World Water Monitoring Day 09

Year in Review
World Water Monitoring Day is an international education and outreach program that builds public awareness and involvement in protecting water resources around the world by engaging citizens in conducting basic monitoring of their local waterbodies.

An easy-to-use test kit enables everyone from children to adults to sample waterways for a core set of water quality parameters including temperature, acidity (pH), clarity (turbidity) and dissolved oxygen (DO). Results are shared with participating communities around the globe through the World Water Monitoring Day website.

The Water Environment Federation (WEF) and the International Water Association (IWA) coordinate World Water Monitoring Day (WWMD™) and officially observe it on September 18. While this day marks the official date, the window for monitoring begins each year on March 22 and runs until December 31. Thus, participants are able to choose their World Water Monitoring Day.
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Executive Summary

While officially observed on September 18, World Water Monitoring Day activities took place from March through December in 2009. December 31 served as the deadline for reporting data to the WWMD database for inclusion in this report.

WWMD participants sampled their local lakes, streams, rivers, ponds, estuaries and other waterbodies for four key water quality indicators: dissolved oxygen (DO), pH, temperature and turbidity. Some groups also monitored for the presence of certain macroinvertebrates such as dragonflies, mayflies and scuds. Samples were taken in a range of settings—agricultural, commercial, residential and industrial—on six continents.

A total of 122,599 participants monitored sites worldwide, which represents a 67% increase over 2008. For the first time in the program’s history, the United States did not garner the largest number of participants. Top honors for the number of people engaged in the 2009 program went to Malaysia with over 50,000 people involved in water quality monitoring activities.

Groups and individuals from 81 countries reported World Water Monitoring Day data in 2009—11 more than the 70 logged in 2008. Though the U.S. lost its top spot with regard to participation levels, U.S. participants did report data from the largest number of sites (4,155). After the U.S., Spain (1,651), Malaysia (439) and India (288) led global WWMD efforts in the number of sites monitored.

In 2009, 16,000 WWMD test kits were distributed—773 more than were distributed in 2008.

The coordinators of World Water Monitoring Day, the Water Environment Federation (WEF) and the International Water Association (IWA), received financial and in-kind support in 2009 from primary sponsors the U.S. Geological Survey, the U.S. Environmental Protection Agency, PerkinElmer, ITT Corporation, Sinclair Knight Merz (SKM) and Smithfield Foods.

A Note on World Water Monitoring Day Data

Participation data includes only those sites and countries where participants completed the data entry process.

The coordinators of WWMD recognize that a small percentage of participants each year have monitored at more than one site and/or more than one time. Thus, it is likely that this figure is one percent to five percent higher than the actual number of people who monitored. Given this range, the coordinators estimate that between 116,469 and 121,373 individuals participated in WWMD 2009.
World’s Water at a Glance

The following figures represent the results of WWMD 2009 for the continents of North America, South America, Europe, Asia, Africa and Australia (including Oceania) based upon the four WWMD water quality parameters. Please bear in mind that the results reported for World Water Monitoring Day do not constitute a completely thorough and accurate portrayal of the health of the world’s water. More detailed information on these results is available in the appendices of this report.

<table>
<thead>
<tr>
<th>Continent</th>
<th>Sites in Sample</th>
<th>DO (PPM)</th>
<th>pH</th>
<th>Temperature (°C)</th>
<th>Turbidity (JTU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>229</td>
<td>4.43</td>
<td>7.36</td>
<td>22.99</td>
<td>29.03</td>
</tr>
<tr>
<td>Asia</td>
<td>1,420</td>
<td>3.81</td>
<td>7.38</td>
<td>24.81</td>
<td>27.06</td>
</tr>
<tr>
<td>Australia/Oceania</td>
<td>18</td>
<td>5.95</td>
<td>7.00</td>
<td>16.54</td>
<td>9.24</td>
</tr>
<tr>
<td>Europe</td>
<td>2,016</td>
<td>4.83</td>
<td>7.21</td>
<td>13.60</td>
<td>17.08</td>
</tr>
<tr>
<td>North America</td>
<td>4,305</td>
<td>7.71</td>
<td>7.35</td>
<td>17.43</td>
<td>16.27</td>
</tr>
<tr>
<td>South America</td>
<td>102</td>
<td>6.96</td>
<td>7.58</td>
<td>12.27</td>
<td>16.38</td>
</tr>
</tbody>
</table>

1 Credible water quality sampling requires the use of standard quality assurance protocols and is conducted by trained volunteer monitoring groups and professionals around the world.
Average pH

World’s Water at a Glance

Average DO
**Average Turbidity**

**Average Water Temperature**

![Charts showing average water temperature and turbidity by region](image-url)
WEF, IWA Celebrate WWMD 2009 in Washington, DC

U.S. Congresswoman Eleanor Holmes Norton (D-DC), 150 students and over 100 guests joined the Water Environment Federation (WEF) and the International Water Association (IWA) on September 18, 2009 for a World Water Monitoring Day celebration at Hains Point in Washington, DC. (See photos on the next page.)

The program began with remarks from emcee Brian Van de Graaf, a local meteorologist with WJLA ABC 7 News. Van de Graaf led the audience through an inspirational line-up of speakers including the Congresswoman, representatives from WEF and IWA, Mr. Michael Shapiro (Deputy Assistant Administrator for the U.S. EPA’s Office of Water), and Ms. Donna Myers (Chief of the U.S. Geological Survey's National Water Quality Assessment Program).

Following the formal program, students from Immanuel Lutheran School (Alexandria, Va.), Grace Episcopal School (Alexandria, Va.), St. Michael the Archangel School (Silver Spring, Md.), Jefferson-Houston School for Arts and Academics (Alexandria, Va.), and Hope Community Charter School (Washington, DC) performed tests on the Potomac River and visited a variety of educational and interactive displays on a number of water quality issues.


