



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Biennial Report 2023

APPENDIX E: PARTNER UPDATES - URBAN STORMWATER



Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Appendix E: Partner Updates - Urban Stormwater

Calumet Stormwater Collaborative

Since 2014, the Calumet Stormwater Collaborative has been convening stakeholders to solve flooding and water quality problems in the Little Calumet River and Cal-Sag Channel watersheds. More than 40 organizations participate in CSC. During monthly meetings, group members exchange information on water quality and flooding needs, as well as worthwhile projects and initiatives.

CSC has developed free, online green infrastructure design templates for communities, a new data-mapping tool for the region, a repository of stormwater management resources, and a logic model for green infrastructure training and maintenance.

CSC developed four watershed plans: the Little Calumet River, Cal-Sag Channel, Des Plaines River in Cook County, and Poplar Creek. These plans, which were approved by Illinois EPA, recommend BMPs, such as green infrastructure, to reduce nutrient pollution from stormwater. Communities and other stakeholders in the watersheds can apply for Section 319 grants to help support key projects.

Specific items in CSC's work plan include developing a green infrastructure baseline inventory, developing an urban flooding baseline inventory, developing relevant trainings and recommendations for green infrastructure maintenance and service sharing, and assessing municipal capacity to manage stormwater flooding issues. The target geography for these components is the Calumet region of Illinois, but lessons and resources are intended to be applicable to a broader geography.

As of 2023 CSC has completed the first iteration of the green infrastructure baseline inventory (led by MPC) and the urban flooding baseline (led by CNT). More information on the green infrastructure baseline can be found at www.metroplanning.org/work/project/23/subpage/7 and the urban flooding baseline tool can be found at ufb.cnt.org.

For more information, see www.metroplanning.org/work/project/23/subpage/1.

Chicago Metropolitan Agency for Planning Technical Assistance

The Chicago Metropolitan Agency for Planning's Technical Assistance Program supports communities in northeastern Illinois and aligns with the region's current long-range plan — ON TO 2050 — and its principles of regional resilience, inclusive growth, and prioritized investment. Since 2012, the Technical Assistance Program has assisted communities in developing more than 200 projects with local governments, nonprofits, and intergovernmental organizations to address local issues at the intersection of transportation, land use, and housing, including the natural environment, economic growth, and community development. The program helps communities with planning projects that build local capacity, engage marginalized groups, and connect local partners with implementing agencies and capital funding for infrastructure investments, including water quality and stormwater management.

For more information, see www.cmap.illinois.gov/programs/ta.

Conservation@Home

An educational and certification program that recognizes yards and sites conscientiously improving their area for the environment and humanity.

For more information, see extension.illinois.edu/cook/conservationhome.

The program goals are to Protect and restore natural areas by encouraging the use of native plants and to promote good water resources, such as rain barrels and rain gardens, and that reduce runoff, conserve, and filter rainwater.

Why:

- Native plantings support a large variety of beneficial wildlife.
- Perennial flowering plants increase the beauty and value of property
- Earth friendly practices reduce the use of chemicals and improve water, air, and soil quality.

Infrastructure University of Illinois Extension and Forest Preserve of Cook County staff work together to create and refine the C@H checklists specific to the various types of properties listed below. Current resources and additional trainings are provided to volunteers to schedule home visits, manage website content and registrations, and distribute signs. Staff and volunteers continue to evaluate landscapes weather permitting.

2022 Update

C@H Residential Membership Breakdown

	Applicants	Unpaid & Consulting	Paid & uncertified	Certified
2022	55	22	0	33
Total to Date	302	131	5	166

Schools & Communities: Illinois Extension Staff and volunteers aid schools looking to incorporate C@H friendly practices worked with 10 schools and communities in 2022. Highlights are:

- o South Suburban College Campus; South Holland
- o Palatine Park District/Buehler YMCA; Palatine
- o Harper College, Palatine
- o Legacy Garden Park; Willow Springs
- o Glencoe Middle School; Glencoe
- o Homewood Library, Homewood
- o BEDS Plus Shelter, LaGrange
- o Lake Katherine Butterfly Garden, Palos Heights

Evaluator Training: Illinois Extension and Forest Preserve staff conducted a training for evaluators on March 5. 24 MG and MN volunteers attended. A virtual training occurred on 4/5 and trained 12 MG/MN volunteers.

Extension Volunteers

Breakdown by Activity		Breakdown by Program	
Activity	Hours	Program	Hours
Evaluation	147.75	North Cook MGs	157.5
Outreach/Tabling	172.25	South Cook MGs	70.25
Program Development	85.25	Chicago MGs	31
		Master Naturalists	146.50
		Total	405.25

C@H Promotion: for the listed events, Extension staff, volunteers, and Forest Preserve employees involved in the C@H program promoted the program through tabling events and talks. Volunteers passively promoted the program whenever they hosted a tabling program for Extension programming. Additionally, UIE staff also discussed this program among their colleagues across the state at several internal meetings. UIE Staff has worked to update the C@H Website with updated graphics/resources, updated criteria and new criteria for community garden application.

