

**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

IN THE MATTER OF: )  
)  
WATER QUALITY STANDARDS AND ) R08-9  
EFFLUENT LIMITATIONS FOR THE ) (Rulemaking - Water)  
CHICAGO AREA WATERWAY SYSTEM )  
AND THE LOWER DES PLAINES RIVER: ) Subdocket C  
PROPOSED AMENDMENTS TO 35 ILL. )  
Adm. Code Parts 301, 302, 303 and 304 )

**NOTICE OF FILING**

To: ALL COUNSEL OF RECORD  
(Service List Attached)

**PLEASE TAKE NOTICE** that on the 30th day of August, 2013, I, on behalf of the Metropolitan Water Reclamation District of Greater Chicago (the "District"), electronically filed **METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO'S RESPONSE TO U.S. EPA'S COMMENTS ON PROPOSED AQUATIC LIFE DESIGNATED USES** with the Office of the Clerk of the Illinois Pollution Control Board.

Dated: August 30, 2013

**METROPOLITAN WATER RECLAMATION  
DISTRICT OF GREATER CHICAGO**

By: /s/ Fredric P. Andes  
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**PROOF OF SERVICE**

The undersigned, a non-attorney, certifies, under penalties of perjury pursuant to 735 ILCS 5/1-109, that I caused a copy of the forgoing, the **METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO'S RESPONSE TO U.S. EPA'S COMMENTS ON PROPOSED AQUATIC LIFE DESIGNATED USES**, to be served via First Class Mail, postage paid, from One North Wacker Drive, Chicago, Illinois, on the 30th Day of August, 2013, upon the attorneys of record on the attached Service List.

/s/ Debbie Espinosa

Debbie Espinosa

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**METROPOLITAN WATER RECLAMATION DISTRICT OF  
 GREATER CHICAGO'S RESPONSE TO U.S. EPA'S COMMENTS  
ON PROPOSED AQUATIC LIFE DESIGNATED USES**

On June 27, 2013, the U.S. Environmental Protection Agency (EPA) filed comments in Subdocket C concerning several issues related to the Illinois Pollution Control Board's (IPCB) proposal and justification of aquatic life uses for the Chicago Area Waterway System (CAWS) and the Lower Des Plaines River (LDPR). The Metropolitan Water Reclamation District of Greater Chicago (MWRD or the District) hereby submits its response to certain comments in EPA's letter.<sup>1</sup>

**I. The Record Contains Ample Testimony and Evidence that the CAWS Cannot Attain the Highest Aquatic Life Uses Set Forth in Section 101(a)(2) of the Clean Water Act**

In Part I of its comments, EPA challenges IPCB's proposal to adopt designated uses throughout the CAWS that do not include the uses specified in section 101(a)(2) of the Clean Water Act (CWA): the protection and propagation of fish, shellfish, and wildlife (referred to herein as the CWA aquatic life goal). EPA contends that the record does not support IPCB's position that attainment of such uses is not feasible for the reasons specified at 40 C.F.R. § 131.10(g)(3), (4) and (5).

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<sup>1</sup> While EPA's comments concern both the CAWS and the LDPR, MWRD is responding here only as to the CAWS, since that is where its facilities and discharges are located. It is our understanding that other parties will address LDPR issues.

A Use Attainability Analysis (UAA) is a structured scientific assessment of the factors affecting the attainment of the uses specified in section 101(a)(2). As explained by EPA: “A key concept in assigning designated uses is ‘attainability,’ or the ability to achieve water quality goals under a given set of natural, human-caused, and economic conditions. The overall success of pollution control efforts depends on a reliable set of underlying designated uses in water quality standards.” See *U.S. EPA, Use Attainability Analysis, Basic Information: Introduction to UAAs*, available at <http://water.epa.gov/scitech/swguidance/standards/uses/uaa/info.cfm>. The factors to be considered when adopting a use *other* than the CWA aquatic life goal set forth in section 101(a)(2) include the physical, chemical, biological, and economic use removal criteria described in EPA’s water quality standards regulation at 40 C.F.R. § 131.10(g)(1)-(6). More specifically, states may remove a designated use which is not an existing use, as defined in section 131.3, or establish sub-categories of uses other than the CWA aquatic life and recreational goals if the State can demonstrate that attaining those uses is not feasible because of *any one* of the six removal factors in 40 C.F.R. § 131.10(g)(1)-(6).

