BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	**)**	
	)	
WATER QUALITY STANDARDS AND	**)**	
EFFLUENT LIMITATIONS FOR THE	**)**	**R08-09 Subdocket D**
CHICAGO AREA WATERWAY SYSTEM	**)**	**(Rulemaking – Water)**
AND THE LOWER DES PLAINES RIVER:	**)**	
PROPOSED AMENDMENTS TO 35 Ill.	**)**	
Adm. Code Parts 301, 302, 303 and 304	**)**	

NOTICE OF FILING

TO: John Therriault, Assistant Clerk
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Attached Service List

PLEASE TAKE NOTICE that I have today filed with the Illinois Pollution Control Board, Midwest Generation, L.L.C.'s Subdocket D Post-Hearings Reply Comments, a copy of which is herewith served upon you.

Dated: May 14, 2014

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CERTIFICATE OF SERVICE

The undersigned, an attorney, certifies that a true copy of the foregoing Notice of Filing and Midwest Generation, L.L.C.'s Subdocket D Post-Hearings Reply Comments were filed electronically on May 14, 2014 with the following:

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Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph Street, Suite 11-500
Chicago, IL 60601

and that true copies were sent via email and mailed by First Class Mail, postage prepaid, on May 14, 2014 to the parties listed on the foregoing Service List.

/s/ Susan M. Franzetti

ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	**)**	
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WATER QUALITY STANDARDS AND	**)**	**R08-09 Subdocket D**
EFFLUENT LIMITATIONS FOR THE	**)**	**(Rulemaking-Water)**
CHICAGO AREA WATERWAY SYSTEM	**)**	
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PROPOSED AMENDMENTS TO 35 ILL.	**)**	
ADM. CODE 301, 302, 303, AND 304	**)**	

MIDWEST GENERATION, L.L.C.'S
SUBDOCKET D POST-HEARINGS REPLY COMMENTS

I. Introduction

The April 30, 2014 post-hearings comments filed by the U.S. EPA (the "U.S. EPA Comments") correctly emphasize that the Clean Water Act's implementing regulations expressly require that a state's water quality standards must be scientifically sound and consistent with guidance before the U.S. EPA may approve them. As described in detail in Midwest Generation, L.L.C.'s Post-Hearings Comments, the Illinois Environmental Protection Agency's ("Illinois EPA") proposed thermal standards for the Use B and Upper Dresden Island Pool Use waters are neither scientifically sound nor consistent with guidance. For these reasons, they should not be adopted by the Board and, even if adopted, should not be approved by the U.S. EPA.

Similarly, the Environmental Groups'[1] lone advocacy for stricter thermal standards is wholly unpersuasive for similar reasons. The Environmental Groups' proposed thermal standards are based upon the same flawed and scientifically unsound MBI/Yoder thermal standards derivation method relied on by the Illinois EPA for its proposed thermal standards. The numeric temperature values in both the daily maximum and period average values proposed by the Environmental Groups are significantly below (*i.e.,* more stringent than) what the years of "real world" biological data for these waters demonstrates is both protective and consistent with the Clean Water Act.

[1] The Environmental Groups' Subdocket D Post-Hearing Comments were submitted on behalf of the following entities: Environmental Law & Policy Center, Friends of the Chicago River, Natural Resources Defense Council, Openlands, Prairie Rivers Network and Sierra Club - Illinois Chapter (collectively referred to here as the "Environmental Groups.")

On the issue of thermal standards, the U.S. EPA Comments object to the inclusion of the excursion hours provision which allows for very limited increases in temperature for only 2% of the time in any year-long period. But the U.S. EPA has not demonstrated why this provision is either scientifically unsound or inconsistent with Clean Water Act guidance. An excursion hour provision should properly be included in the thermal standards adopted by the Board.

The Board should also reject ExxonMobil's request that a thermal demonstration requirement be imposed upon only Midwest Generation's discharges to the UDIP waters. ExxonMobil does not provide a legal or scientific justification for such a discharger-specific burden nor does it explain how doing so would address ExxonMobil's needs. ExxonMobil may need relief from any revised thermal standards for the UDIP which the Board adopts, but this does not provide any rational justification for imposing additional and unreasonable burdens upon Midwest Generation.

Finally, consistent with the U.S. EPA's Comments, the UAA Factors applicable to the Use B Chicago Sanitary & Ship Canal ("CSSC") and the UDIP Use support a multi-discharger or water body variance for thermal standards. Midwest Generation requests that the Board include either of these thermal variance mechanisms in the adopted rules.

II. The Environmental Groups' Proposed Thermal Standards are Neither Scientifically Sound nor Consistent with Clean Water Act Guidance.

The Environmental Groups' advocacy for stricter thermal standards is based exclusively upon the flawed thermal values provided to the Illinois EPA by the Midwest Biodiversity Institute ("MBI"), primarily through the efforts of Christopher Yoder ("Mr. Yoder").[2] As explained and supported in detail in Midwest Generation's April 30, 2014 Post-Hearing Comments ("Midwest Generation's Comments"), the underlying thermal literature database which MBI provided to Illinois EPA (Exhibit 16), the thermal values derived from that database by MBI/Yoder (Ex. 15) and Mr. Yoder's explanations of how those thermal values were derived are riddled with errors, subjective and erroneous judgments regarding the derivation of thermal endpoints, inappropriate literature sources (*e.g.*, mere recordings of ambient water temperatures at which fish were collected from a particular water body which do not purport to be, nor are they, actual thermal endpoint values either for lethality or sublethal effects), and isolated

[2] See *Environmental Groups' Post Hearing Comments on Subdocket D*, filed April 30, 2014, R08-09 at pps. 3-6 (the *Environmental Groups' Comments*).

laboratory-derived thermal endpoints (*e.g.*, a laboratory test value derived from only one or two organisms of a given species). (See Midwest Generation's Comments at pp. 7-14). The MBI/Yoder method also is inconsistent with U.S. EPA guidance regarding the derivation of water quality standards because it is not designed to protect aquatic populations, but rather every fish of any species, including species not reasonably expected to establish viable populations in these waters.

The U.S. EPA reviewed the MBI/Yoder recommended thermal endpoints and agreed with Midwest Generation's position that the work contained numerous errors. A member of the U.S. EPA's review team confirmed that Midwest Generation's thermal expert, Greg Seegert of EA Engineering & Science ("EA"), had correctly identified a number of those errors, stating:

> Chris [Yoder] made a number of errors in selecting species specific values for endpoints as was pointed out by Greg Seegert." An example is the data for the stone cat. Chris [Yoder] also made several errors in his earlier (2003) Des Plaines Report. My suggestion is for the workgroup to review the Yoder reports in detail.[3]

Regrettably, there is no evidence in the record indicating that the Region 5 "workgroup" assigned to review the MBI/Yoder work ever conducted a detailed review of the MBI/Yoder work product (Exhibits. 15 and 16). However, as previously discussed in Midwest Generation's Comments, EA did conduct a detailed review of a subset of the information presented in the MBI/Yoder reports and found numerous errors, as well as thermal endpoint values that could not be validated. (See Attachment A to Midwest Generation's Post-Hearing Comments).