Highlights of Promotion & Programming

Date	Event	Location	Attendees
22-Jan	Forest Park Library	webinar	10
26-Jan	Native Landscape Design Workshop	webinar	121
12&22-Feb	Northwestern University	webinars	17
9-Mar	Go Green Glenview	webinar	50
13-Mar	FPCC Caldwell Wood	on site	25
15-Mar	CCGA	webinar	23
8-Apr	C@H at EEAI	in person	14
20-Apr	Arlington Heights Library	webinar	50
13-May	Northbrook Plant Sale	Village hall	45
9-Jul	Homewood Green Thumbs	Village Hall	14
20-Aug	Franklin Park	City Hall	50+
18-Sep	La Bagh Woods Fall Fest Bridget Deagan	La Bagh	200
			625

Programming Update:

Winter Program: Native Landscape Design

- *Description:* 2-part workshop series. Part 1 consisted of an introduction to landscape design focusing on incorporating native plants. Part 2 consisted of breakout rooms in which staff and volunteers coached individuals on their specific landscape conditions and layout.
- *Dates:* Part 1- 1/26; Part 2- 2/9 & 2/16
- *Attendance:* 121 participants
- *Marketing efforts:* FPCC Nature Center, FPP Facebook pages.
- *Investment:* \$204

Spring/Fall Program: Rainscaping

- *Description:* 6-part series workshop provides participants with the tools and skills needed to design, install and maintain a rain garden on your residential property. Through hybrid training, garden tours, and coaching sessions, participants will develop a personalized rain garden plan. To participate, participants pay a \$40 deposit and will receive a \$200 stipend to build a rain garden after completion of all sessions and submittal of your personalized plan.
- *Dates:* June 16, 23, 30 and July 14, 21, 28
- *Applications:* 72 applicants. Applications closed May 15. Offered 32 participants. Two auditing participants (did not want stipend)
- *Marketing efforts:* FPCC Nature Center, FP Facebook pages, Extension Facebook Page
- *Investment:* \$2,979.04
- *Evaluation and impact:*
 - 32 participants; 15 participants completed the course in its entirety and submitted rain garden plans to receive the \$200 stipend.
 - 94%-100% participation showed increased knowledge of rain gardens, increased confidence and ability to plan/install a rain garden, and likeliness to install a rain garden.
 - 64% plan to educate others on rainscaping practices

CONSERVATION@HOME NEWSLETTER

To date, the newsletter has 281 subscribers including members, volunteers, and partners every season. It is disseminated through Illinois Extension's Email+ program.

C@H Newsletter Stats

Season	Date Released	Open Rate %
Winter	1/15	67.5
Spring	4/2	70.2
Summer	7/7	74.16
Fall	10/6	67.62

CONSERVATION@HOME APPRECIATION EVENT. Extension and FPCC staff will work together to organize and host an appreciation event for volunteer evaluators and C@H members.

Appreciation Luncheon August 7, 2022, at the Chicago Botanic Gardens to feature volunteers, members, and partners of the Conservation@Home program

- Partners featured: Illinois-Indiana Sea Grant, Metropolitan Water Reclamation District, Chicago Region Tree Initiative, Field Museum, West Cook Wild Ones
- Keynote: Pam Karlson
- Attendance: 79 participants

CONSERVATION@HOME PLANT SALE.

Extension staff worked with FPCC and West Cook Wild Ones to support the plant sale through attending planning meetings, providing resources, assisting with preparation, and promoting among the C@H members. UIE staff also recruits volunteers for the sale among the Master Naturalists and Master Gardeners. The sale dates were 6/6-9 and 9/30. C@H members received a 10% discount.



Vanessa Oniboni's Conservation@Home family photo August 27, 2022.

DuPage County Water Quality Improvement Program

DuPage County Stormwater Management recognizes the financial burden a property owner may face when undertaking a project that improves regional water quality. DCSWM's Water Quality Improvement Program, WQIP, offers financial assistance to projects providing a regional water quality benefit to local waterways. The grant funds up to 25% of eligible construction costs for water quality improvement projects. DuPage County initiated the grant program in 2000 and has awarded nearly \$6.3 million to 108 projects to date. DuPage County government agencies, organizations, and individuals are eligible to receive funds under the WQIP. The WQIP story map provides information on the grant and application process, and gives examples of eligible projects, such as rain gardens, green roofs, permeable pavers, and streambank stabilization. The story map also includes animated infographics, photos, project descriptions, and an interactive map showing previously awarded projects.

For more information, see www.dupagecounty.gov/government/departments/stormwater_management/grants/water_quality_improvement_program.php.

Illinois Department of Transportation Stormwater Programs

The Illinois Department of Transportation maintains a chartered Stormwater Committee composed of members from a variety of backgrounds and individuals from other state agencies to help inform and guide policy creation, advise IDOT staff on stormwater issues should they arise, and oversee erosion control training for staff and consultants. The committee also regularly coordinates with other stormwater groups and initiates research through the Illinois Center for Transportation to study aspects of the stormwater management program and determine whether improvements can be made to best management practices.

IDOT continues to research alternatives to erosion control blankets that use plastic mesh, which is known to entangle wildlife and contribute to microplastics in waterways. The literature review is completed, and field trials are planned with a report expected at the end of 2023. IDOT will utilize research and practices generated through other state departments of transportation, the National Cooperative Highway Research Program, and the Illinois Urban Manual, when applicable. IDOT also continues to revise Specifications and Standards based on implementable research or when otherwise warranted. For more information, see idot.illinois.gov/transportation-system/transportation-management/planning/other-plans/storm-water-management-plan.html.

