

National Water Research Institute Our History

1991

◆ The **Joan Irvine Smith & Athalie R. Clarke Foundation** joins with five Southern California water agencies to create NWRI “for the promotion of excellence in water management and research.”

◆ Mrs. Joan Irvine Smith holds the first of several Annual Oaks Classics, a West Coast equestrian event, to provide proceeds to NWRI and select Orange County charities.



Assemblyman Ken Maddox presents Mrs. Joan Irvine Smith, co-founder of NWRI, with a California Legislature Assembly Resolution in 2004.

1992

◆ NWRI provides over \$1 million in funding to its first seven research projects, examining issues in recharge processes, colored water, groundwater contaminants, wetlands enhancement, water quality control, and wastewater pathogens and degradation processes.

◆ NWRI holds its first seminar, entitled, “California Water Law: Past, Present, But What About the Future?”

◆ The first **NWRI Research Advisory Board** (RAB) meeting is held at the Orange County Water District to evaluate and review NWRI’s research projects. The RAB represent water science expertise from across the nation – there were 19 RAB members at this first meeting; today, there are over 40 members.



The NWRI Research Advisory Board in 2003.

◆ “Nature’s Most Precious Resource,” a three-part television program about Orange County’s quest for water, debuts on KOCE-TV Channel 50. The 90-minute program was NWRI’s first outreach project to broaden public awareness on water research and management.

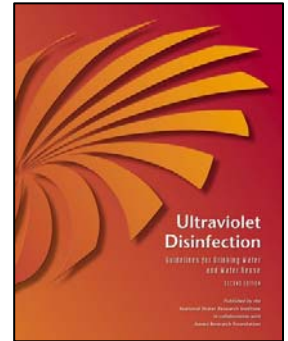
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1993

◆ **Water From Water: Desalination** airs as the first in a series of five public awareness videos produced by NWRI in cooperation with a variety of organizations such as the U.S. Bureau of Reclamation and U.S. Environmental Protection Agency.

◆ NWRI's Blue Ribbon Panel on ultraviolet (UV) disinfection systems publishes a groundbreaking report on UV disinfection guidelines for wastewater reclamation in California. This report is revised in 2000 as the **Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse** – the first of its kind in the world. A second edition was published in 2003.

◆ Fouling and Module Design Workshop – the first of over 20 Nominal Group Techniques workshops conducted by NWRI – is held in cooperation with the National Science Foundation.



1994

◆ NWRI is selected as the principal consultant to the Multilateral Working Group on Water Resources in the Middle East Peace Process and, as a result, designs the institutional framework that established the Middle East Desalination Research Center in the Sultanate of Oman.

◆ The **NWRI Athalie Richardson Irvine Clarke Prize** is established in memory of NWRI co-founder Athalie Richardson Irvine Clarke Prize and is first awarded to Bruce E. Rittmann, Ph.D., a professor of engineering now at Arizona State University. The Clarke Prize is one of only a dozen water prizes awarded throughout the world.

◆ Is microfiltration the right choice to treat water and wastewater? That was the question at **Microfiltration I**, co-sponsored by NWRI and the Orange County Water District. NWRI later holds Microfiltration II, an international symposium, in 1998 to discuss the evolution and future development of this significant technology. Microfiltration III followed in 2002 to demonstrate the microfiltration's evolution as a novelty to a treatment technology broadly accepted by water utilities worldwide, and Microfiltration IV was held in 2006 featuring a short course of membrane bioreactors.



California's Lt. Governor, John Garamendi, presented the 15th Clarke Prize Recipient, Nancy Rabalais, with a State of California resolution at the 2008 award ceremony.

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1995

◆ NWRI is awarded its first U.S. patent: “Biodegradation of Volatile Organic Contaminants from Air Using Biologically Activated Foam.”

◆ NWRI creates the **Corporate Associates Program** to provide opportunities for the research community to interact with the industrial community on NWRI projects like microfiltration, UV disinfection, and utility leadership.



Ronald B. Linsky served as NWRI's first Executive Director from 1991-2005.

1996

◆ NWRI receives funding from the U.S. Bureau of Reclamation to establish National Centers for Separation and Thermal Systems Research. This eventually becomes the **National Centers for Water Treatment Technologies**.



NWRI Independent Advisory Panels meet to provide third-party expertise in reviewing and evaluating water research project and programs. The Groundwater Replenishment System Panel, pictured here in 2008, has met since 2004 on behalf of the Orange County Water District.

