

**STATE OF MICHIGAN, et al., Plaintiffs-Appellants, and
GRAND TRAVERSE BAND OF OTTAWA AND CHIPPEWA
INDIANS, Intervenor-Appellant, v. UNITED STATES ARMY
CORPS OF ENGINEERS, et al., Defendants-Appellees, and
CITY OF CHICAGO, et al., Intervenors-Appellees.**

No. 10-3891

**UNITED STATES COURT OF APPEALS FOR THE SEVENTH
CIRCUIT**

**667 F.3d 765; 2011 U.S. App. LEXIS 17714; 73 ERC (BNA) 1353;
41 ELR 20289**

**May 5, 2011, Argued
August 24, 2011, Decided***

* This opinion is released in typescript; a printed version will follow.

[**1]

Appeal from the United States District Court for the Northern District of Illinois, Eastern Division. No. 10 C 4457--Robert M. Dow, Jr., Judge. Mich. v. United States Army Corps of Eng'rs, 2010 U.S. Dist. LEXIS 127376 (N.D. Ill., 2010)

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Before MANION, WOOD, and WILLIAMS, Circuit Judges.

[*767] WOOD, *Circuit Judge*. Ambitious engineering projects that began at the time that the City of Chicago was founded have established a waterway in northeastern Illinois that connects Lake Michigan to the Mississippi watershed. (Additional links between the Mississippi and the Great Lakes exist elsewhere, from [*768] northern Minnesota to New York.) The system of canals, channels, locks, and dams, with which we are concerned, known today as the [**3] Chicago Area Waterway System (or CAWS, as the parties call it in their briefs), winds from the mouth of the Chicago River and four other points on Lake Michigan to tributaries of the Mississippi River in Illinois. The navigable link has been a boon to industry and commerce, and it supports transportation and recreation. Public health crises that once were common because the Chicago River emptied the City's sewage into the lake -- the City's freshwater supply -- vanished thanks to the Chicago Sanitary and Ship Canal, which reversed the flow of the Chicago River so that it now pulls water from the lake, into the CAWS, and down toward the Mississippi. During heavy rains and seasonal high waters in the region, the CAWS is used to control flooding.

This effort to connect the Great Lakes and Mississippi watersheds has not been without controversy. At the turn of the 20th century, Missouri sued in the Supreme Court to stop Il-

Illinois from opening the Sanitary and Ship Canal. An opinion by Justice Holmes rejected Missouri's challenge; the Court concluded that the state had not presented enough evidence to establish that the flow of sewage toward the Mississippi would create a public nuisance. *Missouri v. Illinois*, 200 U.S. 496, 26 S. Ct. 268, 50 L. Ed. 572 (1906); **[**4]** see also *Missouri v. Illinois*, 180 U.S. 208, 21 S. Ct. 331, 45 L. Ed. 497 (1901). Several years later a broader fight erupted among the states bordering the Great Lakes, and the Court began to issue decrees setting the maximum rate at which Illinois may divert water away from Lake Michigan and into the CAWS. *E.g.*, *Wisconsin v. Illinois*, 449 U.S. 48, 101 S. Ct. 557, 66 L. Ed. 2d 253 (1980); *Wisconsin v. Illinois*, 388 U.S. 426, 87 S. Ct. 1774, 18 L. Ed. 2d 1290 (1967); *Wisconsin v. Illinois*, 311 U.S. 107, 61 S. Ct. 154, 85 L. Ed. 73 (1940); *Wisconsin v. Illinois*, 278 U.S. 367, 49 S. Ct. 163, 73 L. Ed. 426 (1929). Nor has opening a pathway between these bodies of fresh water come without costs. This appeal requires us to consider one of those costs: the environmental and economic harm posed by two invasive species of carp, commonly known as Asian carp, which have migrated up the Mississippi River and now are poised at the brink of this man-made path to the Great Lakes. The carp are voracious eaters that consume small organisms on which the entire food chain relies; they crowd out native species as they enter new environments; they reproduce at a high rate; they travel quickly and adapt readily; and they have a dangerous habit of jumping out of the water and harming people and property.

In an attempt to stop the fish, Michigan, Minnesota, Ohio, **[**5]** Pennsylvania, and Wisconsin, all states bordering the Great Lakes, filed this lawsuit against the U.S. Army Corps of Engineers (the Corps) and the Metropolitan Water Reclamation District of Greater Chicago (the District), which together own and operate the facilities that make up the CAWS. The plaintiff states allege that the Corps and the District are managing the CAWS in a manner that will allow invasive carp to move for the first time into the Great Lakes. The states fear that if the fish establish a sustainable population there, ecological disaster and the collapse of billion-dollar industries that depend on the existing ecosystem will follow. They say that the defendants' failure to close down parts of the CAWS to avert the crisis creates a grave risk of harm, in violation of the federal common law of public nuisance, see *American Electric Power Co., Inc. v. Connecticut*, 131 S. Ct. 2527, 180 L. Ed. 2d 435 (2011), and they advance a related claim against the **[*769]** Corps based on the Administrative Procedure Act (APA), 5 U.S.C. § 702. The states asked the district court for declaratory and injunctive relief and moved for a preliminary injunction that would require the defendants to put in place additional **[**6]** physical barriers throughout the CAWS, implement new procedures to stop invasive carp, and expedite a study of how best to separate the Mississippi and Great Lakes watersheds permanently. Other parties intervened to protect their interests -- the Grand Traverse Band of Ottawa and Chippewa Indians on the side of the plaintiffs, and the City of Chicago, Wendella Sightseeing Company, and the Coalition to Save Our Waterways as defendants. The district court denied the motion for a preliminary injunction, and the states appealed immediately. See 28 U.S.C. § 1292(a)(1).

We conclude that the court's decision to deny preliminary relief was not an abuse of discretion. Our analysis, however, differs in significant respects from that of the district court,

which was persuaded that the plaintiffs had shown only a minimal chance of succeeding on their claims. We are less sanguine about the prospects of keeping the carp at bay. In our view, the plaintiffs presented enough evidence at this preliminary stage of the case to establish a good or perhaps even a substantial likelihood of harm -- that is, a non-trivial chance that the carp will invade Lake Michigan in numbers great enough to constitute a public [**7] nuisance. If the invasion comes to pass, there is little doubt that the harm to the plaintiff states would be irreparable. That does not mean, however, that they are automatically entitled to injunctive relief. The defendants, in collaboration with a great number of agencies and experts from the state and federal governments, have mounted a full-scale effort to stop the carp from reaching the Great Lakes, and this group has promised that additional steps will be taken in the near future. This effort diminishes any role that equitable relief would otherwise play. Although this case does not involve the same kind of formal legal regime that caused the Supreme Court to find displacement of the courts' common-law powers in *American Electric Power*, on the present state of the record we have something close to it. In light of the active regulatory efforts that are ongoing, we conclude that an interim injunction would only get in the way. We stress, however, that if the agencies slip into somnolence or if the record reveals new information at the permanent injunction stage, this conclusion can be revisited.

I

To justify a preliminary injunction, the plaintiff states must show that they are [**8] likely to succeed on the merits of their claims, that they are likely to suffer irreparable harm without an injunction, that the harm they would suffer without the injunction is greater than the harm that preliminary relief would inflict on the defendants, and that the injunction is in the public interest. *Winter v. Natural Res. Def. Council, Inc.*, 555 U.S. 7, 20, 129 S. Ct. 365, 172 L. Ed. 2d 249 (2008). We will affirm the decision to deny a preliminary injunction unless the district court has abused its discretion. *Judge v. Quinn*, 612 F.3d 537, 557 (7th Cir. 2010). As usual, we review questions of fact for clear error and questions of law *de novo*. *Girl Scouts of Manitou Council, Inc. v. Girl Scouts of United States of Am., Inc.*, 549 F.3d 1079, 1086-87 (7th Cir. 2008).

II

We begin with the states' likelihood of succeeding on their common law public nuisance claim. The district court thought [*770] that the states had "at best, a very modest likelihood of success." For the reasons discussed below, we think that the district court underestimated the likely merit of the states' claim, particularly at this early stage of the case.

A

The Supreme Court recently reminded us that when it said, "There is no federal general common law," [**9] in *Erie Railroad Co. v. Tompkins*, 304 U.S. 64, 78, 58 S. Ct. 817, 82 L. Ed. 1188 (1938), it did not close the door on federal common law entirely. *American Electric Power*, 131 S. Ct. at 2535-37. Instead, following *Erie*, a "keener understanding" of federal

common law developed, under which federal courts "fill in 'statutory interstices,' and, if necessary, even 'fashion federal law'" in areas "'within national legislative power.'" *Id.* at 2535 (quoting Henry J. Friendly, *In Praise of Erie - And of the New Federal Common Law*, 39 N.Y.U. L. Rev. 383 (1964)). In *American Electric Power*, the Court reaffirmed a long line of cases that have "approved federal common law suits brought by one State to abate pollution emanating from another State." 131 S. Ct. at 2535-36. These decisions reach at least as far back as the battle between Missouri and Illinois over sewage, see *Missouri v. Illinois*, *supra*, and they have continued from there, see *Georgia v. Tennessee Copper Co.*, 206 U.S. 230, 27 S. Ct. 618, 51 L. Ed. 1038 (1907), *New York v. New Jersey*, 256 U.S. 296, 41 S. Ct. 492, 65 L. Ed. 937 (1921), *New Jersey v. City of New York*, 283 U.S. 473, 51 S. Ct. 519, 75 L. Ed. 1176 (1931), *Illinois v. City of Milwaukee*, 406 U.S. 91, 92 S. Ct. 1385, 31 L. Ed. 2d 712 (1972) (*Milwaukee I*), *City of Milwaukee v. Illinois*, 451 U.S. 304, 101 S. Ct. 1784, 68 L. Ed. 2d 114 (1981) (*Milwaukee II*), and *American Electric Power*, 131 S. Ct. 2527. [**10] But it has been recognized for a much longer period that the equitable power of the courts extends to suits to abate public nuisances. See *United Steelworkers of America v. United States*, 361 U.S. 39, 60-61, 80 S. Ct. 1, 4 L. Ed. 2d 12, 82 Ohio Law Abs. 457 (1959) (Frankfurter, J., concurring) (assembling examples from 16th century England to the turn of the 20th century in the United States).

It is our federal system that creates the need for a federal common law to govern interstate disputes over nuisances. *Tennessee Copper* explains that when the states joined the union and in so doing abandoned their right to abate foreign nuisances by force, "they did not thereby agree to submit to whatever might be done. They did not renounce the possibility of making reasonable demands on the ground of their still remaining quasi-sovereign interests; and the alternative to force is a suit in this court." 206 U.S. at 237. A state that wants to bring a lawsuit attacking a nuisance emanating from outside of its borders faces at least two legal difficulties: whom to sue, and what law to apply? If the offender is another state, then the Constitution permits an original action in the Supreme Court. U.S. Const. art. III sec. 2, cl. 2. Whatever the venue, [**11] applicable law is a problem: the offending state owes no allegiance to the law of the plaintiff state, but the plaintiff state may rightly fear protectionism if the law of the offending state is used. *Committee for Consideration of Jones Falls Sewage Sys. v. Train*, 539 F.2d 1006, 1008 (4th Cir. 1976) (*en banc*). Responding to this concern, the Court has concluded that in the context of interstate nuisances "where there is an overriding federal interest in the need for a uniform rule of decision or where the controversy touches basic interests of federalism," federal common law governs. *Milwaukee I*, 406 U.S. at 105 n.6. When evaluating claims based on the federal common law of nuisance, courts must be [**771] mindful that they do not have "creative power akin to that vested in Congress." *American Electric Power*, 131 S. Ct. at 2536.

1

The states' public nuisance action here is based on allegations that non-native species of carp (specifically, bighead and silver carp) will migrate through waterworks operated by the defendants from rivers connected to the Mississippi into Lake Michigan and on to the other

Great Lakes. "When we deal with air and water in their ambient and interstate aspects, there [**12] is a federal common law." *Milwaukee I*, 406 U.S. at 103. We know that this body of law applies in a dispute about "the pollution of a body of water such as Lake Michigan bounded, as it is, by four States," *id.* at 105 n.6. But the Court has cautioned that it has never "held that a State may sue to abate any and all manner of pollution originating outside its borders." *American Electric Power*, 131 S. Ct. at 2536. The Corps and the District contend that the common law does not extend to the allegations in this case. They stress that they are not emitting "traditional pollutants"; all they have done, they say, is to operate facilities in the CAWS through which invasive species already living in local rivers might travel on their own. We can dismiss the latter part of this argument without much discussion: the defendants bear responsibility for nuisances caused by their operation of a manmade waterway between the Great Lakes and Mississippi watersheds. That they are not themselves physically moving fish from one body of water to the other does not mean that their normal operation of the CAWS cannot cause a nuisance. See, *e.g.*, RESTATEMENT (SECOND) TORTS § 834 ("One is subject to liability [**13] for a nuisance caused by an activity, not only when he carries on the activity but also when he participates to a substantial extent in carrying it on.") & cmt. (b) (defining "activity" to include acts "that create physical conditions that are harmful to neighboring land after the activity that created them has ceased").