A UAA was performed for the CAWS, which showed that these waterways have unique habitat conditions. None of the waterbodies could achieve CWA aquatic life goals due to limitations described in the six UAA factors. *IEPA Statement of Reasons* (Oct. 26, 2007) at 95. *Id.* at 95. IEPA determined that two levels of biological potential apply in the CAWS; neither of the two levels representing biological conditions meets the CWA aquatic life goal, because of the following factors described in the UAAs: (1) Human-caused conditions or sources of pollution prevent the attainment of the use, and cannot be remedied or would cause more environmental damage to correct than to leave in place (40 C.F.R. § 131.10(g)(3)); (2) Dams, diversion or other types of hydrological modifications preclude the attainment of the use, and it is not feasible to

restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use (40 C.F.R. § 131.10(g)(4)); and (3) Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses (40 C.F.R. § 131.10(g)(5)). *IEPA Statement of Reasons* (Oct. 26, 2007) at 47-48.

EPA's letter questions whether the record supports IPCB's conclusions regarding the applicability of 40 C.F.R. § 131.10(g)(3), (4) and (5) to the CAWS. Most of EPA's comments, however, fail to reference the extensive record, are contradicted by EPA's own statements, or are ultimately irrelevant to whether at least one 40 C.F.R. § 131.10(g) category has been satisfied, thus allowing removal of the CWA aquatic life goal as a designated use for these waters. The record before IPCB on the issues raised by EPA is voluminous and unequivocal. The protection and propagation of fish, shellfish, and wildlife specified in section 101(a)(2) of the CWA is not an attainable use for the CAWS as discussed by the UAA and confirmed by the extensive testimony, recent scientific studies, and various other data and evidence in the record.

**A. Physical conditions preclude attainment of aquatic life protection uses (40 C.F.R. § 131.10(g)(5)).**

Under the plain language of 40 C.F.R. § 131.10(g)(5), various physical conditions of a waterbody unrelated to water quality can preclude attainment of the CWA aquatic life goal. In its comment letter (at p. 2), EPA narrowly focuses on IPCB's position that low flow conditions preclude attainment for some waters and questions whether the record demonstrates that low flow conditions are related to the natural features of the CAWS. EPA provides no further specifics, including any citation to the record, that contradicts the position that 40 C.F.R. § 131.10(g)(5) is indeed applicable here. That is likely because the record before IPCB is replete with testimony and evidence supporting the fact that the physical conditions of the CAWS,

including, but certainly not limited to, low flow conditions, prevent attainment of the CWA life protection goal.

Dr. Thomas Granato, currently the Director of Monitoring and Research for the MWRD, testified early in the proceedings on this issue:

Hydraulic limitations such as flow reversals, slow water velocity and the effects of wet weather present challenges not faced by most natural waterbodies. The ecological community in the CAWS also is substantially impaired by poor habitat, including low quality substrate, little or no sinuosity, poor riffle and pond development and low gradients. The CAWS substrate alone will prevent any further improvements in water quality from translating to a better macroinvertebrate community and will not likely result in improvements in aquatic life use. Without suitable habitat pattern and diversity, sustainable aquatic populations will not be established even with improvements in water quality.

*Pre-filed Testimony of Dr. Thomas Granato* (Aug. 4, 2008) at 4. In addition, Jennifer Wasik, a biologist who currently manages the Aquatic Ecology and Water Quality Section at MWRD, submitted testimony concerning the physical condition of the CAWS focusing on the composition of the sediments:

Throughout the CAWS, homogenous fine sediments dominated and there was no quality habitat for benthic invertebrates. Chemical contamination with metals, PAHs, and/or PCBs was widespread in CAWS sediments according to screening levels used in the UAA report. Toxicity analysis demonstrated that sediments were unsuitable for the survival of a relatively tolerant species of benthic invertebrate, especially in the CSC.

*Pre-Filed Testimony of Jennifer Wasik* (Aug. 4, 2008) at 9. Both Dr. Granato's and Ms. Wasik's testimony support the position that the natural features of the CAWS including lack of a proper substrate, flow reversals, and slow water velocity, among other things, preclude attainment of the CWA aquatic life goal.