As emphasized by the U.S. EPA in Enclosure 1 to its April 28, 2014 comment letter filed with the Board,[4] to be approvable under the Clean Water Act's implementing regulations, the proposed thermal standards must "protect the designated use" and "must be based on sound scientific rationale…." 40 C.F.R. § 131.11(a)(1). Other than the unreliable MBI/Yoder thermal endpoint values, the Environmental Groups present no scientific data to support their proposed thermal standards. All of the thermal endpoint values, including the Growth, Upper Avoidance

[3] See Exhibit 37, October 3, 2006 E-mail from Peter Howe, U.S. EPA Region 5, to Allen Melcer, U.S. EPA Region 5, re: Temperature Criteria Meeting with Chris Yoder.
[4] April 28, 2014 Letter to J. Therriault, Clerk, Illinois Pollution Control Board from Tinka G. Hyde, Director, Water Division, U.S. EPA Region 5 (the "U.S. EPA's Comments") at Enclosure 1, p. 1.

Temperatures and Optimum temperatures that the Environmental Groups rely upon, are all derived from the same flawed database prepared by MBI/Yoder.[5]

The Environmental Groups begin by correctly noting that for the UDIP Use thermal standards, Mr. Yoder "found that the fish species with the lowest short-term survival endpoint (i.e. UILT or adjusted CTM), was White Sucker with a UILT of 88.7 ° F."[6] This 88.7° F thermal value is the value the Illinois EPA selected to be its proposed daily maximum value for the UDIP Use (as well as for Use A). But as demonstrated in Midwest Generation's Comments, the only support for the 88.7° white sucker value is a single literature article based on a laboratory test at acclimated temperatures that are not representative of these waters (Exhibit 24). By comparison, the extensive thermal literature review conducted by the Electric Power Research Institute ("EPRI"), published in December 2011, shows that a more recent 1995 study by Smale and Rabeni, in which the test organisms were acclimated to 26° C (78.8° F), within the acclimation range Mr. Yoder agreed was appropriate for these waters (and which he preferred for use here in deriving his thermal endpoints), resulted in a significantly higher Chronic Thermal Maximum (CTM) value of 34.9° C (94.82° F) for white sucker.[7]

To the extent that laboratory-derived data is considered, the laboratory conditions should properly be representative of these waters as determined from a review of the extensive in-stream data that has been collected for over twenty years. As the Board is aware, the fish and invertebrates in these waters are "cold-blooded," meaning that they have little or no ability to regulate their body temperatures and thus they live at the temperature of the water in which they are immersed. However, they are able to acclimate over hours or days as temperature changes, as they adjust their physiology to the new temperature. While certainly there are limits to the ability of fish to adjust to changing temperatures, known as the ultimate upper threshold temperature, they do have a tolerance range that is shifted upward by acclimation to warmer water. Hence, laboratory-derived data from tests performed at lower acclimation temperatures

[5] It is noteworthy that in one of the Exhibit 37 documents the Illinois EPA produced subsequent to Mr. Yoder's hearing testimony, entitled "Issues to be Decided Regarding Temperature Criteria for Lower Des Plaines and Ohio River WQS – Draft (9/14/06)," the reliability of growth thermal endpoints is called into question: "There is uncertainty in the laboratory methods, temperature calculations, biological processes that all lead to some level of uncertainty in what temperature will protect for a particular endpoint. For example, temperature limits for growth are particularly uncertain."

[6] Environmental Groups' Comments at p. 4, citing Ex. 15 at 67 and the Illinois EPA's Statement of Reasons ("SOR") at Attachment HH.

[7] EPRI, *Thermal Toxicity Literature Evaluation, Final Report*, December 2011 (2011 EPRI Thermal Literature Report") at p. 3-13. Available on the internet at: www.epri.com (last checked 5/6/14).

than are appropriate for these waters must not drive the thermal standards. As the Board considers the adoption of thermal standards, particularly here where the record shows that both the Illinois EPA's and the Environmental Groups' recommended standards will potentially cause plant shutdowns or hundreds of millions of dollars in compliance costs to dischargers, it must be certain it is on sound scientific ground. The Environmental Groups' have not presented the Board with an alternative which meets that criterion.

Moreover, before the U.S. EPA exerted its influence over the contents of Mr. Yoder's thermal report, Mr. Yoder had independently concluded that higher (more lenient) thermal standards were appropriate for the UDIP. As the U.S. EPA internal e-mails reveal (Exhibit 37), Yoder's initial draft report had considerably higher temperature standards for the lower Des Plaines River: "Per Ed's [U.S. EPA's Ed Hammer) 3/09/04 E-Mail, Chris [Yoder] lowered his previous recommended summer temperature (June 15-Sept. 15) by a considerable margin to a summer average of 84-85 with a daily maximum of 88-89."[8] The pressure he was subjected to by U.S. EPA to lower his recommended thermal values, with repeated statements in the U.S. EPA review e-mails about the problems Yoder's recommendations would cause to U.S. EPA's desire to place tighter controls upon power plants in the region, is clearly set forth in the series of U.S. EPA e-mails contained in Exhibit 37.[9] Hence, the thermal endpoints on which both the Environmental Groups' and the Agency's proposed thermal standards are based, do not even reflect the independent expert's judgment of what appropriate thermal standards should be for the UDIP.

The persistent "lowering" of laboratory-derived values advocated by the Environmental Groups based on a purported need to ensure their protectiveness goes far beyond the bounds of scientific soundness and is not consistent with water quality standards guidance. There is no established method for standardizing all of the different thermal tolerance values produced by the

[8] See Exhibit 37, March 18, 2004 E-Mail from Peter Howe, U.S. EPA, Region 5, to Linda Holst, U.S. EPA Region 5.

[9] As described in the *Pre-Filed Testimony of Julia Wozniak*, filed August 4, 2008, at pp. 14-15 (Exhibit 364), it was only after the Illinois EPA concluded the stakeholder meetings for both the UDIP and the CAWS that information on the proposed methodology for the development of thermal standards started to be distributed to stakeholders. While some of the draft reports from MBI/Yoder were subsequently circulated for review, no stakeholder meetings were held to discuss these reports. Extensive written comments were prepared by Midwest Generation and submitted to the Illinois EPA, as well as a request for a meeting with Mr. Yoder to discuss his findings, all without any response. See *Attachment UU* to Illinois EPA's Initial Filing, R08-09, filed October 26, 3007.

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differing laboratory test methods, even though those differences can be significant.[10] There are also factors inherent in laboratory testing which cause the derived thermal endpoint value to be lower than actual in-stream studies show is appropriate for a given species in the real world. These factors include the rate of temperature increase applied, the condition of the test fish and the small sample sizes used in laboratory testing.[11] Most importantly, it is contrary to existing water quality criteria guidance to use laboratory-derived values in a vacuum without also considering site-specific conditions and available in-stream data concerning those conditions.

