UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SEP 3 0 2013

REPLY TO THE ATTENTION OF:
WW-16J

Marcia T. Willhite, Chief
Bureau of Water
Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, Illinois 62794-9276

Dear Ms. Willhite:

The United States Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Loads (TMDLs) for the Middle Illinois River Basin, including supporting documentation and follow up information. The Middle Illinois River Basin is located in central Illinois. The fecal coliform, manganese, total dissolved solids, chloride, and phosphorus TMDLs submitted by the Illinois Environmental Protection Agency address the impaired designated Aquatic Life Use, Aesthetic Quality Use, Public Water Supply Use, and Primary Contact Recreation Use.

These TMDLs meet the requirements of Section 303(d) of the Clean Water Act and U.S. EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, EPA hereby approves Illinois's 11 TMDLs for fecal coliform, manganese, total dissolved solids, chlorides, and phosphorus in the Middle Illinois River Basin. These TMDLs address 23 impairments in the Middle Illinois River Basin. The statutory and regulatory requirements, and EPA's review of Illinois's compliance with each requirement, are described in the enclosed decision document.

We wish to acknowledge IEPA's effort in submitting this TMDL and look forward to future TMDL submissions by the State of Illinois. If you have any questions, please contact Mr. Peter Swenson, Chief of the Watersheds and Wetlands Branch at 312-886-0236.

Sincerely,

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Abel Haile, IEPA
Jennifer Clarke, IEPA

bcc: Urban
File

TMDL: Middle Illinois River Watershed, Illinois
Date: SEP 3 0 2013

Decision Document for the Middle Illinois River Watershed TMDL, Illinois

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable. These TMDL review guidelines are not themselves regulations. They are an attempt to summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any differences between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations themselves.

1. Identification of Water body, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the water body as it appears on the State's/Tribe's 303(d) list. The water body should be identified/georeferenced using the National Hydrography Dataset (NHD), and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the water body and specify the link between the pollutant of concern and the water quality standard (see section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the NPDES permits within the water body. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

(1) the spatial extent of the watershed in which the impaired water body is located;
(2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
(3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;
(4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and

(5) an explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

Comment:
Location/Description
The Middle Illinois River TMDL addresses water quality problems on the middle segments of the main stem of the Illinois River in the Peoria area, as well as other 303(d) waters on the 2008 list including: Kickapoo Creek, Big Bureau Creek, West Bureau Creek, and Farm Creek. The TMDL submittal is for 11 TMDLs, six for fecal coliform bacteria, two for phosphorus, one for Total Dissolved Solids (TDS), one for manganese, and one for chlorides. The TMDL also addresses other impairments in the watershed (see tables at the end of this document).

The Middle Illinois River watershed is located in central Illinois. The project area begins near Spring Valley, where the Illinois River makes its "Big Bend" toward the south and continues downstream past Peoria, Illinois ending near Pekin, Illinois, just above the confluence with the Mackinaw River. The impaired segments of the Illinois River addressed by this TMDL are bounded by the Starved Rock Lock and Dam to the north and Peoria Lock and Dam further downstream. The project area covers nearly 2,100 square miles and includes land within Bureau, Putnam, LaSalle, Marshall, Woodfield and Tazewell Counties. Major tributaries along this stretch of River include Big Bureau Creek, Senachwine Creek, Sandy Creek, Crow Creek, Crow Creek East, Clear Creek, Partridge Creek, Ten Mile Creek, Farm Creek and Kickapoo Creek.

The glacial deposits and associated land forms of the Illinois River Valley exert a lasting influence on present day hydrology, soil types and land cover. The predominant soil group found in most of the watershed is Group B soils, composed of loamy soils with a moderate infiltration rate. Between 13 and 30 percent of the soils are considered to be highly erodible. Despite historic degradation and continuing sedimentation, the Illinois River system is a diverse and biologically productive ecosystem.

The Middle Illinois River Watershed TMDL area is large and the TMDLs in the Report are organized into six watershed clusters: Illinois River Main Stem, Big Bureau Creek, Farm Creek, Kickapoo Creek, Senachwine Lake and Depue Lake. A map in Section 3 of this Decision Document identifies the watershed cluster boundaries. The watershed clusters were delineated to align with USGS ten-digit hydrological unit code (HUC) codes. The 10-digit HUC codes reflect hydrologic watersheds and subwatersheds in the area. Specific details of each are identified in Table 4-3 of the TMDL while watershed cluster boundaries are shown in Figure 4-2 of the TMDL. More detailed watershed characteristics are provided by watershed cluster in the TMDL Report in Sections 5-8, 12 and 13.

The characteristics of the Illinois River Mainstem watershed clusters at Hennepin (Site D-16), Peoria Intake (Site D-30), and Pekin (Site D-05) are summarized by Table 5-5, 5-10 and 5-17 respectively in the TMDL Report. The Peoria Lock and Dam creates a chain of lakes, or large navigational pools, including: Senachwine Lake, Goose Lake, Upper Peoria Lake, and Peoria Lake. The Illinois River widens and slows significantly as it enters the lake system allowing sediment to accumulate on the river's bottom and to form sand bars. The average depth of Peoria

Lake has decreased from eight feet to two feet from 1903 to current time, causing the need for constant dredging to maintain water habitat needed for many fish species.

The Big Bureau Creek watershed cluster covers approximately 520 square miles in the northwest region of the project area (Figure 6-1 in the TMDL document). The drainage area can be further delineated into thirteen 12-digit HUCs. Table 6-1 in the TMDL document details area per 12-digit HUC associated with the Big Bureau Creek watershed cluster. Counties with jurisdiction within the Big Bureau Creek watershed cluster include: Bureau, LaSalle and Lee. The Big Bureau Creek watershed drains into Goose Lake which then drains into Senachwine Lake and the Illinois River.

Located east of Peoria, the Farm Creek watershed cluster has a total drainage area of 62 square miles and can be further delineated into two 12-digit HUCs (Figure 7-2 of the TMDL). Table 7-4 in the TMDL Document summarizes the Farm Creek watershed characteristics as well as pollutant sources for the Farm Creek TMDL segment. Table 7-1 details area per 12-digit HUC associated with the Farm Creek watershed cluster. The entire watershed cluster is located within Tazewell County.

Several backwater lakes in the Middle Illinois River TMDL area were formed by creation of the Illinois River lock and dam system. Lake Depue is located in the Lake Depue State Fish and Wildlife Area near the village of Depue. It is a former oxbow lake covering 524 acres and averaging 2.3 feet in depth. The shoreline is approximately 11 miles long. Lake Depue is connected to the Illinois River at the western end by a narrow shallow channel and separated from the river by a low lying peninsula. The lake fluctuates in depth in response to Illinois River levels. Senachwine Lake is a 3,324 acre lake that forms part of the Illinois River valley. It is located in Putnam and Marshall Counties. To the north, Senachwine Lake is connected to Goose Lake, another backwater lake, by a shallow channel. The lake is separated from the Illinois River by a narrow barrier bar, and connected to the mainstem Illinois River by at least one channel. The lake water levels closely fluctuate in response to Illinois River levels.

Table 1. Middle Illinois River TMDL Waterbody Impairments				Impairments Addressed by Actions to implement TMDL, LRS
Name	Segment ID	Designated Uses	TMDLs	
Illinois River	D-16	Primary Contact Recreation	fecal coliform	
	D-05	Primary Contact Recreation	fecal coliform	
	D-30	Primary Contact Recreation	fecal coliform	
		Public Water Supply	manganese, total dissolved solids	
Kickapoo Creek	DL-01	Primary Contact Recreation	fecal coliform	
Big Bureau Creek	DQ-03	Primary Contact Recreation	fecal coliform	
West Bureau Creek	DQD-01	Primary Contact Recreation	fecal coliform	
Farm Creek	DZZP-03	Aquatic Life Use	Chloride	Alteration in Streamside vegetative cover, TSS, pH, Phosphorus
Depue Lake	RDU	Aesthetic Quality and Aquatic life	Total Phosphorus	Aquatic Algae, sedimentation/ siltation TSS, dissolved oxygen
Senachwine Lake	RDZX	Aesthetic Quality and Aquatic life	Total Phosphorus	Aquatic Algae, sedimentation/ siltation, TSS dissolved oxygen

Land Use Distribution

Land use in the watershed is heavily influenced by agriculture in the upper and lower reaches, in combination with the urban setting surrounding Peoria in the lower portion. Figure 1-7 in the TMDL shows land use within the Middle Illinois River watershed. Approximately 68 percent of the Middle Illinois River watershed area is devoted to agricultural activities. Wetlands and upland forest occupy approximately 17 percent of the watershed area. Urban land use covers approximately 11 percent of the overall watershed.

Much of the project area watershed is dominated by agriculture. Corn and soybeans (row crops) are primary crops in the Illinois River basin. Secondary farm products include winter wheat, oats, hay, vegetables, cattle, hogs, dairy products, poultry, sheep and wool. Field drainage or tiling quickly transports excess water from the fields to adjacent surface waters. Residential development within the upper reaches of the project area is predominately low density. The most densely populated areas of the watershed surround Peoria. However, development on bluff areas can have a higher proportional impact due to road drainage routed directly through culverts to

ravine areas. More detailed land use information is provided in a summary table for each watershed cluster in the TMDL document in Sections 5-8, 12 and 13.

Problem Identification/Pollutant of Concern:
Portions of the Middle Illinois River waterway are listed as impaired as indicated in Table 1 above. The middle segments of the main stem Illinois River in the Peoria area appear on the partially approved 2008 Illinois §303(d) list for not supporting primary contact recreation due to elevated levels of fecal coliform bacteria. Several tributaries including Big Bureau Creek, West Bureau Creek, and Kickapoo Creek are listed for the same reason. One segment of the Illinois River (D-30) appears on the list for not supporting public water supply due to elevated levels of manganese and TDS. Farm Creek is listed as not supporting aquatic life use due to elevated levels of chloride, pH, phosphorus, and TSS as well as alteration in streamside vegetative cover. A TMDL was developed for chloride. Load reduction strategies and/or targets and implementation plans have been developed to address phosphorus, pH and TSS loadings in all the segments of the Middle Illinois River Watershed TMDL. More information regarding actions to achieve these reductions can be found in the Implementation Section of this Decision Document.

Lake Depue and Senachwine Lake are on the §303(d) list for not supporting aesthetic quality and aquatic life uses due to elevated levels of phosphorus as well as aquatic algae, low dissolved oxygen levels, sedimentation/siltation, and total suspended solids (TSS). TMDLs for total phosphorus were developed that will address the dissolved oxygen impairments and aquatic algae. Load reduction strategies and targets have been developed to address all the remaining impairments for these lakes. More information regarding actions to achieve these reductions can be found in the Implementation Section of this Decision Document.

Priority Ranking
These waters are listed as medium priority in the Illinois 2008 303(d) list.

Source Identification:
This is a general overview of pollutant sources for the Middle Illinois River Watershed. Section 2.1 in the TMDL summarizes watershed-wide sources that contribute listed pollutants to the Middle Illinois River Watershed. The Section uses a variety of interpretive hydrological tools, such as box and whisker plots and water quality duration curves to assess sources (geographically), and summarizes pollutant sources for the entire TMDL area. Because of the size of the watershed, the watershed was broken up into watershed clusters. Sections 5-8, 12 and 13 in the TMDL characterize the specific sources for each watershed cluster.

Sections 1.8 and 1.9 in the TMDL contain large scale hydrological information in addition to temporal (seasonal) and spatial interpretation of flow patterns and how they relate to water quality (box and whisker plots, flow duration curves). In Sections 5-8, 12 and 13 of the TMDL, IEPA uses water quality duration curves in order to demonstrate drainage area characteristics for the waters that are the subject of the TMDL, and provides an overview of their relationship to potential sources of pollutants. The TMDL uses these analyses to interpret these patterns and relationships meant to help identify sources of specific pollutants. The summary below includes information about how these patterns relate to specific pollutants and sources.

A summary of all point and nonpoint sources is included in the TMDL Document in each watershed cluster summary table. In addition to the information below, the summary tables contain a list of all permits, exceedences of NPDES permit limits, disinfection exemptions, number of reported combined sewer overflows and sanitary sewer overflows, and animal unit density for each cluster:

Table 2. Watershed Cluster Summary Tables and location in Middle Illinois TMDL*				
Segment Name	Segment ID	Table ID	Sources**	Contaminant
Illinois River Mainstem at Hennepin	D-16	5-5[a]	NPDES facilities - 20, CSOs: 4 MS4s: 0 agricultural and urban runoff, tributary loads; animal agriculture; livestock[b]	Fecal Coliform
Illinois River Mainstem at Peoria Intake	D-30	5-10[a]	NPDES facilities;49 MS4s; 5 communities CSOs/SSOs: 9 Com. agricultural and urban runoff; tributary loads; animal agriculture; livestock[b]	Fecal Coliform TDS, Manganese
Illinois River Mainstem at Pekin	D-05	5-17[a]	NPDES facilities; 67 MS4s; 21 communities CSOs/SSOs: 11 com. agricultural and urban runoff, tributary loads; animal agriculture; livestock[b]	Fecal Coliform
Big Bureau Creek at Princeton	DQ-03	6-9	NPDES facilities; 3 MS4s; 0 communities CSOs/SSOs: 0 com. urban and agricultural stormwater runoff; livestock access to waterways; animal agriculture; untreated sewage;	Fecal Coliform
West Bureau Creek at Wynet	DQD-01	6-4	NPDES facilities: 1 MS4 Community: 0 CSO/SSO- 0 urban and agricultural stormwater runoff; livestock[b] access to waterways; animal agriculture; untreated sewage	Fecal Coliform
Farm Creek	DZZP-03	7-4	NPDES facilities: 9 MS4s: 6 CSO SSOs; 2 watershed, streambank, and gully erosion; urban	Chloride

			and agricultural stormwater runoff; hydromodification; deicing agents	
Kickapoo Creek	DL-01	8-4	NPDES facilities, 9 MS4s11; CS0/SSO: 1 urban and agricultural stormwater runoff; animal agriculture;	Fecal Coliform
Lake Depue		NA		Phosphorus
Senachwine Lake		NA		Phosphorus

* Information summarized from Watershed cluster Tables in TMDL Document
* *Combined sewer overflow (CSO) information is from Table 2-2 in the TMDL document.
a. Includes information for upstream of the site, but does not include information for area upstream of the Illinois Peoria Watershed.
b. Animal density numbers can be found in Summary Table, and does not include tributary watershed clusters

Bacteria

There are six waterbody segments in the TMDL area that are impaired for fecal coliform bacteria. Three are in the Illinois River Mainstem watershed cluster (D-16, D-30, D-05), two in the Bureau Creek watershed cluster (DQ-03, DQD-01), and one in the Kickapoo Creek Watershed cluster (DZZP-03). Sources of fecal bacteria in the above segments can be attributed to either NPDES permitted (point) sources, or nonpoint sources.

NPDES facilities within the study area that are potential sources of fecal coliform include municipal wastewater treatment plants. There are 112 NPDES permitted sewage treatment plants (STP) within the project area. The list and locations of all current NPDES permitted facilities within the watershed are found in a summary table located at the beginning of each watershed cluster Section of the TMDL (Sections 5 through 8, and 12 and 13 for Lake DePue and Senachwine Lake). They are also listed in each watershed cluster in a table by name, average design flow, and disinfection exemption status. Several facilities have been in violation of permit limits for fecal coliform.

There is a higher percentage of impervious surface in the urbanized portion of the greater Peoria area than the rest of the TMDL area. Because of this there is a wide array of potential fecal coliform sources that deliver contaminants associated with stormwater runoff to the Illinois River. Stormwater is conveyed to the Illinois River through numerous stormwater outfalls. Regulated entities operate under the State General Stormwater Permit (ILR40), and are identified in Table 2-1 of the TMDL.

