

US EPA ARCHIVE DOCUMENT



Using Interactive GIS to Plan Nutrient Reductions
and Track Implementation

Resource Management Mapping Service
(RMMS)

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Agency

Resource Management Mapping Service (RMMS)

The Illinois Environmental Protection Agency (Illinois EPA) uses the Resource Management Mapping Service to help plan nutrient load reductions and to track the implementation of best management practices (BMPs) and the pollutant load reductions estimated for those BMPs.

The Resource Management Mapping Service, or RMMS, is maintained by the University of Illinois with support from the Illinois EPA and other state agencies.

The website is located at <http://www.rmms.illinois.edu>.

The screenshot displays the Resource Management Mapping Service (RMMS) web application. The browser title bar reads "Resource Management Mapping Service". The main header features the service name and logos for the Environmental Protection Agency, Illinois State, and the University of Illinois. A navigation menu includes links for "Intro", "Load/Save", "Help", "Bookmark site", "What's new", "Project History", and "Edit Forms". Below this, a secondary menu lists map layers: "Base Layers", "Resource Protection Layers", "Resource Layers", "Administrative Layers", "Transportation Layers", "Other Layers", and "Turn On/Off Labels". A toolbar with various icons is visible, with the "Go To" icon (a magnifying glass with a location pin) highlighted by a red box. The main map area shows a white outline of Illinois divided into county boundaries. A scale bar at the bottom indicates distances from 0 to 296 miles, with a map scale of 1:6310293. The status bar at the bottom shows coordinates (lat/long: 40.91269, -90.06764) and map image details (Map: 2530615.9142, 5494857.03815 / Image: 204, 106).

Resource Management Mapping Service

Resource Management Mapping Service




ENVIRONMENTAL PROTECTION AGENCY ILLINOIS STATE UNIVERSITY OF ILLINOIS

Intro Load/Save Help Bookmark site What's new Project History Edit Forms

Base Layers Resource Protection Layers Resource Layers Administrative Layers Transportation Layers Other Layers Turn On/Off Labels

Welcome to the Resource Management Mapping Service.
Users can quickly locate, create, and print maps of large and small areas within Illinois. Numerous map layers may be added to the base map to give a better idea of a specific location's resources and other important attributes.

Getting Started
Locating an area. Select one of the following:

1. Click the Go To icon  in the tool bar and select a Go-To method that zooms you to the general area. You can use this method to quickly zoom to a location centered at a county, a town, a PLSS legal description (Public Land Survey Sections), a zip code or a Latitude-Longitude. Then use the Zoom tool  to move in closer. Selecting any of these methods will automatically turn on viewing the DOQs (Digital Orthophoto Quarter), the PLSS sections and roads/streets, though you may not see them on the map until you zoom in closer.
2. Use the Zoom tool  on the map tool bar. Draw a rectangle (left click and drag) over the area you want to see.

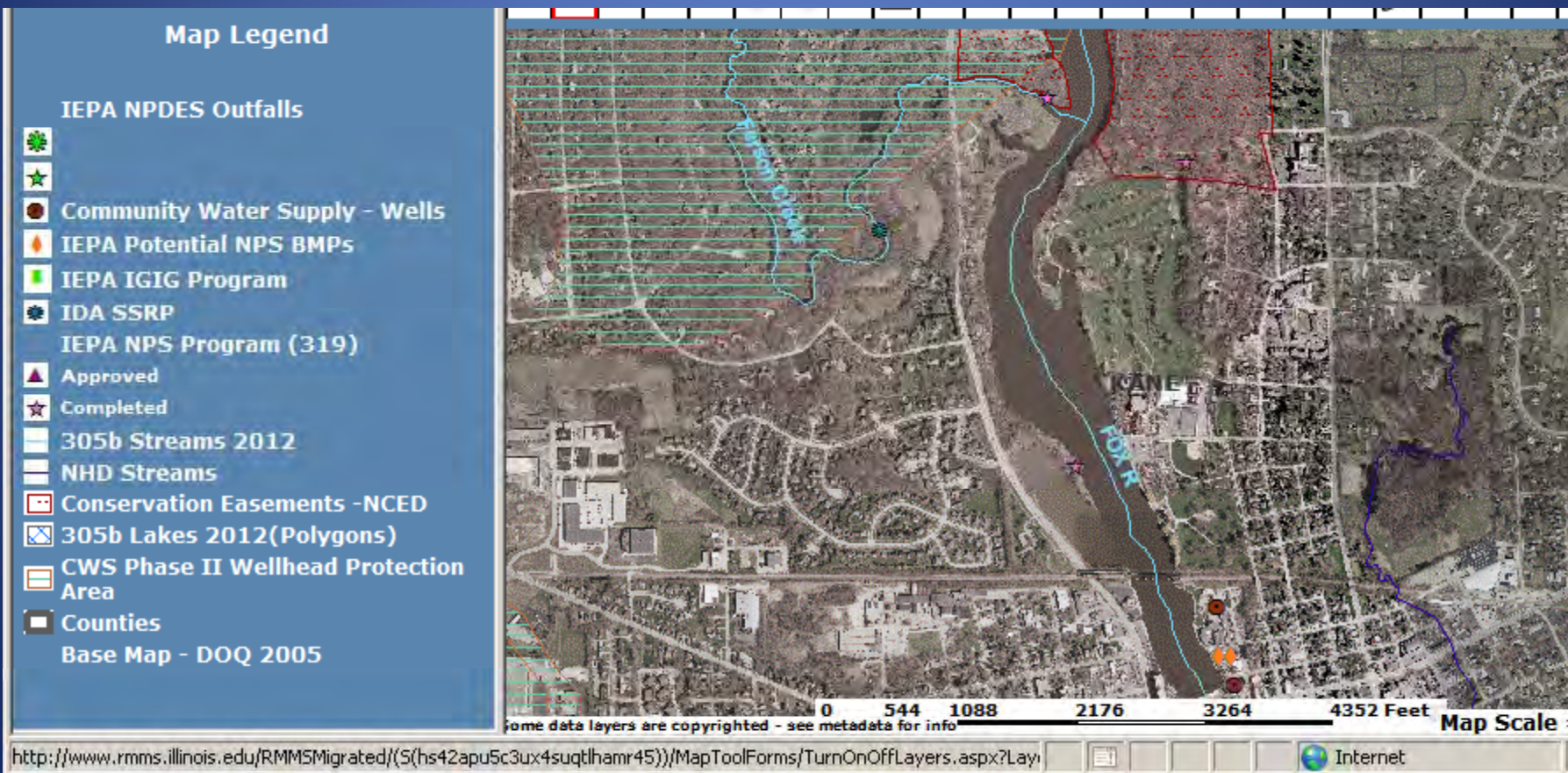
0 37 74 148 222 296 Miles Map Scale = 1:6310293