Similarly, we know of no rule saying that the defendants must emit a "traditional pollutant" in order for federal common law to apply. While it may be true that the introduction of an invasive species of fish into a new ecosystem does not fit the concept of nuisance as neatly as a spill of toxic chemicals into a stream, we do not think the Supreme Court has limited the concept of public nuisance as much as the defendants suggest. A public nuisance is defined as a substantial and unreasonable interference with a right common to the general public, usually affecting the public health, safety, peace, comfort, or convenience. RESTATEMENT (SECOND) TORTS § 821B; DAN B. DOBBS, *THE LAW OF TORTS* § 467, at 1334 (2000). It would be arbitrary to conclude that this type of action extends to the harm caused by industrial pollution but not to the environmental and economic destruction [**14] caused by the introduction of an invasive, nonnative organism into a new ecosystem (assuming that the states have correctly forecast the depletion of the Great Lakes fishery and the corresponding damage to the multi-billion-dollar sports fishing industry). Public nuisance traditionally has been understood to cover a tremendous range of subjects:

It includes interferences with the public health, as in the case of a hogpen, the keeping of diseased animals, or a malarial pond; with the public safety, as in the case of the storage of explosives, the shooting of fireworks in the streets, harboring a vicious dog, or the practice of medicine by one not qualified; with public morals, as in the case of houses of prostitution, illegal liquor establishments, [*772] gambling houses, indecent exhibitions, bullfights, unlicensed prize fights, or public profanity; with the public peace, as by loud and disturbing noises, or an opera performance which threatens to cause a riot; with the public comfort, as in the case of bad odors, smoke, dust and vibration; with public convenience, as

by obstructing a highway or a navigable stream, or creating a condition which makes travel unsafe or highly disagreeable, [**15] or the collection of an inconvenient crowd; and in addition, such unclassified offenses as eavesdropping on a jury, or being a common scold.

KEETON, *et al.*, PROSSER AND KEETON ON TORTS § 90, at 643-45 (5th ed. 1984) (citations omitted). The Supreme Court's application of public nuisance principles to cases involving shared water resources reflects this broad understanding. For example, the Court has held that a change in one state's water-drainage system that causes flooding on another state's farms may create a public nuisance, see *North Dakota v. Minnesota*, 263 U.S. 365, 374, 44 S. Ct. 138, 68 L. Ed. 342 (1923); just as the industrial contamination of a body of water might, *Arizona Copper Co. v. Gillespie*, 230 U.S. 46, 57, 33 S. Ct. 1004, 57 L. Ed. 1384 (1913). In this vein, *American Electric Power* emphasized "that public nuisance law, like common law generally, adapts to changing scientific and factual circumstances." 131 S. Ct. at 2536. The types of invasive carp that are the concern in this case have been designated as injurious species by the U.S. Fish and Wildlife Service, see 50 C.F.R. § 16.13(a)(2)(v); this designation means that it is a federal crime under the Lacey Act to transport them around or into the United States, 16 U.S.C. §§ 3371-78. [**16] We conclude that the federal common law of public nuisance extends to the problem that the plaintiff states have identified.

2

The next question, which is raised only by the Corps, is whether the plaintiff states may state a claim based on the federal common law of public nuisance against the United States. The Corps asserts that "the States have shown no basis for recognizing a federal common-law public nuisance claim against a federal agency." But the Corps has not developed the argument much beyond this broad statement. Its brief moves instead to a discussion of whether federal common law has been displaced by congressional legislation and whether there is any role for the courts to play when agencies have taken concerted action to address a problem. These are two important issues that we will explore below, but neither point explains why a claim based on the federal common law of public nuisance cannot move forward against the United States. The plaintiff states have done little to counter the Corps's suggestion. They reply (unresponsively, in our view) that "the federal common law of public nuisance undoubtedly exists."

The implications of finding that the United States has created [**17] a public nuisance strike us as potentially important and complex; this is not a topic that can be thrown on the table and then ignored. In this connection, it is telling that the Supreme Court went out of its way in *American Electric Power* to point out that it "ha[d] not yet decided whether private citizens . . . or political subdivisions . . . of a State may invoke the federal common law of nuisance to abate out-of-state pollution." 131 S. Ct. at 2536. It declined to answer that question because it thought it best to resolve the case on other grounds. But the Court's statement cautions us to tread carefully whenever we consider how far to push a theory of federal

common law. This concern is less pressing for claims the Court has already recognized, [*773] such as those against state or local governmental entities or private parties. See, e.g., *Missouri v. Illinois*, 200 U.S. 496, 26 S. Ct. 268, 50 L. Ed. 572 (states), *Milwaukee I*, 406 U.S. 91, 92 S. Ct. 1385, 31 L. Ed. 2d 712 (political subdivisions); *Tennessee Copper*, 206 U.S. 230, 27 S. Ct. 618, 51 L. Ed. 1038 (private citizens).

We have not discovered any case in which the Supreme Court has expressly authorized a public nuisance action against the United States in its sovereign capacity. A recent concurring opinion in the D.C. Circuit [**18] makes the same observation, noting that "the Court has not endorsed any federal common-law causes of action against the Government during the post-*Erie* period." *El-Shifa Pharm. Indus. Co. v. United States*, 607 F.3d 836, 853, 391 U.S. App. D.C. 51 (D.C. Cir. 2010) (Kavanaugh, J., concurring). To understand common-law public nuisance in a way that would exclude suits against the United States would be faithful to the ancient origins of nuisance, where the term described the criminal act of infringing on the rights of the Crown, see William L. Prosser, *Private Action for Public Nuisance*, 52 Va. L. Rev. 997, 998 (1966); at least during that era, no one would have contemplated that the King or Queen could be the source of a nuisance. Whether this sort of sovereign prerogative has any place in modern American law, as a concept distinct from the sovereign immunity of the United States, is a separate question. Perhaps there is also a modern justification for the position that the federal common law of public nuisance cannot operate against the government: this area of federal common law exists to provide a uniform rule for interstate disputes that will serve the national interest, and it may be thought illogical [**19] to say that a federal actor, which in theory embodies the national interest, is at the same time violating a judge-made concept of that same interest.

On the other hand, there are respectable arguments in favor of applying public nuisance to the acts of federal agencies, depending on the activity in which the agency is engaged. We have moved far beyond the Divine Right of Kings and the concept that the Crown can do no wrong. We may assume that an agency's effort to regulate private actors in a particular area would not give rise to a claim of public nuisance. But it is hard to see why the United States's ownership of a dam, power plant, or other facility should automatically foreclose a public nuisance claim brought by a state for harms created by the operation of that facility. If the facility were located in and owned by State A and it was damaging State B, then State B would be entitled to assert a common-law claim against State A (or one of its subdivisions or private citizens). Our case offers a good illustration of the point: the Corps and the District together operate facilities that are allegedly on the verge of creating a nuisance in waters of the plaintiff states; why should [**20] the plaintiffs be able to state a claim against the District but not the Corps?

The possible inconsistencies that would be created by such a rule may be the reason that no court has expressed concern about the appearance of the Tennessee Valley Authority -- a federally owned entity that was created by Congress and acts like a private corporation -- as a defendant in a public nuisance lawsuit. See *American Electric Power*, 131 S. Ct. 2527, 180 L. Ed. 2d 435; *North Carolina ex rel. Cooper v. TVA*, 615 F.3d 291 (4th Cir. 2010); *North*

Carolina ex rel. Cooper v. TVA, 515 F.3d 344 (4th Cir. 2008). In fact, out of all public nuisance decisions we have identified from either the Supreme Court or the Courts of Appeals that involve a federal agency as a defendant, none contains a whisper of discussion about whether the claim runs against the United States. In addition to [*774] the cases just mentioned, see *Middlesex Cnty. Sewerage Auth. v. National Sea Clammers Ass'n*, 453 U.S. 1, 4, 101 S. Ct. 2615, 69 L. Ed. 2d 435 & n.3 (1981) (claims against the Environmental Protection Agency (EPA) and the Corps); *Committee for Consideration of Jones Falls Sewage Sys.*, 539 F.2d 1006 (claims against the EPA); *Massachusetts v. U.S. Veterans Admin.*, 541 F.2d 119 (1st Cir. 1976) [**21] (claims against the Veterans Administration). Whether the plaintiffs' common-law action can proceed against the Corps is a question that may well require attention as this case proceeds. Given the parties' cursory exposition of the issue and our ultimate conclusion that preliminary relief is not warranted, we find it unnecessary to say more at this point. (We see this as a question relating to the plaintiffs' ability to state a claim; it does not implicate the court's jurisdiction, and so there is nothing to prevent our declining to reach it.) For now, we will assume that the states' federal common-law claim may proceed against all of the defendants.

B

The defendants argue that two additional obstacles also diminish the states' likelihood of succeeding on their public nuisance claim. The first concerns the sovereign immunity of the United States. The Corps contends that even if it makes sense to apply public nuisance principles against the United States, the Corps is nevertheless not subject to suit because the United States has not waived its sovereign immunity for this kind of claim. The second argument, which we address below, is that congressional regulation of the invasive carp [**22] problem has displaced any role for federal common law.

"Absent a waiver, sovereign immunity shields the Federal Government and its agencies from suit." *F.D.I.C. v. Meyer*, 510 U.S. 471, 475, 114 S. Ct. 996, 127 L. Ed. 2d 308 (1994). The Corps takes the position that there is no such waiver of immunity for lawsuits against the United States that seek declaratory and injunctive relief based on a federal common-law tort. Whether this is correct depends on the interaction between section 702 of the APA and the Federal Tort Claims Act (FTCA), 28 U.S.C. § 1346(b).

We begin with a look at the APA. Section 702 reads as follows:

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. An action in a court of the United States seeking relief other than money damages and stating a claim that an agency or an officer or employee thereof acted or failed to act in an official capacity or under color of legal authority shall not be dismissed nor relief therein be denied on the ground that it is against the United States or that the United States is an indispensable party.

5 U.S.C. § 702. "The first and second [**23] sentences of § 702 play quite different roles." *Veterans for Common Sense v. Shinseki*, 644 F.3d 845, 866 (9th Cir. 2011). The first supplies a right to seek review of agency action; the second, added by the 1976 amendments to the statute, provides a waiver of sovereign immunity. *Id.* The waiver covers actions that seek specific relief other than money damages; this aptly describes the plaintiffs' claim for declaratory and injunctive relief. See *Blagojevich v. Gates*, 519 F.3d 370, 371-72 (7th Cir. 2008) (noting that § 702 "waived sovereign immunity for most forms of prospective relief"); see also *Bowen v. Massachusetts*, 487 U.S. 879, 893, 108 S. Ct. 2722, 101 L. Ed. 2d 749 (1988) (construing § 702's waiver broadly and remarking that "complaints [**775] [for] declaratory and injunctive relief . . . [are] certainly not actions for money damages"); *Veterans for Common Sense*, 644 F.3d at 864-65. Moreover, the waiver in § 702 is not limited to claims brought pursuant to the review provisions contained in the APA itself. The waiver applies when any federal statute authorizes review of agency action, as well as in cases involving constitutional challenges and other claims arising under federal law. *Blagojevich*, 519 F.3d at 372; *Czerkies v. U.S. Dep't of Labor*, 73 F.3d 1435, 1437-38 (7th Cir. 1996) [**24] (*en banc*); see also *Veterans for Common Sense*, 644 F.3d at 867-68; *Trudeau v. Federal Trade Comm'n*, 456 F.3d 178, 186-87, 372 U.S. App. D.C. 335 (D.C. Cir. 2006); *United States v. City of Detroit*, 329 F.3d 515, 520-21 (6th Cir. 2003) (*en banc*); *Jaffee v. United States*, 592 F.2d 712, 718 (3d Cir. 1979).

