

CMAP



Water Quality Activities Report

December 2014

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Watershed-Based Planning

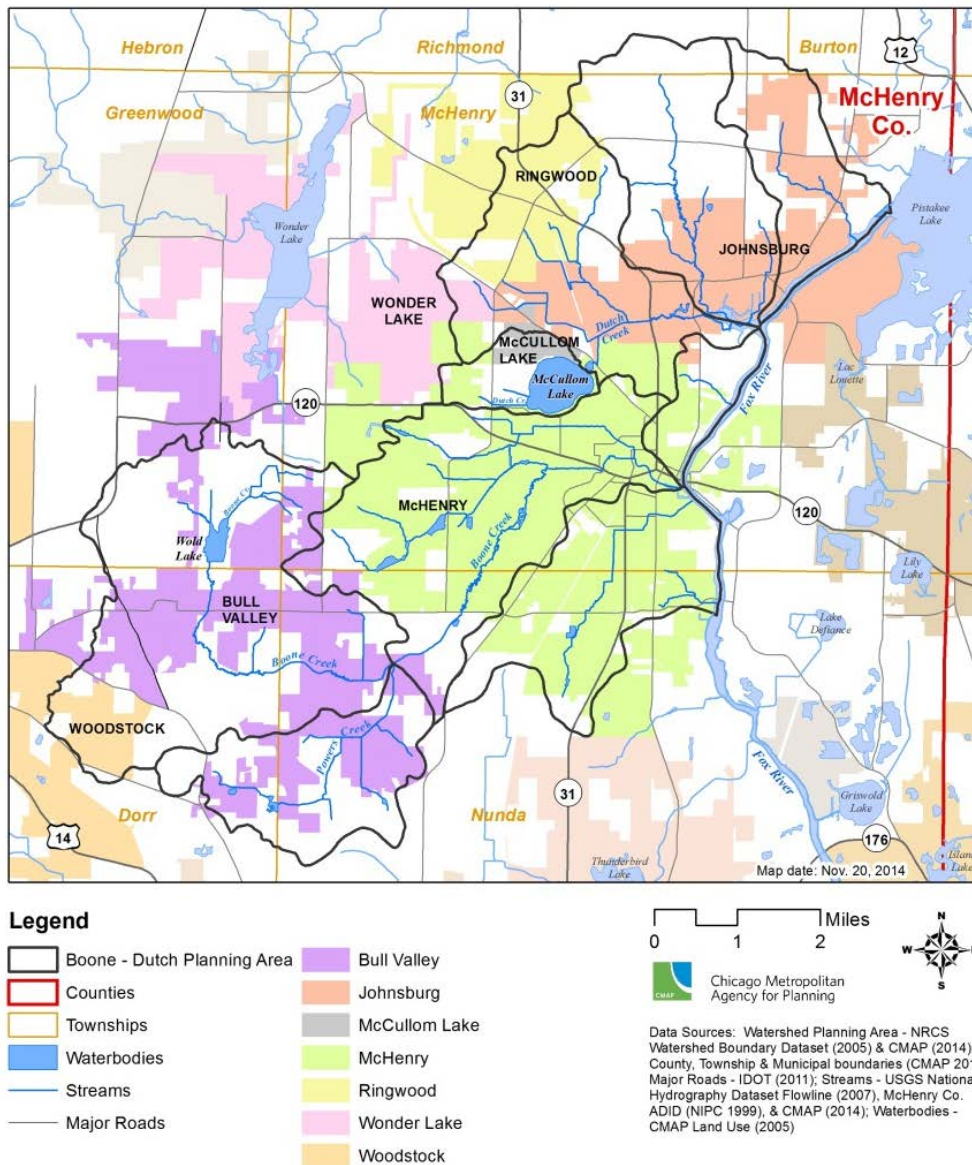
The Chicago Metropolitan Agency for Planning (CMAP) has engaged in a number of watershed-based planning activities during 2014. These activities are as follows.