Some data layers are copyrighted - see metadata for info

lat/long: 40.91269, -90.06764 / Map: 2530615.9142, 5494857.03815 / Image: 204, 106

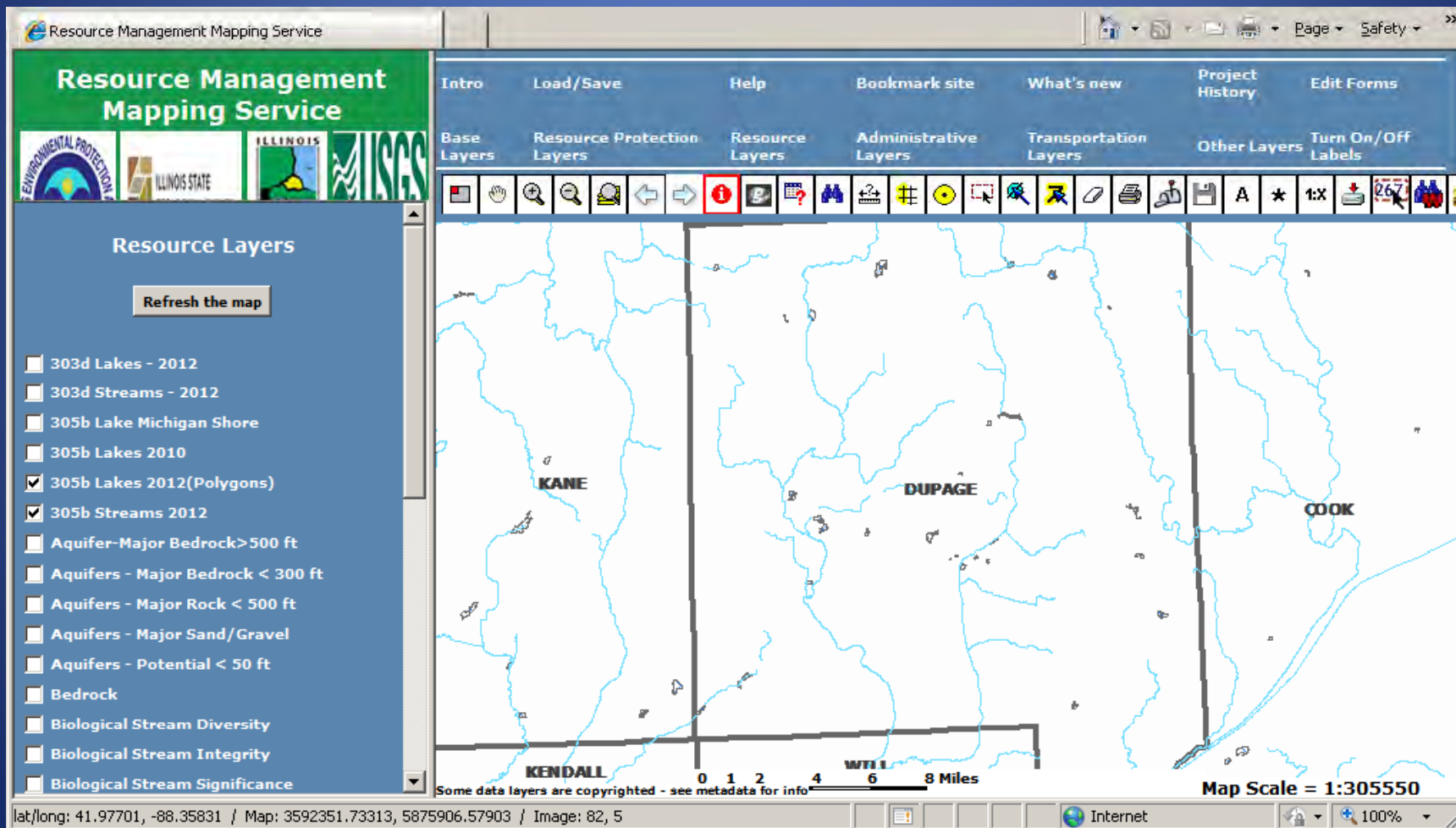
Internet 100%

RMMS uses a wide range of coordinated natural resource related databases to provide an online, interactive mapping environment designed to help government agencies and others evaluate and manage geographically-based information about Illinois' natural resources, particularly water resources, so that they can more effectively develop and implement appropriate resource protection and enhancement measures.



So there is a lot that RMMS can do but I'm just going to focus on those aspects that are directly related to nutrient planning and implementation tracking.

