STATE OF ILLINOIS)
) **SS**
COUNTY OF SANGAMON)

BEFORE THE ILLINOIS
POLLUTION CONTROL BOARD

CITY OF SPRINGFIELD, ILLINOIS)
A municipal corporation)
)
Petitioner,)
)
) **PCB No.** 06-137
)
ILLINOIS ENVIRONMENTAL)
PROTECTION AGENCY,)
Respondent.)

NOTICE OF FILING

To: Joey Logan-Wilkey,
Assistant Counsel
Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Ninth Street
P.O. Box 19276
Springfield, Illinois 62794-9276

PLEASE TAKE NOTICE that I have today filed with the Office of The Clerk of the Pollution Control Board the Petition for Variance of the City of Springfield, Illinois, a copy of which is herewith served upon you.

William A. Murray
Special Assistant Corporation Counsel

February 8, 2006

William A. Murray
Office of Public Utilities
800 East Monroe
4th Floor, Municipal Building East
Springfield, Illinois 62757
Telephone: 217-789-2116, Ext. 501
bmurray@cwlp.com

CERTIFICATE OF SERVICE

I, the undersigned, certify that I have served the Notice of Filing and Petition for Variance by depositing a copy of both in the U.S. Mail in Springfield, Illinois, in a sealed envelop, addressed as specified in said Notice of Filing, postage fully paid, on the 8th day of February, 2006.

William A. Murray

STATE OF ILLINOIS)
) SS
COUNTY OF SANGAMON)

BEFORE THE ILLINOIS
POLLUTION CONTROL BOARD

CITY OF SPRINGFIELD, ILLINOIS a municipal corporation	)	
Petitioner,	)	
	)	**PCB No.** 06-137
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

PETITION FOR VARIANCE

CITY OF SPRINGFIELD, ILLINOIS, by its attorneys, hereby petitions the Illinois Pollution Control Board (Board) to grant Petitioner a variance from 35 Ill. Adm. Code 302.206 of the Board's regulations, and in support thereof states as follows:

1. Petitioner owns and operates water and electric utilities serving the residents of the City and certain environs. The City's utilities are administered by the Office of Public Utilities, which employs 703 individuals. Petitioner's water utility serves, either on a retail or wholesale basis, the City of Springfield, the Villages of Chatham, Grandview, Jerome, Leland Grove, Loami, Rochester, and Southern View, the Sugar Creek Public Water District and the Williamsville-Sherman Public Water Commission and certain unincorporated areas adjacent to the City. The service area encompasses approximately one hundred forty (140) square miles and includes a population of about 153,900. The long-term average daily potable water pumpage to the service area is

approximately twenty-one (21) million gallons per day (MGD). During 2004 and 2005, the maximum hourly pumpage rate reached 36.0 MGD and 40.9 MGD, respectively, while the maximum daily production was 30.5 MGD and 35.87 MGD, respectively. Total water sold and accounted for during the City's prior fiscal year ending February 28, 2005, was 6.6 billion gallons. Petitioner's electric utility serves, either on a retail or wholesale basis, the City of Springfield and the Villages of Chatham, Jerome, Leland Grove, Riverton and Southern View. During 2005, Petitioner generated 1,818.80 gigawatt hours to serve these customers. Petitioner's peak summer electric demand for its control area was 467 Megawatts (MW). Petitioner's coal-fired generation capacity is 448 MW. All the coal-fired generation relies on Lake Springfield for water used in the generation of electricity. The Petitioner also has 166 MW of combustion turbine generating capacity which uses oil or natural gas as fuel sources.

2. Petitioner has over past years engaged in a series of water supply studies regarding the adequacy of the source of its water supply to meet the water needs of both its water and electric utilities during periodic drought events.

a. Lake Springfield was constructed in 1935 as the chief water supply source for the Petitioner. The Lake is located on the southeast and south sides of the City with a drainage area of 265 square miles primarily southwest of the City comprising the Sugar and Lick Creek drainages. Rainfall in the City does not contribute to these drainages, only rainfall between Springfield and Virden or Springfield and Waverly. The adequacy of Lake Springfield as a source of supply was not questioned until the occurrence of the 1953-1955 drought. During that event the lake level declined from a full pool elevation of 560 feet above mean sea level (MSL) to 547.4 feet MSL. Water utility operational

problems as a result of reduced water quality occur at a lake elevation of 546.0. Although the 1953-1955 drought was the most severe period of record event since Lake Springfield was constructed, more severe drought events can and do occur. For example, a more severe period of low rainfall occurred for the Springfield area between 1913 and 1915, prior to construction of Lake Springfield. A similar drought may be occurring at this time. Under such conditions the reliable operation of the City's water filtration plant and power plants would be jeopardized.

b. During the 1953-1955 drought event, the petitioner incorporated facility improvements to augment the Lake Springfield water supply. A moveable low water dam was constructed across the South Fork of the Sangamon River below its confluence with Horse Creek, adjacent to Lake Springfield. This facility diverts water from the South Fork and Horse Creek to a pump station at Lake Springfield. The facility has been maintained in working condition and is operated periodically to supplement the Lake Springfield water supply during dry weather. In addition, the petitioner improved its ash ponds in 1978. A pump station was erected at the ash pond clarification lagoon to enable pumpage of clarified sluice water and filter plant process waters to Lake Springfield during periods of low precipitation. The discharge from the clarification pond back to Lake Springfield was available for use until the 1990's. In 1991, Petitioner filed an application for renewal of its NPDES Permit for its generating stations and water treatment facility. The clarification pond had two outfalls which were subject to the permit, one to Sugar Creek and the return discharge to Lake Springfield. When the final permit was issued on November 14, 1991, it included a new special condition for these outfalls regarding the boron concentration for the discharge which became effective

December 14, 1994. Petitioner came into compliance with the discharge to Sugar Creek by obtaining an adjusted standard for boron from the Board (AS94-9) (December 1, 1994). Petitioner did not seek an adjusted standard for the discharge to Lake Springfield because Petitioner had no data regarding the boron concentration of Lake Springfield water at the Water Purification Plant intake at times when discharges were made to Lake Springfield from the clarification pond. This outfall was abandoned as an operational discharge point in December of 1994 and the pumps were removed. In the spring of 2000, Illinois EPA asked the Petitioner to explore the possibility of reinstituting the capability to utilize the ash pond discharge to augment Lake Springfield. This capability currently exists on a limited basis and is further discussed in Paragraphs 40-45 below.

c. Technical evaluations of the Petitioner's long-term water supply needs were completed in 1957, 1965, 1972, 1980, 1981, and 1986. The most feasible long-term options included development of a second lake (Hunter Lake) or construction of facilities to withdraw water from the Sangamon River, Brush and Horse Creeks, and the South Fork to Lake Springfield. Seven other options reviewed reflected an absence of a readily available supply source. The principal purpose of these remaining two options would be to maintain acceptable pool levels in Lake Springfield during periods of low precipitation. The estimated cost of these projects is $103,000,000 (2005 dollars) and $13,000,000 (1981 dollars), respectively. It was estimated that a second lake would require eight years of construction while the Sangamon River diversion project would require four years to complete.

d. The 1986 evaluation of the petitioner's water supply concluded that Lake Springfield and the emergency water supply plan utilizing the Sangamon River were

expected to meet the water supply needs of the projected service area under a period of drought conditions for the next fifteen years. However, a drought event of great severity would create a water shortage for the community. Such an event would have a probability of occurrence of approximately one percent. Given such an improbable short-term event, the petitioner was reluctant to implement a long-term water supply strategy in order to avoid excessive economic and environmental costs.

3. The Petitioner concluded that until water demand dictates the need for a long-term supplemental water supply project an emergency plan should be sufficient until that time.

a. In 1986, the projected water demand for the year 1995 was 38.9 MGD. The estimated water supply yield for an eighteen-month, 100-year drought event for that year was projected to be 25.2 MGD, assuming that the lake level would drop fourteen (14) feet at which point severe operational difficulties would be experienced. Therefore, an additional 13.7 MGD was projected to be required to augment the petitioner's water supply. A supplemental emergency water supply would be required for the community in the event of a severe drought. The emergency water supply plan was developed which included consideration for water supply and demand and is comprised of two principal components: a drought management schedule and the proposed diversion of the Sangamon River. The objective of the drought management schedule is to provide procedures for reducing water demand, such as water conservation programs, implementation of water rate surcharges, and reduction of system operating pressures. Each procedure is graduated in effect, becoming more stringent with lower pool levels of Lake Springfield. The objective of the proposed diversion of the Sangamon River was to

supplement the City's water supply. The drought management schedule currently in effect is attached as Exhibit 1.

b. The installation of the dams on the Sangamon River pursuant to the emergency water supply plan would be triggered by a low lake level (557.0 or less) on June 30 with additional specific conservation measures being taken prior to this trigger level. Development of the Sangamon River facility would include installation of temporary dams at the project site. The proposed river diversion locations are at the confluence of the Sangamon River, the South Fork of the Sangamon River, and Sugar Creek. The topography of the Sangamon River and South Fork valleys would allow a temporary dam to be constructed at Sangamon River mile 85.24, before the confluence of Sugar Creek, to impound water in the river channels such that the existing pumping facilities at Lake Springfield could be utilized. A secondary structure blocking the low flow arm of the South Fork River would also be installed. The top elevation of the structures would be 525 feet MSL. The effect of the structures would be to create a pool extending approximately 5.2 miles upstream of the dam on the Sangamon River and approximately 6 miles up the South Fork to the existing pump facilities near Lake Springfield. The depth of the pool at the Sangamon River structure would be twelve (12) feet. At some point along the pool created, the river bank is broken at a level less than 525 MSL, and the Petitioner will require flowage easements to be obtained from approximately 32 parcel owners. These locations are typically inundated when the rivers are bank full. One property owner has consented. Pumping would begin upon completion of the temporary dams, subject to available river discharge quantities (Record

88-113, Tr. 158-161). The temporary dams would be removed upon resumption of normal lake levels (see Exhibit 2 for average monthly lake levels).

4. Certain permits are required for the river diversion portion of the emergency water supply plan. A permit to construct the dam on the Sangamon River is required from the United States Army Corps of Engineers. As part of the process, the Illinois Environmental Protection Agency must certify under Section 401 of the Federal Water Pollution Control Act (FWPCA) that the project will result in discharges that comply with applicable water quality standards under Title III of the Act. Permit applications were originally filed on February 27, 1985. The permits were never granted because issues arose that could not be immediately resolved over release rates of water downstream of the proposed dam and the content of dissolved oxygen in the released water (35 Ill. Adm. Code 302.206 provides a standard for dissolved oxygen of not less than 6.0 mg/1 during at least 16 hours of any 24 hour period and not less than 5.0 mg/1 at any time). On October 4, 1986, the Corps of Engineers deemed the permit application to be withdrawn so that resolution of these issues could be achieved. The Illinois Department of Transportation Division of Water Resources conducted an instream flow analysis (Exhibit 1 to the 1988 Petition) and on August 19, 1987, advised the Corps of Engineers that according to its analysis the proposed release rate contained in the City's permit application of 41 cubic feet per second (CFS) would provide sufficient flow habitat if acceptable dissolved oxygen levels were maintained (Exhibit 2 to the 1988 Petition). However, based upon the current standard for dissolved oxygen, the Illinois Environmental Protection Agency is without authority to certify that the project could release discharges that would meet the standard potentially due to naturally created

conditions that would be below the standard anyway. The Agency, recognizing the prudency of emergency planning, also suggested that certification of a temporary emergency plan would be possible if the City were to obtain a variance from the Illinois Pollution Control Board from the problematic water quality standard for the river diversion project. (Exhibit 7 to the 1988 Petition). On or about July 22, 1988, the City filed a petition for a variance with the Board seeking relief from 35 Ill. Adm. Code 302.206. Ironically, the United States was experiencing drought conditions at the same time. On November 29, 1988, the Board granted Petitioner a variance as requested from 35 Ill. Adm. Code 302.206 as it related the dissolved oxygen in the Sangamon River. (PCB 88-113).

5. On or about July 22, 1993, the Petitioner filed a new petition with the Board seeking an extension of the variance granted by the Board in PCB 88-113. On December 16, 1993, in PCB 93-135, the Board granted Petitioner a new variance from Ill. Adm. Code 302.206 as it relates to dissolved oxygen in the Sangamon River. Petitioner again filed a petition for the same variance with the Board on April 28, 2000. The Board subsequently again granted the Petitioner a variance from Ill. Adm. Code 302.206 in PCB 00-179 on June 8, 2000. Subsequent to the granting of the variance in each of these proceedings, Petitioner was able to secure the required permit from the United States Army Corps of Engineers. The permit, however, was never utilized. Subsequent to November 29, 1988, the lake level has never reached a point where the City's drought management plan would trigger the implementation of the emergency water supply plan on the Sangamon River. In all variance proceedings IEPA only favored the Sangamon

River option on the condition that the City pursue a different long-term supplemental water supply option. Both Board orders included this condition to the variance.

6. Petitioner has complied with all aspects of the Board's Order in PCB 88-113, in PCB 93-135, and in PCB 00-179. Condition a. of the 1988 Order was met when Petitioner submitted a Joint Application to the United States Army Corps of Engineers, the Illinois Environmental Protection Agency, and the Illinois Department of Transportation, dated July 27, 1989, for a permit under Section 404 of the Clean Water Act for placement of a dam in Horse Creek, Sangamon County, Illinois, for creation of an impoundment known as Hunter Lake. A schedule for that project was included in the application packet. Since Petitioner never had to proceed with the emergency project for which the variance was granted, conditions b., c., e., f., and g. of the Orders in 1988 and 1993 did not require any compliance actions to be undertaken on the part of the Petitioner. With regard to condition d. of the 1988 Order, mandatory water conservation measures were in place at the time of the Order and remained so until Spring of 1989 when Lake Springfield returned to a satisfactory level for Springfield's water supply needs as a result of runoff from rainfall in the Lake's watershed and supplemental pumping from the South Fork of the Sangamon River. With regard to the Board's Order in the 2000 proceeding, there were only two conditions imposed. The first condition specified when the variance would expire. The second condition specified when any temporary dam would be removed. The City did not invoke the emergency water supply plan during the term of the variance which expired on June 8, 2005. The City has therefore complied with the Board's Order of 2000. The Corps of Engineers has yet to grant a permit for Hunter Lake, and the City estimates that this project will require an

additional five years to complete once a permit is issued. The status of Hunter Lake as a long-term supplemental water supply for petitioner will be discussed in detail later in this petition.

7. The variance granted in PCB 00-179 expired on June 8, 2005. The permit granted by the Corps of Engineers expired on December 31, 2005. The City is applying for a new permit from the United States Army Corps of Engineers. The current lake level of Lake Springfield is 556.5 MSL, or approximately 3.5 feet below full pool (560 MSL). Attached as Exhibit 2 is a chart listing average lake levels at different months of the year. For this time of year, the lake level is nearly 1.5 feet below average. This includes water pumped from the South Fork of the Sangamon River and ash pond water circulated back to the Lake in 2005 (see paragraphs 14 and 15). This represents a lake level augmentation of 1.96 feet in 2005. Attached as Exhibits 3a and 3b are graphic comparisons of current lake levels with other historic dry years. Until recent months the slope of the graph for the period depicting current conditions is almost identical to the lake conditions in 1999-2000. However, current conditions are quite similar to the curve for 1952-53, which was the first period of a three year drought event (1952-1955). Without the pumping augmentation above, the current level would be even lower in comparison to other drought events. The Illinois State Water Survey (ISWS) issued an assessment of drought conditions in Illinois on January 6, 2006 (Exhibit 4), concluding that from March-December, 2005, central Illinois had one of its driest periods on record (third driest since 1895) and that surface lake levels were not replenished during 2005. The ISWS also reported in that assessment that soil moisture in most of Sangamon County was only 25% of normal soil moisture based upon the 1985-1995 mean.