Boone-Dutch Creek Watershed Planning

The Boone-Dutch Creek Watershed Planning project began in 2014. Supported by a Clean Water Act grant from the Illinois Environmental Protection Agency (IEPA), CMAP is developing a watershed-based plan for the 45.3 square mile Boone Creek and Dutch Creek watersheds in eastern McHenry County, which drain to the Upper Fox River (Figure 1.) Within the planning area are the communities of Bull Valley, Johnsburg, McCullom Lake, McHenry, Ringwood, and portions of Wonder Lake and Woodstock. Unincorporated areas lie within the townships of Dorr, Greenwood, McHenry, and Nunda.



Figure 1. Boone-Dutch Creek Planning Area



The purpose of this plan is to work with local stakeholders to develop recommendations that will help restore and protect the water quality of Boone Creek, Dutch Creek, McCullom Lake, and the other streams, waterbodies, and natural resources within the planning area. The plan must follow watershed-based planning guidelines established by U.S. Environmental Protection Agency.

A draft watershed resource inventory was submitted to IEPA in December 2014. The full plan is scheduled for completion in late 2015. Project news and information including meeting dates, notes, presentations, and plan documents can be accessed on the project web page (<http://foxriverecosystem.org/Boone-Dutch.htm>).



Figure 2. Detention Basin Assessment



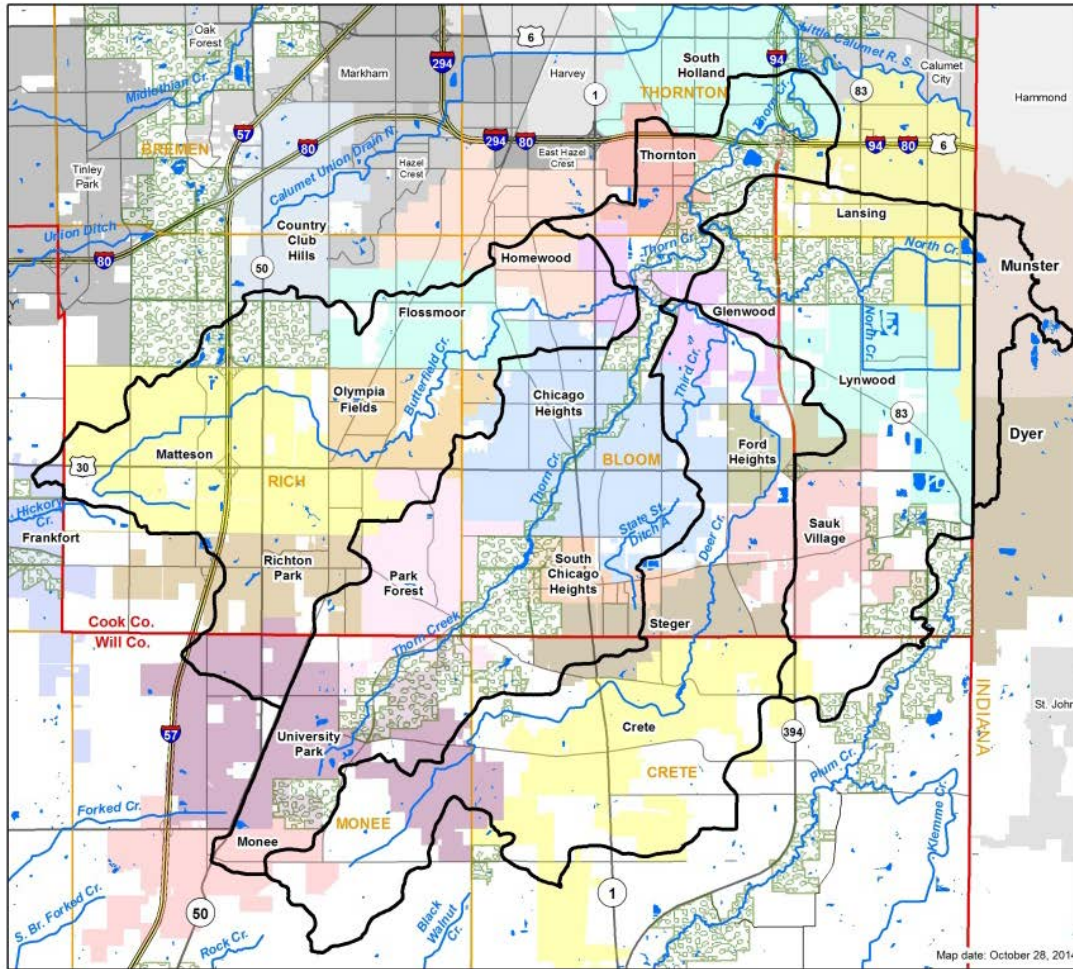
Source: CMAP. Assessing detention basins for their degree of water quality benefits and retrofit opportunities is part of the watershed resource inventory.