Further, there was testimony by Dr. Charles S. Melching, Associate Professor of Civil and Environmental Engineering at Marquette University at the time of his testimony, who discussed in detail the low flow aspects of the CAWS and the effects of the system's physical configuration:

The DUFLOW model was used to determine average travel times in the CAWS. Table 2 in Attachment 1 lists the average travel times, lengths, and average velocities for several reaches in the CAWS for the July 12 to September 15, 2001 simulation period. The hydraulic dam upstream from the Stickney Plant is obvious as it takes 2.5 days to go 8 miles from Madison Street to Cicero Avenue. The hydraulic dam upstream from the Calumet Plant also is obvious as it takes 1.5 days to go 2.3 miles from Indiana Avenue to Halsted Street.

Huge travel times and low flow velocities also are apparent upstream from the junction of the Chicago Sanitary and Ship Canal and the Calumet-Sag Channel. This is because when the Chicago Sanitary and Ship Canal was originally constructed the Calumet-Sag Channel was not anticipated and the Chicago Sanitary and Ship Canal cross-sectional geometry is the same upstream and downstream from Sag Junction. Thus, Sag Junction acts like two lanes narrowing to one lane on the freeway with large backups and long travel times resulting. In total it takes more than 8 days for water to travel from the upstream ends of the North Shore Channel and Little Calumet River (north) to Romeoville on the Chicago Sanitary and Ship Canal....The long travel time gives us further impression of the unnatural condition of the CAWS. This feature of the CAWS contributes to the lower dissolved oxygen that is observed in CAWS compared to general use rivers because of the reduced natural reaeration resulting from low velocity and very low slope.

*Pre-Filed Testimony of Dr. Charles S. Melching (Aug. 4, 2008) at 4-5.* Dr. Melching's testimony squarely addresses the low-flow conditions in the CAWS with specificity and scientific support.

IEPA personnel also submitted testimony early in the proceedings supporting the position that the CWA aquatic life goal is unattainable due to the physical conditions of the CAWS. Rob

Sulski, a 24-year veteran of IEPA, who served as the Project Manager for the CAWS UAA, testified before IPCB that: "Illinois EPA's UAA findings are that the aquatic life uses attainable in most of the CAWS and Lower Des Plaines River in the foreseeable future are affected by one or more of the 6 UAA factors." *Pre-Filed Testimony of Rob Sulski* (Dec. 20, 2007) at 13. Further testifying, Mr. Sulski explained that significant nonreversible physical limitations of the waterbodies preclude attainment of the CWA aquatic life goal:

The CAWS UAA demonstrated through habitat and other aquatic life data that North Shore Channel, Chicago River and Calumet River possess conditions described in UAA factors 3, 4 and 5, which are not reversible in the foreseeable future and in combination with other factors, prevent them from maintaining a biological condition that meets the Clean Waters Act's aquatic life goal. The Chicago Area Waterway System Aquatic Life Use A Waters are artificially constructed, or channelized, earthen bank reaches with some fixed aquatic and overhanging riparian vegetation and other areas of refuge. They are generally less than 15 feet deep and a narrow, littoral zone flanks one or both sides of their steeper-sloped midstream channel. In addition to habitat constraints, the CAWS Aquatic Life Use A waters are routinely subject to moderate to severe navigation and other anthropogenic related conditions such as: wake disturbances of littoral zones; sediment scouring and re-suspension; and rapidly fluctuating water elevations and flow velocities that result from storm surges and pre-storm, human manipulations of the waterways necessary to accommodate such surges.

Although MWRD and IEPA have disagreed on certain actions to be taken based on the UAA results and other issues, there is agreement regarding the presence of many irreversible physical characteristics in the CAWS that preclude attainment of the CWA aquatic life goal.

Paul Freedman, a professional engineer and environmental consultant, who is the founder and President of LimnoTech, Inc., testified as to the key physical differences between the General Use Waters in Illinois and the CAWS. His testimony and supporting materials also addressed flow conditions in the CAWS and its impact on attainable uses:

The CAWS is a unique system, with no other comparable waterway in the State of Illinois. This system has very different characteristics from the other General Use waters, for which IPCB recently adopted standards. The following table provides a simple summary of key differences between the CAWS and broad characteristics of General Use Waters. The combination of different factors found in the CAWS is unique and very different from typical free flowing streams and rivers, which are more characteristic of Illinois General Use waters. None of these characteristics used to describe the CAWS are included within the General Use water descriptions, nor are they typically characteristic of other General Use waters in Illinois.

