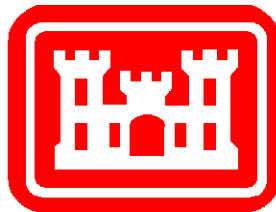


PUBLIC WORKS TECHNICAL BULLETIN 200-1-94
15 APRIL 2011

**ARMY WATER CONSERVATION
COLLABORATION WEB PORTAL**



Public Works Technical Bulletins are published by the U.S. Army Corps of Engineers, Washington, DC. They are intended to provide information on specific topics in areas of Facilities Engineering and Public Works. They are not intended to establish new Department of the Army policy.

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
441 G Street NW
Washington, DC 20314-1000

CECW-CE

Public Works Technical Bulletin

15 April 2011

No. 200-1-94

FACILITIES ENGINEERING
ENVIRONMENTAL

ARMY WATER CONSERVATION COLLABORATION
WEB PORTAL

1. Purpose.

a. This Public Works Technical Bulletin (PWTB) transmits information on accessing and using the Army Water Conservation Collaboration Web Portal. Commonly referred to as the Water Management Toolbox, the website is accessible at the following Internet address: www.water-management-toolbox.com.

b. The Water Management Toolbox was created to assist Army installations in achieving water conservation requirements established in Executive Order 13514, Federal Leadership in Environmental, Energy and Economic Performance, and the Department of Defense (DoD) Strategic Sustainability Performance Plan. The Toolbox provides information to assist in evaluating and selecting appropriate water conservation technologies ranging from plumbing fixtures to water reuse and low impact development. There are links to policy, guidance, and key industry and non-profit organizations engaged in conservation activities. There is also information on publications related to water conservation and efficiency.

c. All PWTBs are available electronically in Adobe® Acrobat® portable document format through the Internet at the National Institute of Building Sciences' Whole Building Design Guide Web page, which is accessible through this link:

http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215

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2. Applicability. This PWTB applies to all U.S. Army facilities engineering activities.

a. The toolbox is an open website, available to designers and planners of new facilities, installation staff interested in reducing water demand, contract utility staff updating water systems, and anyone else in need of information.

b. The toolbox is intended to facilitate users in becoming a community of informed water managers who can share experiences and help each other address challenges in the most effective manner.

3. References (in date order).

a. *National Energy Conservation Policy Act*, Public Law 95-619 92 Stat. 3206, 1978.

b. *Executive Order 13123, Greening the Government through Efficiency Energy Management*, 3 June 1999.

c. *The Energy Policy Act of 2005*, Public Law 109-58, 8 August 2005.

d. *Executive Order 13423, Strengthening Federal Environmental, Energy and Transportation Management*, 24 January 2007.

e. *Department of Energy Supplemental Guidance to the Instructions for Implementing Executive Order 13423; Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423*, 29 March 2007.

f. *Energy Independence and Security Act of 2007*, Public Law 110-140, 19 December 2007.

g. *Executive Order 13514, Federal Leadership in Environmental, Energy and Economic Performance*, 5 October 2009.

h. *Department of Defense Strategic Sustainability Performance Plan*, 26 August 2010.

i. *Department of the Army Sustainable Design and Development Policy Update (Environmental and Energy Performance)*, 27 October 2010.

4. Discussion.

a. Water issues are impacting Army installations and operations in many locations across the nation. Concerns including supply variability, increased cost of purchase or production, quality, habitat degradation, and salinity issues have prompted a new focus on water resources on the installation, national, and global level. Recent national policy that establishes water conservation targets includes codified national goals for Department of Defense installations to design and implement water-efficiency best management practices (BMPs) and develop a water management plan. The new water management and reporting requirements, along with increasing population in regions containing Army installations, make it imperative for installation staff to have ready access to the wide range of Web resources, reports, and tools related to water management that can support installation water conservation programs.

b. Building on the [Energy Policy Act of 2005](#) and [Executive Order 13123](#) (EO 13123), more recent Federal laws and regulations endeavor to integrate, coordinate, and update prior practices, requirements, and strategies for improving environmental and energy performance. In the area of water management, these laws and regulations require federal agencies to achieve water reduction targets and improve water efficiency by incorporating BMPs and through the use of water-efficient products and services.