Although the United States has argued from time to time that the "final agency action" requirement of § 704 limits the waiver of immunity in § 702, it has not prevailed on that ground. *E.g.*, *Veterans for Common Sense*, 644 F.3d at 866-68; *Trudeau*, 456 F.3d at 186-87. The Corps wisely does not take that position here; as the Ninth Circuit explained recently, the conditions of § 704 affect the right of action contained in the first sentence of § 702, but they do not limit the waiver of immunity in § 702's second sentence. *Veterans for Common Sense*, 644 F.3d at 866-68. The only limitation on § 702 that requires our attention is the clause that says, "Nothing herein . . . confers authority to grant relief if any other statute that grants consent to suit expressly or impliedly forbids the relief which is sought," 5 U.S.C. § 702(2), which Congress added to the statute at the same time that it introduced the waiver [**25] of sovereign immunity, see Pub. L. 94-574, 90 Stat. 2721 (Oct. 21, 1976). Pointing to this provision, the Corps frames an argument by negative implication: it says that when Congress enacted the FTCA in 1946, it did so against a backdrop of no tort liability for the United States; the FTCA waives the government's sovereign immunity in suits for money damages to the extent that a private person would be held liable under applicable state tort law, see 28 U.S.C. § 1346(b)(1); *Smith v. United States*, 507 U.S. 197, 201-02, 113 S. Ct. 1178, 122 L. Ed. 2d 548 (1993); *Parrott v. United States*, 536 F.3d 629, 635 (7th Cir. 2008); but while the FTCA authorizes actions for damages, it says nothing at all about injunctive relief; thus, the FTCA implicitly prohibits injunctive relief in tort suits against the United States; and because of § 702(2), the Corps's argument concludes, the plaintiffs cannot use the APA's waiver of immunity to assert a common-law tort claim against the United States.

That argument reads too much into congressional silence. The FTCA authorizes various tort claims for damages against the government to the extent that state law would provide relief, and it spells out a number of explicit exceptions. *E.g.*, 28 U.S.C. § 2674 [**26] (barring punitive damages and interest before judgment); *id.* § 2680 (limiting the waiver, among other circumstances, where the alleged tort concerns the government's enforcement of a statute or a discretionary function). There is nothing in the statute suggesting that Congress meant to forbid all actions that were not expressly authorized. To the contrary, section 702(2) requires evidence, in the form of either express language or fair implication, that Congress meant to forbid the relief that is sought. The Corps's effort to transform silence into implicit prohibition would seriously undermine Congress's effort in the APA to authorize specific relief against the United States. When Congress amended the APA in 1976 it gave every indication that it intended to [*776] provide specific relief for all nonstatutory claims against the government. See *Trudeau*, 456 F.3d at 186-87 (noting that all the reports from Congress "identified as the measure's clear purpose elimination of the sovereign immunity defense in *all* equitable actions" and that "the Senate Report plainly indicated that Congress expected the waiver to apply to nonstatutory actions") (internal quotation marks and alterations removed); [**27] *Jaffee*, 592 F.2d at 718-19 (outlining the reasons for the amendments to § 702, the concern that some executive departments were hiding behind their immunity, and concluding, "It was therefore precisely for equitable actions under section 1331 that Congress enacted the amendments to section 702").

The D.C. Circuit has read the Tucker Act, which it interprets as the exclusive remedy for contract claims against the government, to include an implicit prohibition against specific relief in contract actions against the United States and thus to prevent reliance on the APA's waiver of immunity in such cases. *Sharp v. Weinberger*, 798 F.2d 1521, 1523-24, 255 U.S. App. D.C. 90 (D.C. Cir. 1986) (Scalia, J.). But the same court has since decided that, whatever the unspoken effect of the Tucker Act may be, the FTCA does not contain a comparable implicit ban against specific relief in tort cases against the government, and thus that plaintiffs in such cases may take advantage of the waiver in § 702 of the APA. *U.S. Info. Agency v. Krc*, 989 F.2d 1211, 1216, 300 U.S. App. D.C. 339 (D.C. Cir. 1993). To the same effect, we recently explained that while "[t]he tort claims act doesn't authorize equitable relief . . . [T]he Administrative Procedure [**28] Act does," and we went on to say that a plaintiff asserting a tort claim against a federal agency could take advantage of the APA to obtain equitable relief. *Robinson v. Sherrod*, 631 F.3d 839, 841 (7th Cir. 2011).

If that were not reason enough to reject the Corps's immunity defense, there is more. By its terms, the FTCA does not apply to *any* federal common-law tort claim, no matter what relief is sought. As the Corps itself points out, state tort law -- not federal law -- is the source of substantive liability under the FTCA. See *Meyer*, 510 U.S. at 478-79; *Sobitan v. Glud*, 589 F.3d 379, 388-89 (7th Cir. 2009); *cf. Smith*, 507 U.S. at 198 (no FTCA claim for tort committed in Antarctica, a sovereignless entity not subject to either state law or the law of a foreign country). The states' tort claim is based entirely on federal common law, and so the claim would not be cognizable under the FTCA in the first place. *Meyer*, 510 U.S. at 478. And if the FTCA could never apply to the type of claim advanced, then there is no reason to think that it

implicitly forbids a particular type of relief for a claim outside its scope. For all these reasons, we conclude that the waiver contained in § 702 of the APA [**29] subjects the Corps to the plaintiffs' common-law claims for declaratory and injunctive relief.

C

The Corps and the District next contend that congressional regulation has displaced as a matter of law the federal common law on which the states rely. The district court rejected this argument on the ground that Congress had not done enough about the threat of invasive carp to qualify for displacement of the federal common-law claim. The defendants say this was error. As they see things, it is enough that Congress has passed legislation to stop the carp and that federal and state agencies are hard at work to address the problem. Because the parties disagree about the effect of *American Electric Power* and the way in which the [**777] displacement analysis should proceed, we begin with a few important principles.

The doctrine of displacement rests on the premise that federal common law is subject to the paramount authority of Congress. *New Jersey v. New York*, 283 U.S. 336, 348, 51 S. Ct. 478, 75 L. Ed. 1104 (1931); see also *American Electric Power*, 131 S. Ct. at 2537 ("[I]t is primarily the office of Congress, not the federal courts, to prescribe national policy in areas of special federal interest."). "[W]hen Congress addresses [**30] a question previously governed by a decision rested on federal common law . . . the need for such an unusual exercise of law-making by federal courts disappears." *American Electric Power*, 131 S. Ct. at 2537 (quoting *Milwaukee II*, 451 U.S. at 314). Displacement focuses on the relation between Congress and the federal courts -- it is not a doctrine that is concerned with the relation between the federal courts and the executive branch. This is a distinction often neglected by courts, as well as by the parties to this case. Whether federal courts can or should play a role in the face of comprehensive agency action is a critical issue, which we address below, but executive action or lack thereof does not affect the displacement analysis. See *American Electric Power*, 131 S. Ct. 2538-39 (rejecting the argument that an agency must have taken action before common law is displaced and explaining that the EPA's outright refusal to regulate emissions would not create a role for federal common law because "the delegation [of regulatory authority from Congress to the agency] is what displaces federal law"); *Milwaukee II*, 451 U.S. at 317-18, 324 n.18 (concluding that displacement had occurred because [**31] "*Congress . . . has occupied the field through the establishment of a comprehensive regulatory program supervised by an expert administrative agency,*" regardless of how thoroughly the agency has implemented that program) (emphasis added). Congress's decision to assign a particular problem to an executive agency or its description of an agency's role in addressing a problem may be evidence of displacement, but the ebb and flow of agency action neither diminishes nor increases the role of federal common law. The important displacement question is whether Congress has provided a sufficient legislative solution to the particular interstate nuisance here to warrant a conclusion that this legislation has occupied the field to the exclusion of federal common law.

We readily concede that Congress has not been mute on the subject of the carp, but that simply underscores the critical question: how much congressional action is enough? In their supplemental memoranda filed after *American Electric Power* was decided, the defendants seize upon the statement from the opinion that we quoted above -- that "the delegation is what displaces federal law." 131 S. Ct. at 2538. Their view is that all Congress [**32] must do to displace federal law is to indicate its intention to delegate a particular problem to an executive agency. They read *American Electric Power* as an enlargement of whatever displacement doctrine existed previously. But the defendants have taken the Court's statement out of context. The Court in that passage was responding to an argument that an agency must have acted pursuant to its statutory power before federal common law is displaced. See *id.* at 2538-39. The Court explained that this was not the case and that it is congressional action, not executive action, that guides the displacement analysis. In so ruling the Court did not establish a new test based solely on Congress's delegation of regulatory power; it simply pointed out that delegation is one type of congressional [**778] action that is evidence of displacement. "The test for whether congressional legislation excludes the declaration of federal common law," the Court said, "is simply whether the statute 'speak[s] directly to [the] question' at issue." *Id.* at 2537 (quoting *Mobil Oil Corp. v. Higginbotham*, 436 U.S. 618, 625, 98 S. Ct. 2010, 56 L. Ed. 2d 581 (1978), and citing *Milwaukee II*, 451 U.S. at 315, and *County of Oneida v. Oneida Indian Nation of N.Y.*, 470 U.S. 226, 236-37, 105 S. Ct. 1245, 84 L. Ed. 2d 169 (1985)). [**33] Importantly, while Congress must have spoken to the particular question at issue, it is not necessary for us to find the same manifest congressional purpose that we would require in an analysis of whether Congress has preempted state law. *Id.* at 2537.

Earlier federal nuisance cases provide additional insight into the level of congressional action that is sufficient to displace federal common law. In *Milwaukee I*, where Illinois sued Milwaukee and other cities to stop them from dumping sewage into Lake Michigan, the Court decided that the federal common law of public nuisance had not been displaced, despite the fact that Congress had by that time "enacted numerous laws touching interstate waters." 406 U.S. at 101-07. Laws that touched on the issue at hand were not enough, and thus the common law action could move forward. At the same time, however, the Court foreshadowed that federal legislation "may in time pre-empt the field of federal common law of nuisance." *Id.* at 107. Six months after *Milwaukee I*, Congress passed sweeping amendments to the Federal Water Pollution Control Act (FWPCA), and nine years after its first decision, the Court decided in *Milwaukee II* that those amendments [**34] displaced federal common law in the area. 451 U.S. at 317-18. The Court viewed the amended statute as "a comprehensive regulatory program supervised by an expert administrative agency," and it noted that under that regulatory program "[e]very point source discharge is prohibited unless covered by a permit." *Id.* at 317-18. This permitting requirement brought every potential interstate water polluter within Congress's administrative scheme; any discharge had to be done with the permission of the EPA or a qualifying state agency; and there were enforcement options available when polluters failed to meet the conditions of permits that had been issued. See *id.* at 310-11.

Most recently, *American Electric Power* held "that the Clean Air Act and the EPA actions it authorizes displace any federal common law right to seek abatement of carbon-dioxide

emissions from fossil-fuel fired power plants." 131 S. Ct. at 2537. The Court found it important that the Clean Air Act requires the EPA to identify and establish performance standards for all carbon-dioxide emitters; the statute also "provides multiple avenues for enforcement," which include state agencies (operating under power delegated by EPA), [**35] the EPA itself, criminal proceedings against violators, and private enforcement in the event that the EPA or the states fail to regulate emissions. If the EPA has not acted, states and private parties may petition the agency for a rulemaking, after which parties have a right to review in federal court. *Id.* at 2537-38. The Court concluded with the observation that "[t]he Act itself thus provides a means to seek limits on emissions of carbon dioxide from domestic power plants--the same relief the plaintiffs seek by invoking federal common law. We see no room for a parallel track." *Id.* at 2538.

For better or for worse, congressional efforts to curb the migration of invasive species, and of invasive carp in particular, [*779] have yet to reach the level of detail one sees in the air or water pollution schemes. In 1990, Congress passed the Aquatic Nuisance Prevention and Control Act in an attempt to stop the spread of zebra mussels and other nuisance species. See 16 U.S.C. §§ 4701 *et seq.* That statute established the Aquatic Nuisance Species Task Force and gave it the job of studying invasive species and implementing a program "to prevent introduction and dispersal of aquatic nuisance species" in [**36] the United States. See *id.* § 4722. In 1996, the National Invasive Species Act amended the 1990 law and directed the Corps and the task force to "investigate and identify environmentally sound methods for preventing and reducing the dispersal of aquatic nuisance species between the Great Lakes [basin] and the Mississippi River [basin] through the Chicago River Ship and Sanitary Canal," including any methods that could be incorporated in the normal operation of the CAWS. *Id.* § 4722(i)(3)(A). This mandate led to the construction of an underwater electric barrier in the Chicago Ship and Sanitary Canal. The barrier sits just upstream of the point where the CAWS empties into the Des Plaines River; it is designed to deter fish from moving in either direction through the canal. In 2003 the Corps, relying on the continuing authority given to the Secretary of the Army in 33 U.S.C. § 2309a, began construction of a second barrier next to the first. The barrier projects received an additional influx of cash from the District of Columbia Appropriations Act of 2005, Pub. L. 108-335, § 345, 118 Stat. 1322 (Oct. 18, 2004). In 2007, Congress passed the Water Resources Development Act, Pub. L. No. 110-114, § 3061(b)(1), 121 Stat. 1121 (Nov. 8, 2007), [**37] which allowed the Corps to upgrade its first barrier and officially authorized the construction of the already-in-progress second barrier. Finally, the Corps received more money to complete a third barrier as part of the American Reinvestment and Recovery Act of 2009.

