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Testimony of Dr. Peter H. Gleick¹

Before the Legislative Hearing of the House Committee on Science and Technology of the United States Congress

On 21st Century Water Planning: The Need for Integrated National Water Actions

March 4, 2009

Mr. Chairman, Representatives: I would like to thank the Committee for inviting me to offer comments on the critical issue of 21st century water planning in the United States. The water crisis around the nation is growing and the need for better and more coordinated responses is urgent. We have long known that we need coordinated federal planning for water; but such coordination remains an elusive goal. And new water challenges such as climate change, new pollutants, and decaying infrastructure face the nation.

My written testimony will address three issues:

1. The kinds of water challenges we face at the national level and the kinds of responses we need,
2. Some specific thoughts about the proposed legislation sponsored by Congressman Gordon of Tennessee (HR 1145, entitled the “National Water Research and Development Initiative Act of 2009.”), and
3. The need for additional federal policies and legislation not directly addressed by this legislation.

Global and National Water Challenges

Globally, the realization is growing that the failure to meet basic human and environmental needs for water is the greatest development disaster of the 20th century. Millions of people, mostly young children, still die annually – and unnecessarily – from preventable water-related diseases. Climate change is increasingly threatening water systems and water resources everywhere. Controversy is developing over the proper role of expensive dams and infrastructure, private corporations, and local communities in

¹ Dr. Gleick is President and co-founder of the Pacific Institute, Oakland, California and a member of the U.S. National Academy of Science. His comments reflect his own opinion and the recommended position of the Pacific Institute, Oakland, California.



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managing water. And international and subnational threats to security as a result of water quality and quantity disputes have ramifications for U.S. military and diplomatic policy.

Here at home, freshwater challenges in the United States are also growing rapidly. These challenges include growing scarcity, disputes over allocations and use of water, unresolved problems of contamination from known sources and new pollutants, a clear and present danger associated with the impacts of climate change, a decaying infrastructure and data collection system, and threats to our own security at the national and international level associated with these problems in other countries.

Municipalities are faced with billions of dollars of infrastructure needs and growing disputes over the role of public and private water management. Arguments among western states over allocations of shared rivers remain unresolved, and similar arguments have now appeared in the southeastern U.S. and other regions previously thought to have adequate water resources. Tensions between cities and farmers over water rights are rising. The U.S. and Mexico have unresolved disagreements over the Colorado and Rio Grande/Rio Bravo rivers, and our Canadian neighbors remain worried about how best to jointly manage the shared Great Lakes. Communities are facing new challenges in meeting water-quality standards and ensuring that safe drinking water is available for all.

Addressing our National Water Problems

Many of our water problems are local, and must be resolved at the local and regional level. But we have a responsibility to develop and implement appropriate national policies as well. These responsibilities are not being adequately fulfilled by the diverse federal agencies responsible for them. Part of the problem is confusion over authority. Part of the problem is the failure of executive branch in recent years to request sufficient funds to protect and manage our water resources, and of the legislative branch to appropriate and allocate those funds. Part of the problem is old water legislation that has not been updated to account for the realities of the 21st century and for recent advances in our scientific and technical understanding of both water problems and solutions.

Responsibility for water is spread out over many federal agencies and departments, operating with little overall coordination. In order to address this issue, the President's Office of Science and Technology Policy (OSTP), through the National Science and Technology Council's Committee on Environment and Natural Resources, reconstituted in 2003 a Subcommittee on Water Availability and Quality (SWAQ). Members of that subcommittee come from the departments of Interior, Agricultural, Defense, State, Energy, Health and Human Services, EPA, Commerce, NASA, the National Science Foundation, the Tennessee Valley Authority – altogether 25 Federal agencies that are responsible for all aspects of Federal water research and/or water resource management.



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In September 2007, that Subcommittee released a report with detailed recommendations and priorities for improving coordination and water research in the U.S. These recommendations, combined with additional detailed suggestions from the 2004 report of the Committee on Assessment of Water Resources Research of the National Research Council (NRC) and reports on water from the General Accountability Office (GAO) offer a superb starting point for moving water research forward.

I support the important ideas behind Congressman Gordon's newly submitted bill, HR 1145, which clearly draws on these previous recommendations, and I commend him for tackling the urgent challenges of water. It is time to move from recommendation to action, and the nation needs some kind of group to define research, monitor action, coordinate diverse federal efforts, and bring outside ideas to the attention of agencies and policymakers. I also support the idea of putting (or keeping) that agency under the guidance of the President's OSTP, because of the vital need for independent, high-quality science.

I would also like to offer some specific suggestions for strengthening the proposed bill.