*Pre-Filed Testimony of Paul L. Freedman, P.E., BCEE (Aug. 4, 2008)* at 4. Mr. Freedman's written testimony includes a chart identifying the differences in flow between Illinois General Use Waters and the CAWS noting that the CAWS has "regulated flow, bi-directional flow, and areas stagnant and density stratified." Mr. Freedman further testified regarding the impact of the flow characteristics and other physical properties of the CAWS reflected in his chart:

The differences highlighted above have a significant impact on attainable uses and water quality in affected waterways. The available literature is replete with recognition of how altered conditions impact water quality and potential biologic uses. For example, as described in my report (Attachment 2), the Army Corps of Engineers describes navigation channels as having altered flow, limited mixing and stratification, and sediment effects that all can lead to low dissolved oxygen and unstable bottom substrate. USEPA also states that the physical and hydrological characteristics of man-made waterbodies are not conducive to the establishment of a balanced population of aquatic biota. Many other scientific publications document the negative ecological effects of navigation and man-made channels, including mortality of fish eggs, larvae, and adult fish, prevention of effective spawning, and severe limitations on the growth and development of fish larvae and young of year (YOY) fish.

*Id.* Accordingly, even prior to the CAWS Habitat Evaluation and Improvement Study, the record included ample testimony and scientific support concerning the physical limitations, including low flow conditions, inherent to the natural features of the CAWS.

Scott Bell, a licensed Environmental Engineer and Vice President of LimnoTech, testified concerning the major findings of the CAWS Habitat Evaluation Study and Habitat Improvement Study (the CAWS Habitat Studies) commissioned by the MWRD. The CAWS Habitat Studies, issued in January 2010, comprised a thorough and data-intensive examination of the relationships between fish, physical habit, and water quality in the CAWS and addressed many of the data gap concerns raised earlier in the proceedings before IPCB. Mr. Bell's testimony, supported by the latest science, touches on virtually every physical condition factor listed in 40 C.F.R. § 131.10(g)(5) that can preclude attainment of the CWA aquatic life goal:

In any discussion of aquatic ecology and physical habitat in the CAWS it is important to remember the anthropogenic origin of much of the system. Of the roughly 78 miles of waterways included in the CAWS Habitat Study, approximately 75% are manmade canals that were excavated in the late 19th and early 20th centuries to convey wastewater effluent and urban storm water away from Lake Michigan and to support commercial navigation. While about 75% of the CAWS are manmade, the other 25% of the waterways have been extensively modified from their original form to also support these uses. Many miles of channel banks were dug into bedrock; where the channels were dug in soil the banks were armored with stone and other materials to prevent erosion....Using [digital video] data, we determined that 61% of the banks in the CAWS (approximately 95 miles) consist of vertical walls or are covered with rip rap.

The constructed reaches of the CAWS were made uniform in shape and relatively straight, which imposes limitations on aquatic life. Where natural channels previously existed, the channels were also straightened. In rivers and streams, the curving of the channels as they flow through the landscape creates variations in flow velocity, water depth, bed materials and essentially creates variations in habitat that support a variety of aquatic life and life stages. This is an essential aspect of aquatic habitat in rivers and streams and replication of this sinuosity is often a specific goal in stream restoration when the goal is to restore habitat. Sinuosity is typically measured as the actual length of the channel between two points, divided by the distance between the two points as the crow flies. Using this measure, a perfectly straight channel will have a sinuosity of one and the more sinuous the channel, the higher the

value. In rivers and streams, a sinuosity less than 1.2 is considered low, while sinuosity greater than 1.5 is considered high. Most of the reaches of the CAWS have a sinuosity between 1.0 and 1.1.

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The channels of the CAWS were also constructed and are maintained to be relatively deep, to provide sufficient capacity for the conveyance of wastewater effluent and storm water runoff from the City of Chicago and to allow commercial shipping. Most of the channels in the CAWS are 15 feet deep or more and not only in the center, where rivers are deepest, but across nearly their entire widths. Many of the channels were made to be roughly rectangular or trapezoidal in cross-section with very little of the shallow, nearshore areas, called littoral zones, that are typically very important to fish in natural systems.