The 2005 MBI Report (Exhibit 15) itself acknowledges many of the shortcomings of the solely literature-based approach to deriving thermal standards that the Environmental Groups' advance here. The 2005 MBI Report cautions that: "A long standing concern with all of the commonly available lethal test methods is that the steady or regular increases in test temperature inherent to the methodologies do not reflect environmental reality."[12] The report further acknowledges that few if any of the available *in situ* tests reflect the real world conditions relating to thermal exposures.[13] As MBI states, the "real world conditions" not captured by laboratory conditions include: (a) the accumulation of thermal stress to an aquatic organism is dependent on seasonal acclimation; (b) the severity and duration of periods of thermal exposure and stress, and the duration of recovery periods, i.e. lower temperatures that are closer to physiological optima; and (c) thermal resistance seems to increase with slowly increasing temperatures.[14] Hence, because of the laboratory environment in which the values relied upon by the Environmental Groups were derived, there is just as much justification or more for not applying any of the so-called "safety factors" to reduce the laboratory endpoint values as the Environmental Groups' contend.

A clear example of the need to compare laboratory-derived thermal endpoint values to available in-stream data was presented by EA in its 2007 Thermal Standards proposal submitted by Midwest Generation to the Illinois EPA.[15] As EA explained, the laboratory-derived reported

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[10] 2011 EPRI Thermal Literature Report at p. 4-5.
[11] Id at pp. 4-5 and 4-6.
[12] *Temperature Criteria Options for the Lower Des Plaines River*, October 11, 2005, C. Yoder and E. Rankin, Midwest Biodiversity Institute ("MBI 2005 Report"), Exhibit 15 at page 3.
[13] *Id.* at p. 4.
[14] *Id.* at pp. 3-4.
[15] The 2007 EA proposed thermal standards, entitled "Development of Biologically Based Thermal Limits for the Lower Des Plaines River," August 2007 (hereinafter "EA 2007 Report" or "EA 2007 Thermal Standards") were submitted to the Illinois EPA by Midwest Generation for its consideration in August 2007. A copy was attached as Attachment C to Midwest Generation's Comments.

values for logperch were originally driving the thermal limits proposed for the Ohio River. Because the laboratory-derived endpoints seemed questionable, thousands of logperch were collected from the Ohio River to test their validity. It was determined from this in-stream effort that the median temperature at which they were collected exceeded their purported upper lethal temperature according to the laboratory data and hence, logperch laboratory-derived values were excluded from consideration in developing the final thermal criteria for the Ohio River.[16]

There is at best too much uncertainty and improper bias surrounding the MBI/Yoder thermal endpoints, together with significant evidence showing the unreliability of the thermal literature database from which they are taken, to provide the Board with a scientifically sound rationale for adopting the stricter thermal standards proposed by the Environmental Groups. Even the U.S. EPA's Comments do not advocate for stricter numeric temperature standards for the UDIP and Use B. Therefore, for the same reasons that the Illinois EPA's MBI/Yoder-based proposed thermal standards are not scientifically sound, the same is true of the thermal standards proposed by the Environmental Groups.

Just as the MBI/Yoder work ignored the over twenty years of biological data available for these waters, the Environmental Groups do too. The Board should question why this highly relevant and applicable scientific information has not been considered. The Board should also be highly skeptical of the Environmental Groups' tactic of attempting to divert the Board's attention away from the site-specific biological information to focus on thermal standards derived for other waters in other states. Why should the Board consider the Ohio River thermal standards, as the Environmental Groups suggest, when the evidence presented in this proceeding showed that due to the uniqueness of the Use B and UDIP waters, the stakeholder task force process that preceded this rulemaking could not identify an appropriate reference stream for them?[17] The Environmental Groups obfuscate this issue by misleadingly contending that Midwest Generation advocated that Ohio was a relevant source of precedent. As the Board is well aware, in the Subdocket C use designation phase of this proceeding, Midwest Generation recommended for consideration Ohio's more specific and refined use classification system which contains categories for modified and impounded waters like the UDIP and CSSC. Midwest Generation

[16] EA 2007 Thermal Standards Report at p. 11. (See Attachment C to Midwest Generation's Comments).
[17] Environmental Groups' Comments at pp. 6-7.

never recommended Ohio's reliance upon the MBI/Yoder approach to deriving thermal standards.

The Environmental Groups provide no support for the application or relevance of the Ohio River thermal standards to the UDIP or Use B waters, other than the fact they are in some respects stricter than the Illinois EPA's proposed standards. There is no evidence showing that the Ohio River shares the effluent-dominated characteristics and the highly impounded, artificially controlled flow regime of either the Use B CSSC or the UDIP that impacts the availability of suitable habitat for numerous fish species. Moreover, Ohio's water quality standards recognize the importance of considering the site-specific characteristics of a waterway in deriving criteria and determining the aquatic life that may reasonably be expected to be present.[18] Hence, it is not surprising that the Ohio River thermal period average values are different. But what is very surprising, as the Environmental Groups concede, is that the difference between the period averages is "generally over 1° F less than those IEPA has proposed for the UDIP."[19] Rather than supporting the Environmental Groups' argument, this small difference underscores the fact that the proposed period averages for the UDIP, which is not capable of fully attaining the Clean Water Act's fishable goals, are overly stringent.

The Environmental Groups' proposed thermal standards also should be rejected because they are not supported by Clean Water Act Section 304(a) water quality standards criteria guidance, a requirement which the U.S. EPA Comments to the Board stress must be considered.[20] As explained in detailed in Midwest Generation's Comments, the underlying MBI/Yoder approach on which the Environmental Groups rely deviates from such guidance both because it is not based on data of acceptable quality and because it is overly protective. U.S. EPA guidance provides that water quality standards should be designed to protect communities, not individual species (unless there is a threatened or endangered species present, which is not the case here), "[b]ecause aquatic ecosystems can tolerate some stress and occasional adverse

[18] *See*, Ohio Admin. Code 3745-1-33, which in relevant part provides for modifying thermal water quality standards where "the sensitivity of the aquatic organisms species that occur at the site differs from the species actually tested in developing the criteria." Ohio defines the phrase "Occur at the Site' to exclude "taxa that were once present at the site but cannot exist at the site now due to permanent physical alteration of the habitat at the site resulting, for example, from dams." See Ohio Admin. Code 3745-1-35(B)(2)(b)). Available at: http://www.epa.state.oh.us/portals/35/rules/01-35.pdf , last checked 5/6/14.
[19] Environmental Groups' Comments at p. 7.
[20] U.S. EPA Comments, Enclosure I at p. 1.

effects, protection of all species at all times and places is not deemed necessary."[21] As the U.S. EPA counseled in its May 1977 guidance document, entitled "Temperature Criteria for Freshwater Fish: Protocol and Procedures": "no single temperature requirement could be applied to the United States as a whole, or even to one state, and that the requirements must be closely related to each body of water and its fish populations."[22]

The only logic associated with the Environmental Groups' selection of the Ohio River as relevant precedent is that the same MBI/Yoder approach which underlies the Illinois EPA's proposed daily maximum standards also was used to derive those standards.[23] But as EA described in detail in its 2007 Thermal Standards Report, from reviewing only a small portion of the MBI Ohio River database, it found the same types of deficiencies in the MBI thermal database that was used to derive the Ohio River thermal standards as have been identified here. Upper lethal temperatures for several species were based on testing of only two specimens and at times only a single specimen. In several cases, the data was compromised by the fact that only winter-acclimated fish were tested when their upper lethal temperature endpoints would be higher if they were based on summer-acclimated fish.[24]

Other states that have more recently conducted reviews to update their thermal standards, such as Colorado and Wisconsin, have not followed the MBI/Yoder Ohio River method. As the Electric Power Research Institute ("EPRI") noted in its December 2011 extensive review of thermal literature data and standard derivation methods, methods like those developed to establish thermal standards for Colorado and Wisconsin that use data from a cross-section of studies will be less affected by incorrect or aberrant data than methods like those proposed for the Ohio River (Yoder and Emery 2004, Yoder *et al.* 2006) or the Chicago Area Waterway

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[21] Midwest Generation Comments at pp. 14-15, citing *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses,* U.S. EPA, PB85-227049 (Jan. 1985) at pp. 21-22 (the "U.S.EPA 1985 National Guidelines"). (Available on the internet at: http://owpubauthor.epa.gov/scitech/swguidance/standards/criteria/current/upload/2009_01_13_criteria_85guidelines.pdf)
U.S.EPA 1985 National Guidelines at pp. 1-2.