WWMD Awards Program Débuts

It had been in the works for some time; however, 2009 marked the inaugural year of the World Water Monitoring Day Awards Program. The program is designed to recognize participants for outstanding achievement in boosting awareness of water quality issues via WWMD. The program features two distinct categories of awards: the WWMD Superlatives and Water Champion awards.

While the WWMD Superlative recipients are selected directly from data submitted to the online database, the Water Champion awardees are selected by a regional panel of judges. Two 2009 Water Champion awards will be awarded on March 22, 2010 (World Water Day) in each of six regions: Africa, Asia, Australia/Oceania, Europe, North America and South America.

WWMD would like to extend its gratitude to the water industry professionals who have volunteered to serve on their region’s judging panel. To see a list of the individuals serving on the Water Champion judging panels, see Appendices.
‘Seeing’ Results

Throughout much of 2009, WWMD coordinators collaborated with the New Zealand-based firm Outpost Central on the development of a new mapping feature for the program’s website. The feature, based on a Google Maps platform, will populate all data collection sites automatically (in real time) on a navigable, clickable world map. This will allow participants to add photos and comments to their monitoring sites, as well as easily click and compare their results to those of others from countries around the world. Launch of the new mapping feature is anticipated early in 2010.

Thanks to the diligent efforts of former Chantilly High School student Shan Rammah (Chantilly, Virginia, USA) and his mentors Katie Field and Craig Farkos of Michael Baker Jr., Inc., the data collected for WWMD 2008 can now be viewed in Google Earth. To download the KML file, please visit the ‘About’ section at www.WorldWaterMonitoringDay.org and then select ‘Data & Reports’.

No Longer Lost in Translation

In an effort to broaden the scope of the program, WWMD continued translation efforts on a number of program resources into additional languages in 2009. Test kit instructions and the program’s promotional brochure are newly available for electronic download in Arabic, Dutch, Hebrew, Italian, German, Polish, Romanian and Russian. The popular children’s storybook A Waterproof Case, which débuted in 2008, has additionally been translated and printed for free distribution in Spanish, French, Portuguese and Romanian. WWMD would like to extend heartfelt thanks to the many volunteers who assisted with the translation of these pieces. They are recognized at www.wwmd.org/resources/volunteers.html.
WWMD data was reported by participants in the following countries:

- Argentina
- Armenia
- Australia
- Austria
- Bangladesh
- Belarus
- Belize
- Brunei
- Darussalam
- Bulgaria
- Cameroon
- Canada
- Chile
- China
- Colombia
- Comoros
- Costa Rica
- Croatia
- Cuba
- Cyprus
- Czech Republic
- Ecuador
- El Salvador
- Estonia
- Ethiopia
- Finland
- Georgia
- Ghana
- Greece
- Guatemala
- Haiti
- Iceland
- Indonesia
- Iran
- Israel
- Italy
- Jamaica
- Kenya
- Lithuania
- Latvia
- Macedonia
- Madagascar
- Malaysia
- Mali
- Mexico
- Mongolia
- Morocco
- Myanmar
- Namibia
- Netherlands
- New Zealand
- Nicaragua
- Nigeria
- Norway
- Pakistan
- Peru
- Philippines
- Poland
- Romania
- Russian Federation
- Singapore
- South Africa
- Spain
- Sri Lanka
- Sudan
- Swaziland
- Sweden
- Switzerland
- Taiwan
- Tajikistan
- Tanzania
- Thailand
- Uganda
- Ukraine
- United Arab Emirates
- United Kingdom
- United States
- Uruguay
- Vanuatu
- Vietnam
- Zambia
- Zimbabwe

Numerical Summary

Eighty-one countries participated in World Water Monitoring Day 2009, and 122,599 participants reported data from a total of 8,090 sites.¹

<table>
<thead>
<tr>
<th>Sites Monitored</th>
<th>Participants</th>
<th>Test Kits Distributed</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,090 Total Sites Monitored</td>
<td>122,599 Total Participants</td>
<td>16,000 Total Kits</td>
</tr>
<tr>
<td>3,935 Outside the U.S.</td>
<td>95,212 Outside the U.S.</td>
<td></td>
</tr>
<tr>
<td>4,155 United States</td>
<td>27,387 United States</td>
<td></td>
</tr>
</tbody>
</table>

¹The coordinators of WWMD recognize that a small percentage of participants each year have monitored at more than one site and/or more than one time. Thus, it is likely that this figure is one percent to five percent higher than the actual number of people who monitored. Given this range, the coordinators estimate that between 116,469 and 121,373 individuals participated in WWMD 2009.
On Location
Madison, Wisconsin, USA
Submitted by, Stephanie Robinson
Girl Scout Troop 871

On May 8, nine fourth graders from Girl Scout Troop 871 surveyed the creek that edges along their school, Henry David Thoreau Elementary. The creek leads into Lake Wingra, a small lake nearby that has lots of visible algae in it during the summer months. The Girl Scouts were curious about their creek. Is it a healthy creek? Is it contributing to the weeds in Lake Wingra?

The girls and their leaders surveyed the creek using monitoring equipment supplied by the World Water Monitoring Day program. They sampled two sites—one just behind the school yard and the other a half mile away, closer to the lake. Surveys at both sites included measurements for temperature, pH, dissolved oxygen and turbidity.

The creek measured a healthy 8 ppm for dissolved oxygen and a pH of 7 at both sites. Turbidity measured 40 JTU. The water temperature was 20°C. It was good to see that this creek, which runs through a residential neighborhood, was in pretty good shape!

