Attachment 4

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

STATE OF MICHIGAN, STATE OF WISCONSIN, STATE OF MINNESOTA, STATE OF OHIO, and COMMONWEALTH OF PENNSYLVANIA,	)	
Plaintiffs,	)	Case No. 1:10-cv-04457
v.	)	Hon. Robert M. Dow, Jr.
UNITED STATES ARMY CORPS OF ENGINEERS and METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO	)	
Defendants.	)	

DECLARATION OF JOHN W. PEABODY

1. My name is John W. Peabody. I am a career professional Army officer, currently serving as the Commander and Division Engineer of the Great Lakes and Ohio River Division of the United States Army Corps of Engineers (the Corps). I have command authority for seven Corps of Engineers Districts, including the Chicago District. In this capacity, I direct all U.S. Army Corps of Engineers water resources development in the Great Lakes and Ohio River basins, including all or parts of seventeen states. Our missions include planning, construction, and operation of navigation and flood damage reduction structures throughout the Ohio River and Great Lakes systems, as well as hydropower operations, environmental protection and restoration, water conservation, recreation and disaster assistance. I also have responsibility for military construction in Ohio, Kentucky, Indiana, Illinois and Michigan with design and construction of

barracks, hospitals, Quality of Life and administrative facilities, airfields and family housing at Army, Air Force and Department of Defense installations.

2. I have held the position of Commander and Division Engineer of the Great Lakes and Ohio River Division since August 4, 2008. Immediately prior to reporting to Cincinnati, Ohio for this position, I served as the 27th Commander and Division Engineer for the Pacific Ocean Division headquartered in Hawaii from July 2005 through July 2008. I have served in various command and staff capacities in the United States Army since 1980, mostly as a combat engineer, including combat tours in Somalia (1992-93) and Kuwait/Iraq (2002-03). I have also worked as a political-military analyst and Division Chief for the US Southern Command in Panama (1994-97), and as the Programs Division Chief for the Army's Office of Congressional Liaison, working with the Armed Forces Committees (2003-05).

3. I am a graduate of the United States Military Academy with a Bachelor of Science degree, of the Command and General Staff College, and of the Army War College with a Masters in Strategic Studies. I also hold a Master of Public Administration from Harvard University, and I studied political sociology and international relations at the doctorate level as an Olmsted Scholar at El Colegio de Mexico in Mexico City. I serve as an active duty Army Director on the Board of Directors for the George and Carol Olmsted Scholarship Foundation, and am a member of various professional organizations, including the Society of American Military Engineers, and the Army Engineer Association.

4. I am familiar with the facts relative to the above captioned civil action and I submit this sworn Declaration in support of the United States' Opposition to the Motion for Preliminary Injunction filed by the Plaintiffs in this action.

The Potential Impact of Asian Carp on the Great Lakes

5. I have primary leadership responsibility for the Corps of Engineers' efforts to address Asian carp migration towards the Great Lakes. These efforts are principally associated with the Corps' mission to construct, operate, and maintain the electrical Chicago Sanitary and Ship Canal Dispersal Barrier Project ("fish barrier") located near Romeoville, Illinois. Two species of Asian carp are of particular concern – the silver carp and the bighead carp.

6. Congress originally authorized the fish barrier for the purpose of preventing the round goby from migrating from Lake Michigan into the Illinois and Mississippi River system. As Asian carp have migrated steadily northward, the potential for this species to develop a sustainable population that threatens Lake Michigan and the Great Lakes has become generally recognized in the environmental community and throughout numerous federal, state and local government agencies as having potentially significant negative ecological consequences for the Great Lakes. As such, currently the Corps operates the fish barrier for the primary purpose of preventing Asian carp species' migration past the fish barrier and into the Chicago Area Waterway System (CAWS).

7. The Corps of Engineers has deferred to the judgment of senior professionals from agencies such as the United States Geological Survey (USGS), the United States Environmental Protection Agency (EPA), and the United States Fish and Wildlife Service (USFWS) who have advised us that the impact, if Asian carp could establish a population in the Great Lakes, has the potential to be significant. I am aware of no scientific study of Lake Michigan or the Great Lakes ecosystem that authoritatively predicts the scope of impact Asian carp would have if they were to populate its shoreline regions and tributaries, or even whether they could survive and thrive in these bodies of water. While scientists at USGS have concluded that many uncertainties remain, the Corps understands that, as a species which devours zooplankton, phytoplankton, and vegetation

– the basis for the food chain of all aquatic species – in large quantities, Asian carp have crowded out most other species in some areas of the Mississippi River basin, and could have a similar impact on the shallow water areas, shorelines, and tributaries of the Great Lakes. The Asian carp could also limit recreational activity due to the silver carp's penchant for jumping out of the water when startled, and could alter and damage near shore wetlands' ecosystems.

8. Based on the Corps' own authorities, and the understanding, discussed above, of the potential impact of Asian carp on the Great Lakes, the Corps of Engineers has approached its responsibilities to operate the fish barrier, to ensure the efficacy of the fish barrier, and to pursue other potential solutions through our investigatory authorities, as urgent and compelling priorities. As a result, the Corps of Engineers has aggressively applied its full capabilities to address this issue, in collaboration with the authorities and capabilities of all other relevant federal, state, and local agencies.

Corps of Engineers Authorities

9. Several authorities frame the Corps' efforts. Congress authorized construction of the first fish barrier project in 1996 in the National Invasive Species Act, 16 U.S.C. 4701. Congress supplemented that authority with further study authorization and authorizations to construct and operate the fish barrier as it exists today. The Corps continued construction of the fish barrier project under Section 1135 of the Continuing Authority Program, 33 U.S.C. 2903a, and Section 3061 of the Water Resources Development Act of 2007, Pub. L. 110-114, 121 Stat. 1121.

10. In addition, the Corps has authorities that allow it to study, evaluate and recommend solutions to the threat posed by the migration of Asian carp toward the Great Lakes, based on the Water Resources Development Act (WRDA) of 2007. Section 3061 of WRDA 2007 provides for the "Efficacy Study" which is intended to address the efficacy of the fish barrier in preventing

Asian carp from migrating through it, and its possible susceptibility to bypass. This on-going study, conducted in several parts as discussed further below, has and will recommend solutions to possible Asian carp bypass scenarios and other potential barriers and impediments to Asian carp migration in the Chicago Area Waterway System.

11. Section 3061 WRDA 2007 also authorizes the Great Lakes and Mississippi River Inter-Basin Study (GLMRIS), and addresses the broader issue of all aquatic invasive species' migration between the Great Lakes and the Mississippi River basins. The Corps will execute a multi-year comprehensive study of the Great Lakes and Mississippi River basin watersheds to identify pathways between them by which aquatic invasive species may migrate or "transfer" from one basin to the other. The Corps' plan for executing this study is discussed in more detail below.

12. Until late October of 2009, the Corps did not have emergency authority to responsively address changing circumstances associated with Asian carp migration, as virtually all of its authorities and appropriations were related to the fish barrier and the two study authorities outlined above. In late October of 2009, Congress enacted Section 126 of the 2010 Energy and Water Development Appropriations Act, Pub. L. 111-85, 123 Stat. 2845 (Section 126), which allows the Corps to implement certain interim and emergency measures, if approved by the Secretary of the Army, as delegated to the Assistant Secretary of the Army for Civil Works, "to prevent aquatic nuisance species from bypassing the Chicago Sanitary and Ship Canal Dispersal Barrier Project referred to in that section and to prevent aquatic nuisance species from dispersing into the Great Lakes." The Section 126 authority expires on October 28, 2010.

The Asian Carp Regional Coordinating Committee

13. In late summer of 2009, the Corps joined with a federal, state, and local ad hoc team formed to coordinate and take action as necessary to reduce the vulnerability of the Great Lakes to the migration of Asian carp through the Chicago Sanitary and Ship Canal and nearby bodies of water. The team is the Asian Carp Regional Coordinating Committee (ACRCC), comprised of senior leaders and representatives from the USEPA, the Illinois Department of Natural Resources (IDNR), the Corps, the USFWS, the Metropolitan Water Reclamation District of Greater Chicago (MWRD), the City of Chicago, the United States Coast Guard (USCG), the USGS, the Ohio Department of Natural Resources, the Indiana Department of Natural Resources, and others.

14. This effective inter-agency team is collaboratively and continuously addressing the threat posed by Asian carp on urgent, interim, and long-term bases by planning accordingly and being prepared to take quick action. For example, the team has coordinated and conducted over 3200 working hours of intensive fishing and netting operations in habitats that Asian carp prefer. During a May 2010 rotenone operation where the team applied the fish toxin "rotenone" to a 2.5-mile stretch of waterway, fish within the treatment area were confined by nets. The Corps supported this activity by suspending lock operations at the O'Brien lock for the 6-day duration of the event. Using divers and other techniques, USFWS and IDNR confirmed 100% fish kill with over 130,000 pounds of fish recovered, but not a single Asian carp was discovered.

15. Upon the recent capture of one live Asian carp in Lake Calumet, even though recent eDNA sampling resulted in no positive indications that Asian carp DNA was present, the Corps and its agency partners quickly and carefully assessed the import of the finding. This event confirmed what ACRCC members had previously concluded: that Asian carp may exist in very low numbers in the CAWS. The ACRCC, working through the relevant agencies, increased

monitoring and control efforts in Lake Calumet and nearby areas as a result of the find, but has located no additional live Asian carp in the CAWS as of the date of this declaration.

16. In February of 2010, the ACRCC released the draft Asian Carp Control Strategy Framework. Updated in May of 2010, the Framework presents a multi-tiered, multi-agency strategy to combat the spread of Asian carp into the Great Lakes through the CAWS, and to ensure coordination and the most effective response across all levels of government. Available at www.asiancarp.org, it is comprised of 32 short and long-term actions intended to be taken by various agencies, including the Corps. It represents a comprehensive plan that includes diverse actions such as chemical treatments, structural solutions, enhanced detection systems and research for biological solutions, and management and operational approaches.

17. As described in the Framework and discussed below, the Corps is constructing a third electrical barrier, building measures that will prevent fish from bypassing the electrical barriers during flooding events, and has recommended pilot testing of an acoustic-bubble-strobe deterrent technology in the CAWS. The Framework complements the broader national approach to the management and control of Asian carp as presented in the Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States, approved by the National Aquatic Nuisance Species Task Force in November 2007.

The Corps' Actions

18. Since the first authorization of the fish barrier project, the Corps has taken a number of actions to prevent the establishment of a sustainable population of Asian carp in the Great Lakes. Broadly, the Corps supports the Framework via four over-arching mechanisms:

(a) Design, construction, operation, maintenance and improvement of the electric fish barrier system;

(b) Monitoring for the presence of Asian carp in the CAWS in collaboration with partner agencies, primarily via the application of eDNA technology;

(c) Executing the Efficacy Study in increments as rapidly as possible so that near-term solutions to evolving information can be devised and applied, assuming authorization and funding; and

(d) Executing the long-term GLMRIS study to identify other pathways for aquatic species migration between the basins, gain a scientifically-based understanding of the impacts of various long-term actions, and make recommendations for permanent solutions.

19. Specific actions the Corps has and is taking related to these four mechanisms are further explained below and include:

- The construction and operation of fish barriers I and IIA;
- The construction of fish barrier IIB;
- The search for advanced Asian carp tracking systems, resulting in the Corps' learning of the University of Notre Dame's environmental DNA capability, and rapidly applying this technology;
- The continued conduct of eDNA sampling and research to assess the possible presence of Asian carp above the fish barriers;
- The completion of the Interim I Efficacy Study and the implementation of its recommendation for barriers between the Chicago Sanitary and Ship Canal (CSSC) and its flanking waterways, the DesPlaines River and the Illinois and Michigan Canal;
- The continued development of the Interim II Efficacy Study to verify optimal operating parameters of the electric fish barrier;

- The completion of the Interim III Efficacy Study and the implementation of its recommendations to install screens on sluice gates to prevent fish passage and to close the Chicago and O'Brien Locks as needed to support resource agencies conducting Asian carp population control efforts;
- The completion of the Interim IIIA Efficacy Study which provided the basis for the approval of the construction of an acoustic bubble strobe fish deterrent system, pending authority and funding;
- The continued development of the Final Efficacy Study to ensure the most effective operation of the fish barrier;
- Continued support for efforts by other agencies to control and eradicate Asian carp;
- Conduct of the long-term Great Lakes and Mississippi River Inter-Basin Study which will assess permanent solutions; and
- Conduct of other study efforts such as fish tagging to confirm the fish barrier's efficacy.

The Fish Barrier

20. As the largest fielded operational electrical dispersal barrier in the world, the fish barrier effectively constitutes a large and complex research and development (R&D) project with all of the attendant complexities and challenges of implementing a project while research and development of project details and impacts evolve, and new information is learned. As the Corps gains improved understanding of how to best operate the project or new technologies become available, the Corps applies that new information, knowledge, or technology in the most effective, efficient, and safe method possible, consistent with the Corps' authorities and appropriations.

21. This barrier is actually a system of three separate barriers first authorized by Congress in 1996, and described in more detail by Colonel Vincent Quarles, the Corps' Chicago

District Commander, and Mr. Charles Shea, the Project Manager for the fish barrier project, in their declarations. Barrier I, the "demonstration" barrier, became operational in 2002 and was rehabilitated in 2009 to extend its useful life. Further upgrade to make the barrier permanent was recently authorized and is dependent on future appropriations. Its basic operational parameters are limited to 1 Volt per inch (V/in). The second barrier, Barrier IIA, is designed to work in tandem with a slightly improved twin, Barrier IIB, so that either can be shut down for maintenance while assuring an operational barrier is functioning to prevent Asian carp (or other species) from migrating past the barrier system. Barrier IIA was constructed in 2006 and following extensive safety testing with the US Coast Guard (USCG), went into operation in April of 2009. Based on information indicating that juvenile Asian carp are only deterred by operating parameters higher than those used at Barrier I, Barrier IIA's design was modified so that it could operate along a range of each of the parameters that affect the electrical field in the water. This included voltage able to operate at these higher levels, up to approximately 4 volts per inch.

22. As a consequence of our understanding of the potential impact of Asian carp on the Great Lakes, and after becoming acquainted with this issue following my assumption of command, in the fall of 2008 I directed a comprehensive review of our operation of the fish barrier to assess the adequacy of current approaches, and take actions where we found shortfalls in order to optimize all aspects of fish barrier operations. This review was intended to take a few months, but has evolved into an on-going and nearly continual assessment as information has changed and previously unknown information has developed. The principle aspects of our comprehensive review are described below, including a description of various initiatives and changes we implemented as a result of this comprehensive review:

(a) Bring Barrier IIA into Operation. As part of this review, the Corps decided to accelerate, in coordination with the USCG, the then on-going navigation safety testing and our own Barrier IIA operational testing so that we could bring Barrier IIA into operation in time for increased fish activity in spring, 2009. As a result, Barrier IIA went into operation in April, 2009;

(b) Engineer Research and Development Center Optimal Parameter Testing. This effort involved coordination with the Corps' Engineering Research and Development Center (ERDC) to determine the actual optimal operating parameters needed to deter Asian carp. ERDC's tank tests confirmed that voltage level alone is inadequate to deter Asian carp. A combination of three parameters – voltage per inch, frequency or Hertz, and pulse rate – are required to affect fish reaction to the electrical charge in the water. In 2009, ERDC found that the combination that either repelled or immobilized all sizes of Asian carp tested was 15 pulses per second (15 Hertz) with each pulse lasting 6.5 milliseconds, and a maximum in-water electric field strength of 2 Volts per inch. These parameters have been applied in Barrier IIA ever since the discovery of environmental DNA (eDNA – discussed in detail below) indicating Asian carp could be closer to the barrier than previously thought, requiring emergency safety testing and modifications to navigation traffic regulations as a result. ERDC conducted flume tests earlier this year to better replicate field conditions in order to confirm the optimal parameters of the barrier. Preliminary data from those studies suggest that slightly higher operating parameters of the fish barrier may be needed to deter very small fish under two to three inches in length. As a result, the Corps is working with partner ACRCC agencies to assess the likelihood that small Asian carp are present near the barrier. Although further evaluation is needed, because of the lack of an established adult population in Brandon and Lockport pools and the unsuitable habitat in the vicinity of the barrier, current conclusions are that it is unlikely that very small Asian carp are present in either of these

pools. The final report on this matter (Efficacy Study Interim Report II) is due in September 2010. Once ERDC has finalized any changes to the recommended optimal operating parameters, the Corps will consider this information in consultation with our ACRCC partners, and if raising the operating parameters is deemed to be necessary, in coordination with the USCG the Corps will evaluate any necessary safety considerations associated with raising the fish barrier's operating parameters.

(c) Impacts of Operating the Fish Barrier at Increased Parameters. Although it will be possible to operate Barrier IIA at voltages above 2 Volts per inch, it is not prudent to operate Barrier IIA above the optimal levels required to deter Asian carp with confidence, as such operations will shorten the barrier's lifespan, increase maintenance requirements and the risk of system failure, create unnecessary increased safety risks, and increase costs to the taxpayer. Serious safety risks and challenges of operating at higher voltage are discussed at length in declarations submitted by the USCG, Mr. Shea, and Colonel Quarles. These issues will be assessed in the Interim II Efficacy Study which will determine the need for any change in operating parameters.

(d) Accelerate Barrier IIB Completion. Shortly after the discovery of positive eDNA evidence closer to, but downstream of the fish barrier in the summer of 2009, the Corps obtained $7 million of American Reinvestment and Recovery Act funds to accelerate the execution of this component of the barrier system. Since then several factors have driven design changes and improvements to account for increased winter-time water salinity, additional cooling requirements, and more robust electrical grid connections, resulting in another $12 million in ARRA funding committed to complete this project. Construction completion is expected in the Fall of 2010, with operational and safety testing soon thereafter.

Monitoring for the Possible Presence of Asian Carp and eDNA

23. Use of eDNA Research in the CAWS. Asian carp were first detected in the lower reaches of the Illinois River in 2000, and subsequently migrated up the Illinois River, as discussed in Colonel Quarles' declaration. Based on the evidence of captured Asian carp, it appeared that the carp migration had stalled in the Dresden Island Pool, as none of the species were found above that pool between 2006 and 2008. This assessment was reinforced by Asian carp captured from this pool that were tagged, released, and their movement monitored. None of the tagged fish ventured beyond the Dresden Island pool, reinforcing the conclusion that the species' migration had stagnated. This understanding informed multiple management decisions during this period, to include the need to take the time required to address the significant safety concerns of operating Barrier IIA.

24. As part of our comprehensive review in the fall of 2008, we decided to assess the full suite of capabilities then available to locate and monitor Asian carp as they migrated up the Illinois River system, evaluating these tools for the ability to deliver high confidence that we were locating the leading front of the migrating fish. This assessment resulted in the Corps concluding that the tools then available, principally netting and electro-fishing conducted primarily by our partner agencies, could tell us the locations where fish were likely located in abundance, but not necessarily how far they had migrated up the system in smaller numbers.

25. As a result the Corps canvassed the scientific community for alternative methods of detection, resulting in the Corps learning of research by the University of Notre Dame (UND) and The Nature Conservancy on Asian carp "environmental DNA" (eDNA) in May, 2009. This research, and our subsequent agreement with the University of Notre Dame to apply it for the purposes of attempting to monitor the extent of Asian carp migration in the Chicago Area

Waterway System, has been significant in informing the ACRCC's evolving understanding of how best to manage the fish barrier and associated activities, as discussed below. How eDNA works and the results eDNA sampling has produced to date are described in more detail by Colonel Quarles in his declaration. In essence water samples are taken from waterways, from which suspended solids, many containing fish feces, scales, and other fish tissue containing DNA, are removed and then tested using DNA technology to identify the DNA markers of a target species, in this case, silver and bighead Asian carp, and the results are then reported.

26. As soon as the Corps learned of the eDNA technology mentioned above, we consulted internally to determine whether we should consider applying eDNA testing to help us determine the possible location of Asian carp. While we were excited about this technology's promise, we were concerned that as an emerging technology still in the research stage, it had never been applied in the field before. Nor had it undergone independent scientific studies or peer reviews that the Corps would normally require before applying a new technology which would inform management decisions. In short, the Corps had to evaluate and assess the risks associated with using and relying on an emerging technology, against our concern that existing techniques were inadequate to provide the requisite confidence level as to the location of the leading front of Asian carp migration. Our conclusion was that this new eDNA technology had significant promise and the potential capability to increase confidence in our fish monitoring efforts, and that the need to go forward with its application in the field outweighed the potential uncertainties associated with this emerging and not fully tested technology.

27. At present, eDNA evidence cannot verify the number of Asian carp in an area or whether a viable population of Asian carp are present. What it does suggest is that Asian carp DNA is present, but it does not tell us how it got there, whether it is from a live or dead Asian carp,

or from water containing Asian carp DNA transported from other locations, or other sources. The ACRCC is assessing the utility of further research in these areas.

28. The specifics of eDNA results to date are summarized in detail in the Declaration of Colonel Quarles. From mid-2009 to the present, sampling has been conducted in various locations in the Chicago Sanitary and Ship Canal and the CAWS, above and below the barriers. In 2010, ten samples taken from above the fish barrier have been reported as positive for silver carp DNA of a total of 536 samples collected. Out of the 536 samples collected, none have tested positive for bighead carp.

29. Control and Eradication Efforts Based on eDNA Results. The ACRCC continues to rely on netting and fishing operations conducted by the State of Illinois, the USFWS, and Corps employees to inform the Corps and other agencies about the potential presence of Asian carp above and below the barriers. Since the advent of the employment of eDNA sampling, these tools have been used primarily to attempt to confirm eDNA results with the capture of physical Asian carp specimen, as discussed below.

30. While the Corps understands that netting and electro-fishing have some limitations, the Corps relies on the assessment of other experts, including fish biologists and natural resource experts from the USFWS, and Illinois DNR, who have informed us that these techniques are effective tools in helping to identify the extent of Asian carp migration, and are important to assist our efforts to confirm positive eDNA evidence with the presence of live Asian carp. As such, the Corps has actively assisted and participated in these activities. Despite extensive and meticulous efforts to identify the species of each fish recovered, including during the May 2010 rotenone effort discussed above, prior to June, not one silver or bighead Asian carp was found.

31. Thus far, despite these intensive efforts ongoing since August of 2009, only one Asian carp has been caught above the fish barrier, in Lake Calumet in June 2010. Natural resource experts inform the Corps that their conclusion is that the finding of a single Asian carp amongst thousands of other fish caught or killed to date indicates that any Asian carp present are in the CAWS in very small numbers, and unlikely to be able to develop a sustainable population.

32. Import of eDNA and Monitoring Results. Despite claims by some that eDNA evidence and the recent capture of one live Asian carp above the barrier indicate that the fish barrier has failed, there is no evidence that Asian carp have penetrated the barriers. To the contrary, all of our laboratory testing indicates that the fish barrier is highly effective in deterring Asian carp from swimming through the barrier. Several theories have been advanced from various quarters suggesting that Asian carp DNA may have been found in areas above the fish barrier from sources other than live fish, such as disposed Asian carp remains (communities in the Chicago area consume this fish), remnants of bait used for fishing, or possibly carried there in ballast water or in barge traffic. Cultural placement, release of live bait, or flooding also could explain the possible presence of either DNA or live Asian carp in the CAWS.

33. Further Work with eDNA Research. The Corps of Engineers has contracted with Battelle Corporation to perform Independent External Peer Review (IEPR) of eDNA sampling and processing. A panel of independent scientists has been formed through Battelle and has made a site visit to UND to perform this peer review. The IEPR is scheduled to be complete by December 2010.

34. The relationship between the Corps and the UND has been a positive and unique collaboration that has allowed us together to rapidly cycle out an emerging technology and apply it for operational purposes to meet a compelling need. As our collaboration matured, the Corps

realized early in 2010 that increasing operational needs for quickly processed eDNA information was challenging the UND's research-oriented capabilities. The report of positive eDNA near the O'Brien Lock on 17 November 2009 from a sample taken on 23 September 2009 – nearly a two month delay from when the sample was taken to when it was processed – is an example of past processing limitations. The laboratory at the UND is designed for education and research, not to support the Corps' increasing requirements for near-real-time eDNA information. Nonetheless, the UND team increased laboratory weekly processing capacity from 40 to 60 samples per week early in 2010, and is assisting ERDC with developing a capability of processing an additional 60 samples per week. Pursuant to an on-going transition plan developed collaboratively between the ACRCC and UND, the Corps, IDNR, and USFWS will collect water samples, and by mid-August, ERDC intends to have assumed the responsibility for processing the water samples for eDNA. ERDC will have the capacity to process 120 eDNA samples per week.

Efficacy Study Interim I

35. Upon the discovery of the first positive eDNA evidence in late July 2009 near the confluence of the Chicago Sanitary and Ship Canal with the Des Plaines River and Illinois and Michigan (I&M) Canal, the Corps developed a plan to accelerate aspects of the Efficacy Study. This information meant that, if the eDNA evidence was accurate, it was possible that Asian carp could migrate into either the Des Plaines River or the I&M Canal, both of which parallel the Chicago Sanitary and Ship Canal below and above the fish barrier. In the event of a significant flood, water pathways between these flanking waterways and the Chicago Sanitary and Ship Canal could be opened up, potentially allowing any Asian carp that may be present in them to access the Chicago Sanitary and Ship Canal above the fish barrier, and thus bypass it.

36. As a result, the Corps accelerated an interim report as a component of the Efficacy Study to address this concern. This report, also known as Interim I, recommended construction of jersey-type barriers and, where impermeable barriers would induce flooding, tight reinforced mesh fencing, to prevent fish from by-passing the fish barrier during a flood. Approved by Ms. Jo-Ellen Darcy, the Assistant Secretary of the Army for Civil Works, in January 2010 under Section 126, this physical barrier is being constructed now, and is scheduled to be complete in October 2010.

37. Notably, the July 23-25, 2010, flood event in the Chicago area provided the first test of this barrier. The blockage of the I&M Canal, previously completed, performed as designed. Other portions of the barrier between the Des Plaines River and the CSSC are partially constructed and also provided an effective barrier, while in some places flood waters overtopped the connection where the barrier has yet to be built. The flood route indicates that the barrier, once completely constructed, will perform as designed.

Efficacy Study Interim II.

38. As discussed above, Efficacy Study Interim II is assessing the optimal operating parameters for the fish barriers, including potential safety risks of a change in operation. The Corps intends to complete the study in September of 2010, after which possible changes to the operating parameters will be considered and evaluated for risk, feasibility, and safety.

Efficacy Study Interim III

39. After the initial discovery of Asian carp eDNA above the fish barrier in November, 2009, the Corps began considering what tools might be available to impede potential Asian carp migration above the fish barrier. The Corps specifically considered whether structures in the CAWS, including locks, pumping stations, and sluice gates, could be operated in ways to impede Asian carp migration while at the same time effectively accomplishing these structures' intended

purposes. Key to this analysis, which is set forth in the Interim III report and is focused on the efficacy of modifying lock operations, was an understanding of whether modifications, such as closing the locks for regular and temporary periods, would be effective in reducing the risk that any Asian carp that might be present would migrate past the structures and into Lake Michigan.

40. In order to inform the Corps' analysis of the efficacy of possible changes to the operation of CAWS structures, the USFWS convened a panel of fish experts to provide feedback on an array of options to modify how the Corps operates the Chicago-area locks. Currently, any navigation traffic is passed through the locks when it shows up in the channel. The Corps developed six alternatives that proposed operating the locks on set time windows, with the locks unavailable to navigation for various periods, up to two weeks. The panel of fish experts advised the Corps that none of the six alternatives would mitigate any risk that Asian carp could migrate through the locks.

41. Based on the results of the expert panel and other factors as set forth in the Interim III Report, the Corps decided to use the intermittent closure of the Chicago and O'Brien locks, on an as-needed basis, in support of fish control and eradication efforts performed by partner resource agencies, upon the request of those agencies and in coordination with the U.S. Coast Guard. For example, in May of 2010, the Corps closed the O'Brien lock for six days in support of an application of rotenone. This operation was conducted by the ACRCC to attempt to confirm previous positive eDNA tests south of the lock. Despite recovering and identifying over 100,000 pounds of fish, no silver or bighead Asian carp were found.

42. On July 13, 2010, the Assistant Secretary of the Army for Civil Works, Ms. JoEllen Darcy, approved the Chicago Sanitary and Ship Canal Dispersal Barriers Project, Illinois, Dispersal Barrier Efficacy Study, Interim III - Modified Structures and Operations, Illinois and

Chicago Area Waterways Study and Integrated Environmental Assessment ("Interim III Report"). Based on the analysis and recommendations in the Interim III Report, the Assistant Secretary approved the use of Section 126 authority to install steel bar screens on two of the four controlling works sluice gates at the T.J. O'Brien Lock and Dam. This interim risk reduction measure is designed to deter movement of Asian carp from the Chicago Area Waterways into Lake Michigan. The bar screens are designed to prevent adult Asian carp from passing through sluice gates during the times that the gates are open for water intake from Lake Michigan into the CAWS. The bar screens will be removed during flood events, because they would likely clog with debris and become obstructed. Thus, bar screens will not be installed on the two sluice gates which are mainly used to relieve flooding. A full discussion of this risk reduction measure is set forth in the Interim III Report. The Corps intends to install the bar screens on two of the sluice gates at O'Brien in September of 2010. In May, 2010, MWRD installed two sets of bar screens in the sluice gates at the Chicago River Controlling Works.

43. Interim III also discusses the possible role of other MWRD structures in the CAWS. These structures are controlled by that agency, but the Corps has worked with MWRD to understand how the agency might use them to control Asian carp migration. MWRD operates the Wilmette pumping station and sluice gates on the North Shore Channel. The Corps understands that MWRD has considered whether it can rely more on the pump for water diversion, rather than the sluice gates, to eliminate or restrict a potential pathway for Asian carp. MWRD also controls various outfalls from treatment plants in the CAWS.

44. Also in Interim III, the Corps discusses the potential development of one or more anoxic zones in the CAWS to deter or prevent movement of Asian carp. An anoxic zone could be established through the use of a chemical or biological agent that could significantly reduce

the availability of oxygen in the zone. However, the creation of anoxic zones, by whatever means, would be extraordinarily difficult because of its complexity in terms of implementation, permitting, water quality, and impacts on human health.

45. The Interim III Study did not evaluate longer-term closures of the locks, because the expedited nature of the study did not allow extended or permanent lock closure to be considered given the complicated nature of the impacts and issues that must be addressed as part of that evaluation. Conducting a detailed analysis prior to making a decision on extended lock closure is critical to understanding and mitigating potentially significant impacts. Also, taking the time necessary to conduct this analysis is reasonable in light of the fact that the Corps has insufficient information to conclude that a sustainable population of Asian carp is actually present above the fish barrier. In addition, the Corps does not currently have evidence that there is an imminent threat that a sustainable population of Asian carp may establish itself in Lake Michigan if the locks are not closed. Most importantly, the Corps would require the clearest information possible in order to weigh the impacts of Asian carp, if they could establish a sustainable population in Lake Michigan, against the impacts of lock closure. This information will be developed, and permanent lock closure will be considered, as part of the GLMRIS Study.

Efficacy Study Interim IIIA

46. Also on July 13, 2010, the Assistant Secretary of the Army Ms. Darcy approved the Chicago Sanitary and Ship Canal Dispersal Barriers Project, Illinois, Dispersal Barrier Efficacy Study, Interim IIIA Fish Deterrent Barriers, Illinois and Chicago Area Waterways Study and Integrated Environmental Assessment ("Interim IIIA Report"). Based on the analysis and recommendations in the Interim IIIA Report, the Assistant Secretary approved the recommendation to implement a fish deterrent barrier demonstration project at the Brandon Road

Lock and Dam on the Des Plaines River just below the City of Joliet, Illinois. The purpose of this project is to demonstrate the efficacy of an acoustic-bubble curtain strobe light fish deterrent system technology in discouraging the dispersal of Asian carp from the Chicago Area Waterways into the Great Lakes. By its terms, the Section 126 authority expires on October 28, 2010, and this project cannot be constructed before October 28, 2010. Thus, the Corps cannot implement this project unless Congress enacts legislation to extend the emergency implementation authority of Section 126, or other legislation that allows project implementation in accordance with law and Administration policy, and the Corps receives project implementation and operations funding.

Final Efficacy Study

47. The final report will summarize all interim reports and recommend a long-term, multi-agency comprehensive strategy to improve the efficacy of the dispersal barriers and additional measures throughout the Chicago Area Waterway System to minimize the risk of Asian carp migrating into Lake Michigan. This final report will include assessments of pathways around and beyond the fish barrier in order to determine the advisability and feasibility of permanent solutions to potential bypasses from the Des Plaines River and I&M Canal. It will also consider additional fish barriers or other impediments to the migration of Asian carp and other aquatic invasive species', as is possible in the relatively short time frame of this review, through the Chicago Area Waterways System into Lake Michigan. Finally, it will review potential operational changes to existing Corps waterway structures in light of any additional information developed since the completion of the Interim III study. The Corps is planning to complete the Final Report for the Efficacy Study in the spring of 2011, with a draft of that report intended for public review in December of 2010. Subject to Section 126 approval, if this

authority is extended beyond the current fiscal year, and/or separate Congressional authorization and available funds become available, work to implement Final Efficacy Study Report recommendations could begin as early as Fiscal Year 2012.

48. With its compressed schedule, the Final Efficacy Study will not be able to provide sufficient information to support decision making for actions which permanently alter the existing flow, capacity, or use of the Chicago waterways. Such an action would require extensive planning to address the need for alternative flood control methods in the Chicago area, among many other environmental and engineering challenges inherent in changing the existing waterways. Incidents like the flood in Chicago on July 23-25, 2010, during which the Chicago Locks had to be opened to allow reverse flow from the CAWS into Lake Michigan in order to prevent flooding, emphasize the criticality of being able to operate Chicago-area locks for the purpose of flood risk management. The Efficacy Study is intended to provide adequate information to support decision making for actions that could enhance the level of protection provided by the existing electrical barriers, as well as the potential for additional barriers.

Telemetry Studies

49. The Corps is in the process of implementing a network of acoustic receivers to track the movement of Asian carp and associated surrogate fish species in the area around and downstream of the electric barriers. This network will be installed and maintained through a partnership between the Corps, USFWS, MWRD, and IDNR as part of the ACRCC's Framework. The network will collect information from tags implanted into Asian carp and surrogate species. Tagged surrogate fish will be released both above and below the fish barrier at the point they were captured. Any Asian carp captured below the fish barrier will be released at the point of capture, below the fish barrier. The information gathered should enhance our

understanding of Asian carp systematic movement in the basin. To date, the Corps and the MWRD have installed twenty-seven receivers in the CAWS, above and below the fish barrier. Forty-five fish have been tagged thus far, and the Corps plans to tag approximately fifty-five additional fish.

GLMRIS

50. The scope of the GLMRIS is far more comprehensive than the Efficacy Study, so its expansive nature and added complexity also make it much more time-consuming. While it will incorporate all of the information developed in the Efficacy Study, it will also consider the risks from other known and suspected hydraulic pathways between the Great Lakes and Mississippi River Basins, not just the Chicago Area Waterway System. Consequently, the Corps has organized the GLMRIS to proceed on two basic tracks simultaneously. One track will focus on the CAWS and the unique challenges posed in the evaluation of permanent measures to prevent the transfer of all manners of aquatic invasive species, not just Asian carp, from one basin to the other through that waterway system. The CAWS is the most direct and highest risk pathway for aquatic species transfer between basins, and thus requires priority of effort. The second track will begin with a reconnaissance-level effort to identify and characterize the risk of all other potential aquatic passageways between the Great Lakes and the Mississippi River basins. This risk characterization is expected to be complete in September, 2010. Executing the GLMRIS is the first step in addressing permanent solutions to deter and prevent sustainable populations of aquatic invasive species from transferring from one basin to the other. This study will also consider actions that are needed to prevent inter-basin migration of aquatic invasive species in both directions, not just into the Great Lakes. A study of this magnitude is so complex and far-reaching that it is expected to require a number of years to complete, with additional time

required for Congressional authorization and funding for implementation of any recommended project, or projects.

51. Assuming sufficient funding, the earliest anticipated date for a final recommended alternative for the CAWS portion of GLMRIS is predicted to be in 2015. The total cost of a feasibility study to prevent or reduce the risk of invasive species transfer in the CAWS – to include the evaluation of a hydrologic separation alternative – is currently estimated to be $15 million. This time and cost estimate is only a rough order of magnitude and could increase significantly. A study of this scope and breadth requires a significant quantity and very high quality of environmental, economic, and social data that simply cannot be gathered, analyzed, and understood with the requisite quality or detail in eighteen months, as the Plaintiffs have demanded. Nor is a viable long-term solution likely to be identified within that time. If hydrologic separation is to be evaluated, sufficient time would not exist to collect the requisite data to assess various environmental and hydrologic impacts. The very nature of a study of this complexity means it is not possible to determine time or cost in advance given the large number of currently unknown variables the study is designed to uncover.

52. Any study that recommends significant Federal action that would modify or alter the authorized purposes of Corps projects, to include the closure of the Chicago Area Waterway System locks and control structures, must be supported by sufficient information allowing the evaluation of the costs, benefits, and impacts of various alternatives. The level of detail and confidence in the supporting information should be commensurate with the magnitude of the environmental, social, and economic impacts, and of the costs of the proposed actions. Based on the initial analysis of potential impacts to lock closure discussed below, the Corps has concluded that the accurate and objective level of information required to make these assessments is

currently insufficient, and that major additional analysis is required. Alternatives that would alter the existing flow, capacity, or uses of that system will require sufficient analysis to provide information that will allow adequate understanding of the expected impacts on water quality, the environment, flooding risks, economic uses, uses for public safety and security, and critical infrastructure, as well as the likely benefits from avoiding impacts from Asian carp. Within GLMRIS, the Corps intends to develop the type and quality of information needed to support decision making on alternatives that may alter the existing flow, capacity, or uses of the Chicago waterways.

53. Similar to our R&D approach to the fish barrier as described earlier, new methodologies may have to be developed in order to obtain some of this information. We intend to conduct GLMRIS in a manner, subject to funding, by which actionable items identified through the study might be broken out for implementation before full study completion, if warranted and authorization is available, similar to the approach we applied to the Efficacy Study.

54. The reconnaissance-level characterization of possible pathways outside the CAWS is already producing positive results. Of the approximately eleven locations being addressed in the Preliminary Inter-Basin Connections Risk Characterization, a possible surface water connection that could occur during significant storm events has been identified between the Wabash and Maumee River Basins in the Fort Wayne, Indiana area. There, a team of federal, state, and local agencies and local stakeholders are beginning a partnership to support the Indiana Department of Natural Resources to install a screen or fence before the end of this summer across a wide marsh that spans the drainage divide, to prevent potential transfer of Asian carp from the Wabash River into the Maumee River should a major storm event occur. This is a significant risk reduction

measure because the Maumee River flows directly into Lake Erie, and Asian carp have been documented as close as twenty miles below this connection point.

