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# MEMORANDUM

**To:** **Ferson-Otter Creek Watershed Planning Group**

**Date:** **September 2010**

**From:** **CMAP Staff**

**Re:** **Project charter for Ferson-Otter Creek Watershed Plan**

## Watershed Planning

### *Chicago Metropolitan Agency for Planning*

The Chicago Metropolitan Agency for Planning (CMAP)[1] is the delegated authority for the region's areawide water quality management plan.[2] Thus, CMAP is obligated to outline management strategies for eliminating point- and nonpoint-source pollution, protecting groundwater, and managing wastewater throughout the seven-county region. CMAP, as did the Northeastern Illinois Planning Commission before it, uses a collaborative watershed approach to planning that seeks to protect and/or remediate water quality.[3] Water pollution prevention and groundwater protection is the shared responsibility of state and local governments (and individual farm operators too for controlling agricultural nonpoint-source pollution.)[4]

CMAP entered into an agreement with the Illinois Environmental Protection Agency (IEPA)[5] to complete four watershed-based plans within the Fox River basin, including the Ferson-Otter Creek watershed. Funding for these projects was provided by the IEPA through Section 604(b) of the Clean Water Act. The plan must meet certain requirements which are discussed below. The Conservation Foundation (TCF)[6] and the Fox River Ecosystem Partnership (FREP)[7] are both

[1] Chicago Metropolitan Agency for Planning website, 2010. http://www.cmap.illinois.gov/default.aspx
[2] NIPC, 1979 (as amended). Areawide Water Quality Management Plan. Volumes 1 and 2.
[3] A watershed planning approach often addresses other related natural resource (e.g. open space, habitat, etc. or built-environment (flooding, stormwater, etc.) management issues in a complementary fashion. In so doing, a watershed plan can be multiobjective.
[4] Illinois EPA, Bureau of Water. 1992 (as amended). Illinois Water Quality Management Plan.
[5] Illinois EPA, Bureau of Water website, 2010. http://www.epa.state.il.us/water/
[6] The Conservation Foundation website, 2010. http://www.theconservationfoundation.org/

partners in the planning process and have received grants from CMAP. TCF will serve as the watershed coordinator, convene local stakeholders and execute an outreach plan. FREP will support the outreach and education effort by upgrading their subwatersheds webpage, highlight watershed planning activity in their e-newsletter – "Downstream" and host a Noon Network in each of the four watersheds. The planning process and watershed plans are to be completed by December 31, 2011.

***Ferson-Otter Creek Watershed***

The Ferson-Otter Creek watershed consists of two subwatersheds: Ferson Creek and Otter Creek. However for our planning purposes, the two subwatersheds will be studied together as Ferson Creek is a major tributary to Otter Creek. The Ferson-Otter Creek watershed has a drainage area of approximately 54 square miles (Figure 1), with 29% of the land area developed.[8] The watershed is located on the urban fringe of the Chicago Metropolitan area in Kane County, the 5th fastest growing county in Illinois and covers portions of the Cities of Elgin and St. Charles as well as the Villages of Campton Hills, South Elgin, and Lily Lake.[9] The total population in Ferson-Otter Creek watershed is approximately 32,515[10].

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[7] Fox River Ecosystem Partnership website, 2010. http://foxriverecosystem.org/

[8] Kane County, Illinois Flood Information website, updated January 12, 2005. http://www.co.kane.il.us/kcstorm/flood/index.htm

[9] U.S. Census Bureau, Quick Facts-Illinois website, revised 2010. http://quickfacts.census.gov/qfd/states/17000.html

