ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

August 3, 2012

Midwest Generation Joliet 9, Joliet 29, and Will County Stations	)	
Petitioner,	)	
v.	)	IEPA – 12-26 (Provisional Variance-Water)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

Re: Provisional Variance From Thermal Limits Contained in Joliet Station 9 NPDES Permit IL0002216; Joliet Station 29 NPDES Permit No. IL0064254; Will County Station NPDES Permit No. IL0002208.

Dear Mr. Claybaugh:

On July 3, 2012, the Illinois Environmental Protection Agency ("Agency") granted a provisional variance ("July 3 Provisional Variance") (Exhibit A) to Midwest Generation for its Joliet Station 9, Joliet Station 29, and Will County Station. Midwest Generation has enjoyed provisional variance relief since that time through various provisional variance extensions. The Agency received a request for another provisional variance from Midwest Generation on August 2, 2012. ("August 2 Request") (Exhibit B)

Based on its review, the Agency GRANTS Midwest Generation provisional variance relief from thermal limits of the various NPDES Permits, subject to the specific conditions set forth below.

Background

The generating units at each of Midwest Generation's stations are coal-fired, and each utilizes an open cycle, once-through condenser cooling system. The Midwest Generation Stations are steam-electric generating processes that require the use of large volumes of surface water. Midwest Generation maintains that the basic facts and location of the three Midwest Generation stations subject of the provisional variance described in the July 3 Provisional Variance serve as background to current conditions at the facilities.

However, some operational changes have been put into place as a result of the weather conditions that led to the July 3 Provisional Variance. Midwest Generation has operated all available cooling towers and has reduced the load of Joliet 9, Unit 6 at times to mitigate the climate conditions and maintain the best possible discharge.

Midwest Generation states, "[a]fter a brief period of respite afforded by much needed, although short-lived, rainfall events on July 18, 19, 24, and 26, I-55 temperatures again went over 91° F on July 31, as the result of low flow and high air temperatures."

Relief Requested

With the August 2 Request, Midwest Generation seeks a provisional variance from the thermal limits at the I-55 Bridge, contained in Joliet Station 9 NPDES Permit IL0002216; Joliet Station 29 NPDES Permit No. IL0064254; and Will County Station NPDES Permit No. IL0002208, beginning on August 6, 2012, and expiring on August 19, 2012. More specifically, Midwest Generation has requested a provisional variance from "maximum temperature limits . . . an increase in the maximum thermal adjusted standard from 93° F to 96° F."

Special Condition 5 in Joliet Station 9 and Joliet Station 29 NPDES permits, and Special Condition 6, in Will County's NPDES permit provide in pertinent part:

> [E]ffluent shall not alone or in combination with other sources cause temperatures in the main channel of the Lower Des Plaines River at the I-55 Bridge to exceed the temperatures set forth in the following table, except in accordance with allowable monthly excursions detailed below:
>
> | . . . July . . . | Aug. . . . | Sept . . . |
> |---|---|---|
> | 91 | 91 | 90 |
>
> These standards may be exceeded by no more than 3° F during 2% of the hours in the 12-month period ending December 31, *except that at no time shall Midwest Generation's plants cause the water temperature at the I-55 Bridge to exceed 93° F* (emphasis added).

According to the provisional variance request, "the maximum I-55 Bridge 96° F temperature limit allowed by the prior provisional variance has not been exceeded," and the water temperature will not exceed 96° F at the I-55 Bridge during the term of this provisional variance.

In addition, Midwest Generation requests additional excursion hours be granted by the Agency, "for use as needed" due to the uncontrollable climate factors.

Necessity for Request

According to Midwest Generation, the summer weather pattern is continuing to greatly impact the ability to maintain compliance with the existing thermal limitations which cover the Midwest Generation stations identified above. In 2012, 123.25 of the total allowed excursion hours were used during the time period from July 1 to July 17. The remainder of the 175 allowed excursion hours were used during the abnormally warm conditions encountered in March 2012. Therefore, all permitted excursion hours have been exhausted.

The hot weather is creating unusually high demand for electricity to support human health and safety needs, as well as the many businesses and households which rely on power through the PJM Interconnection. Midwest Generation states that, "[w]hile no system emergency has been declared at this time, the amount of available power continues to be limited within the region by environmental compliance constraints." Midwest Generation also asserts that "the intake temperatures at Joliet Station 6 have gone well over 93° F for hours at a time each day, particularly under low river flows, resulting in the need for unit deratings during the most critical, late afternoon power demand periods."

According to the August 2 Request, the water temperature at the I-55 Bridge was 89.5° F (at 11:00 a.m. on 8-2-12) but expected to go over 93° F later in the day. Midwest Generation says that without the relief requested, the Joliet units, and possibly the Will County units, are in jeopardy of needing to shut down completely in order to attempt to meet the 93° F maximum I-55 thermal limit, which may not even be possible due to the current adverse ambient waterway and weather conditions. Midwest Generation reports that a shut down in lieu of the requested provisional variance would result in operational problems and potential safety risks.

Alternatives to Requested Relief

Midwest Generation states that given the considerations detailed above, the only alternative method of compliance is to shutdown Joliet Stations 9 and 29 (Units 6, 7 and 8) and the Will County Units 3 and 4, as these are the only Midwest Generation stations which have a potential impact on I-55 Bridge water temperatures. (Midwest Generation notes that previous proceedings and thermal modeling has determined that any potential thermal impacts from the Fisk or Crawford Stations have dissipated prior to reaching Will County).

Environmental Impacts

Midwest Generation states that while observations of the Chicago Sanitary and Ship Canal and Lower Des Plaines River have occurred four times per day over the course of the provisional variances issued, "none of the observations have indicated any adverse impacts on aquatic life." According to Midwest Generation's aquatic biology expert, the

requested provisional variance relief, "is not reasonably expected to cause mortality or any long-term negative impacts to the aquatic community."

Midwest Generation also has its biological consultants performing a routine fisheries monitoring program in the Chicago Sanitary and Ship Canal near Will County Station, and in the Lower Des Plaines River from Brandon Lock and Dam down past the I-55 Bridge. The report resulting from that monitoring during the week of July 23, "showed no adverse impacts that could be attributed to Midwest Generation's operations." Midwest Generation has also monitored dissolved oxygen over the course of the provisional variances. The August 2 Request states that, "[d]uring the entire month of July, which had some of the warmest temperatures on record, there were no dissolved oxygen levels measured at the I-55 Bridge which would be considered adverse to aquatic life."

Agency Determinations

The Agency has reviewed the requested provisional variance and has concluded the following:

1. Any environmental impact from the requested relief shall be closely monitored, and the Agency shall be immediately notified of any adverse impacts.

2. No reasonable alternatives appear available;

3. No public water supplies should be affected;

4. The Agency is not authorized to grant additional excursion hours;

5. No federal regulations will preclude the granting of this request; and

6. Midwest Generation will face an arbitrary and unreasonable hardship if the request is not granted.

Conditions

The Agency hereby GRANTS Midwest Generation's Will County and Joliet Stations 9 and 29 a provisional variance from the thermal limits indicated in Special Conditions 6 and 7 of the Will County NPDES Permit No. IL0002208, Special Conditions 5 and 6 of the Joliet Unit 6 (Station 9) NPDES Permit No. IL0002216, and Special Conditions 5 and 6 of Joliet Units 7 & 8 (Station 29) NPDES Permit No. 0064254, subject to the following conditions:

A. The term of this provisional variance begins (1) for excursion hours: when the temperature at the I-55 Bridge exceeds 91°F, but not before August 6, 2012; (2) for maximum temperature limits: when the temperature exceeds 93°F, but not before August 6, 2012. Beginning August 6, 2012, and through August 19, 2012,

any exceedance of 91° F for any length of time during a 24-hour period, 12:00 a.m. to 11:59 p.m. constitutes one day of variance relief. When no exceedance occurs during a 24-hour period, 12:00 a.m. to 11:59 p.m., that 24-hour period shall not be deducted from the remaining available hours of variance relief for Midwest Generation's Will County and Joliet Stations 9 and 29 pursuant to Section 36(c) of the Illinois Environmental Protection Act, 415 ILCS 5/36(c)(2010) and 35 Il. Adm. Code 104.308. At no time shall the temperature at the I-55 Bridge exceed 96° F.

B. During the term of this provisional variance, Midwest Generation must record: a) the time and date when each exceedance begins and ends, pursuant to paragraph A of this Section; b) water temperature at Midwest Generation's intake; c) water temperature at the I-55 Bridge; d) stream flow at the Brandon Road Lock & Dam; e) air temperature and weather conditions in the general area of the facilities; and f) any grid (PJM or MISO) alerts issued during the term of this provisional variance. These six items must be recorded at least twice per day, once at approximately 9:00 a.m. and again at approximately 5:00 p.m.

C. Midwest Generation must continuously monitor discharge and receiving water temperatures and visually inspect all discharge areas, including at the I-55 Bridge, at least four times per day, during daylight hours, to assess any mortalities to fish and other aquatic life. This monitoring shall continue for a minimum of four days after the provisional variance expires.

D. At the conclusion of the term of this provisional variance and as a part of its application for any future regulatory relief, Midwest Generation must submit to the Agency the number of excursion hours that occurred, pursuant to paragraph A above.

E. Midwest Generation shall document environmental conditions during the term of the provisional variance, including the activities described in paragraphs B and C of this Section, and submit the documentation to the Agency and the Illinois Department of Natural Resources ("Illinois DNR") within seven (7) days after this provisional variance expires. Documentation must be submitted to the Agency using the address indicated in paragraph I, below.

F. Midwest Generation shall provide the best operation of all available equipment to produce the best effluent possible at all times during the term of this provisional variance. At no time shall the water temperature in the main channel of the Lower Dew Plaines River at the I-55 Bridge exceed a temperature of 96° F during the term of this provisional variance.

G. Midwest Generation shall immediately notify the Agency and Illinois DNR of any unusual conditions, including mortalities of fish or other aquatic life, immediately take action to remedy the problem, investigate and document the cause and seriousness of the unusual conditions while providing updates to the Agency and

Illinois DNR as changes occur until normal conditions return; notify the Agency and Illinois DNR when normal conditions return and submit the documentation to the Agency and Illinois DNR within seven (7) days after normal conditions return.

H. Midwest Generation shall develop and implement a response and recovery plan to address any adverse environmental impact due to thermal conditions that could result from the provisional variance, including loss and damage to aquatic life.

I. Midwest Generation shall notify Roger Callaway by telephone at 217-782-9720 when the period of this provisional variance begins, pursuant to paragraph A of this Section. Written confirmation shall be sent within five days after the discharge specified in this provisional variance ends to the following address:

Illinois Environmental Protection Agency
Bureau of Water - Water Pollution Control
Attention: Roger Callaway
1021 North Grand Avenue East, CAS #19
Springfield IL 62794-9276

J. Midwest Generation shall sign a certificate of acceptance of this provisional variance and forward that certificate to Roger Callaway at the address indicated above within one day of the date of this provisional variance.

The certification should take the following form:

I (We)_____, hereby accept and agree to be bound by all terms and conditions of the provisional variance granted by the Agency in _____ dated _____.

_____
Petitioner

_____
Authorized Agent

_____
Title

_____
Date

K. Midwest Generation shall continue to monitor all parameters and comply with all other conditions specified in Joliet Station 9 NPDES Permit IL0002216; Joliet Station 29 NPDES Permit No. IL0064254; and Will County Station NPDES Permit No. IL0002208.

Conclusion

The Agency grants this provisional variance in accordance with its authority contained in Sections 35(b), 36 (c), and 37(b) of the Illinois Environmental Protection Act (415 ILCS 5/35(b), 36(c), and 37(b) (2010). The decision to grant this provisional variance is not intended to address compliance with any other applicable laws or regulations. In addition, this provisional variance does not grant excursion hours additional to those provided in the aforementioned NPDES Permits issued to Midwest Generation.

Sincerely,

Julie Armitage
Acting Chief Legal Counsel

cc: Marcia Willhite
Roger Callaway
Chad Kruse

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 3, 2012

Midwest Generation Joliet 9, Joliet 29, and Will County Stations	)	
Petitioner,	)	
v.	)	IEPA – 12-20 (Provisional Variance-Water)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
Respondent.	)	

Re: Provisional Variance From Thermal Limits Contained in Joliet Station 9 NPDES Permit IL0002216; Joliet Station 29 NPDES Permit No. IL0064254; Will County Station NPDES Permit No. IL0002208.

Dear Mr. Claybaugh:

The Illinois Environmental Protection Agency (Agency) has completed its technical review of the attached provisional variance request, dated July 3, 2012 (Attachment A) submitted by Midwest Generation for its Joliet Station 9, Joliet Station 29, and Will County Station. Because of extremely hot weather conditions and the resulting maximum customer demand for electricity needed for cooling Midwest Generation has requested a provisional variance from the thermal limits at the I-55 Bridge in the Lower Des Plaines River contained in these stations' NPDES permits.