Worldwide Leaders in World Water Monitoring Day 2009

The coordinators of WWMD appreciate the contributions of each and every person who took part in the program this year. A full account of each country’s participation is located in the appendices of this report. WEF and IWA would, however, like to acknowledge numerical leaders in participation both globally and within the United States.

Number of Sites Monitored

<table>
<thead>
<tr>
<th>Country</th>
<th>Sites Monitored</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>4,155</td>
</tr>
<tr>
<td>Spain</td>
<td>1,651</td>
</tr>
<tr>
<td>Malaysia</td>
<td>439</td>
</tr>
<tr>
<td>India</td>
<td>288</td>
</tr>
<tr>
<td>Romania</td>
<td>231</td>
</tr>
<tr>
<td>All Others</td>
<td>1,326</td>
</tr>
<tr>
<td>Total</td>
<td>8,090</td>
</tr>
</tbody>
</table>
On Location
Lagos, Nigeria
Submitted by, Adedoyin Lasisi
Ministry of the Environment, Lagos State

WWMD activities commenced for the students of Botsun Private School in Lagos, Nigeria with a pre-monitoring lecture in the school compound. A lecture titled *Healthy Water, Healthy People* was presented by Lasisi K.S.A and Titilope Akosa who also addressed the Millennium Development Goal pertaining to water and sanitation.

The actual water monitoring was carried out at Ajegunle Community along the Lagos-Abeokuta Expressway in Lagos State. The waterbody that was monitored was the Ilo-Awela stream (one of the streams running into the Ogun River, a major river in Southwest Nigeria.) The monitoring was done on September 3 with 45 students and some teachers and parents in attendance. Two water samples were collected at about 500 meters apart along the watercourse.

The general environment of the stream was good with the natural environment undisturbed. However, some human activities like washing and swimming were noted along the stream. The site was selected for its proximity to the school.

After the program, most of the students, parents and teachers expressed their gratitude to the organizer as these opportunities are usually not available to children from schools in rural communities.
Residents of Southwest Missouri enjoy beautiful creeks, streams and lakes and don’t take them for granted. A number of grassroots organizations, as well as local governments, have worked together for decades to protect and preserve the quality of the water in this area.

September 12 marked a day of celebration for these efforts. One of the leading organizations, the Watershed Committee of the Ozarks, threw quite a party—educational fun for the kids, celebratory speeches, a cookout and canoe races!

Among the festivities was a celebration of World Water Monitoring Day—taking advantage of the events of the day and the people who would be attending. Nearly 300 people attended with approximately 75 children taking part in activities planned just for them, courtesy of a grant from the Missouri Water Environment Association (MWEA) in cooperation with a number of partnering agencies and organizations. A live directory listing of these and other Southwest Missouri organizations committed to environmental/conservation education can be seen at www.OzarksEnvironment.com in the ‘Resources’ section.

### Number of Sites Monitored

<table>
<thead>
<tr>
<th>State</th>
<th>Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginia</td>
<td>1,667</td>
</tr>
<tr>
<td>Iowa</td>
<td>787</td>
</tr>
<tr>
<td>Georgia</td>
<td>234</td>
</tr>
<tr>
<td>California</td>
<td>207</td>
</tr>
<tr>
<td>Indiana</td>
<td>159</td>
</tr>
<tr>
<td>All Others</td>
<td>1,101</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,155</strong></td>
</tr>
</tbody>
</table>

The following states are commended for their leadership in WWMD participation in 2009.
On Location

Hanoi, Vietnam
Submitted by, Duong Tong
Hanoi University of Technology

On September 19, 67 students from the Department of Chemical Process Equipment and the Department of Physical Chemistry at Hanoi University of Technology in Vietnam joined in the World Water Monitoring Day event. The participants were proud of taking part in this meaningful activity and hope to extend it throughout the country in the following years.

The selected site was Ba Mau Lake, considered the “green lung” of the surrounding residential area. The students were divided into four groups and charged with collecting and testing water samples from four different points around the lake. The average temperature of the water that the groups examined was 30°C, the DO was 6 ppm, the turbidity was 100 JTU, and the pH was 8.0.

Although it was an oppressively hot day, the students felt highly enthusiastic about testing the water quality of the lake by themselves. They also recognized that it is their responsibility to propagate this activity throughout the University, as well as the community, in order to raise public awareness about water quality protection.
Coordinators, Sponsors and Partners
The program’s committed sponsors and partners, along with countless other local schools, civic organizations, volunteer monitoring groups and interested individuals, have helped build a strong foundation for its continuing success. These organizations are serious in their desire to support growing opportunities to educate and involve people from all over the world who show an interest in the health of their local water resources. The diversity of this group as shared on these pages demonstrates the important role water plays in every sector of our society.

2009 Coordinators

Water Environment Federation

Formed in 1928, the Water Environment Federation (WEF) is a not-for-profit technical and educational organization with 36,000 individual members and 75 affiliated Member Associations representing water quality professionals around the world. WEF and its Member Associations proudly work to achieve our mission of preserving and enhancing the global water environment.

WEF’s mission is the basis for all of its programs and activities. WEF is governed by a member-appointed board of trustees acting on behalf of its membership to advance its mission of providing information, education, and resources to water quality professionals and the public. Visit WEF online at www.wef.org.

International Water Association

The International Water Association (IWA; London (HQ), Den Haag, Singapore, Beijing, Lima, Nairobi, Bucharest) is the global network of water professionals, spanning the continuum between research and practice and covering all facets of the water cycle. There are approximately 10,000 individual and 400 corporate members operating in 130 countries, representing the leading edge in their field of specialty.