[22] Brungs and Jones, *Temperature Criteria for Freshwater Fish: Protocol and Procedures,* EPA-60013-77-061, May 1977, at p. 3. (available on the internet at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_2/2008/ref2446.pdf (last checked May 9, 2014).

[23] See Exhibit 37, "Issues to be Decided Regarding Temperature Criteria for Lower Des Plaines and Ohio River WQS," which states on the last (unnumbered) page: "The second method for calculating temperature criteria is the one utilized for the mainstem of the Ohio River and the lower Des Plaines River. In this method, a literature search is performed to collect data on temperature tolerances and on lethal and sub-lethal endpoints for all species that could be found in the waterbody."

[24] EA 2007 Thermal Standards Report at p. 11.

System (Yoder and Rankin 2005) that use the most thermally sensitive species to establish criteria."[25] Midwest Generation urges the Board not to follow the scientifically unsound approach that MBI/Yoder brought with them from Ohio because it uses incorrect or aberrant data to set thermal standards and improperly ignores high-quality in-stream data. The Ohio River thermal standards are not a model of reliability worthy of the Board's serious consideration nor do they provide any reliable evidence that the thermal standards for the UDIP or CSSC should be stricter.

When field data are lacking, certainly there is no choice but to rely solely upon validated laboratory-derived data. But that is clearly not the case here. As described in the EA 2007 Thermal Standards Report, EA specifically studied how the Lower Des Plaines River field-collected fish data correlated to the laboratory-derived data compiled by MBI/Yoder for this rulemaking. It examined the 13-year field data set for the Lower Des Plaines River from 1994 to 2006 to identify the ambient thermal temperatures at which the fish were collected during this extended time period. "If the lab data compiled by MBI are an accurate predictor of the real-world responses of fishes, then species should not be collected at temperatures above their upper avoidance temperature (UA) nor at temperatures greater than their upper incipient lethal temperature (UILT)."[26] They should not have been, but they were. As briefly summarized below, the EA in-stream fish surveys over the 13-year period found that fish are present in these waters at temperatures that laboratory results identify as lethal or avoidance temperatures:

Golden redhorse:	Present at maximum recorded temperature of 33.5° C (92.3°F) which exceeds both the UA (28.5° C) and UILT (33.4°) laboratory endpoint values, with other collections also occurring in the range of 29.4° C to 31.3° C.
White sucker:	Although admittedly not a "representative" fish for the Lower Des Plaines River given the lack of suitable habitat, it is the Yoder-selected "most sensitive species" for the UDIP and has been collected at very low numbers over the years. It was collected at a maximum recorded temperature of 32.0° C (89.6° F) which exceeds both the UA (28.7° C) and the UILT (31.5° C) laboratory endpoint values, with other collections occurring in the 30.1° C – 31.0° C temperature range.

[25] 2011 EPRI Thermal Literature Report at pp. 5-3 to 5-4. Available on the internet at: www.epri.com (last checked 5/6/14).
[26] EA 2007 Thermal Report at pp. 12-13.

Bluntnose Minnow: Present at maximum recorded temperature of 37.6° C (99.68°F), well above both the UA (31.4° C) and UILT (32.4° C) laboratory endpoint values.

Similar findings applied to the yellow bullhead, largemouth bass and the green sunfish, all of which were collected at temperatures that exceeded their laboratory-derived thermal endpoints.[27] The extensive in-stream fish data for the lower Des Plaines River shows that the laboratory-derived thermal endpoints data is overly conservative for these waters. The data demonstrates that many of the fish species which the MBI/Yoder Report finds should be limited or excluded by higher temperatures are indeed present and thriving in the Lower Des Plaines River. The reality of the thriving aquatic community in the Lower Des Plaines River exposes the severe flaws of the theoretical, laboratory-derived approach to thermal standards derivation.

Similarly, the in-stream biological data also show that the Environmental Groups' contention that the thermal endpoints derived from such data should be further lowered by 2° C to provide a "margin of safety" is clearly unnecessary to protect the designated aquatic life use for the UDIP. As the 1986 U.S.EPA "Gold Book" guidance on the derivation of water quality criteria acknowledges, the origin of the 2° C margin of safety is based on laboratory experiments, not real world conditions.[28] A scientific basis for this safety factor as an ecologically meaningful regulatory increment has not been presented.

Moreover, the Gold Book is over twenty-five years old. The primary author of its temperature guidance, Dr. Charles C. Coutant, in more recent research conducted at the Oak Ridge National Laboratory for U.S. EPA Region 10, questioned both the validity of and need for the 2° C factor, calling it a "somewhat arbitrary" approach, and reporting that "[r]ecent studies have shown an apparent recovery or repair mechanism operating when temperature cycles below the incipient lethal level, which causes the time of 50% mortality to be predicted to occur too

[27] EA 2007 Thermal Report at p. 13.
[28] *Quality Criteria for Water* 1986 ("Gold Book"). U.S. EPA Office of Water (EPA 440/5-96-001), May 1, 1986, cited in 2003 EA Report at p. 39. Excerpts from the Gold Book also were attached to the Illinois EPA's initial filing as Attachment V. Available at: http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/upload/2009_01_13_criteria_goldbook.pdf (last checked 5/13/14).

soon.[29] As Dr. Coutant wisely stated: "A short cut to determining lethal temperatures is often seen in the literature, but it must be used with extreme caution."[30]

Nor does the U.S. EPA Gold Book dictate that this safety factor be applied in all circumstances. Such an approach is expressly rejected by the U.S. EPA's *Water Quality Standards Handbook*, which provides in relevant part as follows:

> A site-specific criterion is intended to come closer than the national criterion to providing the intended level of protection to aquatic life at the site, usually by taking into account the biological and/or chemical conditions (*i.e.*, the species composition and/or water quality characteristics) at the site.[31]

Particularly when, as here, there is extensive in-stream fish data to guide and inform the derivation of thermal standards, there is not a scientific justification for applying the 2° C temperature adjustment.

No one, not the Illinois EPA, the Environmental Groups or the U.S. EPA has provided any justification, let alone a sound scientific rationale, for why the available in-stream biological data for these waters should not be considered in deriving thermal standards for the UDIP or the CSSC. There is no rationale justification for the clear bias against doing so, other than perhaps a goal to adopt a process which favors simplicity of application over actual scientific method, while severely constraining or eliminating the discharges from certain power plants.