Thorn Creek Watershed Planning Addendum

CMAP completed an addendum to update and supplement the recommendations of the Thorn Creek Watershed Based Plan that was produced by CMAP in 2005. This effort involved updating nonpoint source pollutant load estimates based on 2010 land use data than was used in the 2005 plan, identifying a preferred suite of best management practices (BMPs), and validating the appropriate pollutant removal efficiencies of each practice based on the most current research. BMP designs and performance at the site scale were then extrapolated to the implementation of BMPs at the subwatershed and watershed scales, and total estimated pollutant load reductions and costs for these BMP scenarios were summarized. Additionally, stakeholder input following an October 2014 public meeting contributed to development of a site-specific BMP map and table. The addendum is available on the Watershed Planning page on CMAP's website (<http://cmap.is/142Syd4>).

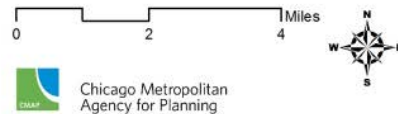


Figure 3. Thorn Creek Watershed



Legend

- Thorn Creek Watershed Boundary
- Counties
- Townships
- Streams
- Lakes/Ponds
- Forest Preserve



Data Sources: Watershed Planning Area - CMAP (2004); County & Township Boundaries - CMAP (2014); Municipal Boundaries - Cook Co. (2014) & Will Co. (2014); Major Roads - IDOT (2011); Streams - Illinois EPA (2004); Waterbodies - National Hydrography Dataset (USGS 2007).

Watershed Management Coordination

Throughout the year, staff provided technical assistance, guidance, and regional coordination to water quality related planning and management activities led by others in the region. As funding allows, and consistent with the water quality management planning work approved by IEPA, staff directs efforts at those entities either undertaking watershed planning initiatives, implementation of an IEPA approved plan, or an activity related to evolving issues and the Clean Water Act (CWA). Such entities include those funded through the Clean Water Act or those focused on addressing CWA Section 303(d) listed (i.e., impaired) waters.

Wastewater Quality Planning and Management Activity

Facility Planning Area Amendment Review Process

CMAP has reevaluated its role in executing the facility planning area (FPA) process to determine how it might better fulfill the role of water quality management in northeastern Illinois. As such, CMAP has been working to revise its FPA Procedures manual to better align the FPA process to the recommendations of GO TO 2040 comprehensive regional plan. The draft revised manual modifies the existing review procedures and also streamlines the review process to avoid duplication of efforts between CMAP, IEPA, and other agencies. Specifically, the manual states that an FPA amendment request should be consistent with CMAP's regional forecasts, that wastewater and other "gray infrastructure" expansion not come at the expense of the regional green infrastructure network, and that water conservation efforts are implemented throughout the region. It also encourages intergovernmental cooperation between local governments planning for new development. Lastly, the manual considers whether an amendment request is consistent with other county and regional plans.

Facility Planning Area Map Updates

Under a contract with IEPA, CMAP prepares FPA base maps and point source tabular accounts for amendments to the Illinois Water Quality Management Plan.

During the program year of 2014, CMAP completed revisions to the FPA maps that incorporated all of the recent FPA boundary amendments. In addition to FPA boundaries, these new maps also include the location of municipal National Pollution Discharge Elimination System (NPDES) permit discharges as well as tabular descriptions of each municipal discharge. These [new maps](#) will provide more information to municipal units of government, planners, engineers, and the general public.