The ultimate strength and potential of IWA lies in the professional and geographic diversity of its membership—a “mosaic” of member communities, including academic researchers and research centers, utilities, consultants, regulators, industrial water users and equipment manufacturers.

IWA is promoting collaboration among its diverse membership groups, and sharing the benefit of the very best of knowledge on water science and management worldwide. Visit IWA online at www.iwahq.org.
The U.S. Geological Survey

The U.S. Geological Survey (USGS) has the principal responsibility within the federal government to provide the hydrologic information and understanding needed by others to achieve the best use and management of the nation’s water resources. To accomplish this mission, the Water Resources Division, in cooperation with state, local, and other federal agencies, systematically collects and analyzes data to evaluate the quantity, quality and use of the nation’s water resources. It provides results of these investigations to the public. The USGS also conducts water-resources appraisals describing the occurrence and availability, as well as physical, chemical and biological characteristics, of surface and groundwater.

In support of WWMD 2009, USGS Water Science Centers hosted conferences, hands-on demonstrations and other fun-filled activities for a multitude of students, citizens and public officials across the nation. USGS hydrologists and technicians performed stream gage and real-time data demonstrations, water-quality sampling, and fish and invertebrate collections. Presentations and discussions focused on an understanding of streams requiring monitoring for stream flow, chemistry and aquatic life.

U.S. Environmental Protection Agency

The mission of the U.S. Environmental Protection Agency (EPA) is to protect human health and to safeguard the natural environment—air, water and land—upon which life depends. EPA provides leadership in the nation’s environmental science, research, education and assessment efforts by working closely with other federal agencies, state and local governments and Native American tribes. EPA’s Office of Water works to ensure safe drinking water; protect and restore oceans, watersheds and other aquatic ecosystems; and provide healthy habitats for fish and wildlife, plants and people.

EPA was again a primary partner of WWMD in 2009. On September 18, Michael Shapiro, deputy assistant administrator for the Office of Water, was a featured speaker at the official World Water Monitoring Day celebration at Hains Point in Washington, DC on the banks of the Potomac and Anacostia Rivers. EPA employees assisted with hands-on learning activities at the event. In addition, administrators and staff from several regional EPA offices around the country developed outreach events, hosted displays and participated with local groups as they monitored waters from March to December. For more information on EPA’s Office of Water, visit www.epa.gov/ow.

2009 Sponsors

The following sponsors made WWMD 2009 possible through their generous financial support and participation:

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On Location

Krakow, Poland

Submitted by, Tessa Anderson

CH2M HILL

On October 19, CH2M HILL Poland hosted its first World Water Monitoring Day. The event was held in Krakow and made possible by kind cooperation of the Integration Primary School Nr.158. A group of 20 pupils from the school joined the team for a morning of water quality education and sampling. This event was run with the valuable support of Gosia Jamrozik, Agnieszka Jas, and Tomasz Osiwak from the CH2M HILL Krakow office, along with the assistance of a visiting biologist.

Pupils were shown a presentation on water quality, followed by a demonstration of the testing procedures. Next, working in three groups, they used their new skills to gather and test water samples from the Wilga and Mlynowka rivers. Back in the classroom, they discussed their findings and ideas about water quality improvement. The event concluded with the awarding of certificates.

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Several groups in Las Horquetas have been actively engaged in water monitoring activities over the past few months. José Brenes of Web del Ambiente and local high school teacher Fresia Salazar have formed three monitoring groups. The first group, comprised of students and teachers, monitors the nearby river La Rambla. Two other groups are comprised of housewives, small farmers and others from the community who wish to participate.

La Rambla is fed by a small creek, the water from which (after some treatment) is used for human consumption. Originating in the small town of Nazareth, the creek runs toward the town of Victoria, near which it joins the La Rambla. On September 30, the monitors walked the watercourse in order to gain appreciation for what it is that they are trying to preserve. The group intends to carry out water sampling on a monthly basis at predetermined sites in order to monitor changes over time.

Through their work with these groups, Brenes and Salazar hope to not only get people monitoring, but to “instill some scientific thinking” when it comes to water resources.
Sinclair Knight Merz (SKM)

Sinclair Knight Merz (SKM) is a leading engineering, sciences and project delivery firm. Its purpose is to deliver a positive and enduring impact on the world. In support of this goal, SKM employs about 6,500 staff in offices across Australia, New Zealand, UK, Europe, the Middle East, South America and Asia. This includes environmental scientists, engineers, planners, economists, hydrogeologists and social scientists with specialized skills in all facets of water and environmental management.

SKM became a sponsor of World Water Monitoring Day in mid 2009 and quickly moved to communicate the merits of the program to clients, community groups and staff, particularly in the Asia Pacific region where it is headquartered.

SKM’s General Manager, Water & Environment, Geoff Linke said that linking up with WWMD was a very easy decision. “We recognize the need for careful resource management, restoration of natural ecosystems, and the maintenance of productive uses as they underpin our economy and quality of life. As a result, our connection with WWMD is a very natural fit,” he said.

Smithfield Foods

Smithfield Foods, a global food company with annual revenues approaching $12 billion, produces more than 50 brands of pork and turkey products as well as more than 200 gourmet foods. Its mission is to be a trusted, respected and ethical food industry leader that excels at bringing nutritious meat and specialty food products to millions every day while setting industry standards for corporate social responsibility.

In line with this philosophy, Smithfield Foods continued its longstanding sponsorship of and participation in World Water Monitoring Day for 2009. Company representatives from more than 30 facilities worldwide worked with nearly 400 volunteers from schools, youth organizations, and local government officials to analyze local waterbodies and share information about water quality. More than 140 sampling kits were provided by Smithfield Foods in support of these efforts.