[10] U.S. Census Bureau, 2000. http://www.census.gov/main/www/cen2000.html

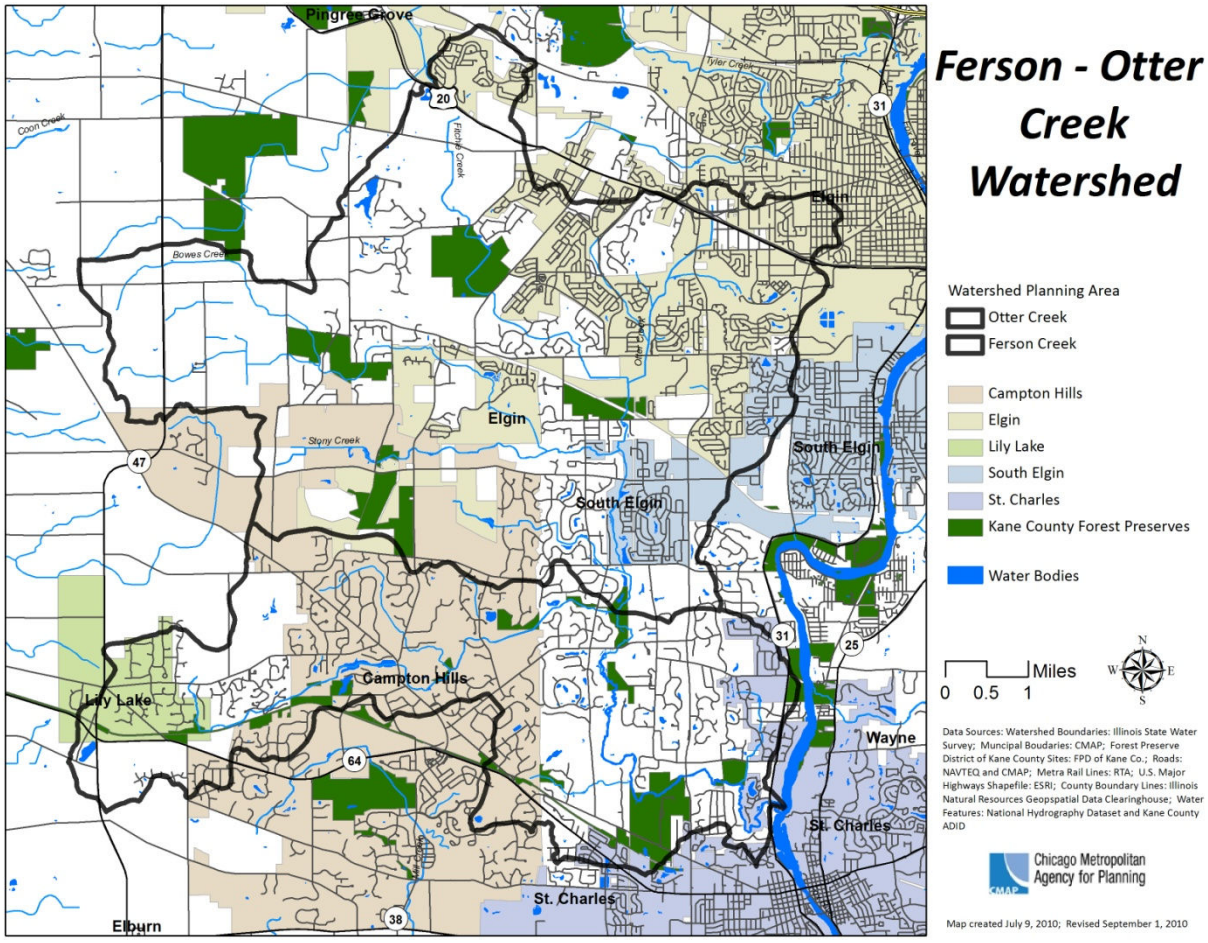


**Figure 1: Watershed Planning Area**

***Current Watershed Conditions***

In the *Draft 2010 Illinois Integrated Water Quality Report and Section 303 (d) list* (Illinois EPA[11]), both Ferson Creek and Otter Creek subwatersheds were assessed and determined to be full support for the aquatic life designated use. However, Ferson Creek was assessed and determined to be nonsupport for the primary contact designated use. The cause of impairment is fecal coliform with the sources of impairment identified as urban runoff/storm sewers and runoff from Forest/Grassland/Parkland. Ferson Creek was not assessed for secondary contact, fish consumption, or aesthetic quality. Otter Creek was not assessed for primary contact, secondary contact, fish consumption or aesthetic quality. The two smaller tributaries that flow into Otter Creek, Fitchie Creek and Stony Creek were not assessed for any designated use.