Additionally, stream flow in the Springfield area comprising the Lake Springfield watershed was in the below-normal range at the 14th percentile. The ISWS concludes that the amount of "precipitation in early spring will likely be key in drought recovery or, on the other hand, in the advancement of drought conditions and water supply concerns." In view of current conditions and the current estimated schedule for completion of Hunter Lake, the City of Springfield has decided to reapply with the Corps of Engineers for the permit to construct the dam on the Sangamon River that is called for in the City's emergency water supply plan. As in prior instances, the Illinois Environmental Protection Agency (IEPA) must certify under Section 401 of the Federal Water Pollution Control Act (FWPCA) that the project will result in discharges that comply with applicable water quality standards under Title III of the Act. For IEPA to certify this consequence to the Corps of Engineers, the City again requests that the Board grant a variance from the dissolved oxygen water quality standard as it relates to the Sangamon River. The purpose of this Petition is to seek the issuance of a new variance for a five year period with the same terms and conditions as set forth in the order of the Board granting variance in PCB 00-179.

8. Petitioner hereby requests the incorporation of the record, opinion and order of the prior variance proceedings, City of Springfield v. IEPA, PCB 88-113, City of Springfield v. IEPA, PCB 93-135, and City of Springfield v. IEPA, PCB 00-179, into this petition for a new variance comparable to those in the prior proceedings. Petitioner represents that the exhibits and testimony of the witnesses presented by Petitioner in PCB 88-113 continue to be true and correct, and as updated in PCB 93-135 and PCB 00-179, except as hereinafter noted. A separate written request for such incorporation will be

made by the Petitioner as required by 35 Ill. Adm. Code 101.106 along with four copies of the record of each of those proceedings.

THE DISSOLVED OXYGEN STANDARD

9. If the proposed temporary dams on the Sangamon River are constructed, the Petitioner proposes a downstream release rate of 41 CFS which ranges from 31 to 100 percent of the projected available stream flow in the Sangamon River during an 18 month drought event. The discharge rate was derived in accordance with the following methodology by consulting engineers retained by the City.

a. The United States Geological Survey flow data from the Riverton, Illinois, gauge site (river mile 82.93) during the 1953-1955 drought were adjusted and used to predict Sangamon River discharge for an eighteen-month, 100-year drought event in 1995. The adjustment considered several factors. First, the Illinois State Water Survey estimated that the ratio for the Sangamon River discharge at Riverton during the 1953-1955 drought (Exhibit 3 to the 1988 Petition) to a projected 100-year frequency drought was 0.7. Second, a reduction of the contributing drainage area over time to the Riverton gauge was calculated based on those reservoirs built after the 1953-1955 drought. Total drainage area was reduced from 1443.1 square miles to 1222.3 square miles, owing to the construction of Lake Taylorville and Lake Sangchris. Therefore, only the watershed areas downstream from dams forming Lake Decatur, Lake Taylorville, and Lake Sangchris were considered to contribute runoff during low flow conditions (0.846996 adjustment factor). Third, the difference between 1953-1955 and future wastewater discharges to the drainage area (13.75 MGD) was added to the 1953-1955 data to compensate for projected increased wastewater discharges (Crawford, Murphy and Tilly,

Inc., City of Springfield, Illinois Technical Report on Emergency Water Supply Plan (Engineering Report) (1983)). (Record, 88-113, Tr. 145-150.)

b. Projected unrestricted flow data without the project indicated the average discharge for the evaluation period was 83 CFS (Exhibit 4 to the 1988 Petition). Incorporation of a proposed downstream release rate of 41 CFS decreased the average river discharge for the period of 59 CFS. Based on projected river discharge, approximately 71 percent of the unrestricted river discharge would be released downstream of the proposed diversion facility. The proposed downstream release rate ranged from 31 to 100 percent of the available, projected stream flow (Exhibit 5 to the 1988 Petition).

c. The final engineering design of the diversion structure will include a lower conduit and valve configuration. This will be of sufficient capacity to maintain a constant downstream release rate of 41 CFS, whenever available in the river. Also, a crest weir and riprap spillway will be constructed to permit higher river discharges to be passed at or near river elevation 525.0 feet M.S.L. Adequate river discharge gauging means will be provided at the site. Other dam design parameters will comply with Illinois Department of Transportation (now Illinois Department of Natural Resources) standards and regulations. (Record, 88-113, Tr. 152-160, 183-185.)

d. The operation of the lower and crest discharge structures will be coordinated based on rate of flow and pool elevation at the diversion structure. It is estimated that the storage volume of the upstream pool behind the diversion structure at elevation 525.0 feet M.S.L. is approximately 680 million gallons. (Record, 88-113, Tr. 159-160.) The length of time estimated to reach and maintain a full pool elevation at the

diversion structure depends directly on available river flow. From data during the 1953-1955 drought, the prolonged duration of low river flow would suggest that maintaining a full pool elevation would not be characteristic or possible at the diversion structure. However, recorded infrequent, maximum river discharges (up to 1700 CFS) would theoretically provide sufficient water volume to fill the full pool elevation in less than one day. (See also Record, 88-113, Tr. 159-161.)

10. Petitioner has likewise had its consulting engineers conduct a dissolved oxygen (DO) analysis (Exhibit 6 to the 1988 Petition). DO levels in the Sangamon River downstream of the proposed temporary dam were evaluated using Streator-Phelps analyses with and without the presence of the temporary dam under low-flow conditions. The analyses showed virtually no difference in the DO patterns downstream of the dam given the two scenarios. The analyses did illustrate an increase in DO downstream of the channel dam due to the presence of the proposed cascade aerator on the downstream side of the temporary dam. Further, downstream DO concentrations were demonstrated to be enhanced over a broad range of impoundment influent DO concentrations at the diversion facility spillway. (Record, 88-113, Tr. 230-237.)

a. Aeration of the Sangamon River impoundment by supplemental means was also evaluated. It was determined that incrementally raising the DO level from 2.9 mg/l to 6.5 mg/l would cost $372,000 to $661,800 (1988 dollars) in initial capital costs. However, it was concluded further that it is very difficult to determine what will happen to the water quality within the impoundment area with or without artificial aeration. Moreover, installation of the temporary equipment would require a lead time of four to six months before it would be delivered to the project site. Based on these

considerations, supplemental aeration was not considered to be feasible. (Record, 88-113, Tr. 216-224). The Illinois Environmental Protection Agency has concurred with the conclusions (Exhibit 7 to the 1988 Petition.)

b. Diel monitoring of DO in the pool upstream of the existing channel dam on the South Fork of the Sangamon River in September, 1985 (Exhibit 8 to the 1988 Petition) provided empirical data from conditions that might be expected to occur with the proposed diversion facility. These data suggest that acceptable DO concentrations may be available in the pool on the Sangamon and South Fork under the emergency water supply plan. (Record, 88-113, Tr. 249-252.)

11. Continuous compliance at all times with 35 Ill. Adm. Code 302.206 by Petitioner would impose a substantial, arbitrary and unreasonable hardship on the Petitioner in that the standard is not potentially capable of being achieved under all circumstances during the life of the actual project for which the variance is requested because of natural factors beyond the control of the Petitioner and because the standard sought to be achieved may potentially not exist in the Sangamon River under drought events even without the implementation of the river diversion project.

a. Without the Illinois Environmental Protection Agency being able to apply a different standard to DO, the Agency would be legally unable to certify under Section 401 of the FWPCA to the Corps of Engineers for the requisite permit for the project to be issued to the Petitioner. No suitable comparable alternative exists in the short-term to serve as an adequate supplemental water supply during drought events. The Petitioner's consulting engineers in 1983 evaluated alternative emergency water supply sources including 1) well field development along the Sangamon River Valley, and 2) pumping

from the Buckhart, Sidener, Broughton and Clear Lake sand and gravel pits. The potential of obtaining water from the Sangamon River gravel aquifers was approximately 1 MGD per three miles of river valley during drought periods. Development would require detailed test drilling and test pumping, plus an extensive piping and pumping system to bring that water to Lake Springfield. The potential return was not sufficiently high to warrant this alternative nor could the system be implemented in time to serve as an emergency supply.

The Sidener and Broughton pits were estimated to contain approximately 775 million gallons of water in 1988 which could be pumped with an additional 1 MGD being drawn from the surrounding formations during pumping. At the same time, an additional 900 million gallons was estimated to be available from the Buckhart pits. A 1998 study by Crawford, Murphy, Tilly in connection with the Hunter Lake project updated the estimated volumes at these locations to be 2,121 million gallons and 2,278 million gallons, respectively. However, the owner of the Buckhart site was not interested in making the water available on a long-term basis, and other site owners had mixed interest. These sources are not sufficient to be the sole source of an emergency supply and would also require extensive pumping facilities for implementation. Water from Clear Lake could be pumped to augment Sangamon River flow; however, given the proximity of Clear Lake to the Village of Riverton's water supply wells, this was not considered to be a viable alternative. (Record, 88-113, Tr. 162-169.)

b. To minimize the need for diverting water, the emergency water supply plan includes a variety of administrative and procedural measures aimed at conserving water in Lake Springfield. The element of drought management is keyed to specific lake

levels and becomes more stringent as the pool level drops. The trigger for implementation of the Sangamon River portion of the emergency plan is a level of 557 on June 30 at which time administrative measures would pursue a specified schedule, as shown in Exhibit 1. However, in June of 1988, the City initiated voluntary conservation while the lake level was not yet at 558. The purpose of the mandatory measures is to avoid the Petitioner's water users from exacerbating the declining lake level and creating a self-imposed hardship. The Petitioner would be committed to prudently managing its existing water supply before resorting to pumpage through the project. However, the duration of the drought event cannot be forecast, and reliance solely upon water use conservation may not be sufficient to maintain an acceptable diminished lake level throughout the entire drought event. Water saver kits and public information dissemination would cost the Petitioner $240,000. (Record, 88-113, Tr. 85-100.)

c. During 1988, Petitioner instituted a program to provide free water saver kits to retail water system customers. The program, which is completely voluntary, makes available customized kits of water saving devices to customers who request them. The kits include low-flow shower heads, toilet dams, low flow kitchen and bathroom faucet aerators, toilet leak detection tablets, toilet tank flow diverters and installation instructions. The number and types of devices provided in a kit are based specifically on the requesting customer's needs. The availability of these devices is advertised periodically through billing inserts. Through August, 2005, a total of 6,098 kits have been distributed, almost entirely to residential customers. This number represents 14.1% of the system's 49,650 total water customers. Totals for individual devices distributed are as follows:

Low-flow Showerheads	9,264
Toilet Dams	10,450
Low-flow Bathroom Aerators	10,667
Low-flow Kitchen Aerators	8,792
Toilet tank Flow Diverters	3,938

Petitioner plans to keep this program active for as long as sufficient customer interest exists. This program was briefly discussed in PCB 88-113 (Tr. 361-367.)

d. Water conservation measures are included as a part of all the feasible alternatives evaluated for water supply augmentation for the Hunter Lake Draft Environmental Impact Statement (DESI). Petitioner has implemented the two most important conservation measures identified in the suite of conservation options evaluated which measures ultimately reduce demand by 1.3 to 1.9 million gallons per day. The most potentially significant conservation measure implementation was the voluntary home plumbing retrofit program discussed above. The second measure implemented in 1990 was revision of the City's plumbing code to require low-flush toilets and low-flow showerheads and faucets for all new or replacement construction.

e. The ability to augment the Lake Springfield water supply could be a critical factor in outlasting the drought event and maintaining electric and water utility operations. While it may be possible to discontinue electric generation, this assumes that the drought event has not impacted electric generating capabilities of other electric utilities from whom the City normally would be able to purchase power to replace the City's inability to generate electricity. (Record, 88-113, Tr. 326-348.) The City is a transmission owning member of the Midwest Independent System Operation (MISO) which is comprised of member utilities from Ohio to Minnesota and Missouri. On May 1, the MISO began operating Energy Markets approved by the Federal Energy

Regulatory Commission (FERC) consisting of a Day Ahead Market and a Real Time Market. Virtually all the City's electric sales both for retail and wholesale transactions now flow through and are subject to the prevailing market prices experienced by these Markets. The City can currently produce electricity from its units on Lake Springfield for a cost of $24.65 MWH based upon the City's operating results from its most recent fiscal year. This past summer prices in the MISO Energy Market ranged from $40 MWH to $80 MWH from off peak to on peak hours in the Day Ahead Market. Replacement power costs would be considerably higher. These increased costs would be passed directly through to the City's customers. Replacement power costs would be an additional hardship experienced by the City and its electric customers. The water plant would experience various pumping and treatment difficulties at lake level 551 MSL. (Record 88-113, Tr. 194-200.) Additionally, there would be no means by which the City could "buy" water elsewhere. Should the City not be granted the variance request, the City would be faced only with conservation measures as a hedge against the end of the drought event. Severe public health and welfare, fire protection, and economic consequences could occur not only for the City but for approximately 80 percent of the population of Sangamon County. The prospective hardship that could occur without the variance being granted is not justifiable. (Record, 88-113, Tr. 348-359.)

f. It is difficult to quantify precisely the economic effect of these consequences. Public health would be impacted to the extent that the City's ability to provide sufficient quantities of potable water at sufficient water pressure would be impaired. Public welfare would be impacted with a greater degree of severity as water use was curtailed and approached a level at which water rationing could be compelled.

Hospital and nursing homes are among the largest users of water. The ability to provide adequate fire protection is to some extent capable of some quantification. The equalized assessed valuation of real property in the City corporate limits on February 28, 2005, was $1,748,394,988.00. This does not include the value of personal property protected, nor does it include the value of property in other jurisdictions that rely on the City's water system for fire fighting capabilities. It can be assumed that certain activities will be affected by the fact that water use would be curtailed or eliminated resulting in a decrease of or cessation of economic activities because of unavailable water. One study has been conducted on the impact of a drought-caused mandatory water conservation program, U.S. Army Corps of Engineers, Prototypal Application of a Drought Management Optimization Procedure to an Urban Supply System, Contract Report 83-C-4 (December, 1983). Nine Springfield industries were studied for a determination of monetary losses resulting from a cutback in water delivery. While the report indicated that such losses are the most difficult to estimate, it focused primarily upon an economic loss to the area. Lost weekly payroll from six nonlocally owned companies due to a 50% reduction in water supply would be $292,800 and $458,700 at a 100% water reduction, Id. at p. 56. Annual payroll for production workers in locally owned companies was $789,000 while lost profits and fixed costs were estimated at a 100% reduction in water supply service to be $87,000. Id. at pp. 57-58. Two of the nine companies would experience a 100% production cut back at a 50% decrease in water supply delivery, and at a 75% decrease an additional four companies would have a 100% production cut back. (Record, 88-113, Tr. 357-361, 367-371.)

The costs of the project would appear to be justifiable when measured against the potential losses, socially and economically, that would be incurred without the project. Water quality monitoring would cost about $2500 per month. The project would cost less than $1 million to implement. Operating costs would not be significant. The potential impact of the project on the Sangamon River fishery would be estimated at $65,000. However, the impact on the Lake Springfield fishery without the project would be at least that amount and probably substantially greater. The benefits that the City would obtain must be measured in the potential hardships that would be averted. The project costs are insubstantial when weighed against the potential hardships. (See generally Record, 88-113, Tr. 106-109.)

g. The current standard for dissolved oxygen (35 Ill. Adm. Code 302.206) is unreasonable and unrealistic with regard to the proposed project. One study based upon data from 38 streams in Ohio suggested that "DO levels may be expected to drop below 5 mg/l minimum for at least a short period of time for essentially all types of streams regardless of the input from pollution sources. In addition, all but the highest quality water can be expected to approach and periodically drop below 4 mg/l." Illinois Pollution Control Board, PCB No. R83-20, Record, Volume 1, p. 20 (1983). The American Fisheries Society (AFS) critique of U.S. EPA's "Quality Criteria for Water" suggested that the existing DO standard did not account for "specific regional variations in chemical/physical regions or existing natural oxygen levels in aquatic ecosystems which are subject to seasonable and biological variability." Thurston et al., a Review of the EPA Red Book: Quality Criteria for Water, American Fisheries Society Water Section (1979), at 169. The findings of the AFS were that ". . . it is essential that

consideration of natural regimes of dissolved oxygen be included in criteria application to specific water bodies (and) . . . that flexibility inherent in the useful concept of 'levels of protection' is encouraged and endorsed." PCB No. R83-20, Volume 1, p. 21. A comparison of dissolved oxygen computer modeling results provided by the Illinois Natural History Survey (INHS) (Exhibit 10 to the 1988 Petition) and actual river discharge during the 1953-1955 drought (Exhibit 11 to the 1988 Petition) was made to estimate DO concentrations in the river during drought conditions. The results of that comparison indicated that natural stream flow during a severe drought event may be sufficiently low to cause prolonged periods of non-compliance with the applicable DO standard to occur in the natural environment of the river. Historical drought condition flow data for the Sangamon River at Riverton would suggest that actual river discharge at the proposed project site may likely be materially less than the minimum river discharge predicted by the INHS model as being necessary to maintain tolerable DO concentration minima. Such empirical data would indicate strongly that critical biological thresholds may not be maintained due to natural causes alone. Moreover, this consideration was recognized by the American Fisheries Society which stated that ". . . it is highly unrealistic to prescribe rigid oxygen criteria for water that may be naturally low in oxygen at some time of the year and may not meet the criteria for natural reasons." (Thurston et al., at p. 171) (Record, 88-113, Tr. 68-77.)

h. The Petitioner does not believe the activity for which the variance is requested would have any demonstrable contributing adverse environmental impact and may, in fact, alleviate some environmental stress that would naturally occur during a

drought event. Petitioner's environmental assessment of the proposed project was attached as Exhibit 12 to the 1988 Petition. (See also Record, 88-113, Tr. 270-300).

i. While there is a certain inability to forecast DO concentrations upstream of the proposed diversion structure, it is unlikely that DO concentrations will be problematic in the pool upstream of the temporary impoundment. The City's consulting engineers have concluded that prior use of channel dams on the Sangamon River and its South Fork are similar to the proposed project which would only be on a temporary basis. Specific conclusions were that:

> "These structures have had little or no noticeable impact upon the water quality of the streams during normal flow. However, during low flows similar to which it is anticipated the emergency supply diversion structure would be built, these structures, no doubt, enhance the aquatic environment of the river, by providing impoundments and aerated discharges."