First, it is not clear to me that a completely new interagency committee is necessary, as opposed to expanding and improving the efforts of the existing Subcommittee on Water Availability and Quality within the National Science and Technology Council and other collaborative efforts underway between different agencies. Whatever approach is taken, however, a coordinating body for national water research will need an explicit budget of its own, with new money. Agency budgets are already grossly underfunded for water research and they are likely to chafe at having to divert funds to a separate independent body. This group should also include water experts from outside of the federal agencies themselves – something SWAQ has not done. The National Research Council previously concluded (in its 2004 report “Confronting the Nation’s Water Problems”) that:

“If the coordinating body is made up only of agency representatives, the overarching national perspective will likely devolve to the sum of agency wish lists. However, independence from agency agendas needs to be balanced by close interaction with agency leaders who have unique and valuable perspectives on national needs.”

Second, the Bill calls for the interagency committee to “establish the priorities for Federal water research.” I believe that such priorities are clearly, and comprehensively, laid out in the NRC, SWAQ, and OMB reports already available. We know what we need to do; what is needed is the funding and effort to do it. As a result, we should not be calling for



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a new assessment of need, but should focus on the activities in Section (c)(2)(C) to set forth “a strategy and timeline to achieve the” desired outcomes.

Third, the explicit outcomes (Section (d)) described in the proposed Bill are unnecessary, if existing recommendations from the SWAQ and NRC reports are to be adopted. Conversely, if this Bill is to include specific Water Research Outcomes, I offer here some explicit recommendations for modest changes: some key outcomes are missing and should be added, others need to be strengthened. In particular, while I strongly support the call for a National Water Census, that Census must also include comprehensive information on water use – as recommended by SWAQ – and a requirement that the Census be made easily available and widely disseminated. Thus, section (d)(1) should read:

“(1) Implementation of a National Water Census, which shall include the collection and dissemination of data on national water resources and all forms of water use, to create a comprehensive database that includes information on the quantity, availability, quality, and use of ground water and surface water resources.”

This National Census is urgently needed, and I further urge this Bill, or supplemental legislation, include a clear call for this work to be done by the U.S. Geological Survey, which has the experience and expertise to do the science properly, an explicit recommendation that such as Census be done every 10 years, and a clear new budget of at least \$25 million for each Census. Spread over 10 years this is a tiny sum of money with potentially vast returns for the nation.

Also missing from the Water Research Outcomes, but included in every recent call for water research, is the need to evaluate both the implications of climate change for the nation’s water resources and appropriate technologies and water management strategies for coping with unavoidable impacts of climate change. An additional “outcome” should therefore be added to section (d) that reads:

“Improvement of the understanding of the impacts of climate change for the nation’s water resources and appropriate strategies for adapting to those climate impacts that may be unavoidable.”

Section (d)(4) calls for development of innovative technologies and tools to enhance water-use efficiency. I fully support this effort, but this outcome should be expanded to include technologies and tools that already exist but have yet to be widely implemented. Wording for this section should be:



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(4) Expansion of efforts to enhance the efficiency of water use throughout the nation using existing technologies and tools and through the development and adoption of innovative new technologies and tools.”

Let me also offer some comments and thoughts about funding, supporting my conclusion that some new, independent funding is required to make this effort work. Federal agency research budgets are typically developed starting with a “base” of activities that change little from year to year, and adding “above base” initiatives. In the context of developing comprehensive and effective national water research, agencies are unlikely to give up any of their base, even to address higher water priorities. Furthermore, the congressional appropriations process makes it difficult to shift funds from one agency to another when these agencies are funded through different spending bills. Table 1 shows just a sampling of the different appropriations subcommittees that are responsible for some of the federal agencies that fund water. This difficulty suggests that separate funds must be appropriated for whatever body is set up to coordinate federal water policy and research. I also urge that the coordinating body’s efforts be synchronized with the schedule of federal budgeting and appropriations.

**Table 1.
Partial Subcommittee Jurisdiction of the House and Senate for Selected Federal Agencies Doing Water Resources Research**

Federal Department or Agency	Appropriations Subcommittee
Department of Energy (civilian)	Energy and Water
Environmental Protection Agency	Housing and Urban Development and Independent Agencies
Army Corps of Engineers	Energy and Water
National Oceanic and Atmospheric Administration	State, Justice, Commerce
U.S. Geological Survey	Interior
U.S. Department of Agriculture	Agriculture

Adapted from The National Research Council. 2004. “Confronting the Nation’s Water Problems: The Role of Research.” National Academy of Sciences, Washington D.C.

Additional Needs for Water Legislation, Policy, and Action

Finally, while implementing a new and better coordinated national research agenda is critical, there are additional needs not addressed by this legislation. The United States has not had a comprehensive water commission in place for 30 years, since the 1968 National Water Commission reported to the President and Congress in 1973. Moreover, we have never had a water commission with the authority and responsibility to review and



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recommend on the role of the U.S. in addressing international water issues. Nor has such a commission ever addressed the new challenges of climate change. Such a commission, perhaps in the form of a “National Water Board” could be very valuable. A version of such a Board for water-related research was proposed by the National Research Council in their 2004 report “Confronting the Nation’s Water Problems.” Indeed, it may be possible and appropriate to combine the idea of an “interagency committee” in this Bill with a broader Board.