Furthermore, the Ferson-Otter Creek watershed is within the Lower Fox River basin. The downstream segment of the Fox River was assessed and determined to be in nonsupport for aquatic life and fish consumption. The causes of impairment were dissolved oxygen, mercury,

[11] State Section 303(d) lists feature information on waterbodies where one or more designated uses have been assessed and deemed impaired. The list identifies both potential causes and sources of impairment for the assessed designated use(s). Illinois EPA, DRAFT Illinois Integrated Water Quality Report and Section 303 (d) list, 2010. http://www.epa.state.il.us/water/tmdl/303d-list.html

polychlorinated biphenyls, alterations in stream-side or littoral vegetative covers and other flow regime alterations. The sources of impairment were identified as streambank modifications/destabilization, impacts from hydrostructure flow regulation/modification, atmospheric deposition-toxics and unknown sources. The watershed-based plan will need to specifically address the fecal coliform impairment; however, the plan should also address some of the issues the Fox River is facing given that the Ferson-Otter Creek is a major tributary. These issues include addressing nutrients (phosphorus and nitrogen) and sediment or total suspended solids. Sources of these pollutants include both agricultural and urban runoff. To provide context, a brief discussion of the Fox River Basin follows.

## The Fox River Basin

### *General Description*

The Fox River is the third largest tributary of the Illinois River stretching 185 miles (115 miles in Illinois) from its headwaters near Waukesha, Wisconsin, to its confluence with the Illinois River in Ottawa. The Fox River Basin covers approximately 2,658 square miles of which 1,720 (65%) are in Illinois. The river basin includes portions of eleven Illinois counties including six (Cook, DuPage, Kane, Lake, McHenry, and Will) that are the most populated in the state and seven that are among the top ten fastest growing counties in Illinois (#1: Kendall, #2: Will, #3: Kane, #5: McHenry, #7: Grundy, #8: Lake, #9: DeKalb)[12]. An attraction for the population growth in the Fox River Basin is the abundance of recreational opportunities and high quality natural resources associated with the river and its tributaries. However, those same high quality resources are being lost or significantly impaired by historic land-use change and a type of development that is often inconsistent with sustainable land and water resources stewardship.

The Illinois portion of the Fox River Basin contains about 2,300 river and tributary stream miles and 406 lakes, many of the lakes glacially formed (IDNR, 1998). Perhaps the most noticeable of these lakes are in the Fox Chain of Lakes in northeastern Lake County, comprised of fifteen interconnected lakes with more than 7,500 surface acres of water. Four segments of the Fox River and fourteen glacial lakes are considered to be "biologically significant" with more than 150 state-threatened and endangered species found within the watershed (IDNR, 1997).

### *Water Quality Conditions*

Agricultural and urban development within the Fox River watershed have resulted in hydrologic, water quality, and direct impacts to the Fox River and its tributaries. The hydrologic and direct stream modification impacts have been compounded by the invasion of nonnative vegetation that is unsuitable for bank stabilization, resulting in extensive streambank erosion. This in turn adversely impacts water quality and results in impairment of aquatic habitat. In many areas the absence of deep rooted native riparian vegetation results in little or

[12] U.S. Census Bureau, Population Estimates Program. 2005. Internet Release Date: April 14, 2005. http://www.census.gov/popest/counties/

no filtering of surface or subsurface runoff from the watershed to the streams. Agricultural and urban runoff results in further degraded conditions.

The water quality of surface and groundwater resources is assessed throughout the state and is reported in the Illinois Environmental Protection Agency's (Illinois EPA) biannual *Illinois Integrated Water Quality Report and Section 303(d) List (Integrated Report)*[13]. In the 2010 draft *Integrated Report*, designated uses listed for the 17 Illinois EPA-identified segments of the Fox River are aquatic life, primary contact, secondary contact, fish consumption, and/or public water supply. All 17 segments were assessed for **aquatic life use**, with 14 considered nonsupport and three segments (one in the Upper Fox, two in the Lower Fox Basin) yielding full support. Causes of impairment include sedimentation/siltation, total suspended solids, total phosphorus, pH, certain organics, and unknown causes. Impairment sources include urban runoff/ storm sewers, combined sewer overflows, municipal point source discharges, flow regulation/ modification, dams/impoundments, agriculture and crop-related sources, habitat modification, bank modification/destabilization, upstream impoundments, recreational pollution, and contaminated sediments.