Illinois Groundwork

In many communities throughout Illinois, more urbanization and larger storms have led to more flooding.

Green infrastructure, such as rain gardens and permeable pavement, can reduce flooding but doesn't always work as well as it might. However, green infrastructure design informed by multidisciplinary research on native soil properties and water movement, among other factors, can maximize green infrastructure impact and cost-effectiveness, and integrating research results across disciplines and into extension efforts can benefit Illinois communities.



From 2021-23, University of Illinois Extension and Illinois-Indiana Sea Grant developed a website, Illinois Groundwork, which is based on multidisciplinary green infrastructure research and an extension process piloted in two Chicago suburbs. The team developed content, including writing text and curating university resources; worked with a professional developer to design and create the website; and collaborated with statewide green infrastructure stakeholders and target audiences to incorporate their technical reviews throughout the process.

The goal of Illinois Groundwork is to help complement and deepen existing community knowledge with better design capacity and soil knowledge to support local decision-making. This goal is achieved by providing green infrastructure research, tools, and resources to stormwater professionals, local leaders, and community members to increase the effective use of green infrastructure to address stormwater management challenges.

The website outlines a process that users can follow to incorporate soil data into green infrastructure design along with insights into helpful or necessary expertise, specific tasks, and additional resources. It also includes an interactive resource to help optimize green infrastructure sizing and a Plant Finder, which covers 119 plants, with information on soil type, light, and moisture needs for each, as well as photos and descriptions.

Explore the website at illinoisgroundwork.org.

Partners of this project include the University of Illinois at Urbana-Champaign, Chicago Metropolitan Agency for Planning, Village of Midlothian, City of Calumet City, Illinois State Geological Survey, Illinois Department of Transportation, Metropolitan Planning Council, Illinois Coastal Management Program, Calumet Collaborative, Geosyntec Consultants, Smithgroup, The Openlands Project, and Friends of the Chicago River.

Lawn to Lake Midwest

In 2021, Illinois-Indiana Sea Grant's Lawn to Lake program created and distributed brochures that provide guidance on using natural lawn care. These outreach materials were selected to meet specific needs identified by lawn caretakers through the survey and focus groups conducted in 2018-2019. Three brochures that cover the topics of managing pests with fewer chemicals, soil testing, and choosing the right plant for the right place were distributed to 38 locations throughout Illinois and Indiana. In total, more than 52,500 copies are now at University of Illinois Extension offices, the Chicago Botanic Garden, and the Forest Preserves of Cook County, where they are available to the public. In addition, two factsheets that highlight information for nutrient priority watersheds were created and distributed to University of Illinois Extension educators in those watersheds.

In 2021, Illinois-Indiana Sea Grant developed a comprehensive natural lawn care website that helps lawn caretakers grow a healthy, attractive lawn while using less fertilizers, pesticides, and water. Using existing resources, the latest research, and expert reviewers, IISG developed lawntolakemidwest.org. This comprehensive resource includes video playlists, a soil testing map, a lawn care calendar and a quiz, and links to outreach materials. The website was launched in September of 2021 with a promotional campaign that included a series of 10 short videos that explain the basics of natural lawn care. These

videos have 98 views on YouTube and as part of a Facebook campaign, the videos had 84,589 impressions. Since its release, the website has been viewed by over 10,000 people.

Over this project period, three different Lawn to Lake virtual presentations were given on natural lawn care practices, reaching a total of 374 people. Illinois-Indiana Sea Grant staffed one pollution prevention and natural lawn care informational booth at an event, reaching 35 people.

For more information, see lawntolakemidwest.org.

National Green Infrastructure Certification Program

The Water Environment Federation and partners, including MWRDGC, created the National Green Infrastructure Certification Program to grow a green workforce. The program trains entry-level workers in the base-level skillset needed to properly construct, inspect, and maintain green infrastructure. With this training, candidates are qualified to enter the field and earn a living wage. Designed to meet international best practice standards, NGICP can meet a wide range of needs, including providing professional development for green infrastructure professionals.

In 2018, Parkland College in Champaign signed a contract with WEF to become the first licensed training center in Illinois, and the first community college in the nation to offer NGICP. This 35 hour training focuses on green infrastructure construction, functionality, and maintenance. Parkland offers the course regularly and additional sections are offered in response to the needs of organizations and industries.

Since 2018, Parkland has administered four successful trainings and trained over 45 individuals from municipalities, private industry, higher education, nonprofit, and professional organizations. During the COVID-19 pandemic, the training migrated fully online; unfortunately, most of the trainings were canceled due to lack of enrollment and challenges associated with the transfer of the NGICP program from WEF to Envirocert International (ECI). In March 2023, we were able to offer a virtual training for 10 students. Students watched videos, did field work, and took practice quizzes asynchronously, and met virtually for 2 hours a week for a month. The work equated to 38 hours of training.