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Channel substrate (the composition, texture and structure of bed materials) is a very important aspect of physical habitat in aquatic systems. Typically, substrate that includes relatively large portions of sand and gravel is considered preferable habitat. As part of the CAWS Habitat Study, substrate data from 28 stations throughout the CAWS were evaluated. Substrate at most of these stations (16 out of 28) was characterized as "inorganic silt", indicating a very fine material, finer than sand. Five of the stations were found to have beds characterized as bedrock, which is also relatively undesirable from a habitat perspective. In addition to being poor in composition and texture, the substrate in the CAWS contains widespread contamination from industrial and other human activities. Chemicals detected at elevated levels in sediments throughout the CAWS include petroleum products, pesticides, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), and heavy metals. Analysis conducted as part of the CAWS Habitat Study showed that there are statistically significant relationships between the concentrations of many these chemical and the health of benthic invertebrates, which comprise a key part of the food chain in aquatic systems.

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The design of the waterways was intended to support their primary uses and not to mimic natural waterways. Their form limits bank and benthic habitat and minimizes hydraulic and geomorphic variation in the channels, which are very important to aquatic life. The CAWS Habitat Study found that channel depth, lack of off-

channel areas and bank refuge for fish, vertical-walled or riprapped banks, and manmade structures in the channels were all strongly, negatively correlated with fish condition. All of these factors are attributable to the design of the CAWS and the fact that they are entirely manmade or drastically modified in form.

In addition to the limitations imposed by the form of the waterways, the primary uses of the CAWS further limit their ecological potential. The inflow of urban stormwater carries fine sediments. A portion of this fine sediment load settles to coat the bed of the waterways, while the rest remains in suspension, resulting in relatively high turbidity. Part of the sediment that settles is easily resuspended by currents or passing boats and barges. These sediments carry pollutants from the urban environment which add to the contaminants already present in the sediments from years of industrial discharges.

*Pre-Filed Testimony of Scott B. Bell – Chicago Area Waterway System Habitat Evaluation and Improvement Study (Feb. 2, 2011) at 4-7.*

Mr. Bell's detailed testimony, supported by the CAWS Habitat Studies, which are also part of the record, addresses both the poor flow conditions in the CAWS and the numerous other physical conditions of the waterbodies that prevent attainment of the CWA aquatic life goal. Mr. Bell further summarized that the CAWS Habitat Studies produced several significant overarching findings regarding physical habitat in the CAWS, its relative importance to fish, and the potential for improving fisheries in the CAWS including:

1. Aquatic habitat is inherently limited in the CAWS by the system's form and function. Habitat in the CAWS is significantly limited by the design of the CAWS, most of which is manmade. The manmade reaches of the CAWS were built to support wastewater effluent conveyance and commercial navigation. The reaches that were once natural streams have been heavily modified to serve these purposes and the changes are unlikely to be reversed as long as the CAWS needs to serve these functions. The form and uses of the CAWS impose severe limitations on physical habitat in the system.

2. Physical habitat is more important to fish in the CAWS than dissolved oxygen. When key physical habitat variables and dissolved oxygen metrics are statistically compared to fish data collected between 2001 and 2008 in the CAWS, it is apparent that habitat is much more important to fish than dissolved oxygen.
3. There is limited potential for physical habitat improvement in the CAWS and potential changes might not result in measurable improvements to fisheries. Only a limited number of the primary habitat impairments in the CAWS, identified in the CAWS Habitat Study, have improvement potential.

*Id.* at 2-3. These unequivocal conclusions are objective, scientifically supported, and not contradicted by EPA. There is no doubt that the extensive physical conditions of the CAWS prevent attainment of the CWA aquatic life goal and, therefore, 40 C.F.R. § 131.10(g)(5) is applicable.