c. [Executive Order 13423](#) (EO 13423) supersedes the requirements of EO 13123 in the development of water management plans and implementation of BMPs for water efficiency as identified by the Federal Energy Management Program (FEMP). EO 13423 establishes new water efficiency rules for Federal facilities, requiring a 2% annual reduction in water consumption intensity (gallons per square foot) from a 2007 baseline through the end of fiscal year (FY) 2015, or 16% by the end of FY 2015. It further requires water audits at Federal facilities of at least 10% of facility square footage at least once every 10 years. Finally, it encourages the procurement and use of water-efficient products and services, specifically identifying the U.S. Environmental Protection Agency's (EPA's) WaterSense[®] program as a source of guidance.

d. The [Energy Independence and Security Act of 2007](#) (EISA 2007) amends Section 543 of the [National Energy Conservation Policy Act](#), the foundation of most current energy requirements.

It adds further water conservation requirements and provides guidance for facility energy management and benchmarking. Under EISA 2007, agencies are required to categorize groups of facilities that are managed as an integrated operation and to identify "covered facilities" that constitute at least 75% of the agency's facility energy and water use. Each of these covered facilities will be assigned an energy manager responsible for completing comprehensive energy and water evaluations, implementing efficiency measures, and following up on implementation.

e. [Executive Order 13514](#) (EO 13514) expands the water efficiency and conservation requirements of EO 13423 and EISA 2007. The new mandate extends EO 13423's 2% annual water consumption intensity reduction requirement into fiscal year 2020, resulting in a total water reduction requirement of 26% from the baseline year of 2007. Additionally, the new rules require similar 2% annual reduction for agency industrial, landscaping, and agricultural water consumption through 2020, for a total of 20% water consumption reduction relative to the 2010 base year. EO 13514 also encourages agencies to identify, promote, and implement water reuse strategies that reduce potable water consumption and support objectives identified in the stormwater management guidance issued by the EPA. All of these policy documents are available through the Army Chief of Staff for Installation Management (ACSIM) website:
<http://army-energy.hqda.pentagon.mil/policies/>

f. The [Department of Defense Strategic Sustainability Performance Plan](#) reviews DoD policy and strategy, and also reviews performance in a number of issue areas including water resources management. The water resources goals include reduction of water intensity in facilities, industrial, and irrigation as stated in EO 13514 as well as the requirement to return development and redevelopment projects to pre-development hydrology, as contained in EISA 2007. The Department of the Army [Sustainable Design and Development Policy Update \(Environmental and Energy Performance\)](#) updates and supersedes the policy of July 8, 2010. All facility construction projects shall achieve a 30 percent reduction in indoor potable water use as compared to a baseline utilizing guidance as detailed in ASHRAE Standard 189.1 Sec6. In addition, outdoor potable water consumption shall achieve a reduction of 50 percent from the baseline.

g. The Army Water Conservation Collaboration Web Portal provides water managers with a centralized site for access to

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comprehensive water conservation and management information to support their efforts in achieving the new water efficiency requirements. Although created for installation water managers and the need to meet new requirements, the web portal is also a resource for designers and planners of new facilities, contract utility staff who are updating water systems, and others interested in water conservation. Ideally, users of this water conservation portal will become a community of informed water managers who share experiences and help each other address challenges in the most effective manner.

h. Appendix A to this bulletin contains instructions on navigating the web site.

i. Appendix B is a list of acronyms and abbreviations used in this PWTB, paired with their spellouts.

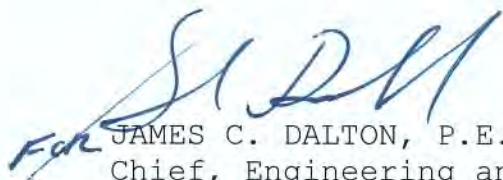
j. Appendix C cites some water-related publications from USACE and Engineer Research and Development - Construction Engineering Research Laboratory (ERDC-CERL).

5. Points of Contact (POCs). Headquarters, U.S. Army Corps of Engineers (HQUSACE) is the proponent for this document. The POC at HQUSACE is Mr. Malcolm E. McLeod, CEMP-CEP, 202-761-5696, or e-mail: Malcolm.E.Mcleod@usace.army.mil.