WWMD provides an excellent opportunity for Smithfield Foods’ employees to help raise the understanding of water quality and the factors that influence it with a variety of stakeholders at a local level. For that reason, World Water Monitoring Day has become an integral part of its social responsibility efforts. More information about Smithfield Foods and its commitment to social responsibility can be found at www.smithfieldfoods.com.
2009 Partners

A number of organizations and agencies partnered with WWMD coordinators and sponsors to promote and implement WWMD in 2009. These included:

International/National Partners

ADECAGUA

ADECAGUA organized el Día Mundial del Control de la Calidad del Agua (World Water Monitoring Day) throughout Spain for the third consecutive year. The project is made possible by the assistance of the Ministerio de Medio Ambiente (the Spanish Ministry of Environment) and the Programa de Voluntariado en Ríos (a national volunteer program for the protection of rivers). The 2009 campaign reached more than 20,000 people from schools, environmental education centers, Boy Scouts, the Red Cross, and many other organizations. Participants received a customized test kit, which contained the standard WWMD materials plus materials for testing nitrates and water hardness. Equipment for analyzing macroinvertebrates, riparian vegetation and pressures affecting the waterbody were also included. ADECAGUA looks forward to continued collaboration for WWMD 2010 in order to promote broader public knowledge about water quality issues.

American Academy of Water Resources Engineers

The American Academy of Water Resources Engineers (AAWRE) has been getting the word out about WWMD to its water resources engineers, their respective organizations and to Student Members of the American Society of Civil Engineers (ASCE). In 2010, the organization plans to coordinate presentations and talks from its engineers to classrooms in the US Midwest—and eventually beyond. By informing its members about WWMD, AAWRE hopes to boost involvement in the program and use it to connect with young people on the topic of water resources.

AAWRE is a non-profit organization formed in 2004 by water resources engineers from the ASCE Environmental and Water Resources Institute (EWRI) to improve the practice, elevate the standards, and advance the profession of water resources engineering by certifying engineers with specialized knowledge in water resources, recognizing the ethical practice of water resources engineering at the expert level, encouraging continued professional development for engineers, and supporting positions on water resources issues important to the public health.

CH2M HILL

Global full-service engineering, procurement, construction, and operations firm CH2M HILL has supported WWMD since 2003 because the program focuses public attention on water, encourages environmental stewardship, and allows employees to share their expertise with students, partners, and elected officials to raise awareness of water issues. The program also provides opportunities to strengthen relationships with clients and elected officials by teaming on events including water quality sampling and monitoring, classroom presentations, and participation in local water festivals. In 2009, 16 CH2M HILL offices in Puerto Rico, Poland, and throughout the U.S. organized WWMD events in their communities. Participants learned about water quality by testing pH, turbidity, dissolved oxygen, and temperature. Monitoring events also provided opportunities to engage participants in discussions about the impacts of their actions on water quality and means for becoming better environmental stewards. To read more about CH2M HILL’s 2009 WWMD events, please visit the ‘Participate’ section of the WWMD website at www.WorldWaterMonitoringDay.org.

Earth Day Network

Earth Day Network (EDN) was very excited to support World Water Monitoring Day through its website, the Global Water Network (www.globalwaternetwork.org), again in 2009. Through the Global Water Network, EDN distributed 200 water monitoring kits to members of its international network. EDN’s international partners
worked with schools and youth groups in 35 different countries to test their local waterbodies. Participating countries included: Algeria, Argentina, Australia, Bangladesh, Belize, Benin, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Costa Rica, Croatia, El Salvador, Ethiopia, Ghana, Guatemala, India, Indonesia, Kenya, Liberia, Mauritius, Mexico, Moldova, Morocco, New Zealand, Nigeria, Pakistan, Peru, Philippines, South Korea, Trinidad and Tobago, Togo, the United States and Venezuela. The Global Water Network seeks to continue to expand the exposure of WWMD and increase participation internationally. Pictures and descriptions of the monitoring events will be posted on the Global Water Network website.

Girl Scouts of the USA

Approximately 2,200 Girl Scouts from 32 states and the District of Columbia participated in World Water Monitoring Day 2009. Through their participation in World Water Monitoring Day, girls achieved leadership skills all while developing their scientific monitoring skills. Girls were challenged to think critically about their own values and how water impacts them and how their actions impact local water sources. Girls connected with others locally and globally by teaming up on a worldwide effort. Girls took action to educate and inspire others through local efforts as well as via the worldwide database.

Jewish National Fund

Jewish National Fund (JNF), with the support of the USDA Forest Service, celebrated WWMD 2009 by providing test kits to 97 schools in the United States—reaching 7,550 students—and 150 kits to schools in Israel. The majority of these schools were participating in the program for the first time. JNF also engaged educators through its interactive webpage (www.jnf.org/waterkits) where it provides educational materials and resources, encouraging teachers to create lessons around their water monitoring activities.

LaMotte Company

A leading manufacturer of portable test equipment for lab and field, LaMotte Company specializes in hand-held colorimeters, turbidity meters, liquid and tablet reagent systems, test strips, and field test kits. Applications include water/wastewater, food/beverage processing, boiler/cooling tower water, swimming pool/spa water, environmental applications and environmental education.

Horizon Technology

Horizon Technology, Inc. has been proud to continue its partnership with Water Monitoring Day throughout 2009. Through corporate marketing materials, including presentations given at industry conferences, tradeshows and associations—both nationally and internationally—Horizon has been honored to promote the good works of WWMD, help spread the word about the importance of understanding what is happening to our planet’s water supplies, and underscore how imperative it is that we all contribute in some way to protecting this valuable resource around the world.
Monitoring Day test kits since the program’s inception in 2001. LaMotte Company was founded in 1919 and is located in Chestertown, Md. on Maryland’s Eastern Shore.