(Exhibit 13 to the 1988 Petition.) Empirical field data recorded from the Petitioner's existing movable channel dam on the South Fork indicated that DO concentrations existed in the impounded area substantially in excess of existing criteria (Exhibit 8 to the 1988 Petition.) (See also Record, 88-113, Tr. 249-252.)

j. A variance from the DO standard will not have an appreciable impact upon the fishery and invertebrate populations that would not already exist from the drought event during which the project would be implemented. The population density of fishes may be significantly reduced by drought conditions (Dowling and Wiley, The Effect of Dissolved Oxygen, Temperature and Low Stream Flow on Fishes: A Literature Review, Illinois Natural History Survey Aquatic Biology Section (1985)). Further, when exposed to low dissolved oxygen levels, many fish species migrate to tolerable regions, dramatically altering local fish community structure. Among the Sangamon River fishes,

largemouth bass and white crappie would tend to avoid areas of low dissolved oxygen. In contrast, red shiners, sunfishes, and course fish would be expected to be tolerant of low dissolved oxygen. Based on an actual period of record drought conditions, it is reasonable to assume that the Sangamon River fishery at the project site would be materially absent or at least substantially different from the normal character of the area, prior to commencement of Petitioner's proposed activities. As a result, it is difficult to predict what fishes, if any, may serve to be protected by the application of standard dissolved oxygen criteria in an extraordinary, yet natural scenario. (Record, 88-113, Tr. 270-286.) Moreover, it is contended that such a persistent coarse fishery would have negligible value. Existing Illinois EPA fish flesh contaminant data relevant to this region of the river indicated the presence of toxic biocides at concentrations that could lead to a ban on commercial fishing and be cause to prompt an advisory against fish consumption.

k. In addition to the evaluation of potential project impacts on the Sangamon River fishery, equal consideration must be made for the significant sport fishery in Lake Springfield, which would be a benefactor of the proposed project. For the past twenty-one years, the petitioner has cooperated with the Illinois Department of Natural Resources via a Cooperative Fishery Management Agreement to stock Lake Springfield with various sport fishes (i.e., tiger muskie, walleye, largemouth bass) and develop a rearing pond for sport fish fry. Inasmuch as lake fishes have a lesser ability to avoid poor water quality regimes under declining reservoir conditions, the effect of our proposed diversion to maintain an acceptable reservoir pool level would help assure the survival of sensitive game fish in Lake Springfield as well as sustain the fine results of

cooperative efforts with the Illinois Department of Natural Resources. (Record, 88-113, Tr. 292-297.)

12. This variance can be granted by the Board consistent with all federal regulations such that the Illinois Environmental Protection Agency could issue a compliance certification under Section 401 of the FWPCA regarding Title III standards. The Petitioner has exercised all available methods to forecast the effects of our proposed project, including incorporation of empirical data to the greatest possible extent. Application of the general use water quality standard for DO for the proposed project would not be reasonable. Available data indicates that it is unlikely that such standards could be achieved during severe drought events in the absence of the City's proposed diversion plan. In fact, given the pooling and aeration effects of the proposed diversion structures, it is probable that the diversion configuration may mitigate the otherwise deleterious effects of the low-flow drought conditions, at least on a localized level. Furthermore, the temporary and improbable nature of the emergency plan would not compromise efforts to achieve long-term compliance with acceptable water quality standards in the Sangamon River. Based on these considerations, the project is a prudent strategy to ensure the provision of essential service while causing, on balance, environmentally neutral consequences.

13. A fishery survey of the Sangamon River would be performed immediately before construction of the temporary diversion structures to provide a baseline against which further damages, if any, could be measured. A water quality sampling and analysis program will be conducted upstream and downstream of the diversion structure for the duration of the project.

UPDATING THE RECORDS
OF PCB 88-113, PCB 93-135, and PCB 00-179

14. The 1988 variance proceeding included testimony and exhibits regarding steps the City has taken to augment its water supply through the pumping of water from other sources (R. at 25-31). Shown on Exhibit 5 to this Petition are tables showing water pumped from the South Fork Pump Station from 1976 through December, 2005 and from the clarification pond from 1979 through December, 2005. During that period 47,518 millions of gallons were pumped from the South Fork. Of this total, 13,981 million gallons were pumped during the drought event of 1987-89 (30.8%). Similarly, during the same drought event, 938 million gallons were recirculated from the clarification pond. From 1995 to 2000 the City was unable to recirculate water from the clarification because of NPDES permit limitations regarding boron concentrations. In connection with the Agency's support for the City's 2000 variance petition, a solution to the moratorium was developed and implemented. Since that time, the City has been able to recirculate 1,387 million gallons from the clarification pond to the Lake. The resolution of this moratorium is discussed in paragraphs 40-45 below.

15. In 1991, Planning and Management Consultants, Ltd., completed a new water demand forecast for Petitioner. This work was basically an extension of the modeling used in the 1986 report which was discussed in the 1988 proceeding (Record, 88-113, Tr. 41-49.) However, an updated version of IWR-MAIN was utilized and updated information was input to the various components of the model. Exhibit 6 is a representation of tables summarizing the water demand forecasts of the 1986 and 1991 studies and actual water usage data available to Petitioner for comparison to both the 1986 and 1991 studies through October, 2005. Base demand forecasts were updated by

the Petitioner in 2005, and the base forecast for the year 2005 was revised to 20.8 MGD with 24.5 MGD for the extreme hot and dry/high growth scenario.

16. Petitioner also provided testimony and exhibits regarding its twenty largest water customers (Record, 88-113, Tr. 310-317.) Exhibit 7 is a table setting forth the largest 20 water users on Petitioner's system. Petitioner has a comprehensive computer report which lists all water customers in alphabetic order by account name and summarizes annual usage for each account. On Exhibit 7, a customer is defined as a set of accounts listed in the billing system by the same account name and located in the same geographic vicinity. This definition is required because most of the large customers have multiple water accounts. If a customer displayed multiple accounts, the usages of those accounts were aggregated for this exhibit. Exhibit 8 is another table depicting the twenty largest water users with a comparison of water consumption for Fiscal Year 1999 and Fiscal Year 2005.

LONG TERM WATER SUPPLY

17. The Board's order in PCB 88-113 conditioned the granting of the requested variance upon Petitioner undertaking a schedule for an alternative plan to eliminate the need for implementing the particular project for which the variance was granted. Petitioner embarked on pursuing the alternative of a second lake. On December 20, 1988, the Council of the City of Springfield adopted Ordinance No. 899-12-88, entitled "Ordinance Authorizing the Construction and Development of Lake Springfield II in the City of Springfield, Illinois, as amended (Exhibit 9). The Council then adopted Ordinance No. 54-1-89 on January 17, 1989, naming the proposed second lake as John H. Hunter Lake, hereinafter referred to as Hunter Lake. This was followed by Ordinance

No. 97-2-89, adopted on February 7, 1989, prescribing the land that would be owned by the City around Hunter Lake would be dedicated as a conservation area and any development was limited to structures compatible with the conservation of wildlife (Exhibit 10). On July 26, 1989, Petitioner mailed its joint application, dated July 27, 1989, for a permit pursuant to Section 404 of the Clean Water Act with the three appropriate reviewing agencies, i.e. the United States Army Corps of Engineers, the Illinois Environmental Protection Agency, and the Illinois Department of Transportation. Soon thereafter, on August 3, 1989, Petitioner issued $17,985,000 in water revenue bonds to fund completion of land acquisition for the Hunter Lake Project, preliminary engineering work for the project, and development of the environmental impact statement that appeared would be necessary.

18. On September 14, 1989, the United States Army Corps of Engineers determined that "the project will have significant (both positive and negative) impacts in the project area and warrants preparation of an EIS (Environmental Impact Statement) to meet National Environmental Policy Act requirements during processing of the permit application." Notice of this determination appeared in 54 Federal Register 45780 on October 31, 1989. A public hearing on the scope of the Draft EIS was held in Springfield, Illinois, in December, 1989.

19. In order to develop the Draft EIS for submission to the Corps of Engineers, certain preliminary engineering work needed to be completed. In September of 1989, Petitioner entered into contracts for engineering services with two firms located in Springfield, Illinois, i.e. Crawford, Murphy and Tilly, Inc. (CM&T) and Hanson Engineering, Inc. (HEI). CM&T was retained to update mapping, conduct water quality

studies and hydrologic budgeting, and infrastructure planning. HEI was employed to perform flood modeling work with and without the proposed project both upstream and downstream of the proposed dam. Prior to beginning the modeling work, HEI completed the conceptual design of the dam, including spillway elevation and fixed crest determination.

20. Triggering the EIS requirement of the National Environmental Policy Act also meant that before a 404 permit could be issued by the Corps of Engineers, the project also had to comply with Section 106 of the National Historic Preservation Act. This requirement consists of a determination of whether there are any cultural, historical or archaeological sites in the project area that may be eligible for the National Register of Historic Places. This is a three-phase process. Phase I is development of an inventory of sites. Phase II involves the further investigation of potentially eligible sites. Phase III is the mitigation of those sites that are determined to be eligible for the National Register and that would be adversely impacted by the project. The Petitioner contracted with the Illinois State Museum to conduct Phase I in March of 1990. The Museum completed its report in May, 1992, which included a recommendation of Phase II activities. The Phase I report has been reviewed by the Corps of Engineers and the Illinois Historic Preservation Agency (IHPA). Petitioner does not anticipate commencing Phase II of this work until after a 404 permit is issued by the Corps of Engineers. Petitioner entered into a Memorandum of Agreement with the Corps of Engineers, the IHPA and the Council on Historic Preservation governing its future efforts in the project area that would represent compliance with Section 106 in September, 1999.

21. When the City Council decided to go forward with the project now known as Hunter Lake in December, 1988, the regulatory framework governing such an endeavor had dramatically changed since the lake was originally conceptualized in the 1960's. Virtually none of the information was compiled at that time to develop the reports that are now needed to accompany the review of the joint permit application. Little practical engineering of the project had actually been performed. Much of the engineering work that was completed in the 1960's and 1970's did not meet the degree of regulatory compliance of the late 1980's and 1990's. Petitioner was basically required to initiate all new study efforts in this regard. The drafting of an EIS requires an examination and evaluation of a series of cultural, social, economic, and ecological subjects. The Petitioner entered into a series of contracts to develop the information necessary for the EIS.

22. In March, 1990, Petitioner entered into a contract with the Illinois Natural History Survey to conduct research and develop conclusions regarding many of the ecological components to be addressed by the EIS process. These included general biological investigations and inventory for the project area (fishes, mammals, birds, reptiles, and amphibians), issues concerning threatened and endangered species and wetlands, vegetation and soil investigations and inventory, soil erosion and siltation issues, prime farmland issues, and habitat evaluations. By March 1993, the National History Survey had completed all aspects of its work with the exception of final delineation of jurisdictional wetlands which was completed in the summer of 1993.

23. A contract was entered into in April, 1990, with a team from Sangamon State University (now the University of Illinois at Springfield) to explore and develop issues

and impacts from a socio-economic standpoint for the EIS. Their task covered population matters and characteristics of the project area, personal income, employment patterns and opportunities, housing and capital assets, farm and business impacts, public facilities and services, with analysis of impacts on taxing districts and revenue streams, and community or cultural issues. The reports were finalized and completed by January of 1993.

24. To complete other aspects of the socio-economic parameters of the Hunter Lake project, Petitioner retained the Springfield-Sangamon County Regional Planning Commission to inventory and analyze land use patterns, demographic information, public facilities and services, and recreation issues and opportunities. This project was completed with the submission of a final report in January, 1992.

25. The Illinois State Water Survey was hired in June, 1990, by Petitioner to evaluate water supply availability during drought events for Petitioner. This updated a 1986 study the Survey conducted previously for Petitioner. The Survey updated Lake Springfield yield based upon the dredging project that had been conducted by Petitioner at Lake Springfield and analyzed the yield available with Hunter Lake. This task was completed in August, 1991.

26. The Petitioner also contracted with Planning and Management Consultants, Ltd. of Carbondale, Illinois, in November of 1989 to update the 1986 Water Demand Study and to evaluate water conservation techniques including a cost and benefit analysis and social acceptability of water conservation measures. The Water Demand Study was completed in July, 1991, and the water conservation tasks were finished in January, 1992.

27. By November, 1992, Petitioner had completed reviewing reports that had been submitted pursuant to the above contracts and had begun writing the Draft EIS (DEIS). Petitioner submitted DEIS to the Corps of Engineers on October 1, 1993. Upon review of the DEIS materials submitted, the Corps informed the Petitioner on August 1, 1994 that, among other issues, alternatives to Hunter Lake must be more fully evaluated at a level of detail comparable to the Hunter Lake alternative. The scope of additional work required by the Corps to meet their requirements for publication of the DEIS was substantial.

Many responses to the Corps' comments were provided in November, 1994. Upon extensive discussion with several consultants and the Corps, a revised scope of services was proposed in May 1995 to address the major items remaining. The reviewed scope of work was accepted by the Corps in October 1995.

28. A contract was executed with Crawford, Murphy and Tilly, Inc. in November, 1995, to develop surveys of downstream flooding affects for Hunter Lake, upstream sewage treatment impacts, gravel pit source water evaluations, and pipeline pumping systems for deliveries of source waters from the gravel pits, the three proposed groundwater sources, and the Springfield Metro Sanitary District water for the closed loop ash sluice option.

29. A contract with Hanson Engineers was executed in November, 1995, to model the wastewater and closed loop options for ash pond sluice water, and to perform environmental reviews of the pipeline corridors for groundwater, gravel pit, and Lick Creek reservoir options. Hanson Engineers' work also included a wetlands evaluation

for Hunter Lake and an analysis of the option to raise the full pool level of Lake Springfield.

30. A contract with The Illinois State Water Survey (ISWS) was executed in April, 1996, to complete three work products for the Petitioner. The ISWS would evaluate groundwater availability in these localities: the Sangamon River Valley, the Illinois River Valley, and the Havana Lowlands. It would develop operating models for the optimal transfer of water to Lake Springfield from the various sources. Finally it would evaluate the water quality of the proposed reservoir sources and Lake Springfield under drought conditions.

31. Upon completion of all study elements, final reports and a revised DEIS text was transmitted to the Corps on May 8, 1998. The Corps compiled all of the available information and published the DEIS for the Hunter Lake Project on April 9, 1999. The 45-day comment period was extended upon request of the U.S. Fish and Wildlife Service and comments were received by the Corps through June 18, 1999. Comments were sorted and evaluated by the Corps, and a request was forwarded to the City on September 14, 1999 asking for the City to provide additional information and response to various DEIS comments.