Questions and/or comments regarding this subject should be directed to the technical POC:

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FCD JAMES C. DALTON, P.E., SES
Chief, Engineering and Construction
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APPENDIX A:

NAVIGATING THE WATER CONSERVATION COLLABORATION WEB PORTAL

Introduction

Commonly called the Water Management Toolbox, the Water Conservation Collaboration Web Portal provides an array of material in an easily accessed and centralized location. This information is invaluable to installation personnel, both for new staff and experienced water managers who are seeking the latest information.

The site captures the many written policies, criteria, guidance, data, references, studies, and analysis tools related to sustainable water supplies for Army installations. The toolbox is an open website, available to designers and planners of new facilities, installation staff interested in reducing water demand, contract utility staff updating water systems, and anyone else in need of information.

The toolbox is intended to facilitate users in becoming a community of informed water managers who can share experiences and help each other address challenges in the most effective manner.

The website will evolve over time, continuing to include the latest information and addressing emerging Army water issues. User feedback, available through the website, will guide updates.

Site Organization

The Water Management Toolbox contains 13 separate topic areas as described below. Each is accessed through the menu on the navigation bar on the left side of the main page (Figure A-1).

The information is organized in different ways to help users navigate to relevant information efficiently. For example, similar information may be available on two subpages such as *Focus Areas*, and *Regional and State Resources*; however, the information may be organized differently on each subpage to provide users quicker access to the specific information needed.