National Public Lands Day

National Public Lands Day (NPLD), a program of the National Environmental Education Foundation, is the nation’s largest hands-on volunteer effort to improve and enhance the public lands Americans enjoy. Today, eight federal agencies and many state and local lands participate in this annual day of caring for shared lands.

During NPLD 2009, 150,000 volunteers at over 2,000 sites in all 50 states, the District of Columbia, Puerto Rico and other U.S. territories built trails and bridges, removed trash and invasive plants, planted trees and restored our water resources.

This year’s environmental focus was water and public lands, and WWMD donated 100 water kits to NPLD sites. Service projects that used the kits were sponsored by federal agencies such as the U.S. Forest Service and U.S. Navy, as well as urban school districts and town parks. The NPLD website also provided resources on a variety of water topics to further augment volunteers’ aquatic knowledge.

Outpost Central

Outpost Central is supporting WWMD by providing web visualization software and web development services for the presentation of water data collected by the program’s participants. Outpost Central develops smart water meter and sensor technology to seamlessly connect water meters and sensors to the web and is one of the fastest growing technology companies in the Asia Pacific region. Outpost smart water meters are deployed by water utilities, schools and large users of water to reduce leakage and manage water consumption.

World Malayalee Council

World Malayalee Council (WMC) is a non-political, non-sectarian, not-for profit global organization of people of Indian origin. Because the availability of clean, potable water for drinking is a major issue in developing nations, WMC has taken up water pollution awareness education as a major project.

WMC participated in the 2009 World Water Monitoring program and collected samples from 12 major rivers in the Indian state of Kerala. WMC used WWMD as part of a broader water pollution awareness program, educating people about how to keep the rivers clean. There are 44 major rivers with several tributaries throughout the state. WMC plans to institute a similar program within other Indian states in the future.

WMC is also working on a student exchange program involving high school students from Newark, New Jersey. The students will visit India and Ethiopia to propagate water quality awareness and study the effects of water pollution in the rivers of these developing countries.

Additional WWMD International/National Partners include:

- Biobox Moçambique
- Environment Online (ENO)
- European Water Partnership
- GEMS/Water Program
- Green Teacher
- H2bid.com
- H2O for Life
- Solvatten AB
- Stockholm Junior Water Prize
- Water, Engineering and Development Centre
- Water New Zealand
- World Wildlife Fund in West African Marine Ecoregion
Regional/Local Partners

Appalachian Trail Conservancy

The Appalachian Trail Conservancy participated in World Water Monitoring Day again in 2009—sites along the 2175+ mile footpath have been monitored for three years now. Four hundred volunteers—from Trail maintaining clubs, the Trail to Every Classroom program and youth groups—monitored water sources in Georgia, North Carolina, Virginia, Maryland, Pennsylvania and Vermont.

Catamount Institute

Catamount Institute has served thousands of students and teachers in Colorado’s Pikes Peak region with a vibrant range of innovative programs. With a mission to inspire ecological stewardship, the organization focuses on resource conservation, preservation and protection.

In spring 2009 Catamount incorporated the WWMD water testing kit into its custom field trip curriculum. With teachers asking for more in-depth lessons on aquatic sciences, the site-based Keepers of the Water program served more than 600 students in the last quarter of school year 08/09.

During the summer Catamount led several educator-focused workshops. Working with the Colorado Geographic Alliance, employees trained more than 20 teachers from all over the state in water monitoring and kit use. A number of teachers who received the training will continue to monitor regional waterways with their students throughout the 09/10 school year, reporting results at the Student Research Symposium co-hosted by Colorado College.

Central States Water Environment Association

The Central States Water Environment Association (CSWEA) Minnesota Section’s WWMD Committee ordered 30 monitoring kits. Kits were supplied to the City of Mankato for distribution to teachers in that area and to the Community School of Excellence in St. Paul.

Eighth grade science students from the Community School of Excellence tested water in the Mississippi River at Shingle Creek in North Mississippi Regional Park and also in the Mississippi at Coon Rapids Dam Regional Park on October 16 and 18, respectively. The students tested for water temperature, pH, water clarity, and dissolved oxygen. Next, the students will visit two sites on the Mekong River in Thailand and conduct the same tests, completing the river water quality comparison project.

This next year CSWEA will look to expand the number of monitoring sites in Minnesota and enlist members to work with schools or other groups. One current plan is the incorporation of a WWMD station at the Metro Children’s Water Festival.

Florida Water Environment Association

The Florida Water Environment Association (FWEA) continued to reach out to teachers, scout troop leaders, and others in the state during 2009. Due to limited financial resources, participants were asked to reuse test kits from the previous year if available, and the FWEA was able to make several “rebuilt” kits available to teachers and scout troop leaders. In addition, WWMD materials were displayed and discussed at the National Science Teachers Association (NSTA) area conference in Ft. Lauderdale, Fla. in November.

Great Swamp Watershed Association

2009 represented the Great Swamp Watershed Association’s third consecutive year of participation in World Water Monitoring Day. GSWA provides test kits to volunteers interested in monitoring the watershed’s streams. Participants are asked to choose any site on any stream in the watershed (map with watershed boundaries provided) and collect data using the WWMD test kits. More ambitious volunteers monitor multiple sites of their choosing. After collecting the data, volunteers input the information into the online WWMD database and are instructed to enter GSWA for the organization name. The instructions included with each kit make the monitoring process easy and simple to understand, making the event appropriate for all ages.
Missouri Water Environment Association

The mission of the Watershed Management Committee (WMC) of the Missouri Water Environment Association (MWEA) is to recommend, develop and conduct activities to advance the understanding and use of watershed management to more effectively preserve and enhance Missouri’s water environment. The WMC implements this mission through workshops, articles of interest and cooperation with other groups and organizations.