Big Bureau Creek MS4s operating under the State General Stormwater Permit within the watershed cluster include: the City and County of Peoria, Peoria City Township, the Village of Bartonville, Kickapoo Township, Limestone Township, Medina Township, Bellevue, Peoria Heights, West Peoria, and the Illinois Department of Transportation (ILDOT).

Combined sewer overflows (CSOs) are also a source of fecal coliform bacteria and are regulated under the NPDES program. Outfalls for both CSOs and sanitary sewer overflows (SSOs) are identified in Table 2-2 in the TMDL and reported maximum flows from each outfall are reported in Table A.11 of Appendix A of the TMDL. Table 2-3 in the TMDL summarizes the number of

CSOs and SSOs events that have occurred per year as reported by the facilities. The status of long term control plans (LTCPs) are summarized in Table 2-4 in the TMDL.

Animal waste from concentrated animal feeding operations (CAFOs), animal feeding operations (AFOs), and livestock can be a source of fecal bacteria and phosphorus. CAFOs are regulated under the NPDES program, while AFOs are smaller facilities regulated under State rules. Loads vary depending on land use and management practices, and include contributions from livestock feedlots, pastures and row crop agriculture. Generally bacteria and phosphorus loading from rural stormwater is considered a nonpoint source. Potential nonpoint sources from agricultural areas include improperly managed land disposal of human and animal waste, wildlife, and failing on-site wastewater systems.

AFOs in Illinois are not subject to CAFO rules and are considered to be nonpoint sources.. Improperly managed AFOs can pose environmental concerns, including manure leakage from storage pits, lagoons, tanks, and contamination of surface or groundwater by improper manure application, or over application.

Livestock that are not considered to be part of CAFOs or AFOs are potential sources of bacteria to streams, particularly when direct access is not restricted and/or where feeding structures are located adjacent to riparian areas. County-wide livestock data were reviewed by IEPA to estimate animal population in the watershed (Table 2-5 in the TMDL). An estimated 92,767 animal units are in the watershed and the animal unit density is estimated to be 45 animal units per square mile. In the Illinois River TMDL, no strong correlation between animal unit density and fecal coliform counts by watershed was found.

Manure is often used as fertilizer in the Illinois River watershed. If improperly applied, the runoff during precipitation events can contain excessive amounts of bacteria and phosphorus. Pasture land is of particular concern if the livestock have access to the stream. The Illinois River main stem watershed has significant animal agriculture activity in the watershed cluster. Table 5-2 in the TMDL presents the total number of animals and equivalent animal units within the watershed, area weighted using County statistics. Tributary loads, including point sources within tributary watersheds, are also sources of bacteria.

Onsite wastewater treatment systems (e.g., septic systems) fail for a variety of reasons. Septic systems discharging from homes and business and can be significant sources of fecal coliform and phosphorus.

A IDNR report from 2006 observed that potential sources of bacteria and phosphorus in Big Bureau Creek may be from raw sewage outlets and cattle access points. Sixteen cattle operations were identified along the main stem of Big Bureau Creek, and as noted, some of these operations allowed direct access to the creek. The Kickapoo Creek watershed has a significant amount of animal agriculture activity in the watershed. Table 8-3 of the TMDL presents the total number of animals and equivalent animal units within the watershed.

Phosphorus

Water containing an excess of phosphorus can lead to undesirable algal blooms, low oxygen levels, and ultimately, decreased aquatic life. There are two waterbodies in the watershed with TMDLs for phosphorus; Lake Depue and Senachwine Lake. Farm Creek is impaired for

phosphorus and has a Load Reduction Strategy for phosphorus. Table 7-4 of the TMDL summarizes the Farm Creek watershed and pollutant sources.

Phosphorus can originate from both point and nonpoint sources. Typical urban sources include: human waste from wastewater treatment facilities, human and animal waste from combined stormwater and untreated sewage, and lawn fertilizers, grass clippings, leaves, and phosphorus accumulated on impervious surfaces, all of which can be transported to receiving waters with precipitation or attached to sediments.

IEPA determined that the primary point source of phosphorus in Lake Depue is the Depue STP (Section 12.1.1 of the TMDL).

IEPA provided WLAs for phosphorus for 32 permitted sources for Senachwine Lake in Table B.7 in this Decision Document. Table B.9 of this Decision document lists the four CSOs that discharge to Senachwine Lake.

Rural sources of phosphorus include livestock waste from pastures and sources that are also sources of fecal bacteria such as agricultural run-off, CAFOS and AFOs described above. Sediment delivered to the lakes during high flow conditions may contain elevated concentrations of phosphorus attached to soil particles. Many types of erosion are associated with water flow and altered sediment dynamics. Erosion may result from land use activities that alter hydrology and flow regimes, and adversely affect the floodplain and streamside riparian areas. A few of the types of erosion discussed in the TMDL include channel, sheet, and gully erosion. The combined effect of these erosion factors highlights the importance of hydrology, and the relationship of physical habitat to aquatic chemistry and life. IEPA believes that implementing the LRSs for phosphorus and sediment will address the loss of vegetative coverage and physical alterations to improve the designated aquatic life use impairment noted on Farm Creek, as well as other tributaries in the watershed.

Senachwine Lake and Lake Depue are listed as being impaired due to low dissolved oxygen. IEPA believes that the impairment is related to the phosphorus impairment and excessive phosphorus loadings are believed to be exerting negative effects on the aquatic ecosystem by increasing algal and aquatic plant life production. As algae and aquatic plants die off, they consume oxygen resulting in depressed oxygen levels in the lake. Implementing activity described in the TMDL Report will reduce the phosphorus loads, and the low dissolved oxygen impairment should be addressed.

TDS and Manganese

Illinois River Mainstem at Peoria Intake (D-30) is the only segment in the TMDL Document that is listed for impairment for TDS and manganese. Appendix B of this Decision Document provides the names of permitted facilities with Waste Load Allocations for TDS (Table B.3) and Manganese (Table B.4). Regulated stormwater runoff may be a significant source of pollutants to the Illinois River and can contain total dissolved solids and sediment-derived manganese. In the Illinois River Basin, manganese is naturally occurring in the soils as a result of past glacial activities. Soils high in manganese can be washed into the river, and under low dissolved oxygen conditions, manganese will dissolve into the water column. There are no Phase I MS4 communities in the project area, and 20 Phase II MS4 communities within the project area

operate under a statewide General Stormwater Permit (ILR40). Regulated entities operating under the State General Permit within the project area are identified in Table 2-1 of the TMDL.

Chloride

Farm Creek has been identified as impaired due to chloride. IEPA noted that there are high levels of urban development and impervious surfaces in the Farm Creek watershed. Potential sources typically include application and handling of chloride-based de-icing agents (salt) applied to roads during the winter, which are then transported to the stream through runoff of the snow melt or runoff from nearby impervious surfaces. In addition to nonpoint sources such as de-icing agents, IEPA states that failing septic systems and chemical fertilizers can also contain elevated levels of chloride.

IEPA provides flow and water quality duration curve analysis, that supports the source identification. Figure 7-16 of the TMDL provides information on seasonal trends showing slightly elevated concentrations of chloride in the fall and winter (periods of snowfall and application of de-icing salts on roadways). IEPA provides nine chloride WLAs for NPDES permittees in the TMDL Report, which are listed in Table B.5 of the Decision Document. IEPA also identified six Phase II MS4 entities under the State General Permit in the TMDL Document which are reproduced in WLA Table B.6 of this Decision Document.

Future Growth

IEPA did not determine a separate allocation for future growth, as IEPA determined that there has not been a large increase in population since 1990 in many counties in the area, and some counties have decreased in population (Table 1-4 of the TMDL). IEPA is not aware of any expected requests for facility expansion in the TMDL watershed. No information was provided regarding any future changes in the current trend.

EPA finds that the TMDL document submitted by IEPA satisfies all requirements of this first element.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the water body, the applicable numeric or narrative water quality criterion, and the antidegradation policy. (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is

expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

Comment:
Designated Use of Waterbody:
Applicable standards for the Illinois River TMDL are in Section 3.1 of the Middle Illinois River Report. General Use Standards protect for aquatic life, wildlife, agricultural, primary contact (where physical configuration of the waterbody permits it, any recreational or other water use in which there is prolonged and intimate contact with the water involving considerable risk of ingesting water in quantities sufficient to pose a significant health hazard, such as swimming and water skiing), secondary contact (any recreational or other water use in which contact with the water is either incidental or accidental and in which the probability of ingesting appreciable quantities of water is minimal, such as fishing, commercial and recreational boating, and any limited contact incident to shoreline activity), most industrial uses, and aesthetic quality of the state's aquatic environment. Public and food processing water supply standards apply to Illinois River segment D-30 (TDS, manganese), along with the general use standards.

Table 3. Standards for TMDL Pollutants in the Middle Illinois River TMDL

Parameter	TMDL Endpoint
Chloride	500 (mg/L) (General Use)
Fecal Coliform	400 cfu/100 ml shall not be exceeded by more than 10% of the samples over a 30 day period. Geometric Mean of 5 samples taken over 30 days shall not exceed 200 cfu/100 ml
Manganese	150 (µ/L) (Water Supply)
Phosphorus, Total	50 (µ/L)
Total Dissolved Solids	500 (mg/L) (Water Supply)

Targets:
The targets for the TMDLs are the criteria listed above in Table 3. For fecal coliform, allocations are calculated based upon the 400 cfu/100 mL portion of the criteria. EPA believes this is protective of both portions of the criteria. The EPA report *"An Approach for Using Load Duration Curves in the Development of TMDLs"* (EPA, 2007) describes how the monthly geometric mean (in this case, 200 cfu /100 mL for fecal coliform) is likely to be met when the single sample maximum value (in this case, 400 cfu/100 mL for fecal coliform) is used to develop the loading capacity. The process calculates the daily maximum bacteria value that is possible to observe and still attain the monthly geometric mean. This "daily maximum" number is greater than the single sample maximum criteria number, indicating that if the single sample maximum number is achieved, it is likely the monthly geometric mean will be achieved. Stated in another way, if the single sample maximum value is set as a never-to-be-surpassed value then it becomes the maximum value that can be observed, and all other bacteria values would have to be less than the maximum, i.e. 400 cfu/100 ml. Although this process is for *E. coli* and not for fecal coliform, the EPA believes the process is appropriate assuming the log standard deviation of 0.4 for E. coli is similar to that of fecal coliform, and using an *E. coli*/fecal coliform translator of 0.6 (*Translator Development for Bacterial Indicator TMDLs*, McLellan and Dila, 2013). The EPA notes that whichever portion of the criteria is used to determine the allocations, both the geometric mean and single sample maximum will be used to assess the extent of implementation

by point and nonpoint sources. The EPA also notes that the TMDL can be updated if new information becomes available.

Additional impairments

This discussion pertains to impairments that are expected to be addressed by implementing actions to achieve required reductions to meet TMDLs. There are waterbodies addressed by the TMDLs that are also impaired for sedimentation/siltation, alteration in vegetative stream cover, pH, phosphorus (rivers), aquatic algae, and DO. Table 1 in the Decision Document contains a complete list of these additional impairments. IEPA did not develop specific TMDLs for these impairments; rather, if reductions are achieved through implementing the TMDLs in Table 1, as well as the Load Reduction Strategies, these impairments should be addressed.

Senachwine Lake and Lake Depue are listed as impaired due to dissolved oxygen, which IEPA considers to be related to the phosphorus impairment as excessive phosphorus loadings exert negative effects on the aquatic ecosystem by increasing the algae and aquatic plants produced. As algae and aquatic plants die off, they consume oxygen and decrease oxygen levels in the lake.

Phosphorus and nitrate levels in water are related to oxygen levels in that nutrient enrichment promotes the growth of nuisance algae that subsequently dies and serves as food for bacteria. Oxygen is used by bacteria that consume dead organic matter. Plant photosynthesis produces oxygen, but at night, respiration reverses the process and consumes oxygen. Under these conditions, night time oxygen can be depleted unless it is replenished from the air. Conversely, oxygen concentrations can become supersaturated during the day, due to abnormally high amounts of photosynthesis. The significant swing in diurnal dissolved oxygen levels causes stress to both fish and invertebrate communities. These swings in DO levels can also lead to elevated pH levels as a result of the abnormally high amounts of photosynthesis.

Illinois EPA believes that attaining the in-lake total phosphorus target of 0.05 mg/L and the targets for nitrate-nitrite will result in shifting plant production back to natural levels, resulting in the dissolved oxygen levels meeting the water quality standard. As the plant production returns to natural levels, it is believed that the aquatic algae and pH impairments will be addressed as well.

BMPs described in the Implementation Section of this Decision Document will be aimed at reducing sedimentation/siltation and TSS by reducing sediment loads in the watershed. In addition, IEPA believes that reductions in phosphorus loads will require reductions in sediment loads, as phosphorus is often attached to sediment particles. Reductions in sediment loads will reduce the impairments due to sedimentation/siltation and TSS. Reductions in sediment will necessitate improvements in habitat because stream bank erosion and lack of tree cover exacerbate the sediment and dissolved oxygen impairments.

Considering the linkages between phosphorus, sediment, and oxygen outlined above, it is expected that the measures taken to reduce the loads of phosphorus from identified point sources and nonpoint source to meet the WLAs and LAs in this TMDL, and to decrease sedimentation/siltation and TSS, will dampen the oxygen level fluctuations, increase oxygen concentrations, improve habitat, reduce algal blooms. Biotic integrity scores for fish and macroinvertebrate communities would be expected to increase in the impaired water bodies. It is believed that these factors will allowthe waterbodies to achieve targets set to relieve the

dissolved oxygen, aquatic algae, sediment/siltation, and TSS impairments listed as contributing to the loss of designated uses.

EPA finds that the TMDL document submitted by IEPA satisfies all requirements of this second element.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a water body for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)). The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account *critical conditions* for steam flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable *critical conditions* and describe their approach to estimating both point and nonpoint source loadings under such *critical conditions*. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

Comment:
Table 7 in the Conclusion Section of this Decision Document contains the list of TMDLs and impairments addressed by the Middle Illinois River TMDL.

Method for Deriving TMDL:
Section 4 of the TMDL describes the method for developing the Middle Illinois River TMDLs. In Section 4.3 of the TMDL, the Middle Illinois River TMDL establishes the relationship between in-stream water quality and source loading using the Load Duration Curve (LDC) Method. A benefit of using duration curves in TMDL development is to provide insight regarding patterns associated with hydrology and water quality concerns. The use of duration curves in water quality assessment creates a framework and a visual means for characterizing water quality data using stream flow conditions. However, the duration curve method alone does not consider specific fate and transport mechanisms, which may vary depending on watershed or pollutant characteristics. The following section describes the methodology being used in this analysis.

This method uses a long-term record of daily flow volumes, so the full spectrum of allowable loading capacities for varying flow regimes is represented by the resulting curve. The entire curve in each of the LDC Figures in IEPA's submittal (Table 4 below) represents a TMDL: in

other words, the loadings that meet the standards at each flow. Load duration curves for each TMDL addressed in this Decision Document can also be found in TMDL Document as follows:

Table 4. Reference for Load Duration Curve Figures			
Segment Name	Segment ID	LDC Figure Number	Pollutant
Illinois River at Hennepin	D16	5-47	Fecal
Illinois River at Peoria Intake	D-30	5-50	Fecal
	D-30	5-51	manganese
	D-30	5-52	TDS
Illinois River at Pekin	D-05	5-55	Fecal
West Bureau Creek	DQD-01	6-23	Fecal
Big Bureau Creek	DQ-03	6-26	Fecal
Farm Creek	DZZP-03	7-18	Chloride
Kickapoo Creek	DL-01	8-14	Fecal
Senachwine Lake	RDZX	13-7	Phosphorus

The load duration curve represents instantaneous loading capacities that vary as a function of flow. A summary of the process is provided below.