The City forwarded the majority of comment responses to the Corps on February 3, 2000. Additional responses requiring joint action by the City and the Corps were completed on August 29, 2000. Publication of the final EIS occurred in November, 2000. A public hearing on the final EIS was held by the Corps on February 26, 2001.

32. Between March and May 2001, additional wetlands information and responses to FEIS public hearing comments were formulated. The Corps began formulating its

Record of Decision, but its completion remained subject to IEPA issuing its Section 401 permit conditions. In September 2001 IEPA specified additional elements needed with regard to the sewage outfalls of Divernon, Pawnee and the Virden Sanitary District for discharges in the Hunter Lake Watershed.

33. From November 2001 to the present, studies and negotiations regarding options for relocating effluent discharges or upgrading the sewage treatment facilities for the three communities, as well as addressing flooding concerns of the Village of Pawnee, were conducted. Draft agreements were prepared for consideration in each community.

34. On August 27, 2003 an agreement was finalized between Divernon and Petitioner with regard to relocating the effluent of their sewage lagoon outfall. Agreements with Pawnee and the Virden Sanitary District remain outstanding.

35. In October 2004 an additional study regarding the feasibility of pumping Virden, Divernon and Pawnee wastewater to the Springfield Metro Sanitary District was completed. Negotiations continued with all three communities to the present.

36. In April 2005 Petitioner forwarded correspondence to the IEPA and to the Corps of Engineers outlining updated water demand and yield information and requesting renewed effort at issuing the Section 401 Water Quality Certification and the Record of Decision, respectively.

37. On June 2, 2005 a meeting was held with the Corps. Background information was reviewed and new revised information needs were presented to the Petitioner by the Corps for the Corps to complete it's Record of Decision. Hanson Engineers was retained on July 5, 2005 to provide requested updated summary information regarding project

alternatives and additional environmental impacts related to the proposed village sewer projects.

38. Negotiations and exchanges of information regarding the sewer projects for the three villages are ongoing.

39. Petitioner had acquired 5,587 acres for the project prior to 1978. The original area of the project was 7,701 acres. Subsequent to the issuance of the above-referenced water revenue bonds, Petitioner initiated acquisition of the remaining land required for the project. Through March 31, 2000, Petitioner had acquired an additional 1541 acres in 73 transactions. No additional purchases have since been completed. The total acreage acquired for the project is now 7,128, and the project area is now estimated to be 7,795 acres. The Petitioner continues to seek to acquire the remaining property.

40. In the Agency Recommendation filed in PCB 93-135, it requested that the Board's grant of a variance require that the Petitioner continue to supplement Lake Springfield with the recirculated clarification pond water. The Agency concluded that this had "a lesser environmental impact of allowing the City to temporarily return this clarification pond water into Lake Springfield during extreme drought events than in damming the Sangamon River." (Paragraph 6 of the Recommendation.) The clarification pond water is more fully discussed in paragraph 2b above. The Agency was of the opinion that by utilizing this water the City may lessen the need or duration of damming the Sangamon River. Prior to filing its 2000 petition, the City met with the Agency on April 28, 2000, to develop an acceptable operating scenario by which this clarification water could be returned to Lake Springfield during drought events while

meeting the general water quality standard for boron in Lake Springfield and resulting in no adverse impacts on the finished drinking water of Springfield.

41. The modification the City proposed involved relocating the clarification pond discharge to the Lake to the Dallman Plant Intake. This relocation would divert ash pond effluent into the Dallman cooling water intake. This intake is for once-through, non-contact cooling water. It discharges back to Lake Springfield through two different outfalls.

The re-routing of clarification pond discharge to the Lake would involve installation of approximately 2400 feet of 20 inch HDPE welded plastic pipe from the existing discharge point in the Spaulding Dam along the lake bottom to a location centered at the Dallman intake barrier net. The pipe would be weighted and anchored to the lake bottom to prevent displacement. New pumps would also be installed at the ash pond to overcome the head capacity created by the 2400 feet of discharge pipe.

The Agency agreed to allow this modification with additional sampling requirements at Dallman discharge outfalls for the cooling water. There was also to be a self-imposed sampling limit for boron to ensure compliance with the Illinois General Use Water Quality limit for boron.

42. On May 3, 2000, the City submitted an Application for Permit/Construction Approval to the Agency to modify its NPDES permit. Included with this application was the proposed sampling program. This program committed to not exceed the General Use Water Quality limit of 1 mg/l for boron. This would be done by weekly sampling, or even more frequently as required to ensure compliance at the outfalls and the intake for the Water Purification Plant. The City would meet the 1mg/l limit for boron at the

outfalls and a weekly average limit of 0.85 mg/l at the intake for the Water Purification Plant. If these limits were reached, pumping from the clarification pond would discontinue.

43. On June 8, 2000, the City received the draft NPDES permit for the 30 day public notice. It provided for the construction and operation of the relocation of the clarification pond discharge pipe, with the sampling precautions discussed above. On June 12, 2000, IDNR sent their response. The City would not be required to obtain permits from them, but needed to receive a 401 Certification or Site Specific Certification from the U.S. Corps of Engineers and IEPA. This certification was granted the end of August. The City's modified NPDES permit became finalized on July 20, 2000.

44. Contracts were then sent out for materials and construction of the pipeline and new pumps. By March 2001, the pipeline had been constructed and the new pumps were in place at the old discharge point. Startup of the system began March 21, and went until April 6, 2001. Operation procedures were developed and the system was placed in service on July 18, 2001. The pumps ran July 18-31, 2001, at an average flow of 5.2 MGD. They operated through August at 7.9 MGD. The discharge continued until September 21, when boron concentrations in the lake required the pumps to be shut off. The average flow for September was 5.4 MGD.

45. Exhibit 5 includes results of the use of the new recirculation capacity. It was not utilized again until July 26, 2002, when it operated July 26 – July 31, with an average flow of 1.8 MGD. The pumping continued through August at an average flow rate of 6.3 MGD. The system was then shut down after reaching permitted boron levels. The pumps were able to be turned back on September 11, and were operated until October 25,

when boron levels caused the pumps to be shut off again. September's average flow was 4.0 MGD and October's was 4.8 MGD. The pumps were placed back in service on December 13, and run to January 8, 2003, before being required to be turned off after reaching boron limits. The recirculation mode was not used again until August 2005. It was operated just three days a week from August 8 to September 16, when boron levels were reached in the lake requiring the pumps to be turned off. August's average flow was 3.4 MGD and September's was 2.2 MGD.

46. The quality of the Sangamon River between Decatur and Riverton is generally similar if not improved since the Petitioner's first Petition in this matter (PCB 88-113). IEPA's Illinois Water Quality Report for 1994-1995 (September, 1996) (IEPA/BOW/96-060a) showed generally no trends up or down in the quality of seven parameters at Riverton with the exception of a slight upward trend in Ph, an indication of a slight increase in the buffering capacity of the stream. Comparison of biological and water quality survey results of the Sangamon River as illustrated in a 2004 IEPA Facility Related Stream Survey report show distinct improvements in the near-Decatur portions of the Sangamon River. (See Exhibit 11) Advancements are attributed to the improvements in wastewater treatment plant discharges and in the handling of combined-sewer overflows. Dissolved oxygen was noted as not meeting the state general use standard at one station in 1996, but DO met the standards at all locations during the 2003 survey. These data further support the Petitioner's proposition that the Sangamon River water would be suitable for transfer to Lake Springfield as a supplemental source of water. It is also still believed that the proposed emergency diversion would not affect the

long-term water quality of the river, and not affect the dissolved oxygen concentrations beyond what might occur naturally without implementation of the project.

47. The variances previously granted to the Petitioner in PCB 88-113, PCB 93-135, and PCB 00-179 were each for a term of five years. Petitioner again seeks a variance for a term of five years. Petitioner does not anticipate that it will have secured a second water supply during this five year period. Upon the Agency's issuance of the 401 water quality certification for the Hunter Lake Project, the Corps of Engineers can proceed to make its decision on the underlying permit application. If the Corps does grant the permit and the United States Environmental Protection Agency concurs (the Agency is deemed to have veto power under Section 404 (c) of the Clean Water Act), Petitioner will then proceed with detailed engineering of the project, development of plans and specifications for construction contracts, bid contracts and conduct Phases II & III historical and archaeological work. Petitioner must also issue bonds to finance this work and the subsequent construction activities. Petitioner estimates that it would take at least two years to complete construction and fill the lake. Since it will take over five years to put the additional water supply in place, Petitioner believes that the variance should be granted to continue the potential for the Sangamon River to serve as an emergency supply of water in accordance with the plan discussed in PCB 88-113, PCB 93-135, and PCB 00-179 should a drought event occur prior to completion of Hunter Lake.

WHEREFORE, Petitioner requests that the Board grant it a variance from 35 Ill. Adm. Code 300.026 for the duration of any Corps of Engineers permit for a temporary diversion of the Sangamon River during drought events for which the Illinois Environmental Protection Agency is required to give certification under the FWPCA. Petitioner further waives a hearing on this petition in anticipation that the Illinois Environmental Protection Agency will respond favorably to the variance request. Alternatively, should said Agency oppose the variance request, Petitioner would request that the Board schedule a hearing on this petition.

Respectfully submitted,

CITY OF SPRINGFIELD, ILLINOIS
a municipal corporation

By William A Murray

Jenifer L. Johnson
Corporation Counsel
3rd Floor; Municipal Center East
Springfield, Illinois 62701
Telephone: 217-789-2393

William A. Murray
Office of Public Utilities
4th Floor, Municipal Center East
Springfield, Illinois 62757
Telephone: 217-789-2116 extension 501
bmurray@cwlp.com

STATE OF ILLINOIS)
)
COUNTY OF SANGAMON)

AFFIDAVIT

After first being duly sworn and under oath, the undersigned, Thomas M. Skelly, states as follows:

1. I am the Water Division Manager, Office of Public Utilities, City of Springfield, Illinois, and I have served in such capacity since July, 1991.

2. In such capacity, I am responsible for all activities of the Water Division relating to source of supply, water purification and distribution of potable water. I report directly to the General Manager of the Office of Public Utilities. I have primary responsibility for implementation of the City's emergency water supply plan. I also am the Project manager for Hunter Lake.

3. From November, 1984, until my appointment as Water Division manager, I served as Supervisor of Water Resources and was responsible for development of certain aspects of the city's emergency water supply plan. In such capacity, I participated in the proceedings in PCB 88-113.

4. I have read the foregoing Petition for Variance and based upon my best knowledge and belief, the allegations contained herein are true and accurate.

5. If I were called to testify to the same with regard to the Petition before a hearing of the Illinois Pollution Control Board, my testimony would support the allegations of said Petition.

Thomas M. Skelly
Thomas M. Skelly

Subscribed and sworn to before me this 6th day of February, 2006.

OFFICIAL SEAL
RUTHANN SHEETS
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 8-12-2009

Ruthann Sheets
Notary Public

CITY OF SPRINGFIELD
DROUGHT MANAGEMENT SCHEDULE
EMERGENCY WATER SUPPLY PLAN

Below full pool at any time from April to December 1	(1)	Pump from South Fork of Sangamon River when water is available.
Below 6 inches below full pool at any time from December 1 through April 15	(1) (2)	Pump from South Fork when water is available. Recycle ash pond water to lake (if permitted).
Below average lake elevation in April	(1) (2) (3) (4)	Advise public that lake level is below average for this time of year. Prepare ordinance for mandatory water conservation measures. Request retail and wholesale customers to conserve water. Enhance notice about the availability of water saver kits for retail customers.
Below average lake elevation in May	(1) (2) (3)	Advise public that lake level is abnormally low. Pass ordinance for mandatory water conservation measures. Notify wholesale customers of water use restrictions passed by city and applicable to their customers.
Elevation 558 In June	(1) (2) (3) (4)	Advise public that lake level is abnormally low and not expected to recover to normal levels during summer. Continue pumping water from the South Fork to lake. Continue recycling ash pond water (if permitted). Enhance campaign of water conservation education.
Elevation 557 On June 30	(1) (2) (3) (4) (5) (6)	Advise customers that lake has not recovered to normal pool. Continue pumping water from South Fork to lake. Continue recycling ash pond water (if permitted). Request additional assistance from retail and wholesale customers to conserve water. Step up enforcement of water restrictions and customer penalties concerning water use restrictions. Begin construction of emergency pumping facilities from Sangamon River.
Elevation 556	(1) (2) (3)	Continue public information campaign. Initiate emergency pumping from Sangamon River upon completion of emergency dams. Prepare water rate surcharge ordinance.

EXHIBIT 1

Elevation 555	(1)	Request emergency conservation of water.
	(2)	Apply water rate surcharge.
Elevation 554	(1)	Expand distribution of water saver kits.
	(2)	Reduce system pressure.
Elevation 553	(1)	Begin audit of high water demand users.
	(2)	Prepare second water surcharge ordinance.
Elevation 552	(1)	Apply second water rate surcharge.
	(2)	Intensify enforcement of water restrictions.
	(3)	Prepare ordinance restricting all non-essential water uses.
Elevation 551	(1)	Pass ordinance prohibiting all non-essential water uses except for health necessities.
	(2)	Implement further possible reduction in system pressure.
Elevation 550	(1)	Intensify enforcement of prohibited uses.
	(2)	Continue monitoring large users.
	(3)	Continue pumping water from all available sources.

EXHIBIT 1

Average lake level during each month based on an average of average monthly levels each year from 1936-2005.
Full pool elevation is 560.00 feet above mean sea level.

Months	Average Surface Elevation
January	557.99
February	558.08
March	558.59
April	559.16
May	559.54
June	559.66
July	559.38
August	558.94
September	558.42
October	558.06
November	557.88
December	557.91