◆ “The World of Water” – NWRI’s original website – premieres on the World Wide Web. The website was developed by graduate students at the University of California, Irvine.

◆ NWRI is awarded its second U.S. patent: “Method for Nucleic Acid Isolation Using Supercritical Fluids.”

◆ Sydney, Australia is the location of NWRI’s international workshop on Membrane Biofouling. This event, co-sponsored by the University of New South Wales, was NWRI’s first conference outside the United States.

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1997

◆ NWRI provides funding for the “Produced Water Project,” a study sponsored by Kennedy/Jenks Consultants to make oil-produced water drinkable. The project later received a 1999 Grand Award – the top prize for research – from the American Academy of Environmental Engineers.

◆ NWRI is awarded its third U.S. patent: “Apparatus and Method for Nucleic Acid Isolation Using Supercritical Fluids.”

◆ The Water Environment Federation awards the Jack Edward McKee Medal to an NWRI-supported project and follow-up paper entitled, “Identification of Wastewater Dissolved Organic Carbon Characteristics in Reclaimed Wastewater and Recharged Groundwater.”



NWRI has a booth at the West Basin Municipal Water District's Children's Water Festival since 2006.

1998

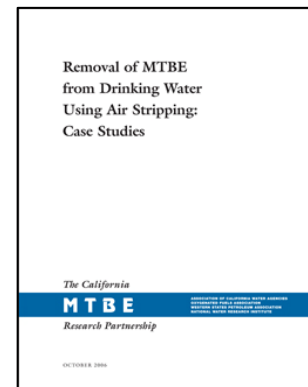
◆ In cooperation with the U.S. Environmental Protection Agency and U.S. Geological Survey, NWRI holds the **Source Water Protection Conference** to discuss the technical needs of those responsible for maintaining, managing, and protecting sources of drinking water.

◆ NWRI and NWRI Corporate Associate Malcolm Pirnie, Inc. establish the **Center for Excellence in Utility Leadership**. This Center focuses on the decision-making process undertaken at water and wastewater utilities.

1999

◆ NWRI becomes Program Manager of the **California MTBE Research Partnership**, a cooperative program among California petroleum and water agencies interested in alleviating groundwater contamination by the fuel oxygenate, MTBE.

◆ NWRI and the Municipal Water District of Orange County begin the first of many workshops and conferences under “**Focus on Orange County's Water Future**,” a program to unite water and business communities in identifying and tackling water issues within Orange County.



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1999 (continued)



Riverbank Filtration Conference attendees visited an RBF well in Louisville, Kentucky, during a field trip.

◆ In 1999, NWRI invited American and European experts to the International Riverbank Filtration Conference to discuss and promote this low-cost, relatively unknown water treatment technology in the U.S. The result of this conference was *Riverbank Filtration: Improving Source-Water Quality*, a 365-page book jointly published by NWRI and Kluwer Academic Publishers in 2002. The **Second International Riverbank Filtration Conference**, featuring over 40 speakers from around the world, was held in September 2003.

◆ NWRI joins with the County of Orange Planning Facilities Resources Department, Orange County Sanitation District, University of California Irvine, and City of Huntington Beach in California to launch a research program to determine the cause of local beach closures.

2000

◆ NWRI holds **UV 2000: A Technical Symposium**, a 2-day event that focused on the pressing issues facing the industries interested in using UV technology for wastewater and drinking water disinfection.

◆ With the support of the Orange County Department of Education, NWRI creates and administers the exam for the Water Quality event for the California State Science Olympiad to promote water science education among Southern California high school students.

◆ NWRI holds **Water Camp 2000**, the first of a series of weeklong educational summer camps for secondary school students interested in water and water science.

◆ In a one-of-its-kind collaboration, NWRI joins forces with the American Water Works Association Research Foundation, WateReuse Foundation, and Water Environmental Foundation to jointly fund water reuse research through the **Joint Water Reuse Task Force**.



NWRI specializes in holding Nominal Group Technique Workshops, like this one seen here in 2003 on Califed Bay-Delta Drinking Water quality.