Testimony provided by Dr. Scudder Mackey, an environmental consultant specializing in aquatic habitat mapping and characterization, further supports the position that physical conditions of the CAWS preclude attainment of the CWA aquatic life goal. Dr. Mackey's conclusions regarding the CAWS Habitat Studies and physical limitations of the CAWS echo Mr. Bell's findings. After reviewing the study, Dr. Mackey testified about the impact of the "irreversible" problematic physical conditions in the CAWS:

All of the CAWS segments are fundamentally limited by the irreversible functional limitations of the CAWS. The CAWS is an artificial man-made system with minimal natural attributes, and the designation of Aquatic Life Uses must consider those irreversible functional limitations. Even though the shoreline habitat improvements recommended in the Habitat Improvement Report would benefit many of the fish species already found in the CAWS, it would not benefit populations of intolerant or moderately intolerant obligate riffle dwellers that require fast moving water and coarse substrates commonly found in natural channels. Sustainable populations of less tolerant species that require higher energy conditions and coarse substrates will always be limited by existing functional uses and physical characteristics

associated with a man-made artificially constructed waterway such as the CAWS. These channelized waters are similar to impoundments and by design, will not exhibit many of the physical habitat characteristics associated with natural streams or rivers.

*Pre-Filed Testimony of Dr. Scudder D. Mackey in Support of a New Aquatic Life Use*

*Designation Proposal* (Feb. 2, 2011) at 4. Similar to Mr. Bell, Dr. Mackey explained that the CAWS Habitat Studies showed that “current DO levels are not a significant limiting factor of Aquatic Life Uses in the CAWS, and that further increases in DO would yield only marginal improvements to aquatic life in the CAWS due to severe physical habitat limitations.” *Id.* at 5.

The CAWS Habitat Studies’ findings, according to Dr. Mackey, confirmed his earlier testimony that physical habitat limitations are the primary limiting factor in the CAWS. Specifically, “the lack of diverse bank-edge and instream habitats within the CAWS may be a much more significant limitation on the development of sustainable fish communities than current levels of DO or temperature.” *Id.* at 6. Dr. Mackey further noted that “[t]he CAWS is an artificial man-made system with minimal natural attributes, and the designation of Aquatic Life Uses must consider those irreversible functional limitations.” *Id.* at 14. Dr. Mackey’s testimony further supports IPCB’s conclusion that the CWA aquatic life goal is unattainable under 40 C.F.R. § 131.10(g)(5).

Thus, notwithstanding EPA’s unsupported comments, a review of the testimony and evidence in the record (including from additional witnesses not discussed herein) clearly reveals copious amounts of information concerning the physical conditions impeding attainment of the CWA aquatic life goal in the CAWS. This evidence includes a number of detailed and scientifically supported discussions that (a) low flow conditions are related to the natural features of the CAWS and (b) the low flow conditions contribute to the inability of the waterbodies to attain the CWA aquatic life goal. EPA’s narrow focus on flow conditions is somewhat

misplaced and irrelevant in any event given the breadth of physical condition considerations allowable under 40 C.F.R. § 131.10(g)(5). Even if flow conditions were not at issue, there is overwhelming evidence in the record regarding the multitude of other physical conditions in the CAWS that preclude attainment of the CWA aquatic life goal.

The CAWS only need to satisfy *any one* of the six 40 C.F.R. § 131.10(g) factors to establish that attainment of the CWA aquatic life goal is not feasible. It is unassailable that the CAWS waters qualify for removal under 40 C.F.R. § 131.10(g)(5) due to their physical conditions as demonstrated in detail in the record. This alone is dispositive of the attainment analysis. Nevertheless, the District will address some of EPA's other comments in Part I of its comment letter below.

**B. Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place (40 C.F.R. § 131.10(g)(3)).**

In its comment letter (at p. 1), EPA asserts that IPCB concluded that stormwater and combined sewer overflows (CSOs) are human caused sources of pollution that prevent attainment of the CWA aquatic life goal. EPA claims that it is unaware of information in the record before IPCB demonstrating either that those sources of pollution cannot be remedied or would cause more environmental damage to correct than to leave in place. EPA opines that information in the record instead suggests that CSOs into the CAWS can be remedied through the completion of the Tunnel and Reservoir Plan (TARP). EPA, therefore, questions whether 40 C.F.R. § 131.10(g)(3) provides an adequate basis to justify nonattainment of the CWA aquatic life goal.