Sections 3061(b) and (d) of the Water Resources Development Act of 2007, *supra*, instructed the Corps to undertake two studies: a short-term examination of how the electric barrier systems might more effectively stop invasive species (this is the Efficacy Study, which so far consists of four interim reports, see <http://www.lrc.usace.army.mil/AsianCarp/efficacy.htm>); and a long-term study of how the Mississippi and Great Lakes basins might be separated on a more permanent basis (this is the Great Lakes and Mississippi River Interbasin Study or "GLMRIS," see <http://glmr.is.anl.gov>).

In an appropriations bill for fiscal year 2009, Congress provided that "the Secretary of the Army shall implement measures recommended in the efficacy study, or provided in interim reports, authorized under section 3061 of the Water Resources Development Act of 2007 . . . with such modifications or emergency measures as the Secretary of the Army [**38] 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." Energy and Water Development and Related Agencies Appropriations Act 2010, Pub. L. No. 111-85, § 126, 123 Stat. 2845, 2853 (Oct. 28, 2009). This authority -- referred to informally as the Section 126 power -- is set to expire on September 30, 2011. Department of Defense and Full-Year Continuing Appropriations Act 2011, Pub. L. No. 112-10, §§ 1101(a)(2), 1104, 1106, 125 Stat. 38, 103 (Apr. 15, 2011). Add to these measures the appropriation of funds so that the Corps can ensure proper operation of the CAWS, *e.g.*, Pub. L. No. 98-63, 97 Stat. 301, 311 (July 30, 1983); [*780] Pub. L. No. 97-88 § 107, 95 Stat. 1135, 1137 (Dec. 4, 1981); Pub. L. No. 79-525, 60 Stat. 634, 636 (July 24, 1946), and one has the whole of Congress's efforts to stop invasive species from moving through the CAWS. Recent legislative proposals targeted at halting invasive carp have failed in both Houses. *E.g.*, Close All Routes and Prevent Asian Carp Today Act of 2010 (CARP ACT), [**39] H.R. 4472, S. 2946.

Although this legislation demonstrates that Congress is aware of the problem of invasive species generally, and carp in particular, it falls far short of the mark set by the Clean Air Act or the Federal Water Pollution Control Act. Congress has not passed any substantive statute that speaks directly to the interstate nuisance about which the states are complaining. Most of the laws that we have summarized appropriate funds to the Corps for routine maintenance of the CAWS or for the electric barrier project. Apart from requiring the construction of these barriers and giving the Secretary of the Army temporary power to implement various recommendations, Congress has ordered agencies (or, more commonly, informal task forces composed of various executive actors) only to study the invasive species problem and propose solutions. Beyond that, neither the Corps nor any other agency has been empowered actively to regulate the problem of invasive carp, and Congress has not required any agency to establish a single standard to deal with the problem or to take any other action. The narrow delegation that has taken place bears little resemblance to the regulatory power that the [**40] EPA wields under the Clean Air Act. Tellingly, Congress has not provided any enforcement mechanism or recourse for any entity or party negatively affected by the carp, and there is certainly no recourse to the courts under the minimal scheme that has been established. The district court was correct that the current state of congressional regulation is much closer to the situation examined in *Milwaukee I* -- and perhaps even less extensive than that -- than the regimes reviewed in *Milwaukee II* or *American Electric Power*.

D

With these important preliminary questions out of the way, we are at last ready to consider whether the plaintiff states have presented enough evidence in support of their nuisance claim to establish that they are likely to succeed on the merits. The district court thought that the

states failed to demonstrate more than a minimal chance of success. Before this court, the states contend that the district court misunderstood the elements of public nuisance. They point to the district judge's statement that the tort "contemplates an active -- or, at least, an imminent -- threat of injury" as evidence of that error. In their view, all they must show to win final relief in a [**41] trial on the merits is that there is a "significant threat" that the nuisance will occur. This is a distinction without a difference; the district court correctly understood the law of public nuisance. Nonetheless, for different reasons we think that the district judge may have underestimated the states' likelihood of success. We will elaborate on this point after a brief review of the governing law.

1

The district court began with the definition of public nuisance found in the *Restatement (Second) of Torts*, which has been a common reference point for courts considering cases arising under federal common law. See *Connecticut v. American Electric Power Co., Inc.*, 582 F.3d 309, 351 & n.28 (2d Cir. 2009), *rev'd on other grounds* 118 Stat. 1352 *American Electric Power*, 131 S. Ct. 2527, 180 L. Ed. 2d 435 (explaining that "[t]he Restatement [**781] definition of public nuisance has . . . been used in . . . federal cases involving the federal common law of nuisance . . . and the Restatement principles have served as the backbone of state nuisance law"). The *Restatement* provides that "[a] public nuisance is an unreasonable interference with a right common to the general public," RESTATEMENT (SECOND) OF TORTS § 821B(1), and it goes on [**42] to explain that conduct meets this standard when it interferes significantly with the public health, safety, peace, comfort, or convenience, *id.* § 821B(2)(a). We described above the reasons why the federal common law of public nuisance is available to redress the type of harm that the states have alleged. And all sides agree that if invasive carp were to achieve a sustainable population in the Great Lakes, the environmental and economic impact would qualify as an unreasonable interference with a public right. As the district court noted, the Corps and other agencies have repeatedly and publicly acknowledged the seriousness of the problem. The Corps, for example, has said that invasive carp "have the potential to damage the Great Lakes and confluent large riverine ecosystems," and that it regards "[t]he prevention of an inter-basin transfer of bighead and silver carp from the Illinois River to Lake Michigan [as] paramount in avoiding ecologic and economic disaster." As a result, the central question on the merits of the states' public nuisance claim will be whether the harm that the states have described is sufficiently close to occurring that the courts should order the defendants [**43] to take some new action that will be effective to abate the public nuisance. We stress at the outset an important point to which we will return: this question is one that will be resolved after a full trial on the merits, rather than at this preliminary stage of the case.

A court may grant equitable relief to abate a public nuisance that is occurring or to stop a threatened nuisance from arising. See *Tennessee Copper*, 206 U.S. at 238-39 (requiring the plaintiff to show that a defendant's actions "cause and threaten damage"). In *Missouri v. Illinois*, 200 U.S. at 518, the Court wrote that the threatened harm underlying the nuisance claim "must be shown to be real and immediate." We have read the Court's cases to say that

"[t]he elements of a claim based on the federal common law of nuisance are simply that the defendant is carrying on an activity that is causing an injury or significant threat of injury to some cognizable interest of the complainant," *Illinois v. City of Milwaukee*, 599 F.2d 151, 165 (7th Cir. 1979), *rev'd on other grounds, Milwaukee II*, 451 U.S. 304, 101 S. Ct. 1784, 68 L. Ed. 2d 114. Additional statements about averting threatened nuisances appear in the *Restatement*, see RESTATEMENT (SECOND) TORTS § 821B cmt. (i) [**44] ("[F]or damages to be awarded [in public nuisance cases] significant harm must have been actually incurred, while for an injunction harm need only be threatened and need not actually have been sustained at all."); *id.* § 821F cmt. (b) ("[E]ither a public or a private nuisance may be enjoined because harm is threatened that would be significant if it occurred."), and in other treatises, see, e.g., 5 J. POMEROY, A TREATISE ON EQUITY JURISPRUDENCE AND EQUITABLE REMEDIES, § 1937 (§ 523), at 4398 (2d ed. 1919) (noting that while "a mere possibility of a future nuisance will not support an injunction," relief will be warranted when "the *risk* of its happening is greater than a reasonable man would incur").

The plaintiffs believe that the district court's "imminent threat" requirement is inconsistent with these principles, but we do not share that view. The district [**782] court reproduced *verbatim* the elements of the claim as we described them in *Illinois v. City of Milwaukee, supra*. Its discussion of "immediacy" did nothing more than flesh out the Court's requirement of a "real and immediate" threat in public nuisance cases. There is no meaningful legal difference for purposes of the ultimate resolution [**45] of a public nuisance claim between a threatened nuisance that is "imminent" and one that is "immediate," "significant," "real," an "unreasonable risk," or anything similar. The job of a court considering the merits of a public nuisance claim is simply to determine whether the activity complained of is a nuisance and, if so, whether it is sufficiently close to occurring that equitable relief is necessary to prevent it from happening.

2

We part company with the district court when it comes to the assessment of the states' likelihood of success on the merits. Here we think it critical to bear in mind the difference between preliminary or interim relief, on the one hand, and permanent relief, on the other. The principles that we just reviewed relate to the ultimate outcome of a public nuisance proceeding. This case has not yet reached that stage, and one consequence of its preliminary posture is that the states were not required to prove that they will ultimately win on the merits in order to secure preliminary relief.

"The propriety of preliminary relief and resolution of the merits are of course significantly different issues." *Parents Involved in Cmty. Sch. v. Seattle Sch. Dist. No. 1*, 551 U.S. 701, 721 n.10, 127 S. Ct. 2738, 168 L. Ed. 2d 508 (2007) [**46] (internal quotation marks omitted). This is the reason why findings made at the preliminary injunction stage do not bind the district court as the case progresses. *Cf. Guaranty Bank v. Chubb Corp.*, 538 F.3d 587, 591 (7th Cir. 2008). The most significant difference between the preliminary injunction phase and the merits phase is that a plaintiff in the former position needs only to show "a likelihood of

success on the merits rather than actual success." *Amoco Prod. Co. v. Village of Gambell*, 480 U.S. 531, 546 n.12, 107 S. Ct. 1396, 94 L. Ed. 2d 542 (1987); cf. *Chathas v. Local 134 Int'l Bhd. of Elec. Workers*, 233 F.3d 508, 513 (7th Cir. 2000) ("A plaintiff cannot obtain a permanent injunction merely on a showing that he is likely to win when and if the merits are adjudicated."). In some cases, it is necessary to expedite an ultimate decision, and so courts sometimes consolidate the preliminary injunction hearing with the trial on the merits. See FED. R. CIV. P. 65(a)(2). But where such consolidation has not taken place -- and it has not here -- and the question is the propriety of preliminary relief, the Supreme Court has warned against "improperly equat[ing] 'likelihood of success' with 'success'" *University of Texas v. Camenisch*, 451 U.S. 390, 394, 101 S. Ct. 1830, 68 L. Ed. 2d 175 (1981); **[**47]** see also *Meridian Mut. Ins. Co. v. Meridian Ins. Group, Inc.*, 128 F.3d 1111, 1119 (7th Cir. 1997). This is in keeping with the often-repeated rule that the threshold for establishing likelihood of success is low. *E.g., Cooper v. Salazar*, 196 F.3d 809, 813 (7th Cir. 1999); *Brunswick Corp. v. Jones*, 784 F.2d 271, 275 (7th Cir. 1986).

We are concerned that the district court here may have lost sight of this distinction. By applying directly the law of public nuisance, the judge seems to have required the plaintiff states actually to show that they were entitled to permanent injunctive relief during the preliminary injunction hearing. The court concluded its discussion of the threat posed by invasive carp, for example, by saying that the **[*783]** states "ha[d] not made a convincing case" that the fish had pushed into the CAWS in significant numbers; and it said that the plaintiffs had not "shown that the fish [are] anywhere near . . . establishing a population in Lake Michigan." Because the states had not yet shown that the threat of nuisance was great enough in the final analysis to warrant an injunction to abate it, the district court seems to have assumed that they had also failed to show enough **[**48]** to obtain preliminary relief. To demonstrate the requisite likelihood of success, however, the states needed only to present a claim plausible enough that (if the other preliminary injunction factors cut in their favor) the entry of a preliminary injunction would be an appropriate step. The preliminary injunction, after all, is often seen as a way to maintain the *status quo* until merits issues can be resolved at trial. By moving too quickly to the underlying merits, the district court required too much of the plaintiffs and, correspondingly, gave too little weight to the strength of their claim at this stage of the case.