Based on its review, the Agency GRANTS Midwest Generation a provisional variance from thermal limits at the I-55 Bridge for its Joliet Station 9, Joliet Station 29, and Will County Station, subject to the specific conditions set forth below.

Background

The generating units at each of Midwest Generation's stations are coal-fired, and each utilizes an open cycle, once-through condenser cooling system. The Midwest Generation Stations are steam-electric generating processes that require the use of large volumes of surface water.

The Will County Station is located in Romeoville at River Mile 295.5 on the Chicago Sanitary and Ship Canal, and is a two-unit steam electric facility with an 897 megawatts

A

production capacity and a design circulating water flow rate of approximately 864 Million Gallons per Day ("MGD"). The Will County Station is not equipped with cooling towers.

The Joliet Station 9 and Joliet Station 29 are located in Will County, Illinois, approximately one mile southwest of the City of Joliet, Illinois, which discharge wastewater, including cooling water, into the adjacent Lower Des Plaines River at locations approximately seven miles north of the I-55 Bridge pursuant to the NPDES Permits described above. Joliet Station 9 is on the east bank of the river and Joliet Station 29 is on the west bank. Both of these thermal discharges flow into the lower Des Plaines River approximately one-half mile downstream of the Brandon Road Lock and Dam between River Miles 285 and 284. Both stations utilize open cycle, once-through condenser cooling systems.

Joliet Station 9 has a single generation unit, Unit 6. It is capable of producing 341 megawatts of electricity and has a design circulating water flow rate of approximately 376 MGD. The design maximum temperature rise in the circulating cooling water is approximately 10.7°F. Joliet Station 9 is not equipped with cooling towers.

Joliet Station 29 has two generation units, Unit 7 and Unit 8. Units 7 and 8 are capable of producing approximately 1100 megawatts, with a design circulating water flow rate of approximately 1325 MGD. The design maximum temperature rise in the circulating cooling water is approximately 12.4° F. The Joliet Station 29 is equipped with cooling towers, referred to as "helper cooling towers" because they are not designed for long-term, continuous runs. They are capable of cooling approximately one-third of Units 7 & 8's total design discharge.

All of these facilities are operated on a daily load cycle which matches electrical demand needs and provides power into the PJM Interconnection, a regional transmission organization that coordinates the movement of wholesale electricity in Northern Illinois, and all or parts of 13 states and the District of Columbia. The PJM region has an area of 214,000 square miles, and a population of about 60 million.

Due to the widespread heat and drought conditions throughout the Midwest, there are many power producers which supply the PJM system that either are currently impacted or will be, given the long-range forecast for extended high air temperatures. As facility operations succumb to heat-related equipment failures and continued compliance challenges which limit their ability to provide needed power to the grid, the necessity for regulatory relief in the form of a provisional variance will become increasingly critical. This is already apparent with PJM's issuance of a Hot Weather Alert for the entire PJM RTO for July 4th and 5th, 2012. Temperatures are expected to approach 100 degrees in Illinois. Midwest Generation notes that over one hundred thousand people lost service in Chicago and over a million are still without power throughout PJM due to recent storms. As reconnections proceed over the next few days, a significant increase in demand is expected.

Relief Requested

Midwest Generation seeks a provisional variance from the thermal limits at the I-55 Bridge, contained in Joliet Station 9 NPDES Permit IL0002216; Joliet Station 29 NPDES Permit No. IL0064254; and Will County Station NPDES Permit No. IL0002208, beginning on July 4, 2012, and continuing through July 13, 2012. More specifically, Midwest Generation has requested an increase in the maximum thermal adjusted standard from 93° F to 96° F, as well as a suspension of the counting of excursion hours for periods when the I-55 Bridge temperature exceeds 91° F.

Special Condition 5 in Joliet Station 9 and Joliet Station 29 NPDES permits, and Special Condition 6, in Will County's NPDES permit provide in pertinent part:

> [E]ffluent shall not alone or in combination with other sources cause temperatures in the main channel of the Lower Des Plaines River at the I-55 Bridge to exceed the temperatures set forth in the following table, except in accordance with allowable monthly excursions detailed below:
>
> | . . . July . . . | Aug. . . . | Sept . . . |
> |---|---|---|
> | 91 | 91 | 90 |
>
> These standards may be exceeded by no more than 3° F during 2% of the hours in the 12-month period ending December 31, *except that at no time shall Midwest Generation's plants cause the water temperature at the I-55 Bridge to exceed 93° F* (emphasis added).

According to the provisional variance request, the water temperature will not exceed 96° F at the I-55 Bridge.

Special Condition 6 in Joliet Station 9 and Joliet Station 29 NPDES permits, and Special Condition 7, in Will County's NPDES permit provide:

> Permittee shall comply with all temperature limitations as imposed by the Pollution Control Board's order in AS 96-10, dated October 3, 1996.

Necessity for Request

During this time of extremely hot air temperatures of up to 100° F each day, with little overnight relief, coupled with prolonged drought conditions in Northern Illinois, the alternate I-55 thermal water quality standards currently in effect cannot consistently be met, even with the current measures already taken by Midwest Generation to maintain compliance, including derating of Joliet Unit 6 down to minimum load during periods of low river flows and increased intake temperatures. Intake temperatures are expected to keep increasing given the prolonged low flows in the entire waterway system and continued high air temperatures. On July 3, 2012, the intake temperature at Will County

Station had already exceeded 86 ° F on several occasions, while intake temperatures at Joliet Unit 6 have gone over 90° F for hours at a time. With air temperatures predicted to stay in a dangerously high range through Saturday, July 7, and possibly longer, the demand for electricity to support human health and safety needs will increase, along with the physical constraints and limitations on power production and distribution brought about by these same extremely hot, dry conditions.

Midwest Generation says that without the relief requested, the Joliet units, and possibly the Will County units, are in jeopardy of needing to shut down completely in order to attempt to meet the 93° F maximum I-55 thermal limit, which may not even be possible due to the current adverse ambient waterway and weather conditions. Midwest Generation reports that this would result in the following operational problems and potential safety risks involved, as detailed below:

Safety – Midwest Generation states that during a river thermal event, unit load is reduced quickly to maintain I-55 temperature compliance. In certain cases, a unit may have to be cycled off. Because of the short notification required prior to shutdown, coal handling systems cannot be completely purged out. This is a hazard because of the volatile nature of Powder River Basin coal to spontaneously combust and act as an ignition source. Because coal bunkers, reclaim feeders and coal preparation equipment cannot be completely purged out when a short notice shut down is required, there is increased risk of an explosion or fire upon restart of the non-purged equipment. A crusher house explosion and fire that occurred at Joliet Station in April 2012 followed a period when Joliet Station was shutdown in late March for river temperature compliance, without the necessary time to purge out the coal handling and transport system. This required emergency response of fire service personnel from at least five jurisdictions. Events such as these put power plant workers and the fire service employees at risk of injury and or loss of life. The current high ambient outside temperature and humidity accelerates the spontaneous combustion phenomenon.

Effects of unit cycling – According to Midwest Generation, any time a steam unit is either started or shut down, a thermal cycle is incurred which results in thermal stresses through thick walled components such as boiler headers, boiler tubes, turbine casings and rotors. Cycling results in decreased equipment reliability and increased costs for equipment repair and maintenance due to the generation of incipient cracks in these components. This condition is not unique to Midwest Generation, but recognized throughout the industry as a widespread consequence of excessive steam unit cycling. In addition to thermal cycles, mechanical cycles on such equipment as circuit breakers, valves, actuators and other high use equipment will result in accelerated wear, unreliability and excessive maintenance costs.

The low pressure steam turbines at Joliet's Units 7&8 are designed to require especially high vacuum to allow them to re-start after shutdown. River temperatures much above 85° F do not provide the cooling required to achieve optimal vacuum conditions. Unit start-up under these conditions places excessive stress on turbine blades and risks serious

damage to these turbines. Higher river temperatures may prevent restart altogether, making units unavailable for system grid load demand and support.

Voltage control and regulation – Midwest Generation states that removing units from service will result in localized voltage and VAR control issues. Although this is the province of the Transmission Operator, these effects usually manifest themselves most severely on hot, high load demand days: days that most likely one would shut a unit down to maintain river thermal compliance. Impacts of low voltage would include shortened motor life and the possibility that some motor operated devices, such as air conditioners, will be unable to operate. More severe impacts could include localized power brown outs or blackouts due to insufficient voltage support on the transmission system.

Load regulation would also be impacted by the loss of a generating unit that typically would supply load regulation as the system loaded up. This would put additional burden on transmission lines and transmission equipment, and could cause transmission line overloading in peak conditions.

Alternatives to Requested Relief

Midwest Generation states that given the considerations detailed above, the only alternative method of compliance is to shutdown Joliet Stations 9 and 29 (Units 6, 7 and 8) and the Will County Units 3 and 4, as these are the only Midwest Generation stations which have a potential impact on I-55 Bridge water temperatures. (Midwest Generation notes that previous proceedings and thermal modeling has determined that any potential thermal impacts from the Fisk or Crawford Stations have dissipated prior to reaching Will County).

Environmental Impacts

Midwest Generation has provided details on the environmental impact during the requested variance period from July 4, 2012, through July 13, 2012. Midwest Generation has determined that there should not be any significant environmental impact during the course of this provisional variance.

Agency Determinations

The Agency has reviewed the requested provisional variance and has concluded the following:

1. Any environmental impact from the requested relief shall be closely monitored, and the Agency shall be immediately notified of any adverse impacts.

2. No reasonable alternatives appear available;

3. No public water supplies should be affected;

4. No federal regulations will preclude the granting of this request; and

5. Midwest Generation will face an arbitrary and unreasonable hardship if the request is not granted.

Conditions

The Agency hereby GRANTS Midwest Generation's Will County and Joliet Stations 9 and 29 a provisional variance from the thermal limits indicated in Special Conditions 6 and 7 of the Will County NPDES Permit No. IL0002208, Special Conditions 5 and 6 of the Joliet Unit 6 (Station 9) NPDES Permit No. IL0002216, and Special Conditions 5 and 6 of Joliet Units 7 & 8 (Station 29) NPDES Permit No. 0064254, subject to the following conditions:

A. The term of this provisional variance begins (1) for excursion hours: when all permitted excursion hours have been exhausted; (2) for maximum temperature limits: when the temperature exceeds 93° F. The term of this provisional variance shall begin on July 4, 2012 and end no later than July 13, 2012. This provisional variance is granted based on the facts and circumstances described in the request dated July 3, 2012. If the facts and circumstances described in the request dated July 3, 2012 abate the term of this provisional variance will end.

B. Midwest Generation shall provide the best operation of its available equipment to produce the best effluent possible at all times during the term of this provisional variance. At no time shall the water temperature in the main channel of the Lower Dew Plaines River at the I-55 Bridge to exceed a temperature of 96° F during the term of this provisional variance.

C. Midwest Generation must continuously monitor discharge and receiving water temperatures and visually inspect all discharge areas, including at the I-55 Bridge, at least four times per day to assess any mortalities to fish and other aquatic life. This monitoring shall occur during the period of the provisional variance and shall continue for a minimum of four days after the provisional variance expires.

D. Midwest Generation shall document environmental conditions during the term of the provisional variance, including the activities described in item C. of this Section, and submit the documentation to the Agency and the Illinois Department of Natural Resources ("Illinois DNR") within seven (7) days after this provisional variance expires.

E. Midwest Generation shall immediately notify the Agency and Illinois DNR of any unusual conditions, including mortalities of fish or other aquatic life, immediately take action to remedy the problem, investigate and document the cause and seriousness of the unusual conditions while providing updates to the Agency and Illinois DNR as changes occur until normal conditions return; notify the Agency and Illinois DNR when normal conditions return and submit the documentation to

the Agency and Illinois DNR within seven (7) days after normal conditions return.

F. Midwest Generation shall develop and implement a response and recovery plan to address any adverse environmental impact due to thermal conditions that could result from the provisional variance, including loss and damage to aquatic life.

G. Midwest Generation shall notify Roger Callaway, Illinois Environmental Protection Agency, by telephone at 217-782-9720 when the period of this provisional variance begins and ends. Written confirmation shall be sent within five days after the discharge specified in this provisional variance ends to the following address:

Illinois Environmental Protection Agency
Bureau of Water - Water Pollution Control
Attention: Roger Callaway
1021 North Grand Avenue East, CAS #19
Springfield IL 62794-9276

H. Midwest Generation shall sign a certificate of acceptance of this provisional variance and forward that certificate to Roger Callaway at the address indicated above within one day of the date of this order.

The certification should take the following form:

I (We)_____, hereby accept and agree to be bound by all terms and conditions of the provisional variance granted by the Agency in _____ dated _____.

_____
Petitioner

_____
Authorized Agent

_____
Title

_____
Date

I. Midwest Generation shall continue to monitor all parameters and comply with all other conditions specified in Joliet Station 9 NPDES Permit IL0002216; Joliet

Station 29 NPDES Permit No. IL0064254; and Will County Station NPDES Permit No. IL0002208.