As an initial matter, there is ample testimony and evidence in the record documenting the magnitude, frequency, and duration of CSO impacts in the waterbodies. For example, Adrienne

Nemura, a civil engineer and consultant with LimnoTech, testified concerning the impacts of CSO discharges on attainability of aquatic life standards. Ms. Nemura notes that low dissolved oxygen levels are likely to remain even if the gravity CSOs could be eliminated. *Pre-Filed Testimony of Adrienne D. Nemura* (Aug. 4, 2008) at 5-6. Ms. Nemura cited to studies and testimony indicating that the criteria proposed by IEPA will be occasionally violated as a result of wet weather even with additional supplemental aeration, flow augmentation, progress in reducing CSO impacts, and hypothetical elimination of gravity CSOs. Ms. Nemura testified that even after TARP or potential green infrastructure measures are fully implemented, she believes that the CAWS will not be able to attain full, unlimited aquatic life uses, because (among other factors) there will still be discharges from CSOs, municipal storm sewers, and overland runoff. *Opinion and Order of the Board* (Feb. 21, 2013) at 71. IPCB has also pointed out that these issues are not resolvable in the short term: “Although CSOs will be addressed by TARP, the completion of TARP reservoirs is at least 15 years away.” *Id.* at 189.

EPA has acknowledged that even after TARP is completed, it is possible for CSOs to still occur; although the frequency and volume of any CSO discharges will be drastically reduced. EPA and MWRD have reached agreement on a consent decree that confirms the District’s commitment to complete TARP in an effort to address CSO-related issues, which has been lodged and is awaiting court approval.<sup>2</sup> That decree specifically recognizes that there are situations in which, after complete implementation of TARP, CSO discharges can still occur, including Transient Events. And, the decree specifies a process to address remaining water quality issues.

Accordingly, EPA’s unsupported contention that CSOs into the CAWS can be remedied solely by the completion of TARP is actually contravened, rather than supported, by the record

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<sup>2</sup> See <http://www.epa.gov/compliance/resources/cases/civil/cwa/mwrld.html>.

and EPA's own statements. Even with the improvements anticipated after the completion of TARP, the sources of pollution that prevent attainment of the CWA aquatic life goal in the CAWS may still remain. Consequently, IPCB was correct in finding that 40 C.F.R. § 131.10(g)(3) justifies a designated use other than the CWA aquatic life goal.

**C. Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or (40 C.F.R. § 131.10(g)(4)).**

With regard to this factor, EPA comments that IPCB should strengthen its rationale for each water where the proposed use will not be the CWA aquatic life goal to show: (1) what information demonstrates that the hydromodifications "preclude the attainment of the use" based upon the record, and (2) the basis for concluding that "it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use." Where IPCB asserts that it is not possible to restore the water body to its original condition, EPA wants IPCB to document that the modification cannot be operated "in a way that would result in the attainment of the use." EPA provides no citation to the record or to any example to demonstrate IPCB's purported shortcomings with respect to meeting the criteria in 40 C.F.R. § 131.10(g)(4).

Given the history of the CAWS, there is ample information in the record on these subjects. The CAWS consists of 78 miles of manmade or altered channels that allow for commercial navigation, and that provide an outlet for urban stormwater runoff and treated municipal wastewater effluent. Approximately 75 percent of the waterway consists of manmade canals while the other 25 percent is formerly natural stream channels which have been deepened, straightened or widened. "The reaches that were once natural streams have been heavily modified to serve [wastewater effluent conveyance and commercial navigation] and the changes

are unlikely to be reversed as long as the CAWS needs to serve these functions.” *Pre-Filed Testimony of Scott B. Bell – Chicago Area Waterway System Habitat Evaluation and Improvement Study* (Feb. 2, 2011) at 2. The flow is artificially controlled by four hydraulic structures managed by MWRD allowing the water levels to be lowered in anticipation of a storm event. Wastewater treatment plant effluent makes up approximately 70 percent of the annual flow through the Lockport Powerhouse and Lock and Powerhouse facility. *Opinion and Order of the Board* (Feb. 21, 2013) at 5 (quotations marks and internal citations omitted).

In light of the waterbodies’ history, their inherent limitations due to their form and function, and the abundant facts and scientific evidence in the record further developing these topics, the notion that the hydromodifications do not preclude attainment of the CWA aquatic life goal; or that the waterbodies can be restored to their “original condition”; or that they are going to be “operated” in a way to result in attainment of the CWA aquatic life goal, has been shown to be implausible through testimony and evidence.<sup>3</sup>

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<sup>3</sup> EPA also requests a better demonstration that the hydromodifications present in the Chicago Sanitary and Ship Canal (CSSC) prevent the attainment of the Aquatic Life Use A designation. As an initial matter, the CSSC is entirely manmade, not a natural waterbody that was modified. There are many physical limitations as a result. For example, flood plains have never existed for the CSSC and there is no potential to improve this type of habitat impairment. *CAWS Habitat and Evaluation and Improvement Study, Habitat Improvement Report* (Jan. 4, 2010) at 24.