3

We also question the inferences drawn by the district court from the facts that it so carefully found after evaluating five days of hearings, which included the testimony of expert witnesses and volumes of written materials on complex scientific and engineering issues. There is very little to criticize about the court's factual findings themselves. For instance, the district judge's decision to admit the expert testimony of Dr. David Lodge, who has been hired by the Corps and who testified for the states at the preliminary injunction hearing about his efforts to track **[**49]** invasive carp through the use of environmental DNA (eDNA) testing, reflects a proper application of Federal Rule of Evidence 702. (We agree that any lack of peer review of Dr. Lodge's work would go to the weight of his testimony, not to the court's ability

to consider it. Moreover, the situation will be different at the merits phase, given Dr. Lodge's recent publication of his research. See Christopher L. Jerde, Andrew R. Mahon, W. Lindsay Chadderton & David M. Lodge, "*Sight Unseen*" *Detection of Rare Aquatic Species Using Environmental DNA*, 4 *Conservation Letters* 150 (April/May 2011).) We also see nothing to criticize in the district court's assessment that the electric barriers built by the Corps near the intersection of the Chicago Sanitary and Ship Canal and the Des Plaines River seem to have at least some deterrent effect on the movement of invasive carp toward the Great Lakes. In addition, we consider it significant, as the district judge did, that efforts to detect carp by techniques including netting, so-called electrofishing, and rotenone poisoning, have led to few signs of the carp.

Along the same lines, the district court was right to take into account the results of eDNA [**50] testing. Despite its skepticism about the reliability of the technique and its concern that the state of eDNA science "did not permit a reasonable inference that live Asian carp are in the [CAWS] . . . in numbers that present an imminent threat," the court acknowledged that the eDNA evidence lent some support to the conclusion that there may be invasive carp above (*i.e.* lakeside of) the Corps's electric barriers. Although we are less skeptical of the science than the district court, we too believe that caution in drawing inferences from the existence of carp DNA in the water is warranted. The eDNA technique, which tests water samples for markers matching a particular species, has a number of shortcomings: it is difficult, if not impossible, to know definitively whether a positive result signals a living specimen [*784] above the barrier (DNA may be shed by a dead or distant fish); a positive test does not reveal the number of live fish; and negative results do not necessarily signal the absence of carp. Efforts to corroborate eDNA results with traditional methods of capturing fish have not been successful thus far. On the other hand, the evidence is worth something. The eDNA technique detects [**51] carp when the fish are present in small numbers and in situations where the other fishing methods we described above might scare them away or simply miss them, and the large number of negative test results make sense given the sensitivity of the technique. In addition, the Corps and other agencies have voted with their feet: they have been using eDNA tests to manage the invasive carp crisis, and they have said that this testing will continue. (This is undoubtedly why the private intervenor-defendants are the primary critics of this methodology.) If the tests are good enough for expert agencies, it is hard to see why we should flatly forbid their consideration. A January 2011 report on eDNA sampling conducted in 2010 showed positive eDNA results in approximately a dozen locations throughout the CAWS, and experts have opined that these results indicate the presence of carp at multiple locations in the CAWS. On July 29, 2011, federal officials announced that they would begin daily efforts to find invasive carp around Lake Calumet, after multiple rounds of testing revealed carp DNA in that area. See Asian Carp Regional Coordinating Committee, Press Release, July 29, 2011, <http://asiancarp.org/news/asian-carp-regional-coordinating-committee-to-begin-intensive-monitoring-in-lake-calumet-in-response-to-environmental-dna-results>; [**52] Tammy Webber, *Feds to Step Up Hunt for Asian Carp Near Chicago*, *Chicago Tribune*, July 29, 2011. The district court thought that this evidence, in combination with the discovery of two invasive carp specimens (one dead and one living) in the CAWS, supported a theory that invasive carp

are present in the CAWS in "low numbers." This conclusion was reasonable. The carp may even be present in greater numbers, but for present purposes we do not need any more precision.

Our greatest hesitation with respect to the district court's findings is over its conclusion that "it is far from certain that Asian carp can survive and reproduce in the Great Lakes." Given the record that was before Judge Dow, this prediction may have been sound at the time he ruled. The situation has been evolving rapidly since the preliminary injunction hearing, however, and so we think it worth mentioning that the newest publicly available evidence suggests that when and if the time comes, the carp are unlikely to have trouble establishing themselves in the Great Lakes. Before the district court there was testimony reflecting great uncertainty about how easily the carp could live and reproduce in this new habitat. A species [**53] typically requires multiple introductions before it takes root in a new ecosystem, and there has been a substantial debate, reflected in the literature, about whether the food supply and other features of the Great Lakes could support the carp. See generally Sandra L. Cooke & Walter R. Hill, *Can Filter-Feeding Asian Carp Invade the Laurentian Great Lakes? A Bioenergetic Modelling Exercise*, 55 *Freshwater Biology* 2138 (2010); Cynthia S. Kolar & David M. Lodge, *Ecological Predictions and Risk Assessment for Alien Fishes in North America*, 298 *Science* 1233 (2002). On April 28, 2011, however, the Obama Administration presented two pieces of what it called "bad news" at a meeting in Chicago on invasive carp: first, it said that while it was once thought that the carp could not establish [**785] breeding populations in Lake Michigan because of the low levels of plankton (the carp's normal food source) in the water, new evidence suggests that the fish will happily switch from eating plankton to consuming the green algae that now covers the lake floor (thanks to another invasive species, the zebra mussel); and (2) while experts had thought the carp need coastal rivers between 30 and 60 miles long to [**54] spawn, it turns out they can make do with much shorter breeding grounds. See, e.g., *Asian Carp Possibly Hardier than Once Thought*, *Chicago Tribune*, Apr. 28, 2011. At this point, therefore, we must assume that once in the Great Lakes, the invasive carp would make it their home.

We need not explore the factual record further. As we have said, our review of the district court's findings is deferential, and we see nothing that demands correction. The critical point is that this record is not a static thing. The district court will undoubtedly have more evidence before it when it is time to rule on the request for a permanent injunction, and we are confident that the court will keep its mind open to the implications of any new information. For purposes of assessing the need for preliminary relief, the court relied on its findings that at best a limited number of invasive carp were present in the CAWS and its observation that the so-called invasion front was approximately 30 miles downstream of the CAWS (60 miles from Lake Michigan) as of the spring of 2009. On this basis, it reached the conclusion that while the potential for damage to the Great Lakes is high, the problem had not advanced [**55] far enough to present a threat to the plaintiff states. From that it drew the conclusion that the states had shown little likelihood of success on the merits.

It is that final step that gives us trouble. As the district court rightly noted, the magnitude of the potential harm here is tremendous, and the risk that this harm will come to pass may be growing with every passing day. (It certainly has grown since the ill-fated day around 1970 when the carp escaped from various aquaculture facilities and began their march up the Mississippi River. See generally Wisconsin Dep't of Nat. Res., Bighead and Silver Carp (*Hypophthalmichthys nobilis* and *H. molitrix*), http://dnr.wi.gov/invasives/fact/asian_carp.htm.) Given the magnitude of the harm, we are inclined to give the benefit of the doubt to the states on the question whether they have shown enough of a risk of nuisance to satisfy the likelihood-of-success requirement at this preliminary stage. See *Van De Sande v. Van De Sande*, 431 F.3d 567, 570 (7th Cir. 2005) ("The gravity of a risk involves not only the probability of harm, but also the magnitude of the harm if the probability materializes.") (citing *United States v. Carroll Towing Co.*, 159 F.2d 169, 173 (2d Cir. 1947)). [**56] In addition, the nature of the threat -- an ecological harm -- suggests that a broader perspective on the problem might be necessary. It is hard to see 60 miles of separation between the carp invasion front and the Great Lakes (and remember this was the estimated distance more than two years ago) as a particularly safe margin, even with functioning electric barriers to deter fish and efforts to reduce propagule pressure (the volume of invasive carp in the water downstream of the front). It is especially chilling to recall that in just 40 years the fish have migrated all the way from the lower Mississippi River to within striking distance of the lakes and have come to dominate the ecosystem in the process. Commercial harvesting of carp in the Mississippi basin increased from just over five tons to 55 tons in the three-year period from 1994 to 1997; there is evidence that by 1999 invasive carp made up 97% of the Mississippi's [**786] biomass; and as of 2007 commercial fishers were catching 12 tons of invasive carp *each day*. These numbers are sobering even apart from the hints that some of the fish may have made it into the CAWS already.

In our view, the proper inference to draw from the evidence [**57] is that invasive carp are knocking on the door to the Great Lakes. We need not wait to see fish being pulled from the mouth of the Chicago River every day before concluding that a threat of a nuisance exists. It is enough that the threat is substantial and that it may be increasing with each day that passes. Unlike many nuisances that can be eliminated after they are discovered, this one in all likelihood cannot be. The fact that it would be impossible to un-ring the bell in this case is another reason to be more open to a conclusion that the threat is real. In our view, the plaintiff states presented enough evidence to establish a good or even substantial likelihood of success on the merits of their public nuisance claim.

III

Before moving on to the other preliminary injunction factors, there are some particular questions about the APA claim against the Corps that we must address. We turn again to § 702 of the APA, which authorizes a suit by "[a] person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute." 5 U.S.C. § 702. A reviewing court is required to "compel agency action unlawfully withheld [**58] or unseasonably delayed," 5 U.S.C. § 706(1), and to "set aside agency ac-

tion . . . found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," *id.* § 706(2)(A). The states do not ask us to compel the Corps to take action, at least as far as § 706(1) is concerned. *Norton v. Southern Utah Wilderness Alliance*, 542 U.S. 55, 64, 124 S. Ct. 2373, 159 L. Ed. 2d 137 (2004), explains that "a claim under § 706(1) can proceed only where a plaintiff asserts that an agency failed to take a *discrete* agency action that it is *required to take*"; the states have named no action that they think the agency is required to take. We understand the states' argument as a request to set aside agency action that they regard as unlawful within the meaning of § 706(2)(A).

The obvious starting point is to identify the final Corps action that the states assert has affected them. See 5 U.S.C. § 704; *Lujan v. National Wildlife Fed'n*, 497 U.S. 871, 882, 110 S. Ct. 3177, 111 L. Ed. 2d 695 (1990). The states contend that five such actions fit the bill. They say that the Corps's (1) operation of the CAWS in a manner that will let invasive carp into Lake Michigan, (2) reliance on ineffective electric barriers, (3) use of locks in areas where living [**59] and dead carp have been found, (4) denial of the states' requests for additional relief, and (5) implementation of recommendations contained in the Corps's third interim report (which is part of the Efficacy Study we discussed in connection with our analysis of displacement, *supra*) are all final agency actions. The district court equivocated on the issue, but it seems to have agreed with the states in the end.

There is a good chance that most of the "actions" named by the states are not "final agency actions" for purposes of the APA. "Agency action" is defined as "the whole or a part of an agency rule, order, license, sanction, relief or the equivalent or denial thereof, or failure to act," 5 U.S.C. § 551(13). The Supreme Court has explained that these categories all "involve circumscribed, discrete agency actions," *Norton*, 542 U.S. at 62. [*787] Agency action is "final" when it marks the consummation of the agency's decisionmaking process and determines legal rights or obligations. *Bennett v. Spear*, 520 U.S. 154, 177-78, 117 S. Ct. 1154, 137 L. Ed. 2d 281 (1997); see also *Western Illinois Home Health Care, Inc. v. Herman*, 150 F.3d 659, 662 (7th Cir. 1998) (citing *Franklin v. Massachusetts*, 505 U.S. 788, 112 S. Ct. 2767, 120 L. Ed. 2d 636 (1992), for the proposition [**60] that "[t]he core question is whether the agency has completed its decisionmaking process, and whether the result of that process is one that will directly affect the parties"). Applying these standards, we cannot see why any of the "actions" that are numbered 1 through 4 on the states' list of complaints above should be considered final agency action. Most of the four "actions" are not discrete at all; and those that might be so classified do not represent the final outcome of any decisionmaking process by the Corps. The Corps's effort to implement its third interim report -- which recommended the installation of screens over two gates that control water flow between the CAWS and Lake Michigan but which otherwise called for normal operation of lake-facing locks -- is the only activity that may be suitable for an APA challenge. We need not evaluate that claim in any detail, however, because it is part of the states' larger request for relief based on the common law of public nuisance.