A small, but successful one-day green infrastructure workforce development training was held in the Chicago area in March 2020, thanks to a large group effort. The second portion of this training was delivered in person in June 2021 in the Chicago area. Partners included Calumet Stormwater Collaborative, Chicago Metropolitan Agency for Planning, Coastal Management Program, Illinois Department of Natural Resources, University of Illinois Extension, Illinois Sustainable Technology Center, Metropolitan Water Reclamation District of Greater Chicago, Parkland College's NGICP Training Center, and University of Illinois at Urbana-Champaign's Prairie Research Institute. Opportunity, Advancement, and Innovation in Workforce Development spearheaded the training, but due to funding losses and complications caused by COVID-19, Chicago Regional Trees Initiative from the Morton Arboretum has assumed the leadership of future offerings.

Going forward, Parkland faculty are involved in the Curriculum Committee to rewrite the NGICP curriculum for ECI standards. The Parkland College NGICP Training Center hopes to offer a minimum of 2 to 3 trainings each year.

For more information, see ngicp.org.

Rainscaping Education Program

University of Illinois Extension provides training to communities interested in building rain gardens, using the Rainscaping Education curriculum developed by Illinois-Indiana Sea Grant and Purdue University Extension. Landscape practices such as rain gardens, which direct stormwater to be absorbed by soils, are of continued interest among Extension clientele and conservation partners. Through workshops, Master Gardeners, Master Naturalists, and other community members learn about rain gardens and additional residential-scale green infrastructure techniques. Sessions cover an introduction to rainscaping and rain gardens with specific modules for rain garden site selection and plant selection as well as garden design, installation, maintenance, and community engagement. The program uses the flipped classroom model in which participants watch videos before each topic of the 15-hour in-person training, while the in-person training includes hands-on activities, interactive discussions, and field trips to community rainscaping projects to deepen learning. Participants gain experience through the creation of a demonstration rain garden with community partners in a public space. Custom designed interpretive signs are available to be installed with each demonstration to promote education efforts. Participants are encouraged to attend as community teams to support implementation of public education programs and provide technical assistance for homeowners or small-scale public projects upon completion of the training. University of Illinois Extension offers the program collaboratively with Purdue University Extension, coordinated by Illinois-Indiana Sea Grant. This partnership began in 2021.

The 2021 Illinois Extension programs were offered four times in three locations with 36 participants:

- Effingham County, 5 participants
- Champaign County, 26 participants
- Jackson County, 5 participants

Effingham's demonstration rain garden constructed as part of the workshop is located at the County Extension Office. The garden captures runoff from the parking lot and is 240 square feet and 12" deep. The Champaign class renovated an existing rain garden at a campus residence hall. The Jackson County class, sponsored by the Greater Egypt Regional Planning Commission, performed hands on maintenance at the rain garden they built during a pilot Rainscaping Education Program.

In 2022, Illinois Extension programs were offered in four locations with 62 participants:

- Macoupin County, 6 participants
- Rock Island County, 9 participants
- Hancock County, 25 participants
- Cook County, 22 participants

The Rock Island County program included additional information about NLRs. Cook County's program offered coaching sessions teaching participants to design their individual rain gardens and if participants completed all sessions, they were awarded \$200 each towards building them. Eleven participants qualified for these stipends, which were funded via a partnership with the Cook County Forest Preserve as part of the Conservation at Home Program.

A grant from the Extension Disaster Education Network funded the rain garden in Hancock County as part of a demonstration effort for stormwater management practices. The University of Illinois Extension partnered with Historic Nauvoo to present the Purdue Rainscaping program and design and

install the demonstration rain garden. Historic Nauvoo has an estimated 100,000 visitors each year. The location is prime for educational efforts of how green infrastructure can serve to reduce the impact of flooding. The rain garden sites are 1,524 square feet in two linear sections along a highly traveled intersection to maximize visibility.

To further collaborative efforts and program sustainability, a train-the-trainer effort occurred at the end of 2021 and 2022 with University of Illinois Extension and Purdue Extension staff. Ten Illinois staff educators attended seven, one-hour sessions to learn how to host and teach the Rainscaping sessions.

For more information, see iiseagrant.org/work/sustainable-community-planning/programs-initiatives/purdue-rainscaping-education/.

Red Oak Rain Garden

The Red Oak Rain Garden is a demonstration landscape on the University of Illinois campus that reduces flooding and improves water quality. It also increases green infrastructure literacy and is a model for how to design, build, and care for rain gardens. It is managed by the Red Oak Rain Garden Team, who are part of University of Illinois Extension and Illinois Indiana Sea Grant.

While the garden was completely renovated in 2019, the team secured additional funding and coordinated an expansion in 2021. The rain garden now encompasses approximately 12,000 square feet (up from 9,200) with more than 13,000 plants representing 59 species. Additionally, a neighboring acre of land surrounding a stormwater retention pond was seeded with 41 native prairie plant species, and hundreds of native spring ephemerals were installed at another nearby site. The rain garden has a capacity of nearly 27,000 gallons.

In 2022, the team hosted a celebration to mark the completion of the boardwalk bridge, which spans the garden and is comprised of sustainably sourced, locally milled timber. The Red Oak Rain Garden's eight outreach brochures, inspired by the garden's plants, were translated into Spanish. The team also worked with the University Foundation to launch a donation hub to establish a long-term garden maintenance endowment.

