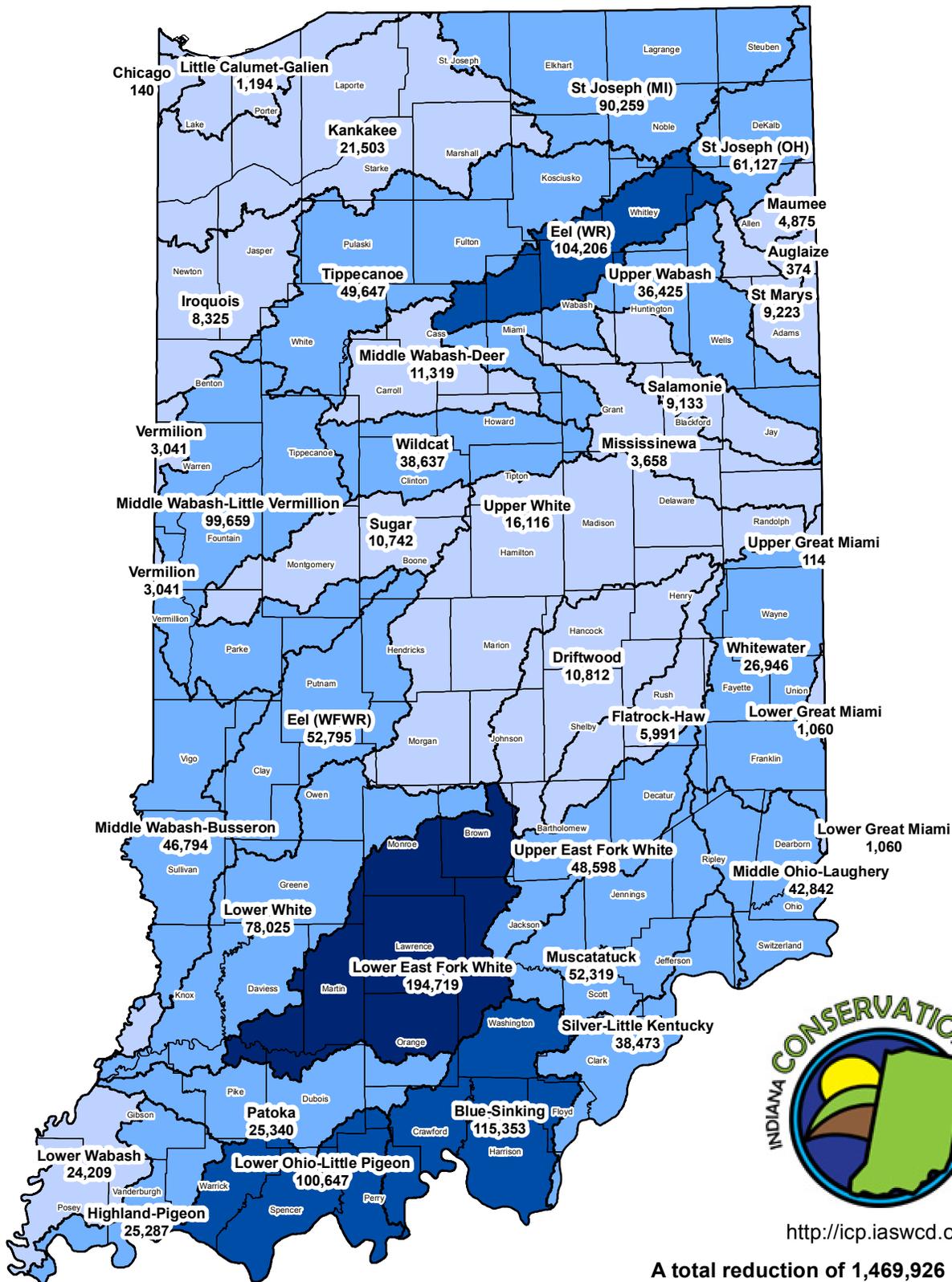


Based on Region 5 Model analyses conducted on 15,332 conservation practices installed by the Indiana Conservation Partnership January 2013 thru December 2013.

Reductions in dissolved nutrients, such as dissolved reactive phosphorus (DRP) and nitrate (NO₃), are not accounted for by the Region 5 Model.

December 8, 2014
Deb Fairhurst, ISDA Program Manager

2013 Nutrient Load Reductions Phosphorus



<http://icp.iaswcd.org/>

A total reduction of 1,469,926 pounds of phosphorus statewide.

Phosphorus Reduction (lbs./year)

-  1 - 25,000
-  25,001 - 100,000
-  100,001 - 175,000
-  175,001 - 250,000

Based on Region 5 Model analyses conducted on 15,332 conservation practices installed by the Indiana Conservation Partnership January 2013 thru December 2013.

Reductions in dissolved nutrients, such as dissolved reactive phosphorus (DRP) and nitrate (NO3), are not accounted for by the Region 5 Model.

December 8, 2014
Deb Fairhurst, ISDA Program Manager