1. Flow data - First, continuous flow data are required. To determine stream flows, IEPA used gages representing each impaired segment within the area of the TMDL's scope. Gage identifying information is provided along with the curves for each watershed cluster. In areas lacking flow information, flows were estimated. The steps are described below.
2. Water Quality data - The LDCs listed in Table 4 determined for the Middle Illinois River pollutants were created by using existing data from the available sampling stations.
3. Load Duration Curves - The plots located in Middle Illinois River TMDL are derived from the flow data and water quality data described above. Existing monitored water pollutant loads, represented by the various points on the plot, are compared to target loads, the water quality standard line (in red). If the existing loads are below (less than) the target line, no reduction needs to occur. Conversely, if the existing loads are above (greater than) the target load, a reduction is necessary to reach the target.
4. Analysis - The final step is to link the geographic locations of load reductions needed to the flow conditions under which the exceedences are occurring. Specific flow regimes contributing to pollutant loads, represented by the graph, are identified to determine under what flow conditions the pollutant exceedences are occurring. By knowing the flow conditions under which exceedences are occurring, IEPA can focus implementation activities on those sources most likely to contribute loads. IEPA provided an analysis for the LDC to determine under what conditions the exceedences are occurring (watershed cluster Sections 5-8, 12 and 13 of the TMDL).

Illinois EPA divided flow rates measured at each of the flow gage stations used in the load duration curve TMDLs into five flow zones: high flows (0-10%), moist conditions (10-40%), mid-range flows (40-60%), dry conditions (60-90%) and low flows (90-100%). The five categories were used to calculate the pollutant loading capacities and allocations for each flow

zone for each station. The total daily loading capacity was calculated using the mid-point flow rate for each of the flow zones, and concentration corresponding to each of the TMDL pollutants. This analysis results in total daily load capacities for the high, moist, mid, dry and low flow zones, and are presented in TMDL tables in Appendix A of the decision document.

Estimation of flows used in Middle Illinois River TMDLs

USGS gage flows for the watershed vary in their period of record ranging from the 1920s to present. 13 gages exist and of these, six have current data. Existing flow data and duration curves were compared from one gage to another for similar time periods to determine if relationships existed which could be used to estimate flow for ungaged streams. Table 4-5 in the TMDL summarizes available flow datasets.

There are three gages with data located on the Illinois River main stem: the Illinois River at Marseilles (5543500), Illinois River at Kingston Mines (5568500), and Illinois River at Henry (5558300). Only three tributary gages in the watershed had current flow data: Big Bureau Creek at Princeton, IL (5556500), Farm Creek at Farmdale, IL (5560500), and Fondulac Creek near East Peoria, IL (5561500). Neither Farm Creek nor Fondulac Creek recorded flows during recent winter months.

Stream flow at ungaged reaches and during ungaged time periods was determined using drainage area weighting techniques and regressional relationships (Section 4.4.1 of the TMDL). This method is most valid in situations where watersheds are of similar size, land use soil types and experience similar precipitation patterns. IEPA evaluated available flow data to decide whether to use regression analysis or drainage area weighting techniques. In all cases where overlapping historical flow data existed, it was found that using drainage area weighting resulted in a more accurate flow duration curve than using of regression analysis.

IEPA determined that the Big Bureau Creek gage near Princeton and the Farm Creek gage at Farmdale provided the best relationship for applying drainage area weighting techniques to the other tributaries in the Middle Illinois River watershed. Table 4-6 in the TMDL summarizes which gages were used to derive an estimated flow duration curve for each ungaged location where a TMDL was developed. Drainage area weighting was used to estimate flows for all ungaged streams in the watershed except Kickapoo Creek.

Because flows for Kickapoo Creek watershed were from 1949 through 1971, flows used in the TMDL were estimated by computing a regressional relationship of area weighted flows for Kickapoo Creek and a similar watershed for the earlier time periods when the two gages both had data. Then the flows for Kickapoo Creek were estimated for the more recent periods without data by using the computed regressional relationship.

Analysis of load duration curves

The duration curve approach helps to identify the issues surrounding the impairment and to roughly differentiate between sources. Table 4-4 in the TMDL depicts the relationship between duration curve zones (flow regimes) where impairments occur and roughly identify contributing sources. Impacts from continuous point sources are usually most pronounced during dry and low flow zones because there is less water in the stream to dilute loads. Impacts from channel bank erosion is most pronounced during high flow zones because these are the periods during which

stream velocities (and power) are high enough to dislodge soil particles from stream banks and cause erosion.

Unit area flow duration curves for the Illinois River mainstem (Figure 4-4 of the TMDL) show greater low flow values at Marseilles that may indicate the impact of upstream point sources. Drainage area weighting is used to estimate flow for all ungaged streams in the watershed except Kickapoo Creek.

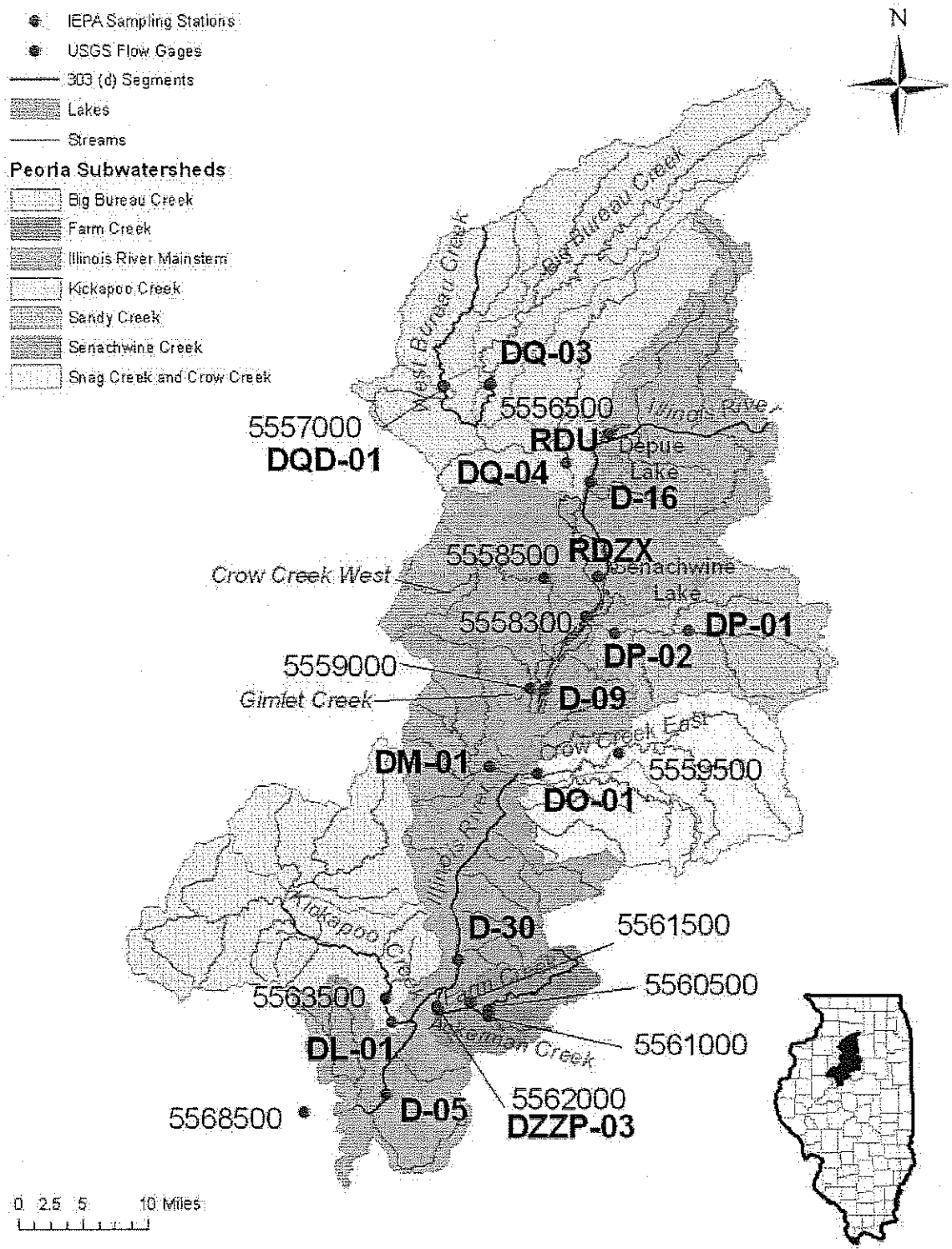
Unit area flow duration curves (excluding 5560500 and 5561500) (Figure 4-3 of the TMDL) show that flows in the tributaries generally follow the same pattern. The smaller streams dry up at low flows and the larger streams like Big Bureau Creek, Kickapoo Creek, and Farm Creek have similar flow duration curves. IEPA believes that higher low flows in certain streams, like Farm Creek, probably show the impact of point sources.

TMDLs - Loading Capacity of Waterbodies for TMDL Pollutants.
Load duration curves were used to derive and express the load capacity for the pollutants addressed by the TMDL. The locations of load duration curves in the Middle Illinois River TMDL are provided in Table 5 of this decision document. Loading capacities are discussed in Section 4.5.and 4.5.1 of the TMDL. The results are presented by assessment location in each of the applicable watershed clusters. TMDL summary tables found in Sections 5-8, 12, and 13 of the TMDL present the TMDLs, LAs, WLAs and MOS for pollutants in each watershed cluster. The TMDL summary tables are duplicated in this Decision Document in Appendix A: TMDL Summary Tables.

The bacteria TMDLs are based on the median allowable load in each of the flow regimes and reductions are based on the 90th percentile of observed load in each flow regime. EPA finds this to be consistent with EPA Report "*An Approach for Using Load Duration Curves in the Development of TMDLs*" (EPA, 2007). All other TMDLs are based on the maximum allowable load in each of the flow regimes and reductions are based on the maximum observed load in each flow regime.

Figure 1 in this Decision Document presents a map of watershed clusters, impaired segments and gage sites in the Middle Illinois River TMDL. The TMDL also contains detailed maps of segments and sampling stations for each of the six watershed clusters in Figures 5-2, Illinois River Mainstem; 6-1, Big Bureau Creek; 7-2, Farm Creek; 8-2, Kickapoo Creek; 12-2, Lake Depue; and 13-2, Senachwine Lake.

Figure 1 Map of Watershed clusters, Impaired Segments and Gage Sites In the Middle Illinois River TMDL



Illinois River Mainstem TMDL for Peoria Intake site (Site D-30)

This Illinois River TMDL Decision Document presents TMDLs and required reductions for the Peoria Intake site (Site D-30) for fecal coliform, manganese, and TDS in Tables A.2, A.3 and A.4 respectively. Figures 5-50, 5-51, and 5-52 in the TMDL present the load duration curves for one feca; coliform, one manganese, and one TDS impaired segment respectively. Table 5-10 in the TMDL lists 64 NPDES facilities (including five MS4s, 10 CSOs/SSOs). 13 of the 64 NPDES facilities have exceeded their permit limits for bacteria (See Appendix A in the TMDL for DMR Exceedance Summary Table (2005-2010)).

Illinois River TMDL at Pekin (site D-05)

The Illinois River at Pekin watershed includes one bacteria impaired segment. Table A.5 of the Decision Document summarizes the Illinois River TMDL and required reductions for fecal coliform. Figure 5-55 in the TMDL presents the TMDL load duration curve for fecal coliform for the same segment. Fairly consistent reductions in bacteria loadings are needed across all flow conditions. Table 5-17 in the TMDL lists 67 NPDES wastewater facilities, 21 MS4s, and 11 CSOs and SSOs). There have been 3,275 reported overflows from the multiple outfalls at CSOs discussed above between 2007 and 2010. The East Peoria SSO has discharged three times in the past five years. The Kenawee STP SSO has discharged once in the past five years. The LaSalle WWTP SSO has discharged 21 out of 36 months from 2008-2010.

The analysis of the data suggests significant sources of bacteria originating between Peoria and Pekin. Tributary load reductions from Kickapoo Creek and Farm Creek are needed. Local sources such as STPs, leaking sewers, and SSOs should be further investigated during implementation. Control of CSOs in the Peoria area and Farm Creek watersheds is also needed. Urban stormwater is also a significant source of bacteria to this site, including regulated stormwater from MS4s.

Illinois River Mainstem TMDL for Hennepin (Site D-16)

Table A.1 (Appendix A of this Decision Document) summarizes the Illinois River TMDL at Hennepin (Site D-16) and required reductions. Figure 5-47 in the TMDL presents the fecal coliform TMDL load duration curve for that segment. Reductions in bacteria are only needed during high and moist flow conditions, therefore control of wet weather sources of runoff from urban and agricultural land uses in combination with reductions in bacteria loading from tributary watersheds is needed to achieve the reductions necessary. Table 5-5 lists 24 NPDES facilities (including three CSO and SSO discharges). Six of the 24 have exceeded their permit limits. There have been 1,450 reported CSOs between 2007 and 2010. The LaSalle WWTP SSO has discharged 21 out of 36 months between 2008 and 2010.

TMDL for West Bureau Creek Segment at Wyanet (DQD-01)

Figure 6-23 in the Report presents the load duration curve and TMDL for fecal coliform at the West Bureau Creek at Wyanet assessment site (DQD-01). Table A.6 in this Decision Document summarizes the TMDL and required reductions. Bacteria load reductions are needed across all flow conditions, with higher reductions needed under higher flow conditions. Watershed runoff and livestock are believed to be the primary non-natural sources of bacteria in the watershed.

TMDL for Big Bureau Creek at Princeton (DQ-03)

Figure 6-26 in the TMDL presents the load duration curve and TMDL for fecal coliform at the Big Bureau Creek at Princeton assessment site (DQ-03). Table A.7 in this Decision Document

and Table 6-9 in the TMDL document characterizes the watershed and sources for the TMDL watershed. There is one NPDES permitted facility for this site. The City of Princeton STP had seven fecal exceedances from 2005 to 2010, averaging 1,269 cfu/100 mL There are no MS4 communities and one CSO/SSO community (Bureau Junction STP (IL0033120)).

Chloride TMDL for Farm Creek at East Peoria (DZZP-03)

The TMDL for Farm Creek is for chloride. Figure 7-18 in the TMDL presents the chloride load duration curve, and Table A.8 in this Decision Document presents the chloride TMDL table for Farm Creek at the East Peoria assessment site. Pollutant reductions are needed for all flow conditions, except low flows.

Kickapoo Creek Watershed cluster (DL-01).

The Kickapoo Creek watershed includes one bacteria impaired segment. Figure 8-14 in the TMDL presents the fecal coliform load duration curve, and Table A.9 in this Decision Document presents the TMDL for the Kickapoo Creek at the Bartonville assessment site. Pollutant reductions are needed for all flow conditions, except under low flows. Watershed runoff and livestock are believed to be the primary non-natural sources of bacteria in the Kickapoo Creek watershed.