Throughout 2021-22, more than 1,000 people learned about stormwater management and the benefits of green infrastructure via presentations and tours. The garden's online engagement remained strong with more than 17,000 website views, more than 2,000 blog reads, and 400–600 followers on Facebook, Instagram, and Twitter.

Education is a key component to the rain garden's approach of using service learning to accomplish maintenance, which is oftentimes a barrier to green infrastructure success. Care is provided by an ever-growing base of community and student volunteers that receive hands-on training and lessons about native plants and rain gardens at the start of each workday. Additionally, its design utilizes the concept of designing with maintenance in mind, which makes stewardship manageable. The Red Oak Rain Garden approach is a model for the demonstration rain gardens built in Illinois as part of the Rainscaping Education program.

For more information, see go.illinois.edu/RORG.

Watershed-Based Planning

Watershed-based plans, as mentioned in chapters 4 and 5, outline current conditions, identify recommended practices, and provide an integrated, holistic framework to protect and improve water quality in a geographic region. They address recommended practices in all three NLRs sectors: agriculture, point sources, and stormwater. Plans are typically developed in partnership with local government agencies, businesses, nonprofits, and residents. As discussed previously, plans are tracked in the Resource Management Mapping Service available at www.rmms.illinois.edu.

Below are examples of watershed-based plans developed or being developed by NLRs partners that feature stormwater management best management practices. These plans strive to identify the causes and sources of impairment and propose solutions, such as streambank stabilization, green infrastructure, and educational programs to reduce nutrient and other pollutant loading.

Chicago Metropolitan Agency for Planning

The Chicago Metropolitan Agency for Planning is currently developing a watershed-based plan for a 16-square-mile area that drains to Indian Creek and the adjoining Fox River in northeastern Illinois. The planning area is located across eastern Kane and western DuPage counties and involves numerous planning partners including the cities of Aurora and Batavia, counties of Kane and DuPage, Fox River Study Group, Fox River Ecosystem Partnership, Fermilab, and Fox Metro Water Reclamation District. The plan will be completed in early 2023. Information about this plan can be found at engage.cmap.illinois.gov/indian-creek-watershed-based-plan.

DuPage County Stormwater Management

Utilizing funds awarded through the Illinois EPA's Section 604b Watershed Planning Program, DuPage County Stormwater Management completed a Watershed-Based Plan for the East Branch DuPage River watershed. The East Branch DuPage River watershed covers more than 52,000 acres, 81.2 square miles, and is located in central DuPage County with a small portion extending south into Will County. It has been classified as an impaired waterway by Illinois EPA for several pollutants, including total phosphorus, sediment/siltation, dissolved oxygen, and aquatic algae. The plan is under review by Illinois EPA.

Greater Egypt Regional Planning and Development Commission

The Greater Egypt Regional Planning and Development Commission has an active role in the development of watershed-based plans in southern Illinois. Two watershed-based plans were completed during the reporting period: Western Crab Orchard Creek watershed, a collection of three HUC 12 watersheds encompassing Carbondale and Makanda, and Kinkaid Creek watershed, a HUC 10 watershed containing Kinkaid Lake.

For more information, see GreaterEgypt.org/watershed-based-planning.

Kinkaid Creek Watershed

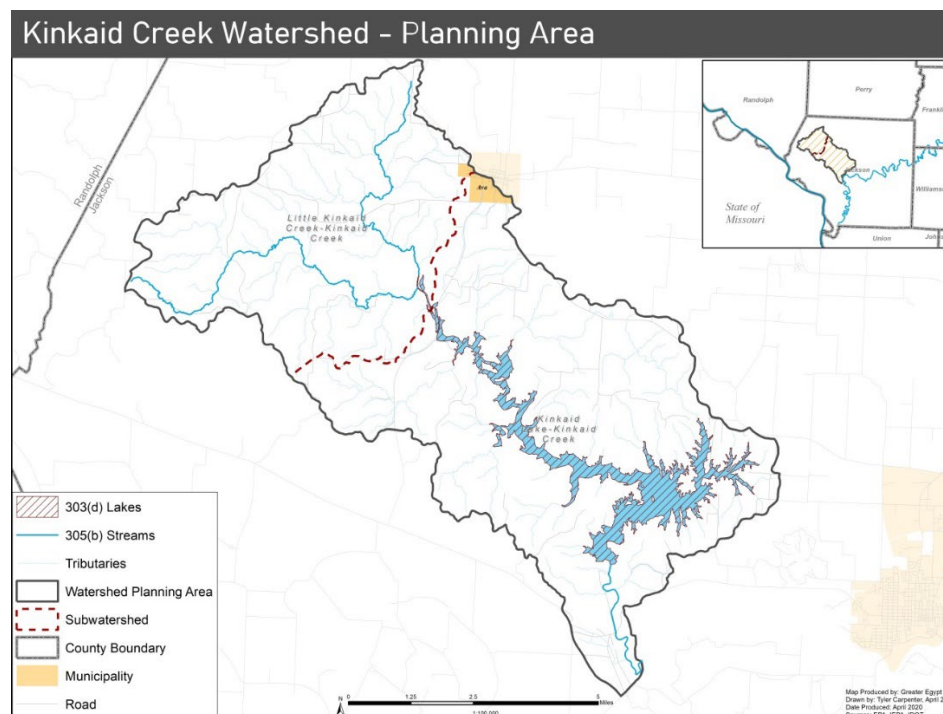
Beginning in the latter part 2019, the Greater Egypt Regional Planning and Development Commission (Greater Egypt) was contracted by the Illinois Environmental Protection Agency (IEPA) to develop a watershed-based plan for the Kinkaid Creek Watershed (0714010611) under Clean Water Act Section 604(b) funding.