Exhibit 2

CWLP - Lake Elevations

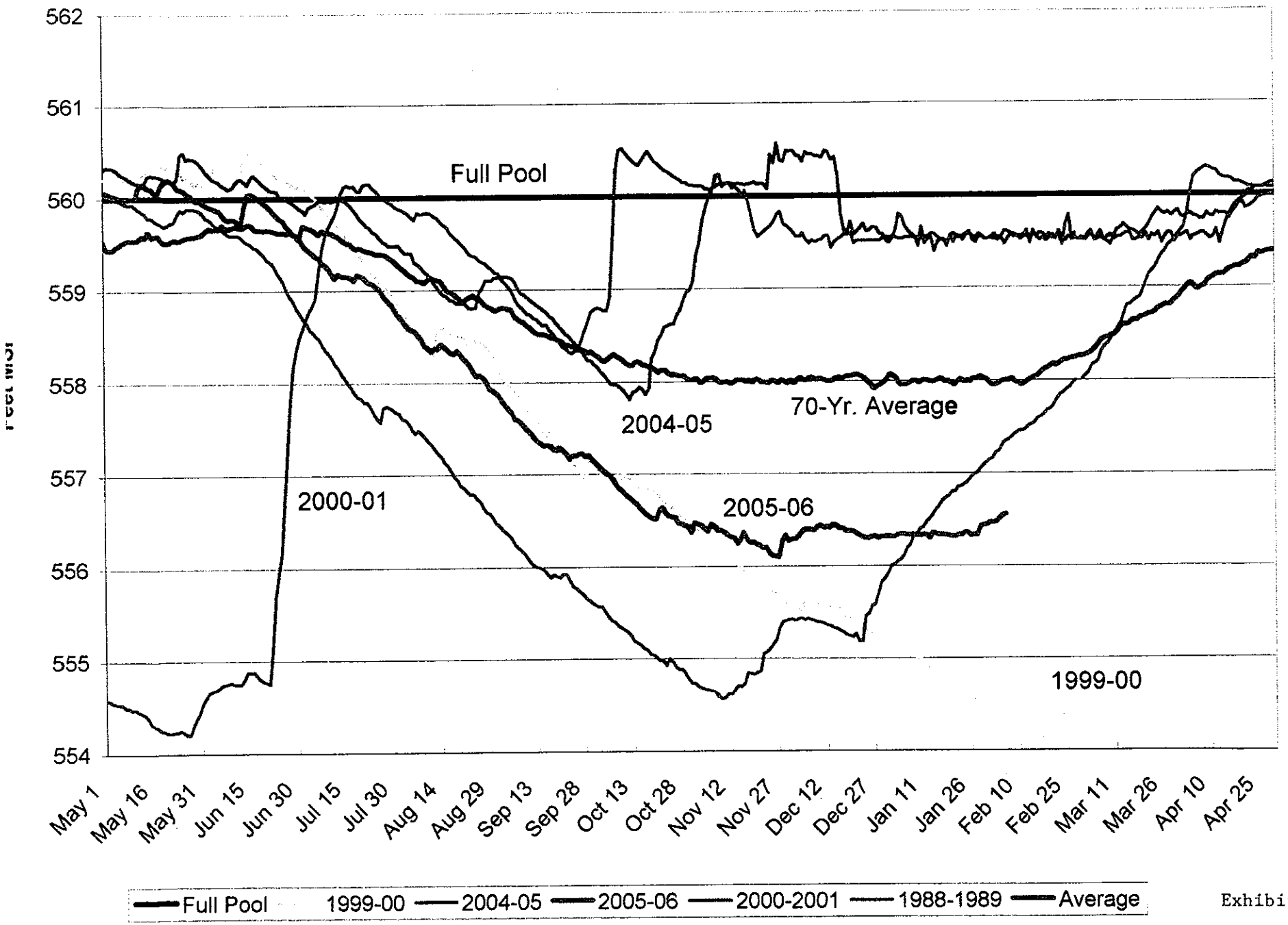


Exhibit 3A

CWLP - Lake Elevations

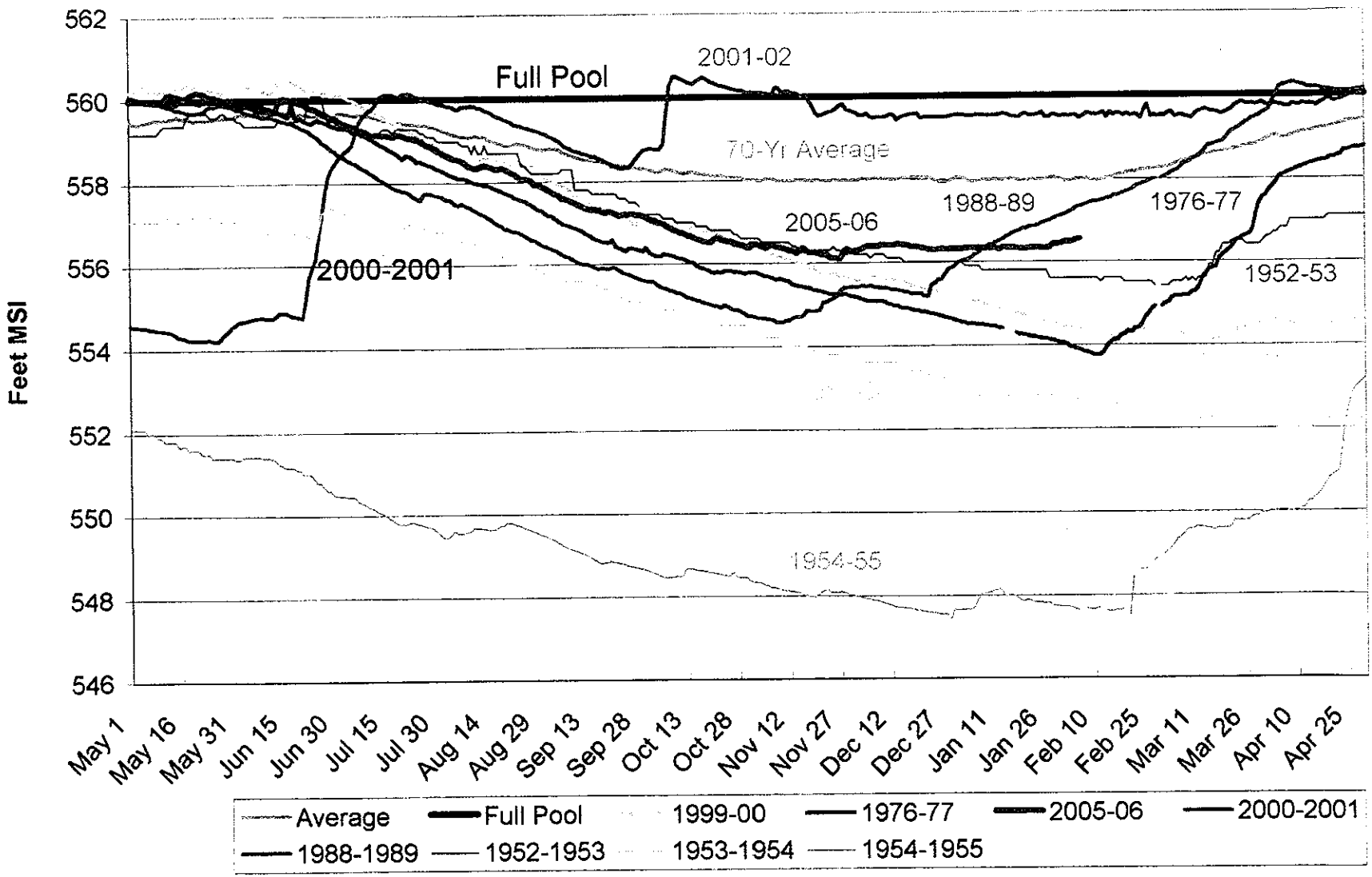


Exhibit 3B

Illinois Drought Update, January 6, 2006
DROUGHT RESPONSE TASK FORCE
Illinois State Water Survey, Department of Natural Resources

For more drought information please go to http://www.sws.uiuc.edu/

SUMMARY. Extreme to severe drought persists throughout most of northern Illinois and is evident in record low precipitation since March 2005, low streamflow, low soil moisture, and low groundwater levels. Dry conditions extend into west central, west southwest, and east southeast Illinois. Instead of recovery that normally is expected during fall and early winter, the drought has intensified. Although the drought has caused adverse impacts, the impacts on water supplies would have been much more severe if the same extreme drought had occurred in central or southern Illinois, where there is an increased reliance on reservoirs and lakes for water supplies. Above normal amounts of precipitation are needed into spring to end the drought.

1. DROUGHT STATUS. According to the U.S. Drought Monitor (Figure 1), most of northern Illinois remains in a severe or extreme drought (categories 2 and 3 in their 4-category drought classification). This week the area along Lake Michigan was reduced from an extreme (category 3) to severe (category 2) drought. However, ISWS scientists did not concur with this change in status, based on indicators that showed no improvement in that area. Much of central Illinois remains in the categories of moderate drought or abnormally dry. Only southern Illinois is considered to be clear of drought. There is some concern with the recent intensification of drought in Texas, Oklahoma, and Arkansas. Early in the last growing season, dryness in that area joined with widespread dryness across Missouri and Illinois. The Drought Monitor is updated each Thursday morning at 8am EDT and can be accessed via the Internet at http://www.drought.unl.edu/dm/monitor.html.

2. PRECIPITATION. Statewide precipitation between the last DRTF meeting on December 1 and January 5, 2006, has been 1.72 inches, which is 1.37 inches below normal. Conditions were uniformly dry across the state with no area receiving close to normal precipitation. Statewide precipitation (Figure 2) since March 1, 2005, has been 25.17 inches (10.16 inches below normal and 71 percent of normal). Precipitation deficits at individual sites can be even more severe. Since March 1, Moline received only 14.77 inches (20.47 inches below normal); Chicago, 18.34 inches (14.87 inches below); Rockford, 19.62 inches (14.54 inches below); and Quincy, 20.25 inches (14.83 inches below). The deficit has worsened since the last DRTF meeting by 1.34 inches. At this time, no snow is reported on the ground in Illinois. As a result, there is no moisture storage available for release into the soil later on.

3. LAST 100 YEARS. Historic long-term precipitation deficits continue in the state, especially in northern Illinois. Statewide precipitation totals during the March - December period were the 3rd driest such period since 1895 (Figure 3). Current amounts are over an inch lower than during the same period of the last substantial drought in memory (1988). Regionally, totals during the last 10 months were the lowest ever recorded in the northwest and northeast climate divisions, and the second and third driest in the west and central divisions, respectively (Figure 4). The west-southwest and east-southeast divisions also have been considerably short on precipitation. Over the last month, divisional rankings of precipitation totals since March 2005 essentially have

remained the same in the northern two-thirds of the state, but have become drier in the east-southeast, southwest, and southeast divisions.

4. SOIL MOISTURE. Soil moisture totals in Illinois continue to indicate very dry conditions in a broad band from northeastern to central to southeastern Illinois (Figure 5). Although a few sites in the state report near normal conditions, the current lack of any snow cover or frozen ground in Illinois will allow drying of surface soils to continue. It is unusual for near-surface soil moisture to be insufficient for early agricultural needs in spring, but only the occurrence of substantial above normal rainfall over the next several months will be able to recharge the total soil moisture profile in the driest regions.

5. GROUNDWATER. Statewide, shallow groundwater levels continue to be below normal. Deviations from normal averaged 3.2 feet below, levels averaged 0.1 feet lower than November levels, and levels averaged approximately 5.0 feet below December levels one year ago.

Water levels at ISWS shallow observation wells at Fermi National Laboratory in DuPage County (15 feet deep) and Bondville in Champaign County (21 feet deep) continue to decline. The level at Fermi is 6.2 feet below normal which is its lowest ever since its record began in November 1988. The level at Bondville is 4.6 feet below normal which is its lowest level for December since its record began in March 1982.

The ISWS has received 4 reports in December from homeowners that are experiencing well problems related to drought conditions. These reports have centered in Kane, Vermilion, and Peoria counties and all have been using large-diameter bored wells which are particularly prone to problems during dry periods because of their shallow construction depths (typically 25 to 50 feet deep). We have also had reports of water hauling for large-diameter bored well groundwater supplies northwest of Peoria due to dry conditions.

Groundwater levels are expected to continue their downward trend over the next months which is typical for this time of the year. However, the continuing dry period are causing an increased decline especially in the north and central parts of the state.

6. ILLINOIS STREAMFLOWS. December streamflows in Illinois (Figure 6) were mostly in the below-normal range (10^{th} to 30^{th} percentiles), although the eastern edge of the State and parts of southern Illinois are experiencing flows in the normal range (30^{th} to 70^{th} percentile). There is a small region in north-central Illinois near Peoria that experienced much-below normal flows (less than 10^{th} percentile) for December, but flows in this region have risen following end-of-month rainfalls. With the continuing precipitation deficit, we do not anticipate a recovery in the overall low streamflow amounts in much of Illinois without significant reduction in the continuing precipitation deficit. At the same time, there would need to be an extended period of very low precipitation for flows to return to much-below normal status. Precipitation in early spring will likely be key in drought recovery or, on the other hand, in the advancement of drought conditions and water supply concerns.

7. WATER LEVELS AT PUBLIC WATER SUPPLY (PWS) RESERVOIRS. Figure 7 provides current water levels for 10 selected reservoirs in central Illinois for which the ISWS has monthly records for at least 16 years. There are relatively few water supply reservoirs located in the northern portion of the state where the precipitation deficit and drought impacts are greatest.

Low water levels often recover partially in winter months, but streamflows in December were not sufficient to replenish storage in most of the reservoirs shown in Figure 7. As a result, most of these 10 reservoirs have seen little overall change in water level since the end of November. In general, most of the reservoirs listed in Figure 8 are not as low as that experienced in the two previous drought periods of 1988-1989 and 1999-2000, but are noticeably lower than their normal (median) levels for this time of year. The biggest concern for water supply reservoirs is the possibility of having a continued dry winter and spring period in which already low reservoirs may not be able to recover to their full pool levels by the end of spring.

- Without a substantial turnabout in precipitation amounts, we do not expect that Canton Lake, Lake Bloomington, and Lake Evergreen will return to full pool this spring. For these reservoirs, the lowest water levels in past droughts have typically occurred in the year following the period of greatest precipitation deficit.
- Altamont Lake, located near Effingham, is at its lowest December level in 23 years of record; however this lake is designed to provide water through a 4-year drought period and, as such, the low water levels are not yet a concern.
- As reported last month, Lake Decatur has returned to full pool and is no longer a concern.

8. FEDERAL RESERVOIRS. There are no water supply concerns for any of the federal reservoirs. Since mid-December, water has been released from Lake Shelbyville and Carlyle Lake to bring their pool levels down to the target winter pool. Carlyle Lake has already reached its winter pool level and Lake Shelbyville is expected to reach its winter pool by mid-January. Rend Lake is at an elevation of 405.5 feet, which is moderately low for this time of year.

9. MISSISSIPPI AND OHIO RIVERS. The water levels in the Ohio River and the Mississippi River downstream of St. Louis have generally been in the normal range for most of December. In contrast, the Upper Mississippi River has been experiencing above-normal flows.

10. ILLINOIS RIVER. The Illinois River was low in December, with average flow levels near the lowest 10th percentile, but precipitation in early January has raised the average flow level of the river. The generally low flow condition on the Illinois River thus far into the winter is the combined results of persisting dryness in northern Illinois and the general reduction in the Lake Michigan diversion in recent years caused by water use conservation and the reduction of leakage through the Chicago Locks.

11. LAKE MICHIGAN. The water level for Lake Michigan during December 2005 fell at a normal seasonal rate, with an average water level of 577.0 feet. This is 0.2 feet lower than the average water level in November 2005, 1.6 feet below the long-term average for December, and 0.8 feet above the lowest December conditions recorded in 1964. The level in Lake Michigan can be expected to continue dropping through mid-winter as part of its normal seasonal cycle.

12. OUTLOOK. According to the National Weather Service, the weather over the next two weeks is expected to be warmer than average with the chance of precipitation improving through the period. Their outlook for January-February-March calls for an increased chance of above-normal temperatures; however, they provide no guidance on precipitation. Do not expect too much relief from drought concerns in January and February because they are normally the two

driest months of the year with 1.97 and 1.99 inches of precipitation respectively. Much of that precipitation in the northern and central portions of the state normally falls as snow.

Continuous above average precipitation will be needed over the next several months to mitigate the dryness. If current conditions persist, frequent and timely rainfall events in these regions will be much more important this year than is normal as the state moves into the next growing season.

13. 2005 SUMMARY. Water resources in Illinois during the last year reveal the impacts of very low precipitation totals of last spring with sporadic wetter monthly totals since that time interspersed among additional dry monthly amounts (Figure 8). All other water resources responded to the initial dryness in a fairly short period of time with soil moisture most closely mirroring the rainfall deficit. Streamflow dropped quickly and has remained below median flow for 9 months. Shallow groundwater wells (water table levels) continue to decrease with the lack of substantial precipitation.