Analysis of Potential Lock Closure

55. As is explained in the various declarations, after the discovery of positive eDNA above the fish barrier in late 2009, the Corps conducted a preliminary analysis of the need for and the efficacy of extended lock closure as the Plaintiffs suggest. For a variety of reasons explained below and in other declarations from Corps professionals, such actions would present extraordinary challenges to execute on either a deliberate or an emergency basis, and could have major negative economic, social, and environmental consequences. The consequences as a result of induced flooding could be devastating, even if a temporary closure allowed exceptions to protect public health and safety, because after being closed for extended periods the aged locks may freeze and not be able to be opened for emergency operations when needed.

(a) As explained in the declarations of Mr. Mike Cox and Dr. Su, these locks must be able to allow waters to flow in both directions in the event of high water flood events, if they are to function as intended to prevent severe flood damages and possibly loss of life. As recently as July 24, 2010, opening the sluice and lock gates at Chicago Lock became necessary due to heavy rains that would have caused significant flooding in the City of Chicago if the Chicago sluice and lock gates had not been opened quickly and allowed reverse flow into Lake Michigan. In order for the lock gates to be available in a severe flooding event, they must be cycled open and closed several times a day, up to an hourly basis during cold weather and winter months, as described in detail by Mr. Cox.

(b) Neither the O'Brien nor the Chicago Locks are water-tight due to their highly advanced age and deteriorated condition. It is not clear whether Asian carp could pass through

these leaks, but it is a possibility that might have to be addressed by buttressing the structures with bulkheads engineered to minimize water transfer. In any event, developing completely water-tight solutions at these structures while simultaneously keeping them available for flood risk management and public health and safety, as the Plaintiffs suggest, is extremely problematic. The Corps is not aware of any mechanism that could both make these structures water tight while also keeping them responsive to opening on an emergency basis.

(c) Significant and severe flood events would certainly have the potential of overtopping closed locks as outlined in Dr. Su's declaration. The potential impact from a severe flood event is substantial. Damages in downtown Chicago and environs could approach or exceed $1 billion, and over 14,000 homes and structures could be affected in the O'Brien Lock area.

(d) Finally, as discussed below, there are many potential impacts of short or long term closures that are not fully understood, and have the potential for dramatically negative impacts that should be fully considered and balanced before taking action.

(e) As Mr. Shamel Abou-El-Seoud of the Chicago District explains in his declaration, the Chicago Harbor Lock is programmed for major rehabilitation from November 2010 through April 2011. As with any man-made structure, the locks and their components need to be properly maintained and periodically replaced or rehabilitated, in order to keep them in proper working condition. Because of the extremely deteriorated condition of the Chicago Lock gates, the purpose of this project is to rehabilitate the lock gates to ensure their operability. The maintenance period of November through April was chosen because this has the lowest impact to users of the structure for navigation, and will ensure the long-term viability of the locks for the purposes of navigation, flow diversion, and flood damage reduction. Failure to take this action

could result in a catastrophic and sudden failure, as occurred on the Ohio River at two different structures in the last year. This could also result in the unregulated flow of Lake Michigan waters into the Chicago River and subsequently the CSSC, as well as the potential long-term loss of the project for use by navigation and for flood risk management.

56. The Corps believes that a comprehensive analysis is needed to properly and adequately assess the potential impacts resulting from the potential closure of the Chicago and O'Brien Locks, closure of the North Shore Channel and/or construction of permanent blockages in the Grand Calumet and Little Calumet Rivers, as proposed by Michigan. We plan to undertake this analysis as part of the GLMRIS study, as discussed elsewhere in this declaration. In order to gain a working understanding of likely impacts from lock closure, shortly after the discovery of Asian carp eDNA above the fish barriers, the Corps began a preliminary analysis of potential economic, social, environmental and flood risk impacts resulting from lock closure to inform internal Corps discussions on alternative actions, as well as discussions with the ACRCC. Subsequently, we have conducted an informal investigation into the installation of permanent closures of all known pathways from the Illinois Waterway to the Great Lakes within the Chicago Area Waterway System. It is important to note that this preliminary analysis was developed on an expedited timeline referencing readily available data from Corps archives, the Corps' Waterborne Commerce Statistics Center, project information for the Little Calumet and Grand Calumet Rivers, and professional judgment. It is therefore tentative, incomplete, and represents estimates that can only provide a likely order of magnitude impact.

(a) Flooding Impacts: Closure of locks and controlling works at the lakefront and blocking flows in the Little Calumet and Grand Calumet Rivers would likely induce significant flood risk to metro Chicago including flooding to downtown businesses and Union Station,

basement flooding and sewer backup in Chicago and suburbs, overtopping at Brandon Road Lock, and significant flooding along North Branch Chicago River, including Albany Park and other neighborhoods, as explained by Colonel Quarles and Dr. Su. Any structures that would be overtopped in a flood event would allow a pathway for aquatic species to move in the direction of the flow. During an extreme flood event, if present in the waterway Asian carp migration could still occur from overland flow in the absence of sandbagging or structural measures, and from overtopping of the Chicago Lock and turning basin walls. As further described in Dr. Su's declaration, overtopping of the lock wall with the lock and sluice gates closed will occur at Chicago Lock and Wilmette during a 20 year rain event, and overtopping at Chicago, Wilmette, and O'Brien will occur during a 100 year event. Impacts from closure of O'Brien Lock include flood damages to about 14,000 homes during certain storm events. Damages from closure of the Little Calumet River are estimated at approximately $56 million during certain storm events and could dramatically reduce flood protection of area projects from the authorized and designed level of a 200 year storm, as declared by Dr. Su. Preliminary estimates of flood damages due to closure of Chicago Lock could approach or exceed $1 billion during an extreme event. The construction of a weir structure in the Grand Calumet River as part of an environmental remediation project is not designed to be a complete barrier to water flow.

The Plaintiffs demand that the Corps close the locks except as needed for public health and safety. If the Corps opens the sluice gates and locks for backflow to avoid flooding, then there may be frequent backflows of water to Lake Michigan, mostly at Wilmette. Since the USFWS risk assessment (attached to Interim III) states that temporary lock closures are not effective at impeding Asian carp migration, the plaintiff's request for relief may not be effective in light of the requirement to open the locks during flood events to allow for backflows.

(b) Environmental and Social Impacts. Due to inadequate data currently available, these impacts are not fully understood. General impacts could include stagnant water conditions and associated water quality and health hazards, low flow rates leading to low dissolved oxygen levels and reduced water quality, less dilution into the system from Lake Michigan, high seasonal chloride levels from road salt run-off, and downstream impacts to water users and permit holders. Extensive analysis and coordination of these impacts are needed between the Corps, IDNR, Illinois EPA, and the MWRD, which the Corps intends to pursue under its GLMRIS authority. Also, numerous industrial and public dischargers could be affected by the need to extend discharge pipelines directly into the lake and upgrading treatment works to meet more restrictive discharge standards into the lake. Impacts due to Clean Water Act requirements for 303(d) impaired waters are as yet undefined. Other impacts that need to be investigated include impacts to the USCG search and rescue and security operations, International Joint Commission concerns to address impaired use of the Grand Calumet River, minor water users and natural or altered surface drainage pathways. Traffic congestion would definitely be exacerbated as currently waterborne commodities would have to shift to ground surface (rail and road) modes of transportation. The Corps does not have ready access to data on details of potential transportation impacts, but anyone with experience driving in the Chicago area would surmise that adding up to seven million tons of commodities to truck traffic in the area could significantly increase congestion, noise and emissions. This could present a significant challenge to the Chicago area surface transportation network. Our initial analysis does not provide details on the destinations of the commodities that transit the O'Brien Lock (see Mr. Mike Cox's declaration for a detailed description of these commodities).

(c) Economic Impacts: As explained in the Declaration of Rebecca Moyer, much additional analysis is needed to understand potential economic impacts. Approximately 7 million tons transited through the Chicago and O'Brien locks in 2008. The top commodities that ship through these locks are coal, petroleum products, coke, bitumen, asphalt, sodium chloride, iron ore, portland cement, iron products, calcium chloride, fuel oils, and scrap metal. In 2008, an estimated $192 million in transportation savings resulted from utilization of the O'Brien and Chicago Locks vs. the least cost overland routing. Chicago Lock also serves a large amount of recreational traffic and has 10,000 lockages per year, over 40,000 vessels per year, and 700,000 passengers per year. The impact to harbor boat owners and operators, commercial and sport fisheries, the dinner cruise industry, and neighboring businesses requires research. Preliminary analysis indicates that many jobs could be affected within the region by termination of operations at Chicago and O'Brien Locks. These impacts would need to be assessed in comparison to the expected impact to the Great Lakes recreation and fishery industries, based on additional data on the expected manner and extent to which Asian carp are likely to affect the Great Lakes.

Analysis of Impediments in the Grand Calumet and Little Calumet Rivers

57. Furthermore, as Plaintiffs note, there are at least two uncontrolled pathways to Lake Michigan that currently have no structures that could be closed, limiting the efficacy of closing existing structures. The weir that is currently in place on the Grand Calumet River is designed for ecological and environmental purposes, and the Corps understands it would only be effective in preventing water transfer for a ten-year probability flood event. Even if the Corps were directed and funded to immediately build permanent structures to block these uncontrolled pathways, multiple requirements most likely taking months or years of time would be required to comply with other elements of law, to include:

- Studies to determine alternatives and the optimal location,

- Real Estate Acquisition actions

- Various Permitting actions,

- Significant flood structures would have to be planned, resourced, and constructed due to the flat topography and significant flow diversion from the envisioned closed structures. These would account for the dramatically changed hydrographic conditions that blocking current river and channel flows would entail.

58. As Dr. Su and Colonel Quarles explain in their declarations, and as is described in the Interim III and IIIA Efficacy Studies, the placement of impediments in the Little Calumet River poses similar challenges with the added complexity of a nearly complete flood protection project along stretches of the waterway. In particular, the Corps has considered whether or not there are other easily implementable deterrents, including block nets as Plaintiffs suggest, that could be implemented on the Little Calumet River to further reduce the risk of dispersal through this pathway. Because of concerns related to flood induced damages and efficacy, the Corps has not been able to identify any physical barrier or block net measures for the Little Calumet River that could effectively impede Asian carp migration without inducing significant flooding during a high water event. Similar concerns would be raised if a physical barrier or block net were placed in the Calumet River above the O'Brien Lock and Dam. The Corps and the ACRCC will continue to evaluate available technologies and methods that could be recommended for implementation to address the risk related to Asian carp migration through the Little Calumet River and the Grand Calumet River in the analysis for the Final Efficacy Study and GLMRIS. In the meantime, the Corps does not believe that those pathways pose a significant threat that

cannot be addressed by the ongoing fish control and eradication efforts performed by the USFWS and IDNR.

Evaluation of Relief Requested by Michigan

59. The States of Michigan, Ohio, Pennsylvania, Wisconsin and Minnesota have asked the Court for various forms of relief, including taking all available measures to prevent the migration of bighead and silver carp through the CAWS into Lake Michigan by blocking their passage, killing or capturing them, installing block nets, temporarily closing the locks and sluice gates at the O'Brien Lock and Dam, the Chicago River Controlling Works, and Wilmette Pumping Station except as needed to protect the public health and safety, and other things. The States have also requested that the Court enter a preliminary injunction requiring the Corps to expedite the preparation of a feasibility study under Section 3061 of the Water Resources Development Act of 2007 which would within 18 months develop and evaluate options for the permanent physical separation of the CAWS from Lake Michigan to prevent the transfer of Asian carp or other invasive species between the Mississippi River and the Great Lakes Basin. The Corps agrees that we must keep Asian carp from becoming established in the Great Lakes, but the measures to be taken to further that goal must be evaluated based on the state of the evidence related to whether Asian carp are postured to establish viable populations in Lake Michigan, as well as the potential harm that Asian carp may cause in Lake Michigan weighed against the harms that closing the locks would cause.

60. In the absence of reinforcing evidence of the presence of Asian carp in the CAWS during extensive rotenone and commercial fishing, the capture of one live Asian carp in Lake Calumet simply reinforced what the ACRCC had already concluded: that Asian carp are likely present in the CAWS in very small numbers; that the information does not indicate a sustainable

population is present; and that the current evidence related to the threat that Asian carp might establish a viable population in Lake Michigan does not warrant considering immediate drastic action such as closing lock structures. Further, our current inability to understand consequences associated with such a drastic action is a serious data gap that must be addressed, and can only be determined after careful objective study, which is likely to take a significant period of time. The immature nature of the Asian carp threat, combined with the potential for extremely harmful second and third order consequences from flooding and the inability to deliver essential commodities to critical industries or infrastructure, among many other potential serious consequences, weighs in favor of exercising a cautious approach – especially in light of the Corps' obligation to operate the waterway for its Congressionally mandated purposes of navigation and flood control, and the Supreme Court order to regulate water flow.

61. As explained in detail above, the Corps of Engineers has developed a strategy to address gaps in data related to all of the above issues by using the Efficacy Study and GLMRIS as vehicles to develop knowledge via a disciplined, objective, and thorough review of the facts and the available scientific evidence. The appropriate action at this time is to develop the data needed to understand where Asian carp are located, in what abundance, what threat this portends, and likely consequences if Asian carp could establish a viable population in Lake Michigan. This must then be weighed against damages from lock closure, buttressed by information that provides adequate understanding of the consequences of various alternative actions to address the threat.

63. The Corps believes that preventing Asian carp migration and establishment in the Great Lakes is a national imperative, but one which must be pursued in as measured and careful a fashion as possible given the potentially dramatic consequences of suddenly severing a

century-old waterway system. In my professional judgment, and taking into account all relevant information as discussed in all of the declarations submitted with the United States' filing, currently available information about the imminence of the risk does not warrant recommending closing any of the structures that allows water flow and navigation to transit between Lake Michigan and the Chicago Area Waterways System, except as provided in the Interim III study. This professional judgment is informed by the opinions of the senior members of the Executive Steering Committee of the ACRCC (especially EPA, USFWS, USCG, and IDNR) in matters of their competency related to this issue.

64. While we are not prepared to take these most extreme measures now, the Corps, along with other agencies, is aggressively pursuing the other relief that the Plaintiffs seek. The Corps has expedited the completion of Barrier IIB. The Corps is constructing the barriers along the DesPlaines River and the I&M Canal to prevent the bypass of the fish barrier in the event of flooding that overflows into the Chicago Sanitary and Ship Canal, as recommended and approved in Interim I. The Corps is continuing to evaluate other interim measures in the Efficacy Study, and in fact, has completed Interim III and Interim IIIA. The Corps has initiated an EIS and Feasibility Study, GLMRIS, to evaluate permanent solutions to the Asian carp migration problem across the entire basin. The ACRCC is continually coordinating actions related to evolving events, and remains poised to address all new information related to our knowledge of Asian carp populations that may be present in the Chicago Area Waterways System. Finally, the Corps is continuing to apply the UND's eDNA research in coordination with our partner agencies' other monitoring efforts, to better understand the reality of Asian carp presence in the waterway.

In my judgment, the Corps and its partner agencies are addressing the Plaintiffs' concerns in an aggressive, coordinated, and appropriate manner.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 2, 2010

JOHN W. PEABODY
Major General
U. S. Army

Attachment 5

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

STATE OF MICHIGAN, STATE OF MINNESOTA, STATE OF OHIO, STATE OF WISCONSIN, and COMMONWEALTH OF PENNSYLVANIA,	)
Plaintiffs,	) Case No. 1:10-cv -04457
v.	) Hon. Robert M. Dow, Jr.
UNITED STATES ARMY CORPS OF ENGINEERS and METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO,	)
Defendants.	)

DECLARATION OF VINCENT V. QUARLES

1. My name is Colonel Vincent V. Quarles. I am the Commander of the Chicago District ("Chicago District") of the Great Lakes and Ohio River Division of the United States Army Corps of Engineers ("Corps"). In this capacity, I direct all operations of the Chicago District. Our district missions include the planning, construction and operation of navigation and flood damage reduction facilities throughout the Chicago metropolitan area, encompassing 5,000 square miles and serving a population of over 8 million people, in addition to environmental protection and restoration, and disaster assistance.

2. I have been the Commander of the Chicago District since July 1, 2008. Immediately prior to reporting to the Chicago District, I served as the Mobility Team Chief, Dominant Maneuver Division of Force Development, Army G-8 from 2006 to 2008 where I developed and managed an annual budget exceeding one billion dollars for developing and distributing mobility systems across the Army. I was commissioned into

the Corps of Engineers and entered active service in 1987. I have served in various command and staff positions, mostly as a combat engineer, including combat tours during Operations Desert Shield/Desert Storm and two tours to Iraq for Operation Iraqi Freedom, the latter tour as the commander of the 4-3 Brigade Troops Battalion, where my battalion managed more than 300 construction projects exceeding $326 million. I have also served as the executive officer in the department of Civil and Mechanical Engineering at the United States Military Academy at West Point.

3. I am a graduate of Norfolk State University, the U.S. Army Command and General Staff College, and North Carolina State University, where I earned a Master of Mechanical Engineering degree. I also taught Civil and Mechanical Engineering at the United States Military Academy at West Point from 1997 to 1999.

4. I am familiar with the facts relative to the above captioned civil action, and I submit this sworn Declaration in support of the United States' Opposition to the Plaintiffs' Motion for Preliminary Injunction.

Overview of Corps' Efforts to Mitigate Asian Carp Migration

5. Asian carp, specifically bighead carp (*Hypophthalmichthys nobilis*) and silver carp (*H. molitrix*), were imported into the southern United States in the 1970s, and they have escaped into and spread throughout the Mississippi River basin. To deter migration of the Asian carp into the Great Lakes, the Corps has constructed, is operating, and is further improving an electrical Dispersal Barrier system in the Chicago Sanitary and Ship Canal ("CSSC") as authorized by Congress. The Corps is also engaged in extensive fish monitoring and is undertaking congressionally authorized studies to identify additional emergency and long term actions needed to deter the migration of this invasive species.

6. As part of our efforts, the Corps has coordinated with numerous federal, state, and local entities to deter the migration of Asian carp. Specifically, the Dispersal Barrier Advisory Panel, comprised of numerous federal, state, local, scientific, and commercial entities, was formed in 1995 to advise the Corps of Engineers on issues pertaining to the development of a barrier to prevent the migration of aquatic invasive species between the Great Lakes and Mississippi River basins via the CSSC.

7. In August 2009, senior leaders of various agencies determined that there was a need to confer regularly regarding contingency planning at an executive level, and formed an Executive Steering Committee entitled the Asian Carp Regional Coordinating Committee ("ACRCC"). This group includes representatives from the Corps, the United States Environmental Protection Agency ("EPA"), the United States Coast Guard ("Coast Guard"), the United States Fish and Wildlife Service ("USFWS"), the Illinois Department of Natural Resources ("ILDNR"), the Indiana Department of Natural Resources ("INDNR"), the Ohio Department of Natural Resources ("ODNR"), the Metropolitan Water Reclamation District of Greater Chicago ("MWRDGC"), the United States Geological Survey ("USGS"), the City of Chicago, and the Great Lakes Fishery Commission.

8. Within the ACRCC, a work group called the Monitoring and Rapid Response Work Group ("MRRWG") was formed and has met extensively to identify the location and population abundance of Asian carp within the Chicago Area Waterway System ("CAWS"), and to implement appropriate rapid response actions. Another group, called the Invasion Control Work Group ("ICWG"), was established within the ACRCC to identify existing authorities and funding mechanisms that could be employed by member

agencies to implement long term actions. The Corps will continue to work with all of these entities to fulfill a common goal of deterring Asian carp migration into the Great Lakes.

Electric Dispersal Barriers

9. The construction and operation of electric dispersal barriers ("Barriers") in the CSSC near Romeoville, Illinois is a major component of the Corps' efforts to prevent the migration of Asian carp into the Great Lakes. To the Corps' knowledge, the Barriers are the largest electrical field dispersal barriers in the world. The project is composed of three separate barriers: Barriers I, IIA, and IIB, as described below.

Barrier I

10. In 1996, the National Invasive Species Act ("NISA"), 16 U.S.C. § 4701 et seq., authorized the Corps to construct a demonstration electric dispersal barrier ("Barrier I") on the CSSC. Barrier I was originally authorized as a demonstration of a technology to deter the movement of aquatic nuisance species through the CSSC. At the time, the primary concern was the migration of the round goby from Lake Michigan into the Illinois and Mississippi river system. After the significance of the threat of Asian carp became known, the Corps focused on operating and designing the Barriers for the purpose of preventing the migration of Asian carp from the Illinois and Mississippi river system into the Great Lakes.

11. After reviewing several available technologies and consulting with the Advisory Panel, the Corps determined that an electric dispersal barrier was the most effective option for the demonstration project. An electric barrier was selected primarily because it: was a proven technology on a smaller scale; was not lethal to fish and other aquatic

species; and did not interfere with the flow of water or movement of vessels in the CSSC, allowing the canal to continue to serve its intended purposes.

12. After completing a National Environmental Policy Act ("NEPA") analysis, the Corps awarded a contract for the design of Barrier I in December 1999, and construction was completed in January 2002. Barrier I was activated for full-time operation in April 2002.

13. Barrier I is located at river mile 296.5 in Romeoville, Illinois, and it consists of 12 steel cable bundles that are secured to the bottom of the canal and extend over approximately 54 feet of the canal bottom. Each steel cable bundle is called an electrode. A low-voltage, pulsing DC current is sent through the electrodes, creating an electric field in the water.

14. Barrier I's electric field is designed to repel fish. Fish penetrating the electric field are exposed to increasingly unpleasant electrical stimuli. Thus, the electric field is repulsive to fish and deters them from swimming through the electrified area. Barrier I is operated at settings of 5 pulses per second with each pulse 4 milliseconds long and a maximum in-water electric field strength of 1 Volt per inch.

15. In 2004, a sparking incident during barge operations in the vicinity of Barrier I was reported to the Corps and the Coast Guard. In 2005, after coordination with the Coast Guard and the navigation industry, the Corps completed tests to evaluate sparking potential within and between vessels and potential health risks to a person in the water at Barrier I. The testing showed that under certain conditions sparking could occur between vessels within the barrier's electric field and between a vessel within the electric field and conductive objects on land. Due to these concerns, the Coast Guard established a

Regulated Navigation Area ("RNA") addressing navigation safety requirements. Barrier IIA was under construction at this time and the extent of the RNA was defined to include the location of Barrier II as well as Barrier I.

16. Because of its original status as a demonstration project, Barrier I was designed and built with materials that were not intended for long-term use. Barrier I was taken off line, once Barrier IIA was operable, for approximately 4 weeks in September and October 2009 for major rehabilitation that extended Barrier I's operating life by an estimated three to five years.

17. Section 3061 of the Water Resources Development Act of 2007, Pub. L. 110-114, 121 Stat. 1121 ("Section 3061 of WRDA 2007") authorized the Corps to upgrade and make permanent Barrier I. The Corps intends to take Barrier I off line and upgrade it to a permanent status after Barrier IIB is fully operational and federal appropriations become available.

Barrier IIA

18. In January 2003, the design and construction of a permanent barrier, called Barrier II, was approved under Section 1135 of the Continuing Authority Program, 33 U.S.C. § 2309a ("Section 1135 of the Continuing Authority Program").

19. The Barrier II project consists of two sets of electrical arrays and control houses, known as Barriers IIA and IIB. Each control house and set of arrays can be operated independently.

20. During the design of Barrier II, the Corps considered and included results from various research studies regarding fish deterrence. Specifically, the Corps became aware of an independent research study conducted by Dr. Mark A. Pegg and Dr. John H. Chick,

as set forth in a 2004 report titled "Aquatic Nuisance Species: An Evaluation of Barriers for Preventing the Spread of Bighead and Silver Carp to the Great Lakes", which indicated that smaller, juvenile fish may require higher voltages than those in use at Barrier I to be repelled. As a result of this study and discussions with the Barrier Advisory Panel and other subject matter experts, the Corps modified the design of Barrier IIA to operate at variable parameters to include reaching field strengths of approximately 4 volts per inch depending on certain factors such as conductivity and temperature of the canal's water.

21. Construction of Barrier IIA was complete in March 2006. Full time operation of Barrier IIA did not occur until 2009, because the Corps and the Coast Guard were involved in an extensive safety testing program to define the extent and magnitude of the electric field generated, evaluate the potential to create sparking between vessels, and evaluate the physiologic effects a person in the electrified water would experience.

22. Barrier IIA is located at approximately River Mile 296.25, approximately 1,200 feet downstream of Barrier I. Barrier IIA consists of 42 solid steel billets that are secured to the bottom of the canal and extend over approximately 130 feet of the canal bottom upstream to downstream. A pulsing DC current is sent through the billets, creating an electric field in the water that deters fish from passing across the area.

23. The Corps retained the U.S. Navy Experimental Diving Unit ("NEDU") in December 2006 to evaluate the potential effects of the electric field on people immersed in the water. In June 2008, NEDU completed its final report which concluded that serious injury or death could occur from immersion in the barrier electric fields. As a

result, appropriate safety measures for personal safety were developed and reviewed by a number of stakeholders, including the Coast Guard and the navigation industry.

24. From September through October, 2008, Barrier IIA was operated on a trial basis, and the results were evaluated as part of the safety program. In December 2008, the Corps was notified by the Coast Guard that it would not object to permanent activation of Barrier IIA at the 1 Volt per inch level. In January 2009, the Coast Guard implemented a revised RNA in the vicinity of the barrier system that included additional safety provisions.

25. In April 2009, the Corps began full-time operation of Barrier IIA at the same operating parameters as Barrier I (5 pulses per second with each pulse 4 milliseconds long and a maximum in-water electric field strength of 1 Volt per inch). At this time there was no definitive information that other operating parameters would be more effective.

Optimal Operating Parameters Research

26. After receiving funding to study the efficacy of the Barriers, the Corps began a comprehensive analysis which included an evaluation of the operating parameters of the Barriers. In April 2009, my district coordinated with the Corps Engineer Research and Development Center ("ERDC") as part of our efforts under Interim Report II (discussed below) to begin a research program in coordination with Smith–Root, Inc. of Vancouver, Washington, the contractors who designed the barriers for the Corps, to identify optimal barrier operating parameters to deter all sizes of bighead and silver carp. The studies at ERDC are more comprehensive and more accurately model the Barriers than the previous study by Pegg and Chick mentioned above.

27. In June 2009, initial results indicated that the optimal operating settings should be 15 pulses per second with each pulse 6.5 milliseconds long and a maximum in-water electric field strength of 2 Volts per inch. The ERDC investigations found that these operating parameters were sufficient to deter the Asian carp tested, which included juvenile Asian carp sized 5.4 to 11 inches.

28. In August 2009, the Corps began operating Barrier IIA at the parameters recommended by ERDC after environmental DNA ("eDNA") results from late July indicated that Asian carp were in the Brandon Road Pool of the Illinois Waterway, closer to the barriers than ever before detected.

29. In September through December 2009, ERDC conducted a second phase of tank testing using juvenile bighead carp 2 to 3 inches in length, as discussed in Mr. Shea's Declaration. Initial results from the second phase of tank testing indicate that the current settings at Barrier IIA may not fully immobilize the smallest fish tested. However, one hundred percent of the exposed fish in the tank tests exhibited avoidance responses. Based on the expert analysis of the avoidance response data from the tank tests, the Corps decided to maintain the same operating parameters at the Barriers until initial, small scale flume testing was completed.

30. In April 2010, the initial flume tests were completed. The flume tests evaluated the behavior of 2 to 3 inch juvenile bighead carp in a shallow oval flume with flowing water and a small-scale, modeled barrier electric field. The area of electrification in the flume tests was 16.4 feet long, allowing for the study of fish avoidance behavior but not simulating the length and duration of electrical exposure fish would experience over approximately 130 feet at either Barrier IIA or Barrier IIB. During the tests, some fish

between vessels traversing the waterway; the impacts of ground current associated with the Barriers on human health and infrastructure; and the human health effects of electromagnetic fields created by the barrier equipment. The results of these investigations are scheduled to be delivered in the summer and early fall of 2010.

35. The Corps is also working with the MRRWG to assess the likelihood that Asian carp 2 to 3 inches in length are present near the Barriers. Although further evaluation is needed, because of the lack of an established adult population in Brandon and Lockport pools and the unsuitable habitat in the vicinity of the barrier, current conclusions are that it is unlikely that very small Asian carp are present in the immediate vicinity of the Barriers.

36. Barrier operation is affected by environmental factors such as water conductivity and water temperature. The barriers were designed to operate under typical environmental conditions. Occasionally, there are short-term extreme variations in environmental conditions, such as peaks in water temperature during the summer months or peaks in water conductivity when road salts wash into the canal during winter thaws. These events place added stress on the barrier electronics and cooling systems. While the Corps can maintain barrier operation during these events, it may not be possible to operate at high voltages, pulse rates, or pulse durations until the environmental conditions return to more typical levels. Based on historical data, the Corps has estimated that water conductivity will impede barrier optimal operating parameters for approximately 200 hours per year. The periods of high conductivity typically occur during the winter months when temperatures are lower and carp migration is less. Results from the optimal operating parameters testing completed at ERDC indicated that the best solution to

challenged the barrier repeatedly, even immediately after recovering from being immobilized in a previous attempt, and some fish were able to pass through the electrified area. The tests results do not necessarily indicate that very small fish will pass through the barriers because the electrical field in the flume (16.4 feet) is not comparable to the electric field at the barriers (130 feet); however, the preliminary recommendation in view of the flume test is that the barriers be operated at a slightly higher level to immobilize fish and ensure effectiveness.

31. Other tests have been completed on bighead carp 2 to 3 inches in length to evaluate the effect of variations in water conductivity and water velocity on barrier effectiveness. In general, higher water conductivities make an electric barrier less effective and higher water currents make the barrier more effective against fish swimming upstream into the electric field.

32. As part of its coordination in the ERDC investigations, Smith-Root, Inc. provided a draft report on all of the optimal operating parameters testing completed since April 2009 on July 9, 2010. A final report is scheduled for August 2010.

33. Although it is possible to operate Barrier IIA in the future at voltages above 2 Volts per inch, it is not prudent to operate Barrier IIA at higher levels than required as such operations will shorten the barrier's lifespan and create unnecessary increased safety concerns. Any change to the barrier operating parameters will require the Corps, in consultation with the Coast Guard, to complete additional testing for the new parameters to determine if the safety risks have changed.

34. The Corps is investigating the safety risks associated with higher operating parameters with regard to: the ability of electrical current in the water to create sparking

address periods of high conductivity was to maintain the voltage and pulse rate and reduce the pulse duration, and the Corps is following this recommendation.

Barrier IIB

37. The current Barrier system will be further strengthened by the Corps' construction of Barrier IIB, which will be located approximately 220 feet north of Barrier IIA. Barrier IIB will be formed of 42 solid steel billets that are secured to the bottom of the canal and extend over approximately 130 feet of the canal bottom upstream to downstream.

38. Barrier IIB was originally scheduled to be completed in 2011. Following the discovery of eDNA evidence closer to the fish barrier in July, 2009, the Corps requested and received $7 million of American Recovery and Reinvestment Act ("Stimulus") funding to accelerate this construction, and construction completion is now scheduled for November 2010. Barrier IIB's construction includes several design changes and improvements to account for increased winter-time water salinity, additional cooling requirements, potentially longer periods between maintenance, and more robust electrical grid connections being accomplished with another $12 million in ARRA funding. The Corps expects that Barrier IIB will be placed into full service in fiscal year 2011 following completion of safety testing. Safety testing will need to be coordinated with the Coast Guard to gauge the effect of operating Barriers I, IIA and IIB simultaneously.

Barrier Maintenance and Rotenone Application

39. The barriers are electrical and mechanical systems and as such require regularly scheduled maintenance. The Barrier II system is designed to have Barriers IIA and IIB operate independently, if needed, so that one component barrier can be turned off for maintenance while the other barrier remains in operation.

40. Barriers I and IIA were shut down for maintenance in early December 2009. In coordination with the Rapid Response Working Group, the maintenance operation was synchronized with the application of rotenone, a commonly used fish toxin, in the CSSC by ILDNR. Approximately 30,000 to 40,000 fish were collected during the rotenone application consisting of 32 species, including common carp, gizzard shad, yellow bullhead, yellow perch, spotted gar, and shortnose gar. Of the tens of thousands of fish recovered, only one Asian carp (bighead carp) was found. The single Asian carp was recovered at River Mile marker 291.5, approximately 5 miles downstream, or south, of the Barrier system.

41. Based on the condition of Barrier IIA observed in December 2009 and subsequent barrier monitoring by the Corps and Smith-Root, Inc., the next maintenance shutdown for IIA should be completed no later than December 2010. Barrier IIB should be operational before the required Barrier IIA December maintenance shutdown. However, the Corps continues to conduct contingency planning with other agencies within the MRRWG should electrical barriers not be available for a short period of time.

Asian Carp Monitoring and Coordinated Federal and State Response Actions

42. In addition to the information obtained from the rotenone effort, the Corps and numerous other federal, state and local entities have been conducting extensive monitoring of the location of the Asian carp through a variety of methodologies, including electro-fishing, netting, telemetry, and eDNA testing. Current monitoring efforts are being coordinated through the MRRWG.

Early Monitoring Efforts

43. Beginning in 2000, the USFWS organized a multi-agency annual sampling event, called the "Carp Corral", which covered the entire Illinois Waterway from the LaGrange Lock and Dam to above the Barrier System. The participants included federal, state and non-governmental agencies, and participants used electro-fishing and trammel nets to survey for bighead and silver carp over a period of several days.

44. In 2000, Asian carp were first detected in the Peoria pool in the Illinois River by the Illinois Natural History Survey. The Peoria pool occupies an approximately 73 mile stretch of the Illinois River that begins approximately 150 miles upstream of the confluence between the Mississippi and Illinois rivers, and approximately 140 miles below, or downstream of, the Barrier system.

45. In 2001, Asian carp were detected in the Marseilles pool, approximately 90 miles upstream of the Peoria pool and approximately 50 miles below the Barrier system by a USFWS crew using electrofishing.

46. In 2003, the University of Illinois and the Illinois Natural History Survey conducted a research program in which common carp had radio transmitters surgically implanted. One hundred forty five radio-tagged common carp were placed downstream of Barrier I during this program. One radio transmitter crossed from downstream to upstream of Barrier I in 2003. The Corps does not believe that the tagged fish survived because the transmitter remained stationary shortly after crossing Barrier I. This crossing resulted in additional studies and changes to the design of Barrier II.

47. In 2006, Asian carp were captured in the Dresden Island pool, approximately 25 miles downstream of the Barrier system, by the USFWS and the Corps using

electrofishing. In 2007, monthly sampling using electro-fishing and trammel nets was added to the monitoring program implemented by the Corps and other federal and state agencies.

48. In addition, in 2007, the Corps and other agencies implemented the use of acoustic telemetry to tag and track Asian carp in the upper pools of the Illinois Waterway. Fish were captured and tagged from the Starved Rock, Marseilles, and Dresden Island pools. Passive telemetry receivers were placed from Starved Rock pool up to Lockport Pool to detect inter and intra pool movements. Additional Asian carp were captured in the Dresden Island pool between 2007 and 2009 during the Carp Corral and through the Corps' independent efforts. Some of the Asian carp captured in the Dresden pool were tagged for telemetry and released. The Corps' telemetry receivers detect movement of the tagged carp. To date, none of the tagged carp have ventured upstream of the Dresden Island pool. Subject matter experts have indicated that environmental conditions may be a factor in the lack of significant Asian carp migration upstream of the Dresden Island pool. The Dresden Island pool provides suitable habitat for Asian carp, while the channelized nature of the upstream areas do not allow for the diverse habitat combination preferred by Asian carp.

49. In September 2008, testing with tagged fish indicated that common carp may be able to pass through Barrier IIA from upstream to downstream, away from Lake Michigan flowing with the current. However, the migration of Asian carp is against the current, i.e. from downstream of the barrier to upstream of the barrier toward Lake Michigan.

Introduction of eDNA as a Monitoring Tool

50. As part of a comprehensive review in the fall of 2008, the Corps determined that traditional monitoring tools, such as netting and electro-fishing, could only indicate where Asian carp were located in abundance. In January, 2009, I asked the Advisory Panel and members of the scientific community to recommend alternative means of detection for small numbers of Asian carp. In May, 2009, the Corps learned of a new monitoring technique, eDNA, being researched by the University of Notre Dame ("UND") and the Nature Conservancy. The eDNA testing detects the presence of species DNA through water sampling, without physically capturing or sighting the fish. Water samples are taken from waterways, and then tested for the target species DNA present in suspended solids, many containing fish feces, scales, and other fish tissue containing DNA. The Corps entered into a cooperative agreement with UND to employ this new tool.

51. During the summer and fall of 2009, eDNA testing detected Asian carp DNA in waters adjacent to the Dispersal Barrier. In July 2009, the Corps received a report from UND that Asian carp DNA was detected on the Des Plaines River in the Brandon Road pool approximately 6 miles south of the Barrier. In response, the Corps increased Barrier IIA's operating parameters to levels recommended by ERDC (15 pulses per second with each pulse 6.5 milliseconds long and a maximum in-water electric field strength of 2 Volts per inch) in August 2009 after close coordination with the Coast Guard on additional safety testing.

52. The Corps received eDNA results in August 2009 that detected Asian carp DNA approximately 0.8 miles south of Barrier IIA and also in the Lockport pool,

approximately five miles downstream of the Barriers. As discussed above, during the aforementioned rotenone application on December 3, 2009, a single Asian carp was recovered in the Lockport pool below the fish barrier.

Positive eDNA results and Response Actions to prevent Bypass of the Electric Barriers

53. In September 2009, Asian carp DNA was detected on the Des Plaines River in a location several miles north of the Barriers. While the Des Plaines River is geographically separate from the CSSC above the Barrier system, there are potential pathways between the two during flood events. As a result, the Corps is in the process of constructing a bypass barrier fence and solid structures between the Des Plaines River and the CSSC as approved in the Interim I report of the Efficacy Study as discussed in more depth below.

54. In October 2009, the Corp learned that Asian carp DNA was also detected in the Illinois and Michigan Canal ("I&M Canal"). In response, the Corps and several other agencies conducted intensive electro-fishing and netting in the lower I&M Canal in October, 2009. However, no Asian carp were captured. The Corps has placed a barrier in the I&M canal to prevent Asian carp bypass of the electrical barriers as approved in the Interim I report of the Efficacy Study, as discussed below.

Positive eDNA results above the Electric Barriers and Corresponding Response Actions

55. On November 17, 2009, it was reported to the Corps that Asian carp DNA was detected in the Cal Sag Channel near the O'Brien Lock, approximately 30 miles upstream of the Barrier system, from samples collected in September and October 2009. This was the first detection of Asian carp eDNA upstream of the Barriers in waters that directly connect to the CSSC.

56. In response, ILDNR contracted with a commercial fishing company to intensively fish a 5.5-mile stretch of the Cal-Sag Channel from December 1 through 6, 2009. They deployed nearly 3,000 yards of fishing nets. While the nets collected more than 1,000 fish, including 12 different species, no Asian carp were found.