Total Phosphorus TMDL for Senachwine Lake (RDZX)

Senachwine Lake is impaired for total phosphorus and dissolved oxygen. The low dissolved oxygen is the result of decaying algae, a process that consumes the oxygen in the lake.[1] During low flow conditions in late summer, TP concentrations increase in the lake as a result of point source dischargers and internal loading, particularly in the Big Bureau Creek watershed. An increase in chlorophyll-*a* is also measured at this time, due to the increase in algae. The bottom sediments may become anoxic during the summer, resulting in release of phosphorus into the water column. Phosphorus reductions in the watershed will also decrease the chlorophyll-*a* and algae concentrations in the lake, which will in turn increase the minimum dissolved oxygen in the lake. Table A.11 of this Decision Document presents the TMDL for Senachwine Lake. Figure 13.7 of the TMDL presents the total phosphorus load duration curve. In July 2001, dissolved oxygen concentrations at two of the three monitoring locations in Senachwine Lakes were measured at less than 6.0 mg/L. (During the period of March through July, Illinois' DO water quality standard requires that the dissolved oxygen level shall be no lower than 6.0 mg/L as a daily mean averaged over 7 days). The third site averaged 8.1 mg/L dissolved oxygen. Because of the hydrology of Senachwine Lake, IEPA used the LDC method to determine the TMDL. Senachwine Lake is a backwater lake of the Illinois River, and as such lake water levels are highly dependent upon inflow from the Illinois River. The lake is separated from the Illinois River by a very narrow strip of land. The lake is connected to the Illinois River in several places, and therefore flows in the Illinois River immediately affect Senachwine Lake (Figure 13-1 of the TMDL). Because of this relationship between the Illinois River and Senachwine Lake, IEPA determined that using the LDC method was appropriate. The EPA concurs with this decision.

Total Phosphorus TMDL for Lake DePue (RDU)

Table A.10 in this Decision Document contains the Phosphorus TMDL summary for Lake Depue. Lake Depue is impaired for total phosphorus and dissolved oxygen. The low dissolved

1 An explanation of the relationship between Total Phosphorus and Dissolved Oxygen can be found in Section 2 of the decision document.

oxygen is the result of decaying algae, a process that consumes the oxygen in the lake.[2] The empirical Vollenweider Lake Model was utilized to determine the annual phosphorus loading to the lake under existing conditions and the allowable phosphorus load in order to meet in-lake standards. This model describes the in-lake nutrient concentration of a lake as a function of the nutrient loading, mean depth, and hydraulic residence time based on evaluation of many temperate lakes. The Vollenweider Lake Model is expressed as:

$$P = \frac{Lp}{qs} \frac{1}{1 + \sqrt{z/qs}}$$

where:
P = in-lake total phosphorus concentration
Lp = annual total phosphorus load / lake surface area
qs = surface overflow rate = z/T
z = mean lake depth
T = hydraulic residence time

The equation was solved for annual total phosphorus load using the variables described in Table 12.3 of the TMDL. Inflow or outflow data are not available for Lake Depue. A review of historical flow records indicates that on average between 1940 and 1974, the Peoria Pool of the Illinois River was higher than or equal to the average Lake Depue elevation for all but 36.5 days per year, or 90 percent of the time. It is assumed that when the Illinois River is at or above the average lake elevation, the lake is fully mixed with inflow from the Illinois River.

Using the watershed to lake volume ratio, a hydraulic residence time of 0.05 days was determined. The watershed includes the direct drainage area to the lake as well as the watershed area of the Illinois River. The flow connection between the Illinois River and Lake Depue is unknown, although the Illinois River is connected to the lake though a side channel inlet and when the Illinois River is high, the lake is fully inundated with river water.

A significant reduction in TP loads is needed to comply with the TMDL. The majority of this load reduction will need to be from nonpoint sources, especially reductions in TP within the Illinois River main stem.

Critical Condition

With the exception of the Depue Lake TMDL, the Middle Illinois River TMDL uses the LDC approach, which establishes loads on the basis of a representative flow regime, it inherently considers seasonal variations and critical conditions attributed to flow conditions. The last 5 columns of Table 5 provide the percentage reductions needed to meet the TMDL under varying flow conditions. An underlying premise of the duration curve approach is correlation of water quality impairments to flow conditions. Through the load duration curve approach it has been determined that load reductions are needed for specific flow conditions; however, the critical conditions (the periods when the greatest reductions are required) vary by location and are inherently addressed by specifying different levels of reduction according to flow (see tables).

2 An explanation of the relationship between Total Phosphorus and Dissolved Oxygen can be found in Section 2 of the decision document.

Table 5 Summary of Critical Conditions

Flow Condition Percentile	Constituent	Season [a]	High 0-10	Moist 10-40	Mid-Range 40-60	Dry 60-90	Low 90-100
Illinois River at Hennepin (D-16)	Fecal Coliform	Recreation	**63.64%**	35.95%	0%	0%	0%
Illinois River at Peoria Intake (D-30)	Fecal Coliform	Recreation	0%	0%	0%	0%	0%
	Manganese	Annual	0%	0%	0%	**26.24%**	15.94%
	Total Dissolved Solids	Annual	0%	0%	0%	0%	0%
Illinois River at Pekin (D-05)	Fecal Coliform	Recreation	68.81%	76.68%	70.66%	73.12%	**79.03%**
West Bureau (DQD-01)	Fecal Coliform	Recreation	**98.86%**	76.40%	68.11%	50.51%	15.15%
Big Bureau Creek (DQ-03)	Fecal Coliform	Recreation	**99.14%**	79.06%	91.71%	64.83%	78.72%
Farm Creek	Chloride	Annual	0%	0%	0%	**74.72%**	0%
Kickapoo Creek	Fecal Coliform	Recreation	**98.84%**	83.49%	48.42%	96.44%	0%
Lake Depue	Total Phosphorus	Annual	**91.2%** (critical conditions are further discussed in Section 12.1.1)				
Senachwine Lake	Total Phosphorus	Annual	84.88%	83.25%	85.80%	85.84%	**92.34%**

a. Recreation Season is designated as May through October
BOLD indicates critical condition

EPA has reviewed the procedure used by IEPA, and determined it is consistent with EPA guidelines (An Approach for Using Load Duration Curves in the Development of TMDLs, August 2007, EPA; Draft Options for the Expression of Daily Loads in TMDLs, June 2007, EPA). EPA finds that the TMDL document submitted by IEPA satisfies all requirements of this third element.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future non-point sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g). Where possible, load allocations should be described separately for natural background and non-point sources.

Comments:
The load allocations are discussed in Section 4.5.1 of the TMDL. TMDL summary tables in Sections 5-8, 12, and 13 of the TMDL contain LAs for each watershed cluster and TMDL pollutant along with the baseline loads and WLAs and MOS. They are duplicated for the five flow categories in Appendix A of this Decision Document.

Load allocations represent the portion of the allowable load that is reserved for nonpoint sources and natural background conditions. The load allocations are based on subtracting the allocations for WLAs and the MOS for each waterbody from the allowable total load determined for each TMDL. The load allocations are presented on a daily basis and were developed to meet TMDL targets. The load allocations set for the Illinois River main stem, Lake Depue, and Senachwine Lake include all loading upstream of the study area boundary. The State's modeling approach and assumptions made in determining load allocations as described in the TMDL are consistent with EPA guidance.

EPA finds IEPA's approach for calculating the loading capacity to be reasonable. EPA finds that the TMDL document submitted by IEPA satisfies all requirements of this fourth element.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permittees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

Comments:
The WLAs are discussed in Section 4.5.2 of the TMDL. The overall WLAs for each waterbody and pollutant along with the baseline loads and LAs in each watershed cluster are summarized in Sections 5-8, 12 and 13 of the TMDL and in Appendix A of the decision document. Individual WLAs were developed for individual NPDES-permitted facilities and are contained in Appendix C of this document. The EPA notes that "N/A" means a WLA = 0.

Fecal coliform:
WLAs for wastewater facilities are found in Appendix C at the end of this document. To calculate the WLAs, IEPA multiplied the fecal coliform standard (400 cfu/100 mL) times the design maximum flow for the high and moist flow range, and the design average flow for the mid-range, dry and low flow regimes All of the treatment facilities are required to comply with both the geometric mean fecal coliform water quality standard of 200 cfu/100 mL and the instantaneous water quality standard of 400 cfu/100 mL at the closest point downstream where recreational use occurs in the receiving water or where the water flows into a fecal-impaired segment.

WLAs for facilities with disinfection exemptions were based on the design flows for each facility multiplied by 400 cfu/100 mL. The resulting WLAs apply at the distance downstream where their respective disinfection exemption no longer applies. Facilities with year-round disinfection exemptions may be required to provide Illinois EPA with updated information to demonstrate compliance with these requirements.

There are 64 regulated CSO outfalls in the watershed associated with 9 facilities (Table 2-2 in the TMDL). The WLAs for all CSOs were calculated from the maximum flow associated with a CSO event, as reported by the regulated entity, multiplied by 400 cfu/100 mL for fecal coliform, and occurring no more than four times per year. When no flow information was provided by the permitted entity, a WLA equal to zero was assigned. The WLAs for CSO events are limited to the high flow regime. During the development of LTCPs for the CSO communities, Illinois may decide to modify the WLA if deemed appropriate.

Fifteen NPDES facilities in the watershed have permitted excess flows (Table 4-7 of the TMDL). The excess flows at these facilities receive primary treatment and disinfection with a fecal coliform limit. Although IEPA did not determine separate allocations for the excess flows, these discharges are regulated under the NPDES program and discharges during wet weather events are required to meet the 400 cfu/100 mL fecal coliform water quality standard.
There are 21 regulated MS4s in the watershed (Table 2-1 of the TMDL). Individual WLAs were established for each MS4 based on the proportional drainage area of the regulated community and the 400 cfu/100 mL portion of the standard. For regulated road authorities including Peoria and Tazewell Counties and the Illinois Department of Transportation, the MS4 area was determined using the length of applicable roads and estimated right-of-way width.

One CAFO is located in the watershed. The Bradford Pig Palace (Permit IL0064319) is designated as a CAFO and receives a WLA of zero. In the event Illinois EPA obtains information on CAFOs in the future, the TMDL strategy may be amended to better account for contributing sources. The SSO discharges identified in Table 2-2 of the TMDL have a WLA = 0.

Phosphorus

The WLAs for Lake Depue and Senachwine Lake are found in Appendix A at the end of this document. WLAs for wastewater facilities for Lake Depue and Senachwine Lake were set using a limit of 1 mg/L total phosphorus and the maximum design flow for the high and moist flow regimes and the average design flow for the midrange, dry and low flow regimes for each facility. The individual WLAs are in Table B-7 in Appendix B of this document. The EPA notes that "N/A" means a WLA = 0.

The CSO WLA process for TP is similar to that for fecal coliform. The WLAs for all CSOs were calculated from the maximum flow associated with a CSO event, as reported by the regulated entity, multiplied by 1 mg/L for TP, and occurring no more than four times per year. When no flow information was provided by the permitted entity, a WLA equal to zero was assigned. The WLAs for CSO events are limited to the high flow regime. During the development of LTCPs for the CSO communities, Illinois may decide to modify the WLA if deemed appropriate.

One CAFO is located in the watershed. The Bradford Pig Palace (Permit IL0064319) is a CAFO and receives a WLA of zero. In the event Illinois EPA obtains additional information on CAFOs in the future, the TMDL strategy may be amended to better account for contributing sources. The SSO discharges identified in Table 2-2 of the TMDL have a WLA = 0.

Chloride, Manganese, and TDS:
The WLAs for the waterbodies impaired for chloride, manganese, and TDS are found in Appendix A at the end of this document. WLAs for wastewater facilities were set using the appropriate criteria (250 mg/L for chloride, 150 ug/L for manganese, and 500 mg/L for TDS) and the maximum design flow for the high and moist flow regimes, and the average design flow for the midrange, dry and low flow regimes for each facility. The individual WLAs for the waterbodies impaired for chloride, manganese, and TDS are in Tables B.5 and B.6 (chloride), B.3 and B.4 respectively in Appendix B of this document. The EPA notes that "N/A" means a WLA = 0.

The WLA process for CSOs is similar to the WLA for fecal coliform and phosphorus. The WLAs for the appropriate CSOs were calculated from the maximum flow associated with a CSO event, as reported by the regulated entity, multiplied by the appropriate water quality criteria, and occurring no more than four times per year. When no flow information was provided by the permitted entity, a WLA equal to zero was assigned. The WLAs for CSO events are limited to the high flow regime. During the development of LTCPs for the CSO communities, Illinois may decide to modify the WLA if deemed appropriate.

Individual WLAs for chloride, manganese, and TDS were established for each MS4 based on the proportional drainage area of the regulated community and the appropriate water quality criteria. For regulated road authorities including Peoria and Tazewell Counties and the Illinois Department of Transportation, the MS4 area was determined using the length of applicable roads and estimated right-of-way width.

Tables containing the WLAs for individual NPDES-permitted facilities are provided in Appendix B, Tables 1-9 at the end of this Decision Document. The total number of NPDES permits of each type and pollutant, their location in the decision document and TMDL are provided below in Table 6 below.

Table 6 Cross-walk for WLA Tables In TMDL Report and Decision Document

NPDES Permit type	Contaminant	Number of Permits with WLAs	Table number in Document	Table Number in Decision Document
STP	Fecal Coliform	87	A-1	B.1
	Manganese	70	A-3	B.3
	Total Dissolved Solids	64	A-4	B.4
	Chloride	9	A5	B.5
	Total P	32	A-7	B.7
MS4	Fecal Coliform	20	A-2	B.2
	Chloride	6	A-6	B.6
CSO/SSO	Fecal Coliform*	14	A-8	B.8
TP	TP	4	A-9	B.9

* Corrected "pathogen" in original TMDL document to Fecal Coliform per Jennifer Clarke IEPA, 7/31/13

EPA finds IEPA's approach for calculating the Waste Load capacity to be reasonable and meets EPA Guidance. EPA finds that the TMDL document submitted by IEPA satisfies all requirements of this fifth element.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety (MOS) to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). EPA's 1991 TMDL Guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

Comments:
The Margin of Safety discussion is in Section 4.5.3 of the TMDL. A 10 percent explicit MOS has been applied as part of this TMDL for fecal coliform, chloride, manganese, total phosphorus, and total dissolved solids. A moderate MOS was specified because the use of the load duration curves is expected to provide accurate information on the loading capacity of the stream since the LDC process uses actual flow and pollutant measurements, but this estimate of the loading capacity may be subject to potential error associated with the method used to estimate flows within the watershed.

An implicit MOS is also associated with estimating the level of load reduction necessary based on the maximum observed loads for each flow condition for chloride, manganese, and total dissolved solids. IEPA also included an additional implicit MOS in each of the fecal coliform TMDLs because no rate of decay was used in calculations or in load duration curves for fecal coliform. Because bacteria have a limited capability of surviving outside their hosts, a rate of decay would normally be used. Thus, it was determined by IEPA that it is more conservative to use the water quality standard of 400 cfu/100ml fecal coliform, and not to apply a rate of decay which could result in a discharge limit greater than the water quality standard.

As stated in *EPA's Protocol for Developing Pathogen TMDLs* (EPA 841-R-00-002), many different factors affect the survival of pathogens, including the physical condition of the water. These factors include, but are not limited to sunlight, temperature, salinity, and nutrient deficiencies. These factors vary depending on the environmental condition/circumstances of the water, and therefore it would be difficult to assert that the rate of decay caused by any given combination of these environmental variables was sufficient enough to meet the WQS of 200 cfu/100 ml and 400 cfu/100ml. Thus, it is more conservative to apply the State's water quality standard as the margin of safety, because this standard must be met at all times under all environmental conditions

EPA finds that the TMDL document submitted by IEPA satisfies all requirements of this sixth element.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

Comments:
The load duration approach used in developing the TMDL inherently accounts for the full range of flow conditions over all seasons. Pollutant levels are generally at their highest following significant storm events during the spring and summer months. Although there is variation from year to year, such conditions and variations are fully captured in the duration curve methodology used in this TMDL, as allocations have been developed for five separate segments of the overall flow-duration regime, and data from more than one year was used in development of the TMDL. In addition, Seasonal variation in flow was a key part of the TMDL assessment because water quality parameters are often related to stream flow rates. This is a particularly important component of subsequent analyses linking sources to observed water quality where timing of source loads is connected to seasonal water quality patterns. The IEPA used box and whisker plots to show the seasonal variability of flows. Determining the seasonal flow patterns allows the TMDL to take into account the changes in hydrology which in turn impact the concentration of pollutants and identify potential sources that need to be addressed to comply with State Water Quality Standards.