Two types of plaintiffs are given a right of review in § 702: those suffering a "legal wrong," and those "adversely affected or aggrieved by agency action within the meaning of a

relevant statute." In their [**61] briefs in this court, the states have not pointed to a single statute against which one might judge the Corps's behavior. (This is not surprising, given the dearth of pertinent federal legislation that we discussed in connection with displacement.) The Corps submits that this means that the states have no APA claim; the states respond their APA claim is "free-standing." Neither answer is satisfactory. We know that the states have not alleged that the Corps's actions failed to comply with some statutory provision, and so they must instead be asserting that they have suffered a "legal wrong" because of those actions. The only legal wrong that comes to mind, however, is the infliction of a common-law public nuisance. See *Lujan*, 497 U.S. at 883 (distinguishing between legal wrongs and the failure of an agency to comply with a statutory provision); *Tennessee Electric Power Co. v. Tennessee Valley Authority*, 306 U.S. 118, 137, 59 S. Ct. 366, 83 L. Ed. 543 (1939) (explaining that "legal wrong" includes tortious invasions and interferences with property and contractual rights). See generally Antonin Scalia, *The Doctrine of Standing as an Essential Element of the Separation of Powers*, 17 SUFFOLK U. L. REV. 881, 887-90 (1983) [**62] (discussing the use of the term "legal wrong" in the APA and explaining that it "could only mean a wrong already cognizable in the courts"). The result is that the states' APA claim against the Corps sinks or swims (so to speak) with its public nuisance theory. Because they are indistinguishable, we address only the latter from this point on.

IV

To satisfy the second threshold requirement for preliminary injunctive relief, the states must establish that irreparable harm is likely without an injunction. *Judge v. Quinn*, 612 F.3d 537, 557 (7th Cir. 2010). In the district court's view, this issue was the same as the question whether the states had shown a likelihood of success on the merits of their public nuisance claim. The states contend that it was error to conflate these inquiries. [*788] They are right. In this case, for example, the likelihood of success on the merits focuses on the threat of a nuisance, while the irreparable harm is concerned with the ability to correct that nuisance if it is created. Not every nuisance will give rise to irreparable harm. These two steps of the preliminary injunction analysis thus play different roles. The likelihood of success on the merits is an early [**63] measurement of the quality of the underlying lawsuit, while the likelihood of irreparable harm takes into account how urgent the need for equitable relief really is. Typically, these lines of inquiry will have some overlap, but they should not be treated as the same. With that in mind, we realize that the same evidence will inform both steps of the preliminary injunction analysis in this case. As long as the distinctions we have just mentioned remain clear, there is no harm in analyzing all of the evidence once rather than twice. As a result, the states' criticism of the district court is largely academic and provides no reason to reverse that court's decision.

Putting theory to one side, we have very little trouble concluding that the environmental and economic harm that the states have shown might come to pass would be genuinely irreparable if it did occur. The district court implied that this was the case when it discussed the magnitude of the potential harm. Last year in Supreme Court filings related to this litigation, the United States explained in a memorandum that it agreed with Michigan "that allowing a

reproducing population of Asian carp to establish itself in Lake Michigan [**64] likely would be an irreparable injury." Memorandum in Opposition of the United States, at 43, Original Nos. 1, 2, and 3, http://www.supremecourt.gov/SpecMastRpt/US_Memorandum_in_Opposition.pdf; see also *id.* at 47 (calling the harm "grave and irreparable"). All of the other parties seem to agree with this view. (To the extent that the defendants argue that there is no irreparable harm because the carp cannot establish a breeding population in Lake Michigan, they are avoiding the key question: what if the fish did establish a successful breeding group?) This near-unanimity on the question of irreparable injury makes sense. "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." *Amoco Prod.*, 480 U.S. at 545; *Sierra Club v. Franklin County Power of Illinois, LLC*, 546 F.3d 918, 936 (7th Cir. 2008). Harms like those the states allege here are irreparable because they are difficult -- if not impossible -- to reverse. See *Hollingsworth v. Perry*, 130 S. Ct. 705, 712, 175 L. Ed. 2d 657 (2010) (per curiam).

For preliminary relief to be granted, the irreparable harm must also be likely. That is, there must be more [**65] than a mere possibility that the harm will come to pass, *Winter*, 555 U.S. at 21-23, but the alleged harm need not be occurring or be certain to occur before a court may grant relief, *United States v. W.T. Grant Co.*, 345 U.S. 629, 633, 73 S. Ct. 894, 97 L. Ed. 1303 (1953); *United States v. Oregon State Med. Soc'y*, 343 U.S. 326, 333, 72 S. Ct. 690, 96 L. Ed. 978 (1952); *Bath Indus., Inc. v. Blot*, 427 F.2d 97, 111 (7th Cir. 1970). Commentators describe the required level of certainty this way: "[A] preliminary injunction will not be issued simply to prevent the possibility of some remote future injury. A presently existing actual threat must be shown. However, the injury need not have been inflicted when application is made or be certain to occur." 11A CHARLES ALAN WRIGHT, ET AL., FEDERAL PRACTICE AND PROCEDURE § 2948.1, at 154-55 (2d ed. 1995). [**789] Because the district court analyzed likelihood of success on the merits at the same time as it assessed the danger of irreparable harm, all of the reservations we had about the inferences drawn by the district court in the former context apply with equal force here.

As we have already pointed out, no one knows whether this irreparable harm will come to pass. The intense factual dispute we are witnessing [**66] here about the rate at which invasive carp are progressing makes evaluating its likelihood even more tricky. In our view, the district court required a level of proof too close to certainty when it assessed the danger of invasive carp escaping into Lake Michigan. Given the dire nature of the harm posed by the carp and their close proximity to the CAWS, we again will give the plaintiff states the benefit of the doubt. Just as they produced enough evidence to establish a likelihood of success on the merits warranting injunctive relief, so too have they shown, to the degree necessary for preliminary relief, that it is likely that irreparable harm will come to pass. This sets the stage for the dispositive issue: how must the harms the states have identified be balanced against those that the defendants will suffer should an injunction be granted?

V

The balancing process to which we now turn is a classic part of any preliminary injunction inquiry. See *Winter*, 555 U.S. at 24 ("A preliminary injunction is an extraordinary remedy never awarded as of right. In each case, courts must balance the competing claims of injury and must consider the effect on each party of the granting or withholding [**67] of the requested relief.") (internal quotation marks and citations omitted). How much of the danger forecast by the states would be avoided by the particular injunction they have asked for? And what harm would the injunction impose on the defendants? Typically, after we balance these party-specific equities, we evaluate whether the injunction would advance or impede the public interest. See, e.g., *Ferrell v. U.S. Dep't of Hous. and Urban Dev.*, 186 F.3d 805, 811 (7th Cir. 1999). That additional analysis is not necessary in this case, however, because the parties themselves, with the exception of two intervenors, are governmental entities that represent the interests of the public.

When it appears that preliminary relief may be burdensome, the Supreme Court has instructed courts to be careful as they balance the competing interests. *Winter*, 555 U.S. at 27; see also *Kartman v. State Farm Mut. Auto. Ins. Co.*, 634 F.3d 883, 892 (7th Cir. 2011). In light of the multifarious ideas the states have for an injunction in this case, there can be no doubt that caution must be our word of the day. Even if a plaintiff's suit appears to have merit, an injunction should not necessarily issue if the [**68] harm to the defendant would substantially outweigh the benefit to the plaintiff. *MacDonald v. Chicago Park Dist.*, 132 F.3d 355, 357 (7th Cir. 1997).

In the end we conclude that a preliminary injunction would cause significantly more harm than it would prevent. We reach this result for two reasons, which we summarize here before explaining the balance of harms in more detail. First, there are a number of problems with various line items in the plaintiffs' proposed package of relief. Taken together, these problems leave us doubting whether the proposed injunction would reduce by a significant amount the risk that invasive carp will gain a foothold in the Great Lakes between now and the time that a full trial on the merits is completed. It is clear, on the other side, that the requested measures [*790] would impose substantial costs on the defendants and the public interests they represent, as well as added expenses for commerce, recreation, and tourism. Second, as circumstances currently stand, there is a more fundamental reason that the states' requested injunction is unlikely to prevent much harm and actually may impose costs. The courts would not be acting alone. As we have explained, there [**69] is a powerful array of expert federal and state actors that are engaged in a monumental effort to stop invasive carp from entering the Great Lakes. The last thing we need is an injunction operating at cross-purposes with their efforts or imposing needless transactional costs that divert scarce resources from science to bureaucracy. Furthermore, from an institutional perspective courts are comparatively ill situated to solve this type of problem. The balance of harms favors the defendants and the public interests they represent to such an extent that we conclude that the district court's decision to deny preliminary relief was not an abuse of discretion.

A

It is best to begin by trying to understand precisely what preliminary relief the states would like. As the district court noted, their request has evolved as the case has moved forward. Indeed, their position has shifted even between their opening brief in this court and oral argument. The moving nature of the target complicates our job of evaluating the propriety of injunctive relief. Moreover, their request has been phrased at a high level of generality. They have given us the broad strokes of additional steps they would like us [**70] to order the defendants to take, but they have not furnished many details about how this relief would be implemented, on what schedule, at what cost, and on whose nickel. From time to time the states urge that the injunctive measures should be "consistent with public health and safety," but they do not say what precisely that means. This vagueness is unhelpful; it stands as an obstacle to the entry of an injunction that will satisfy Federal Rule of Civil Procedure 65(d). See *PMC, Inc. v. Sherwin-Williams Co.*, 151 F.3d 610, 619-20 (7th Cir. 1998); see also *Patriot Homes, Inc. v. Forest River Hous., Inc.*, 512 F.3d 412, 414-15 (7th Cir. 2008). When a plaintiff seeks relief of the type the states ask for here, we have required a more specific plan about the measures to be taken and the costs of implementing those measures. See *Jordan v. Wolke*, 593 F.2d 772, 774-75 (7th Cir. 1978).

At this time, it is our understanding that the states believe that they are entitled to a preliminary injunction that would require the defendants to take these five steps:

a. *Closing the Locks*. Close and stop operating the locks at the Chicago River Controlling Works (the Controlling Works) and the O'Brien Lock [**71] and Dam (O'Brien), which sit at two of the five points of contact between the CAWS and Lake Michigan;

b. *Screens over Sluice Gates*. Install nine additional screens over sluice gates that are used to control water flow between the CAWS and the lake at the Controlling Works, O'Brien, and the Wilmette Pumping Station, a third contact point with Lake Michigan;

c. *Block Nets in the Rivers*. Place block nets to stop fish in the Little Calumet River, which connects the CAWS to the lake at the Burns Small Boat Harbor in Indiana, and if necessary in the Grand Calumet River, which runs between the CAWS and the Indiana Harbor and Canal (Burns Harbor and Indiana Harbor are last of the [*791] five contact points between the CAWS and Lake Michigan);

d. *Rotenone Poisoning*. Use rotenone to poison fish in the CAWS, especially in areas north of O'Brien.

e. *Accelerating GLMRIS*. Finish the part of the Great Lakes and Mississippi River Interbasin Study that relates to the CAWS, which Congress called for in the Water Resources Development Act of 2007, within 18 months.

The states have made two additional requests that do not require discussion. They say that the defendants should use the best methods to stop, capture, [**72] and kill carp that are present in the CAWS. We see this as a more general statement of the specific measures we have just outlined. In addition, the states want the defendants to continue using monitoring techniques, including eDNA testing, to search for invasive carp. But the Corps and the other agencies working on this problem are continuing eDNA monitoring efforts. In July 2011, for example, three rounds of positive eDNA testing results led to a four-day hunt for invasive carp (none was found). This request asks for steps already being taken, and so we will not discuss it further.