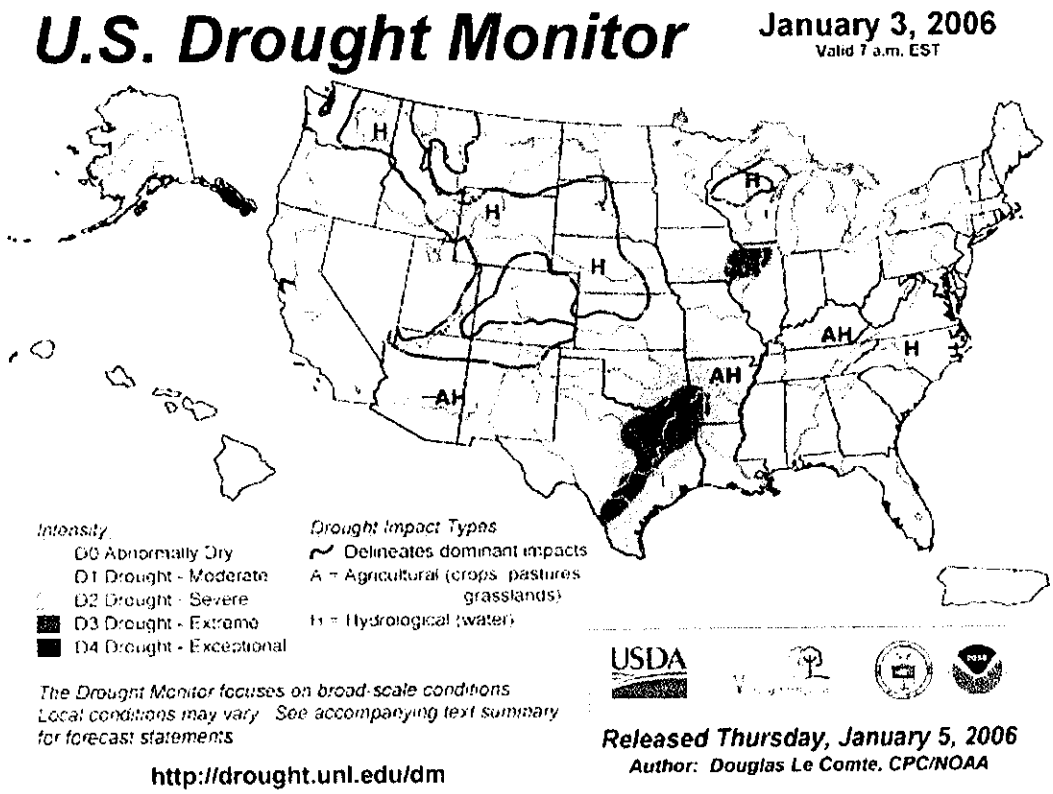
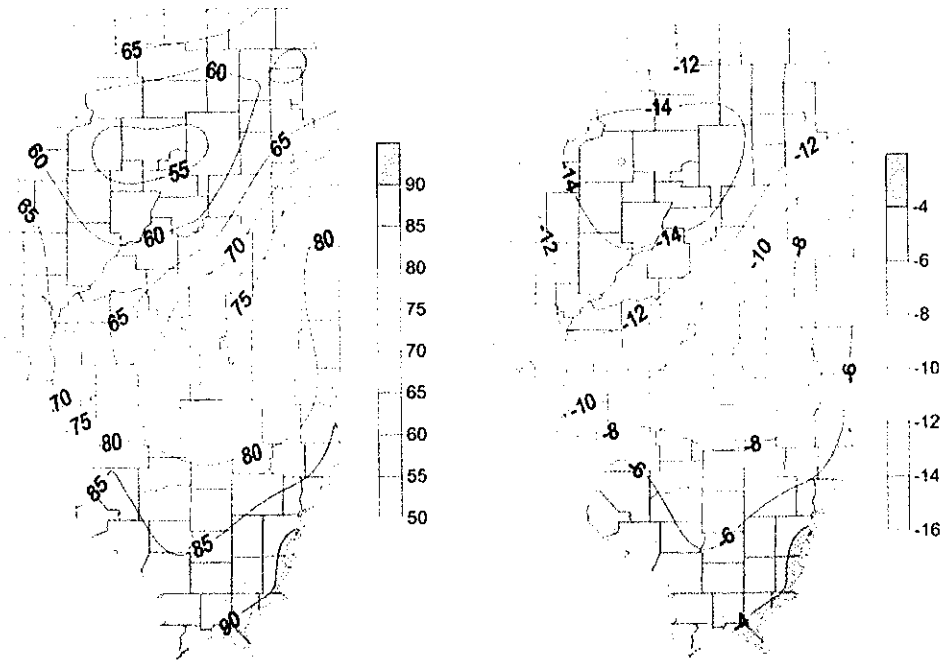


Figure 1. U.S. Drought Monitor for January 3, 2005.



March 1, 2005, to January 5, 2006
Precipitation Percent of Normal

March 1, 2005, to January 5, 2006
Precipitation Deficits (inches)

Figure 2. Precipitation for the period of March 1, 2005 to January 5, 2006, in terms of percent of normal (left) and departure from normal (right).

Source: Illinois State Water Survey

Figure 3. Ten driest March through December periods in Illinois (since 1895)

Rank	*Year*	*Precip (in)*
1	1930	21.20
2	1901	23.24
3	**2005**	**24.15**
4	1914	24.28
5	1953	24.72
6	1988	25.59
7	1976	25.69
8	1940	26.17
9	1963	26.64
10	1936	26.95

Figure 4. Rankings of driest March through December periods within Illinois climate divisions (since 1895)

Climate divisions	*2005 rank*	*top 4 driest years*
Northwest	1	**2005**, 1988, 1930, 1910
Northeast	1	**2005**, 1962, 1930, 1956
West	2	1988, **2005**,1901, 1953
Central	3	1901, 1988, **2005**, 1930
East	16	1930, 1963, 1914, 1901
West-Southwest	5	1930, 1914, 1901, 1953
East-Southeast	7	1930, 1914, 1976, 1953
Southwest	23	1930, 1953, 1901, 1976
Southeast	20	1930, 1940, 1901, 1953

Source: Illinois State Water Survey

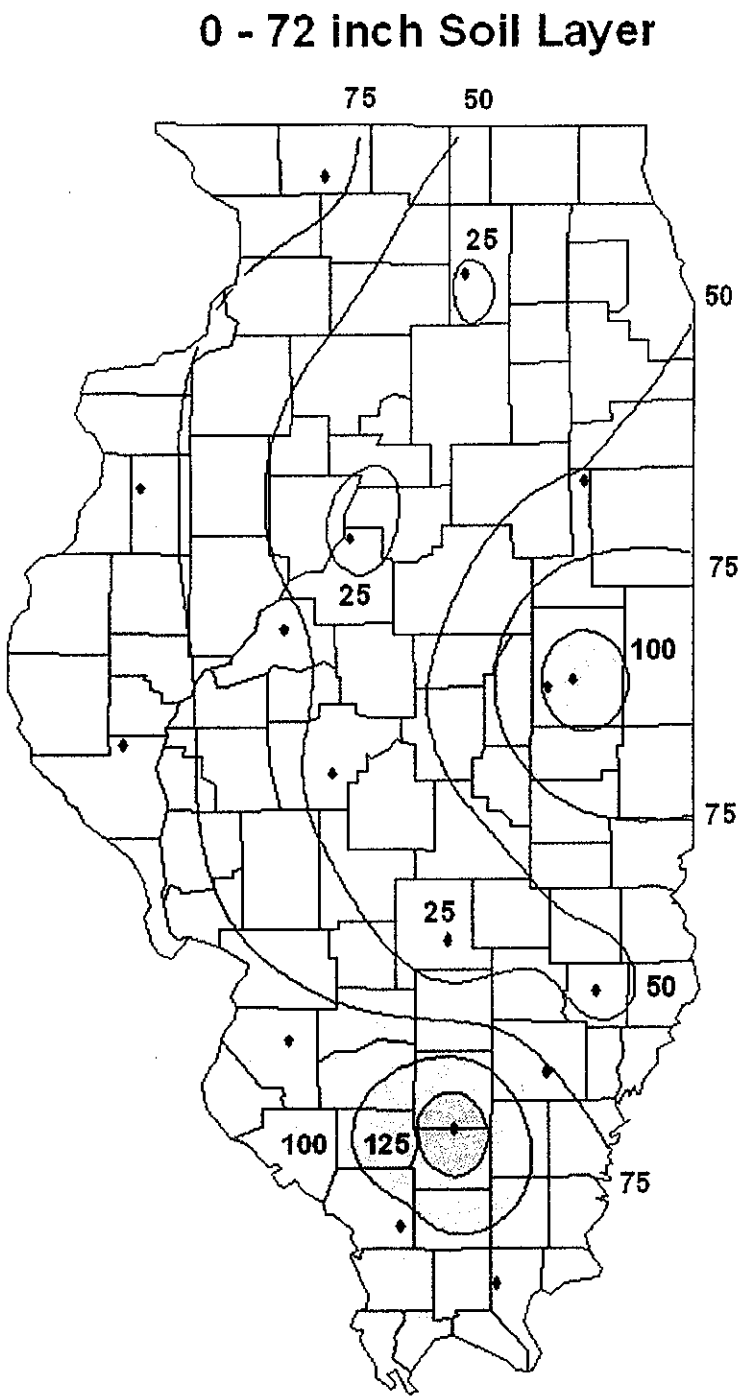


Figure 5. January 1. 2006 observed percent of normal soil moisture based on 1985-1995 mean.

Source: Illinois State Water Survey

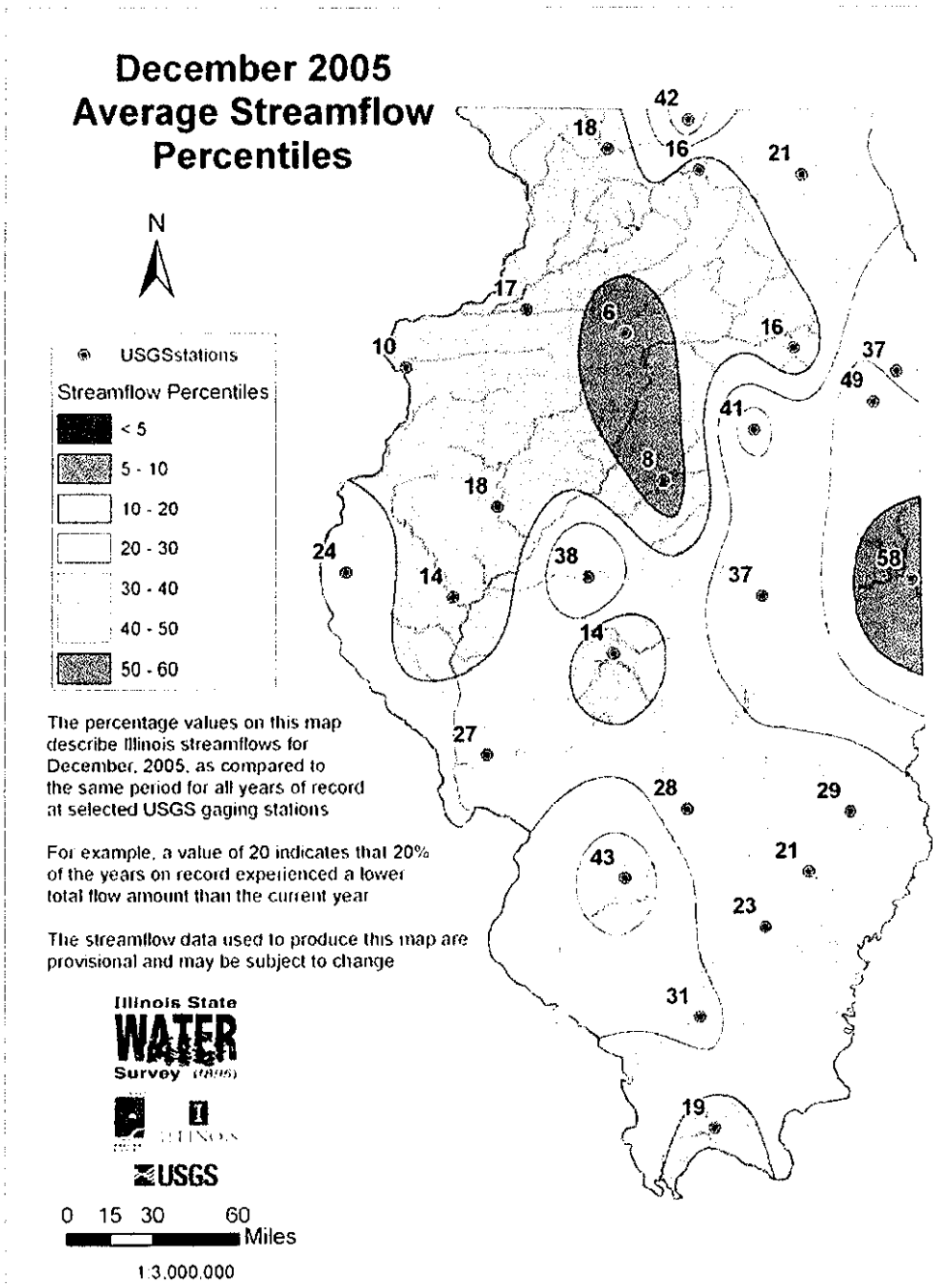


Figure 6. December 2005 Streamflow Percentiles.

Figure 7. December 2005 End-of-Month Water Levels at Selected PWS Reservoirs

Reservoir	Current reservoir drawdown	Beginning of ISWS lake record (year)	Rank	Lowest December level on record (year)**	Median December level
Altamont Lake	-6.3 ft	1983	1	-6.3 ft (2005)	-2.1 ft
Canton Lake	-6.1 ft	1989	2	-11.3 ft (1989)	-2.5 ft
Lake Pittsfield	-2.0 ft	1988	2	-2.7 ft (1999)	0.0 ft
Lake Bloomington*	-10.7 ft	1983	3	-11.9 ft (1988)	-1.9 ft
Paris East Lake	-1.2 ft	1983	4	-5.9 ft (1999)	0.0 ft
Carlinville Lake	-2.0 ft	1983	4	-3.5 ft (1999)	0.0 ft
Evergreen Lake*	-5.4 ft	1988	5	-24.0 ft (1989)	-2.2 ft
Lake Pana	-3.2 ft	1983	5	-5.0 ft (1999)	-0.2 ft
Lake Springfield	-3.7 ft	1983	6	-4.9 ft (1999)	-1.2 ft
Spring Lake (Macomb)	-0.7 ft	1983	9	-5.2 ft (1989)	0.0 ft

*Paired reservoirs - the amount of total reduction in reservoir storage for the combination of Lake Bloomington and Evergreen Lake is the 4th lowest for November since records began in the 1980s (behind 1988, 1989, and 2000).

**Although some water level records are available for historical droughts such as during the 1950s drought of record, these older values are usually not directly comparable to modern records because of substantial changes over time in either water use, normal pool elevation, or in additional sources of supply.

Source: Illinois State Water Survey

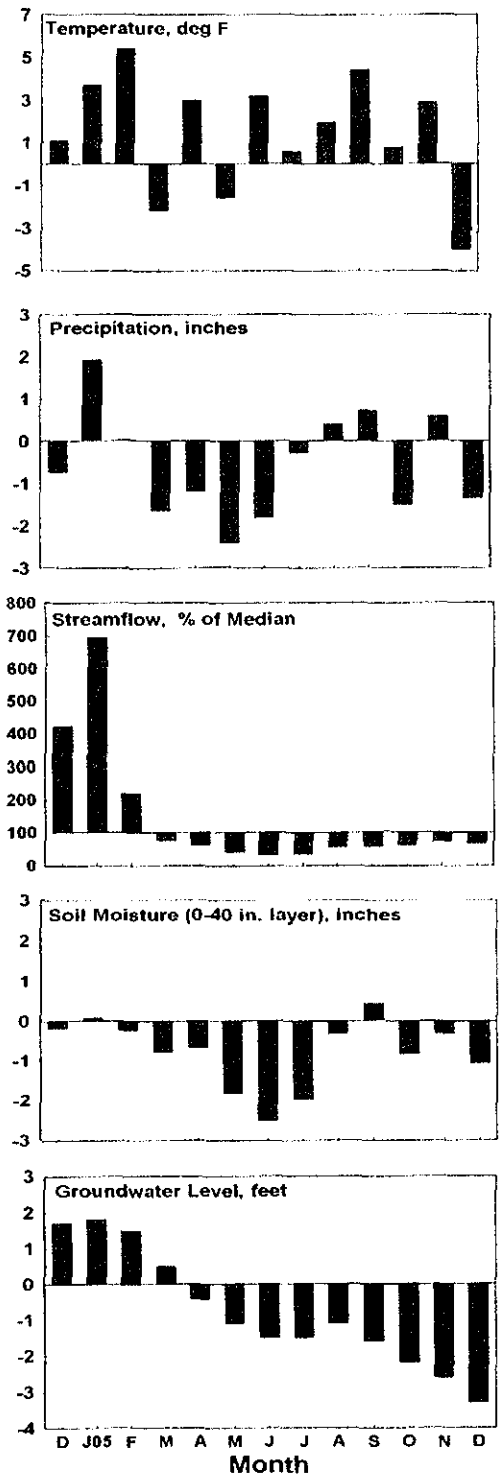


Figure 8. Illinois statewide departures from normal.