For Lake DePue, IEPA accounted for seasonal variation by determining the impact of inflows from the Illinois River. IEPA reviewed river elevations, and noted that the river levels were equal to or exceeded Lake DePue lake levels over 90% of the time, indicating that the same seasonal variations in flow for the Illinois River (Segment D-16) will affect Lake DePue. IEPA assigned a lower WLA for the DePue WWTP to address the more significant impact the WWTP has during the summer, when flows in the Illinois River are lower and have less impact on the lake.

EPA finds that the TMDL document submitted by IEPA satisfies all requirements of this seventh element.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a National Pollutant Discharge Elimination System (NPDES) permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the

load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 TMDL Guidance also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

Comments:
Section 15 of the TMDL submittal discusses reasonable assurance and general implementation strategies. Section 15.1 in the TMDL contains a list of existing implementation efforts that have been initiated in the watershed by the United States Army Corp of Engineers (USACE), Tri-County Regional Planning Commission (TCRPC), the City of Peoria, and the Natural Resources Conservation Service (NRCS). The section documents the relatively high number of active watershed groups, local agencies and planning groups and engaged Federal/state agencies that have given high priority to this area for national implementation programs. The number of watershed groups that have already been funded and accomplished some of their objectives has been considered and included in the decision document as increasing the likelihood that further activity to bring about reductions will be implemented. Some of these efforts that will provide support for the reasonable assurance requirement of EPA's decision document are highlighted here. Big Bureau Creek, Senachwine Creek, Crow Creek, Ten Mile Creek, Farm Creek and Kickapoo Creek are tributaries along the Middle Illinois River Mainstem in the TMDL project area.

Projects taking place in the Middle Illinois watershed include:

- ***Ten Mile Creek*** and its watershed covers approximately 11,027 acres. In 2007, the USACE completed the "*Illinois Basin Restoration Comprehensive Plan with Integrated Environmental Assessment*" as part of the Comprehensive Plan to restore the Illinois River System. Ten Mile Creek joins the Illinois River in a stretch between Upper and Lower Peoria Lake, North of East Peoria. The plan identifies Ten Mile Creek as one of sixteen critical restoration areas. In 2004 the Illinois Department of Natural Resources (IDNR) developed the Ten Mile Creek Watershed Restoration Plan, which identified the lack of stormwater management as the primary cause of water quality degradation in Ten Mile Creek. More recently, the TCRPC has developed a Ten Mile Creek Watershed Plan and the USACE and IDNR have developed the Ten Mile Creek Stream and Watershed Assessment, both of which have already identified potential restoration locations. The Illinois State Water Survey (ISWS) and TCRPC have proposed the Ten Mile Creek TMDL/LRS (see below), for grade control and habitat enhancement. Construction of riffle and pool structures is proposed in four target reaches (approximately 11 miles total). Funding for implementing this project has not yet been secured.

- Under the USACE Comprehensive Plan, the focus of efforts in ***Senachwine Creek*** are phosphorus and nitrogen reductions. Special sources of funding have been obtained for several projects for the city of Peoria (CSO Long Term Control Plan), NRCS (Upper Mississippi River Initiative for Bureau Creek), and the USCOE (Section 519 project for Senachwine Creek). Some proposed activities are still awaiting funding. However,

existing partnerships have conducted analysis that have identified and focused site-specific management practices where they will be most effective, contributing a degree of assurance that implementation will occur to achieve TMDL targets. An example of this focus is the Dry Run pilot implementation plan, which focuses on the Bureau Creek Watershed, and provides additional information and analysis on appropriate measures that could help facilitate the Environmental Quality Incentives Program (EQIP) application in this area. This is a local priority area because the Peoria County Soil and Water Conservation District (SWCD) used Clean Water Act Section 319 funding for BMPs for sediment reductions which were installed in 1994. In 2010, local partners secured United States Department of Agriculture (USDA) grant funding for the Senachwine Creek Watershed through the Mississippi River Basin Healthy Watershed Initiative (MRBHWI) to install farming BMPs through the Environmental Quality Incentives Program.

- ***Crow Creek West***- Crow Creek is a tributary that joins the Illinois River North of the City of Peoria after flowing through the Cameron National Wildlife Refuge near Lacon, Illinois. The USACE is considering funding a sediment project in Crow Creek. Crow Creek West Watershed Committee, Marshall/Putnam SWCD, Bureau SWCD and NRCS have finalized a watershed resource plan for Crow Creek West to reduce sediment loading to the Illinois River from this bluff area.

- ***Turkey Creek*** – Turkey Creek is a small tributary to the Illinois River Mainsterm. discharging to Lower Peoria Lake. In 2008, TCRPC partnered with IEPA and utilized CWA Section 319 funds to stabilize stream channels and hillside restoration in Turkey Creek. BMPs were installed to increase the growth of vegetation to reduce stormwater that flows into lakes, rivers and streams.

- ***Pekin Lake North and South Units***- Pekin Lake forms a backwater lake that is a part of the southern most segment of the Illinois River Mainstem that is included in the TMDL project area. A portion of this project will restore backwater critical habitats for aquatic life. The South project will focus on forest and wetland restoration in this floodplain region. This has been partially completed and is currently on hold due to lack of funding.

- ***Middle Peoria Pool*** Backwater Restoration- restoration of backwaters in the Peoria pool. Monitoring has been completed and the implementation plan is currently being developed.

Big Bureau Creek Watershed-based Plan, 2008.

IEPA's primary strategies for attaining water quality standards in the Middle Illinois River watershed are to implement urban stormwater and agricultural best management practices and in-stream restoration. In addition to the TMDLs, Load Reduction Strategies (LRSs) developed in the TMDL contain additional analyses of pollutants related to aquatic life use impairments that will help to target appropriate reduction activities where and when they are needed. The LRSs include:

TSS and Phosphorus LRSs for Farm Creek at East Peoria DZZP-03

TSS load reductions are presented in Table 7-6 for Farm Creek using the volume weighted target for TSS presented in Section 3 of the TMDL. Streambank stabilization and gully restoration is needed to mitigate excessive sediment loads in Farm Creek. Development and stormwater standards may need to be updated to protect the bluffs and ridges along Farm Creek from potentially harmful development activities that can result in gully formation along the bluffs. Further analysis of hydrologic conditions within Farm Creek is also needed to fully understand existing hydromodifications and implications on biotic habitat. Nutrient LRSs have been developed for the Farm Creek watershed to determine nutrient sources and determine the estimated reductions needed to restore the appropriate designated uses to the segment. The reductions in TSS and phosphorus will also reduce the impacts of pollutants on the Illinois River mainstem.

Figure 7-19 of the TMDL presents the load duration curve and LRS for total phosphorus at the Farm Creek at East Peoria assessment site. Table 7-7 of the TMDL summarizes the LRS and required reductions for phosphorus to achieve targets, and address the impairment. Load reductions are needed for the majority of flow conditions. Agricultural and urban best management practices are needed to provide water quality treatment such as fertilizer and manure management and low impact development practices in urban areas. Control of SSOs is also needed.

TSS LRS for Senachwine Lake (RDZX)

Section 13.2.2 of the TMDL provides information on how the TSS LRS was derived, using the 20 percent sediment reduction target in the Illinois River Basin Restoration Comprehensive Plan with Integrated Environmental Assessment that states "reduce total sediment delivery to the Illinois River by at least 20 percent by 2055 (reduction to an average of 9.7 million tons per year above Valley City, based on ISWS estimate of delivery for WY 1981 to 2000)". The LRS target is presented in Table 13-3 of the TMDL for Senachwine Lake. This objective is identified by the USACE to mitigate for sediment loads from the basin that have resulted in increasing turbidity and filling backwater areas, side channels and islands.

TSS LRS for Lake DePue (RDU)

The methods previously described for determining TSS LRSs are not applicable to the backwater lakes since the volume weighted TSS targets are derived to provide targets for streams under a variety of flow conditions. Section 12.2.2 of the TMDL provides information on how the TSS LRS was derived, using the 20 percent sediment reduction target in the Illinois River Basin Restoration Comprehensive Plan with Integrated Environmental Assessment. The Assessment states "reduce total sediment delivery to the Illinois River by at least 20 percent by 2055 (reduction to an average of 9.7 million tons per year above Valley City, based on ISWS estimate of delivery for WY 1981 to 2000)". The LRS target is presented in Table 12-5 Lake Depue. This objective is identified by the USACE to mitigate for sediment loads from the basin that have resulted in increasing turbidity and filling backwater areas, side channels and islands.

IEPA Existing Regulatory Options :

NPDES Permitting and Compliance - Although several NPDES facilities have been found to be in violation of their permit limits for bacteria, the majority of facilities discharge effluent that meet water quality standards. WLAs set for TP in this TMDL will be implemented through NPDES permitting.

According to IEPA, urban stormwater implementation, along with point source discharges of pollutants in the TMDL, will be accomplished in part through the regulatory process. Regulated entities operating under General Permit ILR40 for Phase II MS4s are required to implement six control measures including public education, public involvement, illicit discharge and detection programs, control of construction site runoff, post construction stormwater management in new development and redevelopment, and pollution prevention/good housekeeping for municipal operations. Regulated entities operating under the State General Permit within the project area are identified in Table 2-1 of the TMDL.

The City of Peoria, as part of their Long Term Control Plan requirements, has submitted a monitoring plan to characterize the CSO and stormwater discharges. They have proposed 23 sites for monitoring at times of CSO and non CSO events. As part of the regular operations, the City monitors specific locations throughout Peoria. Monitoring data were not available for analysis as part of the TMDL; however, data should be available for future evaluations and should be an important component to decipher the continuing impact of CSOs, and potentially guide future management of controls.

IEPA and NRCS Non Regulatory Options

Section 15.4 of the TMDL describes how the following programs might contribute to water quality improvements to support the goals of the TMDL: Conservation Reserve Program (CRP), Illinois Conservation and Climate Initiative (ICCI), Agricultural Loan Program, Conservation Practices Program (CPP), Streambank Stabilization Restoration Program (IEPA), Sustainable Agriculture Grant Program (SARE). The Environmental Quality Incentives Program (EQIP) might target funding towards the Big Bureau Creek Subwatershed Program to focus on various practices such as Nutrient Management plans, Livestock practices and rational grazing systems, tile drainage management system, wetland restoration, filter strips, dry dams and reduced tillage.

IEPA believes that educational efforts and cost sharing programs will likely increase participation to levels needed to protect water quality. Watershed stakeholder participation was strong during the course of the TMDL development as described in the comments under the Public Participation Section of this Decision Document

The IEPA 319(h) program is also discussed to synchronize with Middle Illinois River TMDL implementation. The program emphasizes funding for implementing cost-effective corrective and preventative best management practices on a watershed scale; funding is also available for best management practices on a non-watershed scale and the development of information/ education NPS pollution control programs.

EPA finds that the TMDL document submitted by IEPA adequately addresses this eighth element.

9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 document, *Guidance for Water Quality-Based Decisions: The TMDL Process* (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL

should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

Comments:
Section 15.3 of the TMDL states that multiple best management practices will likely be needed to address the water quality impairments found in the Middle Illinois River watershed. Water quality monitoring should be implemented to monitor BMP success, and to determine if additional best management practices are needed to achieve water quality standards. Further, additional monitoring is needed in the following watershed clusters to more fully understand the sediment and nutrient contributions from these tributaries: Senachwine Creek, Crow Creek and Snag Creek, and Sandy Creek. Monitoring of nutrients in wastewater effluent is also needed to better understand its contribution to phosphorus and nitrogen loading in the watershed and inform permitting authorities.

Further monitoring of impaired lakes is needed to fully understand their nutrient cycling. Data collection could include bathymetry, hydrologic interaction with the Illinois River (timing, flow, volume, and elevations), sediment oxygen demand, lake stage, flow budget, and monitoring of the tributaries.

A monitoring plan for the City of Peoria is part of their Long Term Control Plan requirements and is described under Reasonable Assurance above.

The TCRPC has partnered with Bradley University, Illinois Central College, the Heart of Illinois Sierra Club, and the National Great Rivers Research and Education Center (River Watch program) to form the IL River Action League program that aims to engage citizens of various capabilities in water quality monitoring. This effort is in response to a 2009 Regional Stormwater Plan for Peoria, Tazewell, and Woodford Counties that identified a need for localized surface water quality data collection in the region to guide best management practice implementation in the watershed, to improve implementation effectiveness. Local partners developed protocols and assembled monitoring kits to launch a test run of citizen-based data collection with both Girl Scout organizations and middle school teachers. Partners anticipate that this program will serve as a mechanism to provide long term data collection where data is publically available via internet mapping platforms.

Big Bureau Creek and Senachwine Creek are tributaries to and within the Illinois River watershed, which has been designated for funding by NRCS for the Mississippi River Basin Initiative (MRBI). IEPA has agreed to partner with the watershed groups for the monitoring component. As part of this TMDL, IEPA is monitoring for nitrate nitrogen, total phosphorus, total suspended solids and fecal coliform bacteria. Friends of the Big Bureau Creek watershed group was formed to partner with the NRCS as a Coalition for Clean Water. The group includes the American Corn Growers Association, Prairie River RC&D, the Wetlands Initiative, Environmental Defense Fund, Prairie Rivers Network and Pheasants Forever. Senachwine Creek partners include the Tri-County Regional Planning Commission, Environmental Defense Fund, Iowa Soybean Association, and the Peoria County Soil and Water Conservation District. The TMDL provides additional details about the monitoring locations where data was collected to verify improvements. Continuous and monthly data was collected through July 2012 for the stations in the MRBI watershed. Additional future monitoring depends on additional funding

sources becoming available. IEPA provides staff for all monthly sampling and will continue to provide the three continuous monthly sampler as needed. All monitoring follows IEPA's Quality Assurance Project Plan as approved by USEPA and the Monitoring Strategy that is currently being developed in anticipation of this program.

EPA finds that the TMDL document submitted by IEPA adequately addresses this ninth element.

10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

Comment:
Section 15 of the TMDL submittal discusses Reasonable Assurance and general implementation strategies. Some of the existing regulatory options were discussed in the reasonable assurance section above.

Section 15.1 of the TMDL provides numerous examples of existing activities that are meant to address all the TMDLs in the Middle Illinois River watershed, specifically fecal coliform bacteria, total dissolved solids, manganese, chloride, and phosphorus (dissolved oxygen).

Section 15.1.1 of the TMDL highlights include projects implemented in conjunction with the Illinois Basin Restoration Comprehensive Plan under Section 519 through the USACE. This plan's focus was to reduce the flow of pollutants to the backwater lakes of the Illinois River.

The Illinois Comprehensive Plan has a number of projects in various stages of implementation and study in the watershed. Although they are not all in TMDL segments, many are upstream or feeding into the main stem of the Illinois River and will have significant impacts on the transport and fate of the pollutants in the TMDL

Section 15.1.2 of the TMDL describes a river bluff pilot vegetation restoration pilot project in Mossville Bluffs area to reduce sedimentation and erosion from the bluffs of the Illinois River. This project will serve as a guide for other implementation activities. Tributaries receive runoff from steep bluffs, which cover about four percent of the total drainage area, but deliver about 40 percent of the sediment deposited in the Peoria Lakes. Restoration work has already been done at Robinson Park, Detweiller Park, Farm Creek watershed and the Mossville Bluffs watershed. Other BMPs, some suggested in the Farm Creek and Dry Run implementation plan, include buffers and easements, open spaces and greenways, minimizing impervious surfaces, encouraging mixed-use development, cluster development, reducing runoff from lawns, roofs, and streets, and infiltration of ravine runoff.