Facility Planning Amendment Area Reviews

Under contract with IEPA to implement the Northeastern Illinois Water Quality Management Plan, CMAP reviews requested amendments to wastewater FPAs. As a result of economic conditions and other factors, the number of requests submitted to CMAP for review has been significantly reduced in recent years. A summary of review actions involving FPA boundary changes and new or expanded treatment facilities is represented in Table 1. A total of two requests were reviewed during this one-year period. CMAP’s Wastewater Committee recommended support for approximately 97.9 acres of land transfer from a non-FPA to FPA or from one FPA to another FPA, and one plant consolidation.

Table 1. Level II Water Quality Amendments

WQ Review Number	Applicant	Type of Request	Acreage Requested	CMAP Recommendation	Acreage CMAP Supported	IEPA Decision	HUC 12 Watershed
14-WQ-022	City of Lockport	FPA Boundary Change	97.9	Support	97.9	Pending	Des Plaines
14-WQ-067	City of McHenry	WWTP Consolidation-	N/A	Support	N/A	Pending	Upper Fox
Total			97.9		97.9		

Source: CMAP.



IEPA Funded Watershed Projects in Watershed Plan Areas

IEPA funded several watershed projects based on watershed-based plan areas in northeastern Illinois during 2014. The purpose of this funding is to allow local units of government and other organizations to work cooperatively towards the goal of protecting the quality of Illinois' waters by controlling nonpoint source (NPS) pollution.

The following list includes projects funded with Section 319 and Illinois Green Infrastructure Grants (IGIG). The Section 319 program supports several types of activities including implementation of cost-effective corrective and preventive BMP on a watershed scale; implementation of demonstrative new and innovative BMPs on a non-watershed scale; NPS pollution control information, education and outreach programs; NPS pollution control research and monitoring projects; and development of watershed-based plans. The IGIG grants are available to local units of government and other organizations in an effort to control stormwater runoff through various best management practices to promote water quality protection within Illinois. Table 2 includes projects that are in an area covered by a watershed-based plan and within the counties of McHenry, Lake, DeKalb, Kane, Cook DuPage, Kendall, and Will.

Table 2. Section 319 and IGIG Watershed Project Implementation Projects

Project Name	Watershed Plan Name	Project Start Date	Project End Date	Total Budget	Total 319 Funds	IGIG ¹ Funds
West Branch of the DuPage River Improvement Project	Upper DuPage River Watershed Plan	06/26/2009	03/31/2014	\$2,027,922	\$853,647	\$0
East Branch South Branch Kishwaukee River Watershed-Based Plan	E. Br. of the S. Br. Kishwaukee R. Watershed Plan	11/13/2012	07/15/2014	\$131,146	\$58,615	\$0
Candlewick Lake Watershed Plan	Candlewick Streams and Lakes Conservation Plan	01/18/2013	07/02/2014	\$74,897	\$50,000	\$0
Nippersink Creek Watershed Plan Implementation	The Nippersink Creek Watershed Plan	01/14/2012	12/15/2014	\$466,533	\$267,539	\$0
Long Run Creek Watershed Based Plan	Long Run Creek Watershed-based Plan	06/14/2012	04/17/2014	\$177,419	\$122,400	\$0
Nippersink Watershed Social Evaluation-Phase 2	The Nippersink Creek Watershed Plan	05/25/2012	11/06/2014	\$128,350	\$65,650	\$0

¹ Illinois Green Infrastructure Grant Program for Stormwater Management <http://www.epa.state.il.us/water/financial-assistance/igig.html>.