Conclusion

The Agency grants this provisional variance in accordance with its authority contained in Sections 35(b), 36 (c), and 37(b) of the Illinois Environmental Protection Act (415 ILCS 5/35(b), 36(c), and 37(b) (2010). The decision to grant this provisional variance is not intended to address compliance with any other applicable laws or regulations.

Sincerely,

Julie Armitage
Acting Chief Legal Counsel

cc: Marcia Willhite
Roger Callaway
Chad Kruse

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August 2, 2012

Mr. Roger Callaway
Wastewater Compliance Unit Manager
Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section # 19
1021 North Grand Avenue East
Springfield, IL 62702

SUBJECT: Request for Thermal Provisional Variance for Midwest Generation's Will County and Joliet Stations 9 and 29

Will County	NPDES Permit No. IL0002208
Joliet Station 9	NPDES Permit No. IL 0002216
Joliet Station 29	NPDES Permit No. IL 0064254

Dear Mr. Callaway:

Pursuant to Section 35(b) of the Illinois Environmental Protection Act, Midwest Generation (MWG) respectfully submits this application for a Provisional Variance granting relief for the Will County Station, Joliet Station 9 and Joliet Station 29 from the AS 96-10 adjusted thermal standards applicable at the I-55 Bridge in the Lower Des Plaines River that are incorporated into the NPDES permits for the MWG stations listed above. This request is to cover a maximum period of fourteen (14) days period, beginning August 6th, although MWG may not need to utilize the requested relief for each day in the requested 14-day period depending upon relevant receiving stream and weather conditions. The requested provisional variance relief is necessitated due to the continuation of the extremely warm, dry weather conditions and resultant low waterway flows which threaten the ability of these MWG stations to continue to run to provide needed power for increase air conditioning and other human health and safety support functions during this exceptionally challenging summer period. River flows have become increasingly limiting over the past two months, to the extent that they now threaten the continued operation of the MWG stations, even when air temperatures have shown some moderation from the extreme 100 °F days experienced in early July.

The facts and circumstances described in the original MWG provisional variance request (IEPA 12-20) dated July 3, 2012, and extension requests dated July 12, 2012 and July 18, 2012, hereby incorporated by reference, provide relevant background information demonstrating the far-reaching impact of the prolonged extreme weather conditions on the ability to produce power in

this region. With each additional day of hot and/or dry weather and resultant low river flow, the ability to comply with the applicable thermal limits at I-55 becomes more challenging.

Requested Relief:

MWG requests 14 days of provisional variance relief, beginning August 6th. If more favorable weather and river flow conditions occur during the 14-day period of requested variance relief, which would allow MWG to comply with the existing I-55 adjusted thermal limits set forth in the Stations' NPDES permits, it will notify the Agency of those times when the Provisional Variance relief has not been relied upon to maintain compliance with the applicable thermal limits.

The requested terms of the extended Provisional Variance are as follows:

1. **Maximum Temperature Limits**: MWG requests a Provisional Variance for maximum temperature limits which authorizes an increase in the maximum thermal adjusted standard from 93° F to 96° F. (See Provisional Variance, IEPA Docket No. 12-20, dated July 3, 2012, at p. 6, "Conditions" paragraph A)

   As of the time this request is being submitted, the intake water temperatures at the Will County Station are approximately in the range of 84°-85° F, which is well below both the I-55 Bridge adjusted thermal standards and the General Use thermal standards downstream of the I-55 Bridge. This demonstrates that the thermal discharges from the two Midwest Generation electric generating stations located upstream of the Will County Station, which are the Fisk and Crawford Stations, are not currently contributing to or causing any exceedance of the adjusted thermal standards or any General Use thermal standards in the area downstream of the I-55 Bridge. In the event that these thermal conditions upstream of the Will County Station change significantly, Midwest Generation may need to submit a provisional variance request for the Fisk and Crawford Stations.

2. **Excursion Hours**: Due to the continuing adverse weather conditions in 2012, MWG has already exhausted all of its allowable I-55 limit excursion hours for the year. This is an unprecedented situation. Since the I-55 limits have been in effect (per IPCB Opinion and Order, Docket No. AS 96-10, October, 1996), there have never been more than 63 excursion hours used in any given year (out of 175 allowed each calendar year). For example, the table below shows the total number of excursion hours used during the period from 2005 through 2011. MWG's station operations have not appreciably changed over this entire period of time, and in fact operations have been more limited in 2012 than previous years (including the complete shutdown of Joliet Unit 6 for a 16 day period in March, due to abnormally high air and water temperatures and low flows). Hence, this year's use of excursion hours clearly demonstrates the fact that 2012 is an extremely abnormal and challenging year for thermal compliance.

2005-2011 I-55 Excursion Hours Table

Year	Number of Excursion Hours Used
2005	48.75
2006	33.25
2007	12.25
2008	2.5
2009	0
2010	13.25
2011	63

In 2012, 123.25 of the total allowed excursion hours were used during the time period from July 1-July 17, 2012. (The remainder of the 175 allowed excursion hours were used during the abnormally warm conditions encountered this past March). Based on current weather predictions, MWG reasonably expects that the extremely warm, dry weather and low flow conditions in the receiving waters will continue throughout the remainder through August, and likely the rest of the summer. Accordingly, MWG requests that the provisional variance relief include the suspension of the total maximum allowed excursion hours and that MWG not be required to account for any excursion hours used during the requested Provisional Variance period. Otherwise stated, the provisional variance relief should allow the discharges from the MWG stations to exceed temperatures in excess of 91° F at the I-55 Bridge with the requirement to use excursion hours suspended. .

3. Additional Excursion Hours: Upon expiration of the current Provisional Variance extension period, MWG will be left with no permitted excursion hours for use during the remainder of calendar year 2012. Assuming that the abnormal weather conditions which first presented themselves earlier this year will continue, the lack of available excursion hours will severely limit MWG's ability to operate through the remainder of 2012 without severe operating restrictions necessary to keep the I-55 temperature below the lower period limit(s), which are referenced in each station's NPDES permit (Special Condition 5 for Joliet Stations; Special Condition 6 for Will County). Due to the unpredictability of the weather and flow conditions in the subject receiving waters, where flow conditions are controlled by the U.S. Army Corps of Engineers and the weather largely dictates power demand, it is not possible for MWG to predict when additional excursion hours at the downstream I-55 Bridge compliance monitoring location may be needed through the remainder of the year. Maintaining consistent compliance with the permitted lower I-55 temperature adjusted thermal standard (which varies by month or by two-week periods, depending on time of year) without excursion hours is made more difficult here due to the need to model projected temperatures at the I-55 Bridge, located

seven miles downstream of the Joliet Stations' discharges. Because of these conditions that are beyond MWG's control, it is not possible to manage station operations, even at significantly derated levels, in a way which assures continued compliance with the I-55 temperature standards without the ability to use additional excursion hours, when necessary. The changes in river flow or localized weather effects, both of which are beyond MWG's control, can result in one to two degree deviations from the stated limits within a very short period of time.

MWG submits that the use of excursion hours was intended to address situations and conditions like those described above. Certainly, MWG does not purposely try to use excursion hours; they are used for the aforementioned emergency situations only. The allowance for additional excursion hours, when and if the current extreme weather conditions moderate, will allow MWG the ability to plan and regulate its stations' operations in a way which both ensures the provision of needed electricity without causing significant adverse effects on the receiving waters. It simply restores the regulatory status quo for the remainder of the year in recognition of the unforeseen, extreme weather conditions that have occurred in 2012. MWG needs to have excursion hours available for use as needed due to these uncontrollable factors.

Since the I-55 alternate thermal limits are seasonally based, and weather and flow conditions thus far in 2012 have been well outside of the norm, there is the potential for the need for continuing relief in the form of extra excursion hours through the end of the year, and not just solely for the summer period. To that end, MWG will be required to submit another Provisional Variance request for additional excursion hours after the term of the currently requested Provisional Variance expires if weather and river conditions continue to be unfavorable.

Additional Information In Support of Provisional Variance Relief:

Extended period of critical weather and low river flow conditions:

The prolonged hot and dry summer weather pattern is continuing to greatly impact the ability to maintain compliance with the existing thermal standards applicable to the subject MWG generating stations. Since early June, the lack of rainfall and higher than normal air temperatures have created an unprecedented situation. With several weeks of air temperatures at or over 100° F since early July, and the long-range weather forecast calling for continued high temperatures throughout mid-August, MWG's ability to provide needed power under these increasingly adverse circumstances is further jeopardized.

The weather forecast for the current week indicates high air temperatures in the 90's with very little rainfall through most of the PJM area. This forecast also extends out for the next two weeks (See Attachment 1). (It should be noted that the lower forecasted temperatures for the past several days have also turned out to be several degrees lower than actual measured weather

temperatures—this seems to be the norm for this summer's weather forecasts—all under-predicting actual conditions).

River Flow Conditions have reached all time lows in the waterways adjacent to MWG's Joliet and Will County Stations, with flows below 1000 cfs being experienced every day for the past week for 12 hour periods, or longer. These low flows are interspersed with high flow spikes, as the U.S. Army Corps of Engineers (who control the water levels and flow in the Upper Illinois Waterway system) struggle to maintain navigational pool depth for commercial barge traffic under increasingly critical drought conditions (See Attachment 2).

Because MWG relies on forecasted temperatures and actual river flow data to model the predicted temperatures at the I-55 Bridge compliance monitoring location, higher than forecasted temperatures negatively impact MWG's ability to accurately model what the downstream I-55 temperatures will be. With the inability to accurately predict future river flows, which can been seen above as widely fluctuating and often in the single digits, this also creates extremely challenging operating conditions for MWG, which must quickly implement required load adjustments to try to remain in compliance with the applicable temperature limits at all times, while constantly adjusting load according to weather and river conditions which are outside of MWG's control. This constant adjustment in unit loads creates a difficult situation for PJM, which must continue to ensure that adequate power continues to be supplied throughout the region. Under the current I-55 temperature constraints (without any form of variance relief), the ability for MWG to be able to provided committed power resources becomes increasingly uncertain, which puts a strain on other PJM resources in the system. The overall result is an unstable source of power during a time when it is most needed by businesses and communities.

The drought which has plagued the entire Midwestern region is intensifying, which has been the ultimate cause of the prevailing low flow conditions in the waterways (See Attachment 3 for most up-to-date assessment of drought conditions in Illinois and expected outlook).

The National Weather Service has issued several heat advisories over the course of the summer. While none are in effect at this time, it will likely issue more heat advisories if the current weather pattern continues unabated. (See Attachment 4 for most recent weather record broken this summer, along with a summary for the month of July). PJM also has issued several Heat Alerts over the summer period thus far and has implemented Demand Response (*i.e.*, mandatory load reductions by large industrial users, as well as voluntary reductions by residential customers) in an effort to ensure continuing ability to supply needed power to the region. More alerts are likely to be issued should the hot, dry weather persist, especially if existing power suppliers continue to be limited by environmental and/or operational constraints which are not prevalent during a more typical summer. PJM alerts are normally issued only a day ahead of expected high power demand periods, thereby providing little lead time for stations to be prepared to respond—this is another reason that the relief afforded by the requested Provisional Variance is so essential to ensuring an uninterrupted supply of power when it is most needed.

Mitigating Actions Taken by MWG Throughout the Course of the Original Variance Period:

Deratings /Unit Shut Downs During Provisional Variance Period:

Throughout the course of the summer thus far, even with the relief afforded by the July 3, 2012 Provisional Variance (including extensions), the Joliet and Will County units continue to be derated at times to ensure continuing compliance with the applicable thermal limits. Among the mitigating actions which have continued to be taken by MWG to reduce its thermal discharges were the following:

- Joliet Unit 6 was derated from 30% to 40% of its maximum load capability from July 3rd through mid-day on July 7th, at which time MWG started to shut down the unit. Unit 6 was down from late afternoon on July 7th until late in the day on July 9th, when the extreme 100 deg F air temperatures had somewhat moderated. Currently, Unit 6 continues to be load limited during low river flows, even during peak load demand periods, in order to continue to assure continuing compliance with the applicable thermal limits. Over the past several days, Joliet Unit 6 has been limited to only 30% of its maximum output, due to adverse river flow and water temperature conditions.

- Will County, Joliet 9 (Unit 6) and Joliet 29 (Units 7&8) have continued to be held at minimum loads overnight, throughout the summer, to help with downstream river temperature moderation. These stations are only brought up in load in response to PJM power demand needs and the duration of high load periods has been limited as much as possible in an effort to further control discharge temperatures. None of these units have been held at a high load for extended periods of time. From July 6th through mid-day on July 8th, Joliet Units 7&8 were derated down to minimum load in order to minimize downstream temperature increases during the critical weather and flow conditions. Similar deratings have been taken over the past week in response to critical low river flow conditions at all three stations.

- The Joliet 29 cooling towers have been in constant operation since early June and will remain on indefinitely. Continuing equipment and fouling problems caused by the weather and the proliferation of aquatic vegetation in the intake water from the waterway are being managed by station personnel on a 24/7 basis to keep the towers running. Joliet Units 7&8 were derated for a period of time on July 18th due to the compromised efficiency of the towers in providing adequate cooling under high dew point values. This continues to be of concern during hot and humid weather conditions, when the helper towers are most needed.