2

Before we discuss the harm and benefit of the preliminary relief the states request, we must point out an error in the states' view of how the harms should be weighed. The states say that any harm the defendants might suffer because of the injunction pales "in comparison to the grave and truly irreparable harm that will occur if Asian carp establish a breeding population in the Great Lakes." But that is not the correct measure of the harm avoided by the states' proposed injunction. The states assume, without providing much explanation, that preliminary relief would stop invasive carp from ever reaching [**73] the Great Lakes. While that *may* be the effect that a perfectly designed permanent injunction would have, it is not an accurate measure of the harm that would be avoided by the states' proposed preliminary injunction. At this early point, the question is to what extent would the proposed measures decrease the risk of invasive carp establishing themselves in the Great Lakes between now and when the litigation concludes? Stepping back from the subject matter of this litigation, we note that in addition to the CAWS, the Corps has identified a total of 18 places in Minnesota, Wisconsin, Indiana, Ohio, and New York where invasive carp could move from the Mississippi basin into the Great Lakes. These pathways outside of the CAWS necessarily reduce the likelihood that the states' preliminary injunction will prevent carp from establishing themselves in the Great Lakes, because the states' proposed measures say nothing about these alternate routes. Even focusing exclusively on the CAWS, the states overlook similar limitations inherent in the steps they are proposing -- limitations that would reduce the effectiveness of preliminary relief, as we now explain.

a. *Closing the Locks*. If the locks at [**74] the CRCW and O'Brien are closed, the states concede that the closure need not be permanent or unqualified; instead, they say, the locks may be opened if closure would put public health or safety at risk. We are not sure how that would work. The City of Chicago says that police and fire services use the locks routinely, as do Coast Guard boats. At one point, the states agreed that passage for emergency boats through the locks was needed for public safety. That sounds reasonable to us. Now, however, their injunction would allow the defendants to open the locks only when the District needs to release water from the CAWS into the lake to control flooding (during so-called "reversal" [*792] operations). The states' proposed injunction is made more effective by keeping the locks closed to all boat traffic, but in so doing, it increases the cost to emergency services. Even in its current iteration, the efficacy of the states' plan for closing the locks is compro-

mised because any flooding that would require the defendants to conduct reversal operations decreases the chances that the carp will be stopped -- when the locks are open, water pours out of the CAWS and into Lake Michigan. (This happened [**75] most recently on July 24, 2011, after nearly seven inches of rain fell in only two hours, see Michelle Gallardo, *2 Locks Opened During Record Rainfall*, Chicago Tribune, July 25, 2011, <http://abclocal.go.com/wls/story?section=news/local&id=8270514>. It also happened exactly one year before, on July 24, 2010.) A related complication concerns how effectively the locks stop fish even when they are closed. By most accounts, a watertight closure would require bulkheads to be installed on the locks. Without bulkheads, fish might slip through small openings. The states have been less than explicit about whether their ideal injunction would require bulkheads, but if it would, then all the risks of flooding come right back into the equation. Bulkheads take time to install and remove, which means that it would be very difficult to respond quickly to floods. In short, this aspect of the states' requested relief puts them into a bind: the risk of carp migration is reduced the most by closing the locks permanently with bulkheads; but that measure, as the states recognize, would dramatically escalate the costs imposed by flooding. While keeping the locks closed more often no doubt reduces the risk [**76] of fish migrating into Lake Michigan, it does not bring it down to zero. And this unquantified reduction in risk comes with an increased immediate burden on public health and safety measures.

b. *Screens over Sluice Gates*. The states encounter similar problems with their request that the defendants screen off nine additional sluice gates. The District operates these huge gates, which open and close to adjust the rate of water flow, as part of its diversion effort -- the process of drawing water out of Lake Michigan and into the CAWS to maintain navigability and water quality. In addition, when heavy rains occur, sluice gates (like the locks) are opened to let water from the CAWS into the lake. There are eight sluice gates at the Controlling Works, four at O'Brien, and one in Wilmette. To prevent the migration of adult carp, the District already has installed four screens over sluice gates: two at the Controlling Works and two at O'Brien. The District uses the four screened-off gates for diversion; the other nine remain closed except during flooding.

Initially, the states wanted to force the defendants to close all of the gates, except when public health or safety might be harmed. They [**77] have revised that request so that now they ask for screens over the nine remaining sluice gates at these sites. This request would mitigate the risk of carp migration only (at best) during floods, for at other times the gates, unlike the locks, are closed anyway. Further reducing the effectiveness of this measure is the fact that in some flooding incidents where additional sluice gates must be opened, the locks must be opened as well. Screens over additional sluice gates would not do much good if fish could swim through open locks. Finally, all available evidence suggests that it will take a long time for the District to acquire additional property, to research feasible options for a system of screens that will not become clogged with debris during flooding, and to build those screens. This means that this portion of the states' preliminary injunction might [**793] not even be in place before the full trial on the merits has concluded. For all of these reasons, we think that

installing screens over sluice gates will have at most a tiny effect on the odds of invasive carp making it to Lake Michigan.

c. *Block Nets in the Rivers.* The prospect of placing block nets in the Little Calumet and Grand [**78] Calumet Rivers strikes us as potentially the most effective element of the proposed relief. At the time of oral argument, the states asked that the Corps place block nets only in the Little Calumet River; at that point, a cofferdam in the Grand Calumet River prevented fish migration and alleviated the need for nets there. We will assume that were this dam removed, the states would ask the Corps to place nets in the Grand Calumet River as well. The Corps, however, has said that it is already looking at the possibility of installing nets in both waterways, but that it is concerned that flooding will increase as debris becomes caught in the nets. The states respond that block nets could be cut free and replaced with new nets if risks of flooding materialized. All of the parties are vague about the possibilities and implications of this plan. At this stage, it is enough to say that this step seems more promising than others when it comes to mitigating the risk that fish will appear in Lake Michigan. We take the Corps at its word that this option is under serious consideration and would be implemented if and when a feasible plan can be developed.

d. *Rotenone Poisoning.* In contrast to the [**79] block net idea, the suggestion that the Corps use rotenone to poison fish in the CAWS seems untenable to us. Rotenone is a chemical that acts as a piscicide when it is released in a body of water. Though humans would not digest much of it if it were ingested, rotenone enters the bloodstream of a fish through the gills, causing death quickly. Rotenone dumped into a river kills the vast majority of fish living there; when dead, they usually float to the surface. The poison generally is less dangerous to other animals, but it is toxic and its toxicity varies depending on the species. See generally Cornell University, Resource Guide for Organic Insect and Disease Management, Material Fact Sheets -- Rotenone, <http://web.pppmb.cals.cornell.edu/resourceguide/mfs/11rotenone.php>. It is unclear just how the states' proposal for rotenone use differs from what the Corps is already doing in the CAWS. We know that the states would like poison to be applied near O'Brien, but there is no indication how often or where else it might be used. In May 2010, the Corps and other agencies used the poison to search for fish in a two-mile stretch of the Little Calumet River. Dozens of tons of fish were killed, [**80] and no specimens of invasive carp were found. While poisoning may be an effective way to search for elusive carp in some circumstances, the record does not explain why ordering the Corps to poison the CAWS on a regular basis would be a sound step toward reducing the risk that invasive carp will migrate into the Great Lakes.

e. *Accelerating GLMRIS.* That brings us to the aspect of the proposed injunction that would require the Corps to accelerate its long-term study of ways in which it might permanently prevent the migration of invasive species (including, but not limited to, the carp) between the Great Lakes and the Mississippi basins. The states raise a side issue here, saying that the district court erred when it denied their request to expedite GLMRIS because it failed to make the findings required by Federal Rule of Civil Procedure 52(a)(2). The argument is frivolous. The district court explained its reasons for denying all of the relief that the states

sought. The court had -- and will continue to have as [*794] the case moves forward -- the power to grant or deny equitable measures either in whole or in part. It did not need to discuss every facet of the relief requested.

According to the [*81] Corps, GLMRIS examines every potential pathway between the two watersheds and proposes solutions to stop migration through each one. Examination of the CAWS, which the Corps intends to finish by 2015, is just one portion of the study. The Corps adds that it has the power to implement solutions that are devised as the study progresses. The states would like the court to order the Corps to finish the CAWS portion of GLMRIS within 18 months. They are not the only ones who have criticized the study for taking too long; the City of Chicago and others have as well. See, *e.g.*, Dan Egan, *Chicago Urges Army Corps to Report on Carp Sooner*, Milwaukee Journal Sentinel, Apr. 10, 2011, <http://www.jsonline.com/news/wisconsin/119547049.html>. It may well be that faster action is appropriate if possible; and, as the Corps conceded during oral argument, it may be necessary for the Corps to implement measures devised through GLMRIS on a rolling basis. But we do not see how a preliminary injunction that would essentially ask the Corps to study harder and think faster would reduce the odds that invasive carp will establish themselves in the short term.

When we take all five aspects of the states' proposed [*82] injunction together, we can say only that there is some evidence that the relief sought would reduce by an undefined amount the risk of carp establishing a breeding population in the Great Lakes. It is equally apparent, however, that the steps the states have proposed offer no assurance that they will block the carp over the short run or, over the long run, that they will save the Great Lakes ecosystem and the \$7 billion industry that depends on that ecosystem. We must therefore turn to the other side of the equation: the harm that the proposed steps would inflict on the opponents of preliminary relief.

3

The states have adopted a rather insouciant attitude about the potential harm that their proposal might inflict. "[T]he federal government has made it clear that it is willing to spend significant resources to reduce this threat," the states write, "so the cost of a few bulkheads should not prove a serious impediment to protecting the Great Lakes." This tone continues throughout their briefs, with remarks like, "While the Corps asserts that the Coast Guard doesn't have the funds to [dock additional ships on both sides of locks that would be closed by the injunction], this is just a [*83] matter of money." Of course this dispute is in part a matter of money; but scoffing at the defendants' concerns about the costs of relief does not aid our assessment of the expense of the relief that the states want. It should go without saying in these straitened times that the federal and local governments do not have bottomless coffers. Indeed, 19 members of the plaintiff states' delegations to Congress recently voted against raising the federal borrowing limit. Nor do we understand why the states take this view when they apparently feel no obligation to contribute to the costs of averting this crisis. When we inquired at oral argument how the costs of the proposed injunction should be apportioned

among the parties, the states informed us that their citizens would contribute to the costs by paying federal income taxes. This is not very helpful. Indeed, one might wonder why the federal government and the State of Illinois should be saddled with the entire cost of an injunction that is aimed at a problem that has been developing for four decades [*795] in a watershed that touches roughly half of the states in the Union.

To make matters worse, both sides throw around large numbers to make [**84] the case that the balance of harms favors their position. We have already explained why the proposed injunction is quite unlikely to prevent the states' forecasted \$7 billion in harm. But the defendants invent similarly extreme costs. We are told repeatedly that almost \$2 billion in cargo moves through locks in the CAWS each year. This, however, is not the cost that an injunction would impose on commercial shipping. If the locks were closed, cargo would have to be loaded from ships onto ground transportation at some point along the journey. Estimates of the cost of off-loading range from about \$70 million per year (from the plaintiffs' perspective) to \$150 million (according to the Corps). The intervening defendant Coalition to Save Our Waterways, which represents various business interests, tells us that closing the locks would cost \$4.7 billion. We find no support in the record for that astronomical estimate. The dollar value of the harm to either side is of course difficult to calculate, but we need not settle on a precise number to resolve this appeal.

If the requested preliminary injunction were to issue, we can be sure that it would impose significant costs. First, we would have [**85] the expenses of implementing all of the measures that the states have recommended. In addition, funds that the defendants spend complying with the injunction likely would be diverted from other agency efforts to curb invasive carp. If we required the Corps to complete its long-term study within 18 months, the Corps suggests that it would not have time to study the problem comprehensively and that the study might not adequately support any proposed solutions. The prospect of closing the locks permanently, installing screens on sluice gates, and placing block nets in the CAWS increases the risk of flooding, which (to the extent that it occurs) would impose costs throughout the region. The states say that there are ways to avoid those costs. The locks, for example, could be opened at the District's discretion during flooding. But, as we have explained, this would be possible only if the states agreed that bulkheads were not necessary. (The states argue that bulkheads could be removed by a barge and crane to permit for flood relief. Even if that were possible, stationing barges at both locks would cost thousands of dollars per day.) Screens installed over sluice gates used during flooding [**86] could become clogged, and the states' suggestion that raking systems be installed to alleviate this concern is both untested and would require significant additional expenditures. Meanwhile, closing the locks to boat traffic would have a tremendous impact. Police and fire services on which the City of Chicago relies would not be able to move from the Chicago River and other points in the CAWS to Lake Michigan, which means that the city would have to establish redundant emergency response fleets on either side of the locks. The same goes for Coast Guard operations around the CAWS. Recreational and tourist vessels would be stopped. And last but certainly not least, closed locks would mean that all commercial shipping in the area between the Great Lakes and the Mississippi would have to find alternative routes.