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2001

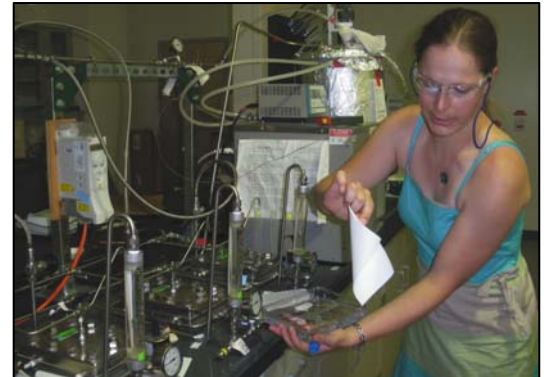
◆ The "Organism Detection Seminar" is the first in a series of national seminars that NWRI holds to address the theme, "Emerging technologies to Meet Emerging Needs." Other seminar topics include UV disinfection technologies and the impacts of salinity on water quality.

◆ NWRI launches the Circle of Friends program to support research in water science and technology. Donations to the Circle of Friends support the NWRI educational programs.

◆ NWRI celebrates its Tenth Anniversary with a dinner gala that included more than 400 guests, ranging from water science researchers, utility leaders, prominent citizens, and politicians from Orange County.

◆ In cooperation with the Inland Empire Utilities Agency and Southern California Alliance of Publicly Owned Treatment Plants, NWRI holds the **Chino Basin Organics Management Conference** to help determine strategies to overcome the water quality problems associated with dairy and agricultural practices in Southern California.

◆ Watersheds – natural settings with meadowlands, streams, and mountains – are being replaced with concrete and golf courses at an astonishing rate. NWRI holds the first **National Urban Watershed Conference** to look at the impacts of the urbanization of watersheds and how it affects water quality and supply.



NWRI supports the research of graduate students by awarding fellowships to deserving students, such as Stanford University student Eva Steinle-Darling (2007-2008 Fellow).

2002

◆ In collaboration with the Southern California Coastal Water Research Project, State Water Resources Control Board, and U.S. Environmental Protection Agency, NWRI sponsors the **Microbiological Source Tracking Workshop** to better define the nature of water quality problems across the nation.

◆ The issue of salinity takes center stage when NWRI helps create and the **Southern California Salinity Coalition**, an organization composed of 13 member agencies to address the critical need to remove salts from water supplies and to preserve water resources in California.

◆ NWRI publishes *Assessing Risk Information Concerning Coastal Runoff*, a report that examines news reports from the media and environmental organizations to determine the accuracy of information on the effects of ocean water on human health and public policy.



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2003

◆ NWRI holds its first **Workshop for Elected and Appointed Water Officials** with the goal of helping water officials gain a better understanding of the regulatory, financial, and public-policy implications of critical water resource issues.

◆ Dr. Traugott Schyett of the Technical University of Berlin becomes the second international researcher to receive an NWRI Visiting Scientist grant, which allowed him to track the fate of pharmaceuticals in the Santa Ana River (California) as they infiltrate into the groundwater basin.



NWRI has awarded junior high and high school students with cash prizes at the O.C. Science and Engineering Fair for almost 10 years.

◆ NWRI and the Middle East Desalination Research Center join forces to co-fund a \$50,000 doctoral fellowship in the field of desalination. Candidates are students from the Middle East who are studying at American universities.

2004

◆ The **Pacific Rim "Quantum Leap" Membrane Symposium** is held by NWRI in Honolulu, Hawaii, to bring together the nations of Japan, China, Singapore, Australia, and the US -- all leaders in membrane technology -- to promote collaboration on future membrane research. They agree to work together as a Pacific Rim Partnership on developing nanotechnology enhanced water membrane systems.

◆ Two Roundtables are held in 2004 as part of the Urban Runoff Roundtable series, meetings designed to bring interested parties together to better control and manage urban runoff in Southern California.



The second NWRI Award of Excellence was awarded to the Honolulu Board of Water Supply during the Pacific Rim Quantum Leap Membrane Symposium.