Source: Illinois State Water Survey

South Fork Pump Station Water Production (Millions of Gallons)

Calendar Years

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Monthly Totals	10 Year Averages
Jan	0	60	0	0	35	150	0	0	0	0	0	0	0	1,717	318	0	0	0	0	0	155	342	1,415	0	0	0	0	114	0	0	4,060	184
Feb	0	864	0	0	0	375	0	0	0	0	0	0	0	1,473	1,183	0	0	0	0	0	1,408	750	0	0	354	0	0	1,067	0	0	6,234	325
Mar	0	1,842	0	0	0	903	0	0	0	0	0	0	0	1,938	1,917	0	0	0	0	0	0	0	0	0	704	0	0	1,720	0	0	6,279	220
Apr	0	1,487	0	0	0	728	0	0	0	0	0	0	0	168	1,237	0	0	0	0	0	551	0	0	0	646	0	0	685	0	0	3,287	171
May	0	141	0	0	0	0	0	0	0	0	0	0	507	225	0	0	0	0	0	0	0	0	0	0	880	0	0	0	0	0	1,612	80
Jun	0	0	0	0	0	0	0	0	0	0	0	675	569	406	0	0	0	0	0	0	0	0	0	0	1,571	0	0	0	0	69	3,221	143
Jul	0	0	0	0	0	0	0	0	0	0	0	117	281	541	0	0	164	0	771	0	0	0	0	0	790	534	212	951	147	703	5,210	334
Aug	0	0	0	0	0	0	0	0	0	0	0	425	116	141	0	0	48	0	717	0	0	43	0	377	0	596	703	823	738	140	4,866	342
Sep	0	0	0	0	0	0	0	15	0	111	220	103	0	801	0	0	300	0	222	0	0	0	0	0	0	186	393	0	396	73	2,474	105
Oct	58	0	0	0	0	0	0	0	0	207	0	80	0	6	0	0	0	0	47	0	0	0	0	0	0	0	316	0	878	93	1,420	129
Nov	167	0	0	0	0	0	0	306	311	205	0	302	1,048	0	0	0	943	0	1,008	0	0	0	0	0	0	0	420	0	102	255	4,078	78
Dec	191	0	0	115	42	0	0	723	194	0	0	1,528	816	0	0	0	0	0	734	0	0	778	0	80	0	0	0	0	0	840	4,776	170
	416	4,393	0	115	77	2,156	0	1,045	506	523	220	3,231	3,336	7,414	4,654	0	1,455	0	3,499	0	2,114	1,913	1,415	457	4,945	1,316	2,044	5,360	2,261	2,173	47,518	2,400
																																6.57
																																MGD
	0.35	3.66	0.00	0.10	0.06	1.80	0.00	0.87	0.42	0.44	0.18	2.69	2.78	6.18	3.88	0.00	1.21	0.00	2.92	0	1.76	1.59	1.18	0.38	4.12	1.10	1.70	4.47	1.88	1.81	39.60	2.00

Approximate equivalent feet of lake level

Clarification Pond Recirculating Water Production (Millions of Gallons)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Monthly Totals
Jan	0	111	45	0	0	0	0	0	0	0	175	144	0	0	0	0	0	0	0	0	0	0	0	0	45	0	0	364
Feb	0	0	81	0	0	0	0	0	0	0	191	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	302
Mar	0	0	155	0	0	0	0	0	0	0	47	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100
Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	0	0	0	0	147	53	0	0	0	228
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	155	0	0	0	0	0	0	192	166	0	0	115	628
Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	0	0	0	0	0	0	163	120	0	0	69	502
Oct	0	72	0	0	0	0	0	0	0	53	0	0	0	0	0	131	0	0	0	0	0	0	0	155	0	0	0	339
Nov	90	157	0	0	0	0	0	0	0	89	0	0	0	0	0	119	0	0	0	0	0	0	0	0	0	0	0	208
Dec	68	216	0	0	0	0	0	0	0	182	201	0	0	0	0	46	0	0	0	0	0	0	0	162	0	0	0	591
	158	556	281	0	0	0	0	0	0	324	614	307	0	0	0	629	0	0	0	0	0	0	502	656	45	0	184	3,261
	0.13	0.46	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.51	0.26	0.00	0.00	0.00	0.52	0	0.00	0.00	0.00	0.00	0.00	0.42	0.55	0.04	0.00	0.15	2.72

Approximate equivalent feet of lake level

Exhibit 5

Comparison of 1986 Water Use Forecast with Actual Water Demand

wpdbm.wtrsupply

	1986 Water Demand Forecast (1)				Actual Water Use (2)			
	Service Area Population	Daily Per Capita Usage (GPD)	Forecast Water Demand (MGD)	Forecast Extreme Demand (MGD) (3)	Service Population (4)	Average Delivered Water (MGD)	Maximum Delivered Water (MGD)	Daily Per Capita Water Use (Gal.)
1985	143,255	124	17.8	-	138,771	18.7	26.21	135
1986	144,203	128	18.4	-	138,958	19.4	26.11	140
1987	145,150	132	19.1	-	139,145	21.0	35.94	151
1988	146,098	135	19.7	-	139,333	21.2	35.47	152
1989	147,045	139	20.4	-	139,520	19.4	34.47	139
1990	147,993	142	21.0	24.4	140,195	18.7	29.07	133
1991	148,941	142	21.2	24.7	141,840	20.4	33.20	144
1992	149,888	142	21.3	25.0	143,484	20.7	33.88	144
1993	150,836	143	21.5	25.3	145,128	20.0	28.9	138
1994	151,783	143	21.7	25.6	146,772	21.4	31.8	146
1995	152,731	143	21.8	25.8	149,227	20.1	38.4	135
1996	153,679	143	22.0	26.1	150,872	21.4	35.2	142
1997	154,626	144	22.2	26.4	152,518	21.3	37.0	140
1998	155,574	143	22.3	26.7	154,164	20.5	32.0	133
1999	156,521	144	22.5	27.0	155,810	21.9	39.1	141
2000	157,469	144	22.7	27.3	149,007	20.4	30.4	137
2001	158,417	144	22.9	27.5	149,860	21.1	33.8	141
2002	159,364	144	23.0	27.6	150,713	21.3	34.7	141
2003	160,312	145	23.2	27.8	151,926	20.9	32.8	138
2004	161,259	144	23.3	27.9	152,899	20.8	30.0	136
2005	162,207	145	23.5	28.1	153,872	22.4	35.3	150

(1) Source: Planning & Management Consultants, Ltd. 1986. A Disaggregate Water Use Forecast for the Springfield Area. Population is estimated from PMCL from the 31-census track data plus interpolated and extrapolated data for the wholesale customers of Rochester, Chatham, Sugar Creek & Sherman-Williamsville not included in the 31-census tracts.
(2) Source: Springfield City Water, Light and Power Water Purification Plant records.
(3) Projected water demand assuming extreme hot & dry conditions & some service area growth. (PMCL 1986)
(4) Service population is based upon either census data or Springfield-Sangamon County Regional Planning Commission estimates.

EXHIBIT 6

Comparison of 1990 Water Use Forecast with Actual Water Demand

wpdbm.wtrsupply

	1990 Water Demand Forecast				Actual Water Use			
	Service Area Population	Daily Per Capita Usage (GPD)	Forecast Water Demand (MGD)	Forecast Extreme Demand (MGD)	Service Population	Average Delivered Water (MGD)	Maximum Delivered Water (MGD)	Daily Per Capita Water Use (Gal.)
1990	145,032	134	19.4	19.9	140,195	18.7	29.07	133
1991	145,790	134	19.5	20.0	141,840	20.4	33.20	144
1992	146,547	134	19.7	20.2	143,484	20.7	33.88	144
1993	147,305	134	19.8	20.3	145,128	20.0	28.9	138
1994	148,063	135	20.0	20.5	146,772	21.4	31.8	146
1995	148,820	135	20.1	20.6	149,227	20.1	38.4	135
1996	149,578	135	20.2	20.7	150,872	21.4	35.2	142
1997	150,336	136	20.4	20.9	152,518	21.3	37.0	140
1998	151,094	136	20.5	21.0	154,164	20.5	32.0	133
1999	151,851	136	20.7	21.2	155,810	21.9	39.1	141
2000	152,609	136	20.8	21.3	149,007	20.4	30.4	137
2001	153,393	136	20.9	21.4	149,860	21.1	33.8	141
2002	154,177	136	21.0	21.5	150,713	21.3	34.7	141
2003	154,962	136	21.1	21.7	151,926	20.9	32.8	138
2004	155,746	136	21.2	21.8	152,899	20.8	30.0	136
2005	156,530	136	21.3	21.9	153,872	22.4	35.3	150

* 31-census tract population estimates used in PMCL (1991) plus SSCRPC 1990 projections for Rochester, Sugar Creek, Chatham, and Sherman-Williamsville, as modified in CWLP Fiscal Year 2001 revenue projections.

CITY WATER, LIGHT AND POWER LARGEST WATER SYSTEM CUSTOMERS - FY2005
(CONSUMPTION IN UNITS OF 100 CUBIC FEET)

RANK	NAME	BUSINESS OR ACTIVITY	FY2005 ANNUAL CONSUMPTION	% OF SYSTEM SALES
1	CWLP POWER PLANT	ELECTRIC UTILITY	477,974	5.51%
2	ST. JOHNS HOSPITAL	HOSPITAL	169,151	1.95%
3	MEMORIAL MEDICAL CENTER	HOSPITAL	160,254	1.85%
4	CWLP WATER FILTER PLANT (1)	WATER UTILITY	97,079	1.12%
5	ILLINOIS STATE CAPITOL COMPLEX	STATE GOVERNMENT	65,063	0.75%
6	SPRINGFIELD HILTON	HOTEL	46,399	0.53%
7	GRAND VALLEY VILLAGE TRAILER PARK	MOBILE HOME PARK	44,880	0.52%
8	ILLINOIS STATE FAIR GROUNDS	STATE GOVERNMENT	43,702	0.50%
9	ILLINOIS STATE POLICE ARMORY	STATE GOVERNMENT	42,980	0.50%
10	UNIVERSITY OF ILLINOIS AT SPRINGFIELD	HIGHER EDUCATION	37,433	0.43%
11	FW MEANS	INDUSTRIAL CLEANING	30,260	0.35%
12	SIU SCHOOL OF MEDICINE	MEDICAL SCHOOL	29,533	0.34%
13	ILLINOIS DEPARTMENT OF REVENUE	STATE GOVERNMENT	27,657	0.32%
14	SANGAMON COUNTY BUILDING	COUNTY GOVERNMENT	25,697	0.30%
15	SPRINGFIELD RENAISSANCE HOTEL	HOTEL	23,803	0.27%
16	CHATHAM HILLS APARTMENTS	APARTMENT COMPLEX	23,251	0.27%
17	SPRINGFIELD MANOR CARE CENTER	NURSING HOME	22,355	0.26%
18	CROWNE PLAZA HOTEL	HOTEL	21,560	0.25%
19	AMERICAN GENERAL LIFE INSURANCE(2)	INSURANCE/FINANCIAL SERVICES	19,474	0.22%
20	HORACE MANN INSURANCE	INSURANCE/FINANCIAL SERVICES	18,323	0.21%
	TOTALS		1,426,828	16.44%

TOTAL SYSTEM WATER SALES FOR FY2005 8,679,784

(1) FILTER PLANT CONSUMPTION IS RECORDED, BUT NOT BILLED.
(2) FRANKLIN LIFE BECAME PART OF AMERICAN GENERAL LIFE

CITY WATER LIGHT AND POWER LARGEST WATER SYSTEM CUSTOMERS – FY2005

(CONSUMPTION IN UNITS OF 100 CUBIC FEET)

RANK	NAME	BUSINESS OR ACTIVITY	FY2005 ANNUAL CONSUMPTION	FY1999 ANNUAL CONSUMPTION	VARIANCE IN UNITS	% VARIANCE
1	CWLP POWER PLANT	ELECTRIC UTILITY	477,974	521,930	-43,956	-8.42%
2	ST. JOHNS HOSPITAL	HOSPITAL	169,151	162,945	6,206	3.81%
3	MEMORIAL MEDICAL CENTER	HOSPITAL	160,254	104,204	56,050	53.79%
4	CWLP WATER FILTER PLANT (1)	WATER UTILITY	97,079	107,226	-10,147	-9.46%
5	ILLINOIS STATE CAPITOL COMPLEX	STATE GOVERNMENT	65,063	68,768	-3,705	-5.39%
6	SPRINGFIELD HILTON	HOTEL	46,399	42,803	3,596	8.40%
7	GRAND VALLEY VILLAGE TRAILER PARK	MOBILE HOME PARK	44,880	47,030	-2,150	-4.57%
8	ILLINOIS STATE FAIR GROUNDS	STATE GOVERNMENT	43,702	NA	NA	NA
9	ILLINOIS STATE POLICE ARMORY	STATE GOVERNMENT	42,980	44,261	-1,281	-2.89%
10	UNIVERSITY OF ILLINOIS AT SPRINGFIELD	HIGHER EDUCATION	37,433	23,052	14,381	62.39%
11	FW MEANS	INDUSTRIAL CLEANING	30,260	40,701	-10,441	-25.65%
12	SIU SCHOOL OF MEDICINE	MEDICAL SCHOOL	29,533	40,315	-10,782	-26.74%
13	ILLINOIS DEPARTMENT OF REVENUE	STATE GOVERNMENT	27,657	31,829	-4,172	-13.11%
14	SANGAMON COUNTY BUILDING	COUNTY GOVERNMENT	25,697	NA	NA	NA
15	SPRINGFIELD RENAISSANCE HOTEL	HOTEL	23,803	28,732	-4,929	-17.16%
16	CHATHAM HILLS APARTMENTS	APARTMENT COMPLEX	23,251	NA	NA	NA
17	SPRINGFIELD MANOR CARE CENTER	NURSING HOME	22,355	NA	NA	NA
18	CROWNE PLAZA HOTEL	HOTEL	21,560	NA	NA	NA
19	AMERICAN GENERAL LIFE INSURANCE(2)	INSURANCE/FINANCIAL SERVICES	19,474	25,823	-6,349	-24.59%
20	HORACE MANN INSURANCE	INSURANCE/FINANCIAL SERVICES	18,323	23,050	-4,727	-20.51%
	TOTALS		1,426,828	1,312,669	-22,406	
	TOTAL SYSTEM WATER SALES FOR FY2005		8,679,784			

(1) FILTER P LANT CONSUMPTION IS RECORDED, BUT NOT BILLED.
(2) FRANKLIN LIFE BECAME PART OF AMERICAN GENERAL LIFE
N/A - CUSTOMER WAS NOT ON THE 1999 LIST OF LARGEST CUSTOMERS

EXHIBIT 8

899-12-88

ORDINANCE AUTHORIZING THE CONSTRUCTION AND DEVELOPMENT OF LAKE SPRINGFIELD II IN THE CITY OF SPRINGFIELD, ILLINOIS, AS AMENDED

WHEREAS, it is desirable that a permanent long term water supply supplement the City's current water supply at Lake Springfield; and

WHEREAS, the City Council has received for consideration information regarding construction plans, financial options and legal requirements necessary for the construction of Lake Springfield II.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF SPRINGFIELD, ILLINOIS:

Section 1: The City Council hereby authorizes the construction, development and completion of Lake Springfield II in the City of Springfield, Illinois, as a supplemental water supply.

Section 2: The cost of Lake Springfield II shall be from revenue accounts established by the Office of Budget and Management in cooperation with the Office of Public Utilities. The Offices of Budget and Management and Public Utilities are hereby authorized to prepare a bond proposal for the City Council's consideration to fund land acquisition, preliminary engineering/design plans for the Lake II project and the cost of permit applications.

Section 3: The Office of Corporation Counsel, in cooperation with the Office of Public Utilities, is hereby directed to proceed with the acquisition and/or condemnation of the remaining land necessary to be acquired for the construction and development of Lake Springfield II subject to the availabililty of the necessary funds from the bond proceeds referenced in Section 2 of this ordinance.

Section 4: The Office of Public Utilities, in cooperation with the Office of Corporation Counsel, is hereby directed to apply for all necessary permits and other governmental approval for the completion of Lake Springfield II.

Section 5: The Office of Public Utilities is hereby authorized to prepare and submit preliminary engineering plans for Lake Springfield II subject to the availability of the necessary funds from the bond proceeds referenced in Section 2 of this ordinance.

Section 6: This Ordinance shall become effective immediately upon its passage.

PASSED: Dec 20, 1988 SIGNED: 12/22, 1988

RECORDED: Dec 22, 1988

MAYOR

ATTEST: CITY CLERK

Approved as to legal sufficiency:

Requested by: Alderman McNeil

Office of the Corporation Counsel

EXHIBIT 9

97-2-89

ORDINANCE DEDICATING MARGINAL LAND
AROUND LAKE II AS A CONSERVATION AREA.