- Load reductions at all the Will County and Joliet units are taken every evening, down to minimum load in many cases, in an attempt to further moderate downstream water temperatures, even when river conditions are slightly less adverse. Throughout the summer thus far, MWG has continued to regulate the output of the units at the Will County and Joliet Stations, as river and weather conditions dictate, in order to maintain thermal compliance.

As a result of the actions taken by MWG to mitigate in-stream thermal conditions, to date, the maximum I-55 Bridge 96 °F temperature limit allowed by the prior Provisional Variance has not been exceeded. Meeting the I-55 temperature limit of 93 °F, absent the variance relief, would be extremely limiting to station operations, to the extent that one or more units would need to be shut down in order to remain in continuing compliance. (This also assumes that MWG would be allowed to go over the 91 °F lower I-55 limit, because without the relief afforded by the requested variance, no excursion hours are available to allow for any temperatures above 91 deg °F at I-55 for the remainder of the summer. If 91 °F were the maximum limit at I-55, it is unlikely that any of the Joliet units would be able to continue operating under the current and expected weather and flow conditions, and the Will County units would also be greatly impacted. This would result in a loss of approximately 2300 megawatts from the PJM region).

Because of the prolonged period of unusually hot, dry weather, the river intake temperatures are continuing to climb and the capacity of the waterway to dissipate heat continues to be further reduced due to the low flow conditions in the waterways. Higher dew points also continue to compromise the effectiveness of the helper cooling towers at Joliet Station 29. In addition, the extended hot and dry weather is creating unusually high demands for electricity to support human health and safety needs, as well as the many businesses and households which rely on power through the PJM Interconnection.

Consequences of MWG Station Shut-downs/Derates:

To remain in compliance even with the higher in-stream temperature limit allowed by the July 3, 2012 Provisional Variance, MWG has still not been able to supply the full amount of power committed to the PJM system. This reduced supply of power from MWG results in the need for PJM to obtain power from other sources, all of which have been similarly taxed by the widespread heat-wave and drought conditions. While no system emergency has been declared at this time, the amount of available power is continues to be limited within the region by environmental compliance constraints. Accordingly, given these extenuating conditions, MWG is requesting this Provisional Variance to allow it to continue to supply a reduced level of power, while still complying with the terms of this requested relief.

In addition, as discussed in MWG's original Provisional Variance request dated July 3, 2012, there are significant safety and operational risks in shutting a unit down and bringing it back up

again. Therefore, MWG could not continue to operate these stations without such additional safety and operational risks but for the relief afforded by the Provisional Variance,

With the many consecutive days of hot air temperatures in the mid-90's and up to 100°F, little overnight relief, and prolonged drought conditions in Northern Illinois, meeting even the I-55 maximum 96 deg F Provisional Variance maximum has proven to be extremely challenging, notwithstanding the mitigation measures taken by MWG to maintain compliance. As of this writing, the intake temperatures at Joliet Station 6 have gone well over 93 ° F for hours at a time each day, particularly under low river flows, resulting in the need for unit deratings during the most critical, late afternoon power demand periods. River flows are also continually manipulated by the U.S. Army Corps of Engineers, sometimes dropping to zero for many hours at a time without warning. Over the past few weeks, apart from the temporarily higher flows seen during sporadic rainfall events, river flows have become increasingly lower over time and have become the limiting factor which impacts the ability of MWG's stations to continue to provide an uninterrupted source of power into the grid.

The long range forecast is showing air temperatures for most of Illinois up to 5 deg F above normal for this time of year. Drought conditions are expected to continue and worsen, which is resulting in devastating consequences for agricultural, as well as residential, resources.

There has been no appreciable rainfall in the entire Northern Illinois area for several weeks, leading to extremely low river flows and arid conditions. With air temperatures predicted to stay well above normal through mid-August and possibly longer, the demand for electricity to support human health and safety needs will increase, along with the physical constraints and limitations on power production and distribution brought about by these same extreme weather and flow conditions.

On-Going Assessment of Any Potential Adverse Impacts:

Since the first time the 93°F temperature at the I-55 Bridge was exceeded on July 5th, the required four time/day observations of the Will County, Joliet 9 and 29 discharges, as well as the I-55 location have been performed as required by the terms of the Provisional Variance. These observations have continued through the current Provisional Variance extension period. None of the observations have indicated any adverse impacts on aquatic life in the Chicago Sanitary and Ship Canal and Lower Des Plaines River. Based on consultation with MWG's aquatic biology expert at EA Engineering, Mr. Greg Seegert, the requested extended Provisional Variance relief is not reasonably expected to cause mortality or any long-term negative impacts to the aquatic community.

In addition to continuing to perform these 4x/day visual observations for potential thermal-related impacts, MWG also has its biological consultants performing routine fisheries monitoring program in the Chicago Sanitary and Ship Canal near Will County Station, and in the Lower Des Plaines River from Brandon Lock and Dam down past the I-55 Bridge. A copy of a map

showing the locations of the fisheries monitoring program, which are each assigned a number on the map, is attached. (See Attachment 5) MWG's biological consultants completed their routine fisheries monitoring work during the week of July 8th. They did not observe any indications of any permanent adverse impacts from the warmer than normal waterway conditions. In fact, their expert observations confirmed that there are still thermal refugia available for the resident fish community as lower temperatures (below 85°F) were reported within tributary mouth and backwater (e.g., (*e.g.*, 26.6° C/79.9 °F, 27.5° C/81.5 °F and 29.0° C/84.2 °F at Locations 304, 414, and 418, respectively). Similarly, the report from the fish monitoring work done the week of July 23rd showed no adverse impacts that could be attributed to MWG's operations. As previously stated, if there are any adverse impacts noted during this monitoring program, for fish or other aquatic organisms or plants, it will be documented and immediately reported to the Agency.

MWG also has a long-term temperature and dissolved oxygen monitoring program in place at the I-55 Bridge, with continuous monitoring equipment from May through September of each year. This data is downloaded on a weekly basis, so there is current data available for review to determine if dissolved oxygen levels remain adequate for aquatic life. During the entire month of July, which had some of the warmest temperatures on record, there were no dissolved oxygen levels measured at the I-55 Bridge which would be considered adverse to aquatic life. During the routine fisheries monitoring work performed for MWG during the week of July 8th and July 23rd, the dissolved oxygen readings were consistent with previous years' fisheries monitoring results. (There were two low D.O. readings in the Lockport pool, but these are attributable to the CSO event which occurred in the waterway following the short-term heavy rain event on July 24th).

Further, there are many state and federal agencies with sampling crews on these waterways, including IDNR and USFWS personnel, performing Asian Carp monitoring activities, so there are additional trained observers in the field that can also report any unusual findings that could be associated with heat impacts. To-date, there have been no reports of any adverse findings which could be associated with higher water temperatures.

I-55 Temperatures:

The I-55 water temperatures were over 93 deg F from the late evening on July 5th and continuing through mid-afternoon on July 8th. I-55 temperature peaked at 95.8 deg F for a very brief period of time on July 6th. I-55 temperatures declined to below 93 deg F by early morning on July 8th. The I -55 temperatures again exceeded 93 deg F on July 16th - 19th for a brief period of time. After a brief period of respite afforded by much needed, although short-lived, rainfall events on July 18th, 19th, July 24th and July 26th, I-55 temperatures again went over 91 deg F on July 31st, as the result of low flow and high air temperatures. This occurred despite MWG's on-going efforts

to control station discharge temperatures by continually manipulating unit loads in response to changing waterway conditions.

All available I-55 excursion hours (123.25) were expended by the afternoon of July 17, 2012.

Current I-55 temperature (8/2/2012 at 11:00 am): 89.5 deg F and increasing, and is expected to go over 93 deg F later today. Yesterday's high I-55 temperature was 92.2 deg F. Similar I-55 temperatures are predicted for the next several days, due to the combination of low river flows and high daily air temperatures and higher humidity. This pattern will likely continue through the rest of the summer, as will the high demand for electricity to support residential and commercial uses.

The MWG generating stations subject to this Provisional Variance request will remain in compliance with the more lenient near-field Secondary Contact thermal standards, and hence, will not be negatively impacting the aquatic life in the waterways immediately adjacent to their discharges. As previously stated in MWG's July 3, 2012 Provisional Variance request, prior thermal studies conducted on the station discharges have shown that the thermal plumes from these stations allow a zone of passage and do not extend from the surface to the bottom of the river, thereby providing additional refugia for the indigenous aquatic community.

Should any adverse thermal impacts associated with the water temperature limit requested by this extension of the Provisional Variance be observed, MWG will immediately take whatever minimization/mitigation actions are required to address these impacts.

Continuing Compliance with Provisional Variance:

MWG has complied with the conditions of the July 3, 2012 Provisional Variance (including all extensions thereof). No adverse impacts associated with MWG's discharges have been noted during the course of the required daily monitoring of the waterway. A full report of observational results will be provided to the Agency and Illinois DNR by August 16th, 2012, in accordance with the requirements set forth in IEPA 12-20.

Prior 2012 Provisional Variance Requests:

The MWG stations which are the subject of this request have not been granted any Provisional Variances within the calendar year other than the July 3, 2012 Provisional Variance (IEPA 12-20), as extended through August 5th, 2012.

Other Board Orders and Pending Matters:

There has been no change in the previously reported Board Orders and pending matters as stated in the July 3, 2012 Provisional Variance request and subsequent extensions.

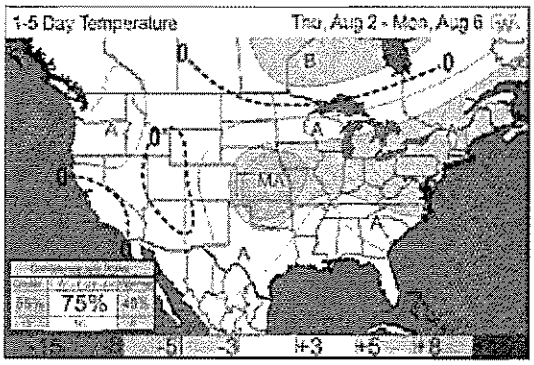
Midwest Generation sincerely appreciates the Illinois EPA's expedited efforts to review and respond to this request for thermal Provisional Variance relief. If you have any questions or require any additional information, please contact Julia Wozniak of my staff at 630 771-7880 (office) / 312 925-3184 (cell)

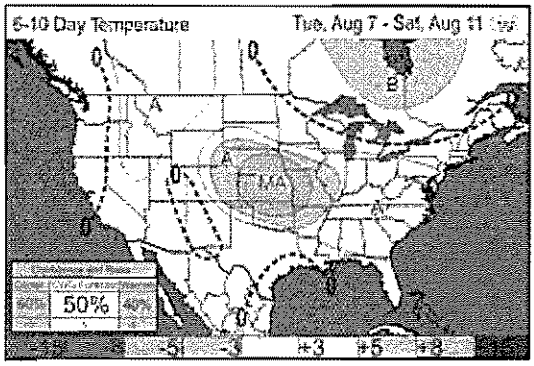
Sincerely,

Basil G. Constantelos
Managing Director, Environmental Services
Midwest Generation EME, LLC

ATTACHMENT #1: —Long Range Weather Forecast Maps

Extended Forecast showing air temperatures well above normal are expected to continue through mid-August:

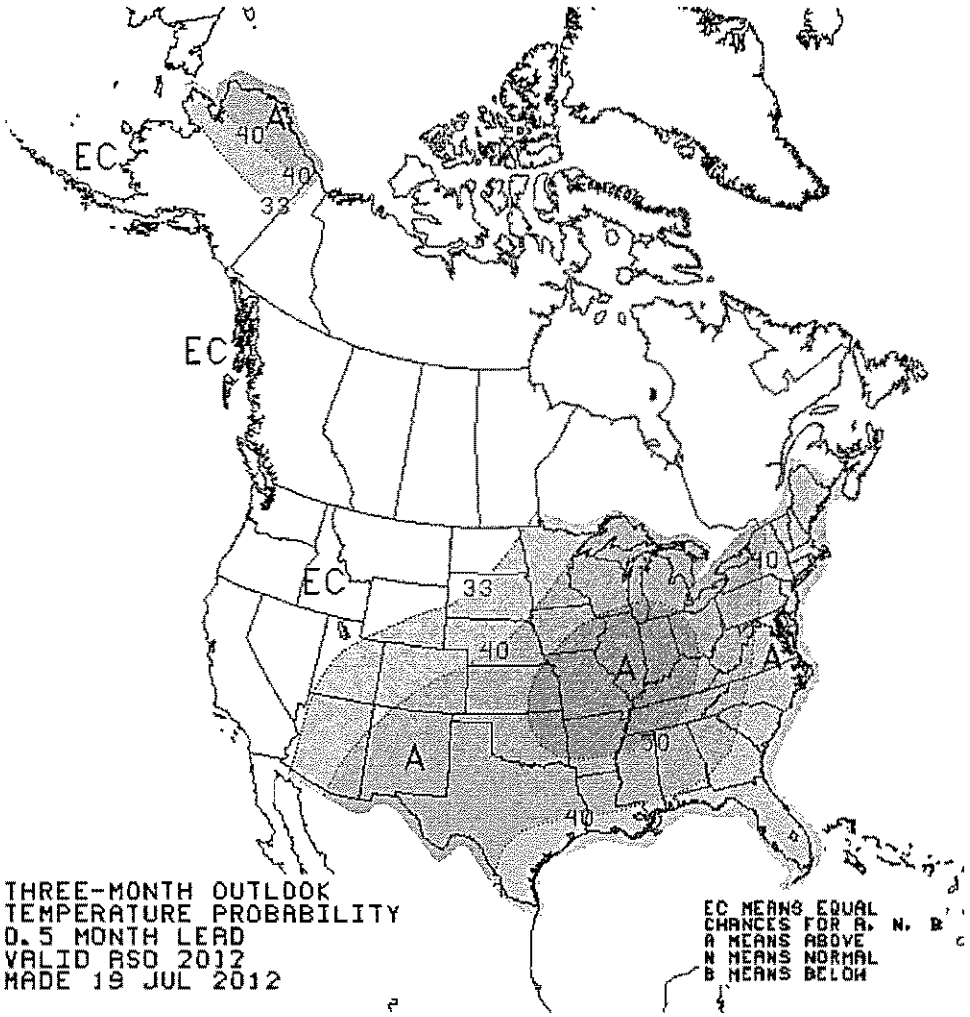


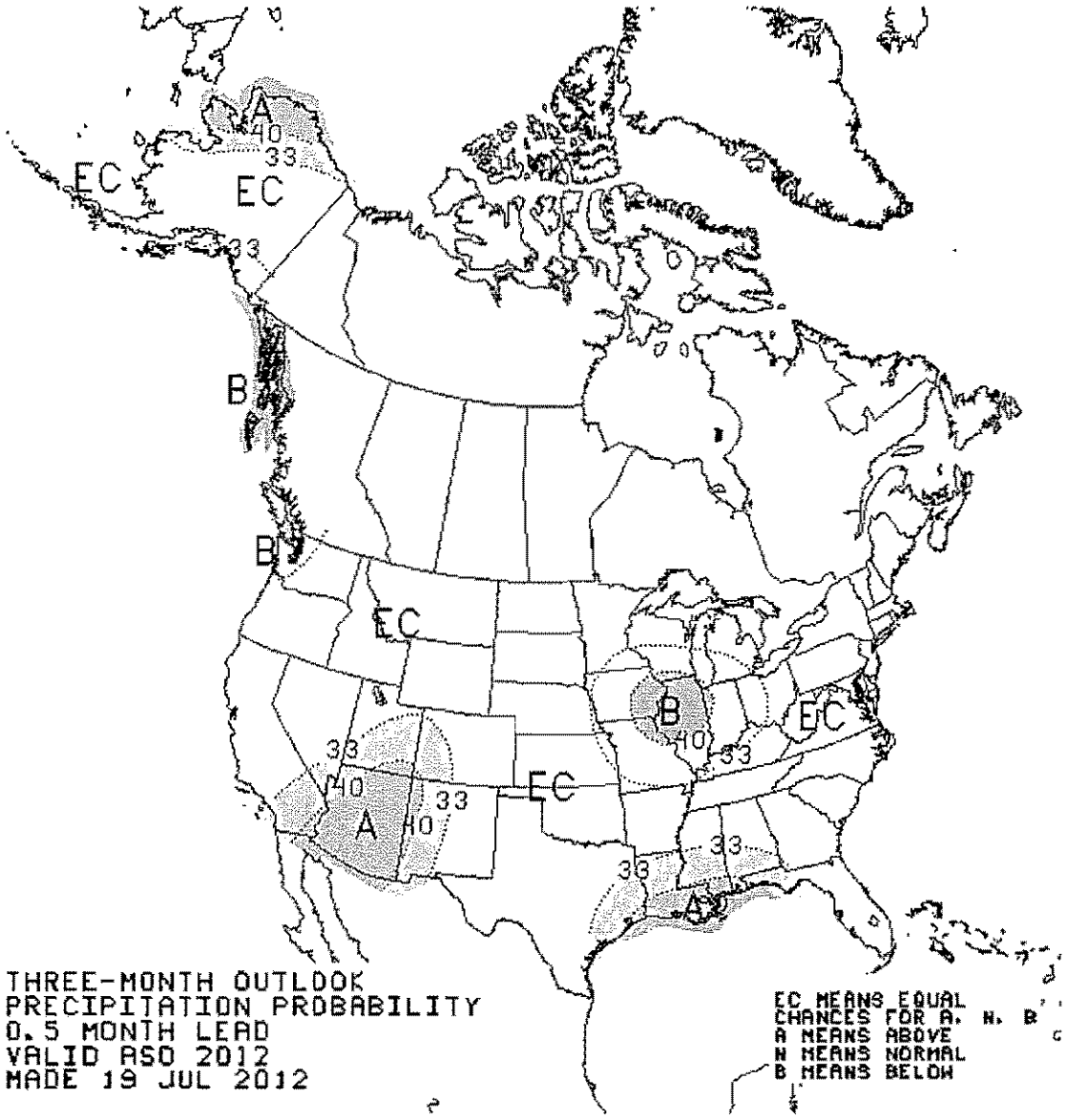


ATTACHMENT #1: —Long Range Weather Forecast Maps

NWS OFFICIAL Forecasts

Aug-Sep-Oct 2012




A
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EC
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B
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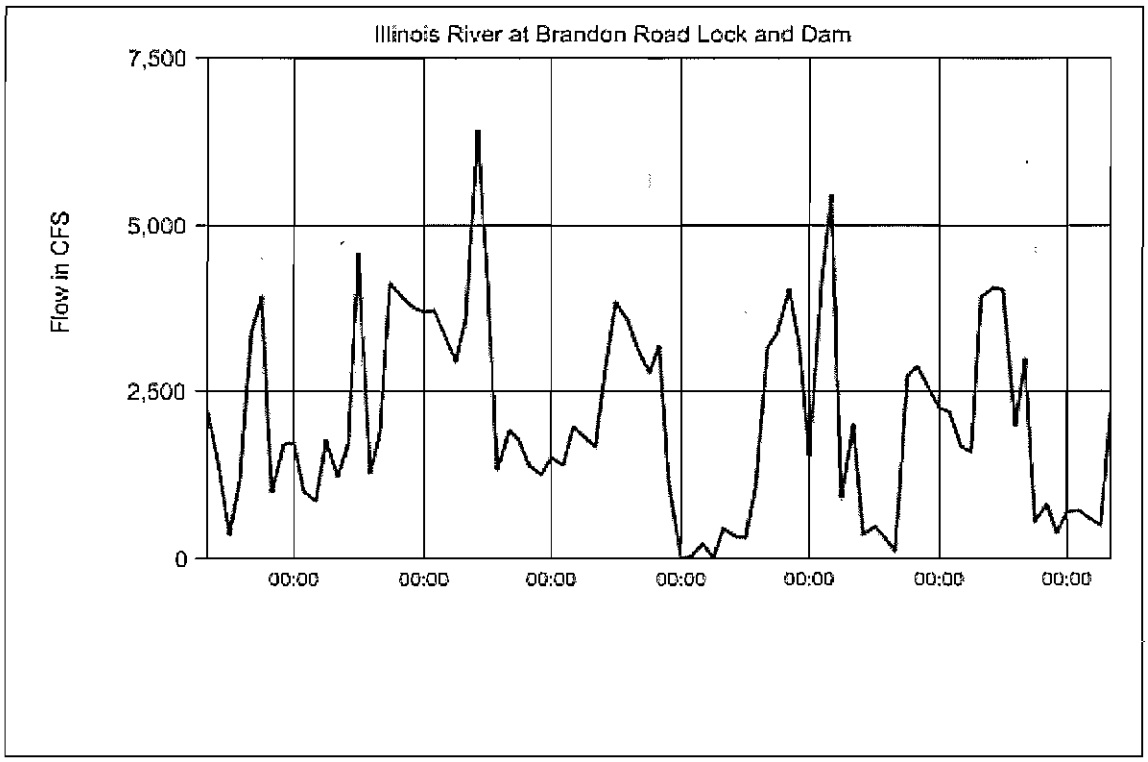
33
33
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID ASO 2012
MADE 19 JUL 2012
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

ATTACHMENT #2: Low River Flow Conditions

River Flow Upstream of Joliet Stations:

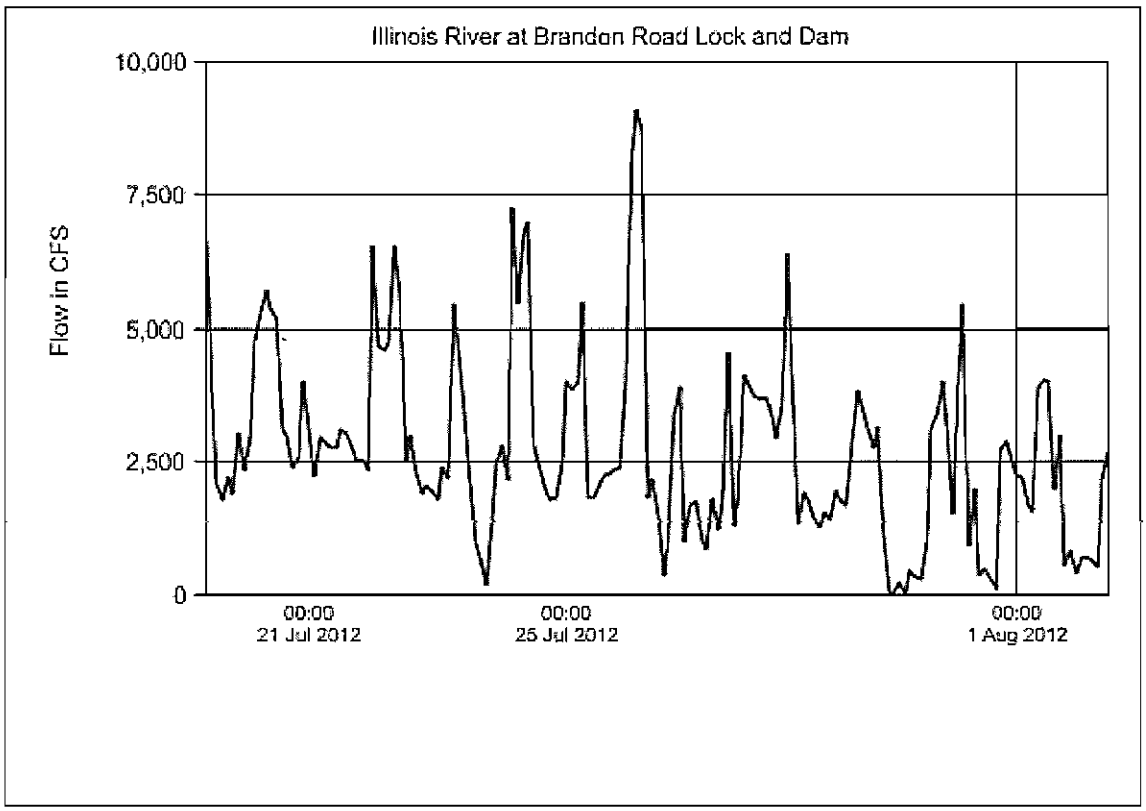


(graph range: July 27-August 2)

ATTACHMENT #2: Low River Flow Conditions

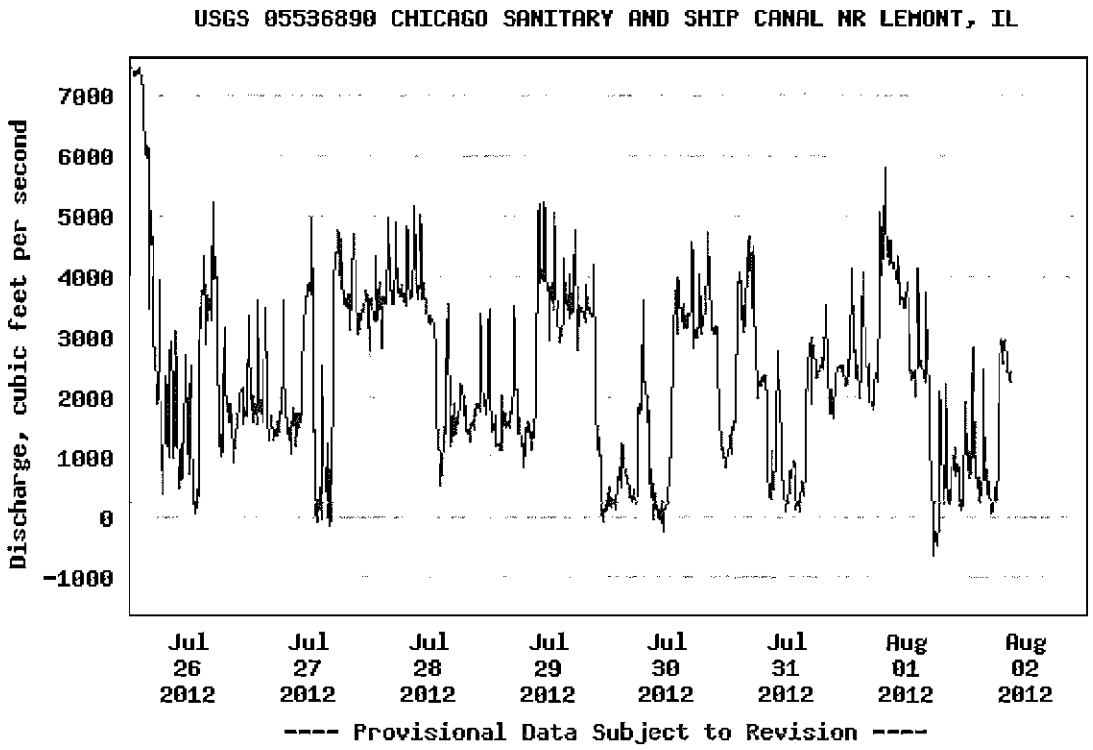
River Flow Upstream of Joliet Stations:

Note steadily falling flow trend over the past two weeks:



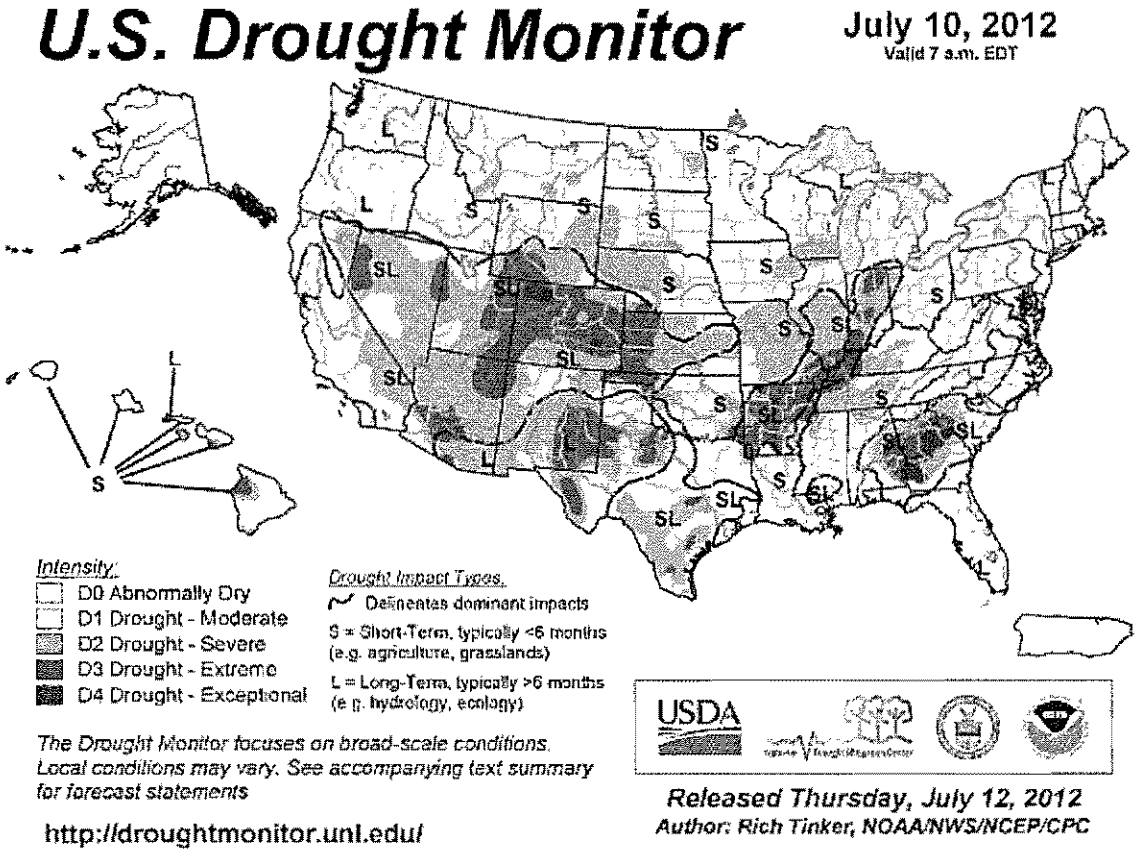
ATTACHMENT #2: Low River Flow Conditions

Canal Flow Upstream of Will County Station:



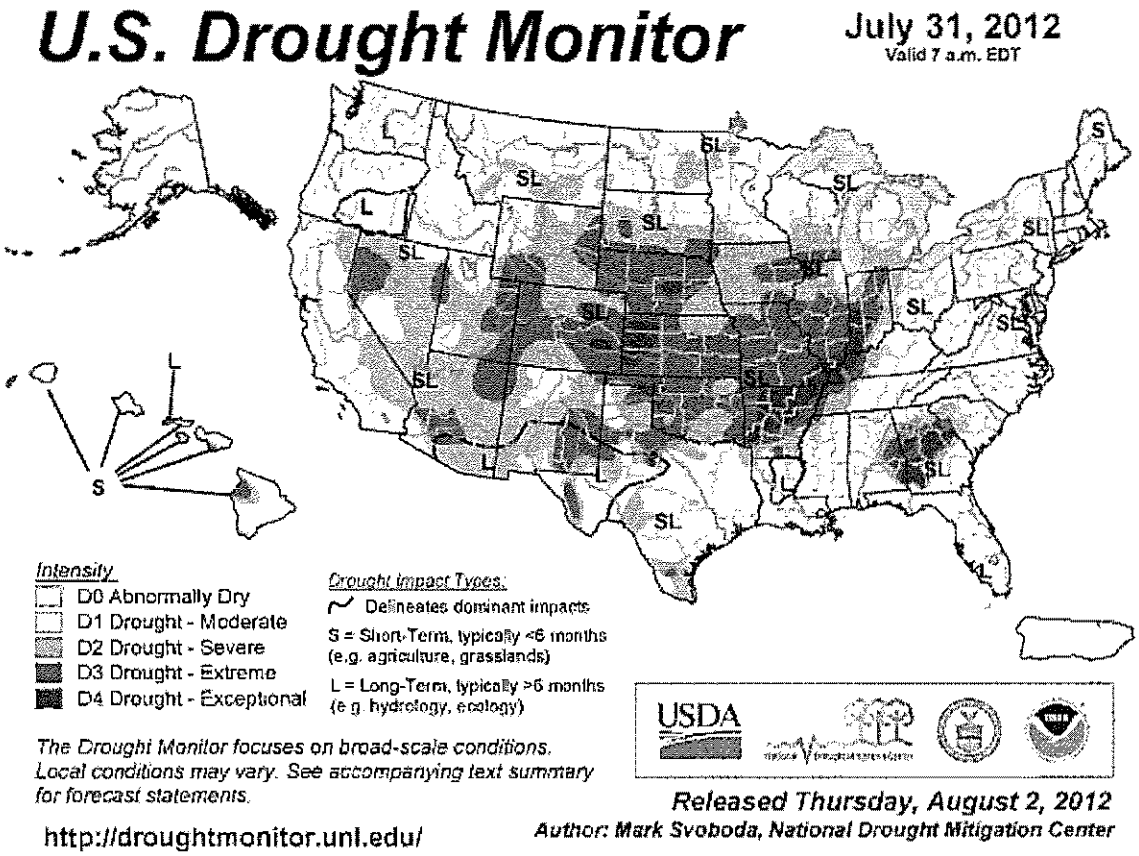
ATTACHMENT #3: Drought Information

PREVIOUS CONDITIONS (early July, 2012):



ATTACHMENT #3: Drought Information

CURRENT CONDITIONS (early August, 2012):



DROUGHT INFORMATION STATEMENT
NATIONAL WEATHER SERVICE CHICAGO IL
344 PM CDT FRI JUL 27 2012 /444 PM EDT FRI JUL 27 2012/

...EXTREME DROUGHT EXPANDS TO PORTIONS OF CENTRAL AND NORTH CENTRAL ILLINOIS...

...SEVERE DROUGHT FOR MUCH OF THE REMAINDER OF NORTHERN ILLINOIS AND NORTHWEST INDIANA...

ATTACHMENT #3: Drought Information

SYNOPSIS...

DROUGHT CONDITIONS CONTINUE TO WORSEN OVER NORTHERN ILLINOIS AND NORTHWEST INDIANA DUE TO LARGE RAINFALL DEFICITS FOR THE CALENDAR YEAR AND FOR THE WATER YEAR DATING BACK TO OCTOBER 2011. THIS HAS BEEN COUPLED WITH MULTIPLE BOUTS OF EXTREME HEAT SINCE LATE MAY. ACCORDING TO THE JULY 24 ISSUANCE OF THE U.S DROUGHT MONITOR...EXTREME DROUGHT CONDITIONS HAVE DEVELOPED ACROSS CENTRAL

ILLINOIS AND PORTIONS OF NORTH CENTRAL ILLINOIS. ELSEWHERE...SEVERE DROUGHT CONDITIONS CONTINUE ACROSS MOST OF NORTHEASTERN ILLINOIS AND NORTHWESTERN INDIANA. THE ONLY EXCEPTION TO THIS IS A SMALL AREA ACROSS SOUTHERN COOK...DUPAGE...WILL...AND KANKAKEE COUNTIES IN ILLINOIS AND LAKE AND PORTER COUNTIES IN INDIANA...WHERE MODERATE DROUGHT CONDITIONS CONTINUE.

LOCAL AREA AFFECTED...

THE FOLLOWING COUNTIES ARE INCLUDED IN THE LATEST DROUGHT MONITOR:

* EXTREME DROUGHT /D3/ -- WINNEBAGO...OGLE AND LEE COUNTIES IN NORTH CENTRAL ILLINOIS AND SMALL PORTIONS OF SOUTHERN LIVINGSTON AND FORD COUNTIES IN CENTRAL ILLINOIS.

* SEVERE DROUGHT /D2/ -- IN ILLINOIS...BOONE...MCHENRY...LAKE... DEKALB...KANE...KENDALL...GRUNDY...LA SALLE...LIVINGSTON...FAR NORTHWESTERN DUPAGE...FORD...NORTHERN COOK...SOUTHERN IROQUOIS.

  IN INDIANA...BENTON...JASPER...SOUTHERN NEWTON...FAR SOUTHEASTERN PORTER.

* MODERATE DROUGHT /D1/ -- IN ILLINOIS...COOK...DUPAGE...KANKAKEE... WILL...NORTHERN IROQUOIS.

  IN INDIANA...LAKE...PORTER AND FAR NORTHERN NEWTON.

ATTACHMENT #3: Drought Information

SUMMARY OF IMPACTS...

* STATE/LOCAL GOVERNMENT ACTIONS -- DUE THE CONTINUED DRY CONDITIONS...IN MID JULY...THE INDIANA DEPARTMENT OF HOMELAND SECURITY AND DEPARTMENT OF NATURAL RESOURCES ISSUED A WATER SHORTAGE WARNING FOR THE ENTIRE STATE. IN THE JULY 24TH MEETING OF THE ILLINOIS DROUGHT RESPONSE TASK FORCE...THE ILLINOIS EPA ELGIN REGION...RESPONSIBLE FOR NORTHEASTERN ILLINOIS...REPORTED EXTREMELY HIGH WATER DEMAND IN MANY AREA WATER SUPPLIES AND ASKED THAT WATER SYSTEMS WHICH HAVE NOT YET EMPLOYED MANDATORY WATER CONSERVATION MEASURES TO DO SO. FURTHERMORE...MANY LOCAL GOVERNMENTS ARE REQUESTING RESIDENTS TO CONSERVE USE OF OUTSIDE WATERING...WITH SOME COMMUNITIES IMPOSING AND ENFORCING EMERGENCY STRICTER OUTDOOR WATER RESTRICTIONS LIMITING WATERING TO MORNINGS OR EVENINGS EVERY OTHER DAY. IN PARTICULAR...ON JULY 23RD...THE CITY OF ROCKFORD ILLINOIS IMPOSED VOLUNTARY OUTDOOR WATERING RESTRICTIONS TO CERTAIN DAYS AND CERTAIN HOURS. THE LAST TIME ROCKFORD IMPOSED WATER RESTRICTIONS WAS DURING THE 1988 DROUGHT. IF CONDITIONS BECOME MORE SEVERE IN AREAS CURRENTLY WITH WATER RESTRICTIONS...OUTSIDE WATER USAGE MAY BE SUBJECT TO TOTAL BANS. ADDITIONALLY...ON JULY 25...INDIANA LIUETENANT GOVERNOR BECKY SKILLMAN REQUESTED THAT THE US DEPARTMENT OF AGRICULTURE (USDA) DECLARE ALL COUNTIES IN INDIANA AS NATURAL DISASTER AREAS. THIS DESIGNATION WOULD MAKE FARMERS IN ALL 92 INDIANA COUNTIES ELIGIBLE TO APPLY FOR ASSISTANCE DUE TO LOSSES CAUSED BY THE DROUGHT.