The record also contains a substantial amount of information concerning other habitat limitations and physical attributes of the CSSC that prevent attainment of Use A. Such characteristics include, among other things, lack of off-channel refuge, vertical wall banks, and lack of macrophyte cover. *See, e.g., id.* at 52-53. In fact, according to the Habitat Improvement Report: “The CSSC is the longest reach in the CAWS and scored among the lowest ratings using the habitat index developed in this Study.” *Id.* at 52. Even with the implementation of habitat improvements, “the changes would not likely have a significant impact on fisheries quality.” *Id.* at 53. “The UAA also noted that Rankin’s habitat evaluation showed that the CSSC instream habitat ranged from poor to very poor. The limiting factors identified include silty substrates, poor substrate material, little instream cover, channelization, and no sinuosity.” *Opinion and Order of the Board* (Feb. 21, 2013) at 26. (internal citations omitted). IPCB specifically agreed with IEPA “that the UAA Factors 3, 4, and 5 are all present in the CSSC preventing this segment from achieving full potential to meet CWA aquatic life goals. While the potential exists for some improvement, the record indicates that such improvements will not make a significant difference in terms of attaining the CWA goals in the foreseeable future.” *Id.* at 196. In approving designation of the CSSC as CAWS ALU B, IPCB correctly concluded that “the new aquatic life use designation reflects the biologic and water quality conditions in the CSSC.” *Id.*

The reasoning and support justifying the applicability of 40 C.F.R. § 131.10(g)(4) is set forth in detail in the record including, but not limited to: the CAWS UAA report; the testimony from experts regarding physical properties discussed above; the testimony of numerous other witnesses not discussed herein; the Statement of Reasons; the CAWS Habitat Studies; the February 21, 2013 Opinion and Order of the Board; and in numerous other filings in the voluminous record. For example, Samuel Dennison – biologist in the Environmental Monitoring and Research Division of the Research and Development Department (now known as the Monitoring and Research Department) of the District, Robin L. Garibay – registered environmental engineer with ENVIRON International Corp., and Greg Seegert – Senior Scientist and Chief Ichthyologist with EA Engineering all provide detailed testimony on the applicability of 40 C.F.R. § 131.10(g)(4) to specific waterways at issue. *See Opinion and Order of the Board* (Feb. 21, 2013) at 79, 85, 98, 151, 182, 185, 189. In sum, the District respectfully suggests that EPA revisit the docket materials, including IPCB’s Opinion and Order and the support contained therein on issues related to 40 C.F.R. § 131.10(g)(4). The agency will find that there is more than sufficient support and reasoning to justify the applicability of 40 C.F.R. § 131.10(g)(4) to the various identified reaches of the CAWS.

## **II. Conclusion**

The protection and propagation of fish, shellfish, and wildlife specified in section 101(a)(2) of the CWA is not an attainable use for the CAWS as discussed by the UAA and confirmed by extensive testimony, recent scientific studies, and various other data and evidence in the record. The CAWS only need to satisfy *any one* of the six 40 C.F.R. § 131.10(g) factors to establish that attainment of the CWA aquatic life goal is not feasible. The record demonstrates that the CAWS waters undoubtedly qualify for removal under 40 C.F.R. § 131.10(g)(5) due to

the physical conditions related to the natural features of the waterbodies. IPCB was also correct in finding that 40 C.F.R. § 131.10(g)(3) applies because even with the improvements anticipated after the completion of TARP, the sources of pollution that prevent attainment of the CWA aquatic life goal in the CAWS will not be eliminated. Finally, hydromodifications also preclude the attainment of the CWA aquatic life goal and the record contains ample reasoning and support justifying the applicability of 40 C.F.R. § 131.10(g)(4). Accordingly, because the State has demonstrated that attaining the CWA aquatic life goal is not attainable, it is proper as a matter of law to remove this designated use, or establish sub-categories of uses other than the CWA aquatic life goal, for the CAWS.

Dated: August 30, 2013

Respectfully submitted,

**METROPOLITAN WATER RECLAMATION  
DISTRICT OF GREATER CHICAGO**

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