The Kinkaid Creek watershed encompasses nearly 41,225 acres, or roughly sixty-four square miles, and is in Jackson County, Illinois. It is part of the larger Big Muddy River watershed. The only municipality in the planning area is a small portion of the Village of Ava.

One waterbody in the watershed has been placed on the Illinois Environmental Protection Agency's 303(d) List of Impaired Waters. This list is comprised of waterbodies that do not meet water quality standards. Kinkaid Lake (IL_RNC) has been placed on the list for impairments from mercury. The impaired designated use for mercury is fish consumption.

Following the submission of the Kinkaid Creek Watershed Inventory and Assessment, an initial stakeholder meeting was held in 2020 to gain awareness of planning efforts, and to garner membership for the Kinkaid Creek Watershed Planning Committee. The group convened on a quarterly basis and provided guidance throughout the plan. This included discussing existing knowledge of the watershed and suggesting best management practices (BMP) for the plan. The success of the plan relies heavily on the continuation of public involvement. This includes overseeing implementation of the plan and monitoring progress.

Land use in the watershed is represented by large areas of agriculture and forest. Forested areas in the watershed compose over sixty percent of the total land cover (25,300 acres). Pasture/Hay represents 17.6 percent of the land area (7,260 acres) while Cultivated Crops makes up nearly ten percent at 4,050 acres. Open water in the watershed comprises six percent of the land area (2,500 acres).



While impervious surfaces in the watershed are low, the Ava and marina areas constitute the largest portion of the watershed’s impervious network. The watershed exhibits around four percent of imperviousness features (10 % or more impervious surface).

The Spreadsheet Tool for Estimating Pollutant Loads (STEPL) was utilized to generate existing pollutant loads for the Kinkaid Creek watershed and its subwatersheds. While the program produces general estimates, the baseline data was generated from multiple factors including land use, climatic indicators, agriculture, septic rates, urban runoff, and streambank erosion using lateral recession rates. In the Kinkaid Creek Watershed, estimated pollutant loads are influenced heavily by agricultural areas.

Sources	N Load (lb/yr)	Percent of Total N Load	P Load (lb/yr)	Percent of Total P Load	Sediment Load (t/yr)	Percent of Total Sediment Load
Urban	11832.9	5.95%	1820.9	4.39%	272.0	0.77%
Cropland	43772.4	22.02%	13645.4	32.90%	9266.0	26.36%
Pastureland	46777.5	23.54%	6789.5	16.37%	3307.7	9.41%
Forest	7371.0	3.71%	3353.0	8.08%	903.6	2.57%
Streambank	34245.3	17.23%	13184.4	31.79%	21405.9	60.89%
Groundwater	54740.8	27.54%	2681.4	6.47%	0.0	0.00%
Total	198739.8	-	41474.6	-	35155.1	-

Pollutant load reduction targets were also generated for major pollutants. A reduction of nitrogen at fifteen percent, phosphorus at twenty-five percent, and sediment reduction of twenty-five percent were calculated for the plan. Target goals are consistent with the Illinois Nutrient Loss Reduction Strategy (ILNLRs).

To achieve the target goals, BMPs were suggested regarding the major nutrient contributor in the watershed, agricultural practices. While the plan addresses watershed-wide practices, site-specific BMPs have also been established to manage agricultural pollutants and other impairments on a localized level.

These management efforts confront the impairments of the various waterbodies in the Kinkaid Creek watershed. Some of the measures include streambank stabilization, agricultural filter strips, and grassed waterways. They have also been categorized by priority based on feasibility, cost, and pollutant load reductions.

The plan incorporates the nine minimum elements required of a watershed-based plan. These elements include: a characterization of the watershed through a resource inventory and assessment to identify nonpoint source pollution, identification of management measures to address those pollutants, identifying funding and technical assistance, an educational component, and a monitoring and evaluation component to track progress and monitor accomplishments.

Funding will mainly come through EPA Clean Water Act Section 319 grants. Most of the BMPs in the plan are eligible to receive funding through these grants since their focus is the reduction of nonpoint source pollution.

Outreach and education of watershed-related activities are important in promoting awareness of the plan and progression of plan implementation. Some of the outreach components include holding public meetings, distributing flyers about the plan and agricultural activities, and locating volunteers for litter and debris cleanups.

Implementation of the plan is divided into three phases. Phase I represents the first two years of the plan where most educational and outreach components are implemented; along with selecting site-specific BMPs for grant funding. Phase II will require the watershed action committee to continue submitting grants and starting implementation of BMPs. Phase III represents the last four years of the planning period in which BMP implementation will continue and evaluating the plan will begin.