* SOIL MOISTURE CONDITIONS -- CURRENT ANALYSIS FROM THE MIDWESTERN REGIONAL CLIMATE CENTER IN CHAMPAIGN INDICATES THAT WATER CONTENT IN THE TOP 4 INCHES OF SOIL...AS OF JULY 26...RANGED FROM A LOW OF AROUND 0.2 INCHES IN FORD COUNTY UP TO AROUND 0.7 INCHES IN PORTER COUNTY INDIANA.

* AGRICULTURAL IMPACTS -- ACCORDING TO THE JULY 23 SUMMARY FROM THE NATIONAL AGRICULTURAL STATISTICS SERVICE...66 PERCENT OF THE CORN CROP ACROSS ILLINOIS AND 71 PERCENT OF THE CORN CROP ACROSS INDIANA...IS CONSIDERED TO BE IN POOR OR VERY POOR CONDITION. 87 PERCENT OF THE SOYBEAN CROP ACROSS ILLINOIS AND 88 PERCENT OF THE SOYBEAN CROP ACROSS INDIANA...IS CONSIDERED TO BE IN FAIR CONDITION OR WORSE. LASTLY...91 PERCENT OF THE PASTURE AND RANGES FOR LIVESTOCK ACROSS ILLINOIS AND 89 PERCENT OF THE PASTURE AND RANGES FOR LIVESTOCK ACROSS INDIANA ARE CONSIDERED TO BE IN POOR OR VERY POOR CONDITION. TOPSOIL CONDITIONS ACROSS NORTHERN ILLINOIS AND INDIANA ARE GENERALLY CONSIDERED TO BE VERY SHORT OF MOISTURE...WITH PRIMARILY LESS THAN 5 PERCENT OF FARM FIELDS CONSIDERED TO HAVE ADEQUATE TOPSOIL MOISTURE.

ATTACHMENT #3: Drought Information

AGRICULTURAL FARM BUREAUS ACROSS THE AREA ARE REPORTING A RANGE OF IMPACTS ON FARMS...FROM DROUGHT STRESS BEGINNING TO SHOW...TO CROP DAMAGE ONGOING...TO TOTAL CORN CROP LOSS IN SOME OF THE HARDEST HIT AREAS. THOUGH SOME FARMS IN FAR NORTHERN ILLINOIS SAW SOME RELIEF IN THE LAST 2 WEEKS...MUCH OF IT CAME TOO LATE TO SAVE THE CORN CROPS...WITH YIELDS WHERE THE CROP HAS NOT BEEN LOST EXPECTED TO BE BELOW TO MUCH BELOW AVERAGE. IN CENTRAL ILLINOIS...WHERE THERE HAS BEEN MUCH LESS RAIN IN THE LAST 2 WEEKS...CORN YIELDS ON MANY FARMS ARE EXPECTED TO BE AT FAR BELOW AVERAGE TO DISASTROUS LEVELS. THERE IS SOME HOPE FOR CLOSE TO AVERAGE SOY BEAN YIELDS IN PORTIONS OF NORTHERN ILLINOIS...THOUGH IN CENTRAL ILLINOIS...YIELDS ARE EXPECTED TO BE WELL BELOW AVERAGE. IN MANY AREAS...THE CURRENT DROUGHT IS ALREADY BEING SEEN AS WORSE THAN THE DAMAGING 1988 DROUGHT.

* FIRE IMPACTS -- THE EXTREMELY DRY CONDITIONS ACROSS THE AREA HAVE RESULTED IN A MUCH GREATER FIRE WEATHER RISK THAN IS TYPICAL FOR LATE JULY...WITH LOW AFTERNOON RELATIVE HUMIDITY AND VERY LOW FUEL MOISTURE IN MANY LOCATIONS. THE CURRENT KEETCH-BYRAM DROUGHT INDEX...A DROUGHT INDEX SPECIFICALLY RELATED TO FIRE POTENTIAL...INDICATES MODERATE TO HIGH FIRE POTENTIAL ACROSS NORTHERN ILLINOIS AND NORTHWEST INDIANA...WHICH MEANS THE GROUND COVER IS DRY AND WILL BURN READILY.

ON JULY 10...THE PREDICTIVE SERVICES OF THE NATIONAL INTERAGENCY FIRE CENTER POSTED A FUELS AND FIRE BEHAVIOR ADVISORY FOR ALL OF NORTHERN ILLINOIS AND INDIANA DUE TO THE WORSENING DROUGHT...FOR VERY DRY FINE AND LARGE FUELS AND ELEVATED SIGNIFICANT FIRE POTENTIAL. ACCORDING TO THE ADVISORY...ELEVATED FIRE POTENTIAL AND PROBLEMATIC FIRE BEHAVIOR SHOULD BE EXPECTED AND PLANNED FOR...WITH ANY PERIODS OF DRY AND WINDY WEATHER LEADING TO INCREASED SIGNIFICANT FIRE POTENTIAL. SPECIFICALLY...GRASSES ACROSS THE AREA HAVE BECOME EXTREMELY DRY DUE TO THE LACK OF RAIN...MAKING FINE FUELS RECEPTIVE TO IGNITION. THE MOISTURE BEING WELL BELOW AVERAGE IN LARGER FUELS ALSO MEANS THAT THESE LARGER FUELS COULD BECOME INVOLVED IN ANY IGNITIONS. THIS ADVISORY REMAINS IN EFFECT AS OF JULY 26TH.

SOME COMMUNITIES...AS WELL AS MOST STATE PARKS...IN NORTHERN ILLINOIS AND NORTHWEST INDIANA HAVE ALREADY POSTED BURN BANS THAT PROHIBIT ANY OPEN BURNING. FURTHERMORE... JASPER COUNTY IN INDIANA HAS CONTINUED WITH A COUNTYWIDE BURN BAN. RESIDENTS ARE URGED TO CONSULT LOCAL AUTHORITIES BEFORE BURNING...AS WELL AS BEING CAUTIOUS WITH CIGARETTES...MATCHES AND OTHER OPEN FLAMES OR ACTIVITIES THAT COULD CREATE SPARKS.

ATTACHMENT #3: Drought Information

CLIMATE SUMMARY...

THE MONTH OF JUNE ENDED UP BEING EXTREMELY DRY ACROSS MOST OF THE REGION...WITH MANY PLACES ONLY RECEIVING BETWEEN 15 AND 50 PERCENT OF THEIR NORMAL RAINFALL. THE DRIEST AREAS WERE ACROSS FAR NORTHERN ILLINOIS...WHERE JUNE PRECIPITATION AT ROCKFORD AND AT CHICAGO TOTALED 0.66 AND 0.90 INCHES...RESPECTIVELY. NORMAL PRECIPITATION DURING JUNE FOR ROCKFORD IS 4.65 INCHES...WHILE IN CHICAGO IT IS 3.45.

THE EXTENT OF THE DRYNESS DURING JUNE AND THE FIRST HALF OF JULY...WHICH IS CLIMATOLOGICALLY THE WETTEST PERIODS DURING THE YEAR...HAS ALSO RESULTED IN CALENDAR YEAR PRECIPITATION ACROSS THE AREA TO CONTINUE TO FALL WELL BELOW AVERAGE. CALENDAR YEAR PRECIPITATION NOW RANGES BETWEEN AROUND 50 TO 80 PERCENT OF NORMAL ACROSS NORTHERN ILLINOIS AND NORTHWEST INDIANA.

IN SPITE OF THESE EXTREMELY DRY CONDITIONS...RAINFALL OVER THE PAST TWO WEEKS HAS BEEN MUCH HIGHER THEN RECENT WEEKS ACROSS PORTIONS OF NORTHEASTERN ILLINOIS AND NORTHWEST INDIANA. A MORE ACTIVE WEATHER PATTERN SET UP AND ALLOWED FOR A FEW COMPLEXES OF THUNDERSTORMS TO AFFECT PORTIONS OF THE REGION. RAINFALL AMOUNTS DURING THE PERIOD OF JULY 18TH THROUGH THE 25TH HAS ADDED UP TO 1 TO 2 INCHES ACROSS MOST OF NORTH CENTRAL AND NORTHEASTERN ILLINOIS AND NORTHWESTERN INDIANA. UNFORTUNATELY...HOWEVER...THESE RAINFALL AMOUNTS DROPPED OFF QUICKLY TO THE SOUTH TOWARDS CENTRAL SECTIONS OF ILLINOIS...WHERE TWO WEEK RAINFALL AMOUNTS WERE GENERALLY AROUND A HALF INCH OR LESS.

HERE ARE SOME RAINFALL STATISTICS THROUGH JULY 19 FOR SELECTED CITIES SHOWING THE AMOUNT OF PRECIPITATION RECORDED AND THE PERCENT OF NORMAL.

LOCATION	YEARLY PCPN JAN-JUL 25 2012	SUMMER PCPN JUN 1-JUL 25 2012
	TOTAL PCT	TOTAL PCT
CHICAGO-OHARE	15.87 / (82%)	3.65 / (58%)
ROCKFORD	12.97 / (64%)	2.59 / (33%)
ROMEOVILLE	16.10 / (71%)	3.73 / (46%)
VALPARAISO 5NNE	16.78 / (73%)	6.66 / (80%)
PONTIAC	11.78 / (57%)	3.29 / (47%)
KANKAKEE	17.64 / (78%)	8.48 / (94%)
RENSSELAER	16.51 / (73%)	4.93/ (64%)
PAW PAW 2NW	11.06 / (54%)	3.33 / (43%)
PAXTON 2WSW	11.32 / (52%)	2.40 / (32%)

ATTACHMENT #3: Drought Information

PRECIPITATION/TEMPERATURE OUTLOOK...

THERE WILL BE A COUPLE OF CHANCES FOR RAINFALL OVER THE NEXT WEEK AS THE AREA REMAINS IN A MORE ACTIVE WEATHER PATTERN. UNFORTUNATELY...RAINFALL AMOUNTS WITH THIS ACTIVITY DO NOT APPEAR TO BE ENOUGH TO BREAK THE ONGOING DROUGHT CONDITIONS.

THE 90 DAY OUTLOOK FOR AUGUST THROUGH OCTOBER CALLS FOR ENHANCED CHANCES FOR ABOVE AVERAGE TEMPERATURES AND ENHANCED CHANCES FOR BELOW AVERAGE PRECIPITATION.

THE SEASONAL DROUGHT OUTLOOK...ISSUED JULY 19 AND VALID THROUGH THE END OF THE OCTOBER...CALLS FOR THE DROUGHT TO PERSIST OR INTENSIFY OVER ALL OF NORTHERN ILLINOIS AND NORTHWEST INDIANA.

HYDROLOGIC SUMMARY AND OUTLOOK...

A SWATH OF 1 TO 3 INCH RAINFALL OCCURRED DURING THE JULY 18-19 TIME FRAME WITHIN PORTIONS OF MCHENRY...LAKE...AND COOKS COUNTIES IN ILLINOIS AND LAKE AND PORTER COUNTIES IN INDIANA. THIS RESULTED IN SOME LOCATIONS IN THE SMALLER WATERSHEDS IN THOSE AREAS EXPERIENCING AN INCREASE IN STREAMFLOW. ELSEWHERE...MOST OTHER LOCATIONS CONTINUED TO INDICATE BELOW NORMAL STREAMFLOW.

WATER LEVELS ON AREA STREAMS ARE FORECAST TO CONTINUE A SLOW FALL OVER THE NEXT 7 DAYS. AT THE PRESENT TIME...ANY RAINFALL EXPECTED IN THE SHORT TERM WILL LIKELY BE ISOLATED AND THEREFORE NOT RESULT IN ANY SIGNIFICANT INCREASES IN STREAMFLOW...ESPECIALLY WITHIN THE LARGER WATERSHEDS.

ATTACHMENT #3: Drought Information

THE FOLLOWING TABLE INDICATES STREAMFLOW IN CUBIC FEET/SECOND (CFS) FOR SELECTED LOCATIONS COMPARED TO THE LONG TERM MEDIAN AS OF JULY 25 AS REPORTED BY THE US GEOLOGICAL SURVEY:

LOCATION	STREAMFLOW (CFS)	MEDIAN (CFS)
DES PLAINES R		
GURNEE IL1672		
FOX RIVER		
MONTGOMERY IL372759		
DAYTON IL	426	785
IROQUOIS RIVER		
CHEBANSE IL56380		
KANKAKEE RIVER		
SHELBY IN5331019		
WILMINGTON IL	686	2039
ILLINOIS RIVER		
MARSEILLES IL	996	7900
PECATONICA RIVER		
SHIRLAND IL	829	1100
ROCK RIVER		
ROCKTON IL	1540	2550
BYRON IL 20704850		
VERMILION RIVER		
PONTIAC IL	4.9	65
LEONORE IL	12	152

AT THE END OF JUNE...SHALLOW GROUNDWATER LEVELS IN NORTHEAST ILLINOIS WERE REPORTED NEAR NORMAL TO 2 FEET BELOW NORMAL COMPARED TO A 15 YEAR AVERAGE.