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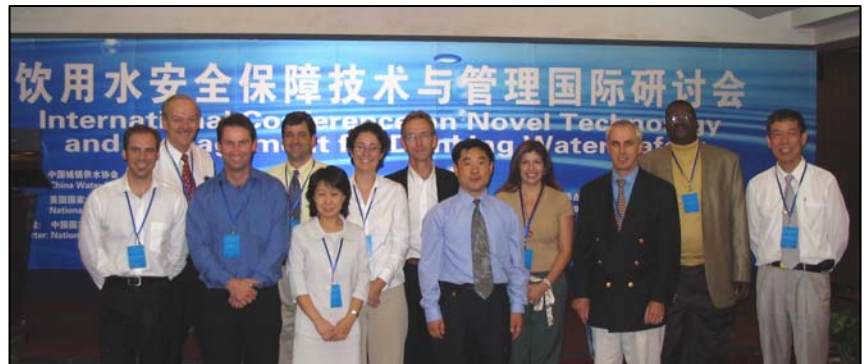
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2005

◆ Always aware of the importance of education, NWRI helps establish an annual **Southern California Salinity Coalition Fellowship** to support graduate research addressing critical salinity issues impacting Southern California.

◆ NWRI suffers a great loss when Ronald B. Linsky, NWRI's Executive Director of the last 15 years, passes away in August. Jeffrey J. Mosher is selected to guide NWRI into the future.

◆ In September 2005, NWRI co-sponsors a conference in Tianjin, China, that focuses on examining the latest technological and scientific developments for upgrading drinking water quality. Nearly 200 participants from China, Australia, the U.S., and Europe attend the **International Conference on Novel Technology and Management for Drinking Water Safety**.

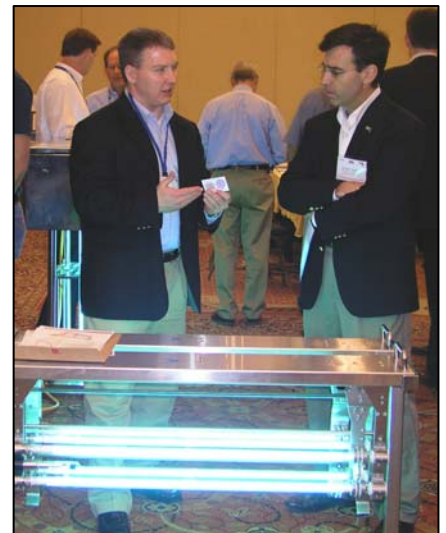


NWRI traveled to China in 2005 to support an international conference on upgrading drinking water quality.

2006

◆ As part of NWRI's fourth international Microfiltration Conference, NWRI holds a special one-day short course on membrane bioreactors (MBRs), a promising technology that uses microfiltration or ultrafiltration to enhance wastewater and reclaimed water treatment processes. The follow-up to this event is the development of **NWRI's Short Course Series**, which holds short courses on MBR operation and design in California in 2006 and Florida in 2007.

◆ In June, the Youth Employment Service (YES) of the Harbor Area, Inc. honors NWRI for its “dedication to our most valuable resources – our youth and our water.” NWRI’s late Executive Director, Ronald B. Linsky, is also remembered at the event for his dedication to improving water resources and implementing educational water-science programs.



UV manufacturers provided equipment to display at the UV short course in 2008.

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2007

◆ In April, NWRI holds its first annual **NWRI Graduate Fellowship Research Conference**, which showcases the work of our NWRI Fellows. It features 11 student presenters and a poster session.

◆ The **NWRI Ronald B. Linsky Fellowship for Outstanding Water Research** is established and awarded in honor of NWRI's first Executive Director. Douglas Call, a student at The Pennsylvania State University, is its first recipient.



Students at O.C. Water Camp test for bacteria in ocean water samples.

◆ The first **O.C. Water Camp** was held in summer 2007 by NWRI, the Municipal Water District of Orange County, Irvine Ranch Water District, Orange County Water District, Orange County Sanitation District, and County of Orange. Students attended one of two week-long sessions, learning about water treatment, recycling, conservation, irrigation, and urban runoff, among others.

◆ NWRI helps establish the **Utility Branding Network**, which is designed to help water and wastewater utilities develop positive brands that clearly communicate the value they provide to their communities.

◆ NWRI teamed with the U.S. Environmental Protection Agency to sponsor an **Advanced Asset Management Training Workshop** for water and wastewater utility managers to help improve the operational, environmental, and financial performance of utilities.

2008

◆ NWRI publishes the report, *A Global Perspective of Low Pressure Membranes*, which provides a review of the current status of the fast-growing low-pressure membrane industry. It is one of NWRI's new e-publications – electronic reports that NWRI has made available to download online for free.

◆ Debuting online was the **Salinity Management Guide**, an interactive web tool showing how recycled water can be safely used for landscape irrigation and that salinity can be addressed through proper management strategies. NWRI supported this project in partnership with eight industry sponsors.