The WMC incorporated World Water Monitoring Day into its collaborative outreach efforts by co-hosting a water quality event at the Watershed Center in Springfield, Mo. Around 250 people attended the event, including an estimated 75 schoolchildren. Barbara Lucks of the Springfield Public Works Department coordinated the event with the support of many sponsoring organizations. Activities included a monitoring station (utilizing 10 WWMD test kits donated by MWEA); a stream table providing hands-on interaction and demonstrating water flow; and a scavenger hunt using clues from the interpretative signage found around the Center.

Montana Watercourse

Montana Watercourse has been active in water monitoring efforts since its inception in 1989, and is excited to continue these efforts and partnerships in the future. During 2009, 50 WWMD test kits were distributed to schools and service-learning groups in: Anaconda, Billings, Browning, Cascade, Deer Lodge, Dixon, Ennis, Harlem, Havre, Lincoln, Livingston, Malta, Missoula, Pray, Roundup, Shelby, Stevensville, Terry and Vaughn. WWMD kits reached K-12 students and educators in the public, private, home and Native American school systems. In addition to test kit materials, each of these groups was given sampling instruction, hands on activities, data uploading tutorials, macroinvertebrate sampling techniques and data analysis methods to round out their water monitoring experience. Follow-up with each of the monitoring groups was conducted during the month of December. This time frame allowed groups the opportunity to sample, process the data and pursue further extensions of the activity.

Multidisciplinary Education for the Environment

Multidisciplinary Education for the Environment (ME4E) is an environmental education consultancy group. Various organizations including schools, libraries, youth groups and park districts utilize ME4E services which are customized to meet their needs.

In September of 2009 ME4E received a WWMD water testing kit for a National Public Lands Day event. Additional kits were then procured, allowing students from third grade through college to test water from three different natural areas. The data was entered while the students were still in the field. Once back in their classrooms, students wrote essays about their experiences and newfound knowledge.

New England Water Environment Association

The New England Water Environment Association (NEWEA) supported numerous WWMD events through their Public Education Committee (PEC), working with nearly 45 schools and community groups. Twenty test kits were donated to the Massachusetts Water Resources Authority for use at schools all over Massachusetts. Two PEC members and MWRA employees were the champions of this program. Another 35 test kits were donated to schools and civic organizations throughout New England through the PEC and NEWEA’s Humanitarian Assistance program. In addition, other NEWEA members, through personal or corporate sponsorship, held WWMD events in the communities in which they live and work.

New Jersey Department of Environmental Protection

For the eighth year, The New Jersey Department of Environmental Protection (NJDEP) collaborated with the US Geological Survey (USGS), the Delaware River Basin Commission (DRBC), the Palmyra Cove Nature Center, and the NJ Watershed Ambassador Program (AmeriCorps) to celebrate WWMD at the Palmyra Cove Nature Center, located along the Delaware River in Palmyra, on October 7. Over 50 students and their teachers from the St. Joseph Pro-
Cathedral School in Camden attended the event where they learned about local freshwater biology and chemistry, stream flow and ground water issues.

The NJDEP’s volunteer monitoring program provided free test kits and educational packets to teachers, informal educators and volunteer groups within the state who were unable to attend the event. Over 40 kits were distributed. The volunteer and the AmeriCorps programs work to promote the World Monitoring Day year round and each year their efforts are drawing more and more attention to this important event.

Ontario Clean Water Agency

The Ontario Clean Water Agency (OCWA) is Ontario’s largest outsourced water and wastewater service provider and has been providing safe, reliable and cost-effective clean water services across the province for over 15 years. During 2009, OCWA's corporate, regional and hub offices distributed 250 WWMD test kits throughout the province of Ontario. This resulted in 200 volunteers at over 59 sites in less than five months! For its first year as a WWMD program partner, OCWA's focus was about increasing the awareness of the program among Canadians, and more significantly, highlighting the importance of the quality of water sources all around the world. After making presentations to various locations including schools, water festivals, camp groups and parent councils, OCWA has made a considerable leap in the right direction and has contributed to the better awareness of both the WWMD program and how to best protect one of the world’s most precious resources: water.

Pacific Northwest Clean Water Association

The Pacific Northwest Clean Water Association has taken an active role in nurturing future water professionals and sharing its knowledge and expertise around the world. In 2009, PNCWA promoted WWMD via several of its outreach initiatives. One such initiative was the Adopt-a-School grant program in which $4500 was distributed to 13 schools to enhance water-related curriculum.

During the past few years the PNCWA Public Education Committee has built a solid relationship with the National Science Teachers Association affiliates and participated at their state conferences. In addition, the Committee joined WWMD in exhibiting at the annual conference of the North American Association for Environmental Education. At both conferences, WWMD and the Stockholm Junior Water Prize were prominently featured.

PNCWA member Clean Water Services also hosted a Russian delegation that travelled abroad to learn about water resource management. As a result, Clean Water Services worked with WWMD to translate the test kit instructions into Russian and distribute test kits to 35 Russian schools.

Rocky Mountain Water Environment Association

The Rocky Mountain Water Environment Association (RMWEA), a member association of the Water Environment Federation, is proud to support WWMD in Colorado, Wyoming and New Mexico. RMWEA supported hands-on use of WWMD kits at several events, including educational activities at the Greeley and Littleton-Englewood wastewater treatment plants in Colorado. These events,
On Location
District Swabi, Pakistan
Submitted by, Rangeen Khan
Human Development Program

The Human Development Program (HDP) is a local nonprofit volunteer organization initiated by the noble thought and efforts of a group of philanthropists with the goal of alleviating challenges within local rural communities through advocacy, capacity building and institutional development.