Agricultural BMPs Technical Assistance Program	North Mill Cr-Dutch Gap Canal Watershed-Based Plan	06/08/2012	07/15/2014	\$42,330	\$21,600	\$0
Flint Creek Stream and Floodplain Restoration	Flint Creek Watershed-Based Plan	06/12/2012	02/13/2014	\$237,034	\$141,436	\$0
West Branch DuPage River Corridor Restoration	Upper DuPage River Watershed Plan	08/14/2012	09/30/2014	\$2,169,349	\$1,301,610	\$0
Buffalo Creek Watershed-Based Plan		07/23/2013	12/31/2015	\$204,854	\$104,400	\$0
Countywide Watershed BMP Implementation Program	Indian Creek Watershed Plan & North Branch Chicago River Watershed-Based Plan	08/06/2013	05/30/2016	\$1,726,315	\$907,850	\$0
Hobson Creek Corridor BMPs at Caddie Corner Park	Upper DuPage River Watershed Plan	08/13/2013	07/15/2015	\$118,054	\$70,832	\$0
2013 Green Campus Initiatives	Upper DuPage River Watershed Plan	07/18/2013	07/15/2016	\$770,880	\$462,528	\$0
Silver Creek Watershed Based Plan	Silver Creek Watershed Based Plan	06/03/2014	07/15/2016	\$113,600	\$68,160	\$0
Carpenter Creek Stream Restoration	Jelkes Creek- Fox River Watershed Action Plan	06/06/2014	07/31/2016	\$1,135,939	\$628,215	\$0
North Mill Creek Channel Restoration – Phase 1	North Mill Cr-Dutch Gap Canal Watershed-Based Plan	07/23/2014	09/30/2016	\$1,250,000	\$500,000	\$0
Candlewick Lake Bioswale Project	Beaver Creek Watershed Action Plan & Candlewick Streams and Lakes Conservation Plan	06/13/2014	07/31/2016	\$88,000	\$52,800	\$0
West Fork Stabilization in Downtown Glenview	North Branch Chicago River Watershed-Based Plan	07/11/2014	07/31/2016	\$218,495	\$125,000	\$0
Watershed Monitoring Plan and QAPP Development	Flint Creek Watershed-Based Plan & Spring Creek Watershed-Based Plan	06/10/2014	07/15/2015	\$30,550	\$18,000	\$0
Oakwood Hills Fen Stream Corridor Restoration	Silver Cr and Sleepy Hollow Cr Watershed Plan	06/11/2014	07/31/2016	\$298,503	\$171,537	\$0
Otter Creek Stabilization - Village of South Elgin	Ferson-Otter Creek Watershed Plan	06/05/2014	07/15/2016	\$559,253	\$335,552	\$0
Lord Street Basin CSO Green Infrastructure Retrofit Project	Jelkes Creek- Fox River Watershed Action Plan	09/28/2011	10/01/2014	\$785,802	\$0	\$634,000



Milwaukee Avenue Green Development Corridor Sub-granting Program	North Branch Chicago River Watershed-Based Plan	11/29/2011	07/15/2015	\$293,334	\$0	\$220,000
Terada Park Green Infrastructure Improvements	Upper DuPage River Watershed Plan	06/26/2012	10/31/2014	\$189,106	\$0	\$75,000
Highland Park High School Wolters Field Permeable Parking Improvements	North Branch Chicago River Watershed-Based Plan	11/19/2013	05/01/2016	\$526,955	\$0	\$368,869
Willow Stream Parking Lot Renovation	Buffalo Creek Watershed-Based Plan	11/25/2013	07/31/2015	\$342,100	\$0	\$75,000
Source: IEPA						



Lake Monitoring and Management

Volunteer Lake Monitoring Program

The Illinois Volunteer Lake Monitoring Program (VLMP) marked its 34th season in 2014. Initiated by IEPA in 1981, this popular program brings together citizens, state agency staff, and regional and local governmental staff to monitor and investigate the quality of Illinois lakes. In northeastern Illinois, CMAP served as program coordinator for the counties of Cook, DuPage, Kane, Kendall, McHenry, and Will, while the Lake County Health Department coordinated the program in Lake County. Staff provides volunteer training, technical assistance, educational materials, training material updates, data and equipment management, volunteer recognition recommendations, and assistance in annual report preparation. All monitoring equipment, data forms, instructional materials (including a comprehensive [Training Manual](#)), and other supplies are provided to the volunteers. Volunteers need only have a boat and anchor to participate.