Interim measurable milestones, water quality benchmarks, and a monitoring component have also been established to track progress and evaluate the success of the plan. The table below represents the water quality benchmarks in the plan which focuses on nitrogen, phosphorus, and sediment.

Benchmark Period	Benchmark Reduction Targets					
	Nitrogen (percent)	Nitrogen (lbs)	Phosphorus (percent)	Phosphorus (lbs)	Sediment (percent)	Sediment (tons)
2 Year (Phase I)	-	-	-	-	-	-
6 Year (Phase II)	7	139,118	10	41,475	10	35,155
10 Year (Phase III)	15	298,110	25	103,688	25	87,888

The monitoring component of the plan features programs offered by IEPA and the Illinois Department of Natural Resources (IDNR). The Ambient Water Quality Monitoring Network (AWQMN) and the Intensive River Basin Surveys are both ways in which water quality can be tested. Results will be analyzed by the watershed action committee to determine the success of BMP implementation and the plan itself.

For more information, see greateregypt.org/kinkaid-creek-watershed-based-plan.

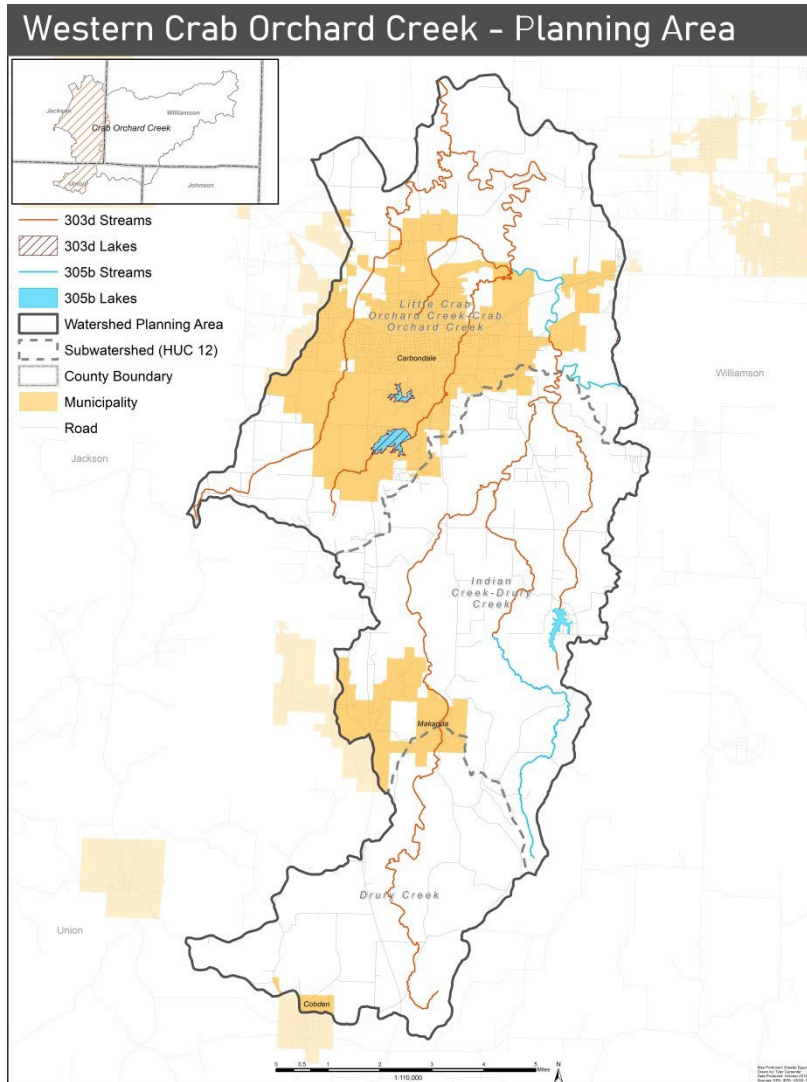
Western Crab Orchard Creek Watershed-based Plan

Beginning in the latter part 2018, the Greater Egypt Regional Planning and Development Commission (Greater Egypt) was contracted by the Illinois Environmental Protection Agency (IEPA) to develop a watershed-based plan for the Western Crab Orchard Creek watershed using EPA Section 604(b) funding.

The Western Crab Orchard Creek watershed is a collective group of three smaller watersheds comprised of: Drury Creek, Indian Creek – Drury Creek, and Little Crab Orchard Creek – Crab Orchard Creek. The study area is part of the larger Big Muddy River basin.

The planning area encompasses 56,533 acres, or around 88 square miles. Most of the watershed lies within Jackson County (78%), with the other portions being in Union (19%) and Williamson County (3%). While the City of Carbondale represents the largest built environment in the study area, the Villages of Cobden and Makanda are also represented.

Nine waterbodies in the watershed have been placed on the Illinois Environmental Protection Agency's 303(d) List of Impaired Waters. This list is comprised of waterbodies that do not meet water quality standards. Causes of these impairments in the watershed include: dissolved oxygen, mercury, methoxychlor, PCBs, pH, sedimentation/siltation, total suspended solids (TSS), and water temperature.