On Saturday, October 31, HDP and a group of students from District Swabi visited Tarbela Dam near Ghazi and Swabi. This large dam is located on the Indus River within the Haripur District of Pakistan’s North-West Frontier Province (about 50 km northwest of Islamabad). The dam is used for flood control, as well as to store water for irrigation. It is also used for the generation of hydro-electric power. While at the dam, the students conducted water quality testing with test kits provided by the WWMD program.

HDP has launched an awareness campaign in the schools and colleges in the District Swabi. Prior to water quality testing, students are given a presentation on WWMD and the importance of water. HDP volunteers remain on hand to answer questions and assist with the monitoring activity.

On Saturday, October 31, HDP and a group of students from District Swabi visited Tarbela Dam near Ghazi and Swabi. This large dam is located on the Indus River within the Haripur District of Pakistan’s North-West Frontier Province (about 50 km northwest of Islamabad). The dam is used for flood control, as well as to store water for irrigation. It is also used for the generation of hydro-electric power. While at the dam, the students conducted water quality testing with test kits provided by the WWMD program.

Additionally, RMWEA distributed more than 30 WWMD kits to teachers at the 2009 Colorado Science Conference. Members of RMWEA spoke with teachers about potential lesson plans for incorporating WWMD into their curricula and distributed information about the program. The contacts made at this conference should help expand WWMD in the Rocky Mountain West.

Stony Brook-Millstone Watershed Association

The Stony Brook-Millstone Watershed Association protects clean water and the environment in the Millstone River Watershed of central New Jersey. Stony Brook’s Watershed Institute and StreamWatch programs participated in WWMD.

WWMD brochures were mailed to watershed groups and participants in Stony Brook’s land stewardship program. The Institute also posted WWMD information to its website and listserv, both encouraging people to get involved and later requesting that they submit data. Additionally, 39 free WWMD test kits were distributed through partnership with the NJ Department of Environmental Protection.

Stony Brook created a blog post to get people involved in WWMD while recruiting volunteers for its StreamWatch and included articles in the March and September issues its newsletter The Stream Watcher.

Virginia Water Monitoring Council

The Virginia Water Monitoring Council (VWMC) supplied WWMD kits to the Virginia Department of Environmental Quality, which donated them to teachers and other educators around the state. Thanks to VWMC and other contributions, 389 kits were provided. To complement the WWMD activity, VWMC is developing an online resource that will offer Virginia-specific water information to schools, communities and informal educators. Finally, the Council made a presentation about integrating WWMD into the classroom at the annual meeting of the Virginia Association of Science Teachers in November. The teachers who attended the session were very excited about the program.

VWMC has secured funding to continue this outreach effort in 2010 so that more teachers, state parks, communities and environmental educators can learn about WWMD. These projects (2009-10) were made possible thanks to a grant from the Altria Group, Inc. to the VWMC.

Additional WWMD Regional/Local Partners include:

- Alaska Department of Environmental Conservation
- Charles River Watershed Association
- Earth Force, Capital Region
- Lynnhaven River NOW
- Missouri Department of Natural Resources
- North West Indiana Operator's Association
- Water Environment Association of South Carolina
Appendices
Water Champion Regional Judging Panels

Africa

Andre Klokow
Business Development Manager
Energy Central
South Africa/Bahrain

Chiemezie Mgbeahurike
Senior Engineer
Rolchi International
Nigeria

Virendra Proag
Professor
Civil Engineering
University of Mauritius
Mauritius

Stephen Siwila
Scientific Officer
National Institute for Scientific and Industrial Research
Zambia

Asia

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Civil Engineering
IIT Roorkee
India

Islam Haq
Managing Director
Water and Sanitation Agency (WASA)
Pakistan

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Gold Coast Water
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Pat Nixon
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Sinclair Knight Merz
Australia

Sharon Marks
Community Education Officer
SEQ Healthy Waterways Partnership
Australia

Jenifer Simpson
Project Officer
Sunshine Coast Environment Council
Australia

Peter Spencer
Manager
Water Corp. of Western Australia
Australia

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Life Sciences & Facility Management
Zurich University of Applied Sciences
Switzerland

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University of Santiago de Compostela
Spain

Paul Emeka Eke
Process Chemical Engineer
Scottish Centre for Carbon Storage
United Kingdom

John Gregory
Emeritus Professor, Water Chemistry
University College London
United Kingdom

Ernesto Hernandez
Project Manager, Research Assoc.
Durham University
United Kingdom
Participation and Averages by Country

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North America

Jessica Bastin  
Environmental Engineer  
Clark Dietz, Inc.  
USA

Andrew Tibor Der  
Environmental Engineer  
Andrew T. Der & Associates, LLC  
USA

Chuck Haas  
Professor  
Environmental Engineering  
Drexel University  
USA

Amit Kaldate  
Application Engineer  
Degremont Technologies  
USA

Julianne LaRock  
Director, Water Quality Assessment  
South Florida Water Management District  
USA

Sharon Miller  
Project Manager  
HDR, Inc.  
USA

South America

Tamara Avellan  
Regional Secretary  
GWP & UNESCO  
Uruguay

Antonio Benetti  
Professor  
Environmental Engineering  
Instituto de Pesquisas Hidráulicas  
Brazil

Cristian Bornhardt  
Professor  
Chemical Engineering  
Universidad de La Frontera  
Chile

Daniel A. Nolasco  
Consultant  
Water, Sanitation, and Environment  
Nolasco & Associates, Inc.  
Argentina
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