We can stop there. This overview demonstrates that the preliminary injunction the states have requested would impose substantial costs, yet given the current state of the record, we are not convinced that the preliminary injunction would assure much of a reduction in the risk of the invasive carp establishing themselves in Lake Michigan in the near future. That the balance of harms [**87] at this stage of the [*796] litigation favors the defendants might be enough by itself to support a conclusion that preliminary relief is not warranted, even though we have concluded that the states have demonstrated a likelihood of success on the merits and a threat of irreparable harm. See *Hoosier Energy Rural Elec. Co-op v. John Hancock Life Ins. Co.*, 582 F.3d 721, 725 (7th Cir. 2009) (describing the relation between the harm prevented by the plaintiff's proposed injunction and the strength of a plaintiff's claim for preliminary relief). Even if one were to conclude that the harms are in equipoise, however, there is a final reason why preliminary injunctive relief is not warranted. As things now stand, the case for judicial intervention is refuted by the fact that the competent federal and state actors are actively pursuing an array of efforts to solve the problem of invasive carp.

B

1

While *American Electric Power* is a case about congressional displacement of federal common law, the Supreme Court took the opportunity to touch generally on the relative competence of courts and expert agencies when it comes to solving complex environmental problems. "It is altogether fitting that Congress [**88] designated an expert agency, here, EPA, as best suited to serve as primary regulator of greenhouse gas emissions," the Court wrote, explaining further:

The expert agency is surely better equipped to do the job than individual district judges issuing ad hoc, case-by-case injunctions. Federal judges lack the scientific, economic, and technological resources an agency can utilize in coping with issues of this order. Judges may not commission scientific studies or convene groups of experts for advice, or issue rules under notice-and-comment procedures inviting input by any interested person, or seek the counsel of regulators in the States where the defendants are located. Rather, judges are confined by a record comprising the evidence the parties present. Moreover, federal district judges, sitting as sole adjudicators, lack authority to render precedential decisions binding other judges, even members of the same court.

American Electric Power, 131 S. Ct. at 2539-40 (internal citation omitted). This limitation of the judiciary is a familiar feature of American law. See, e.g., *Negusie v. Holder*, 555 U.S. 511, 129 S. Ct. 1159, 1171, 173 L. Ed. 2d 20 (2009) (Stevens, J., concurring in part and dissenting in part); *Kelo v. City of New London*, 545 U.S. 469, 487-88, 125 S. Ct. 2655, 162 L. Ed. 2d 439 (2005); [**89] *Lingle v. Chevron U.S.A., Inc.*, 544 U.S. 528, 544-45, 125 S. Ct. 2074,

161 L. Ed. 2d 876 (2005); *Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 865-66, 104 S. Ct. 2778, 81 L. Ed. 2d 694 (1984); *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 194-95, 98 S. Ct. 2279, 57 L. Ed. 2d 117 (1978).

Our sister circuits have explored the impact of this inherent limitation of the judicial role in cases comparable to ours. The Second Circuit has written that "[c]ourts traditionally have been reluctant to enjoin as a public nuisance activities which have been considered and specifically authorized by the government." *New England Legal Found. v. Costle*, 666 F.2d 30, 33 (2d Cir. 1981). In the same vein, the Fourth Circuit recently reversed a lower court's decision to enter an injunction that would have required the TVA to implement new emissions controls. *North Carolina, ex rel. Cooper*, 615 F.3d 291. The district court in that case entered an injunction after North Carolina sued the TVA for air pollution based on a state [*797] common-law public nuisance theory. The court of appeals concluded that granting "the injunction would encourage courts to use vague public nuisance standards to scuttle the nation's carefully created system for accommodating the need for energy production and [**90] the need for clear air." *Id.* at 296. Though the case involved a more robust regulatory scheme than the one that has been cobbled together for the invasive carp, the court's discussion is instructive insofar as it relates to the problems created when courts attempt to stop a nuisance at the same time that agencies are working to solve the problem. An approach that would allow the federal court and the EPA simultaneously to regulate a single emissions problem, said the Fourth Circuit, would result in multiple and perhaps contradictory decrees emanating from different branches of government and confusion about what standards should govern air pollution. *Id.* at 301-04. In addition, judicial action in the face of strong agency measures "would reorder the respective functions of courts and agencies." *Id.* at 304. Environmental problems require the balancing of many complicated interests, and agencies are better suited to weigh competing proposals and select among solutions. *Id.* at 305 ("[W]e doubt seriously that . . . a judge holding a twelve-day bench trial could evaluate more than a mere fraction of the information that regulatory bodies can consider.").

None of this means that courts can [**91] no longer craft remedies designed to abate a public nuisance. In light of the general approach the Supreme Court took in *American Electric Power*, however, it does mean that the court should not blind itself to other remedies that are available under the law or to other measures that are actively being pursued to solve the problem. Even if legal displacement like that found in *American Electric Power* does not exist, the practical effect of agency actions might add up to displace as a matter of fact any role that equity might otherwise play. Efforts of other branches of government might be so complete that additional action ordered by a court would risk undermining agency efforts to abate the nuisance. How much the equitable power of the court has been limited by agency action will be a factual question that turns on the quality and quantity of the agency's (or, as here, agencies') efforts. This kind of institutional consideration of the court's relative ability to craft meaningful relief fits naturally in the balance-of-harms analysis. For if an injunction might hamper agency efforts or can improve upon them only slightly, that is all the more reason to conclude that the equities tilt [**92] in favor of the defendant.

The record in this case leaves no doubt that federal and state agencies, executive officials, and working groups have mounted a tremendous effort to halt the migration of invasive carp. As we have already mentioned, the Aquatic Nuisance Prevention and Control Act of 1990 created the Aquatic Nuisance Species Task Force, which includes among other agencies the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, and the EPA. This task force coordinates invasive species issues generally across the country. In addition, during the fall of 2009, 21 federal, state, and local agencies and other entities combined forces to form the Asian Carp Regional Coordinating Committee (the ACRCC), which is designed (as the name suggests) to track and to stop the migration of invasive carp. See generally Asian Carp Control, <http://www.asiancarp.org/>. The ACRCC counts as members those agencies that comprise the task [*798] force, the Corps and the District, the Coast Guard, the U.S. Department of Transportation, the White House Council on Environmental Quality, the Great Lakes Fishery Commission, the City of Chicago, and the [**93] state departments of natural resources of all of the plaintiff states, plus Illinois, Indiana, and New York.

In order to stop the invasive carp, the ACRCC has developed what it calls the "Asian Carp Control Strategy Framework," which is now in its third edition. The most recent document lists over 40 collaborative projects that the working group has designed to deal with invasive carp; many of these initiatives are underway or have been completed already. As the ACRCC describes it, the projects fall into eight categories:

(1) targeted monitoring assessment activities above and below the electric barrier system, including enhanced monitoring above and below the barriers, electrofishing, and rapid response teams;

(2) commercial harvesting and removal actions below the electric barriers (which involves fishing and removal of fish in the Lockport area, where the CAWS connects to the Des Plaines River; creating new markets for the fish; and investigating certification requirements for invasive carp to be sold commercially);

(3) electric barrier actions and waterway separation measures (consisting of the construction of barriers between various waterways so that fish cannot move from one to [**94] the other during flooding; expedited construction of the now-completed third electric barrier; fish tagging to test the effectiveness of the barriers; and separation of various watersheds that pose risks);

(4) myriad studies on how best to separate the watersheds; the effectiveness of various measures; and risk modeling;

(5) research and technology development (including investigation of how fish move around the CAWS; food sources for invasive carp in the lakes and how those sources might be eliminated; the use of seismic technology to divert or kill

invasive carp; attraction and repulsion pheromones of invasive carp; creation of toxin screens to kill fish; study of the weaknesses of carp to different toxins; physical barriers; reducing carp egg viability; and new detection methods, among other things);

(6) eDNA analysis and refinement (which involves monitoring and sampling for eDNA in the CAWS and increasing the effectiveness of eDNA testing);

(7) enforcement activities designed to prevent people from transferring carp between bodies of water; and

(8) work on funding, including the development of methods to pay for measures among the contributing groups.

In addition, the ACRCC has established [**95] three working groups: monitoring and rapid response; invasion control; and communication and outreach.

What we have described already reflects a substantial effort, but there is more. The Corps has been fulfilling the marching orders that it has received from Congress. In addition to the electric barriers and GLMRIS, which we have discussed in detail, we have mentioned the Corps's study of the effectiveness of its three electric barriers for stopping the movement of invasive carp through the CAWS. The final version of the Efficacy Study is due later this year, but there already have been four interim reports (numbered in typical bureaucratic fashion as Interim I, II, III, and IIIA), and the Corps has implemented measures pursuant to some of these reports. Interim I identified an area where [*799] the Des Plaines River and the Chicago Sanitary and Ship Canal are so close together that carp could wash between them during floods. (The plaintiffs had argued in their complaint that this area represented a huge problem.) The Corps has since built a fence to stop migration between these waterways, and that fence has already proven effective. Meanwhile, Interim II, which is not yet completed, will [**96] set operational parameters for the three electric barriers so that they can most effectively deter the movement of invasive species. The Corps says that even though this study is not finished, it now operates the barriers at the maximum safe strength. In connection with its Interim III report, the Corps consulted a panel of experts about a number of potential changes to its operation of the CAWS. The report concluded that additional screens should be installed on sluice gates, and the District responded by adding screens to two gates at O'Brien, which supplemented the two it had installed months earlier at the Controlling Works. In addition, Interim III recommended that the District cease using the sluice gate at Wilmette for diversion, and it hypothesized that the District might be able to create "atoxic zones" in the CAWS that would be so toxic that no fish would ever be able to swim through them. Finally, the Corps in Interim IIIA recommended the construction of an acoustic, air-bubble, and strobe-light curtain (more or less a disco screen), which would be designed to frighten fish back toward the Mississippi. The disco screen has not been started, but the Corps represented to us [**97] at oral argument that it intends to undertake the project at some location downstream of the existing electric barriers.

In addition to the measures outlined in the interim efficacy reports, the agencies continue to rely on traditional methods to monitor and kill invasive carp, including tracking, netting, electrofishing, and rotenone poisoning; and, as we have discussed, they have also continued eDNA testing throughout the CAWS. Where eDNA reveals a potential threat, the agencies have responded with days-long hunts for invasive carp. Continual fishing south of the CAWS reduces the propagule pressure that would otherwise push carp closer to Lake Michigan. Finally, the Obama Administration has named an "Asian carp czar," who is charged with leading the administration's effort to stop invasive carp. Recently, the administration announced plans to install a high-intensity water cannon that would deter fish by firing huge, underwater blasts of water across Chicago Ship and Sanitary Canal.

It is our understanding that the defendants and the agencies we have just discussed are actively pursuing the measures that we have just described. In addition, where the defendants have represented that [**98] future steps will be taken -- whether a disco screen, the water gun, operating the electric barriers at optimal settings, considering the possibility of block nets in the CAWS, completing and implementing GLMRIS in phases, continuing to monitor aggressively with traditional and eDNA techniques, or any of the other actions we have highlighted -- we have no reason at this point to assume that this work will not be done. Whatever happens, the plaintiff states will continue to have a seat at the table as these and future plans are made and implemented. We conclude that on this record, there is nothing that any preliminary injunction from the court could add that would protect the Great Lakes from invasive carp while this suit is being adjudicated any better than the elaborate measures we have just described. This tips the balance of harms decisively in favor of the defendants.

VI

We take very seriously the threat posed by the invasive species of carp that have [*800] come to dominate parts of the Mississippi River basin and now stand at the border of one of the most precious freshwater ecosystems in the world. Any threat to the irreplaceable natural resources on which we all depend demands the most [**99] diligent attention of government. As the case proceeds, the district judge should bear in mind that the risk of harm here depends upon both the probability of the harm and the magnitude of the problem that would result. In the end, however, the question whether the federal courts can offer meaningful equitable relief -- either preliminary or permanent -- to help abate a public nuisance in the face of agency action is factual in nature. It depends on the actual measures that the agencies have implemented already and those that they have committed to put in place going forward. Our ruling today is tied to our understanding of the current state of play. We recognize that the facts on the ground (or in the water) could change. The agencies currently working hard to solve the carp problem might find themselves unable to continue, for budgetary reasons, because of policy changes in Washington, D.C., or for some other reason. If that happens, it is possible that the balance of equities would shift. Similarly, new evidence might come to light which would require more drastic action, up to and including closing locks on Lake Michigan for a period of time. If either situation comes to pass, then [**100] the district court would have the authority to revisit the question whether an exercise of its equitable powers is war-

ranted, taking into account the principles we have discussed in this opinion. As things stand now, however, preliminary relief is not appropriate. The district court's judgment is **AF-FIRMED**.