

INNOVATION AND RESEARCH FOR WATER INFRASTRUCTURE FOR THE 21ST CENTURY: COOPERATIVE AGREEMENT



IMPACT STATEMENT

Through this \$10 million cooperative agreement, The U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD) will increase its recognition as an active leader and supporter of research that seeks innovative solutions to problems posed by aging water infrastructure.

BACKGROUND:

Aging and deteriorating water infrastructure is a priority issue for EPA. In 2002, the EPA's Office of Water (OW) carried out a study to gain a better understanding of the challenges facing the nation's drinking water and wastewater utilities. In September 2002, the Agency published, *The Clean Water and Drinking Water Infrastructure Gap Analysis* (EPA-816-R-02-020), also known as the "Gap Analysis" report (EPA, 2002). OW's response to the aging water infrastructure problem is their Sustainable Water Infrastructure (SI) Initiative, which seeks to promote and enable better use of our resources, reduce the funding gap, and move the nation's water infrastructure down a pathway toward sustainability.

The SI Initiative identifies four main "pillars:" better management, full-cost pricing, watershed approach, and water efficiency that support sustainable water infrastructure. The SI Initiative seeks to promote and support better execution by utilities in these four "pillar" areas. Led by OW and supported by many other Program Offices and Regions, the SI Initiative represents a collaboration with public and private utilities and municipal governments that provide drinking water and wastewater services; state and tribal water and wastewater programs; drinking water and wastewater equipment manufacturers and consultants; academia; and environmental advocacy groups.

In fiscal year 2007, ORD's National Risk Management Research Laboratory (NRMRL) initiated the Aging Water Infrastructure (AWI) Research Program, to support the SI Initiative with sound, scientific data. The goal of the AWI Research Program is to generate the science and engineering to improve and evaluate promising innovative technologies and techniques to reduce the cost and improve the effectiveness of operation, maintenance, and replacement of aging and failing drinking water and wastewater treatment and conveyance systems.

DESCRIPTION:

NRMRL has funded this research project in support of its AWI Research Program. This cooperative agreement was competitively awarded to a non-profit organization to conduct research that will produce, evaluate, and summarize performance, cost, and value data and information about innovative technologies that will assist the user community to reduce the cost and improve the effectiveness of design, operation, maintenance, rehabilitation, and replacement of aging/failing wastewater, stormwater, and drinking water conveyance and treatment infrastructure. Outputs are sought that can be producing their intended benefits for the user community within four years. The user community consists of utilities, technology and service providers, researchers and research funding organizations, and regulators.

The cooperative agreement was advertised in March 2008, and the award was announced on July 16, 2009. The specific project team will be determined at award, and the specific projects will be determined post-award based on the proposal and an assessment of research progress and current needs and priorities. The intent is to fund the cooperative agreement in the amount of \$2.5 million per year for each of the four years, for a total amount of \$10 million. This major cooperative agreement will provide ORD with a substantial increase in research capability in scientific, technical and practical expertise; hours; facilities; equipment; and resources to meet the goals of the AWI Research Program.

EPA GOAL: Goal #2 - *Clean & Safe Water*; Objective 2.1.1- *Water Safe to Drink*

ORD MULTI YEAR PLAN: Drinking Water (DW), Long Term Goal (LTG) - DW-2 *Control, Manage, and Mitigate Health Risks*; Water Quality (WQ) LTG - WQ-3 *Source Control*

AWARDEE: Water Environment Research Foundation (WERF)

EXPECTED OUTCOMES AND IMPACTS:

The desired outcome from the program is to assist the user community, such as water utilities, to more effectively meet their Clean Water Act and Safe Drinking Water Act requirements and improve water infrastructure sustainability. It is expected that this project will result in increased acceptance of new and innovative technologies by decision makers who adopt, regulate, and design infrastructure technologies.

OUTPUTS:

Expected project outputs include:

- Technical guidance documents, published research papers, and other technical reference material on topics such as:
 - Inspection, leak detection/location/characterization, condition assessment, service life estimation, and cost estimating tools for existing wastewater/stormwater collection systems and drinking water distribution systems
 - Performance and cost analysis of innovative repair, rehabilitation, and replacement technologies and procedures for wastewater/stormwater collection systems and drinking water distribution systems
 - Innovative approaches for wastewater/stormwater treatment and for evaluating the efficacy of water and wastewater/stormwater treatment for emerging contaminants
 - Innovative distribution system design and operating approaches that minimize and/or counteract post-treatment water quality deterioration
 - Approaches to substantially reduce energy usage and/or costs in water conveyance and treatment
- Decision support systems that enable more efficient and effective selection of critical operation, maintenance and capital improvement options.

RESOURCES:

Aging Water Infrastructure Research Program: <http://www.epa.gov/awi/>

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Drinking Water



Water Quality



Aging Water Infrastructure