57. Between November 2009 and July 2010, positive eDNA for both silver and bighead carp have been detected in several locations throughout the CAWS above the electric barriers. In 2009, seventeen (17) samples tested positive for silver carp DNA and thirty-three (33) samples tested positive for bighead carp DNA out of a total of 580 samples taken from above the Barriers. In 2010, ten (10) samples have tested positive for silver carp DNA and zero (0) samples have tested positive for bighead carp DNA out of a total of 536 samples taken from above the Barriers. Because multiple positive samples can come from a single fish, the presence of Asian carp eDNA from sampling trips on separate dates may be a more accurate indicator of the potential presence of Asian carp. Several locations above the Barriers have had positive eDNA samples from multiple sampling trips.

58. In response to the positive eDNA results above the electric barriers, the Corps and other federal and state agencies in the MRRWG have conducted a variety of actions to determine whether live Asian carp are in the area, as discussed in more detail in Mr. Wooley's Declaration. The MRRWG is currently drafting a monitoring plan establishing fixed sites above the electric barriers where monitoring efforts, including both eDNA and traditional techniques, such as electrofishing and netting, will be concentrated.

59. Positive eDNA results were detected on multiple occasions in the northern area of the Little Calumet River immediately below the O'Brien Lock and Dam. In response, the

MRRWG applied rotenone to a 2.5 mile reach of the river in the area on May 20, 2010 to determine if live Asian carp were present, and, if so, the density of their population. An adjacent 2.5 mile reach was sampled by commercial fisherman using conventional gear. From May 20-25, 2010, the USCG established a safety zone prohibiting navigation through the area, and the Corps closed the O'Brien Lock to achieve a no-flow condition. Over 130,000 pounds of fish representing 38 species and two hybrid groups were collected. However, no bighead or silver Asian carp were found.

60. In the spring of 2010, additional positive eDNA results were discovered in the North Shore Channel and the Chicago River. The MRRWG's response was to conduct intense traditional monitoring efforts in those areas. No Asian carp were discovered. Immediately before this monitoring event, eDNA samples were collected. None of the eDNA samples tested positive for Asian carp DNA.

61. On June 22, 2010, a live bighead carp was captured in Lake Calumet by an ILDNR commercial fishing operation, which was being conducted as part of the monitoring plan created by the MRRWG. This was the first live Asian carp found above the electric barriers in the CAWS. An analysis is currently underway by the Southern Illinois University of Carbondale to attempt to ascertain the Asian carp's origin.

62. This event prompted an intense sampling response during the week of June 28, 2010 in the Calumet River between the O'Brien Lock and Dam and Lake Michigan, as discussed in detail in Mr. Rogner and Mr. Wooley's Declarations. As a result of this effort, over 15,000 fish were recovered, but no additional Asian carp were captured. Based on the capture of the one live Asian carp and the subsequent monitoring efforts,

the ACRCC has concluded that to the extent that Asian carp exist in the CAWS, they are present in very low numbers.

63. In response to the capture of the live Asian carp, the MRRWG designated three priority sampling areas where intensified traditional monitoring efforts are being focused, and 300 additional eDNA samples are being collected. These areas are Lake Calumet; the Calumet River above O'Brien and Calumet Harbor; and the Indiana Harbor and Canal. To date, no additional live Asian carp have been found in the CAWS. Results for the eDNA samples collected in July are expected in August.

64. Although no additional live Asian carp have been captured in the CAWS, a few Asian carp were found in an apparently isolated city park lagoon. On July 6, 2010, several live Asian carp were reportedly caught by private fishermen in the Garfield Park Lagoon on Chicago's west side. To the best of the Corps' knowledge, this is a land-locked lagoon with no connection to the CAWS. According to newspaper reports, Asian carp have been found on several occasions in Chicago city park lagoons between 2003 through 2010. On June 5, 2003, a 38 pound bighead carp was caught in the McKinley Park Lagoon on Chicago's southwest side according to a Chicago Tribune news article. In March 2009, five more dead Asian carp were reportedly observed in the McKinley Park Lagoon after it thawed. In November of 2009, a dead Asian carp was reported by the Chicago Sun-Times in the Lincoln Park Lagoon on Chicago's north side after a rotenone treatment. The Lincoln Park South Lagoon is connected to Diversey Harbor via a small discharge pipe. It is not known how these fish got into the isolated city park lagoons, but cultural placement or catfish stocking that included Asian Carp may be an explanation.

Future Monitoring Efforts

65. The Corps in coordination with the MRRWG plans to continue collecting and utilizing data from a variety of monitoring methods in the future. Currently, all reaches upstream of the fish barrier are surveyed monthly using electro-fishing, netting, and telemetry.

66. The eDNA methodology to detect the genetic presence of bighead and silver carp is currently being transitioned from the UND to state and federal members of the MRRWG. Specifically, the tasks associated with the application of this method will be conducted by an interagency sampling team consisting of the Corps, USFWS and ILDNR. The samples will be filtered by the Corps at an EPA facility in Chicago, and then shipped to the Corps' ERDC for processing.

67. The Corps intends to conduct an independent external peer review of the eDNA science and methodology. This review is scheduled to be complete in December, 2010.

Telemetry Efforts

68. The Corps is implementing a network of acoustic receivers to track the movement of Asian carp and associated surrogate fish species in the area around the electric barriers. This network will be installed and maintained through a partnership between the Corps, USFWS, MWRDGC, and ILDNR as part of the MRRWG's monitoring plan. The acoustic network is comprised of at least 30 acoustic receivers, of which 27 have already been deployed. The network will collect information from tags implanted into Asian carp and surrogate species: bigmouth buffalo, smallmouth buffalo, black buffalo, and common carp. Approximately 100 fish will be tagged as part of this effort. Tagged surrogate fish will be released both above and below the Barrier, and tagged Asian carp will be released

below the electric barriers at their original point of capture. No tagged Asian carp will be released above the electric barriers or moved into areas upstream of where they were captured.

69. An ancillary benefit of the telemetry project will be the enhancement of the regional capability of fish tracking at a basin scale. This project will complete the Illinois Waterway basin acoustic receiver network which extends from the Mississippi River to Lake Michigan, and it will enable cooperating researchers to document large scale movements of Asian carp and other fish species within the system.

70. The Corps, ILDNR and USFWS are in the process of tagging fish and collecting data. Several common carp were tagged in late July and data tracking their movement is being gathered.

The Efficacy Study Conducted by the Corps

71. As authorized by Section 3061 of WRDA 2007, the Corps is currently completing an Efficacy Study to identify threats to the efficacy of the Barriers. Work on this study is being presented in a series of reports which have been titled the Interim I, II, III, IIIA and Final Efficacy Reports as described below.

72. Section 126 of the 2010 Energy and Water Development Appropriations Act, Pub. L. 111-85, 123 Stat. 2845 ("Section 126") provides one year implementation authority for Efficacy study emergency measures as approved by the Assistant Secretary of the Army for Civil Works ("ASA (CW)"). The Section 126 authority expires at the end of October, 2010.

Interim I

73. The Dispersal Barrier Efficacy Study, Interim I – Dispersal Barrier Bypass Risk Reduction Study & Integrated Environmental Assessment (December 2009) ("Interim I Report") was approved by the Assistant Secretary of the Army for Civil Works ("Assistant Secretary") on January 12, 2010. Interim Report I analyzes measures to prevent the migration of Asian Carp from the Des Plaines River into the Chicago Sanitary and Ship Canal above the Dispersal Barrier during flood events. The Assistant Secretary approved the use of Section 126 authority to construct concrete barricades and a fine mesh fence with 1/4 inch openings over approximately 13 miles of flood prone areas between the Des Plaines River and the CSSC above the Barriers, and to block potential pathways through the I&M Canal.

74. The construction in the I&M canal is complete. The construction of the barricade and fence along the Des Plaines is underway, and scheduled for completion in October 2010. Funding to construct these barriers was received from EPA through the Great Lakes Restoration Initiative.

75. As a result of a severe storm event in the Chicago area which began on July 23, 2010, flood waters tested these barriers on July 25, 2010. The blockage of the I&M Canal performed as designed. The area between the Des Plaines River and the CSSC overflowed in three areas. The portion of the Bypass Barrier that was constructed prevented a potential overflow at one location. Flood waters did transit three areas where the Bypass Barrier has not yet been constructed. While the rest of the barrier is still under construction, the flood route confirmed that the barrier, once completed, will

address the areas of potential overflow between the waterways. The MRRWG has planned additional eDNA sampling and traditional monitoring near the areas of overflow.

Interim II

76. The Interim II Report will further refine the optimal parameters for operating the electric field of the Dispersal Barriers to deter both adult and juvenile Asian carp based on various studies. The investigations and results are set forth above in the discussion of Barrier IIA and in Mr. Shea's Declaration.

Interim III

77. On July 13, 2010, the Assistant Secretary approved the Chicago Sanitary and Ship Canal Dispersal Barriers Project, Illinois, Dispersal Barrier Efficacy Study, Interim III - Modified Structures and Operations, Illinois and Chicago Area Waterways Study and Integrated Environmental Assessment ("Interim III Report"). Based on the analysis and recommendations in the Interim III Report, the Assistant Secretary approved the use of Section 126 authority to install steel bar screens on two of the four controlling works sluice gates at the T.J. O'Brien Lock and Dam. The bar screens are designed to prevent adult Asian carp from passing through sluice gates during the times that the gates are open for water intake from Lake Michigan into the CAWS. The bar screens may be removed during flood events, because they will likely clog with debris and become obstructed. Thus, bar screens will not be installed on the sluice gates which are solely used to relieve flooding. A full discussion of this risk reduction measure is set forth in the Interim III Report.

78. In May, 2010, MWRDGC installed bar screens on two of the sluice gates at the Chicago River Controlling Works. As described in the Interim III Report, the Corps will install the bar screens on two of the sluice gates at O'Brien in September, 2010.

79. The Interim III Report also evaluated whether and how to modify the operation of the locks to deter Asian carp migration into the Great Lakes. Interim III did not evaluate longer term closures of the locks, because the analysis of that option requires a more in depth complex assessment that is being evaluated as part of the Interbasin Study discussed below. In order to inform the Corps' analysis, the USFWS was asked to convene a panel of experts to provide feedback on the array of options being considered as part of Interim III. The panel of experts concluded that none of the modified lock operations being considered would be effective in reducing the risk of Asian carp migration. Based on the results of the expert panel and other factors as set forth in the Interim III Report, the Corps decided to use the intermittent closure of the Chicago and O'Brien locks, on an as-needed basis, in support of fish control and eradication efforts performed by the resource agencies, upon the request of those agencies and in coordination with the Coast Guard.

Interim IIIA

80. On July 13, 2010, the Assistant Secretary approved the Chicago Sanitary and Ship Canal Dispersal Barriers Project, Illinois, Dispersal Barrier Efficacy Study, Interim IIIA Fish Deterrent Barriers, Illinois and Chicago Area Waterways Study and Integrated Environmental Assessment ("Interim IIIA Report"). Based on the analysis and recommendations in the report, the Assistant Secretary approved the recommendation to implement a fish deterrent barrier demonstration project at the Brandon Road Lock and

Dam on the Des Plaines River just below the City of Joliet, Illinois. The purpose of this project is to demonstrate the efficacy of an acoustic-bubble curtain strobe light fish deterrent system technology in discouraging the dispersal of Asian carp from the Chicago Area Waterways into the Great Lakes. By its terms, the Section 126 authority expires on October 28, 2010, and this project cannot be constructed before October 28, 2010. Thus, the Corps cannot implement this project unless Congress enacts legislation to extend the emergency implementation authority of Section 126, or other legislation that allows project implementation in accordance with law and Administration policy, and the Corps receives project implementation and funding. A full discussion of this risk reduction measure is set forth in the Interim IIIA Report.

Final Efficacy Study

81. The Final Efficacy Study report will evaluate other potential measures to assure the efficacy of the Barriers, including the potential construction of other electrical barriers and other types of barriers, modifications to existing structures, measures to prevent assisted transits (ballast water, bait buckets), and population control. This report will also recommend permanent solutions to the issue of bypass along the Des Plaines River and the I&M Canal, and it will include an analysis of other emergency measures that could be implemented under Section 126 to deter Asian carp in the CAWS, if the Section 126 authorization is extended. The report will provide a summary of all interim reports completed to date and recommend a long-term, multi-agency comprehensive strategy for improving the efficacy of the dispersal barriers and reducing the population effects of Asian carp within the CAWS. The Corps intends to finalize this report in 2011. If additional Congressional authorization and appropriations are made available, work to

implement the Final Efficacy Study recommendations could begin as early as Fiscal Year 2012. Additional studies may be undertaken in the future as technologies to limit the spread of aquatic nuisance species evolve.

The Interbasin Study (GLMRIS)

82. The Corps is also conducting a feasibility study of the options and technologies that could be applied to prevent or reduce the risk of aquatic nuisance species transfer between the Great Lakes and Mississippi River basins through aquatic pathways, pursuant to Section 3061 of WRDA 2007 called the Great Lakes and Mississippi River Interbasin Study ("GLMRIS").

83. GLMRIS was initiated in July 2009 on receipt of the initial appropriations. In January 2010, the first agency scoping meeting for GLMRIS was held, and the attendees included the USGS, USEPA, USFWS, USDA, MWRDGC, and ILDNR. In May 2010, a meeting was held with one of the relevant Tribal interests, the Little Traverse Bay Band of Odawa Indians. Between January and July, 2010, a Draft Project Management Plan was created, and is currently under review.

84. As part of GLMRIS, an Executive Steering Committee ("ESC") will be formed. The ESC will be comprised of Federal, state, and regional governmental agencies that hold a commensurate level of authority or regulatory obligation, and may be able to provide resources or funding to help accomplish GLMRIS. Currently, the potential members of the ESC include: the Corps, USEPA, USGS, USFWS, USCG, ILDNR, INDNR, MWRDGC, the National Oceanic & Atmospheric Admin (NOAA), U.S. Department of Agriculture (USDA); the U.S. Department of Transportation (USDOT); the International Joint Commission (IJC); and the Great Lakes Fisheries Commission.

CAWS Focus Area of the GLMRIS

85. The GLMRIS is currently being conducted in two concurrent focus areas. GLMRIS (Focus Area I) will investigate the immediate threat of Asian carp advancing toward Lake Michigan, and the evaluation of long-term measures to reduce the risk or prevent the Asian carp from using the CAWS to spread into the Great Lakes. The study will analyze several alternatives, including the evaluation of a hydraulic separation. Due to the complexity and scope of the study, it will take several years to complete. If sufficient funding is made available, the earliest estimated completion date is anticipated to be 2015. This schedule includes collecting sufficient data, performing the requisite alternatives analysis for the prevention of ANS transfer in the CAWS, as well as completing an environmental impact statement in accordance with the National Environmental Protection Act ("NEPA"), 42 U.S.C. § 4321, et seq. The total cost of the study is currently estimated to be $15M.

86. If the time to complete Focus Area I of GLMRIS is curtailed to 18 months, it is unlikely that the Corps will be able to conduct a detailed study of sufficient quality to result in a recommended solution. A study of the magnitude and complexity of GLMRIS requires a significant quantity of environmental, economic, and social data. If hydrologic separation is to be evaluated, sufficient time would not exist to collect the requisite data to assess impacts. The anticipated timeline to collect this data is 12-18 months assuming sufficient funding. In addition, one purpose of the study is to uncover unknown information and variables, which normally lead to additional avenues of investigation, and require additional time. In addition, after the collection and analysis of the data, the required NEPA processes will take a significant amount of time. From the date the notice

of a Draft Environmental Impact Statement (DEIS) availability is printed in the Federal Register until the ROD can be signed generally takes a minimum of 190 days.

Other Pathways Outside the CAWS

87. The second focus area of GLMRIS includes a preliminary reconnaissance-level investigation to identify and characterize additional surface water connections between the Great Lakes and Mississippi River basins, other than the CAWS. This effort is scheduled for completion by October 2010, and will be followed by the development and evaluation of long term measures.

88. There are several natural connections between the Mississippi River Basin and the Great Lakes other than the CAWS. For instance, there is a potential pathway for invasive Asian carp to move into Lake Erie during flooding via a natural connection of glacial origin between the Wabash and Maumee River basins in Northeastern Indiana at the location of the Eagle Marsh in Fort Wayne. Spawning populations of Asian Carp were found in late May 2010 in the Wabash River near Lafayette, Indiana. When the Maumee River floods, water backflows and may flood the Eagle Marsh with enough water to theoretically allow the passage of Asian carp from the Wabash Basin into the Maumee Basin. Flooding of this magnitude has occurred at least four times since 2004. The INDNR, in coordination with other members of the ACRCC, are planning to install a fence across Eagle Marsh to deter Asian carp migration with the completion date scheduled for August.

89. Evaluating all of the connections between the Great Lakes and Mississippi River basins is very important. Closing but one avenue for migration, the CAWS, is not

sufficient analysis, when there are other connections as well. The GLMRIS will comprehensively study the pathways between the basins.

Feasibility and Impacts of Plaintiffs' Requested Relief

Structures Identified in Plaintiffs Request for Relief

90. The Corps and MWRDGC each own and operate certain portions of the Chicago and O'Brien Locks and controlling works, and they have coordinated their operation through agreements. The Corps owns and operates both the O'Brien Lock and sluice gates, but operates the sluice gates under the direction of MWRDGC per a June 1966 agreement. The MWRDGC owns and operates the sluice gates at Chicago River Controlling Works connected to the Chicago lock facilities. The MWRDGC owns the Chicago lock, but the Corps operates the Chicago lock per a June 1984 agreement. Pursuant to the 1966 and 1984 agreements, MWRDGC can direct the Corps to open the lock gates at Chicago and O'Brien as needed to alleviate potential flooding resulting from severe rain events.

91. MWRDGC owns and operates the Wilmette Pumping Station. The Wilmette Pumping Station is equipped with several pumps and a sluice gate. The pumps and the sluice gate are used to divert Lake Michigan water to the North Shore Channel (NSC) to improve water quality during warm months. The sluice gate is also used to relieve excessive storm water to the Lake during significant rain events. The velocity of the current across the sluice gate is not high, and thus does not pose a deterrent to fish migration.

Effects of Closure on the Maintenance and Operation of the Chicago and O'Brien Locks

92. Plaintiffs' request for relief asks for closure of the Chicago and O'Brien Locks, except to provide for health and safety. Closure of the locks during the winter months would impact the operational status of the locks if needed for flood control, and it may also lead to damage of the structures as discussed in detail in the Declaration by Mr. Cox.

93. The Corps intends to replace the Chicago lock gates this winter, as further detailed in Mr. Abou's Declaration. To perform the replacement, the Corps will need to dewater the structures. In order to protect against flood risk, the Corps will station a floating barge carrying a crane by the lock and will use the crane to remove the bulkheads for flood control, if necessary. The floating barge and crane will cost approximately $12,000 per day. The bulkheads would have to be taken out, on an emergency basis, in order to accommodate significant flood waters. Replacement of these lock gates and operating machinery is critical to the integrity of the CAWS. This equipment has not been replaced since the lock was constructed in 1938. If these lock gates fail in a closed position, water could not be released into the Lake during a major flood event, thus significantly increasing the flood risk for the Chicago area. If these lock gates fail in an open position, water will flow from Lake Michigan into the CAWS in an unregulated manner.

Efficacy of the Closure of the Chicago and O'Brien Locks on Migration Prevention

Leakage

94. There are areas of leakage around the Chicago and O'Brien Lock gates, and thus closure of the lock gates may not fully prevent migration of fish through the lock. On the Chicago Lock gates, there are rubber seals along the outer edges, along the bottom and at

the center where the gates come together. Over time, because of wear and tear of the roller tracks, significant leaks have developed along the outer edges and between the lock gates. New seals were installed in 1999 and numerous adjustments have been made to the gates/seals over the past ten years, but approximately 1 to 2 inch wide leaks remain along some portions of the vertical 21-foot seal lengths.

95. The Corps has bulkheads available for the Chicago Lock, but some leakage would still occur even if the bulkheads are installed because there would still be gaps of approximately one half inch along the sides of the bulkheads. Bulkheads consist of large metal plates that span the width of the canal and are stacked on top of each other to span the height of the canal. These large metal plates must be installed and removed using a crane; they are typically used when conducting maintenance of the lock gates. The Corps could engineer a solution to the leakage in the bulkheads, but such a solution would be inconsistent with the need to open the locks to prevent flooding as discussed further below.

96. Similar leakage issues exist at the O'Brien Lock, as described in Mr. Cox's Declaration, and the O'Brien Lock does not currently have readily available bulkheads.

Overtopping of the Chicago Lock in Flood Events

97. As discussed in Dr. Su's Declaration, it is likely that a sufficiently severe storm event would lead to overtopping of the Chicago Lock facilities if the Locks were closed, thus potentially allowing Asian carp to migrate to Lake Michigan via the water overtopping the facility structures. At this time we know that such overtopping is certain to occur at the Chicago Lock during a 500 year storm event if the sluice gates are open. If the sluice gates are closed and the Chicago Lock, O'Brien Lock and Wilmette Pumping

Station are also closed, then overtopping will occur at the Chicago and Wilmette facilities during a 20 year flood event, and will occur at all 3 locations during a 100 year flood event, as discussed in Dr. Su's Declaration.

Impacts of Closure of Chicago and O'Brien Locks

98. Based on our preliminary analysis, the closure of the Chicago and O'Brien Locks and associated facilities, as requested by Plaintiffs, would have numerous significant impacts, including increased flood risk in the Chicago area, impacts to commercial and recreational vessels through the locks, and potential health and safety concerns as discussed below.

99. It is important to note that this preliminary analysis was developed on an expedited basis referencing available data from the Corps' Waterborne Commerce Statistics Center ("WCSC"), project information for the Little Calumet and Grand Calumet Rivers, and professional judgment. The analysis and preliminary statistics set forth below are therefore tentative and incomplete.

Flooding Impacts of Lock Closure

100. Closure of the Chicago and O'Brien Lock would increase the risk of flooding in the Chicago metropolitan area as discussed in Dr. Su's Declaration. The closure of the lock structures will increase the likelihood of flooding in the Chicago area including flooding to critical downtown businesses, Union Station, suburbs, the North Branch of the Chicago River, and it could lead to the overtopping of the Brandon Road Lock. Closure of the lock structures would also increase the likelihood of sewage backups in the Chicago area. If the associated sluice gates are closed, the flood risks would be more significant. These impacts are discussed in more detail in Dr. Su's Declaration.

101. Increased flood risk means increased public safety risks and potential loss of life. In addition, a preliminary estimate found that over $1 billion in property damage will potentially result if the Chicago Lock and sluice gates are closed during an extreme rainstorm event. This preliminary damage estimate was derived from information regarding lawsuits and insurance claims related to the 1992 flooding of downtown Chicago. Preliminary estimates also indicate that approximately 14,000 homes would be subject to increased flood risk if O'Brien Lock is closed with no backflow through the lock or the sluice gates.

102. A project to account for the additional flood risk created by the closure of the locks would likely be a very lengthy and costly process. For example, to address current flood risks to the Chicago metropolitan area, the Corps and MWRDGC are constructing a deep tunnel system with reservoirs. Construction of the tunnels began in 1975 and was completed in 2006. Construction of the reservoirs is ongoing. The total estimated cost of the completed project is approximately $3 billion.

Frequency of Backflows to Avoid Flood Risk

103. The Plaintiffs' request for relief includes closure of the locks and sluice gates at Chicago, O'Brien and Wilmette, except as needed for public health and safety. As discussed above, the locks and sluice gates will need to be opened on occasion to allow water from the CAWS to backflow into Lake Michigan to avoid flooding and the associated health and safety risks.

104. Dr. Su's Declaration sets forth the historic number of backflow events at all three locations. The sluice gates at CRCW have been opened in response to severe rain events on ten occasions since 1986. In five out of the ten occasions, the lock gates at Chicago

Lock were also opened. The sluice gates at O'Brien Lock have been opened in response to severe rain events on four occasions since 1986, and the lock gates were opened twice, most recently in September 2008. The sluice gate at Wilmette Pumping Station has been opened in response to severe rain events on 21 occasions since 1986. During a severe rain event in September 2008, approximately 2.9 billion gallons of water were released from the CAWS into Lake Michigan through the Wilmette Pumping Station. Five more backflow events have occurred at Wilmette since the fall of 2008. Further details are contained in Dr. Su's Declaration.

105. The most recent backflow event occurred on July 24, 2010. Around 3:00am on July 24, 2010, MWRDGC directed the Corps, per the 1984 Agreement, to open the Chicago Lock gates to allow backflow of flood waters into Lake Michigan due to intense localized rain falls. Between 6 to 7 inches of precipitation fell in a 24 hour period. In addition, MWRDGC opened all of the sluice gates at the CRCW and the sluice gates at the Wilmette Pumping Station to allow for backflow of flood water into Lake Michigan. Due to the sudden and severe nature of the storm event, there was no notice prior to MWRDGC directing the Corps to open the Chicago lock gates. Although the Corps opened the lock gates immediately upon receiving notice, flood waters were nonetheless observed at Union Station.

106. In light of past backflow events, frequent openings of the sluice gates and locks at Wilmette, O'Brien and CRCW may be required to protect health and safety. Because the USFWS expert panel opined that intermittent lock closures by themselves were of questionable efficacy, as discussed above, Plaintiffs request for closure of the sluice gates and locks except as necessary for public health and safety may not be effective against

Asian carp migration. While Plaintiffs' request for relief may be of questionable efficacy in preventing Asian carp migration, it would have certain economic, social and environmental impacts as described below.

Impact of Lock Closure on Commercial Vessels & Industry

107. The Chicago and O'Brien Locks are major transportation routes for many important commodities. According to statistics gathered by the Corps, total commercial tonnage for the O'Brien Lock in 2008 was nearly 6.9 million tons, valued at $1.7 billion over the same period, and included petroleum coke, bitumen, asphalt, sodium chloride, iron ore, Portland cement, and iron products. The Chicago Lock tonnage during the same period was more than 48,000 tons, valued at $17.5 million, and included fuel oils, calcium chloride, petroleum coke, bitumen, asphalt, scrap metals, and chemicals. Chicago Lock traffic also included nearly 700,000 passengers on commercial vessels, such as ferries and dinner cruises.

108. The Corps estimates that the closure of the Chicago and O'Brien Locks would result in the loss of approximately $192 million in annual transportation rate savings as discussed in detail in Ms. Moyer's Declaration. Permanent closure of the Chicago and O'Brien locks would eliminate the annual transportation cost savings into perpetuity. Closure of the locks would force industries to seek alternative means of transportation, potentially resulting in hundreds of millions of dollars worth of additional annual costs.

Impact of Lock Closure on Recreational Vessels

109. An annual estimated average of 43,000 recreation vessels transit the Chicago Lock and 19,000 transit the O'Brien Lock. Permanent closure of the Chicago Lock will prohibit lake access for vessels moored/placed in the water on the Chicago River.

Potentially lower water levels on the waterways due to a lack of lake flows could also potentially impact recreational users, although these impacts have not been quantified. Annual recreation impacts for termination of operations at Chicago and O'Brien locks are preliminarily estimated at $700,000.

Lock Closure Effects on Search and Rescue Operations

110. As discussed in the Declaration by the Coast Guard, the closure of the Chicago Lock would impact their operations, including their search and rescue operations.

Potential Environmental and Water Quality Impacts of Lock Closure

111. Potential water quality impacts may result from permanently closing the CAWS to Lake Michigan. We anticipate that these impacts will be addressed within the broader analyses being done to support the GLMRIS and associated Environmental Impact Statements.

112. The Corps is required to follow a federal regulation, 33 C.F.R. § 207.420, which requires the Chicago River to be kept at a certain level via the diversion of water through the sluice gate and lock structures. Specifically, the regulation states that the "elevation to be maintained in the Chicago River at the west end of the lock . . . shall at no time be higher than minus 0.5 foot, Chicago City Datum, and at no time lower than minus 2.0 feet, Chicago City Datum, except as noted in the preceding paragraph [during flood conditions]." The relief requested by the Plaintiffs would conflict with the Corps' obligations under this federal regulation.

Interim Barrier in the Grand Calumet River

113. The EPA's Great Lakes National Program Office is currently constructing a sediment remediation project on the Grand Calumet River, located in the neighboring

cities of Hammond and East Chicago, Indiana. As part of the sediment remediation project, authorized under the Great Lakes Legacy Act, steel sheet-pile walls are being installed perpendicular to the flow of the channel, to isolate individual portions of the Grand Calumet River.

114. The steel sheet piles effectively create a temporary barrier to the passage of Asian carp during non-storm conditions. The sediment remediation project is being conducted in a reach of the Grand Calumet River where water depths are often two-feet or less, and there is a naturally occurring hydraulic dividing line. These sheet-pile walls allow for dewatering of the segregated management units, and excavation of contaminated sediments "in the dry". It is anticipated that at least one sheet-pile barrier will be in place for at least the next one and a half years.

115. The design height of the sheet-pile wall was coordinated with the Corps to provide hydraulic isolation during a 10-year flood event. In the case of a more significant rainfall event, the installed height of the walls would allow relief of flood waters toward Lake Michigan.

Impacts from Plaintiffs' Proposed Block Nets or Barrier in the Little Calumet River

116. The Little Calumet River flows through a flood prone watershed. In response, the Corps has been building a levee system along the Little Calumet River between Gary and Hammond/Munster.

Physical Barrier in the Little Calumet River

117. As discussed in detail in Dr. Su's Declaration, a barrier structure across the Little Calumet River would decrease the effectiveness of the federal levee, and lead to a significant increased risk of flooding along the river corridor. Such increased flood risk

leads to an increased potential for loss of life and other public safety concerns. A preliminary estimate of potential flood damages from closure of the Little Calumet River is approximately $56 million for a severe flood event.

118. In addition, a physical barrier on the Little Calumet River, depending upon the location in which it's located, could significantly impact the river's flow rate and thus cause potential negative water quality impacts by reducing dissolved oxygen in the water.

119. Currently, the Corps does not have the real estate rights, authority or appropriations necessary to construct a physical barrier in the Little Calumet River.

Block Nets

120. Block nets are generally used routinely by fisheries scientists on a temporary basis in lakes and in rare occasions on streams for sampling. A properly designed block net could be used at the mouth of the Little Calumet River under ideal conditions for a short period of time. However, it is unlikely that long term deployment would be effective, given the flow conditions in the Little Calumet River. It may be difficult to keep the net anchored to the bottom under all flow conditions. Debris management is the fundamental challenge for deploying a block net for any period of time, because the net will become clogged and pull apart. Daily debris removal may be necessary, but may not be effective during the fall when large quantities of leaves flow downstream and in the winter under ice flow conditions.

121. In addition, there are several issues which need to be fully considered before proceeding with the placement of a block net across the mouth of the Little Calumet River. Block nets would restrict all navigation into and out of the Little Calumet River. Navigation notices, security and signage would be required for public

safety. The block net would also sever longitudinal connectivity for native fish species, preventing fish from getting to and from spawning, feeding, and wintering habitats in the Little Calumet River.

Impacts from Plaintiffs' Proposed Block Nets or Barrier in the Calumet River

122. A physical barrier in the Calumet River lakeward of the O'Brien Lock and Dam may create a risk of flooding, although the Corps has not modeled this scenario. Currently, the Corps does not have the real estate rights, authority or appropriations necessary to construct a physical barrier in the Calumet River. A block net in the Calumet River would face the same challenges discussed above.

I declare under penalty of perjury that the foregoing is true and correct, pursuant to 28 U.S.C. § 1746.

Executed on 2 AUG, 2010

Chicago, Illinois

VINCENT V. QUARLES
Colonel

Attachment 6

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

STATE OF MICHIGAN, STATE OF MINNESOTA, STATE OF OHIO, STATE OF WISCONSIN, and COMMONWEALTH OF PENNSYLVANIA,	)	
Plaintiffs,	)	Case No. 1:10-cv-04457
v.	)	Hon. Robert M. Dow, Jr.
UNITED STATES ARMY CORPS OF ENGINEERS and METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO	)	
Defendants.	)	

PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION

The State of Michigan, by and through its Attorney General, Michael A. Cox, and the State of Minnesota, by and through its Attorney General, Lori Swanson, the State of Ohio, by and through its Attorney General, Richard Cordray, the State of Wisconsin, by and through its Attorney General, J.B. Van Hollen, and the Commonwealth of Pennsylvania, by and through its Attorney General, Thomas W. Corbett, Jr., (Plaintiff States) move pursuant to F.R.Civ.P. Rule 65 for a preliminary injunction in the above-captioned case.

The Defendants, the United States Army Corps of Engineers (Corps) and the Metropolitan Water Reclamation District of Greater Chicago (District) have created and maintained, and continue to operate and control facilities within the Chicago Area Waterway System (CAWS) that link Illinois waters – that are infested with the harmful invasive species bighead carp and silver carp (collectively Asian carp) – to Lake Michigan and other connected waters. To the extent those facilities are maintained and operated in a manner that allows the

migration of Asian carp into the Great Lakes and connected waters, they constitute a public nuisance that threatens grave and irreparable harm to public trust resources as well as riparian and other rights of the citizens of the Plaintiff States. The Complaint seeks a judgment requiring Defendants to implement, as soon as possible, permanent measures to physically separate the Asian Carp-infested Illinois waters from Lake Michigan. Pending entry of such a judgment, the Plaintiff States seek through this motion for preliminary injunction to require Defendants to take immediate and comprehensive action to abate the nuisance and to minimize the risk that Asian carp will migrate from the CAWS into Lake Michigan.

Request for Relief

For the reasons set forth above and in the accompanying Exhibits 1 through 46, the Affidavits of Tammy J. Newcomb, Ph.D. and John C. Taylor, Ph.D., and proposed Brief filed in support of this Motion, the Plaintiff States respectfully request that the Court:

1. Enter a Preliminary injunction enjoining the Defendants to immediately take all available measures within their respective control, consistent with the protection of public health and safety, to prevent the migration of bighead and silver carp through the CAWS into Lake Michigan, including, but not necessarily limited to, the following:

(a) Using the best available methods to block the passage of, capture or kill bighead and silver carp that may be present in the CAWS, especially in those areas north of the O'Brien Lock and Dam.

(b) Installing block nets or other suitable interim physical barriers to fish passage at strategic locations in the Calumet River between Lake Calumet and Calumet Harbor.

(c) Temporarily closing and ceasing operation of the locks at the O'Brien Lock and Dam and the Chicago River Controlling Works except as needed to protect public health and safety.

(d) Temporarily closing the sluice gates at the O'Brien Lock and Dam, the Chicago Controlling Works, and the Wilmette Pumping Station except as needed to protect public health or safety.

(e) Installing and maintaining grates or screens on or over the openings to all the sluice gates at the O'Brien Lock and Dam, the Chicago River Controlling Works, and the Wilmette Pumping Station in a manner that will not allow fish to pass through those structures if the sluice gates are opened.

(f) Installing and maintaining block nets or other suitable interim physical barriers to fish passage as needed in the Little Calumet River to prevent the migration of bighead and silver carp into Lake Michigan, in a manner that protects public health and safety.

(g) As a supplement to physical barriers, applying rotenone at strategic locations in the CAWS, especially those areas north of the O'Brien Lock and Dam where bighead and silver carp are most likely to be present, using methods and techniques best suited to eradicate them and minimize the risk of their movement into Lake Michigan.

(h) Continue comprehensive monitoring for bighead and silver carp in the CAWS, including resumed use of environmental DNA testing.

2. Enter a preliminary injunction requiring the Corps to expedite the preparation of a feasibility study, pursuant to its authority under Section 3601 of the Water Resources Development Act of 2007, developing and evaluating options for the permanent physical

separation of the CAWS from Lake Michigan at strategic locations so as to prevent the transfer of Asian carp or other invasive species between the Mississippi River Basin and the Great Lakes Basin. Specifically, the Corps should be required to:

(a) Complete, and make available for public comment, within six months, an initial report detailing the progress made toward completion of the evaluation.

(b) Complete, and make available for public comment, within twelve months, a second, interim report detailing the progress made toward completion of the evaluation.

(c) Complete, and make available for public comment, within eighteen months a final report detailing the results of the evaluation and recommendations for specific measures to permanently physically separate the CAWS from Lake Michigan at strategic locations to prevent the migration of bighead carp, silver carp or other harmful invasive species between the CAWS and the Great Lakes.

3. Grant the Plaintiff States such other relief as the Court determines just and proper.

Dated this 19th day of July, 2010

Respectfully submitted,

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

STATE OF MICHIGAN, STATE OF WISCONSIN, STATE OF MINNESOTA, STATE OF OHIO, and COMMONWEALTH OF PENNSYLVANIA,	)	
Plaintiffs,	)	Case No. 1:10-cv-04457
v.	)	Hon. Robert M. Dow, Jr.
UNITED STATES ARMY CORPS OF ENGINEERS and METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO	)	
Defendants.	)	

PLAINTIFFS' BRIEF IN SUPPORT OF MOTION FOR PRELIMINARY INJUNCTION

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Safety and Security Zone, Chicago Sanitary and Ship Canal, Romeoville, Illinois, 74 Fed. Reg. 65439 (2009). 27

INTRODUCTION

The states and Canadian provinces bordering the Great Lakes, and everyone that uses the Great Lakes for recreation or commerce, face a dire threat to this unique and irreplaceable resource, the largest freshwater system in the world. It is well documented that Asian carp, specifically the silver and bighead[1] – huge by freshwater standards, voracious and prolific – pose a real potential to seriously damage or even wipe out resident species of fish in any waterway that they come to inhabit. (Ex 10, 17, 18, 19, 43.)[2] These fish, near the end of an unrelenting march up the Mississippi River from Mississippi and Arkansas – have been found as far north as Lake Calumet, literally at the threshold of Lake Michigan. (Ex 9, 22.) And Asian carp DNA – which indicates live fish recently inhabited the sampled area (Ex 14) – has been found throughout the Chicago Area Waterway System (CAWS), and even in Calumet Harbor, which is part of Lake Michigan itself. (Ex 6, 33.) Given the capture on June 22, 2010 of an Asian carp in Lake Calumet, only six miles from Lake Michigan, along with the DNA evidence, there is every reason to believe that increasing numbers of Asian carp are swimming ever nearer the Great Lakes where there are few, if any, options to control their spread.

These discoveries confirm the urgency of taking decisive measures to block the invasion. Most biological experts, including those employed and retained by the United States, agree that the immediate goal must be to minimize the number of fish that can reach Lake Michigan, thereby reducing the risk that a reproducing population of Asian carp will be established in the Great Lakes. (Ex 14, 21, 38 par 13, 20.) Defendant U.S. Army Corps of Engineers (Corps) and Defendant Metropolitan Water Reclamation District of Greater Chicago (District) are variously responsible for the operation of structures such as locks, dams and sluice gates in the CAWS, the

[1] There are several species of Asian carp. Reference to "Asian carp" in this Brief is intended only to mean silver carp and bighead carp.
[2] This Brief refers to Plaintiffs' concurrently filed supporting Exhibits as "Ex [number(s)]."

conduit for an Asian carp invasion. The Corps has been granted broad emergency authority pursuant to Section 126 of the 2010 Energy and Water Development Appropriations Act which requires the Corps "implement" necessary measures by October 28, 2010 to prevent the dispersion of Asian carp through the CAWS into the Great Lakes.[3] The Corps has also been authorized by Section 3061 of the Water Resources Appropriation Act of 2007 to conduct a Great Lakes and Mississippi River Interbasin Study to evaluate measures to prevent the migration of invasive species between those Basins.[4]

Beginning in December, 2009, when DNA evidence showed that Asian carp were much closer to the Great Lakes than anyone expected (Ex 4), Plaintiff Great Lakes States repeatedly asked that Defendants take action to minimize the risk that the carp would get into Lake Michigan. Plaintiffs demanded that the Corps comprehensively address each of the pathways through which Asian carp can enter Lake Michigan, including, at a minimum, temporarily closing the navigational locks and sluice gates nearest Lake Michigan – currently open doors to fish passage – except as needed to protect public health and safety, installing new physical barriers to fish passage at strategic locations where none now exist, and eradicating Asian carp present in the CAWS. Moreover, Plaintiffs demanded that the Corps expedite evaluation and planning for measures to permanently separate the Great Lakes and Mississippi Basins.