RMMS contains information on the physical location of lakes and streams assessed and reported in accordance with Section 305(b) of the Federal Clean Water Act.



The 305b assessment data for those lakes and streams can also be viewed in RMMS by using the map identify tool. The codes in the pop-up table are explained in the metadata, which can be viewed by clicking on the name of the data layer.

The screenshot shows a web browser window with the following content:

Results of Identify Tool

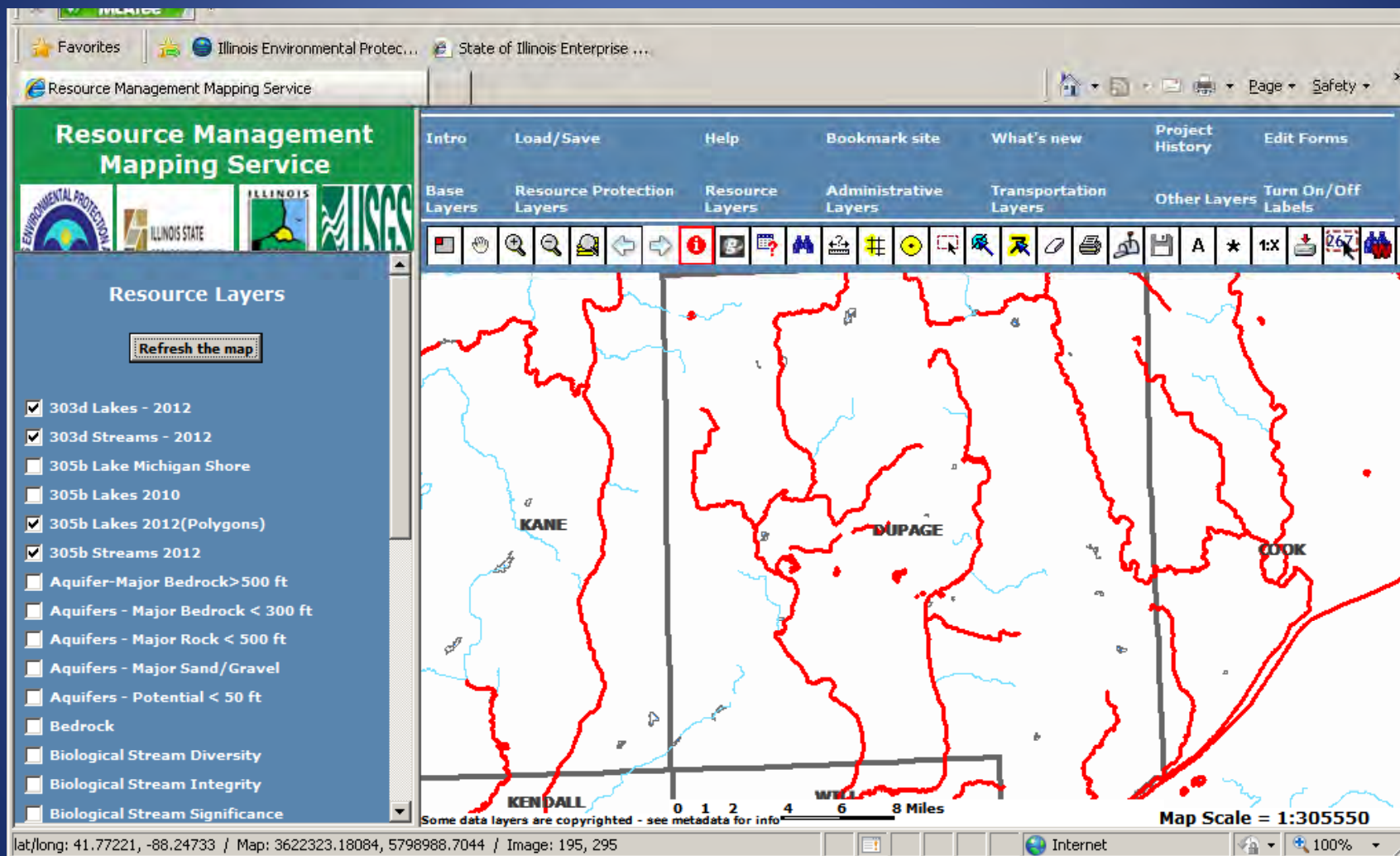
305b Streams 2012

Seq	AUID	Name	Miles	IEPA Basin	Category	Use Attainment	Causes	Sources
1	IL_GL-03	SALT CR	10.51981778	2	5	N582, N583, X585, X586, X590	84, 177, 244, 322, 348, 371, 403, 462, 500, 274	20, 84, 28, 23, 115, 122, 177, 85, 142, 10, 140