Section 15.1.4 of the TMDL also highlights the NRCS Mississippi River Basin Cooperative Conservation Partnership (MRBI-CCPI) projects in Big Bureau and Senachwine Creek

watersheds. The federal grant program, (also called the MRBI), is designated to improve the health of the Mississippi River Basin by helping producers voluntarily implement conservation practices that prevent, control and trap nutrient and sediment runoff from agricultural land from entering surface and ground water; and restore and protect wetlands. Big Bureau Creek and Senachwine Creek watershed are within a USDA priority subwatershed within the Middle Illinois River TMDL. It is a financial and technical assistance commitment by the NRCS to the priority areas above and beyond the regular conservation working lands programs.

Finally, as part of a pilot project, a modeling report was completed as a follow-on to the TMDL and LRS project. The report explores BMP scenarios in Farm Creek and Dry Run (which feed into Bureau Creek) that would reduce pollutants delivered to these waterbodies and those downstream. A goal of the pilot was to come up with a detailed urban and rural BMP implementation plan aimed at attaining TMDL targets. The final report contains recommendations for potential activities blended with existing local, state and federal efforts to implement water quality improvements to bring about reductions called for in the TMDL in Farm Creek (TMDL segment) and Dry Run (feeds into Bureau Creek). There are also planned activities in the watershed that are outlined in the *North Farm Creek and Dry Run tributary Implementation Plan* focused specifically in reducing pollutants from the TMDL waters. It was funded by USEPA and developed by IEPA working with the TCRPC, and the City of Peoria, as a follow up to the Middle Illinois River TMDL. Public input was taken on the plan to help increase local usefulness of the plan. It was submitted along with the TMDL by IEPA.

Section 15.2 of the TMDL contains future anticipated activities in the watershed. The activities apply to a variety of pollutant sources. Table 6 below summarizes the reduction percentage needed to meet the TMDL for each contaminant in each watershed cluster, and suggested activities to explore for source reduction. Section 15.2.1 through 15.2.3 of the TMDL describe future implementation activities in the watershed for the source categories of urban waters and agricultural waters to achieve reductions. These activities apply generally to a variety of contaminants. Only TMDL pollutants are covered.

Table 6. TMDL Types of sources and reduction percentages needed in each watershed cluster for TMDL pollutants.

Watershed Cluster	Pollutants of Concern	Percent Reduction Required	Potential Candidates for Source Reduction.
Illinois River	Fecal Coliform	0-79	agricultural and urban runoff; NPDES facilities;MS4s; CSOs/SSOs; watershed, streambank and gully erosion, bluff erosion; hydromodification; tributary loads; animal agriculture; livestock
	Manganese	0-26	
	TDS	0	
Big Bureau Creek	Fecal Coliform	15-99	Runoff - urban and agricultural stormwater runoff; livestock access to waterways; animal agriculture; untreated sewage; NPDES facilities; CSOs
Farm Creek	Chloride	75	urban and agricultural stormwater runoff; NPDES facilities; MS4s; SSOs; hydromodification; deicing agents
Kickapoo Creek	Fecal Coliform	97-100	urban and agricultural stormwater runoff; animal agriculture; MS4s; NPDES facilities

Lake Depue	Phosphorus	91	Illinois River inflows; NPDES facilities; watershed runoff
Senachwine Lake	Phosphorus	83 -92	Illinois River inflows; NPDES facilities; watershed runoff

EPA reviews, but does not approve, implementation plans. EPA finds that this criterion has been adequately addressed.

11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

Comments:
Section 14 of the final TMDL document discusses the roles of many citizens and entities in the watershed. IEPA worked in partnership with EPA and the TCRPC to coordinate outreach amongst many interested stakeholders.

The IEPA TMDL staff had workgroup meetings at the TCRPC office in Peoria, IL, throughout the TMDL process. Workgroup participants at the meetings included representatives from the following entities:

- City of Peoria
- IEPA
- IDNR
- ISWS
- NRCS
- USACE
- EPA

The Watershed Characterization Report, Linkage Analysis Report, and preliminary results of water quality modeling as part of the TMDL implementation pilot analysis report for Farm Creek and Dry Run Creek, were made available to the Workgroup for review and comment. The workgroup held stakeholder meetings to get input on the project work plan and schedule, TMDL data needs, and development of implementation plan for Dry Run and Farm Creek.

TCRPC had an IEPA CWA Section 319 grant to develop an outreach plan to facilitate the TMDL development and implementation planning. TCRPC staff created a social resource

inventory and an education strategy to guide the process of TMDL education throughout the region. They also:

- provided information and sent meeting notices in advance to the North Central Illinois Council of Governments, the Illinois River Valley Council of Governments, North Central Illinois Council of Governments, Peoria Lakes Basin Alliance, and Natural Resources and Development Taskforce
- distributed the TMDL fact sheet provided by Illinois EPA to the above organizations
- posted press releases in local media sources, and
- sent notices out by email to stakeholders.

Media coverage for the Middle Illinois River TMDL included:

-WMBD-TV in Peoria
-WCBU-FM in Peoria
-The LaSalle News Tribune, and
-The Bureau County Republican based in Princeton

The public comment period for the draft TMDL opened on November 16, 2011, and closed December 16, 2011. A public meeting was held on November 16, 2011, in Peoria and Princeton, Illinois. The EPA notes that these are the correct dates as per the public notice, and the dates in Appendix B of the TMDL are incorrect. The public notice for the meeting was made available to the public including a public notice in the Peoria Journal Star. The public notice gave the date, time, location, and purpose of the meetings. It also provided references to obtain additional information about this specific site, the TMDL Program, and other related issues. Individuals and organizations were also sent the public notice by first class mail. TCRPC sent out notices and information to everyone on their mailing list. The draft TMDL was available for review on the Agency's web page at http://www.epa.state.il.us/water/tmdl . A copy of the TMDL was made available to the public for comment upon request. 40 people attended the Peoria meeting and 20 attended the Princeton meeting. Several comments were received on the draft TMDL. Appendix B of the TMDL contains IEPA's Responsiveness Summary to the comments received. The Responsiveness Summary also notes the changes made to the draft TMDL in response to the comments. EPA has reviewed the comments and responses and finds that IEPA as addressed the comments appropriately

EPA finds that the TMDL document submitted by IEPA satisfies all requirements of this eleventh element.

12. Submittal Letter

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a *technical review* or *final review and approval*. Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the water body, and the pollutant(s) of concern.

Comment:
The EPA received the final Middle Illinois River TMDL document, submittal letter and accompanying documentation from the IEPA on, June 12, 2013. The IEPA transmittal letter is dated June 3, 2013, from Bureau of Water Chief Marcia T. Willhite, to Tinka Hyde, Director, EPA Region 5, Water Division. The submittal letter explicitly states that the enclosed Middle Illinois River Watershed report was submitted for USEPA final approval. The letter further lists the waterbodies that are targeted for TMDL development. Table 1 in the decision document summarizes the waterbodies targeted for TMDL development.

The letter also explains that Load Reduction Strategies (LRS) were developed to address pollutants in the watershed that do not have water quality standards. The LRS targets and reductions necessary to meet these targets are discussed throughout the document, but are not included in the approvals for TMDLs developed in the Middle Illinois River. They are included for the purpose of increased understanding of the sources, and increased efficiencies in implementing management practices to limit stormwater and other sources of these pollutants. Both TMDL pollutants and LRS pollutants are addressed in the enclosed North Farm Creek and Dry Run tributary Implementation Plan dated December 2012.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of this twelfth element.

13. Conclusion

After a full and complete review, EPA finds that the TMDL for the Middle Illinois River Watershed satisfies all of the elements of an approvable TMDL. This approval document is for the waterbody segments in the table below, impaired by the pollutants listed in the table, for a total of 11 TMDLs.

EPA's approval of this document does not extend to those waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. EPA or eligible Indian Tribes as appropriate will retain responsibilities under CWA Section 303(d) for those waters.

Table 7 TMDLs approved under Middle Illinois River TMDL, Illinois			
Impaired Waters		Impairments Addressed by TMDL	Additional Impairments Addressed by TMDL or LRS*
Name	Segment ID		
Illinois River	D-016	fecal coliform	
	D-05	fecal coliform	
	D-30	fecal coliform, manganese, total dissolved solids	
Kickapoo Creek	DL-01	fecal coliform	
Big Bureau Creek	DQ-03	fecal coliform	
West Bureau Creek	DQD-01	fecal coliform	
Farm Creek	DZZP-03	chloride	Alteration in streamside vegetative cover, TSS, phosphorus, pH
Depue Lake	RDU	phosphorus	Aquatic algae, sedimentation/siltation, TSS, dissolved oxygen
Senachwine Lake	RDZX	phosphorus	Aquatic algae, sedimentation/siltation, TSS, dissolved oxygen

* does not include mercury, PCBs, or contaminated sediments

Appendix A Load Duration Curve Summary Tables

Table A.1 - Fecal coliform TMDL, Illinois River at Hennepin, D-16 (TMDL Ref. 5-6)

Station D 16 TMDL[c]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Fecal Coliform (G-org/day)	Current Load	962,391	280,586	68,673	40,824	9,884
	LA[a]	297,221	161,328	93,529	60,352	35,138
	WLA: NPDES Facilities	409	409	195	195	195
	WLA: CSOs	17,342	0	0	0	0
	Total WLA[b]	17,751	409	195	195	195
	MOS (10%)	34,997	17,971	10,414	6,728	3,926
	TMDL=LA+WLA+MOS	349,969	179,708	104,138	67,275	39,259
	TMDL Reduction %[d]	63.64%	35.95%	0%	0%	0%

a. Note that the Load Allocation includes all upstream area
b. Note that the WLA is based on point sources in the Middle Illinois River watershed
c. Note that the TMDL is based on the median allowable load in each flow regime and reduction is based on the observed 90th percentile load in each flow regime
d Note that daily load reductions are based on the instantaneous water quality standard; the seasonal geometric standard also needs to be met.

Table A.2 Fecal coliform TMDL, Illinois River at Peoria Intake, D-30 (TMDL Ref. 5-11)

Station D 30 TMDL[c]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Fecal Coliform (G-org/day)	Current Load	216,822	156,993	53,217	21,437	6,835
	LA[a]	320,091	188,997	100,685	58,883	36,609
	WLA: NPDES Facilities	733	733	350	350	350
	WLA: CSOs	21,762	0	0	0	0
	WLA: MS4 Communities	1,014	642	343	200	125
	Total WLA[b]	23,509	1,375	693	550	475
	MOS (10%)	38,178	21,153	11,264	6,604	4,120
	TMDL=LA+WLA+MOS	381,778	211,525	112,642	66,037	41,204
	TMDL Reduction %[d]	0%	0%	0%	0%	0%

a. Note that the Load Allocation includes all upstream area
b. Note that the WLA is based on point sources in the Middle Illinois River Watershed
c. Note that the TMDL is based on the median allowable load in each flow regime and reduction is based on the observed 90th percentile load in each flow regime
d Note that daily load reductions are based on the instantaneous water quality standard; the seasonal geometric standard also needs to be met.

Table A.3 Manganese TMDL, Illinois River at Peoria Intake, D-30 (Ref. 5-12)

Station D 30 TMDL[c]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Total Manganese (lbs/day)	Current Load	14,158	16,788	7,830	9,735	4,906
	LA[a]	63,068	23,012	11,206	6,151	3,400
	WLA: NPDES Facilities	343	343	311	311	311
	Total WLA[b]	343	343	311	311	311
	MOS (10%)	7,046	2,595	1,280	718	412
	TMDL=LA+WLA+MOS	70,456	25,950	12,797	7,181	4,124
	TMDL Reduction %	0%	0%	0%	26.24%	15.94%

a. Note that the Load Allocation includes all upstream area
b. Note that the WLA is based on point sources in the Middle Illinois River watershed
c. Note that the TMDL is based on the maximum allowable load in each flow regime and reduction is based on maximum observed load in each flow regime

Table A.4 Total Dissolved Solids TMDL, Illinois River at Peoria Intake, D-30 (Ref. 5- 13)

Station D 30 TMDL[c]		High Flows	Moist Conditions	Mid-Range Flows[d]	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Total Dissolved Solids (tons/day)	Current Load	44,640	36,083	15,227	11,536	N/A
	LA[a]	105,113	38,354	18,677	10,252	5,667
	WLA: NPDES Facilities	571	571	519	519	519
	Total WLA[b]	571	571	519	519	519
	MOS (10%)	11,743	4,325	2,133	1,197	687
	TMDL=LA+WLA+MOS	117,427	43,250	21,329	11,968	6,873
	TMDL Reduction %[d]	0%	0%	0%	0%	N/A

a. Note that the Load Allocation includes all upstream area
b. Note that the WLA is based on point sources in the Middle Illinois River watershed
c. Note that the TMDL is based on the maximum allowable load in each flow regime and reduction is based on maximum observed load in each flow regime
d. Note that there is only one observed exceedance of the TMDL. That exceedance occurs at the 53% during mid-range flows. The percent reduction of load required to meet the standard on that day is 5.84%

Table A.5 Fecal coliform TMDL, Illinois River at Pekin, D-05 (Ref. 5-18)

Station D 05 TMDL[c]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Fecal Coliform (G-org/day)	Current Load	1,284,330	951,586	402,892	257,804	206,136
	LA[a]	331,480	194,751	103,696	60,309	37,190
	WLA: NPDES Facilities	2,201	2,201	1,186	1,186	1,186
	WLA: CSOs	22,405	0	0	0	0
	WLA: MS4s	4,447	2,802	1,492	868	535
	Total WLA[b]	29,053	5,003	2,678	2,054	1,721
	MOS (10%)	40,059	22,195	11,819	6,929	4,324
	TMDL=LA+WLA+MOS	400,592	221,949	118,193	69,292	43,235
	TMDL Reduction %[d]	68.81%	76.68%	70.66%	73.12%	79.03%

a. Note that the Load Allocation includes all upstream area
b. Note that the WLA is based on point sources in the Middle Illinois River watershed
c. Note that the TMDL is based on the median allowable load in each flow regime and reduction is based on the observed 90th percentile load in each flow regime
d. Note that daily load reductions are based on the instantaneous water quality standard; the seasonal geometric standard also needs to be met.

Table A.6 Fecal coliform TMDL West Bureau Creek at Wyanet, DQD-01 (Ref. 6-5)

Station DQD 01 TMDL[a]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Fecal Coliform (G-org/day)	Current Load	201,537	2,843	814	96	11
	LA[a]	2,067	601	233	42	7
	WLA: NPDES Facilities	3	3	1	1	1
	Total WLA	3	3	1	1	1
	MOS (10%)	230	67	26	5	1
	TMDL=LA+WLA+MOS	2,298	671	260	48	9
	TMDL Reduction %[b]	98.86%	76.40%	68.11%	50.51%	15.15%

a. Note that the TMDL is based on the median allowable load in each flow regime and reduction is based on the observed 90th percentile load in each flow regime
b. Note that daily load reductions are based on the instantaneous water quality standard; the seasonal geometric standard also needs to be met.

Table A.7 Fecal coliform TMDL Big Bureau Creek at Princeton, DQ-03 (ref 6-10)

Station DQ 03 TMDL[a]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Fecal Coliform (G-org/day)	Current Load	601,320	7,245	7,083	306	97
	LA	4,576	1,265	494	63	1
	WLA: NPDES Facilities	101	101	34	34	18
	Total WLA	101	101	34	34	18
	MOS (10%)	520	152	59	11	2
	TMDL=LA+WLA+MOS	5,196	1,517	587	108	21
	TMDL Reduction %[b]	99.14%	79.06%	91.71%	64.83%	78.72%

a. Note that the TMDL is based on the median allowable load in each flow regime and reduction is based on the observed 90th percentile load in each flow regime
b. Note that daily load reductions are based on the instantaneous water quality standard; the seasonal geometric standard also needs to be met.