The Environmental Groups' attempt to drive the UDIP thermal standards downward to unrealistic temperatures patently ignores the undisputed fact that this is an effluent-dominated stream. It consequently has temperatures that are going to be higher than certain laboratory-derived endpoints, such as reproduction. The fact is there is no U.S. EPA guidance available for how to deal with the special case presented by effluent-dominated streams such as the UDIP and the CSSC. Attempts to fit them into any "normal" standards-setting mold are misplaced and riddled with uncertainty. Section 131.11(b)(1)(ii) of the Clean Water Act water quality standards

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[29] C. Coutant, *Perspectives on Temperatures in the Pacific Northwest's Fresh Waters*, Oak Ridge National Laboratory, ORNL/TM-1999/44, June 1999, prepared for the U.S. EPA Region 10, at pp. 42 & 43; available at: http://web.ornl.gov/info/reports/1999/3445605662770.pdf (last checked 5/13/14).
[30] *Id.*
[31] U.S. EPA *Water Quality Standards Handbook: Second Edition*, EPA-823-B-12-002, March 2012, Section 3.7, pp. 3-38.

regulations expressly provide states with opportunity to adopt water quality criteria that modify Section 304(a) Guidance "to reflect site-specific conditions." (40 C.F.R. §131.11(b)(1)(ii)). Similarly, the U.S. EPA has previously indicated that ambient conditions can be the basis for deriving water quality standards where human-caused conditions cannot be remedied or would cause more damage to correct.[32] Consequently, it is consistent with the Clean Water Act to acknowledge that an effluent dominated system like this one is going to be thermally peculiar and any attempt to impose "ambient" or "natural" temperatures based on a regulatory standards-setting approach used for other types of natural streams is unrealistic. The evidence shows that for an effluent-dominated stream like this one, the only scientifically sound approach is to derive the thermal standards based on the extensive biological data that has been collected, analyzed and statistically validated to show that it is protective of the designated use – which is exactly what the 2007 EA thermal standards provide here.

Accordingly, Midwest Generation urges the Board to give careful consideration to thermal standards alternatives like the EA 2007 proposed thermal standards which are derived from a detailed examination of the years of high-quality fish data collected from the lower Des Plaines River and validated by not one but two well-established and independent statistical analyses (the ANOVA and Loess procedures) of that data. As EA concluded, a conclusion that no one has refuted in this proceeding, "the field approach provides a more reliable methodology to identifying thermal standards that are adequately protective of the aquatic community that can be achieved in the [Lower Des Plaines River] without the risk that overly stringent standards will be adopted."[33] The goal here should be to assure that the thermal standards are environmentally protective, but not unreasonable or arbitrary. To achieve this goal, the Board should adopt the EA 2007 proposed thermal standards that provide for a monthly average temperature of 90° F and maximum daily average temperatures of 93.0° F in the summer months.

III. The Allowance of Excursion Hours Does Not Make Thermal Standards Unprotective or Inconsistent with Guidance.

The U.S. EPA's Comments (Enclosure I at p. 2) raise the question of whether the proposed allowance of excursion hours in section 302.408(a) is consistent with the requirement

[32] See Advance Notice of Proposed Rulemaking (on possible revisions to the Water Quality Standards Regulation at 40 CFR Part 131), 63 FR 36742, 36761 (July 7, 1998).
[33] EA 2007 Thermal Report at p. 13.

of 40 CFR § 131.11(a)(1) that the criteria be based upon a sound scientific rational.[34] The U.S. EPA expresses a concern that the excursion hours proposal would allow for temperatures above the upper incipient lethal temperature, a temperature determined based only on the MBI/Yoder selected literature data, such that mortality would be expected in fish exposed to these temperatures.[35] However, the evidence provided by the "real world" conditions in these waters has clearly demonstrated that the laboratory-derived literature data have understated the thermal tolerances of fish. Fish in these waters have been exposed to temperatures higher than those that would be allowed under the excursion hours provision with no evidence of any resulting mortality. Hence, refuting the U.S. EPA's suggestion, years of actual in-stream data provide scientific support for the excursion hours provision.

There is an abundance of evidence showing that the temporarily elevated temperature levels allowed by excursion hours do not result in any mortality. For example, under the existing AS96-10 adjusted thermal standards which apply at the I-55 Bridge to protect the downstream General Use waters from adverse thermal effects, excursion hours are allowed at the same 2% level as proposed in Section 302.408(a).[36] The annual fish surveys conducted by EA in the waters downstream of the I-55 Bridge have not identified adverse effects, including mortality, upon the aquatic life. These findings are consistent with the original 1993-1994 extensive Upper Illinois Waterway (UIW) studies presented to the Illinois EPA and the Board in the original AS96-10 proceeding, and which provided the basis on which both the Illinois EPA and the Board agreed to the Adjusted Standards. The Board found that the 1993-1994 UIW studies successfully demonstrated that the heated discharges from the Joliet stations did not cause nor could they be reasonably expected to cause any significant ecological damage to the waters of the "Five-Mile Stretch" of the Lower Des Plaines River below the I-55 Bridge.[37] Midwest Generation's witness, Julia Wozniak, similarly testified in this proceeding that she had worked

[34] The Environmental Groups also raised this issue in their post-hearing Subdocket D comments. Environmental Groups Comments at pp. 8-9.
[35] The U.S. EPA Region 5's unqualified reliance on laboratory-derived data is particularly disappointing in that it implies an unjustified bias in favor of laboratory data versus in-stream data that is not consistent with its own Section 304(a) guidance.
[36] 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.
[37] See Attachment 2, Opinion and Order of the Board in AS96-10, dated October 3, 1996; see also, *Response of the Illinois EPA to the Amended Petition of Commonwealth Edison Company Adjusted Standard /rom 35 Ill. Adm. Code 302.211 (d) and (e),* filed in AS96-10.

on this waterway since 1984 and had not personally observed any "fish kills or anything of that nature, nor of any of the fisheries monitoring reports I've reviewed now for many years found any impacts from heat."[38]

Repeated studies of the thermal discharges from the Midwest Generation stations also show that limited periods of excursion hours will not adversely affect the aquatic community. As explained in the 2003 EA Report, "three-dimensional mapping of the thermal plumes (ENSR, 1994, EA, 2003), shows that buoyancy of warm water limits these exclusion areas to upper water column layers and that a zone of passage at cooler temperatures (of at least 75% of the cross-section of the waterway) remains beneath the surface thermal plume at any time."[39] Further, as part of the UIW Study in the 1990's, fly-over, infra-red imagery was taken of the waterway and that data collected also showed the surficial nature of the thermal plumes in both the summer and winter periods.[40] These findings, along with the absence of any fish kills, support the premise that the limited extent of excursion hours that is currently allowed in these waters (*e.g.*, 5%), as well as the more limited 2% duration proposed by the Illinois EPA, are still protective because resident fish species can and do move temporarily out of thermally enhanced areas and into portions of the river that are more suited to their preferred temperature range.[41]

Similarly, as pointed out by ExxonMobil's April 30, 2014 Post-Hearing Comments and Pre-Filed Testimony of Lial F. Tischler (Exhibit 488), Midwest Generation has previously been granted provisional variances which allowed the temperatures to exceed the existing 93° F standard up to 97° F for a limited period of time. This temperature clearly should have exceeded literature-based predictions of the Upper Incident Lethal Temperature for several fish species present in these waters – and Midwest Generation was required to observe the river for any signs of harm to the fish community - but no fish kills occurred.