Counties

Seq	OBJECTID	Name	population 1990	population 2000	FIPS_CNTY	FIPS
1	12	DUPAGE	781666	904161	43	17043

RMMS can also display the streams and lakes that have been listed in accordance with Section 303(d) of the Clean Water Act (CWA).



And we can look at the 303d list information using the map identify tool

Results of Identify Tool

303d Streams - 2012

Seq	AUID	Name	Miles_Acre	Impairment	TMDL Status
1	IL_GBK-09	DU PAGE R, W BR	11.85	Phosphorus (Total), Sedimentation/Siltation, Fecal Coliform	Ongoing TMDL

305b Streams 2012

Seq	AUID	Name	Miles	IEPA Basin	Category	Use Attainment	Causes	Sources
1	IL_GBK-09	DU PAGE R, W BR	11.8539463	2	5	N582, X583, N585, X586, X590	138, 371, 462, 400	85, 177, 122

Counties

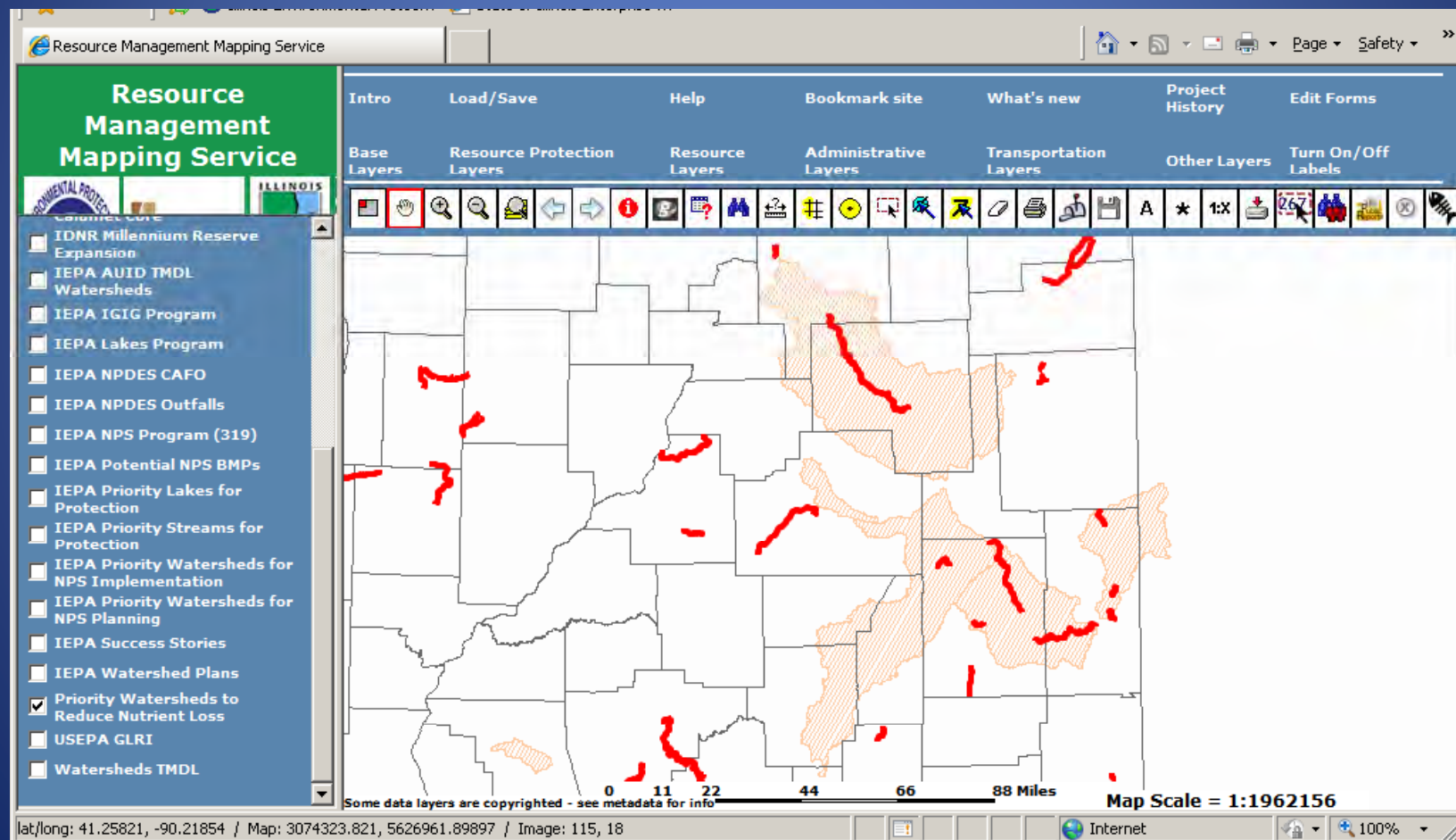
Seq	OBJECTID	Name	population 1990	population 2000	FIPS_CNTY	FIPS
1	12	DUPAGE	781666	904161	43	17043

Because we have this assessment data in RMMS, users can generate a table and map of all the lakes and stream segments where specific pollutants, such as nutrients, have been identified as a known cause of impairment.