To date, while the Corps has made a great show of monitoring, studying, analyzing and planning to address the Asian carp issue sometime in the future as part of the federal government's "Asian Carp Control Strategy Framework" (Ex 13), and the District has installed screens in some of the sluice gates it controls to impede the passage of larger fish, neither Defendant has taken the comprehensive actions necessary to abate this public nuisance. Instead,

[3] Pub. Law 111-85, 123 Stat. 2853.
[4] Pub. Law 110-114, 121 Stat. 1121.

Defendants have resisted urgent requests for more effective action by deploying varying rationales in the face of mounting evidence of the threat:

- Defendants initially downplayed the significance of the Corps' own environmental DNA (eDNA), evidence, suggesting that it was not a scientifically reliable indicator that Asian carp were actually present in the CAWS. (Ex 16, pp 16, 18; Ex 32, p 11.)

- Defendants then emphasized that because no Asian carp were initially recovered during conventional fishing and fish poisoning operations at certain locations in the CAWS, either no Asian carp were actually present, or their numbers were insignificant. Indeed, on June 3, 2010, the Corps reaffirmed its decisions to keep the locks open because, in the absence of such bodies, it had "insufficient evidence" that Asian carp were present. (Ex 12, p 52.)

Now, despite the June 22, 2010 capture of a live bighead carp during a fishing operation in Lake Calumet only six miles from Lake Michigan, the Corps has continued to routinely open the locks, including the nearby O'Brien Lock (Ex 22) through which that carp apparently swam. And the United States very recently made the remarkable assertion that that the capture of that fish shows that "the Framework is working" because that document includes a monitoring plan involving commercial fishing operations "designed to pinpoint and remove" any of the "small number" of Asian carp assumed to exist in the CAWS. (Ex 45.)

Unfortunately, such an inference of "success" is scientifically unwarranted. It is widely agreed by biological experts that Asian carp are exceptionally difficult to capture with conventional fishing nets and techniques, particularly where, as here, they are at the leading edge of a biological invasion. (Ex 14, 38; Affidavit of Tammy J. Newcomb, p 8.) Indeed, one of the federal government's own leading experts on Asian carp biology has compared the task of capturing all Asian carp in the CAWS with nets to "capturing all rats from a terrestrial habitat in Chicago of a similar size and shape-without using bait" and emphasized that "capture of one fish probably means there may be many uncaptured fish." (Ex 44, pp 41-42.)

If Defendants continue the current operation of the CAWS structures, particularly the locks, and the Corps fails to establish physical barriers to fish passage in other open CAWS channels, more Asian carp will pass through them, and inevitably enter the Great Lakes system. Given the existing eDNA data, the direct observation of Asian carp in the CAWS, and the rapid advance of these fish up the Mississippi River to the CAWS (they can swim up to 39 miles a day) (Newcomb Affidavit, p 3), there is no reason to believe this invasion is not ongoing.

If a reproducing population of Asian carp is established in Lake Michigan, what the Corps itself has referred to as an "ecological and economic disaster" (Ex 11) may take some time to develop in the Great Lakes, but it is virtually certain to follow. That danger has been widely recognized (Ex 17, 19, 43, 46) and is reflected by, among other sources, the U.S. Fish and Wildlife Service's final rule designating the silver carp to its list of "Injurious Wildlife Species" under the Lacey Act[5]:

> In summary, the Service finds all forms of live silver carp, including gametes, viable eggs and hybrids, to be injurious to wildlife and wildlife resources of the United States and to the interests of human beings because:
>
> - Silver carp are *highly likely to spread* from their current established range to new waterbodies in the United States;
> - Silver carp are *highly likely to compete* with native species, including threatened and endangered species, for food and habitat;
> - Silver carp have the potential to carry pathogens and transfer them to native fish;
> - Silver carp are *likely to develop dense populations* that will *likely affect critical habitat for threatened and endangered species* and could further imperil other native fishes and mussels;
> - Silver carp *are negatively impacting humans*;

[5] 18 U.S.C. § 42.

- It *would be difficult to eradicate* or reduce large populations of silver carp, or recover ecosystems disturbed by the species; and
- There are no potential ecological benefits for U.S. waters from the introduction of silver carp.[6]

While fortunately there is no evidence that such a reproducing population of Asian carp has already been established, and it may take an extended period of time for the effects of such an established population to become fully manifest in the Great Lakes, "that does not mean we are not now at a critical juncture," according to federal biologist Duane Chapman. (Ex 38, par 24, 26.) On the contrary, we face a finite, but inevitably shrinking window of time, in which decisive action can prevent a full-scale invasion of the Great Lakes by Asian carp. There is broad scientific consensus that the key to preventing the establishment of a reproducing population of Asian carp in Lake Michigan and connected waters is to minimize the number of those fish entering the Lake. (Ex 14, 21, 38.)

Because Defendants are maintaining conditions that allow more Asian carp to enter the Great Lakes, Plaintiff States' Motion for Preliminary Injunction seeks an order requiring Defendants to take all actions, within their respective authority and consistent with the protection of public health and safety, to minimize the movement of these fish into Lake Michigan. As more specifically described in the Motion and the Conclusion of this brief, the key elements of the requested preliminary injunction include:

- Where existing structures controlled by Defendants – the locks and sluice gates- function, when closed, as barriers to fish passage, even if not perfect, they should remain closed, except as necessary to protect public health and safety.
- Where barriers to fish passage in certain channels of the CAWS do not yet exist, especially the portion of the CAWS between the O'Brien Lock and Calumet Harbor

[6] Injurious Wildlife Species: Silver Carp and Largescale Silver Carp, 72 Fed. Reg. 37461, 37464 (2007) (Ex 10)(emphasis added).

(including Lake Calumet and the Calumet River), and on the Little Calumet River before it enters Lake Michigan, the Corps should exercise its authority to install and maintain interim physical barriers, such as block nets, to impede the movement of fish.

- The existing and new interim barriers should be supplemented with the best available methods to kill and remove Asian carp in the CAWS.

- Comprehensive monitoring for Asian carp should continue, with a resumption of eDNA monitoring funded by the Corps.

- The Corps should be required to accelerate evaluation and planning for permanent physical separation of the Mississippi and Great Lakes Basins at the CAWS, on a schedule commensurate with the gravity of the threat. (Ex 46; Newcomb Affidavit, par 49)[7]

Plaintiffs acknowledge that some aspects of the interim relief requested – temporarily ceasing operation of the locks and placing interim barriers to fish passage in navigation channels – will impact some existing navigation in the CAWS and impose economic costs. However, any such loss is relatively minor, can be addressed through alternative means of transportation, and is *finite*. If the Asian carp establish themselves in the Great Lakes system, the damage to the environment and economies of the Great Lakes states and Canadian provinces will be staggering, irreversible, and long term. The Preliminary Injunction sought by Plaintiffs is needed to preserve the status quo, a Great Lakes ecosystem apparently still free of an established, reproducing population of Asian carp.

[7] This aspect of Plaintiffs' requested relief is consistent with recently introduced legislation, H. R. 5625 and S. 3553, that would require the Corps to complete the feasibility study of hydrologic separation on the CAWS within 18 months, rather than the multi-year period currently envisioned by the Corps.

BACKGROUND

I. The Chicago Area Waterway System (CAWS)

The Chicago Area Waterway System (CAWS) is an integral part of the Lake Michigan water diversion project that had its genesis over 100 years ago. (Ex 11, 12 pp 11-12.) It is operated by the District and the Corps. (Ex 13, pp 8-10) The CAWS includes the Chicago Sanitary and Ship Canal (Canal), the Calumet-Sag Channel, the North Shore Channel connecting the Chicago River to Lake Michigan at Wilmette, and various "'improvements"' to the Chicago River. (Ex 2, 12 pp 12-13, Ex 13 pp 5, 12.)[8] It also includes the Calumet, Grand Calumet, and Little Calumet Rivers and Lake Calumet. (Id)[9] The primary water control structures on this system are the Lockport Powerhouse and Lock on the Canal near its connection with the Des Plaines River; the O'Brien Lock and Dam on the Calumet River; the Chicago River Controlling Works in downtown Chicago; and the Wilmette Pumping Station on the North Channel of the Chicago River.[10] (Ex 13 pp 8-9, 15 pp 4-5.)

Decades ago when these waterways and control structures were created, they were used to reverse the flows of the Chicago and Calumet Rivers and artificially connect them to the Illinois River basin for waste disposal and navigation purposes.[11] (Ex 13, pp 8-9, Ex 15 pp 4-5.) This system is primarily maintained and operated by the District, but several structures in the system contain navigational locks and are jointly operated by the District and the Corps. These waterways provide direct water connections between the Mississippi River and the Great Lakes (Ex 3, 13 pp 8-9, 15 pp 4-5) in a form that did not exist before the diversion project was

[8] *See* Ex 1, Corps of Engineers Diagrams, Before and After Canal System Construction.
[9] *See* Ex 2, Map of the Chicago and Calumet Waterways.
[10] *See* Ex 3, Corps of Engineers, Addressing Asian Carp Migration.
[11] *Wisconsin v. Illinois,* 278 U.S. 367 (1929).

completed. (Ex 1, 12 p 8-9) These connections occur at five locations at or near the Lake (Ex 3.):

- The Wilmette Pumping Station, located where the North Shore Channel meets Lake Michigan. It is owned, operated, and maintained by the District. (Ex 12, p17.) It includes a concrete channel, pumps, and a sluice gate. (Ex 12, p 14.)

- The Chicago River Controlling Works in Downtown Chicago where the Chicago River joins Lake Michigan. The control structure includes a concrete wall separating the river from Lake Michigan, sluice gates, and a navigation lock. (Ex 12, p12.) The Corps of Engineers is responsible for maintenance and operation of the lock. The District is responsible for operation and maintenance of the remainder of the structure and the sluice gates. (Ex 12, p17.)

- The Thomas J. O'Brien Lock and Dam, located on the Calumet River. This structure controls the flows of water between Lake Michigan and the Little Calumet River and, thereby, the Calumet-Sag Channel. The navigational Lock and Dam are operated and maintained by the Corps. (Ex 12, p 13.) The sluice gates are operated by the Corps under the direction of the District. (Ex 12 p 17.)

- Indiana Harbor in Indiana. The Calumet-Sag Channel connects to the Grand Calumet River, which enters Lake Michigan at Indiana Harbor. (Ex 2, 12 p.5.)

- Burns Harbor in Indiana. The Calumet-Sag Channel connects to the Little Calumet River, which enters Lake Michigan at Burns Harbor. (Ex 2, 12 p 5.)

In addition, because of the creation and operation of the Canal, the North Shore Channel and the Calumet-Sag Channel by the District and the Corps, there is the potential for fish and other species to migrate from the Canal into Lake Michigan as a result of: (1) reversals of water flow into Lake Michigan at the Wilmette Pumping Station under certain stormwater flow conditions (Ex 32, p10); (2) direct passage through the Grand Calumet River into Lake Michigan at Indiana Harbor, if and when a temporary cofferdam recently installed as part of an ongoing environmental cleanup project at the Harbor is removed ; and (3) direct passage through the

Little Calumet River into Lake Michigan at Burns Harbor, Indiana. (Newcomb Affidavit, p 10.)[12]

Thus, the CAWS and its associated structures as currently maintained and operated by the District and the Corps provide a conduit for the movement of fish and other biota including Asian carp between the Illinois River and the Great Lakes at multiple locations on the shore of Lake Michigan. (Newcomb Affidavit, p 10.)

II. Asian carp

Several species of carp native to Asia have been imported to the United States for various reasons, including experimental use in controlling algae in aquaculture and wastewater treatment ponds. (Ex 19.) Two species of Asian carp are of particular concern here: *silver carp* which can grow to lengths of three feet and weights of 60 pounds, (Ex 17) and *bighead carp* which can grow to lengths of five feet and weights approaching100 pounds. (Ex 17.)

Both silver and bighead carp readily adapt to a variety of environmental conditions, reproduce prolifically, and spread rapidly. (Ex 10, 17.) Since their escape from ponds in the lower Mississippi River basin, both silver and bighead carp populations increased exponentially. (Ex 17, 18.) They have rapidly migrated through, and become established in rivers in the Mississippi River Basin, including the Illinois River. (Ex 17.) By aggressively consuming available nutrient sources, silver and bighead carp have substantially disrupted and in some areas largely displaced native fish populations in these rivers, impairing recreational and commercial

[12] Furthermore, portions of the Canal located north of Lockport closely parallel two other nearby waterways – the Des Plaines River and the obsolete Illinois and Michigan Canal (I&M Canal). (Ex 11 p 11, Ex 16 p 9, Ex 1 p 4.) As recently as 2008, the Des Plaines River flooded into the Canal, creating another connection permitting the transmigration of species between the Mississippi River Basin and the Great Lakes. While the Corps is currently planning to construct fences on a strip of land between those waterways to reduce those risks, they have not yet been completed. (Ex 45, p 3.)

fishing. (Ex 10, 19, 43.) Because of their large size and extreme jumping behavior, silver carp have injured boaters and caused property damage, thus impairing recreational boating. (Ex 10, 19, 43.)

The migration of Asian carp, through the Canal and connecting waters into Lake Michigan, presents a grave threat of environmental and economic harm, as recognized by the Corps, the United States Fish and Wildlife Service (USFWS), and the Illinois Department of Natural Resources (Illinois DNR).

For example, the Corps has acknowledged:

> Asian carp have the potential to damage the Great Lakes and confluent large riverine ecosystems by disrupting the complex food web of the system and causing damage to the sport fishing industry. Two species of Asian carp, bighead carp (Hypophthalmichthys nobilis) and silver carp (H. molitrix), have become well established in the Mississippi and Illinois River systems exhibiting exponential population growth in recent years. Certain life history traits have enabled bighead and silver carp to achieve massive population numbers soon after establishing. Currently, the Illinois River is estimated to have the largest population of bighead and silver carp in the world. The prevention of an inter-basin transfer of bighead and silver carp from the Illinois River to Lake Michigan is paramount in avoiding ecological and economic disaster. (Ex 11.)

A 2004 United States Fish and Wildlife publication similarly stated:

> Bighead and silver carp are in the Illinois River, which is connected to the Great Lakes via the Chicago Sanitary and Ship Canal. Asian carp pose the greatest immediate threat to the Great Lakes ecosystem. . . . Bighead and silver carp could colonize all of the Great Lakes and sustain high-density populations. High densities would likely result in declines in abundance of many native fishes. (Ex 17.)

The Illinois Department of Natural Resources in November 2009 stated:

> Asian carp could have a devastating effect on the Great Lakes ecosystem and a significant economic impact on the $7 billion fishery. Once in Lake Michigan, this invasive species could access many new tributaries connected to the Great Lakes. These fish aggressively compete with native commercial and sport fish for food. They are well suited to the water temperature, food supply, and lack of

> predators of the Great Lakes and could quickly become the dominant species. Once in the lake, it would be very difficult to control them. (Ex 19.)

The enormous potential harm that Asian carp could cause in the Great Lakes is further described in the Affidavit of Tammy Newcomb, Ph.D., an expert in fisheries biology in the Michigan Department of Natural Resources and Environment. Dr. Newcomb describes the severity of the potential threat to fisheries resources of the Great Lakes Basin if silver and bighead carp enter and become established in some areas of the lakes and connecting rivers and streams (Newcomb Aff, pp 2-3.) She explains that the Great Lakes, including their bays, tributaries and drowned river mouths, and inland waters may provide desirable habitat for bighead and silver carp. (Newcomb Aff, pp 3-4.) And that those species' wide thermal tolerance, high reproductive rates, and fast growth will provide the potential for their expansion and competition with native fish. (Newcomb Aff, pp 4-6.) Dr. Newcomb also describes how key species of fish in the Great Lakes, which are targeted by recreational anglers and commercial fishing operations could decline because of both direct and indirect competition with silver and bighead carp for food. (Newcomb Aff, pp 6-7.) In summary, she states:

> All natural resource management agencies and partners in the Great Lakes Basin have expressed concern about the potential ecological and economic effect of silver and bighead carp on the Basin. The life history traits of silver and bighead carp suggest there is a high probability that they will cause negative ecological and economic effects wherever they become established. Silver and bighead carp can reproduce multiple times per year, can attain very high densities, are long-lived, are very mobile, have a high tolerance for poor water quality, and have voracious feeding habits.
>
> Once established, control of silver and bighead carp is believed to be nearly impossible. If those carp become established in the Great Lakes Basin, it will certainly be difficult and costly to deal with the negative ecological and economic effects caused by Asian carp and those effects will likely be, as a practical matter, permanent. (Newcomb Aff, p 8)

III. The eDNA and physical evidence of Asian carp in the CAWS

Realizing that traditional fish sampling techniques were inadequate to predict the whereabouts of Asian carp in the CAWS, beginning in 2009, the Corps undertook a program of environmental surveillance for silver and bighead carp using eDNA methods developed by the University of Notre Dame. (Ex 20, 21.) In this method, samples of water are collected, filtered, and their contents analyzed for the presence of genetic material that has been emitted or secreted by those species. (Ex 20, 21.)

In December 2009, this eDNA testing method was examined in detail by a four member team of experts. This Quality Assurance audit team was led by the Environmental Protection Agency with an observer from the Corps also present. In their Summary, the Quality Assurance team confirmed that the genetic markers utilized by the eDNA testing method detected only the target fish species, endorsed the eDNA testing field and laboratory protocols, acknowledged that the methods used during testing minimized the possibility of reporting false positive results, and concluded: "Our team believes that the eDNA method [the Corps is] using is sufficiently reliable and robust in reporting a pattern of detection that should be considered actionable in a management context. We have a high degree of confidence in the basic PCR method [the Corps is] using for detecting Silver and Bighead carp environmental DNA." (Ex 21, pp 3-4.)

A series of eDNA sample results indicate that Asian carp are present in the Canal north of the Lockport Lock, in the North Shore Channel, in the Calumet-Sag Channel in the vicinity of the O'Brien Lock, in the Calumet River and in Calumet Harbor which is in Lake Michigan itself. (Ex 4, 5, 6, 7, 33.) Unfortunately, these results were confirmed when in December, 2009 a bighead carp was recovered from the Canal north of the Lockport Lock (Ex 13, pp3-4), and even more alarming, when on June 22, 2010, a bighead carp was recovered from Lake Calumet, north

of the O'Brien Lock and Dam and only six miles from Lake Michigan. (Ex 9, 22.) No physical barriers to fish passage currently exist anywhere between the O'Brien Lock and Lake Michigan.

The rapid migration of Asian carp through the Illinois and Des Plaines River toward Lake Michigan, the timing and spatial distribution of eDNA detections of Asian carp, and the physical recovery of actual Asian carp in the CAWS, most recently in Lake Calumet, all strongly support the inference that multiple Asian carp have migrated to the CAWS from the Mississippi River Basin and are now swimming through the CAWS toward Lake Michigan. (Newcomb Aff, pp12-13) While the Corps and the District have suggested other explanations for the existence of Asian carp eDNA in the CAWS, such as excrement from humans or birds that have eaten Asian carp, Asian carp released or disposed by humans in the CAWS, or release of ballast water that might contain Asian carp DNA, the Corps' own expert, Dr. David Lodge of the University of Notre Dame, considered and rejected all of these explanations in favor of the conclusion that the eDNA results mean that a live Asian carp was in the vicinity of the sampled water within two days of the sampling. He declared under oath:

> Based on our understanding of the waterway and other potential pathways, we believe that no explanation other than the presence of multiple living silver and bighead carps can plausibly explain the entire spatial and temporal pattern of positive results for silver and bighead eDNA in the waterway. The presence of living silver and bighead carps north of the electric barriers[13] is most plausibly explained by failures of the electric barrier to completely restrict the northward movement of silver and bighead carps."[14]

Based on that eDNA evidence, as well as subsequent detection of Asian carp eDNA at other locations in the CAWS, including the Calumet River and Harbor, Dr. Newcomb, similarly concluded, regarding the bighead carp captured in Lake Calumet, that "the most scientifically

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[13] See Background Section IV. A., *infra*, for a discussion of the electric barrier system.
[14] Declaration of David M. Lodge dated January 4, 2009, p. 22, filed in U.S. Supreme Court (Ex 14)

plausible inference is that the fish in question is one of a number of bighead and silver cap that have migrated through the CAWS, swimming either through or around the electrical barrier." (Newcomb Aff, p 12.)

IV. Decisions, Actions, and Omissions of the Corps and the District

Plaintiff States' Complaint details the numerous discrete decisions, actions, and omissions of the Corps and the District related to the Asian carp threat that have contributed to the creation and maintenance of a federal common law public nuisance, and constitute "agency action" for purposes of Plaintiff's Administrative Procedures Act claim. (Complaint, par 56, 60-63, 66-76 87- 82, 100.) These decisions, actions, and omissions are consistent with an apparent strategy to continue operating the structures on the CAWS in the same manner that has created the imminent risk that Asian carp will continue to traverse the CAWS and enter Lake Michigan. They can be broadly categorized as follows:

A. The Corps' reliance on the electric Dispersal Barrier System as the primary physical barrier to Asian carp migration in the CAWS.

The Corps' primary defense to Asian carp migration into the CAWS is an electrical "Dispersal Barrier System," comprised of underwater steel cables charged with electricity that is intended to deter the passage of invasive species. The first element of the Dispersal Barrier System – now referred to as "Barrier I" and located slightly north of the Lockport Dam began operation in 2002.[15] (Ex 13, App B, p 7.) Barrier I was conceived as an experimental means of deterring the movement of other aquatic invasive species that had infested the Great Lakes –

[15] Congress authorized the construction of that barrier in 1996 in the National Invasive Species Act, 16 U. S. C. § 4722(i)(3).

such as zebra mussels and the round goby – from Lake Michigan through the Canal into the Illinois and Mississippi River basins. (Ex 12, pp 9-10.)

In 2004, the Corps began construction of a second electrical barrier – now referred to as "Barrier IIA" – located approximately 1,300 feet downstream from "Barrier I." (Ex 16, 23.) Although construction of Barrier IIA was completed in 2004, it was not placed into service until early 2009, and even then, initially at approximately 25 percent of its electrical capacity. (Ex 23, 24.) In August, 2009, after results of eDNA testing for Asian carp closer to Lockport Dam were reported, the Corps increased the electric settings on Barrier IIA somewhat. (Ex 23.) Those settings, however, still remain below their full design capacity. (Ex 23.) Further reducing its effectiveness, the Corps has determined that Barrier IIA cannot be operated continuously and must be periodically turned off for maintenance. (Ex 24.) The Corps has started construction of a third element of the Dispersal Barrier System – designated "Barrier IIB" to be located between Barriers IIA and I – but it has not yet been completed. (Ex 16, p 9, Ex 45, p 3.)

The numerous positive Asian carp eDNA detections in various parts of the CAWS, and the recent capture of a live bighead carp in Lake Calumet – 20 miles beyond and upstream of the barrier – demonstrate that the Dispersal Barrier System is not effective at preventing Asian carp from migrating into the CAWS and ultimately the Great Lakes. Despite mounting evidence that the Barrier has been breached, the Corps continues to rely on it as the primary line of defense, and refuses to operate other structures under its control in a manner to prevent further Asian carp migration or to put in place other structures to block carp pathways.

B. Defendants have repeatedly refused to grant Plaintiff States' requests to close locks, add additional physical barriers, and take other measures to prevent Asian carp from migrating through the CAWS

1) Plaintiff States' requests

Since the Corps announced, in November, 2009, that Asian carp eDNA had been detected in the CAWS lakeward of the Dispersal Barrier System, the Plaintiff States and other interested parties have repeatedly urged the Defendants to promptly take additional actions to minimize the risk that Asian carp will migrate through the CAWS into Lake Michigan. The actions requested have included: (1) closing and ceasing operation of the locks at the O'Brien Lock and Dam and Chicago Controlling Works; (2) limiting the opening of sluice gates; (3) installing interim barriers in the Little Calumet and River; (4) eradicating Asian carp in the CAWS through poisoning or other methods; and (5) accelerating planning and implementation of permanent physical separation of the CAWS and Lake Michigan. These requests for specific action were included in the following:

- A letter dated December 2, 2009, from the Attorney General of the State of Michigan to the Corps, the District and Illinois. (Ex 27.)

- The State of Michigan's December 21, 2009 Motion to Reopen and For a Supplemental Decree in Original Nos. 1, 2 and 3 in the United States Supreme Court, together with a Motion for Preliminary Injunction.[16] The States of Wisconsin, Minnesota, New York, Ohio and Pennsylvania filed responses in the Supreme Court supporting the relief requested by Michigan. (All filings may be viewed on the

[16] In December 2009, Michigan asked the Supreme Court to reopen a prior original action that involved the allocation of water from Lake Michigan to Illinois. Because the Chicago diversion project was the means for this allocation – and is also the conduit for the introduction of Asian Carp into Lake Michigan – Michigan argued that it was proper for the Court to grant relief that would involve modifying the operation of the CAWS infrastructure. Alternatively, Michigan requested leave to file a new original action. Michigan's Request was supported by several states as well as the Province of Ontario. Michigan filed two motions for preliminary injunction, which were denied, without explanation, in orders dated January 21, 2010 and March 22, 2010. Ultimately, on April 26, 2010, the Court rejected the Petition and declined to exercise its original jurisdiction in a summary Order.
http://www.supremecourt.gov/orders/courtorders/042610zor.pdf

Supreme Court's web page, http://www.supremecourt.gov/specmastrpt/recentfilingsinoriginalnos_1_2_3.aspx).

- The State of Michigan's February 4, 2010 Renewed Motion for Preliminary Injunction in the United States Supreme Court, reiterating its request for preliminary injunctive relief based on new eDNA sampling results showing Asian carp were in Calumet Harbor. The States of New York, Minnesota and Wisconsin filed Briefs in Support of Michigan's Renewed Motion for Preliminary Injunction.

- The Michigan Attorney General's February 18, 2010 written comments on the Draft Asian Carp Control Strategy Framework issued by the Asian Carp Regional Coordinating Committee. (Ex 28.)

- A May 19, 2010 letter from the Attorneys General of the Plaintiff States to Commander and Division Engineer Major General Peabody of the Corps, copied to the District, following the release of a Revised Asian Carp Control Strategy Framework, and a press release announcing a plan for applying the fish toxicant Rotenone in one segment of the Calumet Sag Canal, (Ex 29.)

2) Defendants' denials of Plaintiff States' requests

The Corps and the District have largely rejected these requests. Through sworn declarations, responses to letters, and in reports and other public statements of intended action, they have made clear that they will not consistently operate existing structures in a manner to prevent fish passage or undertake the additional measures requested to impede Asian carp migration. These include the following:

- In its January 5, 2010 Opposition to Michigan's initial Motion for Preliminary Injunction in the Supreme Court, the Corps announced its decision, reflected in the Declaration of General Peabody (excerpts attached as Ex 16, entire document viewable on the Supreme Court's web page as part of the Appendix to United States Memorandum), to reject most of the relief requested by Michigan and the other Plaintiff States.

- In its January 5, 2010 Opposition to Michigan's initial Motion for Preliminary Injunction in the Supreme Court action, the District also rejected most of the relief requested by Michigan and the other Plaintiff States. In particular, as reflected in the Affidavit of District Executive Director Richard Lanyon (included in the Appendix to Metropolitan Water Reclamation District of Greater Chicago's Response, excerpt attached as Ex 15) the District insisted that it must be able to continue unrestricted operation of sluice gates at the Wilmette Pumping Station and Chicago River Controlling Works not only for flood control, but also navigation and discretionary diversion purposes. It further

asserted that it had no means to prevent fish passage through the sluice gates when they are opened. (Ex 15.)

- In its February 26, 2010, Opposition to Michigan's renewed Motion for Preliminary Injunction filed in the Supreme Court, the United States, on behalf of the Corps, again rejected the relief sought by the Plaintiff States. Among other things, the February 24, 2010 supplemental Declaration of General Peabody (included in the Appendix to the Response filed by the United States, excerpt attached here as Ex 31) asserted that there was insufficient evidence that Asian carp were present in the CAWS beyond the Dispersal Barrier System and again rejected even the temporary closure of the Chicago and O'Brien Locks. (Ex 31, p 6.)

- The District followed the Corps' lead. In its February 24, 2010 Opposition to Michigan's Renewed Motion for Preliminary Injunction, the District opposed significant aspects of the relief sought by the Plaintiff States. While the District asserted that it was at that time only opening sluice gates "for reversals to the Lake" as necessary to prevent flooding, it continued to oppose limitations on its "discretionary diversions" of Lake Michigan water through sluice gates at the Chicago River Controlling Works and O'Brien Lock and Dam. (Ex 32, pp 6-7.) The District stated that it proposed to install a "trial" bar screen to be inserted in some, but not all of the sluice gates it controls. (Ex 32, pp 8-9.)

- On June 3, 2010, the Corps released a report entitled "Interim III, Modified Structural Operations, Chicago Area Waterways Risk Reduction Study and Integrated Environmental Assessment" (Interim III). (Excerpts attached as Ex 12; complete document viewable at http://www.lrc.usace.army.mil/pao/02June2010_InterimIII.pdf) In an accompanying press release issued the same day (Ex 36), and in the report, the Corps stated that it did not intend to even temporarily close the O'Brien and Chicago Locks, except intermittently, on a "case by case basis in support of fish management efforts such as spot pisicide application, or intensive commercial fishing efforts by the ... USFW and ...IDNR." (Ex 36.)

- In a letter dated June 8, 2010, General Peabody, on behalf of the Corps, replied to the May 19, 2010 letter from the Attorneys General the Plaintiff States. (Ex 37) Of the five additional short term actions specifically requested in the States' May 19th letter to reduce the risk of Asian carp migration, the Corps indicated that only one – installation of screens in sluice gates – was actually being implemented. The Corps reiterated and referred to the conclusions in its June 3, 2010 Interim III Report. While stating that the Corps "agrees" that the issue of potential permanent solutions to the hydrologic connection of the CAWS to the Great Lakes in the GLMRIS "merits a focused study on an aggressive schedule," (Ex 37) the Corps did not propose, let alone commit itself to any acceleration of its previously announced schedule, as urged by the Plaintiff States.

C. The Corps' decisions to reopen the O'Brien Lock twice after closing the lock to undertake activities to address the concern that Asian carp were near the lock

During the December 2009 shutdown of the Barrier, the United States Coast Guard temporarily restricted navigation in the Canal. (Ex 26.) The Corps also kept the O'Brien Lock closed between December 1 and December 7, 2009. (Ex 12, pp 55-56.) During that time the Asian Carp Rapid Response Workgroup used fishing nets to collect fish in a segment of the Calumet-Sag Channel near the O'Brien Lock where Asian carp eDNA had been found.[17] (Ex 12, 30.) Despite requests by some of the Plaintiff States to keep the lock closed due to the risk that Asian carp may present, the O'Brien Lock was re-opened on December 7, 2009, (Ex 12, p 56; Ex 30), re-establishing a direct, unobstructed water connection to Lake Michigan.

On May 20, 2010, the Corps temporarily closed the O' Brien Lock so a second application of rotenone poisoning in a 2.5 mile segment of the Calumet-Sag Channel could be conducted. But it then reopened the lock on May 25, emphasizing in public statements that no Asian carp were among the fish recovered in that operation. (Ex 12, p 56; Ex 35.)

By ordering the reopening of the O'Brien Lock twice, the Corps effectively denied relief requested by the Plaintiff States, and re-established a direct water connection through which Asian carp could migrate into Lake Michigan. While the O' Brien and Chicago locks are not designed as barriers to fish passage and may allow some water to pass through small openings at the edge of some lock gates, it is indisputable that when the locks are closed they are far less likely to allow the passage of fish than when they are opened, and thus, closure reduces the risk

[17] Although no Asian carp were found among the several hundred fish netted in that process, the fishing effort could not and did not recover all fish present in that area, and thus did not establish that no Asian carp were present. The difficulty of capturing live or dead Asia carp has been recognized by multiple biological experts, including at least two experts consulted by the Corps, Dr. Lodge (Ex 14, p 6) and Duane Chapman (Ex 38, par 26.)

of Asian carp migration. (Newcomb Affidavit, p 10.) In fact, six out of seven members of an Expert Risk Assessment Panel convened by the USFWS who responded to the Corps' question on this subject said that notwithstanding such gaps on lock gates, closing the locks *would* "be effective in significantly impeding the migration of Asian carp into Lake Michigan." (Ex 44, p 29.)

D. The "no change in operations" response to the June 22, 2010 capture of an Asian carp in Lake Calumet

Despite the alarming news that a bighead carp had been caught in Lake Calumet, in a press release issued by the RCC on June 23, 2010, Colonel Vincent Quarles of the Corps' Chicago District, made it clear that the Corps intended to continue to operate the locks in a business as usual fashion. (Ex 22.) This statement is consistent with statements Colonel Quarles made in a press release issued June 3, 2010 (Ex 36) that addressed findings and conclusions of the Corps with regard to "modified structural operations." In this press release, Colonel Quarles stated: "In the end the analysis showed that using measures such as temporary lock closures will do very little to reduce the risk of Asian carp migration." (Ex 36.)[18]

It is clear from the statements issued by Colonel Quarles in the June 3 and June 23 press releases, that the Corps has elected to implement the "no change in operations" option outlined in the Draft and Revised Frameworks, and that it will not be closing the locks as requested by the

[18] However, as alleged in paragraphs 73-75 of the Complaint, the Corps' characterization of the results of the expert risk analysis is seriously misleading. Among other things, the Corps artificially constrained the array of alternatives the experts were allowed to consider, limiting the options to intermittent, or very short term closure. (Ex 12, pp 49-51.) Notably, the majority of the panel concluded that each of the options, *including the "no-action"* alternative (i.e. continuing routine lock operations) that was in essence adopted and is still being applied by the Corp presents an "unacceptable" risk, that is "[T]here [is] an imminent threat that Asian carp (silver and bighead) will establish a sustainable population in Lake Michigan in the near future." (Ex 44, Table 4 and p 19.)

Plaintiff States (except possibly for the limited purpose of temporarily supporting its sampling operations), despite compelling evidence that the Dispersal Barrier System can't keep the Asian carp out of Lake Michigan.

E. Conclusion

The Corps and the District have made clear that they intend to operate and maintain the CAWS infrastructure largely in a "business as usual" manner. The Corps has refused to close the locks or install other barriers to impede Asian carp passage into Lake Michigan. Even with the discovery of a live bighead carp in Lake Calumet, to the best of Plaintiffs' knowledge the Corps has not announced any plans to erect a physical barrier in the Calumet River between Lake Michigan and the O'Brien Lock, or even to apply rotenone in that area. Similarly, to the best of Plaintiffs' knowledge, the District still refuses to commit to operation of its sluice gates in a manner that will prevent all Asian carp from passing through them, and has not, to date, installed screens in all the sluice gates it controls, nor committed itself to maintaining such screens in place whenever the sluice gates are opened.

ARGUMENT

I. A proper balancing of the preliminary injunction factors compels entry of an order requiring that the control structures in the CAWS be operated in a manner that will not allow Asian carp to pass beyond them, and that other pathways be blocked, at least until the Court can make a decision on the merits of this case.

A. The preliminary injunction factors.

A primary reason for any court to grant a motion for a preliminary injunction is to

maintain the status quo.[19] While this is a benefit to the moving party, it also acts to preserve and protect the authority of the court to render a meaningful judgment.[20] Entering a preliminary injunction, just as entry of a permanent injunction, is the exercise of the court's equitable powers to ensure that a just result is reached.[21]

The federal courts have traditionally applied a handful of factors when asked to enter a preliminary injunction. The number of factors and the nature of the factors have varied over time and from court to court, but contemporary practice has generally settled on four factors. The U.S. Supreme Court has recently described the factors it considers before issuing a preliminary injunction:

> A plaintiff seeking a preliminary injunction must establish that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in his favor, and that an injunction is in the public interest.[22]

Numerous U.S. Circuit Courts of Appeal have determined that during the application of these factors in a particular case, it is appropriate to give more weight to certain factors depending on the nature of the evidence. For example, several courts have held that where a

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[19] *Deckert v. Independence Shares Corp.*, 311 U.S. 282 (1940); *In re De Lorean Motor Co.*, 755 F.2d 1223, 1229 (6th Cir. 1985 ("In a much earlier case, this Court said: "The object and purpose of a preliminary injunction is to preserve the existing state of things until the rights of the parties can be fairly and fully investigated. . . ." *Blount v. Societe Anonyme du Filtre Chamberland Systeme Pasteur*, 53 F. 98, 101 (6th Cir. 1892).

[20] *Alabama v. U.S. Army Corps of Engineers,* 424 F.3d 1117, 1128 (11th Cir. 2005), *cert. denied* 547 U.S. 1192 (2006).

[21] *Lawson Products Inc. v. Avnet, Inc.*, 782 F.2d 1429, 1435 (7th Cir. 1986).

[22] *Winter v. NRDC, Inc.*, 129 S. Ct. 365, 374 (2008, *citing Munaf v. Geren*, 553 U.S. __, 128 S. Ct. 2207; (2008 (slip op. at 12), *Amoco Production Co. v. Gambell*, 480 U.S. 531, 542 (1987), and *Weinberger v. Romero-Barcelo*, 456 U.S. 305, 311-312 (1982).

very strong showing is made on the fact of irreparable injury, an injunction may enter even where the case supporting the likelihood of success on the merits factor is not as strong.[23]

As shown below, when these factors are properly weighed in the case at hand, it is clear that a preliminary injunction must be entered to protect the status quo of Lake Michigan waters that are currently not the home of an established reproducing population of Asian carp.

1. If an injunction is not issued requiring Defendants to cease operating certain structures in the CAWS in a manner that allows Asian carp to enter Lake Michigan, Plaintiff States will suffer irreparable injury from an infestation of Asian carp.

a. The damage.