Faced with the abundant evidence showing that the allowance of limited excursion hours does not harm the aquatic population, it is surprising that the U.S. EPA would imply that the excursion hour provision may not be approvable under the Clean Water Act. The U.S. EPA has not cited any guidance that prohibits the inclusion of excursion hours under such circumstances. It would be hard pressed to do so. Although decades have passed since thermal standards began

[38] Wozniak Testimony, November 9, 2009 AM Hearing Tr. at pp. 28-29.
[39] 2003 EA Report at p. 35.
[40] 2003 EA Report at p. 35 citing (Brady, 1993-1994).
[41] Id. at p. 35.

to be adopted by the various states in the 1970's, the U.S. EPA does not have any Section 304(a) nationally recommended criteria for temperature, primarily because, as U.S. EPA acknowledges in its listing of Section 304(a) criteria, temperature standards are "species dependent criteria."[42] What guidance is available is admittedly limited, but the guidance that is available, does not support the U.S. EPA's position. For example, the *Draft Interagency 316(a) Technical Guidance Manual and Guide For Thermal Effects Sections of Nuclear Facilities Environmental Impact Statements*, May 1, 1977 ("U.S. EPA § 316(a) Guidance")[43] emphasizes the need to include in-stream studies to collect in-stream thermal and biological data before determining site-specific thermal criteria. At a minimum, in this guidance document, the U.S. EPA advocates a balance between reliance on laboratory data and field surveys, such as the type conducted over many years in the UDIP area by EA.[44] Hence, it is puzzling that the U.S. EPA questions the inclusion of excursion hours but yet completely ignores the sound scientific basis provided for the excursion hours provision from the years of studying the fish community both downstream and upstream of the I-55 Bridge.[45]

Ignoring the available in-stream data from these waters while also claiming that the excursion hours will not be protective of the aquatic life is also inconsistent with other relevant EPA guidance documents. EPA's researchers have counseled that: "The use of [a temperature] increment requires a knowledge of the natural temperature conditions of the water in question, and the size of the increment that can be tolerated by the desirable species."[46] Similarly, the 1986 U.S.EPA Gold Book's guidance on the derivation of thermal water quality criteria acknowledges the "avoidance" ability of fish, stating that "juvenile and adult fish usually thermo-regulate behaviorally by moving to water having the temperature closest to their thermal

[42] See U.S. EPA's listing of national recommended water quality criteria at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm (last checked 5/13/14).
[43] The U.S. EPA 316(a) Thermal Guidance is available at: http://www.epa.gov/npdespub/pubs/owm0001.pdf (last checked 4/28/14).
[44] U.S. EPA § 316(a) Guidance at p. 7.
[45] Even the EPA May 1977 guidance document entitled "Temperature Criteria for Freshwater Fish: Protocol and Procedures," states that it is "recognized that aquatic organisms might be able to endure a high temperature for a few hours that could not be endured for a period of days."
[46] Brungs and Jones, *Temperature Criteria for Freshwater Fish: Protocol and Procedures*, EPA-60013-77-061, May 1977, at p. 3. (available on the internet at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_2/2008/ref2446.pdf (last checked May 9, 2014).

preference" and that "this response (avoidance) precludes problems of heat stress by juvenile and adult fish during the summer."[47]

Consistent with this guidance, EA stated the following in its 2007 Report in support of the Midwest Generation 2007 thermal standards proposal:

> We recognize that while long-term avoidance of a habitat can be detrimental to population success, short-term avoidance should be viewed as a beneficial, adaptive response. In the natural environment, all species found at a location sometime during a year will not always be there. Seasonal and spatial thermal partitioning is an accepted feature of fish communities.[48]

Moreover, the elimination of any excursion hour provision would clearly make the proposed daily maximum temperatures even more unreasonable than they already are. It is indisputable that fluctuating temperatures are the norm in the environment. Because ambient stream temperatures fluctuate not just seasonally, but daily within any water course, it is not appropriate to establish an instantaneous daily maximum temperature. The U.S. EPA Comments do not address the concern that if the Board were to adopt the proposed daily maximum thermal standards as an instantaneous daily maximum temperature, which it should not, and if the excursion hours are eliminated, then any exceedance of the daily maximum numeric value would constitute noncompliance, no matter for how short a period of time that temperature occurred. There is no support in the literature values and certainly not in the real world conditions studied for years in these waters that such an approach to thermal water quality standards is necessary in order to be protective of the aquatic life use designation.

For all of the above reasons, Midwest Generation submits that an excursion hours provision should be included in the thermal standards adopted for the UDIP and CSSC because it is adequately protective of aquatic life, supported by a sound scientific rationale and consistent with available guidance.

IV. Multi-Discharger and Water Body Variances

In its Post-Hearing Comments, Midwest Generation requested that the Board include a provision in the Subdocket D thermal water quality standards for either a multi-discharger or a

[47] U.S. EPA 1986 Gold Book in "Temperature" section, 10th-11th pages (pages are unnumbered).
[48] 2007 EA Thermal Standards Report at p. 12.

water body variance.[49] The U.S.EPA Comments also address this issue. The U.S. EPA advised that for a variance to be consistent with federal requirements, the record should demonstrate that the variance applies "only to the times, places, and/or dischargers where attainment of the criteria cannot be achieved for one of the reasons set forth at 40 CFR 131.10(g)."[50] The referenced "reasons set forth at 40 CFR 131.10(g)" are the six Use Attainability Analysis ("UAA") factors to be considered when adopting a use other than the Clean Water Act goals.

In Subdocket C, the Board found that the CSSC cannot achieve the Clean Water Act goals because UAA Factors 3, 4, and 5 are all present in the CSSC.[51] In its Subdocket C Second Notice Opinion, and in response to prior U.S.EPA comments requesting a detailed explanation of the Board's UAA Factors findings, the Board specifically addressed the basis for its findings.

Regarding UAA Factor 3, which addresses human-caused conditions, the Board explained that "the habitat quality in most of the [CAWS and the Lower Des Plaines River] segments is impacted by human caused conditions, which include channel morphology, hydrology and flow regime, and bank and riparian conditions." [52] The Board also found that the CSSC "is predominantly treated and partially treated effluents from the District's wastewater reclamation plants and combined sewer overflows (CSOs)."[53]

For UAA Factor 4, which addresses hydrologic modifications, the Board consistently found that the low flow conditions and hydrology in the CSSC contribute to its inability to attain the CWA goals. As testimony in the UAA hearings showed, temperatures in the waterway are largely influenced by the upstream flow manipulations, and when the flow is low and the ambient air temperature is high, the waterway picks up heat quickly, but very little ambient cooling occurs. As the Board found, this is particularly true in the CSSC because it has poor riparian conditions, thus lacking the shade conditions which would reduce the temperature levels.[54]

The Board also came to a similar conclusion regarding UAA Factor 5's physical conditions affecting a water body's ability to attain the Clean Water Act's goals.[55] The Board