Table A.8 Chloride TMDL, Farm Creek at East Peoria DZZP-03 (Ref 7.5)

Station DZZP 03 TMDL[a,b]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Total Chlorides (lbs/day)	Current Load	71,629	39,372	34,985	110,366	1,487
	LA	867,193	19,749	5,286	1,951	150
	WLA: NPDES Facilities	32,547	32,547	16,301	16,301	16,301
	WLA: SSOs	0[c]	0	0	0	0
	WLA: MS4s	3,046,645	69,384	18,570	6,856	526
	Total WLA	3,079,192	101,931	34,870	23,156	16,827
	MOS (10%)	438,487	13,520	4,462	2,790	1,886
	TMDL=LA+WLA+MOS	4,384,872	135,200	44,618	27,897	18,863
	TMDL Reduction %	0%	0%	0%	74.72%	0%

a. Note that the TMDL is based on the maximum allowable load in each flow regime and reduction is based on maximum observed load in each flow regime
b. Note that Farm Creek flows were adjusted to account for NPDES design flows during all flow regimes
c. Note that both facilities in Farm Creek are SSOs and are not allowed to discharge.

Table A.9 Fecal coliform TMDL, Kickapoo Creek at Bartonville DL-01(Ref 8.5)

Station DL-01 TMDL[a]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Fecal Coliform (G-org/day)	Current Load	602,867	12,248	1,499	6,367	52
	LA	4,555	1,255	480	118	9
	WLA: NPDES Facilities	116	116	44	44	44
	WLA: MS4s	1,628	449	172	42	3
	Total WLA	1,744	565	216	86	47
	MOS (10%)	700	202	77	23	6
	TMDL=LA+WLA+MOS	6,999	2,022	773	227	62
	TMDL Reduction %[b]	98.84%	83.49%	48.42%	96.44%	0%

a. Note that the TMDL is based on the median allowable load in each flow regime and reduction is based on the observed 90th percentile load in each flow regime.
b. Note that daily load reductions are based on the instantaneous water quality standard; the seasonal geometric standard also needs to be met.

Table A.10 Phosphorus TMDL, Lake Depue (Ref. 12-4)

Pollutant	TMDL Component	Total Phosphorus (lbs/day)
Total Phosphorus (lbs/day)	Current Load	34,885.2
	LA	2,766.3
	WLA: NPDES Facilities	4.0
	Total WLA	4.0
	MOS (10%)	307.8
	TMDL Target	3,078.1
	TMDL Reduction (%)	91.2%

Table A.11 Total Phosphorus TMDL for Senachwine Lake (Ref. 13.2)

Station RDZX TMDL [a]		High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Pollutant	TMDL Component	0-10%	10-40%	40-60%	60-90%	90-100%
Total Phosphorus (lbs/day)	Current Load [b]	63,809	29,571	20,214	13,096	14,127
	LA	8,051	4,306	2,440	1,526	831
	WLA: NPDES Facilities	152	152	143	143	143
	WLA: CSOs	478	0	0	0	0
	Total WLA	630	152	143	143	143
	MOS (10%)	965	495	287	185	108
	TMDL Target	9,646	4,953	2,870	1,854	1,082
	TMDL Reduction %[b]	84.88%	83.25%	85.80%	85.84%	92.34%

a. Note that the TMDL is based on the median allowable load in each flow regime and reduction is based on median observed load in each flow regime
b. Note that the current load and percent reductions are based on total phosphorus concentration data from the nearest Illinois River gage upstream of Senachwine Lake, D-16.

Appendix B: Individual NPDES Facility Waste Load Allocations

Note – When Average Design Flow and Maximum Design Flow are equal, a Maximum Design Flow was not reported.

Table B.1 NPDES fecal coliform WLAs

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (B-Org/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Moist Flow Conditions (0-40%)
IL0001392	NOVEON INC-HENRY	0.542	–	14,338	14,338
IL0001414	CATERPILLAR INC-MOSSVILLE	2.480	–	37,543	37,543
IL0002291	CATERPILLAR INC-EAST PEORIA	1.424	–	21,560	21,560
IL0020575	PRINCETON, CITY OF STP	2.550	6.330	32,553	56,641
IL0021237	CREVE COEUR WWTP	1.550	4.850	23,468	73,433
IL0021288	PEORIA SD STP	37.000	60.000	560,219	908,449
IL0021491	Lodi STP	0.365	2.850	5,526	43,151
IL0021539	METAMORA NORTH STP	0.360	1.440	5,451	21,803
IL0021695	TOULUON STP	0.300	–	4,542	4,542
IL0021751	WENONA STP	0.450	0.480	2,577	7,268
IL0021741	OAKLAME ACRES HOMEOWNERS ASSOC	0.038	0.050	0,727	0,908
IL0022331	GRANVILLE STP	0.285	0.504	4,376	7,631
IL0023159	CHILLICOTHE SD STP	0.900	2.000	12,113	30,282
IL0023523	DEPUE STP	0.480	0.960	7,268	14,535
IL0024163	CATERPILLAR INC-PEORIA	0.006	–	0,091	0,091
IL0024791	MALDEN STP	0.050	0.125	0,757	1,893
IL0024881	CITY OF WASHINGTON STP #1	0.600	0.600	9,084	9,084
IL0024996	DELESSEY STP	0.879	1.224	13,305	18,532
IL0025160	TISKILWA STP	0.420	0.600	6,357	9,084
IL0025313	HENNEPIN PWD STP	0.300	0.750	4,542	11,356
IL0026573	PUTNAM COUNTY JUNIOR HS	0.040	0.025	0,151	0,378
IL0026972	GRANDVIEW MOBILE HOME PARK	0.025	0.062	0,378	0,938
IL0027910	CARMI WWTP	0.400	3.300	21,197	49,461
IL0029576	EAST PEORIA STP #1	4.220	8.445	63,894	127,788
IL0029416	GERMANTOWN HILLS STP #1	0.300	0.500	3,028	7,570
IL0029343	Kewanee STP	2.000	5.000	30,282	75,704
IL0029378	LACON WWTP	0.320	1.150	4,845	17,412
IL0029424	LASALLE WWTP	3.330	5.000	50,419	75,704
IL0030007	MORTON STP #3	0.950	1.390	14,384	36,038
IL0030660	PERU STP #1	3.060	4.530	46,322	68,589
IL0031216	Spring Valley STP	1.700	2.560	25,739	37,852
IL0033120	BUREAU JUNCTION STP	0.071	0.178	1,075	2,695
IL0034495	PEKIN STP #1	4.500	8.700	68,134	131,725
IL0035411	WASHBURN STP	0.138	1.130	2,089	17,109
IL0042234	PINEWOOD MHP	0.030	0.050	0,454	0,757
IL0042412	WASHINGTON STP #2	1.500	3.000	22,711	45,422

Table B.1. NPDES fecal coliform WLAs

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (B-Org/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Moist Flow Conditions (0-40%)
IL0043835	LAKE ARIEPIE WATER CO STP	0.050	0.125	0.757	1.893
IL0045213	EAST PEORIA STP #3	1.300	2.400	19.159	36.338
IL0047384	SUNDALE HILLS STP	0.275	0.688	4.164	10.417
IL0047406	WASHINGTON ESTATES INC STP	0.200	0.300	3.028	4.543
IL0052868	OAKF MANITOUMI LOW POINT	0.015	0.072	0.227	1.090
IL0053813	Norwood School District #63 STP	0.003	0.063	0.038	0.945
IL0053864	LAKE WILDWIND MHP-METAMORA	0.050	0.125	0.757	1.893
IL0054674	HPA - Jubilee College Historic	0.003	0.005	0.030	0.075
IL0056030	MOUNT ALVERNO MONTTATE-E PEOR	0.009	0.022	0.133	0.333
IL0059391	CEDAR BLUFF UTILITIES, INC STP	0.075	0.175	1.059	2.650
IL0060461	OAK RIDGE SD-STP	0.014	0.356	0.219	5.390
IL0064319	BRADFORD PRI PALACE	0.000	—	0	0
IL0065072	MEDINA UTILITIES IND-EAST STP	0.165	0.330	2.495	4.990
IL0067824	PRAIRIE VIEW NURSING HOME STP	0.029	0.050	0.303	0.757
IL0070548	HENRY STP	0.300	0.750	4.542	11.355
IL0071358	TRICO, INC., MILL POINT MHP	0.015	0.050	0.227	0.909
IL0075507	PERU STP #2	1.000	—	15.141	15.141
IL0651915	MAPLE ACRES MHP	0.026	0.065	0.392	0.981
IL0651939	SUNDALE SEWER CORP-HIGHLAND	0.053	0.132	0.803	1.999
IL0651981	PEKIN COUNTRY CLUB	0.018	0.025	0.151	0.378
IL0580008	Cedar Point STP	0.050	0.125	0.757	1.893
IL0580250	Brimfield SD STP	0.140	0.520	2.120	7.873
IL0580396	Dunlap STP	0.095	0.240	1.438	3.634
IL0580127	LAMOILLE, VILLAGE OF STP	0.063	0.243	0.954	3.679
IL0580130	Dazell STP	0.150	0.275	1.895	4.164
IL0580190	DIKE, VILLAGE OF STP	0.077	0.191	1.160	2.893
IL0580226	SPARLAND STP	0.205	0.260	1.590	3.937
IL0580245	WYANET STP	0.250	0.625	3.785	5.453
IL0580262	GERMANTOWN HILLS WWTP #2	0.200	0.400	3.028	7.570
IL0582512	Elmwood STP	0.370	1.160	5.602	17.565
IL0582522	Hanna City SD STP	0.374	0.685	4.149	10.371

Table B.2. MS4 fecal coliform WLAs

Operator Name	Permit ID	Watershed Area (sq miles)	WLA (B-Org/day)				
			High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Village of Bartonville	IRL400387	5.72	130.79	75.11	40.53	23.57	14.53
Kickapoo Township	IRL400573	27.23	579.57	365.15	194.25	113.09	69.74
Limestone Township	IRL400578	8.26	195.73	123.33	65.67	38.15	23.66
Medina Township	IRL400585	27.45	583.07	365.50	194.62	113.45	69.80
City of Peoria	IRL400434	46.41	966.79	617.95	329.03	191.36	118.01
Village of Morton	IRL400392	3.62	76.01	47.88	25.50	14.83	9.15
Cincinnati Township	IRL400583	0.01	0.21	0.13	0.07	0.04	0.03
City of East Peoria	IRL400551	20.85	441.39	278.12	148.09	86.13	53.11
City of North Peki	IRL400403	1.14	24.09	15.18	8.09	4.70	2.90
City of Pekin	IRL400423	8.74	184.78	116.43	61.99	36.05	22.23
Washington Township	IRL400685	38.18	806.74	508.33	270.63	157.41	97.07
Bellevue	ILR400165	1.67	35.29	22.29	11.84	6.88	4.25
Creve Coeur	ILR400322	4.48	94.67	59.65	31.75	18.47	11.39
Marquette Heights	ILR400581	1.64	34.65	21.96	11.64	6.77	4.17
Peoria Heights	ILR400425	6.83	144.31	90.93	48.42	28.16	17.36
West Peoria	ILR400506	1.25	27.15	17.11	9.11	5.30	3.27
Peoria City Township	ILR400599	2.17	45.85	28.89	15.37	8.94	5.51
IL DOT Roads	ILR400455	2.68	57.61	36.30	19.33	11.24	6.93
Tazewell County	IRL400271	0.10	3.20	1.39	0.74	0.43	0.27
Peoria County Roads	IRL400367	0.72	15.44	9.73	5.18	3.01	1.86

Table B.3 NPDES manganese WLAs

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (lbs/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Mold Flow Conditions (0-40%)
IL0001350	NOVEON INC-HENRY	0.547	--	1.19	1.19
IL0001414	CATERPILLAR INC-MOSSVILLE	2.48	--	3.10	3.10
IL0001554	Dynegy Midwest Gen - Hennepin	215	--	272.85	272.85
IL0001724	AMERICAN NICKELOID CO-PERU	0.0436	--	0.05	0.05
IL0001783	OF INDUSTRIES - PERU	0.003	--	0.00	0.00
IL0002518	UNITED SUPPLIERS-HENRY	0.011	--	0.01	0.01
IL0002631	ISG HENNEPIN,INC.	7.245	--	9.07	9.07
IL0020575	PRINCETON, CITY OF-STP	2.15	6.33	2.69	7.92
IL0021482	Ladd STP	0.365	2.85	0.46	3.57
IL0021539	METAMORA NORTH STP	0.36	1.44	0.45	1.80
IL0021555	TOLUCA STP	0.3	--	0.38	0.38
IL0021792	WENONA STP	0.19	0.48	0.24	0.60
IL0022331	GRANVILLE STP	0.289	0.504	0.36	0.63
IL0023159	CHILLICOTHE SD STP	0.8	2	1.00	2.50
IL0023523	DEPUE STP	0.48	0.96	0.60	1.20

Table B.3 NPDES manganese WLAs

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (lbs/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Mold Flow Conditions (0-40%)
IL0070424	J&D RENTALS AND SALES	N/A	N/A	N/A	N/A
IL0070548	HENRY STP	0.3	0.75	0.38	0.94
IL0071366	TRICO, INC., MILL POINT MHP	0.015	0.06	0.02	0.08
IL0073562	SUBLETTE WTP	N/A	N/A	N/A	N/A
IL0075507	PERU STP #2	1	--	1.25	1.25
IL0076848	MARK WTP	0.005	--	0.01	0.01
IL0077224	METAMORA PWS	0.031	--	0.04	0.04
IL0077371	CATERPILLAR TRAILS PWD WTP	0.055	--	0.07	0.07
IL0551315	MAPLE ACRES MHP	0.0359	0.0598	0.04	0.07
IL0552008	Cedar Point STP	0.05	0.125	0.06	0.16
IL0553550	Brimfield SD STP	0.14	0.57	0.18	0.55
IL0553556	Dunlap STP	0.396	0.74	0.12	0.35
IL0560137	LAMOILLE, VILLAGE OF STP	0.053	0.343	0.08	0.30
IL0560136	Debell STP	0.11	0.275	0.14	0.34
IL0560150	OHIO, VILLAGE OF-STP	0.0756	0.151	0.10	0.24
IL0560205	SPARLAND STP	0.105	0.35	0.13	0.33
IL0560345	WYANET STP	0.25	0.625	0.31	0.78
IL0560263	GERMANTOWN HILLS WWTP #2	0.2	0.5	0.25	0.63
IL0563512	Emerald STP	0.37	1.18	0.46	1.48
IL0640144	Seatonville WTP	0.005	--	0.01	0.01
IL0640187	MAGNOLIA WTP	0.005	--	0.01	0.01
IL0640035	SENECA - PETROLEUM-POWLEY SAND	N/A	N/A	N/A	N/A

* No information provided

Table B.3: NPDES manganese WLAs.