The threat of damage to the environment, public rights and economies of the Plaintiff States posed by the Asian carp is demonstrated by the damage already done by these carp in other states. These fish were reportedly brought to the United States by catfish farmers in Mississippi in the 1970s to remove algae from their fish ponds. (Ex 18.) In the 1990s, floods allowed some of the fish to escape their ponds and enter the Mississippi River basin. (Ex 18.) From there they have travelled hundreds of miles north, invading other waterbodies along the way. (Ex 17, 18.) According to the U. S. Environmental Protection Agency, Asian carp have become "the most abundant species in some areas of the [Illinois] River." (Ex 18.) In a series of questions and answers on its web page, the Illinois Department of Natural Resources (Illinois DNR) described the Asian carp problem in that river:

> Asian carp are a problem because of their feeding and spawning habits. Bighead carp are capable of consuming 40% of their own body weight in food each day. Silver carp are smaller, but pose a greater danger to recreational users because of

[23] *Qingdao Taifa Group v. United States*, 581 F.3d 1375 (Fed. Cir. 2009) (*quoting Kowalski v. Chi. Tribune Co.*, 854 F.2d 168, 170 (7th Cir. 1988) ("A request for a preliminary injunction is evaluated in accordance with a 'sliding scale' approach: the more the balance of irreparable harm inclines in the plaintiff's favor, the smaller the likelihood of success on the merits he need show in order to get the injunction."); *Sofinet v. INS*, 188 F.3d 703, 707 (7th Cir. 1999); *In re De Lorean Motor Co.*, 755 F.2d 1223, 1229 (6th Cir. 1985).

> their tendency to jump out of the water when disturbed by boat motors. They have severely impacted fishing and recreation on the Illinois River. They can spawn multiple times during each season and quickly out-compete native species by disrupting the food chain everywhere they go. Click the link to see how they have devastated the Illinois River.
> http://www.youtube.com/watch?v=yS7zkTnQVaM. (Ex 19)

The web video recommended by the Illinois DNR in the above quote shows that the Asian carp, once they are in a water system, quickly dominate that system to the exclusion of nearly all the other native fish populations. And not only do these fish threaten other fish – because the fish are prolific, massive, and they jump several feet in the air when watercraft pass, they have become a threat to passengers in boats who have sustained serious physical injuries when colliding with airborne fish. (Ex 19, 43.)

The bighead carp can get as large as five-feet long and one hundred pounds (Ex 19) and, as noted by the Illinois DNR, they eat up to 40 percent of their body weight in a single day. Because the food they eat is the base of the food chain (plankton and other small organisms), they pose a mortal threat to smaller forage fish who can't compete with the Asian carp's voracious appetite and size, which in turn threatens larger fish that would normally feed on the forage fish. (Ex 10, 43.)

The devastation that would follow the introduction of Asian carp to the Great Lakes is not in serious dispute. This threat has been documented by, among others, the U.S. Army Corps, and the U.S. Fish and Wildlife Service.[24] The U.S. Environmental Protection Agency also agrees that an ecological and economic disaster is nearly unavoidable if the fish get into the Lakes:

> Asian carp . . . could pose a significant risk to the Great Lakes Ecosystem . . . The carp have steadily made their way northward up the Mississippi, becoming the most abundant species in some areas of the River . . . Asian Carp are a

[24] See Section II of Background.

> significant threat to the Great Lakes . . . They are well-suited to the climate of the Great Lakes region, which is similar to their native Asian habitats . . . Due to their large size, ravenous appetites, and rapid rate of reproduction, these fish could pose a significant risk to the Great Lakes Ecosystem.(Ex 18)

Most or all of these findings and predictions are confirmed in the U.S. Fish and Wildlife's 2007 final rule that adds silver carp to its list of "injurious fish" under the Lacey Act.[25] This rule found that the silver carp posed a serious threat to expand in the Great Lakes, that this would devastate native species of fish, that silver carp reproduce rapidly, they would pose a threat to already threatened endangered species, that they would likely cause serious injury to boaters, and perhaps most disturbingly:

> If silver carp were introduced or spread into new U.S. waters, it is unlikely that the introduction would be discovered until the numbers were high enough to impact wildlife and wildlife resources. . . . It is unlikely that silver carp could be eradicated from U.S. waterways unless they are found in unconnected waterbodies.
>
> * * *
>
> It would be difficult to eradicate or reduce large populations of silver carp, or recover ecosystems disturbed by the species. . . .(Ex 10)

The nature and extent of the damage these federal agencies have predicted is, as noted above, echoed by the Affidavit of Tammy J. Newcomb. Dr. Newcomb also confirms what is apparent from the excerpts quoted above, that the damage from the Asian carp is essentially irreversible, at least with present day technologies. (Newcomb Aff, p 8.) Once the Asian carp are established in the Great Lakes, it will for all practical purposes be impossible to get rid of them. Thus, there will be no realistic way to return to the status quo if an injunction is not entered now, and Asian carp establish a reproducing population in Lake Michigan while the parties are litigating this case. This is truly irreparable damage that needs to be averted.

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[25] 18 U.S.C. § 42.

b. The danger is imminent.

Time is running out. This was recognized by Congress when it gave the Corps one year – until October 28, 2010 – to "implement" measures to prevent Asian carp from dispersing into the Great Lakes.[26] The supposed solution for keeping the Asian carp from the Great Lakes is the electric Dispersal Barrier System built and operated by the Corps in the Chicago Sanitary and Ship Canal west of Chicago. Under current operation of the CAWS structures, there is nothing blocking the Asian carp's route to Lake Michigan once they get past the Dispersal Barrier System.

While the electric Barrier may have slowed the northward advance of the Asian carp, it is an imperfect protection, even when it is operating properly.[27] The flaws in this defense were recognized by the Corps itself, which, to its credit, took some measures to monitor the Asian carp's progress and location. It was as a result of the eDNA monitoring described above that the Corps first determined there was a serious risk that Asian carp got by the electric Barrier.

Since October, 2009, there have been numerous positive eDNA tests in several areas of the CAWS located beyond the Dispersal Barrier System, including the Canal, the Calumet Sag Channel, the Chicago River, the North Shore Channel, the Little Calumet River, the Calumet river and Calumet Harbor. (Ex 4, 5, 6, 7, 33.) The latter is in Lake Michigan.

Asian carp passage through the O'Brien Lock is the most immediate threat as it lies a short distance north (lakeward) from where eDNA testing has repeatedly determined the presence of Asian carp in the Calumet-Sag Channel (Ex 4-7, 33.) The O'Brien Lock is south of the locations in the Calumet River and Calumet Harbor where silver carp eDNA was found in

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[26] Energy and Water Development and Related Agencies Appropriations Act of 2010, Section 126, (quoted on p 6 of Ex 12) Pub. Law 111-85, 123 Stat. 2853.

[27] This was implicitly recognized by Congress when, in Section, 126 it gave the Corps one year to implement measures in addition to the barriers, to prevent carp migration.

December, 2009, and from where the bighead carp was caught in Lake Calumet in June 2010. (Ex 6, 8, 9.) If this lock is allowed to continue to operate as usual, it will permit other Asian carp to get into the Calumet River, Lake Calumet, and ultimately, Lake Michigan. There is currently no mechanism in place that prohibits any fish from swimming into the lock when it is opened to allow a boat to enter, or to stop the fish from escaping the lock when it opens to allow a boat to exit the lock on its way to Lake Michigan. The Corps and Coast Guard implicitly recognized this danger when they shut down the Calumet-Sag Channel to boat traffic, and closed the O'Brien Lock for several days in December, and again in May, based on the discovery of the eDNA evidence past the Dispersal Barrier System, but below the Lock.[28]

The Chicago Lock lies lakeward of locations in the Canal and the Chicago River where Asian carp eDNA has been detected (Ex 4-7.) Whenever the lock is opened, it also creates a conduit through which Asian carp may migrate into Lake Michigan. (Newcomb Aff pp 10, 13.)

The O'Brien Lock, the Chicago Lock, and the Wilmette Pumping Station also have sluice gates that are sometimes open to Lake. This could result in fish, including Asian carp, being released into Lake Michigan through any of these three structures. While the District has installed screens or grates in some of the sluice gates that, when in place, could deter the passage of adult Asian carp, it has not installed them in all of the sluice gates it controls, and has stated its intention to remove them under certain "reverse flow" conditions when stormwater is diverted from the CAWS into Lake Michigan. (Ex 32.) The Corps has similarly proposed to install screens in some sluice gates, it has not committed to installing them in all the gates, nor to keeping them in place whenever the gates are opened. (Ex 12 pp 45-47, 58.)

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[28] Safety and Security Zone, Chicago Sanitary and Ship Canal, Romeoville, Illinois, 74 Fed. Reg. 65439 (2009). (*See also*, App. 68a.)

Finally, the area where eDNA evidence has been found on the Calumet-Sag Channel is near the confluence of the Channel and the Grand and Little Calumet Rivers. (Ex 4-7.) These rivers provide potential entry points for Asian carp into Lake Michigan and have no permanent barriers to fish passage. (Ex 3, 12, pp 43-44.) [29]

Although it is unknown how many Asian carp may have already migrated through the CAWS into Lake Michigan and no one can predict precisely when and in what numbers additional Asian carp will enter Lake Michigan, if more are present in Lake Calumet and the other areas of the CAWS where the eDNA evidence shows they have been, given the track record of the Asian carp and its ability to swim up to 39 miles a day, the danger of continuing Asian carp migration into Lake Michigan is imminent. Indeed, as noted above, when the Corps asked an Expert Risk Assessment Panel convened by the USFWS about the risk of Asian carp establishment in Lake Michigan if the Corps continued to routinely operate the O'Brien and Chicago Locks, the majority (63 percent) of the respondents indicated that under that scenario - which is what the Corps is still doing now - there is " an imminent threat that A[sian] C[arp] will establish a sustainable population in Lake Michigan in the near future." (Ex 4, Table 4.) Even considering the acknowledged uncertainty in those responses, it is clear that there is an imminent risk that Asian carp will continue to migrate through the CAWS into Lake Michigan.

Minimizing the risk that additional Asian carp will migrate through the CAWS into Lake Michigan is the key to preventing the establishment of a reproducing population in the Great Lakes. (Newcomb Aff, p 9.) Duane Chapman, a federal fisheries biologist with whom the Corps has consulted has similarly observed that "[m]inimizing the number of invading individuals is key to preventing successful establishment of a species." (Ex 38, par 20.) Dr. David Lodge,

[29] There is currently a temporary barrier- a sheet piling- in the Grand Calumet River near the Illinois- Indiana border as part of an unrelated, environmental clean up project. (Ex 12, p 44.)

flatly stated, on January 4, 2010, that "there remains an urgent need to reduce the probability that both silver or bighead carp individuals can enter Lake Michigan." (Ex 14.) More specifically, in his February 9, 2010 testimony before the House Subcommittee on Water Resources and Environment, Dr. Lodge addressed the subject of "Science-based management actions for the Chicago canal" as follows, listing measures to prevent Asian carp from entering the Lake as the first priority:

> Given the goal shared by all federal agencies to prevent an invasion of the Great Lakes by either silver carp or bighead carp, any management action that reduces the likelihood of individuals of either species entering the lake should be seriously considered. ***First, while other options are considered, I recommend that urgent attention be given to any management action that will prevent the silver and bighead carp that are currently above the barrier from entering Lake Michigan.*** Second, options for eradicating or at least dramatically reducing the numbers of the individuals above the barrier should also be considered. Third, the operation and maintenance of the two existing barriers, and the plans for the third barrier, should be fine-tuned as much as possible to maximize effectiveness against fishes moving in either direction (barrier IIA was designed to be more effective against species moving northward). Fourth, a surveillance program needs to be established in the Great Lakes to locate and determine the extent of any Asian carp presence in the Great Lakes, targeted perhaps at the tributaries most likely to support spawning of the carps. This should be coupled with development of methods that would allow any fish detected to be contained, and eradicated. Fifth, other deterrents to fish movement should be considered to augment the barriers. Sixth, the Mississippi River basin and the Great Lakes basin should be permanently separated ecologically, as agreed among many agencies, stakeholders and experts at the 2003 canal summit in Chicago (Brammier et al. 2008). It is not only Asian carp we should be thinking about, but the hundreds of potentially harmful species (many of them completely unaffected by electrical current) in both basins, the damages from which would be suffered by us and our children in perpetuity (Ex 21 p 11, emphasis added.)

Given the potential devastation to the Great Lakes ecosystems and economies if Asian carp become established, there is no real choice but to immediately take whatever measures are available to stop more Asian carp from passing from the CAWS into the Great Lakes. In the short term, the most effective and urgently needed of such measures are using physical barriers where they already exist and supplementing them with new interim ones where they do not, in a

way that minimizes the opportunity for additional Asian carp to enter the Great Lakes through each of the five channels where the CAWS connects to Lake Michigan. (Newcomb Affidavit, par. 47.)

In her affidavit Dr. Newcomb more specifically describes specific short term and long term measures needed to abate the threat of Asian carp migration through the CAWS. With respect to existing control structures, it is Dr. Newcomb's opinion that necessary measures include:

- Temporarily close and cease operations of the locks at the O'Brien lock and Dam and the Chicago Lock except as needed to protect public health and safety.
- Temporarily close and cease operation of the sluice gates at the O'Brien Lock and Dam, the Chicago River Controlling Works and the Wilmette Pumping Station except as needed to protect public health and safety.
- Install and maintain grates or screens on or over the openings to all of the sluice gates at the O'Brien Lock and Dam, the Chicago River Controlling Works and the Wilmette Pumping station.

With respect to areas where physical barriers do not now exist, Dr. Newcomb states that necessary measures include:

- Install and maintain block nets or other suitable interim physical barriers to fish passage at strategic locations in the Calumet River between Lake Calumet and Calumet Harbor.
- Install and maintain block nets or other suitable temporary physical barriers to fish passage in the Little Calumet River as needed to prevent the migration of bighead and silver carp into Lake Michigan.

Dr. Newcomb identifies other needed short term measures to minimize the risk of continuing Asian carp migration into the Lake:

- As a supplement to physical barriers and a means of reducing propagule pressure, apply rotenone at strategic locations in the CAWS, especially those areas north of the O'Brien Lock and Dam where bighead or silver carp are most likely to be

present, using methods and techniques best suited to eradicate them and minimize the risk of their movement into Lake Michigan.

- Undertake continuous and regular monitoring for silver and bighead carp above the electrical barriers and in other strategic locations throughout the Chicago Waterway System. Such monitoring should include, among other method, eDNA testing. (Par 47.)

Finally, like other scientists (Ex 21) and observers, including, among many others, the Great Lakes Commission[30] (Ex 46.) Dr. Newcomb states that there must be permanent, hydrologic separation of the Mississippi and Great Lakes Basins in the CAWS, and planning for such a permanent solution must be expedited. Dr. Newcomb explains that:

> "The best, long-term solution to ensure silver and bighead carp are not readily transferred between the Mississippi River Basin and Lake Michigan is to eliminate any physical connection between the two water bodies. To eliminate the immediate and irreversible risk of damage to the Great Lakes posed by the invasion of Asian carp through the Chicago Waterway System and into Lake Michigan, the study of permanently separating the Mississippi River and Great Lakes basins should be completed as quickly as practicable. Subsequent to a final report, actions required to achieve the goal of permanent separation should commence immediately." (par 48.)[31]

2. The equities favor Plaintiffs.

The second factor for the Court to consider when granting a preliminary injunction is the balance of the equities between the parties. In the preceding section, Plaintiffs have shown that the introduction of Asian carp into their waters will, in the judgment of most experts, including the agencies with expertise in the United States government, cause irreversible damage to the environment, fishing and other Great Lakes dependent industries of all the states and Canadian provinces bordering the Great Lakes.

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[30] The Great Lakes Commission is a body representing all of the Great Lakes states. The resolution referenced was unanimously passed by Commission.

[31] The specific, preliminary injunctive relief requested by Plaintiff States in that regard – requiring the Corps to accelerate its feasibility study of options for such permanent separation so that the study is completed within 18 months, with interim progress reports at 6 and 12 months- is consistent with schedules contained in pending legislation, H. R. 5625 and S. 3553.

Defendants asserted in their Supreme Court filings, and are likely to assert here, that certain relief sought by Plaintiffs — temporarily closing locks and sluice gates — will cause harm to other parties and the public that should preclude the requested injunction. These claimed harms range from widespread flooding, property damage, disruption of emergency response services, and injury to the local economy through the disruption of the local commercial and recreational vessel traffic. Such contentions do not withstand scrutiny.

a. Plaintiffs seek injunctive relief consistent with the protection of public health and safety.

First, and most important, the Plaintiffs request for preliminary injunctive relief here — including temporary lock and sluice gate closure — is expressly qualified by the condition that the measures to be ordered would be *consistent with the protection of public health and safety.* That is, the Defendants would be enjoined from opening the locks and sluice gates except when necessary to protect public health or safety. Thus, for example, if circumstances arose where it became necessary to reopen locks or sluice gates to prevent flooding, or to accommodate the movement of emergency response vessels, those activities would not be enjoined.

Operation of the locks to prevent flooding, however, is exceedingly rare, contrary to repeated suggestions otherwise by Defendants. In fact, the Declaration of the Corps' hydraulic engineer Tzuoh-Ying Su proffered by the government, acknowledged that the Chicago Lock has been opened in response to severe rain events on only eight occasions in the last 55 years, and the O'Brien Lock has been opened for that reason on only four occasions in the last 45 years. (Ex 39.) These extraordinarily rare circumstances do not justify regular operation of the locks in the face of the imminent and mounting threat of Asian carp movement through the locks and into Lake Michigan.

In opposing Michigan's preliminary injunction requests in the Supreme Court, both the United States and Illinois officials claimed that the closure of the O'Brien and Chicago Locks would threaten public health and safety by interfering with watercraft used for emergency response and law enforcement purposes. Plaintiffs reiterate that they do not ask that these locks remain closed when their use is necessary to address emergencies. During the summer, the Coast Guard already maintains a station in downtown Chicago that straddles the Chicago Lock, i.e. boats are positioned on both sides of the lock, and throughout the year it maintains a station at Calumet Harbor. (Ex 40.) While docking Court Guard vessels on both sides of the O'Brien Lock year round if needed would certainly entail some additional expense for the dockage, and potentially cause additional effort to consolidate activities, such expense and efforts would not be unreasonable given the need to reduce the risk of irreparable injury facing the rest of the Great Lakes community. Moreover, both the Coast Guard and the Corps have acknowledged that the Corps already plans to completely shut down the Chicago Lock for maintenance for six months, between November 2010 and April 2011. (Ex 41.) This confirms that extended closure of the Lock does not present an unacceptable risk to public health and safety.

Plaintiffs also expect that Defendants may argue that the City of Chicago's police boats, which are docked on the city side of the Chicago Lock, and fire boats, which are on the lake side of the Chicago Lock, will be slowed or prevented from moving when responding to emergencies if the Chicago Lock is closed. As noted above, Plaintiffs do not seek to close the locks when operation is necessary to protect public health and safety, including when needed for emergency response. Presumably, Chicago officials have already developed plans to maintain essential emergency services during the Corp's planned, complete closure of the Chicago Lock between

November, 2010 and April 2011. Such plans could be implemented sooner if, as Plaintiffs request, the Court temporarily orders closure of the Chicago Lock.

In sum, an Order can be fashioned that will: (a) minimize the risk of introducing additional Asian carp into Lake Michigan; and (b) still allow operation of the locks when and if necessary to accommodate emergency response, without jeopardizing public health and safety.

b. Any injury to the local economy is insignificant compared to the potential injury from Asian carp.

Plaintiffs understand that these locks are used for the transportation of freight, as well as by recreational boaters. There is no denying that there will be an economic impact and unavoidable inconvenience if the O'Brien and Chicago Locks are temporarily closed, even if alternate means are used to transport freight or for recreational boaters to gain access to Lake Michigan. Nevertheless, the balance of equities tips decidedly to Plaintiffs.

In seeking to justify its decisions to continue regular openings of the O'Brien and Chicago Locks, despite mounting evidence of the risk that Asian carp will migrate through them into Lake Michigan, the Corps has relied, in part, on assertions that even the temporary closure of the locks urged by the Plaintiff States would impose unacceptable costs upon commercial and recreational users of those portions of the CAWS. But between January and June 2010, the Corps has publicly disclosed three separate, but consecutively declining estimates of such costs. Initially, in January, 2010, the Corps estimated that the annual transportation related cost impact would be approximately $192 million. Then, in February, 2010, in a Declaration by Corps economist Rebecca J. Moyer, appended to the United States' Opposition to Michigan's Renewed Motion for Preliminary Injunction in the Supreme Court, the Corps lowered its estimate to $167 million per year. Most recently, in its June 2010 Interim III Report, the Corp's estimate was further reduced to approximately $150 million. (Ex 12, p 39.)

To address this issue, the State of Michigan consulted with John C. Taylor, Ph.D., Associate Professor of Supply Chain Management and Director of Supply Chain Programs at Wayne State University, an expert in transportation and logistics. In February, 2010, Dr. Taylor prepared an Affidavit filed in the Supreme Court proceeding, summarizing and incorporating an initial report of his research.[32] In that Affidavit and Report, Dr. Taylor concluded, among other things, that the Corps' initial $192 million estimate seriously exaggerated the transportation related impacts associated with the proposed closure of the locks, and conservatively estimated those costs to be in the range of approximately $64-69 million per year.

Subsequently, Dr. Taylor and his co-author, transportation consultant James L. Roach, performed additional research and also reviewed additional information prepared by the Corps, including the Moyer Declaration and the Interim III Report, as well as a report prepared by Dr. Joseph Schwieterman, of De Paul University, for the Illinois Chamber of Commerce.[33] Based upon that additional research and review, Dr. Taylor and Mr. Roach prepared an updated report, entitled "Chicago Area Waterway System: The Logistics and Transportation Related Cost Impact of Waterway Barriers", dated July14, 2010 (Updated Report) Dr. Taylor has summarized his findings in his Affidavit, dated July 14, filed concurrently with the Plaintiff States' Motion.

As summarized in paragraph 10 of his July Affidavit, it was and remains Dr. Taylor's professional opinion that assertions by the Corps and others that temporary lock closure would result in increased transportation costs in excess of $190 million, substantially increase pollution,

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[32] Chicago Waterway System Ecological Separation: The Logistics and Transportation Related Cost Impact of Waterway Barriers, February 2, 2010.

[33] An Analysis of the Economic Effects of Terminating Operations at the Chicago River Controlling Works and O'Brien Locks on the Chicago Area Waterway System; DePaul University; April 7, 2010.

and have a severe adverse impact on the local and regional and economy were unfounded, because, among other reasons:

(a) Only approximately seven million tons of cargo per year would be affected and some of this would incur relatively minor inconvenience.

(b) That affected volume represents less than one percent of all the freight traffic in the Chicago Region and only thirty percent of the total Port of Chicago traffic.

(c) The affected barge traffic is the equivalent of two daily loaded rail unit trains in a region that has approximately 500 daily freight trains.

(d) Truck traffic in Chicago would increase less than 1/10 of one percent.

(e) Most of the affected cargo would continue to move on the inland waterway system, through the Lockport Locks, but would have to stop a few miles short of its former destination.

(f) Most of the claimed environmental, air quality, safety, and energy benefits associated with barge transportation would continue since most of the barge traffic would continue.

(g) Some of the affected cargo traffic may require transfer to another mode of transportation such as rail, truck, or pipeline at transload locations. Such transfers are the norm in an intermodal transportation system (e.g., grain moves by truck to an elevator, by rail to a port, and by barge to an end user to an export location). Indeed, much of the traffic in the inland waterway system already uses several modes.

(h) The suggestion that other modes of transportation are not available is incorrect. Virtually all of the major shippers have direct or proximity access to both rail and highway. The assertion that there are not enough rail cars or trucks to handle the traffic is also very wrong. There is more than sufficient capacity to handle seven million tons annually and it could readily be provided. (Taylor Aff, p 5-6.)

With respect to the more recent documents prepared by the Corps and Dr. Schwieterman, Dr. Taylor, in paragraph 14 of his Affidavit summarized his conclusions as follows:

(a) Our original estimate that if barriers were established at the O'Brien and Chicago Locks, transportation and handling costs would increase by less than $70 million annually in a Chicago metropolitan area economy of $521 billion remains sound and conservative. Indeed, that estimate overstates those costs if one uses

the shipping volume data most recently relied upon by the Corps in its June 3, 2010 Interim III Report. Moreover, in that portion of his report and analysis that is directly relevant to our analysis, Dr. Schwieterman, on behalf of the Illinois Chamber of Commerce, independently estimated that such transportation and handling costs would increase by approximately $89 million annually. His estimate on that subject is generally comparable to ours on the same subject.

(b) Dr. Schwieterman's far larger estimate of approximately $4.7 billion in additional costs and economic effects over a 20 year period is not comparable to our analysis and does not accurately predict the economic consequences of the interim, and conditional, closure of the O'Brien and Chicago Locks proposed by the State of Michigan and other Great Lakes States. Most of the additional costs estimated by Dr. Schwieterman pertain to permanent infrastructure changes relating to flood control, assuming the Locks were continuously and permanently closed. However, because Michigan's proposal would allow for reopening of the Locks as needed to prevent flooding or otherwise protect public health and safety, those assumed expenditures are not relevant here. Further, as noted in our report, other aspects of additional indirect costs estimated by Dr. Schwieterman appear to be inadequately supported.

(c) The Corps' varying estimates of increased transportation related costs associated with lock closure, ranging from $192 million (January, 2010), to $167million (February, 2010) and most recently to $150 million (June, 2010) are neither well-supported nor persuasive. The Corps estimates are based upon an assumption that if barge traffic, including long distance traffic (e.g., New Orleans to Chicago), is disrupted by lock closure during the first or last few miles of the trip, the cargo would be shifted in its entirety to a rail or truck alternative for the entire distance of the trip. Regardless of whether such an assumption is somehow constrained here by principles and guidelines typically used by the Corps for evaluating proposed water resource development projects, it is not economically realistic in the present context. Given this fundamental flaw, each of the Corps' estimates is overstated.

(d) Ultimately, whether, as we have estimated, the annual transportation related costs of temporary lock closure are approximately $64-69 million, or approximately $89 million as estimated by Dr. Schwieterman, or even $150 million as most recently estimated by the Corps, such economic effects are far lower that the potential damage to the widely estimated $7 billion annual value of the Great Lakes fisheries and recreational resources that are threatened by the migration of Asian carp through the CAWS into Lake Michigan and connected waterways. (Taylor Aff pp 9-10.)

The Corps has also suggested that the O'Brien and Chicago Locks should not be closed because it would adversely affect the operation of commercial tour boats and private recreational

boats. But, once again, the Corps appears to overstate the nature of those impacts and their relative weight in the context of Plaintiffs' request for interim relief.

It is certainly true that closing the Chicago Lock will be inconvenient for some of these tour boats owners to the extent they regularly transit the Chicago Lock. But, because these tours occur on both sides of the lock, separate river and lake tours could be continued and it may be possible, with some logistical maneuvering, to transfer passengers short distances on land, between boats docked in the river, and boats docked at locations in Lake Michigan. (Taylor Aff, Attachment 2, p 25 report.)

The Corps, through the declaration of Colonel Vincent Quarles filed in the Supreme Court, has asserted that in 2008 an estimated 43,000 recreation vessels transited Chicago Lock and 19,000 transited O'Brien Lock. However, Dr. Taylor, who relied upon publicly available information from the Corps' own Navigation Data Center, reports considerably lower recreational vessel usage: in 2008, 23,886 recreational vessels transited the Chicago Lock and 15,184 transited O'Brien Lock. (Taylor Aff, Report, p 7.) Moreover, Dr. Taylor reports that according to the Corps' own statistics, both recreational and tour boat operations through the Chicago Locks have significantly declined from the peak years of 1994-1995. (Taylor Aff Report, p 7.)

Some segment of these trips though the locks are twice a year occurrences in spring and fall when boats are moved out of and into winter storage, on land, at locations inland from the locks. These boats could be transported by other means not requiring use of the locks. Many pleasure boats are routinely transported by trailer. Other pleasure craft owners that wish to

transit the locks on more frequent basis may face inconvenience, and additional expense.[34] Even using the Corps' most recent estimate of $500,000 for the total economic benefits to recreational boaters using the O'Brien and Chicago Locks (Ex 12, p 40.), these costs pale in comparison to the potential injury caused by Asian carp in the Great Lakes.

Besides the disparity in dollars between harm to the Chicago economy and the harm to the economies of all the other Great Lakes states and provinces, any injury from closing the locks will be temporary. It will end when alternate means of transportation are engaged or when some other effective mechanism to protect the Great Lakes from Asian carp is put into place. There would no doubt be economic injury, but the damage will be finite, and will be miniscule in comparison to the economic harm caused should Asian carp enter the Great Lakes. Weighing the undisputed fact that the scope of the potential injury to the other Great Lakes States is immense if nothing is done to prevent Asian carp from entering the Great Lakes, against the short-term economic harm to barge and recreational boating traffic, the balance tips decidedly in favor of Plaintiffs.

If Asian carp establish a reproducing population in the Great Lakes, the damage will likely be permanent and irreparable. Plaintiffs are aware of no means of ridding the Great Lakes of Asian carp, or even controlling them, once they become established. And the damage to the Great Lakes will continue year after year, with no foreseeable end. The monetary extent of the potential damage is also undeniably far greater than any temporary harm caused by the requested injunction. As the Corps and others have recognized, the value of the commercial and sport fishery that would be threatened by the introduction of Asian carp in the Great Lakes is billions of dollars a year. (Ex 11, 19; Newcomb Aff, p 7.)

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[34] Dr. Taylor noted that it may ultimately be possible to move some of these boats around the lock through various mechanical means. (Taylor Aff, Report p 7-8.)

Moreover, environmental damage presents a special concern when considering a motion for preliminary injunction:

> Environmental injury, by its nature, can seldom be adequately remedied by money damages and is often permanent or at least of long duration, i.e., irreparable. If such injury is sufficiently likely, therefore, the balance of harms will usually favor the issuance of an injunction to protect the environment.[35]

As shown above, the Corps own eDNA testing and the recent capture of a live bighead carp confirm the existence of Asian carp in the CAWS past not only the Dispersal Barrier System but past any remaining barriers to Lake Michigan. And the Illinois DNR and the Corps, as well as virtually every other government agency, have recognized that the introduction of the Asian carp would be an ecological and economic disaster for the Great Lakes. Weighing the undisputed fact that the scope of the potential injury to the environment and Plaintiffs' economies is immense if nothing is done to prevent Asian carp from entering the Great Lakes, against a short-term economic harm to barge and recreational boating traffic, the balance tips decidedly in favor of Plaintiffs.

3. A preliminary injunction is in the public interest.

The demonstrated extent, imminence, and relative scale of the respective harms detailed above strongly supports a finding that it is in the public interest to take whatever steps are necessary to protect the Great Lakes from an Asian carp invasion. This is particularly true where, as here, there is a strong public policy reiterated in numerous federal and state statutes favoring the protection of the environment and natural resources.[36] Where such public policy is

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[35] *Amoco Production Co. v. Gambell*, 480 U.S. 531, 545 (1987).

[36] *See, e.g.*, the Nonindigenous Aquatic Nuisance Prevention and Control Act, 16 U.S.C. §§ 4711-4751; the Clean Water Act, 33 U.S.C. §§ 1251-1387; the Endangered Species Act, 16 U.S.C. §§ 1531-1599.

identified by Congress in specific statutes, it is given great weight by federal courts considering whether or not to grant a preliminary injunction.[37]

Courts are likewise more apt to grant motions for injunctive relief when the interests furthered are public as opposed to private interests. "Courts of equity may, and frequently do, go much farther both to give and withhold relief in furtherance of the public interest than they are accustomed to go when only private interests are involved."[38] While there may be broader impacts to the public in the Greater Chicago area from closing the locks, the primary impact will be felt by private individuals or companies who use the locks. On the other hand, if the Asian carp invade the Great Lakes, the world's largest freshwater ecosystem, the damage to the environment will be immeasurable, and the economic, recreational, and public safety interests of the citizens of eight states and two Canadian provinces will seriously suffer.

Measured by the public interest reflected in federal law, the national and global importance of the resource at issue, and the number of people potentially harmed, the public interest is clearly better served by entry of temporary injunctive relief that will prevent Asian carp from entering the Great Lakes.

4. Plaintiffs are likely to succeed on the merits of their claims

Given the indisputable gravity of the irreparable harm that is likely to occur if Asian carp establish a reproducing population in the Great Lakes, Plaintiffs do not need to make an incontestable showing with regard to the likelihood of success on the merits factor to be entitled to a preliminary injunction under the established standards of this Circuit. Nevertheless, the overwhelming weight of the evidence, much of it gleaned from documents produced by the

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[37] *Anglers of the Au Sable v. United States Forest Serv.*, 402 F. Supp. 2d 826, 839 (E.D. Mich. 2005; Wright, Miller & Kane, Federal Practice and Procedure: Civil 2d § 2948.4 ("The public interest may be declared in the form of a statute.")

[38] *Yakus v. United States*, 321 U.S. 414, 441 (1944, *quoting Virginian Ry. Co.* v. *System Federation*, 300 U.S. 515, 552 (1937).

Defendants themselves, clearly supports a finding that the Plaintiffs are likely to succeed on both their common law public nuisance claims and their APA appeal.

a. Plaintiffs are likely to succeed on their common law public nuisance claim.

Defendants continue to maintain and operate the CAWS infrastructure in a manner that allows admittedly injurious species to enter the Great Lakes. The resulting injury to the public rights is both foreseeable and severe. At common law, a condition, action, or failure to act that unreasonably interferes with a right common to the general public is a public nuisance.[39] The attorney general may bring an action for injunctive relief to prevent or abate such a public nuisance.[40] Any immunity of the Corps to such an action has been waived by Congress.[41]

To sustain an action for public nuisance, a plaintiff must establish that there is an unreasonable interference with a common public right. Federal courts have described the circumstances sustaining a holding that an interference with a public right is unreasonable to include the following:

> (a) Whether the conduct involves a significant interference with the public health, the public safety, the public peace, the public comfort or the public convenience, or
>
> (b) whether the conduct is proscribed by a statute, ordinance or administrative regulation, or

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[39] Restatement (Second) of Torts, § 821B(1); *Connecticut v. Am. Elec. Power Co.*, 582 F.3d 309, 327, 352 (2d Cir. N.Y. 2009)("Moreover, as a general matter, the Supreme Court and this Court have often turned to the Restatement (Second) of Torts for assistance in developing standards in a variety of tort cases . . . In keeping with the precedents discussed above, we will apply the Restatement's principles of public nuisance as the framework within which to examine the federal common law of nuisance question presented by the instant cases. We believe the Restatement definition provides a workable standard for assessing whether the parties have stated a claim under the federal common law of nuisance.")

[40] *Missouri v. Illinois*, 180 U.S. 208, 244 (1901).

[41] 5 U.S.C. § 702. That waiver of sovereign immunity is not limited to suits brought under the Administrative Procedures Act. *Trudeau v FTC*, 456 F. 3d 178, 186-187 (D.C. Cir. 2006).

> (c) whether the conduct is of a continuing nature or has produced a permanent and long-lasting effect, and, as the actor knows or has reason to know, has a significant effect upon the public right.[42]

The waters and aquatic resources of Lake Michigan and the other Great Lakes are held in trust for the benefit of the public by Michigan and other Great Lakes states, within their respective jurisdictions.[43] The public rights in those waters and resources include, but are not limited to, fishing, boating, commerce, and recreation.

As established above, the migration of bighead and silver carp from the CAWS into Lake Michigan, and thereby into other Great Lakes and connected rivers and waterbodies, will cause enormous and irreversible harm to the common public rights in those waters. Maintaining operation of the CAWS infrastructure in a way that permits this migration clearly interferes with public safety, health, comfort and convenience because if established in the Great Lakes, Asian carp will cause physical injury to boaters and drive out native fish species sought after by sport and commercial fishers.

Likewise, facilitating the introduction of aquatic invasive species such as the Asian carp contravenes policies delineated in the Nonindigenous Aquatic Nuisance Prevention and Control Act and the Lacey Act. Such conduct is thus proscribed by "statute, ordinance or administrative regulation" and on this basis alone should be considered a public nuisance.

And there is no serious question that if Asian carp establish a reproducing population in the Great Lakes, this will produce "a permanent and long-lasting effect." The Corps' own statements confirm that they are acutely aware of this long-lasting effect.

Defendants' conduct thus satisfies all three Restatement tests of whether there is an unreasonable interference with a common public right. Under these circumstances, the

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[42] *Connecticut v. Am. Electric.* at 352, citing the Restatement of Torts § 821B(2).
[43] *Illinois Central R.R. Co. v. Illinois*, 146 U.S. 387, 455-458 (1892).

Defendants' maintenance and operations of the diversion project in the current manner is no longer equitable. Indeed, it is a continuing public nuisance that substantially infringes upon Plaintiffs' rights. Declaratory and injunctive relief is therefore warranted.

b. Plaintiffs are likely to succeed on their APA appeals.

Under 5 U.S.C. § 702, "[a] person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute, is entitled to judicial review thereof." 5 U.S.C. § 706(1) provides that a court may: "compel agency action unlawfully withheld or unreasonably delayed . . . ." 5 U.S.C. § 706(2) provides, in part, that a court may: "[h]old unlawful and set aside agency actions, findings and conclusions found to be – (a) Arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law. . ." "Agency action" is defined in 5 U.S.C. § 551(13) to include "the whole or a part of an agency rule, order, license, sanction, relief, or the equivalent or denial thereof, or failure to act. . . "

In the case at hand, the State Plaintiffs have been adversely affected and aggrieved by a number of actions, of the Corps. These are discussed in detail above, but a few notable examples are:

- The Corps decision to operate the CAWS infrastructure in a manner that creates or contributes to a public nuisance by allowing Asian carp to migrate unimpeded through the CAWS to Lake Michigan, even after the Corps learned through its own eDNA testing that Asian carp were more than likely in Calumet Harbor in Lake Michigan.

- The decision of the Corps to rely almost exclusively on the Dispersal Barrier System as its method for precluding Asian carp from entering the Great Lakes. Even at the time this decision was made, it was apparent that the barrier was an experimental and unproven technology and that it would need to be taken off-line for maintenance. Yet the Corps implemented no back-up strategy, or even plan, until it was effectively too late and the Asian carp had bypassed the electric barrier.

- The Corps ordered the reopening of the O'Brien Locks and continued operation of those locks in December, 2009 and May 2010 after they had been closed while the Corps applied rotenone and conducted netting operations. The result of continuing lock operations as usual was to perpetuate activities that contributed to a public nuisance.

- The Corps' adoption of the "no change in operation" option described in the Interim III Report, which meant that the Corps decided to continue reopening the locks without any change in operation in response to the Asian carp threat. (Ex 12.)

These decisions, which are ultimately part of a clear strategy to maintain the current operation of the CAWS, are "agency action[s]" as defined by 5 U.S.C. § 551 and are appealable. These actions should be set aside and declared unlawful pursuant to 5 U.S.C § 706(2) because they violate the federal common law of public nuisance, the Nonindigenous Aquatic Nuisance Prevention and Control Act and the Lacey Act, and are arbitrary and capricious and an abuse of discretion.