[49] Midwest Generation's Comments, Section XI at pp. 50-52.
[50] U.S. EPA Comments, Enclosure I at pp. 5-6.
[51] Subdocket C First Notice Opinion at p. 196; Subdocket C Second Notice Opinion at pp. 37, 39, & 40.
[52] Subdocket C First Notice Opinion at p. 7.
[53] Subdocket C Second Notice Opinion at p. 37.
[54] See, e.g., Midwest Generation Final Comments in Subdocket C, PC #1277, at p. 81, citing to 11/9/09 AM Tr. at pp. 86-87.
[55] Subdocket C Second Notice Opinion at p. 40.

explained that the "record is replete with evidence that there are other limitations [other than low flow] to the segments…" including testimony by Dr. Thomas Granato regarding flow reversal and the impact on habitat and testimony by Dr. Charles Melching regarding the physical configuration of this water body.[56]

Turning to the UDIP, the Board found that the "UDIP cannot fully meet the CWA goal."[57] With regard to UAA Factor 4 hydrologic modifications, the Board concluded, "that the extensive record supports a finding that UAA Factor 4 prevents the CAWS and LDPR from achieving the CWA goal of fishable."[58] Supported by the expert testimony of EA's Gregory Seegert, the Board noted as follows: "For example, hydrologic modifications can change the waterway system from its original riverine nature and can cause physical limitations by limiting the riffles, reducing the amount of fast water and increasing sedimentation."[59] The Board found that the low flow conditions in the UDIP contribute to its inability to attain the CWA goals. Relying in part on Greg Seegert's Pre-Filed Testimony (Exhibit 366), the Board noted how the hydrologic modifications to the UDIP changed the waterway from its original riverine nature.[60] As stated in the 2008 EA Report on the UDIP conditions (attached as Exhibit 2 to the Seegert Pre-Filed Testimony), the winter temperature regime in the UDIP is much altered because of the wastewater inputs.[61] Temperatures in the waterway, including the UDIP, are mainly influenced by the upstream flow manipulations and when the flow is low and the ambient air temperature is high, the waterway picks up heat quickly, but very little ambient air cooling occurs.[62]

Based upon the Board's UAA Factors findings for both the CSSC and the UDIP, either a multi-discharger or a water body variance should be applied for thermal standards because the waterways cannot attain the criteria due to conditions that are recognized as limiting under UAA Factors 3 (for CSSC only), 4 and 5. The thermal dischargers to the CSSC and the UDIP cannot change or control the flow conditions in these waters. Their highly impounded condition is an artifact of the man-made dams and flood-control needs for the Chicagoland area. Yet, the fact

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[56] Subdocket C Second Notice Opinion at p. 39.
[57] *Final Order, In the Matter of: Water Quality Standards and Effluent Limitations for the Chicago Area Waterway System and Lower Des Plaines River; Proposed Amendments to 35 Ill. Adm. Code 301,302, 303, and 304*, R08-09(C), February 6, 2014, at p. 10.
[58] Subdocket C, Second Notice Opinion at p. 39.
[59] Subdocket C Second Notice Opinion at p. 38.
[60] Subdocket C Second Notice Opinion at p 38.
[61] See Ex. 2 to Exhibit. 366, EA Report at pp. 4, 29.
[62] See Midwest Generation Final Comments in Subdocket C, PC #1277, at p. 81, citing 11/9/09 AM Tr. at 86-87.

that low flow conditions are characteristic of these waters in the hot, summer months, further exaggerates the effects of ambient and solar heating to elevate their typical summer temperatures. Artificially controlled, variable flows and pool levels to accommodate navigational needs present a condition which is considerably altered from what would be found in a natural waterway. The limited habitat that does exist for higher quality aquatic life in the UDIP is further constrained by the navigational traffic and the constant flow manipulations and alternations. As such, these constraints are irreversible and cannot practically be mitigated during any thermal variance period.

The effluent-dominated nature of these waters, which prevents any normal seasonal variation of the ambient temperatures and elevates non-summer ambient water temperatures, is unavoidable and permanent. Further, as explained in detail in the 2003 EA Thermal Report, there is substantial temperature variability outside the main channel of the UDIP waters that is unrelated to power plant operations. Side channel, slough, and backwater habitats are often warmer than mid-channel areas in mid-summer (due to solar heating).[63] There is no known solution that would bring cooler waters, such as from Lake Michigan, into these waters. The record in Subdocket C of this rulemaking demonstrated that temperature is not the primary factor that constrains the establishment of more favorable physical and/or chemical conditions for aquatic life.

The granting of a thermal multi-discharger or water body variance will not eliminate or remove the existing ability of these waters to attain their designated use. During any such variance, there will not be any substantive improvement in the physical or chemical condition of these waters. Due to continuing barge traffic, the clarity of these waters will not improve. Due to continuing Combined Sewer Overflows ("CSOs") to these waters, the dissolved oxygen content will not improve. The nature and extent of urban run-off into these waters also will not significantly change. These obstacles to improvements in the quality of aquatic life in these waters, along with the prevalent habitat limitations, will continue to prevent the establishment of a higher quality aquatic community.

In sum, thermal dischargers to these waters, like Midwest Generation, begin any compliance efforts with a severe uphill battle not due to any fault of their own. The Board anticipated this situation in its Subdocket C First Notice Opinion when it acknowledged that the

[63] 2003 EA Thermal Report at pp. 45 and 68.

thermal standards may need to be adapted.[64] Midwest Generation submits that one or more of the applicable UAA Factors justifies a decision by the Board to adopt either a multi-discharger or water body variance for the CSSC and the UDIP.

V. ExxonMobil's Suggested Imposition of a Thermal Demonstration upon Midwest Generation Thermal Discharges is Unjustified and Contrary to Existing Regulations.

In its Pre-First Notice Comments, ExxonMobil suggests that if the Board adopts the General Use standards for the UDIP, then the power stations on the UDIP should perform a thermal demonstration under 35 Ill. Adm. Code §302.211(f).[65] ExxonMobil's self-serving suggestion unduly and unjustifiably expands the applicable scope of the thermal demonstration requirement applicable only to General Use waters under Section 302.211(f). No such separate demonstration should be required here because not only is the UDIP not a General Use water, but more importantly, nothing would be gained by imposing such a thermal demonstration requirement upon Midwest Generation.

First, the existing thermal demonstration requirement under Section 302.211(f) is for "General Use Waters" which are defined as all waters of the State, "except as otherwise specifically provided." 35 Ill. Adm. Code §303.201. Pursuant to Section 303.201 of the water quality standards for General Use waters, such waters must comply with the standards of Subpart B of Part 302 of the regulations. Here, the UDIP is "otherwise specifically provided for," within the meaning of Section 303.201, as a separate UDIP Use designation, described and defined in the newly codified 35 Ill. Adm. Code § 303.230. Section 303.230 states that the UDIP Use standards must comply with Subpart D, not Subpart B, of Part 302. Because the UDIP is "otherwise specifically provided" for under the separate UDIP Use designation, and is therefore subject to the standards in Subpart D, the General Use standards under Subpart B do not apply. While Midwest Generation objects to the application of the General Use thermal standards to the UDIP, even if the Board were to rely upon them to derive the UDIP Use standards, the UDIP would still not become a "General Use" water for purposes of Section 302.211(f).