Following the submission of the Western Crab Orchard Creek Watershed Resource Inventory and Assessment, an initial stakeholder meeting was held in 2020 to gain awareness of planning efforts, and to garner membership for the Western Crab Orchard Creek Watershed Planning Committee. The group convened on a quarterly basis and provided guidance throughout the plan. This included discussing existing knowledge of the watershed and suggesting best management practices (BMP) for the plan. The success of the plan relies heavily on the continuation of public involvement. This includes overseeing implementation of the plan and monitoring progress.

Land use in the watershed is represented by large areas of agriculture, forest, and urban environment. Agriculture in the watershed is composed of 18.7 percent of pasture and hay and 6.7 percent of cultivated crops. Forested areas represent the largest land use at 51 percent of the watershed.

Developed land constitutes 21 percent. Remaining land uses in the watershed include open water (1.1%) and wetlands (1.2%). With around 25 percent of the watershed being classified as agriculture, there is a high potential nutrient runoff. This is exemplified by areas of cropland that are located in the Little Crab Orchard Creek subwatershed.

While impervious surfaces in the planning area are generally low, the Carbondale area constitutes the largest portion of the watershed’s impervious network. This is made up of roads, buildings, and other components of the built environment. This can also lead to localized flooding.

The Spreadsheet Tool for Estimating Pollutant Loads (STEPL) was utilized to generate existing pollutant loads for the Western Crab Orchard Creek watershed and its subwatershed management units. While the program produces general estimates, the baseline data was generated from multiple factors including: land use, climatic indicators, agriculture, septic rates, urban runoff, and streambank erosion using lateral recession rates. In the Western Crab Orchard Creek watershed, estimated pollutant loads are influenced by areas of agricultural and urban environment.

Source	N Load (lb/yr)	Percent of Total Load	P Load (lb/yr)	Percent of Total Load	Sediment Load (tons/yr)	Percent of Total Load
Urban	81390.36	24.88%	12527.90	20.79%	1870.49	3.91%
Cropland	31256.72	9.56%	9009.52	14.95%	5606.23	11.71%
Pastureland	70201.03	21.46%	8968.51	14.88%	3733.30	7.80%
Forest and Grassland	8619.41	2.64%	3998.50	6.63%	845.65	1.77%
Groundwater	78323.21	23.94%	3696.34	6.13%	0.00	0.00%
Streambank	57308.84	17.52%	22063.91	36.61%	35818.03	74.82%
Total	327,099.55		60,264.68		47,873.69	

Pollutant load reduction targets were also generated for major pollutants. A reduction of nitrogen at 15 percent, phosphorus at 25 percent, and sediment reduction of 25 percent were calculated for the plan. Target goals are consistent with the Illinois Nutrient Loss Reduction Strategy (ILNLRs).

To achieve the target goals, BMPs were suggested in regards to the major nutrient contributors in the watershed, agricultural and urban practices. While the plan addresses watershed-wide practices, site-specific BMPs have also been established to manage agricultural and urban pollutants and other impairments on a localized level.

These management efforts confront the impairments of the various waterbodies in the Western Crab Orchard Creek watershed. Some of the measures include gully, shoreline, and streambank stabilization methods. They have also been categorized by priority based on cost and pollutant load reductions.

The plan incorporates the nine minimum elements required of a watershed-based plan. These elements include: a characterization of the watershed through a resource inventory and assessment to identify nonpoint source pollution, identification of management measures to address those pollutants, identifying funding and technical assistance, an educational component, and a monitoring and evaluation component to track progress and monitor accomplishments.

Funding will mainly come through EPA Clean Water Act Section 319 grants. Most of the BMPs in the plan are eligible to receive funding through these grants since their focus is reducing nonpoint source pollution.

Outreach and education of watershed-related activities are important in promoting awareness of the plan and progression of plan implementation. Some of the outreach components include: holding public meetings, distributing flyers about the plan and agricultural activities, and locating volunteers for litter cleanups.

Implementation of the plan is divided into three phases. Phase I represents the first two years of the plan where most educational and outreach components are implemented; along with selecting site-specific BMPs for grant funding. Phase II will require the watershed action committee to continue submitting grants and starting implementation of BMPs. Phase III represents the last four years of the planning period in which BMP implementation will continue and evaluating the plan will begin.

Interim measurable milestones, water quality benchmarks, and a monitoring component have also been established to track progress and evaluate the success of the plan. represents the ten-year water quality benchmarks in the plan with focus on nitrogen, phosphorus, and sediment.

Benchmark Period	Benchmark Reduction Targets					
	Nitrogen (percent)	Nitrogen (lbs)	Phosphorus (percent)	Phosphorus (lbs)	Sediment (percent)	Sediment (tons)
2 Year (Phase I)	-	-	-	-	-	-
6 Year (Phase II)	7	228,970	10	60,265	10	47,880
10 Year (Phase III)	15	490,649	25	150,662	25	119,699

The monitoring component of the plan features programs offered by IEPA and the Illinois Department of Natural Resources (IDNR). The Ambient Water Quality Monitoring Network (AWQMN) and the Intensive River Basin Surveys are both ways in which water quality can be tested. Results will be analyzed by the watershed action committee to determine the success of BMP implementation and the plan itself.

For more information, see greateregyp.org/crab-orchard-creek-west-watershed-based-plan.