A prime example of the arbitrary nature of the Corps decision making is established by the decision to adopt the "no change in operation" option for the proposed modified structural operations. A careful review of the" Interim III" Report (Ex 12) reveals that the Corps was not considering an obvious solution to the problem – whether to stop operating the locks on a temporary basis until a more permanent solution could be put in place. The only "options" for modifying lock operations actually evaluated in the Interim III Report were variations on closing the locks intermittently, such as a few days a week or at most, two months. (Ex 12, pp 49-56.) Not surprisingly, the panel of experts consulted by the Corps that assessed these options concluded that intermittent closures would do little to hinder the advance of Asian carp because they would pass through the locks on the days that they were open. (Ex 12, pp 49- 51.) This process was clearly not designed to conduct an objective assessment of the full array of real options to address the Asian carp invasion. It was skewed from the start in a manner that would

not allow consideration of the relief being requested by the Plaintiff States, i.e., stopping lock operations altogether (with exceptions to protect public health and safety) pending a permanent solution to the problem.

This is a textbook example of arbitrary and capricious action. For conduct not to be arbitrary, it must have some rational basis. As noted by the Supreme Court:

> Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.[44]

Here, by not allowing the expert panel to even consider temporary cessation of lock operations – an obvious option for dealing with Asian carp – the Corps' evaluation of "modified operations" under the Framework and in the Interim III report (Ex 12) was an intentional effort to fail to consider "an important aspect of the problem." It also "runs counter to the evidence before the agency." Ignoring this option for addressing the Asian carp threat is clearly arbitrary and capricious.

Another example of the Corps ignoring the evidence before it is its persistent refusal to act based on eDNA evidence. The pattern of positive eDNA samples establishes that Asian carp have been migrating past the electric barrier, through the CAWS and into Lake Michigan. This was the conclusion of Dr. David Lodge who the Corps described as "one of the leading scientists on the subject" of the Asian carp invasion. (Ex 34, p ES-2.) In a declaration filed with the Supreme Court, Dr. Lodge rejected suggestions that the positive eDNA results should be attributed to anything other than live Asian carp inhabiting the CAWS where positive samples had been taken. And as noted by Dr. Lodge, this eDNA testing method had been vetted by the

[44] *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (U.S. 1983.)

U.S. E.P.A and declared to be sufficiently reliable and robust so that the results would be "actionable in a management context." (Ex 14, pp 9-10.) Yet the Corps persistently refuses to believe the eDNA test results and claims that the method is not reliable enough for it use when deciding whether to change the way it is acting and making decision. (Ex 12, 22, 36.) This course of conduct is clearly arbitrary as it ignores evidence that the Corps' own experts have presented them.[45] The irrationality of this decision making process was recently brought home when, after repeatedly heralding the news that its netting operations had not recovered a single Asian carp, either live or dead, lakeward of the Dispersal Barrier System on June 22, a live Asian carp was recovered near areas that had previously tested positive for Asian carp. Even after this confirmation of the reliability of Dr. Lodge's analysis, the Corps has made no effort to revise its decision to make "no change in operations" with regard to its continued operation of the CAWS infrastructure. And despite the fact that on June 3, 2010, the Corps refused to consider extended lock closure, saying it had "insufficient information to conclude that Asian carp are actually present above the fish barrier" (Ex 12, p 52), the capture of an actual carp did not change that decision.

It is therefore clear that the Corps has taken "action" as defined by the APA, and that these actions are unlawful and arbitrary and capricious.

CONCLUSION AND RELIEF SOUGHT

Each of the factors applied by the Court in determining whether to issue preliminary injunctive relief weighs in favor of the Plaintiffs. Accordingly, Plaintiffs request that the Court enter an order providing the following relief:

[45] Similarly, as noted above, the Corps persists in routine operation of the Chicago and O'Brien Locks, notwithstanding the findings by a majority of the Expert Risk Assessment Panel that under that condition, there is" an imminent threat that [Asian carp] will establish a sustainable population in Lake Michigan in the near future." (Ex 44, Table 4.)

1. Enter a Preliminary injunction enjoining the Defendants to immediately take all available measures within their respective control, consistent with the protection of public health and safety, to prevent the migration of bighead and silver carp through the CAWS into Lake Michigan, including, but not necessarily limited to, the following:

(a) Using the best available methods to block the passage of, capture or kill bighead and silver carp that may be present in the CAWS, especially in those areas north of the O'Brien Lock and Dam.

(b) Installing block nets or other suitable interim physical barriers to fish passage at strategic locations in the Calumet River between Lake Calumet and Calumet Harbor.

(c) Temporarily closing and ceasing operation of the locks at the O'Brien Lock and Dam and the Chicago River Controlling Works except as needed to protect public health and safety.

(d) Temporarily closing the sluice gates at the O'Brien Lock and Dam, the Chicago Controlling Works, and the Wilmette Pumping Station except as needed to protect public health or safety.

(e) Installing and maintaining grates or screens on or over the openings to all the sluice gates at the O'Brien Lock and Dam, the Chicago River Controlling Works, and the Wilmette Pumping Station in a manner that will not allow fish to pass through those structures if the sluice gates are opened.

(f) Installing and maintaining block nets or other suitable interim physical barriers to fish passage as needed in the Little Calumet River to prevent the migration of bighead and silver carp into Lake Michigan, in a manner that protects public health and safety.

(g) As a supplement to physical barriers, applying rotenone at strategic locations in the CAWS, especially those areas north of the O'Brien Lock and Dam where bighead and silver carp are most likely to be present, using methods and techniques best suited to eradicate them and minimize the risk of their movement into Lake Michigan.

(h) Continue comprehensive monitoring for bighead and silver carp in the CAWS, including resumed use of environmental DNA testing.

2. Enter a preliminary injunction requiring the Corps to expedite the preparation of a feasibility study, pursuant to its authority under Section 3601 of the Water Resources Development Act of 2007, developing and evaluating options for the permanent physical separation of the CAWS from Lake Michigan at strategic locations so as to prevent the transfer of Asian carp or other invasive species between the Mississippi River Basin and the Great Lakes Basin. Specifically, the Corps should be required to:

(a) Complete, and make available for public comment, within six months, an initial report detailing the progress made toward completion of the evaluation.

(b) Complete, and make available for public comment, within twelve months, a second, interim report detailing the progress made toward completion of the evaluation.

(c) Complete, and make available for public comment, within eighteen months a final report detailing the results of the evaluation and recommendations for specific measures to permanently physically separate the CAWS from Lake Michigan at strategic locations to prevent the migration of bighead carp, silver carp or other harmful invasive species between the CAWS and the Great Lakes.

3. Grant the Plaintiff States such other relief as the Court determines just and proper.

Dated this 19th day of July, 2010

Respectfully submitted,

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ENRA/cases/2009/Asian Carp/USDC/ILND/PI brief 7 19.10 320 pm

Attachment 7

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

STATE OF MICHIGAN, STATE OF WISCONSIN, STATE OF MINNESOTA, STATE OF OHIO, and COMMONWEALTH OF PENNSYLVANIA, Plaintiffs, v. UNITED STATES ARMY CORPS OF ENGINEERS and METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO Defendants.	)	Case No. 1:10-cv-04457 Hon. Robert M. Dow, Jr.

PLAINTIFFS' REPLY IN SUPPORT OF
MOTION FOR PRELIMINARY INJUNCTION

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INTRODUCTION

Plaintiffs bring their Motion for Preliminary Injunction because we have reached the point described by one of the United States' principal experts, as a "critical juncture" (Chapman Dec, ¶ 22), in Asian carps'[1] movement up the Mississippi River Basin, through the Chicago Area Waterway System (CAWS) and into the Great Lakes.[2] More than seven months ago, the United States Army Corps of Engineers (Corps) acknowledged the grave threat:

> As Asian carp have migrated steadily northward, the threat of this species gaining access to Lake Michigan and the Great Lakes has become generally recognized in the environmental community and throughout numerous federal, state and local government agencies as having great significance with *potentially devastating ecological consequences for the Great Lakes*.
>
> * * *
>
> The Corps understands that, as a species which devours zooplankton, phytoplankton, and vegetation – the basis for the food chain of all aquatic species – in huge quantities, Asian carp have crowded out most other species in some areas of the Mississippi River basin, and could have a similar impact on the shallow water areas, shorelines, and tributaries of the Great Lakes. The Asian carp could also limit recreational activity due to the silver carp's penchant for jumping out of the water when startled, and could significantly alter and perhaps permanently damage near shore wetlands' ecosystems. Indeed senior officials in EPA have told us that *preventing Asian carp migration into Lake Michigan is probably the most acute new invasive species threat facing the Great Lakes*.[3]

Thus, the United States has for some time admitted that it "agrees that allowing a reproducing population of Asian carp to establish itself in Lake Michigan likely would be an

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[1] As in Plaintiffs' Motion, "Asian carp" as used here, refers to two species of Asian carp: bighead and silver carp.

[2] Plaintiffs' Reply addresses the Responses in Opposition to their Motion filed by the Corps, the Metropolitan Water Reclamation District of Greater Chicago (District) and the proposed Intervenor/Amicus Curiae the City of Chicago (City). Because the Court has not yet ruled on the Motions to Intervene filed by the Coalition to Save Our Waterways and Wendella Sightseeing Company, Plaintiffs have not replied to their other concurrently filed documents, but will do so if they are allowed to intervene or participate as amici curiae.

[3] (Peabody Dec I, S. Ct. ¶¶ 5-6, emphasis added) available at http://www.supremecourt.gov/specmastrpt/OpptoMemforUSinOpposition.pdf.

irreparable injury"[4] and such harm "would be both grave and irreparable."[5] And, it also agrees "that if Asian carp have entered Lake Michigan, it is highly important to keep out additional fish to prevent a self-sustaining population from arising."[6]

The imminence of the risk to the Great Lakes has only increased, not diminished, with time:

- It is undisputed that enormous populations of both bighead and silver carp remain in Illinois rivers directly connected to the CAWS.
- Credible scientific evidence collected by the experts retained by the government itself – multiple detections of bighead and silver carp eDNA at multiple locations in the CAWS system in late 2009 and early 2010 – indicate that fish of both species were present beyond the Corps' electrical barrier system, including in Lake Michigan itself.
- On June 22, 2010, a live bighead carp was captured in Lake Calumet only a few miles from Lake Michigan.
- Despite repeated requests by Plaintiffs, the Defendants have continued to routinely operate the locks and sluice gates they control in a manner that allows Asian carp to pass through them, and instead have persisted in relying upon a continuation of the Corps' experimental and unproven electrical barrier system and conventional fishing methods that the government's own expert acknowledges are incapable of detecting and capturing all Asian carp that may be present in the CAWS.

Under these circumstances and as demonstrated in Plaintiffs' Motion and supporting documents, Plaintiffs have shown, and can further show at the hearing on this Motion, that unless this Court grants the preliminary injunctive relief they request, Plaintiffs are indeed likely to suffer imminent, severe and irreparable harm. Defendants' Responses seek to obscure and confuse the issue of imminent harm by attempting to shift the focus to the timing of when the ecological and economic damages resulting from the establishment of a reproducing population

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[4] (US Mem, S. Ct. p 43), available at http://www.supremecourt.gov/specmastrpt/US_Memorandum_in_Opposition.pdf.
[5] (US Mem. p 47.), available at http://www.supremecourt.gov/specmastrpt/US_Memorandum_in_Opposition.pdf.
[6] (US Mem Opp Ren Mot P I, p 21), available at http://www.supremecourt.gov/specmastrpt/Mem_for_the_US.pdf.

of Asian carp in the Great Lakes will become fully apparent. Plaintiffs do not claim, and need not prove, that in the absence of an injunction, widespread ecologic and economic harm will immediately occur. Rather, the imminent harm that Plaintiffs face, and that judicial intervention is urgently needed to avoid, is reaching a biological tipping point, at which the conditions maintained by Defendants allow a sufficient number of silver and/or bighead carp enter Lake Michigan to give rise to a reproducing population there. The longer those conditions are allowed to persist, the more imminent the likelihood of that harm becomes.

Absent the injunctive relief requested by Plaintiffs – the use of existing and supplemental physical barriers to reliably minimize the risk of additional Asian carp entering Lake Michigan through the CAWS – Plaintiffs will likely suffer irreparable harm before this case can be decided on its merits. The status quo – Lake Michigan free of an established population of Asian carp – once altered, cannot plausibly be restored by a subsequent order of this or any other Court.

Contrary to Defendants' assertions, Plaintiffs have not only shown that they are likely to suffer imminent and irreparable harm, but have also satisfied each of the other factors for issuance of the requested preliminary injunction. First, the balance of harm favors Plaintiffs. The United States' recent attempts to downplay and characterize as "uncertain" the grave harm it has previously admitted, are not persuasive. The fact that the enormous environmental and economic harm stemming from the establishment of Asian carp in the Great Lakes may take some time to become apparent does not make it any less real or actionable, or alter the fact that it is likely to be both permanent and orders of magnitude greater than the localized, temporary economic harm associated with changes in some navigation that would result from the injunctive relief requested by Plaintiffs.

Moreover, the relief sought by Plaintiffs is consistent with the public interest. Plaintiffs have explicitly tailored their requested injunction to measures that would be consistent with protection of public health and safety. Among other things, Plaintiffs' requested injunction would allow opening of sluice gates and locks as needed to prevent flooding.

In addition, upon further consideration of the concerns raised by Defendants and the City of Chicago regarding the potential impact of routine sluice gate closure (i.e., precluding "discretionary diversion" of Lake Michigan water through sluice gates) upon water quality and navigation within the CAWS, Plaintiffs, in this Reply, and as more specifically explained below, are modifying their request for preliminary injunction so that such discretionary diversion of Lake water through sluice gates could continue, provided that screens or bar grates at least equivalent to those already installed by the District in two sluice gates and those proposed by the Corps for installation in two other sluice gates, are installed and maintained in each sluice gate that is opened, for any purpose.

Plaintiffs have also shown they are likely to succeed on the merits of their claims. Contrary to the Corps' assertions, Congress has, through 5 U.S. C. § 702, broadly waived sovereign immunity with respect to the equitable relief sought here by Plaintiffs under the common law public nuisance doctrine. Moreover, such common law relief is available where, as here, Congress has not comprehensively addressed and displaced common law on this subject. Further, contrary to the City of Chicago's suggestion, this case does present a justicable controversy, not a "political question" the adjudication of which would infringe the constitutional separation of powers. Finally, Plaintiffs have properly alleged, and are likely to prevail on their claims that the Corps has made a series of final decisions, each reviewable under the APA that are arbitrary and capricious or otherwise unlawful.

ARGUMENT

I. If a preliminary injunction is not entered now, Plaintiffs will likely suffer irreparable injury.

A. Absent the requested injunctive relief, it is likely that conditions maintained by Defendants in the CAWS will allow enough Asian carp to enter Lake Michigan to permit a reproducing population to become established there.

1. Asian carp have rapidly expanded northward through the Mississippi River Basin, creating huge populations in Illinois rivers that are connected to the CAWS. The CAWS, as now maintained by Defendants, provides a conduit through which some Asian carp have already moved, and others are likely to move, into Lake Michigan.

It is undisputed that both bighead and silver carp are fecund, quite mobile, and adapt to varying environmental conditions, including conditions similar to those present in at least some portions of Lake Michigan and connected waterways. (Newcomb Aff, ¶¶ 14 – 20; Chapman Dec, ¶ 21.) "Asian carps are clearly capable of successfully invading a wide variety of rivers and lakes and can move long distances to select habitats that are conducive to their survival and growth." (Chapman Dec, ¶ 21.) It is likewise undisputed that they have established enormous populations in Illinois rivers and ponds where they had not existed a few years before. And, it is widely agreed among biologists who study invasive species that "propagule pressure" – the number and quality of invading organisms – is directly proportional to the likelihood of a successful invasion and that "minimizing the number of invading individuals is key to preventing successful establishment of a species." (Chapman Dec, ¶ 6.)

Unfortunately, the CAWS, as now maintained, provides several direct hydraulic connections between the Asian carp-infested water in the Illinois and Des Plaines Rivers and Lake Michigan. The Defendants have relied, and in opposition to Plaintiffs' Motion continue to principally rely, upon two means that they assert are sufficient to prevent the continued migration of Asian carp through the CAWS to Lake Michigan: (a) the Corps' electrical Dispersal

Barrier System and (b) conventional fishing for Asian carp with nets in the CAWS. As explained below, these methods are neither singly nor in combination sufficient to preclude Asian carp from entering Lake Michigan through the CAWS.

2. The Defendants' "principal" defense against Asian carp migration from the CAWS to the Great Lakes is an unproven, experimental electric barrier that should be supplemented with a physical barrier.

a. The electric barrier has not been 100% effective for keeping carp from migrating to Lake Michigan.

As noted in Plaintiffs' principal brief, Dr. David Lodge, a professor at the University of Notre Dame, is a recognized expert on aquatic invasive species, and in particular on the invasion potential posed by Asian carp. The Corps itself has acknowledged that Dr. Lodge is a "leading scientist" on the issue of this invasion. In fact, at the request of the Corps, Dr. Lodge and his team spent several months sampling waters from the CAWS and as a result has concluded that there are "multiple" Asian carp in the waterways north of the electric barrier. In a Declaration filed by the Corps with the Supreme Court, Dr. Lodge addressed the positive eDNA samples taken from the CAWS:

> Based on our understanding of the waterway and other potential pathways, we believe that no explanation other than the presence of *multiple living silver and bighead carps* can plausibly explain the entire spatial and temporal pattern of positive results for silver and bighead eDNA in the waterway." (Ex 14, Lodge Dec, ¶ 46 emphasis added.)

This conclusion is confirmed by the Corps' submission to this Court of the declaration of Duane Chapman, a biologist with the U.S. Geological Survey (USGS) who stated:

> Even before the bighead carp was captured in Lake Calumet, I was reasonably certain that some undetermined number of both bighead and silver carp were present above the barrier, because of the eDNA data. The eDNA data is not calibrated to indicate the number of number of fish present, but I believe that collection of a positive eDNA sample is a good indicator of fish presence. (Chapman Dec, ¶ 26.)

There is no evidence presented by Defendants that the Asian carp referenced by Lodge or Chapman inhabited the CAWS north of the electric barrier prior to its installation. These fish somehow evaded the electric barrier.

Further proof that the electric barrier is unreliable, and consistent with the eDNA testing results relied on by both Lodge and Chapman, as noted above, a living bighead carp was captured in June in Lake Calumet, north of the electric barrier. Considering both the eDNA evidence and the fact of the captured fish, the only reasonable conclusion that can be drawn is that the barrier, for whatever reasons, is not 100% effective at preventing Asian carp from migrating to the Great Lakes.

Defendants have gone to some length to suggest that the positive eDNA samples were the result of carp DNA entering the CAWS through means other than a live Asian carp bypassing the electric barrier. As discussed in Plaintiffs' initial brief, this suggestion has already been forcefully laid to rest by Dr. Lodge in his Declaration filed by the Corps in the Supreme Court, and by Dr. Newcomb in her Affidavit filed in this action, (Lodge Dec, p 22, Ex 14; Plaintiffs' Brief, p 13-14) and nothing in the Defendants' submissions to this Court credibly refutes the conclusions of these experts. Likewise, as noted above, any suggestion that the bighead carp captured in Lake Calumet did not swim through the CAWS to that location is pure speculation. Given the expert opinions of Drs. Lodge and Newcomb, and no credible evidence that the carp actually caught above the barrier didn't swim through it, there is good reason to believe that the electric barrier has not protected the Great Lakes from the leading edge of an imminent Asian carp invasion. As admitted by Major General Peabody, Commander, Great Lakes and Ohio

River Division of the Corps, "It is important to recognize that the electrical barriers do not provide a guarantee that Asian carp will be prevented from entering Lake Michigan."[7]

b. The electric barrier will continue to allow Asian carp to enter the Great Lakes.

(1) Using an electric barrier as an absolute barrier to keep all Asian carp out of the Great Lakes is an unproven, experimental application of this equipment.

The electric barriers are essentially bundles of steel cables or steel "billets" laid across the bottom of the Chicago Sanitary and Ship Canal (CSSC) and connected to electric generators that can send pulsed DC current of anywhere from 1 to 4 volts per inch. (Quarles Dec, ¶¶ 13, 14, 22; Peabody Dec, ¶ 22.) This current generates an electrical field in the water that can, but does not always, repel, mobilize or kill fish or other animals that cross its path. While this is a relatively simple idea, as noted by Major General Peabody:

> As the largest fielded operation electrical dispersal barrier in the world, the fish barrier effectively constitutes a large and complex research and development (R & D) project with all the attendant complexities and challenges of implementing a project while research and development of project details and impacts evolve, and new information is learned. (Peabody Dec, ¶ 20.)

In other words, the electric barrier is a unique science project that has been pressed into service before its capabilities and side effects have been determined through the completion of research and development. Under the present circumstances, continuing to rely upon such a mechanism as the principal means for protecting the Great Lakes from an invasion of Asian carp calls the Corps' judgment into serious question.

The undisputed facts confirm that the electric barrier is patently experimental. A review of the Declarations of General Peabody, Colonel Quarles and Charles Shea make it clear that the

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[7] Statement of Major General John Peabody before Subcommittee on Water Resources and Environment, Committee on Transportation and Infrastructure, United States House of Representatives, February 9, 2010, p 3, available at: http://www.supremecourt.gov/specmastrpt/US_Appendix_to_Renewed_Opp.pdf.

Corps is studying, evaluating and changing the way the barrier is operated on nearly a continuous basis, and with regard to multiple aspects of its operation. This is not surprising under the circumstances. As suggested by General Peabody, electric barriers have been used elsewhere, but never on a scale comparable to the CAWS barrier. Plaintiffs are aware of no other application such as this where an electric barrier has been employed to absolutely bar a new invasive species from entering and potentially devastating an ecosystem as significant and large as the entire Great Lakes system. Using an electric barrier to deter fish from entering water intakes for power plants or from entering an inland lake just does not compare to the current situation where the consequences of failure are so far reaching.

As shown below, the Corps really has no idea how many fish may be evading the electric barrier at any given time or over any given period. Coupled with the admission by the Corps that it has no idea how many Asian carp it will take in Lake Michigan to reach the tipping point marked by the establishment of a reproducing population, (Chapman Dec, ¶¶ 10-12, 19, 24, 26-27) it is astounding that the Corps would put virtually all its eggs in this one basket, particularly when there is the option of employing reliable and effective physical barriers such as closing existing locks and maintaining screens in sluice gates.

(2) When the electric barrier is operated at voltages and pulse rates that do not create unacceptable health and safety risks, it cannot prevent Asian carp from entering Lake Michigan.

Because it is experimental, the Corps does not know what the optimal operating parameters for the electric barrier are. Even though the Corps has been operating one or two electrical barriers since 2006, it has just received a "draft" report from its vendor "on all of the optimal operating parameters testing completed since April 2009", with a final report estimated in August 2010. (Quarles Dec, ¶ 32.) The Corps has not disclosed what the draft report says as

to whether it is possible to operate the barriers in a manner that will prevent Asian carp from entering Lake Michigan. The discussion in the declarations it submits with its brief suggest that there is a quagmire of unknowns, and it leaves the firm impression that there is a basic tension between operating the barriers at a voltage high enough to prevent migration of Asian carp, while still maintaining the safety of the public. It is clear that operation of the barrier is a compromise that does not fully prevent the migration of Asian carp, particularly when it is operated in a manner that does not present a significant health and safety risk.

(a) The health and safety risks.

Electrocution risk. In his Declaration submitted by the Corps, Charles Shea, project manager for the electric barrier, notes that "The likelihood of injury or death for people who become immersed in the water would also increase as operating parameters are increased to higher voltages and pulse rates. This is not being evaluated further at this time as the risks for an immersed person are already high and people must be kept out of the water at the current operating parameters." (Shea Dec, ¶ 18.)

Sparking danger. Another serious danger described by the Corps that prevents operation of the barrier at higher voltages, is the risk of arcing or sparking when metal boats pass through the electrified waters. According to Mr. Shea "this is a significant concern as barges carrying explosive or flammable materials do traverse the CSSC." (Shea Dec, ¶ 19.) The response to this danger was having the Coast Guard enact a Regulated Navigation Area (RNA) around the barriers to reduce the risk and to restrict operation of the electric barrier to its current operating parameters until and unless the Coast Guard completes "additional testing for the new parameters to determine how safety risks have changed . . ." (Shea Dec, ¶ 19.) This means that even if higher operating voltages would be more effective at preventing migration of Asian carp, they cannot be employed until the Coast Guard determines there is no risk of explosion or fire.

The Corps' submissions do not indicate that such a conclusion has been reached by the Coast Guard.

Magnetic field. In addition to the risk of electrocution and explosion from higher operating voltages, the electric barrier also generates a significant magnetic field "in the air" (Shea Dec, ¶ 22.) Again, there is an apparent concern that increasing the operating parameters of the electric barrier could increase the safety risk associated with this magnetic field. (Shea Dec, ¶ 22.)

Ground effects. The other major safety concern with the electric barrier is with electric fields that leave the water and enter the ground. Although the Declarations submitted by the Corps don't specifically say that this risk increases when the operating parameters increase, they do acknowledge that they are conducting tests and performing computer modeling to try to predict what risks are associated with "different barrier operating scenarios" suggesting that increases in operating parameters could increase the risks on the ground. (Shea Dec, ¶ 21.)

(b) The Corps has identified several scenarios where Asian carp are not prevented from passing through the electric barrier at current operating parameters.

Small fry. A significant shortcoming of the electric barrier is its admitted failure to prevent juvenile Asian carp less than three inches long from passing through to its upstream side. According to Mr. Shea, longer fish are "more readily deterred than shorter fish." (Shea Dec, ¶ 9.) While Shea asserts that testing on fish 5.4 inches to 11 inches long did suggest that these fish were prevented from passing over a bench model of an electric field, (Shea Dec, ¶ 10) testing on fish two to three inches led to the observation that "some fish challenged the barrier repeatedly, even immediately after recovering from being immobilized in a previous attempt, and some fish were able to pass through the electrified area." (Shea Dec, ¶ 14.) The report

recommended that higher operating parameters than those currently in use be employed in the hope that smaller fish would be immobilized.[8] (Shea Dec, ¶ 14.) This of course cannot be done without increasing the safety risks discussed above.

Environmental factors. According to Shea, the barriers are designed to operate under "typical environmental conditions." (Shea Dec, ¶ 24.) This was echoed by Colonel Quarles who stated:

> Occasionally, there are short-term extreme variations in environmental conditions, such as peaks in water temperature during the summer months, or peaks in water conductivity when road salts wash into the canal during winter thaws. These events place added stress on the barrier electronics and cooling systems. While the Corps can maintain barrier operation during these events, it may not be possible to operate at high voltages, pulse rates, or pulse durations until the environmental conditions return to more typical levels. Based on historical data, the Corps has estimated that water conductivity will impede barrier optimal operating parameters for approximately 200 hours per year." (Quarles Dec, ¶ 36.)

The periods of high conductivity are significant because, in addition to putting stress on the barrier systems, they make the electric barrier less effective in deterring the migration of fish.[9] (Quarles Dec, ¶ 31.)

Shadow effect. Another limitation on the effectiveness of the barrier is caused by the passage of steel-hulled boats through the electrified waters. This was acknowledged by Duane Chapman in his declaration. (Chapman Dec, ¶ 30.) This effect is explained in a report of a study commissioned by the U.S. Fish and Wildlife Service (USFWS).[10] According to the 2005 report, a steel-hulled boat "warps" the electric field such that its deterrent effect can be significantly lessened, or even eliminated when a fish is swimming alongside or to the rear of a steel-hulled

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[8] It is not clear why fish between three inches and 5.4 inches were not subjected to testing, and it is possible that these larger fish would also be able to pass through the barrier.

[9] Colonel Quarles notes that these periods of high conductivity typically occur during winter months (due to road salt washing into the canal) when carp migration is reduced.

[10] http://www.fws.gov/midwest/fisheries/30-Potentialimpactofsteel-hulledbargesonmovementoffishacrossanelectricbarrier/Impact_of_steel-hulled_barges.pdf.

barge. (USFWS report, p 7.) While the study suggested that modifications to the electric barrier could improve its performance, and apparently some changes have been incorporated in Barrier IIA, there is no indication on either the Corps' or the USFWS's web pages that such studies have been conducted. Until such testing is completed – and Plaintiffs suspect that the testing will not be completed until Barrier IIB is fully operational which could be years away[11] – there is no proof that Asian carp are not bypassing the electric barrier in the shadow of the steel barges that constantly pass through the barrier.

(c) There is a real concern that the barrier will not be sustainable.

The Corps has taken steps to ensure that operation of the electric barrier does not now present an unacceptable public safety and health risk. It has attempted to balance that risk with the need to operate the barrier at higher voltage levels and pulse rates to increase its effectiveness at preventing Asian carp from entering the Great Lakes. There is some concern that, despite the precautions taken by the Corps, there will be an accident or injury caused by the electric barrier and it will be shut down in response. Should this occur, there would be no barrier whatsoever between the Asian carp and the Great Lakes which would then move unimpeded through the CAWS and into Lake Michigan.

In sum, there is no dispute that the electric barrier: 1) is an unproven, experimental, immensely complex system that the Corps does not know how to operate in the most efficient manner 2) cannot be operated at voltage levels and pulse rates that would be the most effective at deterring Asian carp because it would be unsafe to operate the barrier at these levels, and because there are periods of time – 200 hours a year – when water conductivity levels are so high

[11] Construction of barrier IIB is not yet completed, though its completion is predicted before the end of the year. However, if the experience with barrier IIA is any guide – it took approximately three years from completion to operation (see Quarles Dec, ¶ 21) – barrier IIB and any further testing of the shadow effect, could be some time down the road.

that it is impossible to maintain such operational levels and 3) even when the barrier is operated at normal levels, some Asian carp may be able to pass through the barrier in the shadow of a steel-hulled barge.

3. Netting, electrofishing and poisoning of Asian carp will not prevent them from entering the Great Lakes.

While the Corps states that the electric barrier is its principal means for deterring Asian carp from entering the Great Lakes, it also relies to some extent on traditional methods for controlling fish populations including netting, electrofishing and poisoning for the purposes of locating and eradicating the carp. Plaintiffs support the use of these methods as a supplement to physical barriers. (Newcomb Aff, ¶ 47.) However, there can be no serious dispute that these traditional methods cannot eradicate all or even most of a population of any specific fish species, particularly in a large, open-ended waterway such as the CAWS. As noted by Dr. Lodge:

> [T]raditional tools for sampling fishes, while very useful for studying abundant species, are poor at detecting species that are not abundant (Magnuson *et al*. 1994, Fischer *et al*. 2009). By traditional tools, we mean primarily netting, electrofishing (stunning fish with an electric current emanating from a specially designed boat), and poisoning (using the toxin rotenone). . . We have extensive experience with all of these traditional tools, and know that they capture only a very small proportion of individuals comprising a local population of a fish species. (Lodge Dec, ¶¶ 6-7.)

This limitation inherent in the use of traditional control methods is even more significant with regard to Asian carp. As noted by Duane Chapman in his Declaration:

> [Asian carp] are also more net-averse than most native fishes. When at low densities, adult Asian carps are amazingly difficult to capture with any standard fisheries technique. Because of these characteristics, small populations can exist without detection. (Chapman Dec, ¶ 24.)
>
> Dr. Lodge agrees: "The generally low sensitivity of traditional tools is further compounded for both silver and bighead carps: they are more difficult than most fishes to capture." (Lodge Dec, ¶ 8.)

It is thus very unlikely that Asian carp that pass through or evade the electric barrier will be eradicated by traditional control techniques. As a result, if the Defendants continue to refuse to implement the relief requested by Plaintiffs in this action, the sole instrument for stopping the carp will be the electric barrier. Given its evident failure to prevent all Asian carp from entering the Great Lakes, its unproven and experimental status and the questions regarding its sustainability, it is imperative that the Court enter a preliminary injunction requiring the Corps to maintain physical barriers and take the other measures to prevent migration of Asian carp as detailed in Plaintiffs' request for relief.

B. The injury is both imminent and likely irreparable.

The eDNA data collected and analyzed for the Corps indicates that multiple live bighead and silver carp were present in the CAWS, past the Dispersal Barrier System, in late 2009 and early 2010.

- "Between November 2009 and July 2010, positive eDNA for both silver and bighead carp have been detected in several locations throughout the CAWS above the electric barriers . . . Several locations above the Barriers have had positive eDNA samples from multiple sampling trips." A total of 50 samples from above the Barriers have tested positive for longhead or silver carp. (Quarles Dec, ¶ 57.)

- Dr. David Lodge, whose laboratory collected and analyzed the samples has explained that based upon the care with which the samples were taken and processed and the confidence expressed in the laboratory's protocols by an independent laboratory audit team organized by the EPA, "there can be little, if any, doubt that the areas for which we have reported positive results . . . did indeed contain eDNA from the target species. (Lodge Dec ¶ 34.) Although he considered other possible explanations for the presence of eDNA in the water, he concluded "that by far the most plausible interpretation for the presence of the eDNA is that at least one live individual fish of a target species is present or has been present in the recent past [hours to at most two days] near the locks or upstream." (Lodge Dec, ¶ 35.)

- While the method used by Dr. Lodge does not determine the number of individual fish present where the sample was collected, Dr. Lodge explained, "the most informative statement we can confidently make is that a positive result indicates the presence of *at least* one live fish. The results could just as well indicate the presence

of tens or hundreds or more individual silver or bighead carp. (Lodge Dec, ¶ 37, emphasis added.)

- As noted above, Duane Chapman, the biologist upon whom the Corps principally relies in opposing Plaintiffs' Motion acknowledged: "Even before the bighead carp was captured in Lake Calumet, I was reasonably certain that some undetermined number of both bighead and silver carp were present above the barrier because of the eDNA data . . . I believe that collection of a positive eDNA sample is a good indicator of fish presence." (Chapman Dec, ¶26, emphasis added.)

Defendants have not disputed that even before that June 2010 capture of a live Asian carp above the barrier in Lake Calumet, scientific experts consulted by the Corps had concluded that there was an urgent need to reduce the likelihood of Asian carp entering Lake Michigan through the CAWS and that, with the routine operation of the Chicago and O'Brien locks, there is an "imminent threat" that Asian carp will establish a substantial population in Lake Michigan in the near future.

- Dr. Lodge's January 4, 2010 Declaration proffered by the United States in the Supreme Court concluded:

  > "[O]ur eDNA results indicate that at least a few individuals of both silver and bighead carp have ready access to Lake Michigan via the O'Brien Lock and Dam . . . Because the probability of invasion increases the more individual carp enter Lake Michigan, the theory of invasion biology . . . and rich experiences of managing invasions . . indicate clearly that there remains an urgent need to reduce the probability that both silver or bighead carp individuals can enter Lake Michigan." (Lodge Dec, ¶ 49.)

- A majority (63%) of the scientists in the expert Risk Assessment panel convened by the USFWS for the Corps in February 2010 who responded to the question: "Is there an imminent threat that Asian carp (silver and bighead) will establish in Lake Michigan in the near future" answered "yes", with varying degrees of uncertainty (Darcy Dec, Ex. 2, Appendix D, Table 4, p 19) and a majority rated the risk of Asian carp establishment as "unacceptable" [Medium to High] under a "no-action" scenario where routine operation of the locks continued. (*Id.*, pp 3, 9.)

The subsequent capture of a live Asian carp in the CAWS above (lakeward) of both the electric barrier *and* the O'Brien Lock further underscores the imminent nature of the threat.

(Newcomb Aff, ¶¶ 45-47.) Contrary to the Corps' suggestion, the Plaintiffs have not asserted that that single fish "equate[s] to a sustainable population of fish above the electric barrier." (Corps, p 38.) Rather, Plaintiffs contend that the capture of that fish viewed in conjunction with other information regarding the biology of Asian carp, the history of Asian carp in the connected Illinois waterways, and the pattern of the eDNA evidence, demonstrates the probability that additional Asian carp will enter Lake Michigan, leading to establishment of a reproducing population there. (Newcomb Aff, ¶ 47; 2nd Newcomb Aff, ¶ 18.) While Defendants correctly note that the geographic origins of the particular fish captured on June 22nd, and the means by which it entered Lake Calumet, have not been determined (2nd Newcomb Aff, ¶ 17; Chapman Dec, ¶ 28), the suggestion that it may have been carried to the site in a bait bucket or have been released there by a third party (Chapman Dec, ¶¶ 29-32 and Rogner Dec, ¶¶ 25-27) is simply unfounded speculation.[12]

Defendants contentions that there is no imminent risk of harm to Lake Michigan are not persuasive. First, contrary to the Defendants' suggestions, the Plaintiffs do not claim and need not show that a reproducing population of Asian carp is likely to be established in the CAWS

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[12] The fish in question was later transported to researchers at Southern Illinois University for analysis (Quarles ¶ 61.) On August 5, 2010, the IDNR issued a press release announcing the completion of the study, which included chemical analysis of markers on the fish's inner ear bones or otoliths and an attempt to compare them with chemical characteristics of various water bodies in order to draw inferences about where the fish was at various life stages. Available at: http://asiancarp.org/Wordpress/news/tsting-complete-on-bighead-asian-carp-found-in-lake-calumet-2/. Notwithstanding the admittedly inconclusive nature of the analysis, Mr. Rogner publicly asserted that the report "does suggest that the fish . . . may have been put there by humans, perhaps as a ritual cultural release or through bait bucket transfer" (*Id.)* Predictably, given Mr. Rogner's "spin", some media outlets widely but inaccurately reported the study as evidence that the fish in question had been "planted". See, e.g., http://abcnews.go.com/print?id=11333152. However, as evidenced by the text of the report itself, a copy of which is appended to the Second Affidavit of Tammy Newcomb filed with this Reply, the report said nothing whatsoever about the possibility conjectured by Mr. Rogner and explicitly stated that "no conclusive statements regarding the environmental history of [the] fish is currently possible."

itself, or in that portion of the CAWS that is above the electrical barrier (District, pp 31 - 32; Corps, p 48). Instead, the real issue is the risk that such a population will be established in Lake Michigan or other connected waters. More specifically, given their mobility, and the current open condition of the CAWS, Asian carp need not spawn and reproduce in that part of the CAWS itself in order to enter and become established in the Lake.

Second, the Corps' reliance upon Mr. Chapman's opinions for the proposition that "a preliminary injunction need not issue based on imminence" (Corps, p 38) is misplaced. At one point, Mr. Chapman appears to focus on the question of the likelihood that the fish currently above the barrier in the CAWS will create a reproducing population:

> [N]either the results of fishing or of eDNA can be used at this time to devine any estimate of the population of Asian carp in the CAWS above the electric barrier. It is likely that we did not capture all the bighead and silver carp from the CAWS or Lake Michigan. Thus, there is a chance that *the fish that are there* could create a substantial population. However, I believe, based upon the apparent (but not assured) failure of a few bighead carp to establish a population in Lake Erie, and the apparent (but not assured) low number of Asian carps in the CAWS, the chance that *currently resident* Asian carp will create a population is quite low. (Chapman Dec, ¶ 26, emphasis added.)