Second, even assuming that Section 302.211(f) were to become applicable to the UDIP Use, which it should not, there is no justification provided by ExxonMobil for why only Midwest

[64] Subdocket C First Notice Opinion at p. 221.
[65] ExxonMobil's Pre-First Notice Comments, filed April 30, 2014, R08-09(D) at p.p. 23-24.

Generation should be compelled to make this demonstration regarding its discharges. ExxonMobil's only rationale behind this proposal appears to be to unnecessarily cause Midwest Generation unjustified burden and expense. Further, through the extensive UIW Studies in the 1990's which supported the AS96-10 adjusted thermal standards and the subsequent annual fish surveys conducted for Midwest Generation by EA, in the AS96-10 decision by the Board, Midwest Generation has already demonstrated that its discharges "have not caused and cannot be reasonably expected to cause significant ecological damage to the receiving waters" within the meaning of Section 302.211(f). ExxonMobil provides no explanation as to why after all of the years of studying the thermal discharges to these receiving waters its proposed additional thermal demonstration should also be required.

Finally, Midwest Generation also would like to correct the misleading statements concerning the water intake usage by its Joliet Stations introduced into this record by ExxonMobil.[66] ExxonMobil's claim that "the cooling water flows for Joliet 9 and Joliet 29 are approximately 43 percent greater than the upstream river flow" appears to be a cynical and misguided attempt to convince the Board that the Joliet Stations are using almost half of the water present in the UDIP for cooling purposes. Such an assertion is simply wrong. Unlike ExxonMobil's witness Mr. Tischler, Midwest Generation's witness Julia Wozniak has studied the flow of the UDIP for years, including on a daily basis during the summer months because she must use flow data on a daily basis to monitor thermal compliance for the Joliet Stations.[67] Ms. Wozniak testified that because of the impounded nature of the UDIP, "trying to relate the amount of water used for condenser cooling to the amount of flow available in the waterway is not an accurate representation of what's occurring in the waterway at times. There's always a large volume of water available in the navigational pool to dilute effluent, including heating [sic] ones."[68] ExxonMobil's exaggeration of the percentage of the Dresden Pool water utilized by the Joliet Stations is wholly unreliable and indeed, purely self-serving.

Further, ExxonMobil's contention that the Joliet Stations' heated effluent represents 43% of the flow in the UDIP is directly refuted by the thermal plume surveys that Midwest Generation has conducted. As Ms. Wozniak also testified, in 2002, Midwest Generation

[66] See ExxonMobil Post-Hearing Comments at p. 19, citing Tischler Pre-Filed Testimony at p. 26.
[67] Wozniak Testimony, November 9, 2009 Hearing Tr. at pp. 25-27; Pre-Filed Testimony of Julia Wozniak (Ex. 364) at p. 9-11.
[68] Id at pp. 32-33.

conducted thermal in-stream surveys on the Joliet Station thermal discharges that did cross-sectional, top-to-bottom, side-to-side measurements.[69] The 2002 thermal survey showed that the Joliet Stations were not using more than 25 percent of the cross-sectional area or volume of flow and that the UIW studies in support of the AS96-10 adjusted thermal standards "showed similar results."[70] The same 2002 thermal survey demonstrated that a "zone of passage" for aquatic life, as required by the mixing zone requirements in 35 Ill. Adm. Code § 302.102, was also maintained.[71]

While ExxonMobil's heated discharge may present its own compliance issues, it has failed to demonstrate that Midwest Generation's thermal discharges are the sole cause of its thermal compliance problem. ExxonMobil fails to present a single thermal study which supports this assertion. For example, ExxonMobil has not presented any modeling or other form of analysis to show what the ambient temperatures would be in the area of its discharge in the absence of the Joliet Stations. There are several miles of waterway in-between the Joliet Stations and the ExxonMobil Station. As EA advised in its 2003 report on thermal conditions in this waterway, because of the highly impounded nature of the UDIP, "[d]uring the hottest times of the year, the ambient river temperatures are also increased, due to higher air temperatures and solar inputs."[72] It cannot simply be assumed by the Board that the ambient temperatures present in the vicinity of ExxonMobil's discharge are caused solely by the Joliet Stations' discharges located several miles upstream. ExxonMobil may need relief from whatever thermal standards are adopted by the Board, but that is not a justification for ExxonMobil's attempt to impose additional compliance demonstrations or burdens upon Midwest Generation.

VI. Conclusion

The EA 2007 Proposed Thermal Standards meet all of the requirements for approval under the Clean Water Act. They are adequately protective, scientifically sound and consistent with U.S. EPA guidance on thermal standards derivation that is currently available. The data collected by EA is perhaps the most extensive database that has ever been available for a

[69] Id. at p. 45.
[70] Id. at p. 45.
[71] Id. at p. 47.
[72] 2003 EA Report at p. 61.

particular water body. It is simply contrary to both sound scientific methods and U.S. EPA guidance to ignore that data.

The Environmental Groups' proposed standards are not scientifically sound because they are based on the unreliable, flawed database of literature thermal values prepared by MBI/Yoder. Nor do the Environmental Groups present any other evidence to show that their proposed thermal standards are necessary to protect the designated aquatic life uses for the UDIP or the Use B waters. The evidence in this proceeding from the over twenty-years of stream data collected by EA from the Lower Des Plaines River shows that the Environmental Groups' proposed thermal standards are overly protective because they are far more stringent than necessary to protect the aquatic life in these waters. As a result, adopting such thermal standards would improperly impose compliance burdens that are neither required by the Clean Water Act nor consistent with the requirement in Section 27 of the Illinois Environmental Protection Act that all such standards must be economically reasonable. Just as the Illinois EPA and MBI/Yoder unjustifiably and arbitrarily elected not to give due consideration to the available site-specific biological data, the same is true of the approach taken by the Environmental Groups.

The U.S. EPA's suggestion that an excursion hours provision would not be protective is supported only by speculative concerns regarding the actual effects of temporary and limited elevated ambient temperatures on the aquatic life that inhabit these waters. U.S. EPA's suggestion arises solely from laboratory derived thermal endpoints presented by MBI/Yoder, which do not meet U.S. EPA's requirements for acceptable data and have repeatedly been shown to be unreliable on several grounds. Further, the validity of the MBI/Yoder thermal endpoints has been persuasively refuted by comparing them to the actual in-stream data. That comparison showed that fish have been repeatedly collected in these waters at temperatures which, according to the flawed MBI/Yoder analysis, should either have killed them or at least caused them to leave.

For all of the above reasons, and those also set forth in Midwest Generation's Comments, Midwest Generation requests that the Board reject the Illinois EPA's proposed thermal standards and the Environmental Groups' even less justified alternative standards. The most defensible thermal standards approach before the Board, and one that will pass muster under the Clean Water Act's requirements, is the 2007 EA propose thermal standards. A careful review of the EA 2007 proposed thermal standards will show that they are protective, based on sound science

and consistent with EPA guidance - - all of the factors necessary to adopt approvable thermal standards under the Clean Water Act. In the alternative, the Board should consider the other alternatives described in Midwest Generation's Comments, such as the 2003 EA thermal standards, the AS96-10, or even the General Use standards, which are still overly protective but less objectionable than what the Illinois EPA or the Environmental Groups have proposed.

Respectfully submitted,

Midwest Generation, LLC

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