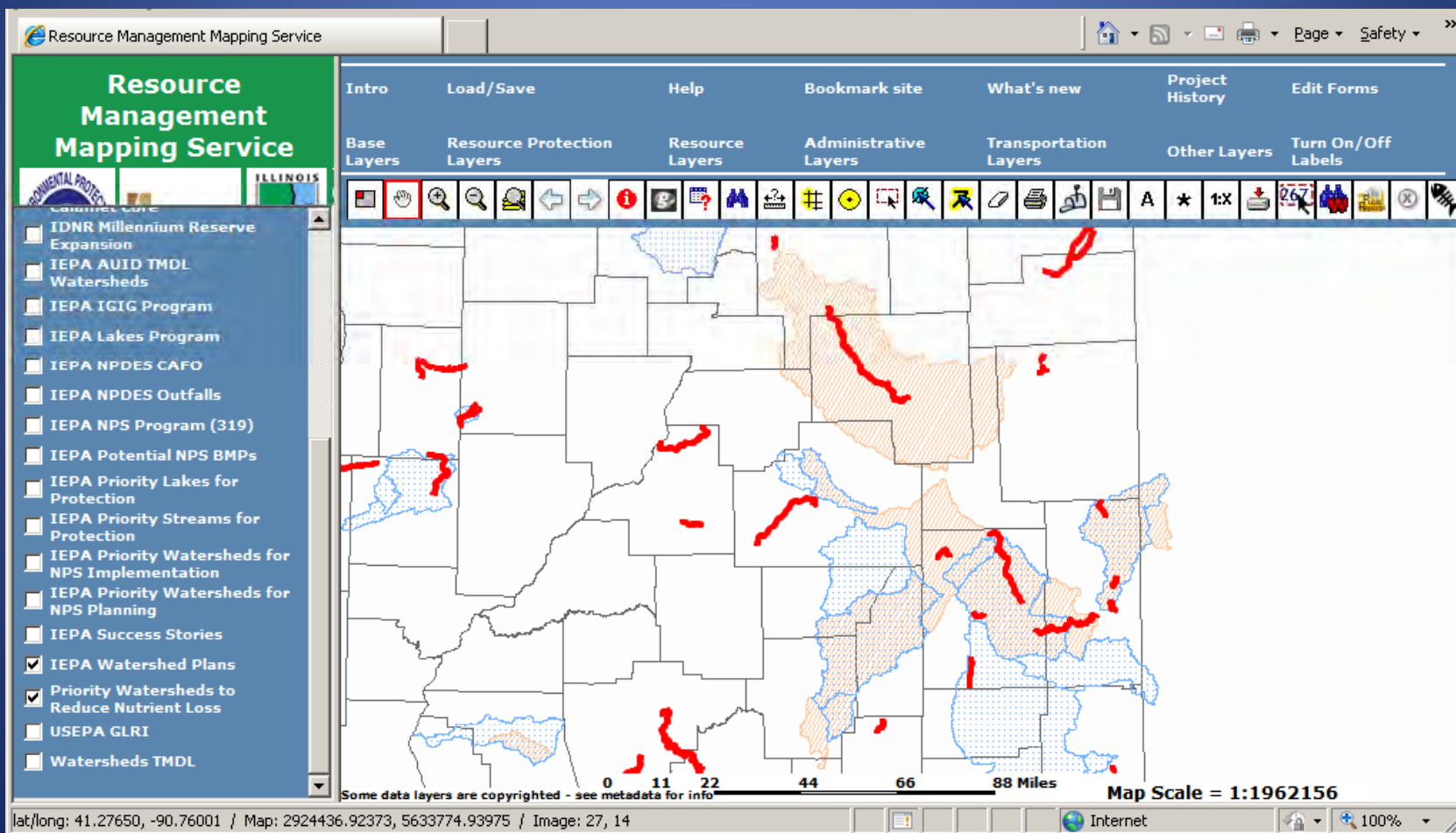
The screenshot displays the Resource Management Mapping Service (RMMS) web application. The interface is divided into several sections:

- Header:** "Resource Management Mapping Service" with navigation links: Intro, Load/Save, Help, Bookmark site, What's new, Project History, Edit Forms.
- Layer Management:** Base Layers, Resource Protection Layers, Resource Layers, Administrative Layers, Transportation Layers, Other Layers, Turn On/Off Labels.
- Toolbar:** A row of icons for map navigation and editing, including pan, zoom, and layer controls.
- Left Panel:** A list of pollutants with their respective counts:
 - Mercury(274)
 - Methoxychlor(277)
 - Nickel(301)
 - Nitrogen, Nitrate(452)
 - No Cause Identified(N/A)
 - Nonnative Fish, Shellfish, or Zooplankton(317)
 - Oil and Grease(317)
 - Other flow regime alterations(319)
 - Oxygen, Dissolved(322)
 - pH(441)
 - Phenols(339)
 - Phosphorus (Total)(462)
 - Polychlorinated biphenyls(348)
 - Sedimentation/Siltation(371)
 - Silver(375)
 - Sludge(502)
 - Sulfates(385)
 - Temperature, water(388)
 - Terbufos(390)
 - Total Dissolved Solids(399)
 - Total Suspended Solids (TSS)(403)
 - Zinc(423)
- Map:** A map of Illinois showing numerous red markers indicating locations of impairment. A scale bar at the bottom indicates distances up to 296 miles.
- Footer:** "Map Scale = 1:6310293" and coordinates: "lat/long: 40.72387, -95.83675 / Map: 1413168.21683, 5500334.72294 / Image: 0, 105".

RMMS also contains a layer that shows Priority Watersheds to Reduce Nutrient Loss. So we can see those watersheds that have been identified as a priority for reducing nutrient loss and the streams within those watersheds that are impaired by nutrients.



RMMS also contains data on watershed-based plans that have been developed to control nonpoint source (NPS) pollution. We can see that several watershed based plans have been developed in the Priority Watersheds to Reduce Nutrient Loss.



Again, using the Map Identify tool you can see some basic information about an individual plan and there is also a link to a copy of the plan.

Results of Identify Tool

IEPA Watershed Plans

Seq	Plan Title	Completion Date	Approved	Funded Under 319	319 File No.	Comment	Watershed Name	OWNER_EMAIL	WATERSHED_TYPE	Representative HUC	Web Add of Plan	Town	Stream	Lake
1	Watershed Implementation Plan for the Upper Salt Fork of the Vermilion River	5/1/2007	1	1	04-10		Salt Fork Vermilion River		1			Urbana; Thomasboro; Sidney; St. Joseph; Royal; Rantoul; Homer	BPJ-03 (Salt Fk. Vermilion R.); BPJ-07 (Salt Fk. Vermilion R.); BPJ-08 (Salt Fk. Vermilion R.); BPJ-09 (Salt Fk. Vermilion R.); BPJ-10 (Salt Fk. Vermilion R.); BPJ-12 (Salt Fk. Vermilion R.); BPJB-01 (Stony Cr.); BPJC-06 (Saline Br.); BPJC-08 (Saline Br.); BPJCA (Boneyard	RBU (Crystal); RBO (Homer)