With all due respect to Mr. Chapman, his narrow focus on only these fish currently above the barrier and his analogy to the apparent lack of reproductive success among the few, isolated Asian carp in Lake Erie is flawed. Given the still experimental, unproven, and potentially unsustainable nature of the barrier, as well as its past operational history, it is unreasonable to assume, as Mr. Chapman apparently does, that the barrier will be fully effective in precluding the passage of other Asian carp into the CAWS. Moreover, while the precise origin of the Asian carp rarely observed in Lake Erie remain uncertain, it is believed they may be the product of

isolated human releases.[13] In any event, Mr. Chapman does not cite any evidence that there has been or now exists an open waterway directly connected to Lake Erie with large and expanding Asian carp populations, like those that exist in the Illinois river system directly connected to the CAWS.

Ultimately, the United States temporal argument appears to rely upon Mr. Chapman's opinion that if Asian carp do invade the Lakes, "it will probably take many years for the population to become *problematic*" (¶ 22, emphasis added) and that "an Asian carp *population expansio*n to numbers that would cause widespread substantial economic and environmental damage is most likely to take at least one to three decades." (¶ 23, emphasis added).

Such reasoning entirely misses the mark with respect to the nature of injury that Plaintiffs seek to avoid and conflates the question of when an injury is likely to occur with when the full extent of the ultimate damage will become apparent. As the United States has previously acknowledged, the harm that must be avoided is "allowing a *reproducing population* of Asian carp to establish itself in Lake Michigan" (US Mem S. Ct. I p 43). Once that condition arises, a "likely . . . irreparable injury" (US Mem S. Ct. II, p 47) will have occurred, regardless of how many years it takes for the established population to expand to the extent that the ultimate havoc to the Great Lakes ecosystem is fully manifested.

While emphasizing Mr. Chapman's belief that "widespread substantial economic and environmental damage" may take years to materialize, the Corps tellingly ignores Mr. Chapman's immediately following acknowledgment that we may nonetheless be at a "critical juncture" and that:

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[13] "Asian Carp Monitoring," available from the USFWS at http://www.fws.gov/northeast/lowergreatlakes/Programs/ans/Projects/AsianCarpMon.html.

> This *possible pattern* of invasion provides both opportunities *and problems*. If Asian carps are able to establish in the Great Lakes, *we may* have some time to devise control methods that would prevent their eventual population expansion.
>
> * * *
>
> [S]mall populations [of Asian carps] can exist without detection. *Small numbers of fish could expand over very large distances in the Great Lakes, before conditions that precipitate a large population increase are encountered by the fish.* However, *it is important to remember in the coming years that failure of Asian carps to cause undesirable effects in the Great Lakes over the short term does not mean that undesirable effects have been avoided.*
>
> Also, there is no guarantee that many bighead and silver carp have not moved completely through the CAWS and into Lake Michigan already. We have no way to assess the presence of bighead and silver carp in a body of water like Lake Michigan. *Even if there were hundreds of fish in the lake, catching one would be unlikely*. Furthermore, although risk of establishment is low if the number of fish is low, and *risk increases with an increasing number of fish*, if there are a male and a female bighead carp in Lake Michigan, the risk of establishment is not zero. (Chapman Dec, ¶¶ 24-25.)

Notably, Mr. Chapman does not identify the "control methods that would prevent their eventual population expansion" that he speculates "we *may* have some time to devise" (¶ 24, emphasis added). Similarly, there is virtually no explanation or documentation of his later assertions that "there are things that we *might* do to control Asian carp in the Great Lakes, and even if conditions exist such that Asian carps have the capacity to reach large populations, we *may* be able to control them – but it would not be free or easy, and *might not be successful*" (¶ 29, emphasis added).

Mr. Chapman's claims regarding such "control measures" are not merely undocumented and speculative, they are frankly implausible. To begin with, the history of the expansion of Asian carp in the Mississippi River basin including the Illinois River, to numbers that are evidently unmanageable, inspires little confidence that effective control measures for these species exist or are likely to be developed. Moreover, given the apparent impossibility of controlling or substantially reducing Asian carp populations in those river systems, it seems less

likely that some control method will be successfully applied in the vastly larger and more ecologically complex environment of the Great Lakes. Indeed, as noted above, Mr. Chapman himself has acknowledged, even assessing the presence of Asian carp in a body of water like Lake Michigan is now extremely difficult. (Chapman Dec, ¶ 25.) In sum, the possibility of some future technological development does not show that harm of an established, reproducing population of Asian carp in Lake Michigan can or will be remedied.

Even assuming that, as Mr. Chapman opines, it may take years for an Asian carp population in the Great Lakes to become "problematic[,] *[t]his does not mean that we are not currently at a critical juncture*." (Chapman Dec, ¶ 22, emphasis added.)

Indeed. And, "[t]he best understanding of the current situation is that minimizing the number of invading individuals will minimize the chance of establishment of Asian carps." (Chapman Dec, ¶ 13.) That is precisely why the preliminary injunction sought by Plaintiffs is urgently needed.

II. The balance of equities favors Plaintiffs and the requested injunction is in the public interest.

Contrary to the assertions by the United States, the District and the City of Chicago, the balance of the equities favors Plaintiffs and the requested injunction would be consistent with the public interest. Of particular importance, the relief sought by Plaintiffs would be consistent with the protection of public health and safety.

A. Public Health and Safety.

1. Use of sluice gates for discretionary diversion of water from Lake Michigan into the CAWS.

Defendants and the City of Chicago have opposed one part of the preliminary injunction initially proposed by Plaintiffs – temporary closure of sluice gates at the Chicago River Controlling Works and the O'Brien Lock and Dam, on the grounds that it would preclude the use

of those sluice gates for routine "discretionary diversion" of Lake Michigan water into the CAWS.[14] The District, (pp 35-37) and the City (pp 9-10) each argue at length that continued routine use of at least some of the sluice gates for discretionary diversion of Lake Michigan water into the CAWS is needed to avoid stagnation of water, to dilute and disperse partially treated wastewater, to protect public health and to preserve public use and economic development projects adjacent to the CAWS. (District, pp 35 – 37, City, pp 9-10.)

Plaintiffs believe that their original request to close the sluice gates "except as needed to protect public health and safety" remains justified as a means of reducing the likelihood that Asian carp will enter Lake Michigan through those gates, and that it could reasonably be understood to allow continued diversion of Lake water through the sluice gates as needed to address the District and the City's health-related concerns. Nonetheless, upon further consideration of the District's and the City's more generally stated concerns regarding the importance of continued discretionary diversion, and in an effort to balance those concerns with the Plaintiffs' interests in reducing the risk that Asian carp will migrate through the sluice gates when opened, Plaintiffs are in this Reply, modifying their request for injunctive relief as follows: Plaintiffs are eliminating the request that the Court require Defendants to temporarily close all sluice gates, provided that Defendants install and continuously maintain in all sluice gates, including those normally used only for flood control, screens or bar grates that restrict the passage of fish to at least the same extent as those proposed and authorized by the Corps in the

[14] As explained by the District (Lanyon Aff, ¶¶ 29-30), some discretionary diversion can be accomplished by using pumps at the Wilmette Pumping Station rather than sluice gates.

Interim III Report, together with automatic rakes or other similar equipment that removes debris and prevents the screens from clogging.[15]

With this modification, the Plaintiffs' proposed injunction would not prevent the District from continuing routine discretionary diversion through sluice gates. Accordingly, the District's and the City's stated concerns in that regard are moot.

2. Use of sluice gates for flood control.

The purpose of the Plaintiffs' Motion for Preliminary Injunction is to minimize the risk of additional Asian carp entering Lake Michigan via the CAWS. One potential means of fish passage through the CAWS and into Lake Michigan is through open sluice gates in the Chicago Lock, the Wilmette Pumping Station, and the O'Brien Lock and Dam. The installation of screens in the open sluice gates would reduce the risk of adult and some juvenile Asian carp passing through and entering Lake Michigan. (Ex 12, p 45.)

To its credit, the District has installed screens in some of the sluice gates it controls. However, it has done so with the caveats that screens will not be installed in the remaining sluice gates, and that the screens that have been installed will be removed in certain high water events to prevent potential flooding. (Ex 32.) Similarly, the Corps has proposed to install screens in some sluice gates, but has not committed to installing them in all the gates, nor to keeping them in place whenever the gates are opened. (Ex 12, pp 45-47, 58.)

The primary reason the Defendants cite for their refusal to place and maintain screens in all of the sluice gates is the concern that, during the flood events, the screens could become clogged with debris. (District, p 37; Corps, pp 41-42.) Defendants have expressed concerns that, were the screens to become completely clogged with debris, it could prevent water from passing

[15] As discussed in § II A.2 below, such automatic rakes are commercially available and used to prevent clogging of screens in other water control structures, so they can continue to pass water, even under flood conditions.

through the open sluice gates, specifically during certain "reverse flow" conditions when water is diverted from the CAWS into Lake Michigan, and cause flooding. (Ex 32; Ex 12, p 45.) However, this argument is unpersuasive because, among other reasons, there exists commercially available technology specifically designed to prevent sluice gate screens from becoming clogged with debris. (Someah Dec, p 3.)

Automatic raking machines are devices designed to clear debris from the screens in sluice gates. (Someah Dec, p. 3.) Automatic raking machines are commonly installed above sluice gate screens and can detect, by measuring the pressure behind the screens or the water level across the screens, when the screens have become clogged with debris. (Someah Dec, p 4.) The automatic raking machine then activates and removes the debris from the screen. (Someah Dec, p 4.) Automatic raking machines are commercially available in the United States, and are used to manage water intake for a variety of industries and in various kinds of water control structures, including some owned and operated by the Corps itself. (Someah Dec, pp 2-3.) Automatic raking machines are specifically used in flood control structures, and work to keep screens free of debris even in flood conditions. (Someah Dec, p 3.)

The only reason set forth by Defendants for not installing and maintaining screens in all sluice gates any time they are open is the potential for the screens to become clogged with debris. But installing automatic raking machines or similar devices above the screens would allow the Defendants to prevent the problems associated with clogged screens while substantially reducing the risk of adult Asian carp passing through the sluice gates whenever they are opened. Installing this equipment is a small price to pay to achieve the stated goal of all the parties.

3. Use of Locks for flood control.

In order to substantially reduce the likelihood that additional Asian carp will migrate through the CAWS into Lake Michigan, Plaintiffs' requested preliminary injunction would,

among other things, require the Corps to temporarily close the Chicago and O'Brien Locks "except as needed to protect public health and safety." Thus, while it is undisputed that sluice gates, not locks are the primary flood control mechanism in the CAWS, and the Chicago and O'Brien Locks are only infrequently opened for flood control purposes (only five times at the Chicago Lock since 1986 and only two times at O'Brien since 1986 (Su Dec, ¶¶ 11-12), Plaintiffs recognize that those locks must occasionally be opened to prevent flooding, and therefore have not sought and do not seek to prohibit lock openings under those circumstances.

It is likewise undisputed that the Corps of Engineers has already independently decided to close the Chicago Lock for six months, between November 2010 and April 2011 while the locks are repaired and the lock gates are replaced. (Abou-El-Seoud Dec, ¶¶ 2-5.) During those repairs, the Corps plans to install watertight bulkheads, and to maintain a crane on site that can, if necessary, temporarily remove the bulkheads if needed to prevent flooding. (Abou-El-Seoud Dec, ¶¶ 2-5.) Consistent with their previously stated position, Plaintiffs do not, of course, seek to enjoin the removal of the bulkheads as needed to prevent flooding or otherwise protect public health and safety.

The Corps asserts that because of the advanced age and deteriorated condition of the O'Brien Lock gates and associated gate control mechanisms, it must be allowed to regularly open or "cycle" the gates, especially during cold weather conditions, in order to keep the O'Brien Lock gates in working order. (Corps, p 41.) Thus, the Corps argues, if the locks are closed for an extended period, they will cease to function, precluding their opening even for flood control. (*Id.*)

Assuming that those assertions regarding the decrepit conditions of the O'Brien Lock equipment are correct, it appears that its reliability is already questionable for reasons wholly

independent of the present controversy and that extensive repairs and replacement of portions of the lock infrastructure like those planned for the Chicago Lock may be needed in the near future, presumably necessitating a similar, extended closure. In any event, regardless of whether such repair or replacement is soon undertaken, the Corps could, as an alternative to the closure of the O'Brien Lock gates requested by Plaintiffs, employ a procedure similar to that already planned for the Chicago Lock. That is, the Corps could obtain and install one or more bulkheads at the O'Brien Lock that would control water movement and impede fish passage, but could still be removed by a crane if needed to prevent flooding. (Cox Dec, ¶ 4, p 6.)

Finally, the Corps' suggestion that because Plaintiffs' proposed injunction would allow both the sluice gates and the locks to be operated to prevent flooding, it is "unlikely to add any value" to "ongoing efforts" to prevent the establishment of Asian carp populations (Corps, pp 48-49) is patently without merit. First, it ignores the fact that the sluice gates are the primary flood control mechanism and that under Plaintiffs' proposed injunction, each of them would be continuously fitted with screens to block the passage of most fish into the Lake. Second, the locks are not, in fact, "regularly" (Corps, p 48) operated for flood control purposes. As noted above, the O'Brien Locks are rarely operated for that purpose.

4. Impact of block nets or similar interim physical barriers.

Plaintiffs' Motion also seeks to require the Corps to install interim physical barriers such as block nets to impede the movement of Asian carp through channels of the CAWS where no physical barrier currently exists, such as the Little Calumet River. As with all other aspects of Plaintiffs' requested injunctive relief, it is expressly limited to measures "consistent with the protection of public health and safety."

While block nets are not necessarily an ideal or permanent solution to the problem, Plaintiffs proposed them specifically because, as fixed nets, they block the movement of most

fish, but still allow water to flow through them. Accordingly, they are far less likely to contribute to flooding than fixed, impermeable structures. Notwithstanding that indisputable fact, the Corps has nevertheless summarily rejected their use on the grounds that they could still cause flooding if they become blocked with debris and may be difficult to keep anchored to the bottom of the river under all flow conditions, and would impede navigation. (Quarles Dec, ¶¶ 120-121.)

But the Corps has not shown that any of these objections need actually preclude the installation and number of such block nets as a means of impeding Asian carp migration. For example, multiple parallel nets could be installed, so that if one were to become blocked, or dislodged by the current, it could be removed while another would remain as an effective barrier pending further maintenance or repair as needed. Similarly, the Corps apparent assumption that a block net would necessarily be installed at the mouth of the Calumet River and thereby disrupt navigation (¶ 121) is unfounded. There is no apparent reason why block nets could not be installed at other locations in the Little Calumet River where little or no commercial navigation exists.[16]

5. Impact on Chicago Police and Fire Departments and Coast Guard Operations.

The City and the Corps contend that the locks cannot be closed because they are used by both City police and fire boats and Coast Guard vessels for rescue and security operations. While Plaintiffs appreciate the seriousness of such concerns, it is apparent that they can be addressed by thoughtful planning and perhaps the duplication of some assets. As noted in Plaintiffs' initial brief, the proof of this assertion is that the Chicago locks will be closed for six straight months starting in November of this year. This is acknowledged by the Corps in its

[16] Installation of block nets in the Calumet River, would obviously raise more substantial issues of impacting navigation.

brief. (Corps, p 44, fn 14.) While the Corps claims that this planned closure does not provide support for Plaintiffs' request for relief, Plaintiffs believe that if plans can be developed to address all the police, fire and Coast Guard concerns described by the Defendants just so the lock can be closed to permit it to be repaired, there is no reason to believe that comparable plans cannot be developed to close the locks to assure that the Great Lakes ecosystem is not seriously harmed by an invasion of Asian carp. It may be inconvenient and may entail some expense to prepare and implement such plans, but the balance of harms tips decidedly in Plaintiffs' favor viewed in light of the potential environmental and economic disaster that looms over the Great Lakes region.

The City does not even address the planned lock closure in its brief, and instead presents arguments that suggest that no lock closure of any duration is reasonable. The Corps on the other hand merely contends that the six month closure is not comparable to the relief requested by Plaintiffs because the planned closure will occur in the "winter" season when boat traffic is slower through the lock. Even if this is true, it does not explain the obvious impact that lock closure will have on the police and fire activities described by Defendants as critical to public health and safety. These needs will certainly continue through the winter season, regardless of whether there is a high level of traffic in the waterway. Yet, the Defendants have undoubtedly devised a way to meet these critical needs for six straight months with the lock closed. They do not share what their strategy or plan is, but given the gravity of the harm caused by leaving the locks open to the migration of Asian carp, it would not be unreasonable to use this plan as the springboard for adapting to an extended closure of the locks. As the Corps notes in its brief, the community has known about the closure for a long time, so presumably preparations have been made. This suggests that it would not be out of the question to accelerate the implementation of

this closure. Once the lock is closed and the closure plan is in place, the City and the Coast Guard would have those months to develop a further plan to continue the closure through the summer season. Neither the City nor the Defendants have offered a specific reason why this isn't a reasonable approach to this issue.

Likewise, if there is a plan for providing emergency service while the Chicago Lock is closed, there is no good reason why a similar plan could not be adopted for the O'Brien Lock. While the Coast Guard does have a station near there, it appears that the same is not true for the City police and fire departments. Apparently the Coast Guard has a strategy for responding to emergencies and carrying out all of its security functions in the Chicago River even when that lock is closed. (Barndt Dec, ¶ 50.) Employing a similar strategy in the waterways south of the O'Brien Lock thus seems feasible. Alternatively, the Coast Guard could maintain a second dock south of the O'Brien lock so it can moor a second vessel there to respond to situations below the lock. While the Corps asserts that the Coast Guard doesn't have the funds to pursue such a course, this is just a matter of money. Given the promise of federal funds to address the invasion of Asian carp (Bolen Dec, Attachment 1), it would seem possible for the Coast Guard to find a funding source for these increased costs.[17] (Barndt Dec, ¶ 45)

B. Transportation and economic impacts.

As demonstrated in Plaintiffs' initial brief, the permanent ecological and economic harm likely to result from the establishment of Asian carp in the Great Lakes ecosystem is likely to exceed by an order of magnitude the temporary economic impacts of the injunctive relief

[17] In her Declaration Ms. Barndt asserts that it would cost the Coast Guard "twenty to thirty million dollars" to operate another station. This seems unlikely. The Coast Guard already operates a "temporary" station in the Chicago River during the summer months, presumably for considerably less than $20-30 million. It would seem that a similar station could be operated on a permanent basis south of the O'Brien Lock for considerably less than the amount estimated by Ms. Barndt.

requested by Plaintiffs, including the effects on navigation in the vicinity of the Chicago and O'Brien Locks. In response, the Corps, primarily through the Declaration of Corps economist Rebecca J. Moyer, has criticized the analysis and conclusion presented by Dr. John Taylor in his Affidavit and Report.

Dr. Taylor has prepared a Second Affidavit, filed with this Reply, that addresses key issues raised by the Corps and explains why he adheres to his previously stated conclusions. Among other things, Dr. Taylor notes:

- His estimate of $64-69 million per year in additional logistics and transportation related cost impacts to shippers if the Chicago and O'Brien Locks are closed is far closer to the $89 million estimate of such impacts independently prepared by Dr. Joseph Schwieterman for the Illinois Chamber of Commerce (that was not even addressed by Ms. Moyer) than the Corps' varying estimates of $150 to $192 million. (Taylor 2nd Aff, ¶¶ 4.a. – 4.b.)
- With respect to one of the key disagreements between the Corps and Dr. Taylor – the Corps' assumption that goods that cannot complete an entire trip by barge would have to shift to an alternative mode of transportation such as rail or truck for the entire length of the trip – Dr. Ian Savage, whose critique of some other aspects of Dr. Taylor's analysis was relied upon by Ms. Moyer, agreed with Dr. Taylor that such an assumption was "very pessimistic." (Taylor 2nd Aff, ¶ 4.a.)
- Some of Ms. Moyer's other assertions and assumptions regarding certain transportation costs and limitations on other transportation options available to shippers were unrealistic (Taylor 2nd Aff, ¶ 5) and/or lacking in supporting detail and documentation. (Taylor 2nd Aff, ¶¶ 6, 8.)

- He reaffirms his previously stated conclusions regarding estimated transportation related impacts and that such impacts would be relatively modest in the context of the Chicago area economy. (Taylor 2nd Aff, ¶ 12.)

III. Plaintiffs are likely to succeed on the merits of their claims.

Defendants and the City have challenged the Plaintiffs' likelihood of success on the merits in several respects, but none of their arguments are well taken.

A. Plaintiffs' public nuisance claim seeks prospective equitable relief only and therefore comes within the APA § 702 waiver of sovereign immunity.

The Corps' assertion that Plaintiffs' request for equitable relief under the common law nuisance doctrine is barred by sovereign immunity (Corps, pp 20-22) is without merit. Under § 702 of the Administrative Procedures Act (APA), a person suffering a legal wrong because of an agency's action (or inaction) is entitled to judicial review by a federal court. provided the lawsuit seeks "relief other than money damages."[18]

As the Seventh Circuit has recognized, in § 702 Congress "waived sovereign immunity for most forms of prospective relief."[19] This waiver was added to § 702 through a 1976 amendment that, according to the legislative history, was meant to eliminate the sovereign immunity defense "in *all* equitable actions for specific relief against a Federal agency."[20] Several Circuits have reached the same conclusion about the breadth of the § 702 waiver.[21]

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[18] 5 U.S. C. § 702; see also *The Presbyterian Church (U.S.A.) v. United States*, 870 F.2d 518, 525 (9th Cir. 1989) (under § 702 "an action for nonmonetary relief challenging an agency for 'acting or failing to act' shall not be barred by sovereign immunity").
[19] *Blagojevich v. Gates*, 519 F.3d 370, 371 (7th Cir. 2008).
[20] *Trudeau v. Federal Trade Comm*, 456 F.3d 178, 186 (D.C. Cir. 2006), quoting S. Rep. No. 94-996, at 8 (1976) and H.R. Rep. No. 94-1656, at 9 (1976) (emphasis in original).
[21] *Raz v. Lee*, 343 F.3d 936, 938 (8th Cir. 2003) (§ 702 "expressly waives sovereign immunity as to any action for nonmonetary relief brought against the United States"); *United States v. City of Detroit*, 329 F.3d 515, 520 (6th Cir. 2003) (*en banc)* (under § 702 of the APA the government "has waived its immunity with respect to non-monetary claims"); *Presbyterian Church*, 870 F.2d

This waiver, moreover, goes beyond matters reviewable through the APA: § 702 is "a law of general application."[22] The waiver also goes beyond any particular statute, reaching any civil matter arising under the "laws" of the United States.[23] As the *Trudeau* court concluded, "we hold that APA § 702's waiver of sovereign immunity permits not only Trudeau's APA cause of action, but his nonstatutory and First Amendment actions as well."[24] The "laws" of the United States, of course, include the federal common law of public nuisance.[25] So Plaintiffs' common law claim, which seeks non-monetary relief to abate a public nuisance, comes squarely within the § 702 waiver of sovereign immunity.

The § 702 waiver, moreover, applies unless there is another statute "expressly displacing" it.[26] The Corps argues that Plaintiffs' public nuisance claim "is properly brought as a tort," although conceding that it is "not styled . . . as such," and maintains that as a tort it must be brought under the Federal Tort Claims Act (FTCA). (Corps, p 20.) This argument is wrong for two reasons.

First, the scope of the APA § 702 waiver depends on the nature of the relief sought, not the kind of claim made. Section 702 encompasses any action "seeking *relief* other than money damages," but it does not confer "authority to grant *relief* if any other statute that grants consent

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at 525 ("the 1976 amendment to § 702 waives sovereign immunity in all actions seeking relief from official misconduct except for money damages").

[22] *Blagojevich*, 519 F.3d at 372; see also *City of Detroit*, 329 F.3d at 521 (noting that each of the five other circuits "that have addressed this issue agree that 'the waiver of sovereign immunity contained in § 702 is not limited to suits brought under the APA'").

[23] *Trudeau*, 456 F.3d at 185, quoting 28 U.S.C. § 1331.

[24] *Trudeau*, 456 F.3d at 187.

[25] *Illinois v. City of Milwaukee*, 406 U.S. 91, 99-100 (1972) (applying 28 U.S.C. § 1331). Comprehensive amendments to the Federal Water Pollution Control Act (FWCPA) preempted the common law nuisance in the area of water pollution. *Middlesex Cty. Sewerage Auth. V. National Sea Clammers Ass'n.*, 453 U.S. 1, 21-22 (1981). No such comprehensive legislation exists with regard to the subject of Plaintiffs' suit.

[26] *Blagojevich*, 519 F.3d at 372.

to suit expressly or impliedly forbids the *relief* which is sought."[27] The Corps portrays this exception to § 702 as pertaining to "claims" and selectively quotes the statute in an effort to bolster its argument. (Corps, pp 22, 23.) But so long as the nature of the relief sought is equitable, the § 702 waiver applies, even though a claim for money damages might have been pleaded on the same facts.[28] So, for example, although Massachusetts might have sued the United States for damages over its failure to reimburse some Medicaid expenditures, it was not required to do so, particularly since a money judgment would not be an adequate substitute for prospective relief.[29]

Second, a public nuisance claim has always been equitable in nature. In a case involving placement of fill in navigable waters, for example, the Supreme Court noted that "[a] public nuisance action was a classic example of the kind of suit that relied on the injunctive relief provided by courts in equity."[30] Even in 1887, when the U.S. Supreme Court decided *Mugler v. Kansas,*[31] the "jurisdiction of courts of equity" over public nuisance cases was "of a very ancient date." The reason for this equity jurisdiction, the Court explained, was "the ability of courts to give a more speedy, effectual, and permanent remedy, than can be had at law."[32] Significantly, too, courts of equity "cannot only prevent nuisances that are threatened, and before irreparable mischief ensues, but arrest or abate those in progress and, by perpetual injunction, protect the public against them in the future."[33]

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[27] 5 U.S.C. § 702 (emphasis added).
[28] *Bowen v. Massachusetts,* 487 U.S. 879, 893 (1988).
[29] *Bowen,* 487 U.S. at 904-905.
[30] *Tull v. United States,* 481 U.S. 412, 423 (1987).
[31] *Mugler v. Kansas,* 123 U.S. 623, 672 (1887).
[32] *Mugler,* 123 U.S. at 673.
[33] *Mugler,* 123 U.S. at 673; see also *In re Debs,* 158 U.S. 564, 592 (1895) ("in no well-considered case has the power of a court of equity to interfere by injunction in cases of public nuisance been denied").

When the U.S. Supreme Court agreed to consider an injunction against use of the Chicago Sanitary and Ship Canal to discharge sewage into the Mississippi River watershed, it recognized the "established principle that the court has jurisdiction in equity to restrain and prevent nuisances."[34] Equitable remedies are particularly fitting when a public nuisance threatens damage to a body of water, for legal or statutory proceedings cannot "'be involved until a part of the mischief is done, and they could not, in the nature of things, restore the pond, the land and the underground currents to the same condition in which they now are.'"[35]

The historic remedy for a public nuisance – and the one sought here – is prospective equitable relief, not damages. Moreover, none of the Corps' cited cases holds that the FTCA applies to a public nuisance claim; nor do any of them hold that an effort to enjoin a public nuisance falls outside the APA § 702 waiver.[36] *Spectrum Leasing,*[37] which the Corps also cites, confirms that courts look to the remedy sought to determine whether a case comes under the Tucker Act (for contracts) or § 702. If the plaintiff seeks declaratory or injunctive relief, rather

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[34] *Missouri v. Illinois,* 180 U.S. 208, 244 (1901), quoting *Attorney General v. Jamaica Pond Aqueduct Corp,* 133 Mass. 361, 363 (1881).
[35] *Missouri v. Illinois,* 180 U.S. at 244, quoting *Jamaica Pond,* 133 Mass. At 363.
[36] In *Massachusetts v. United States Veterans Administration,* 541 F.2d 119, 123 (1st Cir. 1976), the court did not need to decide whether the federal common law of nuisance encompassed a water pollution claim because Massachusetts sought a monetary penalty. In *Kennedy v. City of New York,* 1986 U.S. Dist. LEXIS 26736, *5-6 (S.D.N.Y. 1986), the court granted summary judgment because statutes precluded a private action when the EPA had already brought an enforcement action. In dicta, the court noted that the plaintiffs' confusing claim against the EPA might include a theory of public nuisance. *Id.*, at *3-4. The court then stated that the United States had not consented to a public nuisance suit, but APA § 702 was not addressed either by the court or the pro se plaintiffs. *Id.*
[37] *Spectrum Leasing Corp. v. United States,* 764 F.2d 891, 895 (D.C. Cir. 1985).

than the contractual remedy of specific performance, courts have found the § 702 waiver to apply.[38]

State attorneys general have historically sued in equity to abate public nuisances. "The judicial power to enjoin public nuisance at the instance of the Government has been a commonplace of jurisdiction in American judicial history."[39] They do so here. Because Plaintiffs seek "relief other than money damages" – in a type of case for which equitable relief is the norm – their public nuisance action comes squarely within the APA § 702 waiver of sovereign immunity.

B. The City's argument that this case presents a non-justiciable political question is without merit.

The City of stands alone in presenting the argument that the political question doctrine requires Plaintiffs' claims should be dismissed. The City's argument is without merit. The Supreme Court has explicitly rejected the political question defense in interstate nuisance actions such as the case at hand which presents none of the factors necessary for the case to be found nonjusticiable.

1. The political question doctrine does not bar federal common law cases.

The claims presented here are not barred by the political question doctrine. It is plainly not the case that a federal common law determination will constrain the powers of the other branches; Congress and the Executive can preempt federal common law principles.

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[38] *Spectrum Leasing,* 764 F.2d at 894, citing *Megapulse, Inc. v. Lewis,* 672 F.2d 959 (D.C. Cir. 1982); see also *B.K. Instrument, Inc. v. United States,* 715 F.2d 713, 723 (2nd Cir. 1983) (§ 702 waiver applied to unsuccessful bidder's action for declaratory and injunctive relief).

[39] *United Steelworkers of Am. v. United States,* 361 U.S. 39, 61 (1959) (Frankfurter, J., concurring), citing *Attorney General v. Tudor Ice Co.,* 104 Mass. 239, 244 (1987); *Village of Pine City v. Munch,* 42 Minn. 342, 343; 44 N.W. 197 (1890); *Board of Health v. Vink,* 184 Mich. 688; 151 N.W. 672 (1915).

> The political question doctrine is "a function of the separation of powers," *Baker v. Carr*, 369 U.S. 186, 210 (1962), designed to avoid "inappropriate interference" by the Judiciary in the business of the other branches, *United States v. Munoz-Flores*, 495 U.S. 385, 394 (1990) where that other branch is better suited to resolve the issue.[40]

While "our constitutional system imposes upon the Branches a degree of overlapping responsibility, a duty of interdependence as well as independence the absence of which would preclude the establishment of a Nation capable of governing itself," separation of powers constraints operate to ensure that no action would "accrete to a single Branch powers more appropriately diffused among separate Branches or . . . undermine the authority and independence of one or another coordinate Branch."[41]

In a case such as this involving the obligations of domestic actors under federal common law, the political branches remain free to modify or displace any principles that the judiciary applies and to dictate that courts follow any standards they formulate. Consequently, there is no danger of the judiciary monopolizing powers that the Constitution "diffused among separate Branches," *id.*, or granted exclusively to one of the other branches. With no such danger, there is no call for the protections of the political question doctrine. Neither the Supreme Court nor the Seventh Circuit have ever found the political question doctrine to bar adjudication of a case arising solely under common law.[42]

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[40] *Connecticut v. American Elec. Power Co., Inc.*, 582 F.3d 309, 321 (2d Cir. 2009), petition for cert. filed, ** U.S.L.W. *** (U.S. August 2, 2010) (No. 10-**).

[41] *Mistretta v. United States*, 488 U.S. 361, 381-82 (1989) (internal quotation marks and citations omitted).

[42] There are a few nominally "common law" cases in which courts have found a political question. But the claims in these cases in fact turned upon questions of constitutional or international sovereign right, and it was the constitutional or international sovereign right issues, not the common law ones, that were the focus of political question concerns. See, e.g., *Luther v. Borden*, 48 U.S. (7 How.) 1 (1849) (trespass claim, depending on guarantee clause claim); *Commercial Trust Co. v. Miller*, 262 U.S. 51 (1923) (German citizen's property recovery claim, depending on whether Germany was still at war with the United States).

2. The Supreme Court already has explicitly rejected the political question defense in interstate nuisance and related cases.

Justiciability of this case is confirmed by the Supreme Court's repeated holdings that State claims for redress for injuries to their quasi-sovereign interests — including interstate pollution claims — are justiciable. In these cases, the Supreme Court has disposed of separation of powers concerns and, in particular, arguments about the inappropriateness of such disputes for judicial resolution.[43]

Here Plaintiffs allege serious harm to their waters, water resources, aquatic environment, commercial and sport fishing industries threatened and contributed to by Defendants' actions and inactions. The City's claim that this case is not justiciable cannot be reconciled with the courts' longstanding role in adjudicating such controversies and explicit holdings that such controversies are justiciable.

3. This case does not implicate any of the *Baker v. Carr* factors.

In *Baker v. Carr* the Court set out six factors which may describe a political question.[44] The City asserts that factors two, three, four and six are applicable to the case at hand and require a finding of non-justiciability. This assertion has no merit.

a. This case will be decided under judicially manageable standards and does not require an initial policy determination for nonjudicial discretion.

The second and third factors are sometimes considered together to determine whether "judicially manageable standards" exist so as to ensure that an issue is appropriate for resolution

[43] See *Rhode Island v. Massachusetts*, 37 U.S. 657, 684 (1838) (holding that disputes among the states are inherently political, but not necessarily barred by the political question doctrine); *Ohio v. Wyandotte Chemicals Corp.*, 401 U.S. 493 (1971) (Court explicitly rejects bar of political question doctrine in interstate nuisance action).

[44] *Baker v. Carr,* 369 U.S. 186, 217 (1962).

by judicial method, that is, by principled adjudication, as opposed to "nonjudicial discretion."[45] These two factors pose no problem here. Courts regularly decide nuisance cases of all sorts and, as noted above, frequently have decided interstate nuisance cases involving injuries to State's quasi-sovereign interests. Principled, common law adjudication of such cases lies squarely within the judiciary's core competence. In pollution and other nuisance-type cases, courts examine the magnitude of the injury, issues of causation and contribution, and equitable factors.[46] These are judicially manageable and appropriate inquiries.

Nor is the potential complexity of the facts or societal significance of the remedies a bar. For example, in *Connecticut v. American Elec. Power Co., Inc.,* cited by the City in its brief at pp. 11-12, the Court there found that the federal common law nuisance case against the six top emitters of greenhouse gases contributing to global climate change triggered none of the six *Baker* political question factors. There the defendants argued that issues arising from greenhouse gas emissions were too complex and presented policy questions such that a court could not decide them. [47]

Yet, the Court observed, "Defendants' argument is undermined by the fact that federal courts have successfully adjudicated complex common law public nuisance cases for over a century." [48] Surely, the complexities involved in a global climate change nuisance action are far more daunting than those attendant to an action to keep Asian carp from invading the Great Lakes. As in *AEP*, "Well-settled principles of tort and public nuisance law provide appropriate guidance to

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[45] *See Goldwater v. Carter*, 444 U.S. 996, 998 (1979) (Powell, J., concurring) (the second and third Baker prongs ask whether "resolution of the question [would] demand that a court move beyond areas of judicial expertise").
[46] *See, e.g., Georgia v. Tennessee Copper Co.*, 240 U.S. 650, 650-51 (1916) (setting emissions limits and imposing monitoring requirements).
[47] *Connecticut v. American Elec. Power Co., Inc.*, 582 F.3d 309, 421 (2d Cir. 2009), *citing Baker v. Carr*, 369 U.S. at 217.
[48] 582 F.3d at 326.

the district court in assessing Plaintiffs' claims and the federal courts are competent to deal with these issues."[49]

b. Adjudication of this action will neither show a lack of respect for coordinate branches of government nor present a potential for embarrassment from multifarious pronouncements by various departments in question.

Adjudication of this case does not implicate the fourth or sixth Baker factors. As to the fourth factor, adjudication of this matter expresses no "lack of respect" for the political branches. In cases involving alleged injuries to States' quasi-sovereign interests, the Supreme Court has often adjudicated questions of domestic, interstate responsibilities.

Finally, there is no danger of "embarrassment" from competing pronouncements. The political branches can readily incorporate, modify, or displace any principles applied in this and other common law cases. Moreover, the official U.S. position, as expressed in the laws cited by the City, is to reduce the risk of invasive species and Asian carp introduction into the Great Lakes. Resolution of the States' claim can cause no embarrassment. The City's claim should be rejected.

C. Plaintiffs are likely to succeed on the merits of their common law public nuisance claim.

In opposing Plaintiffs' Motion, the Defendants and the City argue that existing federal statutes displace Plaintiffs' federal common law nuisance action, and that Plaintiffs' claim conflicts with federal law and policy. (Corps' pp 23-25; District pp 24-29; City pp 13-14.) Their arguments are without merit.

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[49] 582 F.3d at 329; see also, *Oneida Indian Nation of New York v. County of Oneida*, 719 F.2d 525, 539 (2d Cir. 1983) (internal quotation marks and citation omitted), *aff'd* in relevant part, 470 U.S. 226 (1985)(Second Circuit rejects argument that a Native American land claim poses a political question because a remedy would have "catastrophic ramifications;" the court noted that "'we know of no principle of law that would relate the availability of judicial relief inversely to the gravity of the wrong sought to be addressed.'")

1. Standards governing displacement.

Here, as in C*onnecticut v. American Elec. Power Co., Inc.*, (*AEP),*[50] "Defendants allege that even if Plaintiffs can raise a federal common law nuisance claim, any such cause of action has been displaced by federal legislation. A cause of action has been displaced when 'federal statutory law governs a question previously the subject of federal common law.'"[51] The displacement standards as they apply to water pollution nuisance cases are well-described by the Second Circuit in *AEP*:

> Because "federal common law is subject to the paramount authority of Congress," federal courts may resort to it only "in absence of an applicable Act of Congress." *Milwaukee II*, 451 U.S. at 313-14, 101 S.Ct. 1784 (alteration and internal quotation marks omitted). Federal common law is a "necessary expedient" to which federal courts may turn when "compelled to consider federal questions which cannot be answered from federal statutes alone." *Id*. at 314, 101 S.Ct. 1784 (internal quotation marks omitted). But "when Congress addresses a question previously governed by a decision rested on federal common law the need for ... lawmaking by federal courts disappears." *Id*. "[T]he question [of] whether a previously available federal common-law action has been displaced by federal statutory law involves an assessment of the scope of the legislation and whether the scheme established by Congress addresses the problem formerly governed by federal common law." *Id*. at 315 n. 8, 101 S.Ct. 1784.[52]

As these principles are applied, one should remain mindful that "[s]tatutes which invade the common law . . . are to be read with a presumption favoring the retention of long-established and familiar principles, except when a statutory purpose to the contrary is evident."[53] "[C]ourts

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[50] C*onnecticut v. American Elec. Power Co., Inc.*, 582 F.3d 309, 371 (2d Cir. 2009) (hereafter A*EP*), citing *Milwaukee v. Illinois*, 451 U.S. 304, 316 (1981) (hereafter "*Milwaukee II*") (footnote omitted).