All 17 segments also were assessed for **fish consumption use**, and all were considered nonsupport due to PCBs and in some cases also mercury from unknown sources. Of the ten segments assessed for **primary contact**, three were considered full support and the other seven nonsupport. Causes of primary contact impairment were total fecal coliform bacteria from unknown sources. Two segments are used for **public water supply**, and one was considered full support and the other nonsupport (due to chloride) for that designated use. Per Illinois EPA's draft 2010 Section 303(d) List (IEPA, 2010a; Appendices A-2 and A-3), the entire Fox River within Illinois and all 10 lakes within the Fox Chain O'Lakes are 303(d)-listed waters. Additionally, 66 of the other 72 lakes that were assessed within the Fox River Basin are 303(d)-listed (for the aesthetic quality and/or fish consumption designated use), including Silver Lake for fish consumption use due to mercury.

For groundwater quality, a probabilistic monitoring network of community water supply (CWS) wells is monitored by Illinois EPA on a rotating basis. The 2010 draft *Integrated Report* (IEPA, 2010b) indicates a range of good to fair to poor drinking water use support for the CWS ambient network wells within northeastern Illinois. Increasing chloride concentrations are one of the particular concerns in northeastern Illinois sand and gravel and shallow bedrock aquifers.

***Watershed-Based Plan Components and Goals***

The fundamental purpose of the watershed-based plan is to evaluate and recommend the best measures to help restore the beneficial uses in the Ferson-Otter Creek watershed, with the long-term goal of improving conditions enough that Ferson Creek can be removed from the Illinois Section 303(d) list. Since the only identified cause of impairment in Ferson-Otter Creek watershed is fecal coliform, the focus will be on recommendations to eliminate this cause.

[13] Illinois EPA, DRAFT Illinois Integrated Water Quality Report and Section 303 (d) list, 2010. http://www.epa.state.il.us/water/tmdl/303d-list.html

The US EPA has identified 9 components that a watershed-based plan should incorporate:

1. Identify causes and sources of pollution that will need to be controlled to achieve pollutant load reductions estimated in the watershed plan.
2. Estimate pollutant reduction loads expected from following implementation of management measures described in #3 below.
3. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions estimated under #2 above and an identification of the critical areas where measures need to be implemented.
4. An estimate of the amount of technical assistance, associated costs, potential funding source and parties that will be relied upon to implement.
5. A public information/education component designed to change social behavior.
6. Develop a plan implementation schedule.
7. Develop a description of interim, measureable milestones.
8. Identify indicators that can be used to determine whether pollutant loading reductions are being achieved over time.
9. Develop a monitoring component to evaluate the effectiveness of the implementation efforts over time.

The plan should also address the regional criteria piloted in the Kishwaukee River Basin, completed by CMAP in 2008[14], which are described below.

1. Develop a vision for watershed land use by evaluating the collection of local comprehensive plans and estimating the cumulative impact on future water quality.
2. Set target pollutant-load reductions for impaired waters taking into account both point- and nonpoint-source pollution sources.
3. Consider groundwater protection from both water quality and water quantity perspectives.
4. Compare municipal codes and ordinances against the US EPA developed Water Quality Scorecard.

In order to address the criteria listed above, CMAP will utilize a pollutant-load model created by the Illinois State Water Survey (ISWS) for the Fox River Study Group (FRSG). This model has delineated the Upper and Lower Fox River Basins into 31 sub-basins and 1 main branch of the Fox River. The model is a Hydrologic Simulation Program FORTRAN (HSPF) model which will simulate watershed loading and delivery and routing of nonpoint and point sources of pollution. The ISWS is collecting water quality samples to calibrate the model in late 2010.

As mentioned, the Ferson-Otter Creek watershed lies within one of the fastest growing counties in Illinois. All of the communities in the watershed are dependent on groundwater and river

[14] Kishwaukee River Watershed Planning, CMAP website, 2010.
http://www.cmap.illinois.gov/kishwaukee.aspx

water for their drinking water sources. Current and future water demand/supply issues are additional considerations and discussion of the issues will be of benefit to everyone.[15]

**Watershed Planning Process**

***Planning Partners***

The Conservation Foundation (TCF) was established in 1972 as a not-for-profit land and watershed protection organization. TCF has been involved in planning coordination and technical assistance for a number of watershed plans including Upper DuPage River, Aux Sable Creek, Lower DuPage River, Salt Creek and Tyler Creek[16].

The Fox River Ecosystem Partnership (FREP) is a not-for-profit created in 1996, comprised of local governments, private businesses, not-for-profits and landowners in the Fox River Basin. FREP's vision for the Fox River Basin "is to balance all the uses and demands on our natural resources while preserving and enhancing a healthy environment[17]."