USGS GROUNDWATER LEVELS IN LEE COUNTY ARE NEAR OR BELOW THE LOWEST MEDIAN JULY LEVELS REPORTED SINCE RECORDING BEGAN IN 1992.

NEXT ISSUANCE DATE...
THIS PRODUCT WILL BE UPDATED ON AUGUST 3RD OR SOONER IF NECESSARY IN RESPONSE TO SIGNIFICANT CHANGES IN CONDITIONS.

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ACKNOWLEDGMENTS...
THE DROUGHT MONITOR IS A MULTI-AGENCY EFFORT INVOLVING NOAA/S NATIONAL WEATHER SERVICE AND NATIONAL CLIMATIC DATA CENTER...THE USDA...STATE AND REGIONAL CENTER CLIMATOLOGISTS AND THE NATIONAL DROUGHT MITIGATION CENTER. INFORMATION FOR THIS STATEMENT HAS BEEN GATHERED FROM NWS AND FAA OBSERVATION SITES...STATE COOPERATIVE EXTENSION SERVICES...THE USDA...USACE AND USGS.

QUESTIONS OR COMMENTS...
IF YOU HAVE ANY QUESTIONS OR COMMENTS ABOUT THIS DROUGHT INFORMATION STATEMENT...PLEASE CONTACT...

NATIONAL WEATHER SERVICE
333 W UNIVERSITY DRIVE
ROMEOVILLE IL 60446
PHONE...815-834-0600
LOT.WEBMASTER@NOAA.GOV

ATTACHMENT #4: National Weather Service Records Broken in July

Most Recent National Weather Service Record Report

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000
SXUS73 KLOT 240645
RERORD

RECORD EVENT REPORT
NATIONAL WEATHER SERVICE CHICAGO IL
145 AM CDT SAT JUL 24 2012

...RECORD HIGH MINIMUM TEMPERATURE SET AT CHICAGO-OHARE IL
YESTERDAY...

A RECORD HIGHEST MINIMUM TEMPERATURE OF 81 DEGREES WAS SET AT
CHICAGO-OHARE IL ON MONDAY. THIS BREAKS THE OLD RECORD OF 78 SET
IN 1965.
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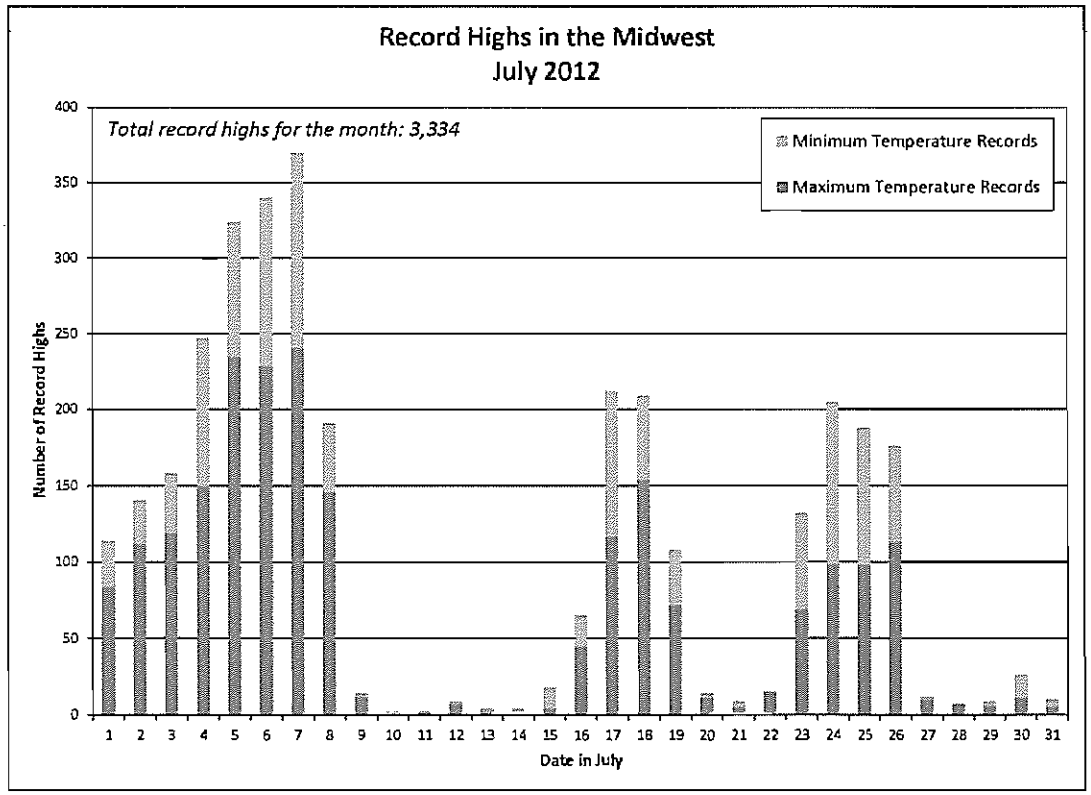

Source: Midwestern Regional Climate Center. http://mrcc.isws.illinois.edu/cliwatch/1207/week4.htm

ATTACHMENT #5: MWG Fish Monitoring Locations in the Chicago Sanitary and Ship Canal and Lower Des Plaines River

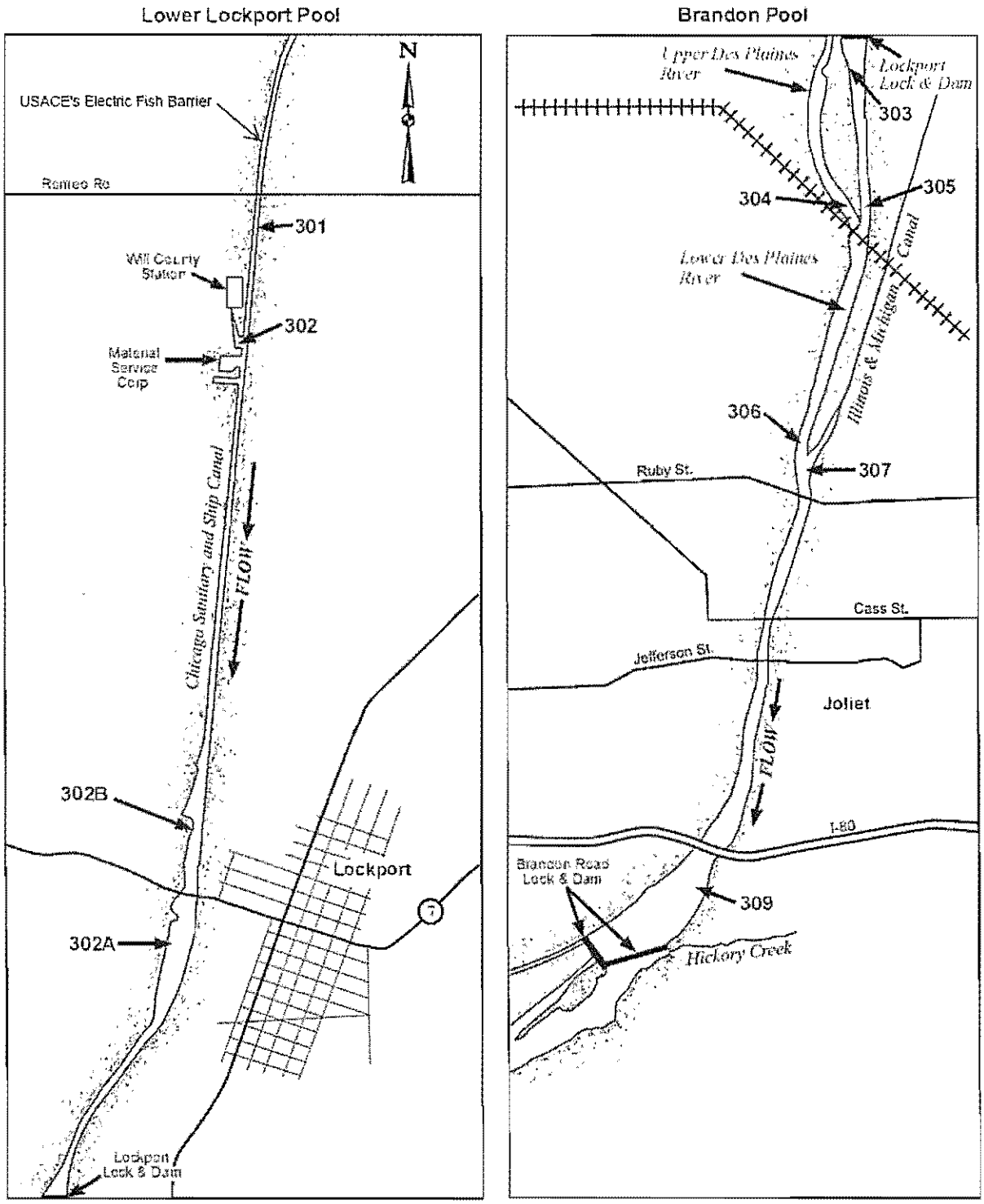

Figure 1. Fish Sampling Locations in Lower Lockport and Brandon Pools.

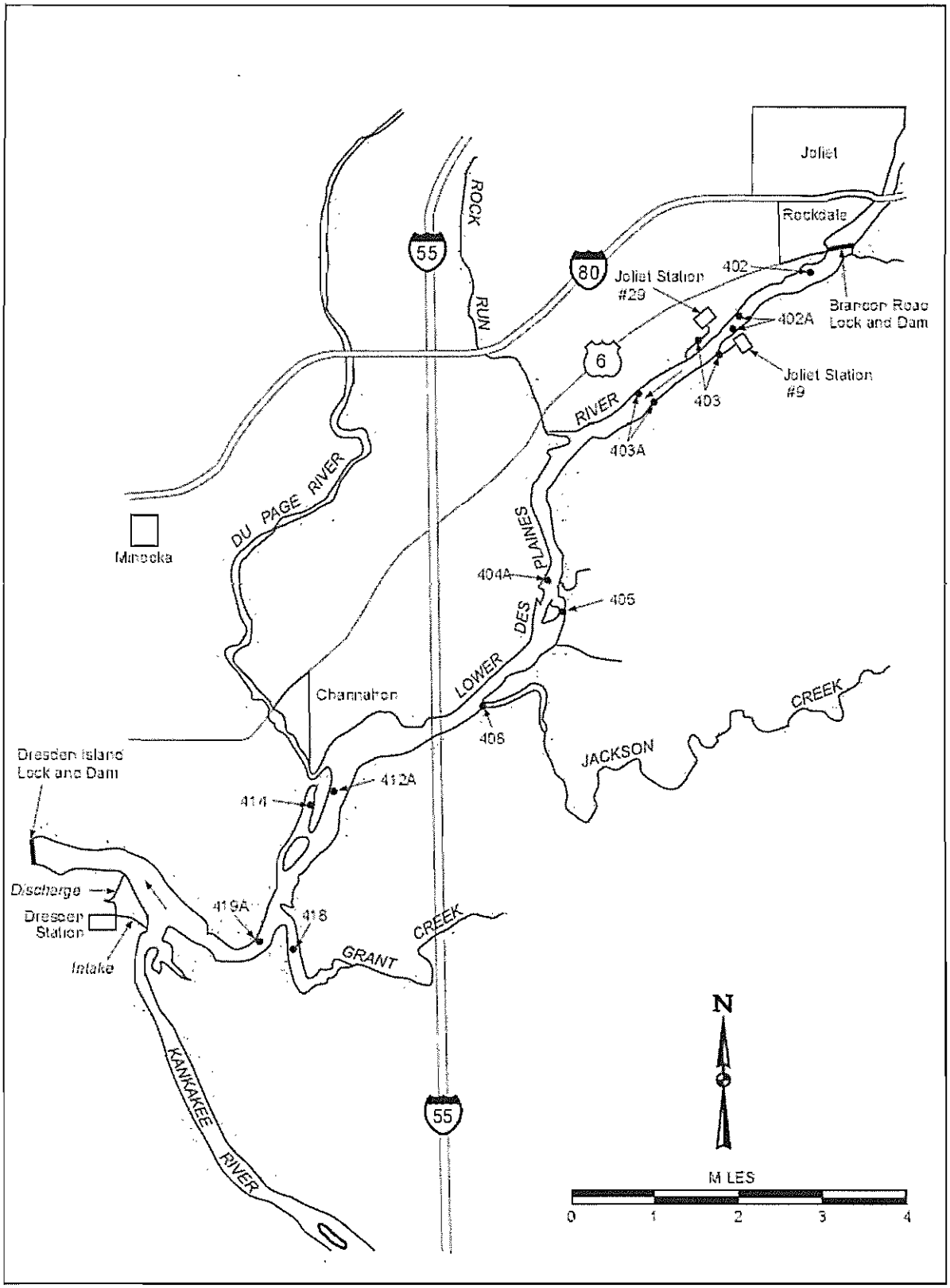

Figure 2. Fish Sampling Locations within the Upstream and Downstream I-55 Segments of the Lower Des Plaines River.