[51] Based on a snippet from *Milwaukee II*, 451 U.S. at 313, the Corps makes the curious argument that, "Neither Plaintiffs' complaint nor brief make any argument in favor of the development of federal common law." The issue is not whether federal common law needs to be developed here, but whether existing tenets of federal common law should be applied. "'It is not uncommon for federal courts to fashion federal law where federal rights are concerned.' . . . When we deal with air and water in their ambient or interstate aspects, there is a federal common law . . . ." *Illinois v. Milwaukee*, 406 U.S. 91, 103 (1972) (hereafter *Milwaukee I*) (citations and footnote omitted).

[52] 582 F.3d at 371.

[53] *United States v. Texas*, 507 U.S. 529, 534 (1993) (internal quotation marks omitted).

may take it as a given that Congress has legislated with an expectation that the common law principle will apply except when a statutory purpose to the contrary is evident."[54]

In *Milwaukee I*, the Supreme Court upheld the right of Illinois to sue the City of Milwaukee in a federal public nuisance action relating to overflow discharges of untreated sewage into Lake Michigan despite the existence of several existing and new federal laws giving federal agencies the authority to control water pollution. The Court stated, "Until the field has been made the subject of comprehensive legislation or authorized administrative standards, only a federal common law basis can provide an adequate means for dealing with such claims as alleged federal rights."[55] "*Milwaukee I* stands for the proposition that if the extant statutes governing water pollution do not cover a plaintiff's claims and provide a remedy, a plaintiff is free to bring its claim under the federal common law of nuisance; a plaintiff is not obliged to await the fashioning of a comprehensive approach to domestic water pollution before it can bring an action to invoke the remedy it seeks."[56]

The standards for displacement of federal common law were further clarified in *Milwaukee II* and subsequent cases. In *Milwaukee II*, the Supreme Court held that the new Federal Water Pollution Control Act Amendments of 1972 met the standard for displacement of federal common law nuisance to address the pollution at issue in that case because "Congress' intent in enacting the Amendments were clearly to establish an all encompassing program of water pollution regulation. Every point source discharge is prohibited unless covered by a permit, which directly subjects the discharger to the administrative apparatus established by

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[54] *United States v. Texas*, 507 U.S. at 534 (internal quotation marks and alteration omitted).
[55] *Milwaukee I*, 406 U.S. at 107, n. 9.
[56] *AEP*, 582 F.3d at 330, *citing Milwaukee I*, 406 U.S. at 101-02.

Congress to achieve its goals."[57] "The establishment of such a self-consciously comprehensive program by Congress, which certainly did not exist when *Illinois v. Milwaukee* was decided, strongly suggests that there is no room for courts to attempt to improve on that program with federal common law."[58] "[F]ederal common law applies 'until the field has been the subject of comprehensive legislation or authorized administrative standards.'"[59]

Apparent comprehensiveness of Congressional legislation is only one important indicia of displacement. After all, there appeared to be comprehensive legislation on the subject of water pollution in *Milwaukee I*. For there to be displacement, the comprehensive legislation also must address the problem at issue and address the problem specifically in order to displace the common law. "[T]he question whether a previously available federal common-law action has been displaced by federal statutory law involves an assessment of the scope of the legislation *and* whether the scheme established by Congress addresses the problem formerly governed by federal common law."[60]

When a federal "Act does not address every issue . . . but when it does speak directly to a question, the courts are not free to 'supplement' Congress' answer so thoroughly that the Act becomes meaningless."[61] "Thus the question was whether the legislative scheme 'spoke directly to a question' . . . --not whether Congress had affirmatively proscribed the use of federal common law."[62] "The displacement question requires courts to distinguish between situations in which

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[57] *Milwaukee II*, 451 U.S. at 318 (footnote omitted).
[58] *Milwaukee II*, 451 U.S. at 319.
[59] *Milwaukee II*, 451 U.S. at 314, *citing Texas v. Pankey*, 441 F.2d 236, 241 (10th Cir. 1971) (quoted in *Milwaukee I*, 406 U.S. at 107, n. 9).
[60] *Milwaukee II*, 451 U.S. at 315, n. 8 (emphasis added).
[61] *Milwaukee II*, 451 U.S. at 315, quoting *Mobil Oil Corp. v. Higginbotham*, 436 U.S. 618, 625 (1978).
[62] *Milwaukee II*, 451 U.S. at 315. *See also*, *AEP*, 582 F.3d at 374, quoting *County of Oneida v. Oneida Indian Nation of N.Y. State*, 470 U.S. 226, 236-37 (1985).

regulatory coverage leaves a 'gap' which federal common law can appropriately fill, and situations in which the federal common law overlaps with an existing regulatory scheme but would supply a different approach than the one Congress has mandated."[63]

2. The federal statutes cited by Defendants and the City do not comprehensively and specifically address the particular question raised in Plaintiffs' action

This is a *Milwaukee I* case, not a *Milwaukee II* case. The federal statutes cited by Defendants and the City as having displaced federal common law do not comprehensively and specifically address the imminent threat of Asian carp invasion of Lake Michigan through the CAWS, and they do not provide the specific mandate or methods for adequately addressing the threat. Congress has not enacted laws that have displaced the need for judicial remedies under established principles of federal common law.

The only specific statutory provision relating to aquatic nuisance species in the CAWS cited by Defendants as a ground for displacement of federal common law is 16 U.S.C. § 4722(i)(3). Enacted in 1996, it authorized a "Dispersal barrier demonstration" project, to impede the dispersal of aquatic nuisance species in the Great Lakes, such as zebra mussels and round goby, through the CAWS into the Mississippi River basin, and ultimately led to the operation, beginning in 2002, of what the Corps now refers to as "Barrier I." Clearly, this "demonstration" project was intended by Congress to be, and still is, experimental in nature. It is not a comprehensive program for preventing Asian carp introduction and establishment in the Great Lakes, and the facts of this case show that it is far from effective.

Moreover, it is clear Congress did not intend this law to preclude the States from taking any legal actions necessary to prevent Asian carp from invading their waters. 16 U.S.C. § 4725, provides:

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[63] *AEP*, 582 F.3d at 374, *citing Milwaukee II*, 451 U.S. at 324 n. 18.

> All actions taken by Federal agencies in implementing the provisions of section 4722 of this title shall be consistent with all applicable Federal, State, and local environmental laws. Nothing in this chapter shall affect the authority of any State or political subdivision thereof to adopt or enforce control measures for aquatic nuisance species, or diminish or affect the jurisdiction of any State over species of fish and wildlife. Compliance with the control and eradication measures of any State or political subdivision thereof regarding aquatic nuisance species shall not relieve any person of the obligation to comply with the provisions of this subchapter.

Clearly, Congress did not intend this law to be inconsistent with or to prevent the States from "[enforcing] control measures for aquatic nuisance species" through the exercise of their federal common law nuisance rights. In sum, there is simply no support for the notion that 16 USC § 4722 or any other provision of the Aquatic Nuisance Prevention And Control law displaces the federal common law of nuisance to effectively address the imminent threat of Asian carp introduction into the Great Lakes.

Nor do the others laws cited by Defendants and the City, either individually or together, demonstrate a comprehensive attempt by Congress to address the imminent threat of Asian carp into the Great Lakes. The City cites in its brief at p 14 three other laws. The City is quoted as follows, with our brief response.

- "District of Columbia Appropriations Act, 2005 (2005 Act), Pub. L. No. 108-335, § 345, 118 Stat. 1352." That law merely authorizes the Chicago Sanitary and Ship Canal Dispersal Barrier at a total cost of $9,100,000.

- "Water Resources Development Act of 2007 (2007 Act), Pub. L. No. 110-114, § 3061(b)(1)(A) and (d),121 Stat. 1121." That law merely authorized the construction of "Barrier II" and it along with Barrier I, "constructed as a demonstration project . . . shall be considered to constitute a single project." This remains as a single experimental demonstration project.

- "Energy and Water Development and Related Agencies Appropriations Act, 2010, Pub. L. No. 111-85, § 126, 123 Stat. 2853 (2009)." That law provides, "*During the 1-year period beginning on the date of enactment of this Act*, the Secretary of the Army shall implement measures recommended in the efficacy study, or provided in interim reports, . . . with such modifications or emergency measures as the Secretary of the Army determines to be appropriate, to prevent aquatic nuisance species from

> bypassing the Chicago Sanitary and Ship Canal Dispersal Barrier Project referred to in that section and to prevent aquatic nuisance species from dispersing into the Great Lakes." (Emphasis added). Enacted in 2009, the latter law will soon expire and leaves indefinite the effectiveness of any measures to be taken under its terms.

The Corps' brief at 24-25 cites, in addition to 16 U.S.C. § 4722 discussed previously, "Act of Dec. 4, 1981, Pub. L. No. 97-88, § 107, 95 Stat. 1135 (CSSC to be operated "in the interest of navigation"); Act of July 30, 1983, Tit. I, Ch. IV, 97 Stat. 301 (Chicago Lock); River and Harbors Act of 1946, Pub. L. No. 79-525, 60 Stat. 634 (July 24, 1946) (same, for O'Brien lock)." However, they are cited only for the proposition that "[t]he Corps operates the facilities in the CAWS pursuant to the statutes authorizing the works and regulating their uses. The Corps operates and maintains the CSSC as necessary to sustain navigation from Chicago Harbor on Lake Michigan to Lockport on the Des Plaines River." (Corps, p 24.) Any notion, as suggested by Corps (p 24) and District (p 25), that these laws were intended by Congress to authorize the Corps or anyone else to operate the locks in a manner so as to create a public nuisance, including the catastrophic introduction and establishment of Asian carp in the Great Lakes, would be preposterous.

The Defendants rely on *New England Legal Foundation v. Costle* for the proposition that "Courts traditionally have been reluctant to enjoin as a public nuisance activities which have been considered and specifically authorized by the government."[64] (Corps p 24.) However, contrary to the Defendants' assertion, this vague statement of legal principle is neither a fixed legal bar nor applicable to the facts of this case.

The facts of *Costle* were very different from the facts of this case. *Costle* involved a claim that the Long Island Lighting Company maintained a public nuisance by burning oil that

[64] *New England Legal Foundation v. Costle*, 666 F.2d 30, 33 (2nd Cir. 1981).

contained too much sulphur in its power plants.[65] The Second Circuit affirmed the District Court's dismissal of the case on the grounds that the Long Island Light Company held a permit lawfully issued by the Environmental Protection Agency pursuant to the statutory requirements of the Clean Air Act.[66] In so ruling, the Second Circuit stated the general principle that "Courts traditionally have been reluctant to enjoin as a public nuisance activities which have been considered and specifically authorized by the government."[67]

As a preliminary matter, the Second Circuit did not hold that courts lack the authority to enjoin such conduct as a public nuisance, but merely that they are traditionally reluctant to do so. More substantively, *Costle* involved conduct (the burning of certain fuels) that had been "considered and specifically authorized" by the government via the emissions standards set forth in the Clean Air Act and the EPA's permitting regime.

In this case, Congress neither "considered" nor "specifically authorized" the operation of the locks in a manner that would give rise to a public nuisance. Congress clearly did not consider the threat of Asian carp when, years ago, it authorized the Corps to construct and operate the locks, therefore the manner in which the Corps currently operates the locks in the face of that threat was not "specifically authorized" by the government.

The extant statutes relating to the subject do not cover the Plaintiffs' claims nor provide an adequate remedy to Plaintiffs. None of the above laws, singly or collectively, establish a comprehensive statutory or regulatory regime directed specifically to prevent the introduction and establishment of Asian carp in the Great Lakes through the CAWS. At most, these laws are not even on par with the water pollution control measures in place at the time of *Milwaukee I*,

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[65] *Costle*, 666 F.2d at 31-32.
[66] *Costle*, 666 F.2d at 32.
[67] *Costle*, 666 F.2d at 33.

and they do not even approach the level of comprehensiveness, specificity, and all-inclusiveness of measures for controlling point source discharges of pollution in the FWPCA of 1972 and found by the Supreme Court in *Milwaukee II* to have displaced the common law nuisance action by Illinois.

Lastly, *North Carolina ex rel. Cooper v. Tennessee Valley Authority*[68] relied upon by the District (at 25-28) is inapposite. The court ruled that a "patchwork of nuisance injunctions" would undercut the Congress' comprehensive effort to control air pollution through the federal Clean Air Act.[69] It further held that nuisance actions would not provide the courts with sufficient resources or standards to match the expertise and capabilities of the agencies charged with administering federal air pollution programs.[70] The instant case, however, does not involve the Clean Air Act or a nuisance action to abate air pollution arguably addressed by that law. As argued previously, this is not a case where Congress has established a "comprehensive effort to control" a particular pollution problem analogous to the FWPCA in *Milwaukee II*. In addition, there is no threat of a "patchwork of nuisance injunctions" to deal with this local, but potentially catastrophic, problem. The *Cooper* case simply does not apply here.

For the foregoing reasons, and the reasons stated in Plaintiffs' initial Brief, the federal common law of nuisance to prevent the introduction and establishment of Asian carp in Lake Michigan and the Great Lakes has not been displaced, Plaintiffs have stated a claim in federal public nuisance, and are likely to succeed on the merits of that claim.

D. Plaintiffs are likely to succeed on the merits of their appeals under the APA.

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[68] *North Carolina ex rel. Cooper v. Tennessee Valley Authority*, No. 09-1623, 2010 U.S. App. LEXIS 15286 (4th Cir. July 16, 2010).
[69] *Id*. at *6, 25.
[70] *Id*. at *33."

1. The decision by the Corps to not consider extended lock closure as a means for preventing migration of Asian carp into the Great Lakes was arbitrary and capricious.

In their initial brief, Plaintiffs show that the Corps' decision in its "Interim III" Report to not allow the expert panel that was convened specifically to assess the effectiveness of possible options for modifying the operation of the Chicago and O'Brien locks to prevent migration of Asian carp, to even consider the most obvious option for addressing this problem – extended closure of the locks to effect a temporary physical separation of the CAWS from Lake Michigan – was arbitrary and capricious. While this conclusion is practically self-evident, Plaintiffs supported it with ample legal authority.

The Corps responded by arguing that its decision was not arbitrary and capricious because it had a good reason for limiting the options considered by its expert panel. According to the Corps, it did not consult with its experts because it had already concluded that it was too complicated to close the locks without first conducting some multiple year study. However, by adopting this course of action, the Corps failed to obtain *any* input from its panel of experts regarding the extended lock closure, and apparently relied exclusively on its own judgment for making its decision. It would have been much more rational to allow the panel of experts to at least assess the extended lock closure option in the context of the Asian carp threat. If the information gleaned from the expert panel was insufficient to persuade the Corps that extended lock closure was the right course, then the Corps could have made its decision at that juncture. By denying itself access to the expertise of its panel, the Corps severely limited the information it possessed when reaching the conclusion not to close the locks.

This outcome is particularly irrational in light of the assertion by the Corps in its Interim III report that assures that it is "prepared to respond . . . to any new information that arises . . . which in the judgment of appropriate experts represents a significant threat that a sustainable

population of Asian carp could become established in Lake Michigan . . . USACE is prepared to make recommendations related to lock closure and to consider any other appropriate actions . . ." (Darcy Dec, Att 1, p 53.) Of course, when the Corps had the opportunity to obtain the judgment of its own selected experts regarding the advisability of closing the locks in the face of the Asian carp threat, it absolutely refused to do so.[71] (Darcy Ex 2, App. p 19.) This promise thus rings hollow given the Corps' insistence that it didn't even want to hear whether someone disagreed with its assessment that lock closure was unnecessary to thwart this invasion. It would appear that the entire expert panel process was nothing more than an effort to make it appear that the Corps was consulting with appropriate experts with regard to whether lock closure was warranted.

The Corps' reliance on case law that holds that a decision following "strenuous disagreement among the scientists and economists" regarding the interpretation of data and the analysis of difficult problems is thereby not "arbitrary and capricious,"[72] and case law that finds it is an agency's prerogative to "weigh those opinions and make a policy judgment based on the scientific data,"[73] is misplaced. While the Corps pretended to consult with experts who had disagreements over appropriate courses of action, it did so only with regard to a limited suite of options relevant to its essentially pre-ordained conclusion. When it came to the only such option that might truly address the invasion threat, the Corps purposely shut itself off from all such debate and discourse and arbitrarily decided not to close the locks. Under these circumstances, it

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[71] That decision is all the more extraordinary and irrational, given the fact that a majority of the expert panel actually advised the Corps that under the present conditions there was actually an "imminent threat that Asian carp . . . will establish in Lake Michigan in the near future."
[72] *Associated Fisheries of Maine, Inc. v. Daley,* 954 F. Supp 383, 389 (D. Me. 1997).
[73] *Southern Offshore Fishing Ass'n v. Daley*, 995 F. Supp. 1411, 1432 (M.D. Fla. 1998).

is likely that the Plaintiffs will be able to show that the Corps acted in an arbitrary and capricious manner and that its decision in the Interim III Report not to close the locks should be reversed.

2. In addition to their challenge to the "Interim III" decision, Plaintiffs have appealed from, and are likely to prevail in, a series of other final decisions by the Corps.

As the Court is aware, the Plaintiffs are challenging a number of the Corps' decisions in this case. Those decisions include, without limitation: (i) the decision to operate the CAWS in a manner that allows Asian carp to enter Lake Michigan; (ii) the decision of the Corps to rely almost exclusively on the Dispersal Barrier System as its method for precluding Asian carp from entering the Great Lakes despite knowing this system is of limited effectiveness; (iii) the reopening of the O'Brien Locks and the continued operation of the locks in December 2009 and May 2010; (iv) the denial of relief repeatedly requested by the Plaintiffs in the form of written requests and the prior litigation before the United States Supreme court; and (v) the adoption of the "no change in operation" option described in the Interim III Report which means that the Corps will continue to reopen the locks without any change in operation to reduce the Asian carp threat. (Plaintiffs' Br, pp 44-45.)

The Corps contends that the majority of the decisions the Plaintiffs are challenging are beyond judicial review. (Corps p 29, fn 8.) With the exception of the adoption of the "no change in operation" option in the Interim III Report, the Corps claims that all of its challenged decisions in this case are non-final and therefore non-reviewable decisions. The Corps' argument on this point must fail because the three cases the Corps cites do not actually support the Corps' position.

In *Franklin v. Massachusetts,*[74] the Commonwealth of Massachusetts and two of its registered voters challenged the method used for counting overseas federal employees for legislative reapportionment purposes as part of the decennial census. In bringing their challenge, the plaintiffs attempted to challenge a census report that the Secretary of commerce submitted to the President of the United States. The Supreme Court held that the Commerce Secretary's report was not a final agency action subject to review under the APA because the report itself carried no direct consequences to reapportionment.[75] Under the relevant statute, the Court concluded that the action that would create an actual effect on reapportionment would be a subsequent Presidential statement to Congress and not the Secretary's report to the President. The Court therefore concluded that the Secretary's report was only a tentative recommendation and not a final agency action.

Similarly, in *Dalton v. Specter,*[76] the Supreme Court held that a federal commission's action in recommending military bases for closure was not reviewable under the APA because the commission's action was only a recommendation and not a final agency action. In holding that the commission's recommendation was not a final agency action, the Court noted that the commission's actions would carry no direct consequences for any military bases unless and until the President submitted a certification of approval to Congress.[77] The court determined that the commission's action was "more like a tentative recommendation than a final and binding determination.[78]'

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[74] *Franklin v. Massachusetts,* 505 U.S. 788 (1992).
[75] *Franklin,* 505 U.S. at 797.
[76] *Dalton v. Specter,* 511 U.S. 462 (1994).
[77] *Dalton,* 511 U.S. at 469-70.
[78] *Dalton,* 511 U.S. at 469-70; quoting *Franklin,* 505 U.S. at 798.

Here, the Corps does not and cannot claim that its actions regarding Asian carp are mere recommendations subject to implementation by some superior authority. The Plaintiffs are not challenging recommendations in this case. The Plaintiffs are challenging tangible, physical actions that the Corps has taken and continues to take. Unlike the recommendation in *Dalton,* the Corps' actions in this case carry very real and direct consequences to the Great Lakes. Specifically, the Corps' actions have allowed and continue to allow the very environmental harm the Plaintiffs are trying to prevent because the Corps' actions are facilitating the migration of Asian carp into the Great Lakes.

The third case the Corps cites, *Bennett v. Spear,*[79] supports the conclusion that the Corps' actions in this case are final agency actions subject to judicial review under the APA. In *Bennett*, ranch operators and irrigation districts challenged a biological opinion issued by the Fish and Wildlife Service under the Endangered Species Act. The government argued that the biological opinion was not a final agency action subject to judicial review under the APA, but the Supreme Court rejected that argument.[80] In so ruling, the Court held that the biological opinion would alter the conditions under which the agency could take endangered species. Because the biological opinion would have direct consequences on the project at issue, the Court held that the biological opinion was a final agency action subject to APA review.

Bennett also set forth the two-part test for determining whether an agency action is final for purposes of judicial review. Specifically, *Bennett* establishes that an agency action is final when: (1) the agency['s decision-making process is consummated – the decision cannot be of a

[79] *Bennett v. Spear*, 520 U.S. 154 (1997).
[80] *Bennett*, 520 U.S. at 177-78.

"tentative or interlocutory nature"' and (2) the action must be one by which "rights or obligations have been determined," or from which "legal consequences will flow."[81]

Applying the *Bennett* test to this case clearly shows that the Corps' actions constitute final actions which are subject to judicial review. Here, Plaintiffs are challenging the tangible conditions under which the Corps is operating the CAWS lock and dam system because the Corps' actions have created and maintained a pathway for Asian carp to migrate into the Great Lakes. The chain of decisions to maintain this pathway has not been tentative or interlocutory, and legal consequences have clearly flowed therefrom. Under the Supreme Court's reasoning from *Bennett*, the Corps' actions in this case are therefore subject to judicial review.[82]

CONCLUSION AND RELIEF REQUESTED

Each of the factors applied by the Court in determining whether to issue preliminary injunctive relief weighs in favor of the Plaintiffs. Accordingly, Plaintiffs request that the Court enter an order providing the following relief:

1. Enter a Preliminary injunction enjoining the Defendants to immediately take all available measures within their respective control, consistent with the protection of public health and safety, to prevent the migration of bighead and silver carp through the CAWS into Lake Michigan, including, but not necessarily limited to, the following:

(a) Using the best available methods to block the passage of, capture or kill bighead and silver carp that may be present in the CAWS, especially in those areas north of the O'Brien Lock and Dam.

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[81] *Bennett*, 520 U.S. at 177-78 (citing *Chicago & Southern Air Lines, Inc. v. Warterman S.S. Corp.,* 333 U.S. 103, 113 (1948); *Port of Boston Marine Terminal Ass'n v. Rederiaktiebolaget Transatlantic*, 400 U.S. 53, 71 (1970).

[82] Because Plaintiffs have shown a likelihood of success on the merits of the common law nuisance claim as well as several claims under the APA, it is not necessary at this point to address the Defendants' responses to all of the APA claims.

(b) Installing block nets or other suitable interim physical barriers to fish passage at strategic locations in the Calumet River between Lake Calumet and Calumet Harbor.

(c) Temporarily closing and ceasing operation of the locks at the O'Brien Lock and Dam and the Chicago River Controlling Works except as needed to protect public health and safety.

(d) Installing and continuously maintaining permanent grates or screens, along with any debris removal equipment necessary to prevent blockage or clogging of such grates or screens, on or over the openings to all the sluice gates at the O'Brien Lock and Dam, the Chicago River Controlling Works, and the Wilmette Pumping Station in a manner that conforms to the specifications detailed in Appendix A to the Corps' Interim III Report (Darcy Dec, Att 2) or otherwise will be as effective at preventing Asian carp from passing through these structures as the grates or screens specified in that Report.

(e) Installing and maintaining block nets or other suitable interim physical barriers to fish passage as needed in the Little Calumet River to prevent the migration of bighead and silver carp into Lake Michigan, in a manner that protects public health and safety.

(f) As a supplement to physical barriers, applying rotenone at strategic locations in the CAWS, especially those areas north of the O'Brien Lock and Dam where bighead and silver carp are most likely to be present, using methods and techniques best suited to eradicate them and minimize the risk of their movement into Lake Michigan.

(g) Continue comprehensive monitoring for bighead and silver carp in the CAWS, including resumed use of environmental DNA testing.

2. Enter a preliminary injunction requiring the Corps to expedite the preparation of a feasibility study, pursuant to its authority under Section 3601 of the Water Resources Development Act of 2007, developing and evaluating options for the permanent physical separation of the CAWS from Lake Michigan at strategic locations so as to prevent the transfer of Asian carp or other invasive species between the Mississippi River Basin and the Great Lakes Basin. Specifically, the Corps should be required to:

(a) Complete, and make available for public comment, within six months, an initial report detailing the progress made toward completion of the evaluation.

(b) Complete, and make available for public comment, within twelve months, a second, interim report detailing the progress made toward completion of the evaluation.

(c) Complete, and make available for public comment, within eighteen months a final report detailing the results of the evaluation and recommendations for specific measures to permanently physically separate the CAWS from Lake Michigan at strategic locations to prevent the migration of bighead carp, silver carp or other harmful invasive species between the CAWS and the Great Lakes.

3. Grant the Plaintiff States such other relief as the Court determines just and proper.

Respectfully submitted,

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Dated: August 13, 2010
ENRA/cases/2009/Asian Carp/USDC/ILND/Plaintiffs' Reply

Attachment 8

Attachment 8

Metropolitan Water Reclamation District of Greater Chicago

Fish Species and Number Collected at Lockport in the Chicago Sanitary and Ship Canal During 2008-2010

2010

Gizzard shad	116
Green sunfish	6
Largemouth bass	1

2009

Bluegill	4
Channel catfish	2
Gizzard shad	82
Green sunfish	6
Largemouth bass	4
Pumpkinseed	29
Pumpkinseed x bluegill	3
Yellow bullhead	1

2008

Bluntnose minnow	14
Carp	3
Channel catfish	2
Emerald shiner	25
Freshwater drum	1
Gizzard shad	118
Green sf. x bluegill	1
Largemouth bass	2
Pumpkinseed	4
Yellow bullhead	1

Attachment 9

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

STATE OF MICHIGAN, STATE OF WISCONSIN, STATE OF MINNESOTA, STATE OF OHIO, and COMMONWEALTH OF PENNSYLVANIA,

Plaintiffs,

vs.

UNITED STATES ARMY CORPS OF ENGINEERS and METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO,

Defendants.

No. 1:10-cv-04457

Hon. Robert M. Dow, Jr.

AFFIDAVIT OF EDWARD J. STAUDACHER

1. My name is Edward J. Staudacher. I make this affidavit based upon my personal knowledge as well as information supplied to me by members of my staff under my supervision. If called upon as a witness, I can testify competently to the contents of this affidavit.

2. I am currently employed by the Metropolitan Water Reclamation District of Greater Chicago ("District") as a Supervising Civil Engineer in the District's Waterways Section. I have held this position since February, 2008. In my current position, I oversee the navigational, flood control and diversions for water quality for the Chicago Area Waterway System ("CAWS") that are within the District's statutory authority.

3. I have been employed by the District since August, 1998. I have been actively involved in various areas of the District's operations including, but not limited to, the treatment processes, such as the collection systems, solids handling and treatment plant operations.

4. I received my Bachelor of Science Degree in Engineering from the University of Illinois in 1995 and a Juris Doctorate from Chicago-Kent College of Law in 2004. I am a licensed professional engineer in the State of Illinois.

5. Critical to the District's mission and statutory responsibility of protecting the water environment, is insuring that the water quality in the CAWS is adequate enough to protect fish and other aquatic organisms, prevent odors and maintain the water levels to allow for proper navigation.

6. The District accomplishes this, in part, by diverting water from Lake Michigan ("Lake") into the CAWS. It is necessary for the District to divert Lake water for water quality purposes to raise the level of Dissolved Oxygen ("DO") in the portions of the waterway that are isolated from other flows. These areas include the 4.5 miles from the Wilmette Pumping Station ("WPS") to the North Side Water Reclamation Plant ("NSWRP"), the Chicago River from the Chicago River Controlling Works ("CRCW") to the junction with the North Branch Chicago River and the Little Calumet River from the O'Brien Lock and Dam to the Calumet WRP. This Lake diversion is essential to provide sufficient DO for fish to live and to prevent odor and other nuisance conditions such as mosquito breeding that would occur in the water in the CAWS if it did not contain sufficient oxygen and flow.

7. The District is authorized to discharge to the CAWS and regulated, in part, as to water quality in the CAWS by the Illinois Environmental Protection Agency (IEPA) through the issuance of National Pollutant Discharge Elimination System (NPDES) permits.

8. NPDES permits are issued by the IEPA under authority delegated by the United States Environmental Protection Agency (USEPA) under the Clean Water Act (CWA) and contain certain requirements as to oxygen levels in the CAWS.

9. Discharges to the CAWS by the District must comply with NPDES permits.

10. At the District's NSWRP and the North Shore Channel (NSC), the District's NPDES permit requires it to maintain DO levels in the North Branch of the Chicago River downstream of the NSWRP at a minimum level of 4 mg/L.

11. The NPDES permit for the District's Calumet Water Reclamation Plant (CWRP) requires the District to maintain levels in the Cal-Sag Channel at a minimum level of 3.0 mg/L, which is accomplished, in part, through the operation of 5 Side-Stream Elevated Pool Aeration (SEPA) Stations AND DIVERTING Lake water at O'Brien.

12. If DO levels are not maintained in the CAWS, strong odor will occur.

13. The District normally begins diverting water from the Lake to the CAWS via sluice gates at the WPS in May and the O'Brien Lock and Dam and Chicago River Controlling Works ("CRCW") in June, although additional diversion is occasionally required at other times throughout the year. All diversions typically end in October.

14. Sluice gates are large metal gates that are opened and closed as needed at three lakefront structures, namely, the WPS, CRCW and O'Brien Lock and Dam. Sluice gates can be open to divert Lake water to the CAWS for water quality and/or navigational purposes and can also be open to reverse to the Lake to prevent flooding.

15. In addition to meeting water quality standards applicable to the CAWS, the District is responsible for maintaining the appropriate water level in the CAWS. The water level in

the CAWS is typically maintained below the water level in the Lake in order to prevent inadvertent reversals from the CAWS to the Lake. Additionally, water levels must be maintained in a manner to allow for navigation at levels prescribed by the U.S. Coast Guard.

16. The District is required to maintain the CAWS navigable waterways pursuant to the United States Code of Federal Regulation, Title 33, Chapter II, Part 207, Sections 207.420 and 207.425.

17. If the water level in the CAWS is too low, navigation can run aground/bottom out. If the water level in the CAWS is too high, commercial navigation cannot make it past bridge underpasses.

18. The District also maintains the water level in the CAWS in such a manner as to prevent flooding during rain events.

19. In advance of rain events, the District will draw down the level of the CAWS by closing the sluice gates at the Lake and increasing the flow of generators and opening the pit gates at Lockport to draw water away from the CAWS, forcing it further downstream. Additionally, the Lockport Controlling Works gates can be opened.

20. The District's decision to reverse water flow from the CAWS to the Lake is based on water elevations, weather conditions and operating experience relative to water elevation levels and gauges throughout the CAWS.

21. The District only reverses water from the CAWS to the Lake as needed to prevent flooding and protect public health and safety.

22. The District reverses to the Lake from the CAWS by opening the sluice gates and allowing water to flow unobstructed from the CAWS to the Lake.

23. In very extreme rain events, the District may also need to request the U.S. Army Corps of Engineers (Corps) to open the locks at CRCW and the O'Brien Lock and Dam, to further relieve the CAWS, to prevent flooding and protect public health and safety.

24. In the past decade, the District has had to reverse to the Lake, by opening the sluice gates 11 times, in order to prevent flooding and protect public health and safety. Attached hereto as Exhibit A is a chart showing the date, location and volume of reversals in the past decade.

25. In the past decade, the District has had to reverse to the Lake, by requesting the Corps to open the locks 4 times, in order to prevent flooding and protect public health and safety.

26. The most recent rain event necessitating the reversal from the CAWS to the Lake, through the opening of the locks and sluice gates was on July 24, 2010.

27. From July 23-24, 2010, approximately 4.69 inches of rain fell, on average, across the entire District service area over approximately 13 hours, with some areas receiving 7 inches of rain.

28. This large rain event necessitated the District discharging a total of approximately 6.6 billion gallons of water into the Lake. Approximately 750 million gallons were released into the Lake at the WPS, 1.5 billion gallons through the sluice gates at CRCW, 4.3 billion gallons of water through the locks at CRCW and an additional 70 million gallons were pumped into the CAWS at the 95th Street and 122nd Street Pumping Stations.

29. Despite all of these actions, there was severe wide-spread flooding in communities such as Westchester and Cicero. Additionally, parts of the Chicago Downtown Riverwalk were under water.

30. To the best of my knowledge, the District does not have the authority to install block nets in the Little Calumet River or in the Calumet River between Lake Calumet and Calumet Harbor. If block nets or other interim physical barriers are required to be installed in these locations, it is unknown what impact they may have, though they would likely negatively impact navigation and may increase flooding risks to the surrounding communities.

31. In an effort to address the potential of Asian carp in the CAWS, the District has fabricated bar screens for placement in front of its sluice gates. The purpose of these bar screens is to prevent adult fish from swimming into the Lake.

32. CRCW has 8 sluice gates, with 4 located at CRCW South and 4 located at CRCW North. On May 14, 2010, the District installed screens on sluice Gates 1 and 4 at CRCW South. Currently, Gates 1 and 4 are the only gates at CRCW the District intends to use to divert Lake water.

33. The remaining 2 gates at CRCW South and the 4 gates at CRCW North are not needed for Lake water diversions and are only used to relieve flood water by reversing to the Lake.

34. Screens were intentionally not installed on the remaining gates at CRCW to allow flood waters to pass unobstructed without the risk of the screens blinding or clogging when the District has to reverse to the Lake to prevent flooding.

35 The District does not own or operate the sluice gates at the O'Brien Lock and Dam. The Corps owns and operates the sluice gates at the District's direction.

36. On July 13, 2010, the Assistant Secretary of the Army (Civil Works) approved Efficacy Study III and IIIA, which include the installation of screens at the O'Brien Lock and Dam.

37. Gates 1 and 4 at the O'Brien Lock and Dam are the only ones the District will direct the Corps to use for Lake water diversion.

38. Once installed, similar to CRCW, the sluice gates at the O'Brien Lock and Dam will remain closed except as needed to reverse to the Lake or divert Lake water and in the latter situation, only Gates 1 and 4, with screens soon to be installed, will be used.

39. As is the case with CRCW, screens will intentionally not be installed on the remaining sluice gates at the O'Brien Lock and Dam to allow flood waters to pass unobstructed without the risk of screens blinding or clogging when the District has to reverse to the Lake to prevent flooding.

40. Due to the size and weight of the bar screens and the difficulty in removing the screens during storm events, they will not be removed from in front of the sluice gates if those sluice gates are utilized during Lake reversals in order that flood waters can exit the CAWS to the Lake.

41. As to the WPS, due to unique operational and factual considerations, the District has not, nor does it intend to install a screen on the one sluice gate at WPS. WPS does not have a lock that can be opened when it becomes necessary to reverse to the Lake to prevent flooding and protect public health and safety. Consequently, it is critical to have unobstructed flow to the Lake at this location, which is accomplished by not having a screen on the one sluice gate.

42. The Standard Operating Procedure (SOP) for Lake diversions at WPS is to use the sluice gate when the Lake level is more than 0.5 feet above the surface elevation of the NSC. If the Lake level is too close to the NSC surface elevation, then the District can use one of the available pumps. The reason for this SOP is to prevent inadvertent reversals to the Lake.

43. The NSC is a very sensitive area and the dissolved oxygen levels drop quickly in warm weather without diversion water and the diversion must be stopped when the District receives a rain warning due to the limited storage capacity and the distance from the outlet, the Lockport Powerhouse. Additionally, from a geographical standpoint, the WPS and the NSC are the furthest distance away from the lone Asian carp that was found in Lake Calumet.

44. In the event of a threat of Asian carp establishing a population in the NSC, the District has the ability to use a 250-cfs pump or 5 10-cfs submersible pumps to divert water from the Lake to the NSC. The District does not plan to install a screen on the single sluice gate at the WPS. Due to the fact that there is no lock, the one sluice gate needs to have unobstructed flow to the Lake.

45. As to the WPS, the District already has a plan in place to rehabilitate and add additional safety measures, under Engineering Contract 06-23-3P. The contract is currently at the 98% review step and should be advertised this fall, with award in early 2011. The

contract schedule calls for 760 days of construction for substantial completion and 915 days for final completion.

46. Once operational, the project will add a 150-cfs pump to divert water from the Lake to the NSC in addition to the existing 250-cfs pump. Additionally, there will be two tunnels under the pump station that will be equipped with gates and screens and can be used to divert Lake water without using a pump. The current single sluice gate will also be divided into 3 gates. The plan then would be for the District to divert Lake water, as needed, through pumping or the tunnels with screens, while reversals would be sent through the three new sluice gates unobstructed.

47 Extensive electrofishing and netting operations are being conducted by the Illinois Department of Natural Resources (IDNR) and the United States Fish and Wildlife Service throughout the CAWS in an effort to locate Asian carp.

48. I receive regular updates from IDNR staff as to its Asian carp sampling done throughout various parts of the CAWS, including updates for the weeks of July 12 and July 26, 2010.

49. I was informed by IDNR staff that for the week of July 12, 2010, IDNR and commercial fishermen conducted electrofishing and trammel netting at 5 fixed sites throughout the CAWS, namely: 1) Lake Calumet, 2) Little Calumet River, 3) South Branch Chicago River and CSSC, 4) North Branch Chicago River, and 5) North Shore Channel. This sampling effort resulted in a total fish catch of approximately 2,690 fish of over 31 species. No Asian carp were collected or seen at any of these locations.

50. I was informed by IDNR staff that from July 26 through July 29, 2010, IDNR and commercial fishermen conducted electrofishing and trammel netting at the above-referenced 5 fixed sites. This sampling effort resulted in a total catch of approximately 240 fish of 11 species. No Asian carp were collected or seen at any of these sites.

51. As of July 30, 2010, to the best of my knowledge and belief, only one Asian carp was found in Lake Calumet, Lake side of the electric barrier installed and maintained by the Corps. This Asian carp was caught by as part of IDNR's extensive fishing efforts to assess the presence of Asian carp.

52. The District has met and cooperated with other participating agencies assembled to develop both a short-term and long-term plan of action. The Draft Asian Carp Control Strategy Framework that resulted from these meetings is posted at http://www.asiancarp.org/.

53. The District has allowed the IDNR to utilize the District's land as a staging area for Asian carp related activities along the CAWS, and has granted a right-of-entry to the Army Corp of Engineers for its use in constructing a 13-mile barrier between the Chicago Sanitary and Ship Canal during heavy rain events.

FURTHER AFFIANT SAYETH NOT

Edward J. Staudacher

Subscribed and sworn to before me this
30th day of July, 2010

Notary Public

OFFICIAL SEAL
ROSALIE BOTTARI
Notary Public - State of Illinois
My Commission Expires Apr 10, 2014