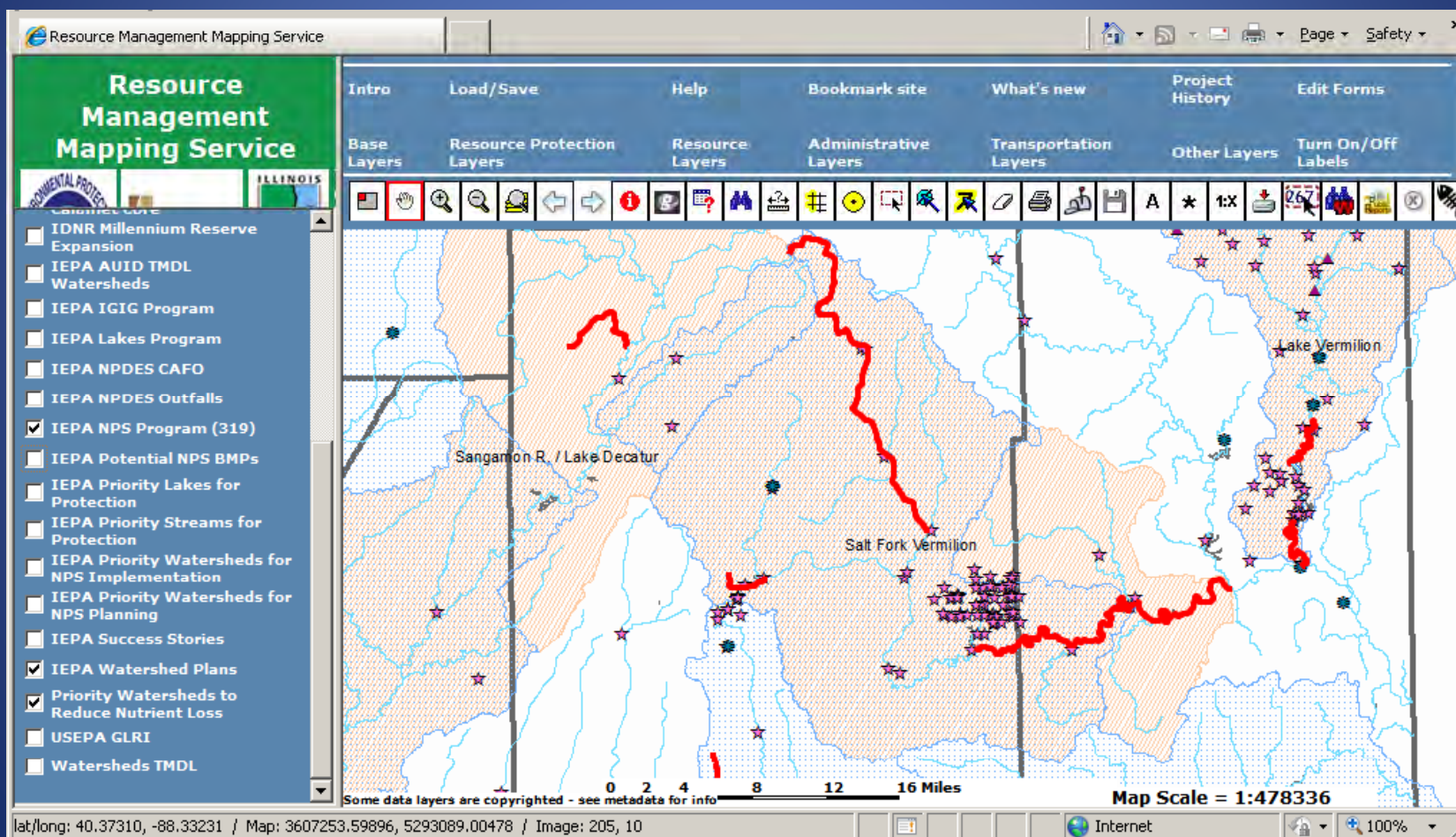
Done

Internet 100%

RMMS allows the user to run reports, such as a report to see what nonpoint source pollution control BMPs were recommended by a specific plan.


Watershed Based Plan Data Layer Report								
Recommended Bmps (Title: Watershed Implementation Plan for the Upper Salt Fork of the Vermilion River)								
1990-2018								
Generated on Friday, April 05, 2013								
Bmp Category	Bmp Code	Quantity	Unit	COST	Sediment Load Reduction (tons/year)	TSS Load Reduction (lbs/year)	Phosphorus Load Reduction (lbs/year)	Nitrogen Load Reduction (lbs/year)
OTHER2	septic system upgrade(34)		number					
OTHER2	buffer zone enhancement / installation(35)	10	acres	3,480				
AGRICULTURE	Conservation Tillage(329)	140,000	acre	756,000	28,000		2,800	
AGRICULTURE	Filter Strip(393)	1,000	acre	228,000	470		50	15,000
AGRICULTURE	Nutrient Management(590)	140,000	acre	1,876,000				420,000
HYDROLOGIC	Stream Channel Stabilization(584)	34,400	feet					
HYDROLOGIC	Streambank and Shoreline Protection(580)	40,500	feet					
HYDROLOGIC	Wetland Restoration(657)	100	acre					12,000
OTHER2	Education(1)		number					
OTHER2	Monitoring(2)		number					

RMMS also contains information about BMPs that have actually been implemented, such data on individual BMPs implemented with Section 319 funding. Each pink star represents a Section 319 funded BMP.




RMMS allows the user to run reports on BMP implementation, such as a report to list the BMPs implemented within the area covered by a watershed plan .

Please click here to download the excel file of the report.



Conservation Program: IEPA
BMP Implementation Summary (Watershed-Based Plan:
Watershed Implementation Plan for the Upper Salt Fork of the
Vermilion River)
1990-2013
Generated on Friday, May 31, 2013



Approved

	Occurrence	Number Acres	Feet	Pollutant Load Reduction				
				N	P	TSS	SED	
Completed								
	Occurrence	Number Acres	Feet	N	P	TSS	SED	
AGRICULTURE								
Conservation Tillage (329)	19	-	4485.8	-	21622	10867	-	10029.9
Filter Strip (393)	4	-	26.9	-	153	80	-	59
Nutrient Management (590)	45	-	3844.77	-	55724	28357	-	35026
Total.....	68	-	8357.47	-	77499	39304	-	45114.9
OTHER2								
Education (1)	4	4	-	-	-	-	-	-
Monitoring (2)	3	3	-	-	-	-	-	-
Planning/Administration (3)	1	1	-	-	-	-	-	-
Total.....	8	8	-	-	-	-	-	-

Done Internet 100%

By having this information in RMMS users can compare the units (acres, feet, number) & load reductions of BMPs actually implemented under Section 319 and other programs to the BMP recommendations contained in the watershed plan to see what kind progress is being made in terms of implementing the plan.