***Planning Stakeholders***

TCF will be responsible for assembling local stakeholders through advertisements, coordination with CMAP and FREP, and direct solicitation. Stakeholders may include representatives from local communities, forest preserve districts and other bodies of government, local landowners, special interest groups, and any citizens that live in the watershed.

***Plan Development***

As the project lead, CMAP will be facilitating and providing technical assistance for the watershed-based plan. One of the tasks CMAP will be responsible for is leading stakeholder meetings, which will be held on a near-monthly basis. These meetings will direct the development of the watershed-based plan based on stakeholder input, best professional judgment and the requirements enumerated above. CMAP will also compile a comprehensive watershed resource inventory which will include the natural, human and man-made resources in the watersheds. CMAP will be using an HSPF model to determine current pollutant loading in the watershed. This model will also be used to simulate potential pollutant-load reductions associated with plan recommendations. CMAP will be responsible for writing and publishing the plan.

***Project Timeline***

The project has somewhat of an expedited schedule. It is important, therefore, to be cognizant of the project deadlines. The major project completion dates are listed below. As the project continues a more detailed schedule will be developed.

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[15] *Water 2050: Northeastern Illinois Regional Water Supply/Demand Plan*. 2010. Available at: http://www.cmap.illinois.gov/uploadedFiles/committees/watersupply/Documents/FY10-0079_RWSPG_PLAN_final_low_res.pdf

[16] The Conservation Foundation website, 2010. http://www.theconservationfoundation.org/

[17] Fox River Ecosystem Partnership, website 2010. http://foxriverecosystem.org/index.htm

| Activity | Completion Date | Responsible Partner |
|---|---|---|
| PowerPoint Presentation Final Draft | October 22, 2010 | The Conservation Foundation |
| Draft Website Design | December 1, 2010 | Fox River Ecosystem Partnership |
| Updates to Website | Ongoing | Fox River Ecosystem Partnership |
| Brochure #1 Publication | February 1, 2011 | The Conservation Foundation |
| Educational Poster e-distribution | April 1, 2011 | The Conservation Foundation |
| Water Resources Inventory | May 1, 2011 | Chicago Metropolitan Agency for Planning |
| Brochure #2 Publication | August 1, 2011 | The Conservation Foundation |
| Draft Plan and Executive Summary | November 1, 2011 | Chicago Metropolitan Agency for Planning |
| Final Plan and Executive Summary | December 31, 2011 | Chicago Metropolitan Agency for Planning |

***Plan Adoption***

A watershed-based plan is an advisory document, but serves as the primary means for addressing nonpoint-source pollution. After decades of investments in wastewater treatment and policies to address other point-source discharges, nonpoint-source pollution has emerged as the focal point nationwide for improving water quality and meeting the goals of the Clean Water Act. After the plan has been completed, stakeholders that represent possible plan implementers will be asked to bring forth the plan to their respective organization. The plan should then be adopted with a resolution to the effect that it supports collective implementation of the plan. CMAP and TCF staff will be available to make presentations to village boards or other governing bodies, but all stakeholders including elected officials should have been regularly apprised of the plan as the planning process progressed. There is precedent for formal adoption of watershed plans that CMAP and local stakeholders have produced: the three watershed plans developed within the Kishwaukee River Basin in 2008 were each adopted by resolution by the cities and counties involved.

Plan adoption does not mean that the policy recommendations of the plan automatically go into place. Ordinances may need to be revised, while local funding may need to be committed to projects through normal budgeting processes. Given the difficult fiscal situation that many implementers face, the plan has to be sensitive to the need to minimize local funding contributions. External funding is expected to cover some or most of the costs of projects in the short term implementation plan, and it is CMAP's intent to try to help secure funding for implementation projects in the Ferson-Otter Creek watershed. However, the need for some local funding cannot be avoided. Ways of raising such revenue will be considered in the plan.

***Plan Production***

CMAP is responsible for producing a watershed based plan and an executive summary document per their IEPA contract. The final products will be available to the public on CMAP's website as well as the FREP website. While plans must address certain issues as described above, stakeholder input is critical in order that plans benefit from local knowledge, reflect local sentiment, and enjoy local buy-in (i.e., support).