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (lbs/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Moist Flow Conditions (0-40%)
IL0034163	CATERPILLAR INC.-- PEORIA	0.005	--	0.01	0.01
IL0034797	MALDEN STP	0.05	0.125	0.06	0.16
IL0034596	OGLESBY STP	0.979	1.224	1.10	1.53
IL0035165	TISKILWA STP	0.12	0.6	0.15	0.75
IL0035343	HENNEPIN PWD STP	0.3	0.75	0.38	0.94
IL0035573	PUTNAM COUNTY JUNIOR HS	0.01	0.025	0.01	0.03
IL0035572	GRANDVIEW MOBILE HOME PARK	0.025	0.062	0.03	0.08
IL0035815	GERMANTOWN HILLS STP #1	0.2	0.5	0.25	0.63
IL0035343	Kewanee STP	2	5	2.50	6.26
IL0035378	LADDN WWTP	0.32	1.15	0.40	1.44
IL0035424	LASALLE WWTP	3.33	5	4.17	6.26
IL0035660	PERU STP #1	3	4.53	3.76	5.67
IL0031216	Spring Valley STP	1.1	2.5	1.38	3.13
IL0033626	BUREAU JUNCTION STP	0.071	0.178	0.09	0.22
IL0035807	LAROSE WTP	N/A	N/A	N/A	N/A
IL0035411	WASHBURN STP	0.138	1.13	0.17	1.41
IL0042234	PINEWOOD MHP	0.03	0.05	0.04	0.06
IL0043535	LAKE ARISPIE WATER CO STP	0.05	0.125	0.06	0.16
IL0051705	Cherry WTP	N/A	N/A	N/A	N/A
IL0053163	NEW JERSEY ZINC COMPANY, INC.	N/A	N/A	N/A	N/A
IL0053066	CAMP MANITOUMI-LOW POINT	0.015	0.072	0.02	0.09
IL0053864	LAKE WILDWIND MHP-METAMORA	0.05	0.125	0.06	0.16
IL0054674	HPA - Jubilee College Historic	0.005	0.006	0.00	0.01
IL0059030	MOUNT ALVERNO NOVITIATE-E PEOR	0.0066	0.022	0.01	0.03
IL0059351	CEDAR BLUFF UTILITIES, INC STP	0.07	0.175	0.09	0.22
IL0060451	OAK RIDGE SD STP	0.0444	0.356	0.02	0.45
IL0063363	DOVER WTP	N/A	N/A	N/A	N/A
IL0064238	BRADFORD PIG PALACE	0	--	0.00	0.00
IL0065056	CENTRAL LIMESTONE CO-MORRIS	N/A	N/A	N/A	N/A
IL0065072	MEDINA UTILITIES INC-EAST STP	0.165	0.33	0.21	0.41
IL0065757	PRINCETON WTP	N/A	N/A	N/A	N/A
IL0066486	IL DNR - Jubilee College State Park	0.14	0.049	0.18	0.06
IL0067024	PRAIRIE VIEW NURSING HOME STP	0.03	0.05	0.03	0.06
IL0068047	HOPEVILLE WTP	N/A	N/A	N/A	N/A

Table B.4: NPDES TDS WLAs.

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (tons/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Moist Flow Conditions (0-40%)
IL0001392	NOVEON INC-HENRY	0.547	--	1.99	1.99
IL0001414	CATERPILLAR INC-MOSSVILLE	0.48	--	5.17	5.17
IL0001554	Dynegy Midwest Gen – Hennepin	218	--	464.82	464.82
IL0001724	AMERICAN NICKELOID CO-PERU	0.0436	--	0.09	0.09
IL0001783	CF INDUSTRIES - PERU	0.003	--	0.01	0.01
IL0002518	UNITED SUPPLIERS-HENRY	0.011	--	0.02	0.02
IL0002631	IEG HENNEPIN INC.	7.246	--	15.12	15.12

Table B.4. NPDES TDS WLAs

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (tons/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Moist Flow Conditions (0-40%)
IL0023175	PRINCETON, CITY OF STP	2.15	6.33	4.43	13.21
IL0021491	Lodd STP	0.365	2.85	0.76	5.95
IL0027235	METAMORA NORTH STP	0.36	1.44	0.75	3.00
IL0021695	TOLUCA STP	0.3	--	0.63	0.63
IL0021792	WENONA STP	0.48	0.48	0.40	1.00
IL0022331	GRANVILLE STP	0.289	0.504	0.60	1.05
IL0023159	CHILLICOTHE SD STP	0.8	2	1.67	4.17
IL0023523	DEPUE STP	0.48	0.96	1.00	2.00
IL0024163	CATERPILLAR INC - PEORIA	0.005	--	0.01	0.01
IL0034797	MALDEN STP	0.05	0.125	0.10	0.26
IL0034886	OGLESBY STP	0.879	1.224	1.83	2.55
IL0026140	TISKILWA STP	0.32	0.6	0.25	1.25
IL0025313	HENNEPIN PWD STP	0.3	0.75	0.63	1.56
IL0026573	PUTNAM COUNTY JUNIOR HS	0.001	0.025	0.02	0.05
IL0029573	GRANDVIEW MOBILE HOME PARK	0.005	0.062	0.05	0.13
IL0029576	GERMANTOWN HILLS STP #1	0.3	0.5	0.42	1.04
IL0025343	Kewanee STP	3	5	4.17	10.43
IL0029378	LADDN WWTP	0.33	4.55	0.67	2.40
IL0029424	LASALLE WWTP	3.33	5	5.95	10.43
IL0030660	PERU STP #1	3	4.53	5.25	9.45
IL0034746	Spring Valley STP	1.5	2.5	2.29	5.20
IL0033430	BUREAU JUNCTION STP	0.071	0.178	0.15	0.37
IL0039667	LAROSE WTP	N/A	N/A	N/A	N/A
IL0039411	WASHBURN STP	0.138	0.33	0.29	0.96
IL0042234	PINEWOOD MHP	0.03	0.05	0.06	0.10
IL0042625	LAKE ARISPIE WATER CO STP	0.05	0.125	0.10	0.26
IL0051705	Chatty WTP	N/A	N/A	N/A	N/A
IL0052183	NEW JERSEY ZINC COMPANY, INC.	N/A	N/A	N/A	N/A
IL0053066	CAMP MANITOUMI-LOW POINT	0.015	0.072	0.03	0.15
IL0053958	LAKE WILDWIND MHP-METAMORA	0.05	0.125	0.10	0.26
IL0054674	HFA - Judges College Historic	0.002	0.005	0.00	0.01
IL0058030	MOUNT ALVERNO NOVITIATE-E PEOR	0.0068	0.022	0.02	0.05
IL0058394	CEDAR BLUFF UTILITIES, INC-STP	0.07	0.175	0.15	0.37
IL0060461	OAK RIDGE SD STP	0.3144	0.356	0.03	0.74
IL0062363	DOVER WTP	N/A	N/A	N/A	N/A
IL0063169	BRADFORD PS PALACE	0	--	0.00	0.00

Table B.4. NPDES TDS WLAs.

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (tons/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Moist Flow Conditions (0-40%)
IL0056065	CENTRAL LIMESTONE CO-MORRIS	N/A	N/A	N/A	N/A
IL0056073	MEDINA UTILITIES INC-EAST STP	0.165	0.33	0.34	0.69
IL0056757	PRINCETON WTP	N/A	N/A	N/A	N/A
IL0056486	IL DNR - Jubilee College State Park	0.14	0.045	0.29	0.10
IL0057024	PRAIRIE VIEW NURSING HOME STP	0.02	0.05	0.04	0.10
IL0058047	HOPEWELL WTP	N/A	N/A	N/A	N/A
IL0070424	J&D RENTALS AND SALES	N/A	N/A	N/A	N/A
IL0070548	HENRY STP	0.3	0.75	0.63	1.55
IL0071358	TRICO, INC., MILL POINT MHP	0.015	0.05	0.03	0.10
IL0073652	SUBLETTE WTP	N/A	N/A	N/A	N/A
IL0075507	PERU STP #2	1	—	2.09	2.09
IL0076848	MARK WTP	0.005	—	0.01	0.01
IL0077224	METAMORA PWS	0.031	—	0.06	0.06
IL0077321	CATERPILLAR TRAILS PWD WTP	0.065	—	0.14	0.14
IL0551015	MAPLE ACRES MHP	0.0259	0.0648	0.05	0.14
IL0580005	Cedar Point STP	0.05	0.125	0.10	0.26
IL0580050	Extended SD STP	0.14	0.37	0.29	1.08
IL0580099	Dunlap STP	0.095	0.24	0.20	0.50
IL0580127	LAMOILLE, VILLAGE OF STP	0.063	0.343	0.13	0.51
IL0580136	Dalzell STP	0.11	0.275	0.23	0.57
IL0580150	OHIO, VILLAGE OF STP	0.0765	0.191	0.16	0.43
IL0580205	SPARLAND STP	0.105	0.26	0.22	0.54
IL0580245	WYANET STP	0.25	0.625	0.52	1.30
IL0580252	GERMANTOWN HILLS WWTP #2	0.2	0.5	0.42	1.04
IL0580312	Elmwood STP	0.37	1.48	0.77	3.46
IL0580144	Sterlingville WTP	0.005	—	0.01	0.01
IL0580187	MAGNOLIA WTP	0.006	—	0.01	0.01
IL0580035	SENECA PETROLEUM-POWLEY SAND	N/A	N/A	N/A	N/A

"—" No information provided

Table B.5. NPDES chloride WLAs.

Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	WLA (tons/day)	
				Mid-Range to Low Flow Conditions (40-100%)	High and Moist Flow Conditions (0-40%)
IL0020150	OAKLANE ACRES HOMEOWNERS ASSOC	0.035	0.05	31.39	125.58
IL0024864	CITY OF WASHINGTON STP #1	0.6	0.6	1251.81	1251.81
IL0028576	EAST PEORIA STP #1	4.32	8.44	8604.37	17608.75
IL0030007	MORTON STP #3	0.85	2.36	1662.03	4966.50
IL0034312	WASHINGTON STP #2	1.5	3	3129.53	6259.03
IL0047384	SUNDALE HILLS STP	0.375	0.686	573.74	1435.43
IL0047465	WASHINGTON ESTATES INC STP	0.2	0.2	417.27	626.90
IL0074632	V-MIX CONCRETE INC	0.045	—	93.85	93.85
IL0551059	SUNDALE SEWER CORP-HIGHLAND	0.063	0.132	130.58	275.40

"—" No information provided

Table B.6 MS4 chloride WLAs

Operator Name	Permit ID	Watershed Area (sq mile)	WLA (lbs/day)				
			High Flows	Moist Conditions	Mid-Range Flows	Dry Conditions	Low Flows
Village of Morton	IRL400392	3.68	228114.10	5154.49	1389.85	512.75	38.64
City of East Peoria	IRL400331	13.53	857338.17	19427.40	5234.81	1937.69	146.02
Washington Township	IRL400555	25.78	1633654.15	43067.43	11597.30	4245.34	321.60
Grove Cedar	ILR400322	0.58	37335.78	856.15	227.46	83.92	6.35
Tazewell County Roads	IRL400371	0.48	30944.20	704.64	188.54	69.56	5.27
ILDOT, Roads	ILR406493	0.06	4031.33	92.35	24.68	9.11	0.69

Table B.7 NPDES Total phosphorus WLAs					
				WLA (lbs/day)	
Permit ID	NPDES Facility Name	Average Design Flow (MGD)	Maximum Design Flow (MGD)	Mid-Range to Low Flow Conditions (40-100%)	High and Moist Flow Conditions (0-40%)
IL0001562	Dynegy Midwest Gen – Hennepin	258	–	96.96	96.96
IL0001724	AMERICAN NICKELOID CO-PERU	0.0435	–	0.82	0.82
IL0001783	CF INDUSTRIES - PERU	0.333	–	6.00	6.00
IL0002631	ISG HENNEPIN INC.	7.245	–	3.02	3.02
IL0002575	PRINCETON, CITY OF STP	2.15	6.33	17.94	52.83
IL0021491	Ladd STP	0.365	2.85	3.65	23.78
IL0022331	GRANVILLE STP	0.289	0.504	2.41	4.21
IL0023523	DEPUE STP	0.48	0.66	4.01	5.01
IL0024791	MALDEN STP	0.05	0.125	0.42	1.04
IL0025160	TISKILWA STP	0.12	0.6	1.00	5.01
IL0025313	HENNEPIN PWD STP	0.3	0.75	2.50	6.26
IL0026424	LASALLE WWTP	3.33	5	27.79	41.73
IL0030660	PERU STP #1	3	4.53	25.04	37.86
IL0031216	Spring Valley STP	1.1	2.5	9.18	20.86
IL0033120	BUREAU JUNCTION STP	0.071	0.178	0.59	1.49
IL0042625	LAKE ARISPE WATER CO. STP	0.05	0.125	0.42	1.04
IL0051705	Cherry WTP	N/A	N/A	N/A	N/A
IL0052183	NEW JERSEY ZINC COMPANY, INC.	N/A	N/A	N/A	N/A
IL0053503	DOVER STP	N/A	N/A	N/A	N/A
IL0055095	CENTRAL LIMESTONE CO-HORRIS	N/A	N/A	N/A	N/A
IL0055727	PRINCETON WTP	N/A	N/A	N/A	N/A
IL0057004	PRAIRIE VIEW NURSING HOME STP	0.01	0.05	0.17	0.42
IL0073652	SUBLETTE WTP	N/A	N/A	N/A	N/A
IL0075507	PERU STP #2	1	–	8.35	8.35
IL0076546	MARK WTP	0.005	–	0.04	0.04
IL0555015	MAPLE ACRES MHP	0.0253	0.0548	0.22	0.54
IL0560008	Cedar Point STP	0.05	0.125	0.42	1.04
IL0560127	LAMOILLE, VILLAGE OF STP	0.063	0.243	0.53	2.03
IL0560130	Dalzell STP	0.11	0.375	0.92	3.05
IL0560193	OHIO, VILLAGE OF STP	0.0765	0.191	0.64	1.59
IL0560045	WYANET STP	0.25	0.625	2.09	5.23
IL0540146	Geasyville WTP	0.005	–	0.04	0.04

– No information provided

Table B.8. CSO/SSO pathogen WLAs.

Facility Name	NPDES Permit ID	Number of Regulated Outfalls	CSO or SSO	Maximum permitted CSO flow (MGD)	Downstream Receiving Water	4 Times per Year WLA (Q-org/day)[a]
Bureau Junction STP	IL0053120	1	CSO	13.5	Big Bureau Creek	206
East Peoria STP #1	IL0038776	4	SSO	0	Farm Creek	0
Granville STP	IL0022331	3	CSO	13.5	Illinois River Main Stem	206
Kewanee STP	IL0029343	1	SSO	0	Kickapoo Creek	0
		2	CSO	27.1	Illinois River	410
Lasalle WWTP	IL0029424	1	SSO	0	Main Stem	0
Metamora North STP	IL0021539	1	SSO	0	Illinois River Main Stem	0
Ogelsby STP	IL0024996	7	CSO	N/A	Sandy Creek	0
Pekin STP #1	IL0034495	9	CSO	278.3	Illinois River Main Stem	4,214
Peoria CSOs	IL0027800	15	CSO	42.5	Illinois River Main Stem	643
Peoria SD STP	IL0031259	1	SSO	0	Illinois River Main Stem	0
Peru STP #1	IL0030660	22	CSO	355.5	Illinois River Main Stem	34,938
Spring Valley STP	IL0031216	3	CSO	118.1	Illinois River Main Stem	1,788
Washington STP #2	IL0042412	4	SSO	0	Farm Creek	0
Wenona STP	IL0031792	1	CSO	N/A	Sandy Creek	0

Table B.9. CSO/SSO TP WLAs.

Facility Name	NPDES Permit ID	Number of Regulated Outfalls	CSO or SSO	Maximum permitted CSO flow (MGD)	Downstream Receiving Water	4 Times per Year WLA (lbs/day)[a]
Granville STP	IL0022331	3	CSO	13.5	Senachwine Lake	113
		2	CSO	27.1		226
Lasalle WWTP	IL0029424	1	SSO	0	Senachwine Lake	0
Peru STP #1	IL0030660	22	CSO	355.5	Senachwine Lake	5234
Spring Valley STP	IL0031216	3	CSO	118.1	Senachwine Lake	395