The Pacific Institute has long supported such an idea. A National Water Commission or Board would be authorized by Congress, be composed of both federal agency representatives and non-governmental water experts from across the many disciplines affected, including the sciences, economics, public policy, law, governments, public interest groups, and appropriate private sectors, would have a fixed term and specific mandate, and would serve as a neutral third party to:

1. Provide guidance and direction on the appropriate role of the United States in addressing both national and international water issues.
2. Prepare a regular survey of water research activities and priorities.
3. Advise Congress and OMB on the recommended focus of a long-term research agenda and on key water budget decisions.
4. Report to OMB, OSTP, and the Congress in a timely manner compatible with the budget and appropriations process.

The NRC concluded that such a Board could offer both Congress and OMB credible advice on improving the efficiency with which federal agencies fund and conduct water research and priorities.

Moreover such a Board could re-assess:

- **Efforts to expand supply with new thinking on water reuse, desalination, conjunctive use, and other non-traditional supply options.** In most regions, even regions with growing scarcity, increasing supplies through traditional infrastructure does not appear to be the most efficient, cost-effective, and timely response. In contrast, non-traditional sources of supply appear to offer enormous potential.
- **Efforts to improve the efficiency of water use in both the urban and agricultural sectors.** One of the greatest opportunities for addressing water scarcity and quality problems is by increasing the efficiency of water use and reducing waste. Great advances have been made, and total water use in the United States has actually decreased in the past 20 years, reducing pressure on overall supply. Much more can be done.



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- **National water science and policy** and offer guidance on integrating efforts now scattered among disparate and uncoordinated federal agencies and departments. National budget priorities should also be re-evaluated and re-structured to ensure that the national objectives are more clearly supported.
- **Revisions or better enforcement of national laws related to water**, including laws governing water quality (the Clean Water Act and the Safe Drinking Water Act), the protection of aquatic ecosystems, the financing of water infrastructure, and national standards for improving water-use efficiency and conservation.
- **Recommendations for flood and drought management**, including implementing overdue changes proposed by previous reviews.
- **The physical security of the nation's water**, by highlighting necessary steps that could be taken to reduce overlap and streamline responsibilities of the multiple federal agencies working on water issues.
- **Recommendations for the U.S. role in identifying and addressing global water problems**, including how to significantly accelerate efforts to meet the large and devastating unmet basic human needs for water in poorer countries. These recommendations should address how best to apply the vast financial, educational, technological, and institutional expertise of the United States to these problems.
- **How to prepare the nation's water resources systems for the risks of climatic changes.**
- **Recommendations for reducing the risks of international tensions over shared water resources**, including how to resolve concerns with our own neighbors, Mexico and Canada, over shared water systems. These recommendations would be valuable in other international river basins where our experience, international stature, and expertise can be effective.

The Need for U.S Leadership

The time is ripe for an integrated and comprehensive national water strategy. While many water issues will remain local, to be resolved by community efforts, our national government can no longer ignore the positive and effective role it can play both here and abroad. The United States is well positioned to be a world leader in addressing water problems, yet the U.S. regularly fails to present the world community with a



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comprehensive, integrated, and informed set of positions necessary to play a leadership role.

I congratulate you for considering this vital issue and for helping to raise national attention on the need to re-evaluate and re-focus efforts on sustainably managing the nation's precious freshwater resources.

Thank you for your attention.

Dr. Peter H. Gleick
March 2009



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Biography for Dr. Peter H. Gleick

Dr. Peter H. Gleick is co-founder and President of the **Pacific Institute** in Oakland, California. The Institute is one of the world's leading non-partisan policy research groups addressing global environment and development problems, especially in the area of freshwater resources. Dr. Gleick was described by the San Francisco Chronicle in 2009 as "arguably the world's leading expert on water." His research and writing address the hydrologic impacts of climate change, sustainable water use, water privatization, and international conflicts over water resources. His work on sustainable management and use of water led to him being named by the BBC as a "visionary on the environment" in its *Essential Guide to the 21st Century*. In 2008, Wired Magazine called him "one of 15 People the Next President Should Listen To."

Dr. Peter H. Gleick produced some of the first research on the implications of climate change for water resources. He has also played a leading role in highlighting the risks to national and international security from conflicts over shared water resources. He produced some of the earliest assessments of the connections between water and political disputes and has briefed major international policymakers ranging from the Vice President and Secretary of State of the United States to the Prime Minister of Jordan on these issues. He also has testified regularly for the U.S. Senate, House of Representatives, and state legislatures, and briefed international governments and policymakers.

Dr. Gleick received a B.S. from Yale University and an M.S. and Ph.D. from the University of California, Berkeley. In 2003 he received a MacArthur Foundation Fellowship for his work on global freshwater issues. In 2006 he was elected to the U.S. National Academy of Sciences, Washington, D.C. and his public service includes work with a wide range of science advisory boards, editorial boards, and other organizations. Gleick is the author of more than 80 peer-reviewed papers and book chapters, and seven books, including the biennial water report *The World's Water* published by Island Press (Washington, D.C.).