WHEREAS, the City of Springfield has authorized the construction of Lake II; and

WHEREAS, it is desirable to establish a conservation area as a habitat for wildlife on the marginal lands surrounding Lake II; and

WHEREAS, the preservation of Illinois' heritage should be included by incorporting the restoration of prairie grasslands, and its natural habitat, as an attraction to the many visitors of Springfield's historic sites.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF SPRINGFIELD, ILLINOIS:

Section 1: Marginal land surrounding Lake II owned by the City of Springfield shall be dedicated as a conservation area, with development limited to only those structures compatible with wildlife conservation.

Section 2: The Office of Public Utilities shall consult with the Illinois Department of Conservation in planning and developing the reforestation and restoration of prairie grassland on marginal land surrounding Lake II and shall make application for all available conservation grants to acquire additional property.

Section 3: This Ordinance shall become effective immediately upon its passage.

PASSED: Feb. 7, 1989

SIGNED: 2/8, 1989

RECORDED: Feb. 8, 1989

MAYOR

ATTEST: Theresa J. Davis
CITY CLERK

Approved as to legal sufficiency:

Requested by: Alderman Clutter

Office of the Corporation Counsel

EXHIBIT 10

ILLINOIS EPA - BOW - DWPC – SURFACE WATER
FACILITY-RELATED STREAM SURVEY REPORT

A. **Facility:** Decatur MWWTP **NPDES Permit:** IL0028321 **Exp:** 01/31/07 **County:** Macon

Location: Decatur, IL **Population:** 81,860 **BOW Region:** 4

Survey Date: 09/22&23/2003 **Report Date:** 05/16/04

Treatment Level: This is a two stage activated sludge plant with anaerobic sludge digestion and sludge storage lagoons. Sludge is land applied.

Disinfection Status: seasonal **DAF/Max (mgd):** 41.0/125.0

CSO=S: yes **Last Major Upgrade (year):** --

Operational condition of facility (from DWPC records, operator=s comments, and/or observations): --

Violations of permit limits over last year (from DMRs and FOS monitoring): --

Effluent bioassay data available? Yes X **No** _ **WBID:** ILE09

B. **Receiving Stream:** Sangamon River **Basin/sub-basin:** Illinois River / Sangamon River

USEPA stream Reach: 07130006 **Receiving Stream BSC/year:** C / 1994

BSC Other/year: -- **Receiving Stream 7Q10:** -- **Stream Order:** 6
(At the point of discharge)

Discharge of Receiving Stream downstream from WWTP outfall, during survey: 53.4 cfs at the C1a station
Discharge of Receiving Stream upstream from WWTP outfall, during survey: 3.91 cfs at the A1 station

Discharge of Facility at outfall: 35.0 **mgd** as a monthly average for September, 2003
(Facility flow meter X **or IEPA measurement** _**)**

Est. dilution ratio, during survey: --

Other Potential Sources of Impairment:

Previous Surveys (years): 1974, 1977, 1981, 1988, 1991 & 1996

Findings of previous surveys: Macroinvertebrate data from the 1996 survey indicated little or no impairment existed downstream from the Decatur MWWTP. General use water quality standards were not met for dissolved oxygen at C1 or total dissolved solids at stations C1 and C2.

C. **Biological Findings of this survey:** Macroinvertebrates were collected at four locations on the Sangamon River and one site on Stevens Creek in the vicinity of the Decatur MWWTP (Table 1). Calculated MBI scores indicated that Sangamon River conditions upstream of the Decatur MWWTP (stations A1 & A2) were fair or slightly impaired and conditions downstream (station C1a) appeared to be good or non-impaired.

Exhibit 11

D. **Water quality findings of this survey:** Water chemistry was evaluated from four sites on the Sangamon River, one location on Stevens Creek, as well as, the Decatur MWWTP effluent (Table 2). General use water quality standards were not met for total dissolved solids at the C1a and C1 stations, downstream from the Decatur MWWTP. Additional water chemistry data is available via the AWQM station E-09 located at the background A1 site and AWQM station E-06 located at the dam of Decatur lake.

E. **Recreational use, actual or potential:** The Sangamon River is a navigable water body used for fishing and recreational boating. The Sangamon River flows through and adjacent to parks and residential areas in Decatur. Stevens Creek flows through Fairview Park in Decatur.

F. **Conclusions:**

1.) Calculated MBI values indicated that fair or slightly impaired conditions existed at the background stations (A1 & A2) and non-impaired conditions existed downstream of the Decatur MWWTP.

2) General use water quality standards were not met for total dissolved solids at the C1a & C1 stations.

G. **Recommendations:**

H. **Monitoring and assessment staff who worked on this survey.**

Jim Hefley
Matt Short
Tim Kelly

Table 1. Macroinvertebrate community assemblages from the Sangamon River and Stevens Creek in the vicinity of Decatur MWWTP, September 22&23, 2003.

Class	Order	Family	Genus/species	Life stage	tol.	E-DC-A2	E-DC-A1	E-DC-C1a	E-DC-C1	ES-DC-D1
Oligochaeta	unidentified	unidentified	unidentified	A	10.0	3	1		3	
Turbellaria	Tricladida	Planariidae	Dugesia tigrina	A	6.0	4	4			
Crustacea	Isopoda	Asellidae	Caecidotea occidentalis	A	6.0	3	2			
Crustacea	Amphipoda	Crangonyclidae	Crangonyx sp.	A	4.0	6	2			
Crustacea	Decapoda	Cambaridae	Orconectes propinquus	A	5.0	2	1			
Crustacea	Decapoda	Cambaridae	Orconectes virilis	A	5.0					1
Insecta	Ephemeroptera	Baetidae	Baetis intercalaris	L	7.0				7	
Insecta	Ephemeroptera	Baetidae	Pseudocloeon propinquus gr.	L	4.0		1			
Insecta	Ephemeroptera	Heptageniidae	Stenacron interpunctatum	L	4.0	1				9
Insecta	Ephemeroptera	Caenidae	Caenis sp.	L	6.0	3	1			
Insecta	Odonata	Calopterygidae	Calopteryx maculata	L	4.0			2		3
Insecta	Odonata	Coenagrionidae	Argia apicalis/tibialis	L	5.0				42	
Insecta	Odonata	Coenagrionidae	Argia apicalis	L	5.0	1	9	7		
Insecta	Odonata	Coenagrionidae	Argia moesta	L	5.0		2	1		
Insecta	Odonata	Coenagrionidae	Argia tibialis	L	5.0	9	11	15		16
Insecta	Odonata	Coenagrionidae	Enallagma sp.	L	6.0					
Insecta	Odonata	Coenagrionidae	Enallagma divagans	L	6.0				1	11
Insecta	Odonata	Gomphidae	Dromogomphus spinosa	L	4.0			1		
Insecta	Odonata	Libellulidae (corduliinae)	Epicordulia princeps	L	4.5		1			
Insecta	Odonata	Libellulidae (corduliinae)	Neurocordulia molesta	L	3.0			4		
Insecta	Odonata	Libellulidae (macromiinae)	Macromia illinoiensis	L	3.0					1
Insecta	Odonata	Libellulidae (macromiinae)	Macromia taeniolata	L	3.0			1		
Insecta	Odonata	Aeshnidae	Boyeria vinosa	L	3.0				2	8
Insecta	Odonata	Aeshnidae	Nasiaeshna pentacantha	L	2.0		1		1	
Insecta	Megaloptera	Corydalidae	Chauliodes rastricornis	L	4.0				1	
Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche sp.	L	6.0		5	8	7	
Insecta	Trichoptera	Hydropsychidae	Hydropsyche betteni gr.	L	5.0			1		
Insecta	Trichoptera	Hydropsychidae	Hydropsyche bidens	L	5.0			2	1	
Insecta	Trichoptera	Hydropsychidae	Hydropsyche simulans	L	5.0					
Insecta	Trichoptera	Polycentropodidae	Cyrnellus fraternus	L	5.0	2		1		
Insecta	Coleoptera	Elmidae	Dubiraphia sp.	A	5.0					
Insecta	Coleoptera	Elmidae	Dubiraphia sp.	L	5.0					
Insecta	Coleoptera	Elmidae	Macronychus glabratus	A	2.0			1		2
Insecta	Coleoptera	Elmidae	Stenelmis sp.	A	7.0			5		16
Insecta	Coleoptera	Elmidae	Stenelmis sp.	L	7.0					2
Insecta	Diptera	Chironomidae	Ablabesmyia janta var. II	L	6.0			3		
Insecta	Diptera	Chironomidae	Ablabesmyia mallochi	L	6.0					
Insecta	Diptera	Chironomidae	Ablabesmyia monolis/ramphae	L	6.0		2		1	
Insecta	Diptera	Chironomidae	Clinotanypus sp.	L	6.0		1			
Insecta	Diptera	Chironomidae	Thienemannimyia gr.	L	6.0		3	2		
Insecta	Diptera	Chironomidae	Nanocladius sp.	L	3.0		2	1		
Insecta	Diptera	Chironomidae	Chironomus sp.	L	11.0	10	14		1	
Insecta	Diptera	Chironomidae	Cryptochironomus sp.	L	8.0		1		1	
Insecta	Diptera	Chironomidae	Dicrotendipes neomodestus	L	6.0		1			
Insecta	Diptera	Chironomidae	Dicrotendipes nervosus	L	6.0	1	2			
Insecta	Diptera	Chironomidae	Glyptotendipes sp.	L	10.0	4	19	7	6	
Insecta	Diptera	Chironomidae	Parachironomus tenuicaudatus gr.	L	8.0	1				
Insecta	Diptera	Chironomidae	Polypedilum convictum gr.	L	6.0		2	2		
Insecta	Diptera	Chironomidae	Polypedilum illinoiense gr.	L	5.0		31	22	2	
Insecta	Diptera	Chironomidae	Tribelos fusicorne	L	5.0			1		
Gastropoda	Lymnophila	Physidae	Physella sp.	A	9.0	2	4		5	
Gastropoda	Mesogastropoda	Pleuroceridae	Pleurocera sp.	A	7.0	9				
Pelecypoda	Eulammelibranchia	Sphaeriidae	Musculium/Sphaerium sp.	A	5.0	2				
Pelecypoda	Eulammelibranchia	Corbiculidae	Corbicula fluminae	A	4.0					1
				TOTAL ORGANISMS		63	123	87	81	70
				TOTAL TAXA		17	25	20	15	11
				MBI		7.03	6.75	5.48	6.10	5.14

Table 2. Water chemistry results from the Sangamon River and Stevens Creek in the vicinity of Decatur MWWTP, September 22&23, 2003.

PARAMETER	GENERAL USE STANDARD	A2	A1	E1	C1a	C1	D1
Field Air Temp., Deg. C.		21	27	27	22	20	14
Field Water Temp., Deg. C.		21.5	21.1	27.6	24.6	23.8	15.8
Field pH, units	6.5-9.0	8.3	8.3	7.6	7.8	7.9	7.8
Field Dissolved Oxygen, mg/l	5.0 min	5.4	8.2	7.1	6.6	6.0	7.4
Field Conductivity, umhos/cm		455	556	3630	2960	3140	855
Turbidity, NTU		16.1	19.8	4.5	8.6	13.9	5.5
Ammonia Nitrogen, mg/l	15(a)	0.01	0.01	0.04	0.08	0.1	<0.01
Nitrate + Nitrite, mg/l		0.08	0.22	7.33	6.30	6.92	0.25
Total Phosphorus, mg/l		0.33	0.24	5.02	3.91	4.13	0.08
BOD, mg/l		6	6	5	5	4	3
BOD carb (Inh.), mg/l		3	3	2	2	2	<1
Total Susp. Solids, mg/l		22	27	20	19	27	10
Total Dissolved Solids, mg/l	1000 mg/l	270	330	2190	1790 *	1890 *	518
Diss. Calcium, mg/l		42	50	55	60	60	90
Diss. Magnesium, mg/l		24	29	24	27	27	41
Diss. Sodium, mg/l		11	16	600	490	520	32
Diss. Potassium, mg/l		2.2	2.0	53.0	43.0	45.0	1.2
Diss. Aluminum, ug/l		<100	<100	<100	<100	<100	<100
Diss. Barium, ug/l		41	44	26	37	38	84
Diss. Boron, ug/l		58	120	190	190	180	140
Diss. Beryllium, ug/l		<1	<1	<1	<1	<1	<1
Diss. Cadmium, ug/l	***	<3	<3	<3	<3	<3	<3
Diss. Chromium, ug/l	***	<5	<5	<5	<5	<5	<5
Diss. Copper, ug/l	***	<10	<10	<10	<10	<10	<10
Diss. Cobalt, ug/l		<10	<10	<10	<10	<10	<10
Diss. Iron, ug/l	1000 ug/l	<50	<50	94	77	86	<50
Diss. Lead, ug/l	***	<50	<50	<50	<50	<50	<50
Diss. Manganese, ug/l		<15	37	<15	27	56	49
Diss. Nickel, ug/l	***	<25	<25	<25	<25	<25	<25
Diss. Silver, ug/l		<3	<3	<3	<3	<3	<3
Diss. Strontium, ug/l		91	110	120	130	130	210
Diss. Vanadium, ug/l		<5	<5	<5	<5	<5	<5
Diss. Zinc, ug/l	***	<100	<100	<100	<100	<100	<100
T. Calcium, mg/l		46	50	58	60	61	90
T. Magnesium, mg/l		26	29	25	27	27	42
T. Sodium, mg/l		12	16	620	480	520	32
T. Potassium, mg/l		1.6	2.4	55.0	42.0	46.0	2.8
T. Aluminum, ug/l		160	310	<100	120	260	130
T. Barium, ug/l	5000 ug/l	47	48	32	39	42	87
T. Boron, ug/l	1000 ug/l	63	120	200	180	190	140
T. Beryllium, ug/l		<1	<1	<1	<1	<1	<1
T. Cadmium, ug/l		<3	<3	<3	<3	<3	<3
T. Chromium, ug/l		<5	<5	<5	<5	9	<5
T. Copper, ug/l		<10	<10	<10	<10	<10	<10
T. Cobalt, ug/l		<10	<10	<10	<10	<10	<10
T. Iron, ug/l		320	480	240	310	540	280
T. Lead, ug/l		<50	<50	<50	<50	<50	<50
T. Manganese, ug/l	1000 ug/l	94	120	16	45	77	61
T. Nickel, ug/l		<25	<25	26	<25	40	<25
T. Silver, ug/l	5.0 ug/l	<3	<3	<3	<3	<3	<3
T. Strontium, ug/l		98	110	120	130	130	210
T. Vanadium, ug/l		<5	<5	<5	<5	<5	<5
T. Zinc, ug/l		<100	<100	<100	<100	<100	<100
** Hardness, mg/l		220	245	245	260	263	400

* State Water Quality Standard not met
** Calculated value
*** Standards are hardness dependent.
(a) Ammonia nitrogen shall not exceed 15.0 mg/L

Table 3. Description of sampling locations in the vicinity of the Decatur MWWTP, 2003.

Station	Location
E-DC-A2	Sangamon River below Lake Decatur dam, approximately 3.0 miles upstream from the Decatur MWWTP. T16N, R2E, NE22. Macon County. Lat: 39 49'44" Long: 88 58'34"
E-DC-A1	Sangamon River, approximately 2.0 miles upstream from the Decatur MWWTP at Illinois Route 48. T16N, R2E, NE21. Macon County. Lat: 39 49'51" Long: 88 58'34"
E-DC-E1	Decatur MWWTP effluent. T16N, R2E, NW20. Macon County. Lat: 39 49'55" Long: 89 00'10"
E-DC-C1a	Sangamon River approximately 0.5 mile downstream from the Decatur MWWTP at a bike trail bridge in Rock Springs. T16N, R2E, NW20. Macon County. Lat: 39 49'53" Long: 89 00'40"
E-DC-C1	Sangamon River, approximately 2.5 miles downstream from the Decatur STP at Wycles Road. T16N, R2E, SW19. Macon County. Lat: 39 49'28" Long: 89 01'45"
ES-DC-D1	Stevens Creek, approximately 0.9 mile upstream from the Sangamon River confluence at Fairview Park. T16N, R2E, NW17. Macon County. Lat: 39 50'36" Long: 89 00'06"