Figure 4. VLMP Volunteers



Volunteers Tom Sharkey and Paul Herzog (Virginia Lake/Cook Co.) work together to fill a water sample bottle from a VanDorn sampler. Source: CMAP.

Volunteer monitors measure water transparency (clarity) in a lake of their choosing using a simple device called a Secchi disk (an 8-inch diameter plate painted black and white in opposite quadrants, attached to a calibrated rope or tape measure). The disk is lowered into the water and the depth at which it is no longer visible is recorded. Volunteers also record water color, aquatic plant growth, and several other factors relating to lake, weather, and watershed conditions each time they monitor. Secchi monitoring typically is done twice a month.

The Secchi measurements are used to document changes in water transparency during the monitoring season as well as from year to year (Secchi transparency is affected by the color of the water and the amount of suspended sediment and algae in the lake). The Secchi measurement also indicates the sunlit, or “euphotic,” zone of the lake, which is about twice as deep as you can see the Secchi disk in the water. This means that within this zone there is generally enough sunlight for aquatic plants and algae to live and grow.

In addition to Secchi disk monitoring, a subset of the volunteers (on a rotating basis) also have an opportunity to collect water chemistry samples on a monthly basis that are analyzed at an Illinois EPA laboratory. The water chemistry data provides important information on suspended material in the lake (e.g., sediment, algae) as well as levels of nutrients (phosphorus,



nitrogen) that can promote nuisance aquatic plant and algae growth. Some volunteers also collect samples for chlorophyll analysis and record dissolved oxygen and temperature data. The chlorophyll data is particularly useful in determining the amount of microscopic, “planktonic” algae in the lake. Dissolved oxygen and temperature data are useful for determining if the lake stratifies during the summer (separates into layers of warm, upper water and cool, bottom water) and if there is adequate oxygen in the water to support aquatic life.

Primary goals of the VLMP are to familiarize volunteers with lake processes and to help them learn about lake ecology and the cause-and-effect relationships that exist between their lake, its watershed, weather, and human activity. Through the VLMP’s hands-on educational structure, the data and information gathered can more effectively assist in local lake and watershed management decision-making. Lake scientists, planners, and consultants also use the data for a wide variety of purposes. Furthermore, the Illinois EPA uses VLMP data in its biennial assessment of the state’s waters as required by the federal Clean Water Act.

In the six counties coordinated by CMAP, 21 lakes were monitored at least once during the 2014 season, involving 46 volunteers. The Secchi monitoring data can be viewed and downloaded from IEPA’s VLMP Web Application (<http://dataservices.epa.illinois.gov/waBowSurfaceWater/Default.aspx>).

Additionally, through two initiatives begun in 2013, VLMP participants are asked to report potential harmful algal (cyanobacteria) blooms (HABs) and possible sightings of the invasive aquatic plant *Hydrilla verticillata* (a.k.a. “hydrilla”). In fact, anyone who suspects a HAB can report it to the Illinois EPA using their Bloom Report Form (<http://www.epa.state.il.us/water/algae-bloom/forms/bloom-report-form.pdf>). In 2014, CMAP staff helped finalize a hydrilla early detection and rapid response plan for Illinois. Anyone suspecting the presence of hydrilla in any waterbody is encouraged to report it to the Hydrilla Hunt! initiative (<http://www.niipp.net/hydrilla/>).

Figure 5. VLMP Volunteer



Volunteer John Kanzia (Swan Lake/Cook Co.) filters water for chlorophyll analysis. Source: CMAP.



Other CMAP staff activities in 2014 included updating the VLMP Training Manual, helping plan a lake festival at Crystal Lake in McHenry County, and creating a VLMP display which made its debut at the Crystal Lake Park District's "Lake Discovery Day."

For more information about or if you would like to join the VLMP, contact Northeastern Illinois VLMP Coordinator Holly Hudson at CMAP (hhudson@cmap.illinois.gov).

Figure 6. VLMP display



Source: CMAP.