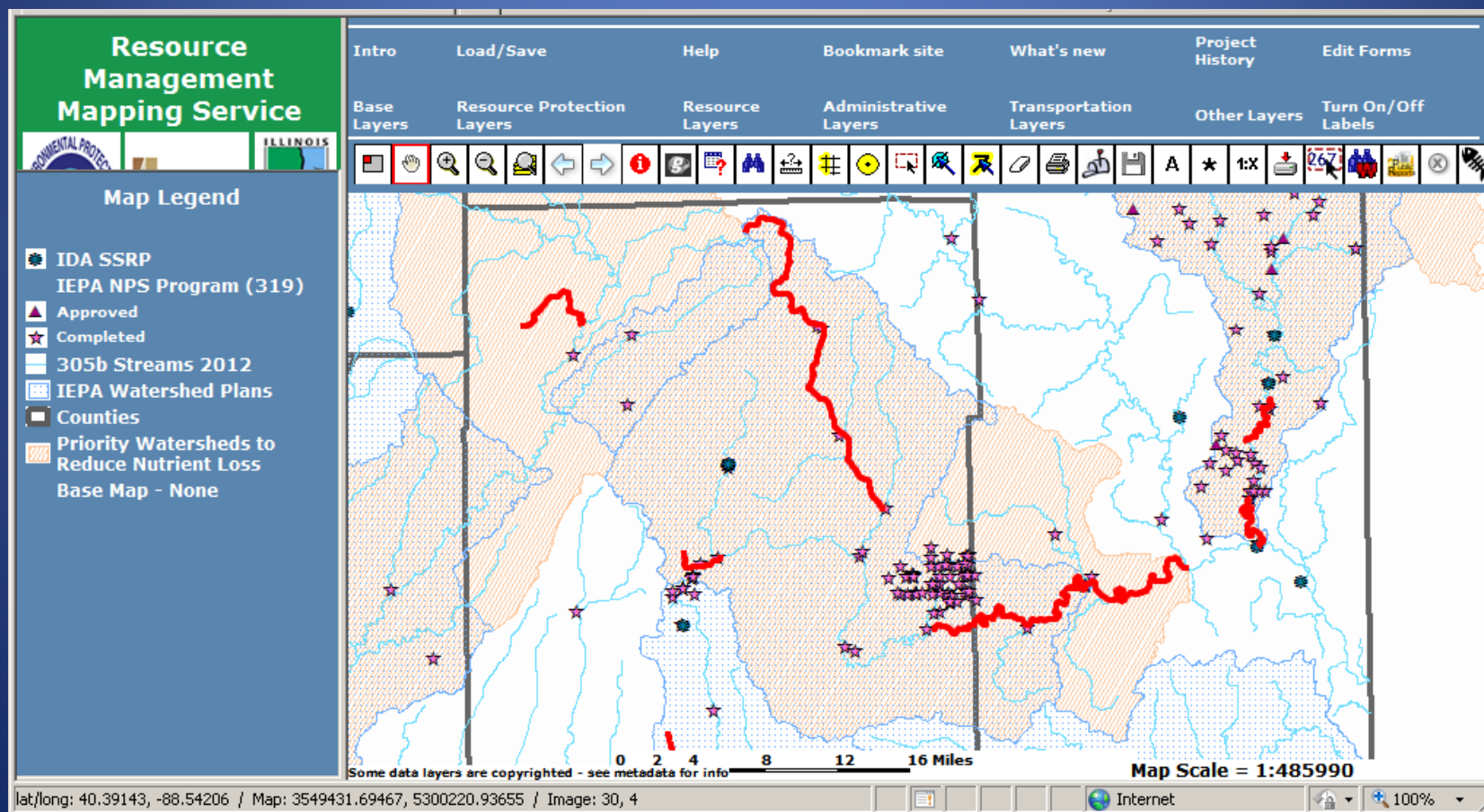
For example, by combining the two RMMS tables we generated before we can see what was recommended versus what has been achieved in this planning area.

Watershed Implementation Plan for the Upper Salt Fork of the Vermilion River					Recommended Load Reductions			
Bmp Code	Quantity Recommended	Quantity Implemented	Quantity Remaining	Unit	Sediment Load Reduction (tons/year)	Phosphorus Load Reduction (lbs/year)	Nitrogen Load Reduction (lbs/year)	
septic system upgrade(34)				number				
buffer zone enhancement / installation(35)	10			acres				
Conservation Tillage(329)	140,000	4,485.80	135,514	acre	28,000	2,800		
Filter Strip(393)	1,000	26.90	973	acre	470	50	15,000	
Nutrient Management(590)	140,000	3,844.77	136,155	acre			420,000	
Stream Channel Stabilization(584)	34,400			feet				
Streambank and Shoreline Protection(580)	40,500	450	40,050	feet				
Wetland Restoration(657)	100			acre			12,000	
Education(1)				number				
Monitoring(2)				number				
		Total Load Reductions Recommended				28,470	2,850	447,000
		Implemented Load reductions				45,116.0	39,320	77,531
		Remaining Need				-16,646.0	-36,470.0	369,469.0

But we have to keep in mind that the BMP data layers currently available in RMMS don't tell the whole story. For example, RMMS doesn't have data on BMPs that are being implemented privately or under certain other government programs, such as those administered by NRCS.



Finally, not only can RMMS show us if we are making progress on meeting nutrient load reduction targets but it can also show us if we're making that progress in the right places. For example, although BMPs have been implemented in this planning area, few have yet been implemented that would benefit the upstream impaired segment. So RMMS may help suggest critical areas for future BMP implementation.



Thank You

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