Water 2050 Implementation

In the spring of 2014, CMAP received a new two-year grant from the Illinois Department of Natural Resources (IDNR), Office of Water Resources (OWR) to continue with *Water 2050* and GO TO 2040 implementation support efforts. This funding will allow staff to follow up on two key projects that were conducted in 2013 under CMAP's Local Technical Assistance (LTA) program and carry out other work to improve understanding of regional water use.

Staff worked with the Northwest Water Planning Alliance (NWPAA) to begin implementation of their [three-year \(2014-16\) strategic plan](#) that was developed over a series of meetings in 2013 as part of an LTA project. Now in its fourth year, the NWPAA seeks to advance a model for monthly water use reporting, increase adoption of the recommended outdoor/lawn watering ordinance, and build on participation among members in the effort to collaboratively plan for and manage shared river and groundwater resources. Staff will analyze water use data as it becomes available from the Illinois Water Inventory Program and track change or trends that develop within the NWPAA geography. Another key strategy being pursued within the NWPAA Technical Advisory Committee is development of a best estimate of available water supply, a complex task led by the Illinois State Water Survey.

Staff additionally worked with the IDNR OWR Lake Michigan Water Allocation Program office in support of those communities that use Lake Michigan as a source of drinking water. Another 2013 LTA project led to an enhanced understanding of the [water loss control practices and challenges](#) faced by Lake Michigan permittees. The challenge of water loss control is significant given the magnitude of the problem and size of investment likely needed to reduce loss and maintain compliance with the loss-related condition of permit. Staff is developing a new water



system improvement plan guidance document for IDNR to provide those permittees that exceed the water loss threshold. CMAP is also a member of the IEPA-convened Water Loss Accounting Program Steering Committee that is guiding the provision of free training and technical assistance for community water suppliers to audit, control, and reduce their nonrevenue water.

Lastly, CMAP collaborated throughout 2013 and 2014 with the Metropolitan Planning Council, IDNR, and others on discussions that are aimed at helping IDNR shape a new action plan for state and regional water supply planning. Among discussion topics is the matter of crafting a new legislative initiative for 2015 that will secure a dedicated and sustainable source of revenue for a statewide water supply planning and management program.

Related Natural Resource Activities

Calumet Stormwater Collaborative

Throughout 2014, CMAP participated in the Calumet Stormwater Collaborative initiative led by the Metropolitan Planning Council. This initiative is intended to focus attention and resources within the Millennium Reserve to improve stormwater planning and management, particularly in communities most affected by stormwater challenges. The effort is broad based and includes expertise from the private, public, and non-profit sectors. Significant progress has been made in identifying challenges that need to be addressed, as well as seeking critical funding for deeper examination of issues and development of solutions. The initiative continues through 2015, and CMAP's role in stormwater planning and management generally is expected to increase significantly this year.

Chicago Wilderness

The GO TO 2040 plan recommends setting aside a significant sum of additional land for conservation purposes, and that conservation lands be arranged in a network of core areas connected by open space corridors. Working with Chicago Wilderness, CMAP carried out a project to classify and characterize important resources in a consistent and analytically robust manner, as well as to define ecological and human connectivity needs and provide enhanced information to support conservation and development decisions. The result was the [Green Infrastructure Vision](#). The main products of this project are derived GIS datasets that describe and characterize the regional green infrastructure network. In FY15, CMAP is overseeing an update to the Green Infrastructure Vision that assigns economic value to the ecosystem services provided by different landscape types identified in the Green Infrastructure Vision.



Local Technical Assistance

In 2014, CMAP staff participated in a number of discussions and provided comprehensive plan recommendations through its [LTA](#) program. Through the program, comprehensive plans were created for the Villages of Lakemoor and Campton Hills with a strong emphasis on water resources protection, green infrastructure and natural resources. Additionally, CMAP's LTA Program allowed staff to kick off two projects with water quality implications including an update to the Village of Glenview's codes and ordinances, with a focus on its stormwater management and green infrastructure component, and to create a green infrastructure plan for Governor's State University to address flooding issues and develop natural area restoration and management strategies, both of which will improve water quality.





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