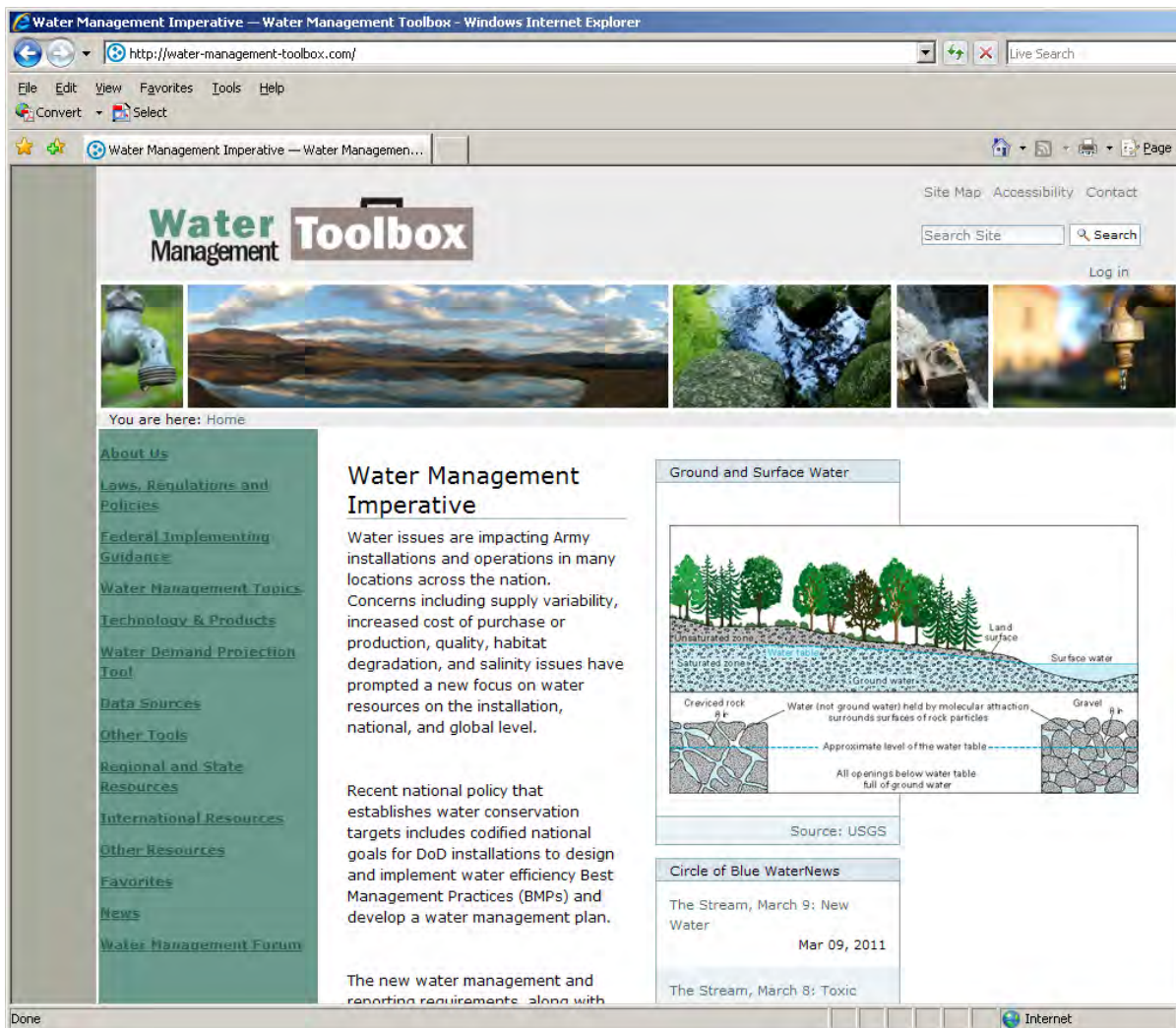


Figure A-1. Main page of Water Management Toolbox website.

Water Demand Projection Tool

The *Army Installation Water Demand Projection Tool* was created to help Army installations estimate and forecast water demand on each site based on installation-level data. This page contains an Excel spreadsheet version of the tool along with instructions on its use. The tool utilizes installation real property data and local information (e.g., building water-use factors, population trends, planned construction projects, water cost) to project water demand for a period of 30 years. This tool was documented in PWTB 200-1-85, "Installation Water Audit Guidelines."

Laws, Regulations and Policies

The *Laws, Regulations, and Policies* subpage outlines the relevant legal frameworks related to water and water conservation. It includes information on federal regulations, Army guidance in the area of water conservation, state and regional water rights laws, and international water conservation laws.

Federal Implementing Guidance

The *Federal Implementing Guidance* subpage supplies resources and further guidance on meeting water conservation goals. It includes information on meeting the specific regulatory requirements necessary for federal compliance. This includes details about the Federal Energy Management Program's (FEMP) BMPs for complying with federal water use laws. Other guidance for federal compliance includes the Whole Building Design Guide and information of process water conservation from EPA. There is also information about the Labs 21 program.

This subpage points to several federal agencies that provide a variety of resources offering guidance for the implementation of water goals and mandates of new regulations. The Department of Energy provides Instructions for Implementing EO 13423 ([PDF 150 KB](#)), which defines agency requirements under the new mandate and provides broad strategies for achieving them. FEMP offers further supplemental guidance through Establishing Baseline and Meeting Water Conservation Goals of EO 13423 ([PDF 512 KB](#)). In this document, FEMP identifies three areas of necessary guidance: (1) baseline development, (2) identification and implementation of efficiency opportunities, and (3) necessary reporting. Finally, the EPA's WaterSense® office has updated the [EPA's BMPs](#) in an effort to help agency personnel achieve the water conservation targets contained in EO 13423.

This subpage also contains a link to the U.S. Army Corps of Engineers program of Public Works Technical Bulletins (PWTBs). PWTBs translate the results of research and development into useful, hands-on guidance for military installation Directorates of Public Works (DPWs). They are housed on the Whole Building Design Guide website which can be accessed at this link: http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215.

Water Management Topics

The *Water Management Topics* subpage organizes resources by their topical focus and offers water managers information to address a range of water conservation topics. These tips cover water conservation, water-efficient design, water reuse, the energy/water nexus, low impact development, water quality, wastewater management, water security, and water system performance.

Technology and Products

The *Technology and Products* subpage includes information about certifying agencies, such as EPA's WaterSense, and contains a section devoted to products and practices that promote water conservation.

Water Demand Projection Tool

The Army Installation Water Demand Projection Tool was created to help Army installations estimate and forecast water demand on each site based on installation-level data. This subpage contains an Excel spreadsheet version of the tool along with instructions on its use. The tool utilizes installation real property data and local information (e.g., building water-use factors, population trends, planned construction projects, water cost) to project water demand for a period of 30 years. This tool was documented in PWTB 200-1-85, "Installation Water Audit Guidelines."

Data Sources

The *Data Sources* subpage provides links to a variety of sources of raw data related to water that include the U.S. Geological Survey (USGS), EPA, and the Federal Emergency Management Agency (FEMA). Examples of these data include the National Hydrologic Dataset of digital spatial data of water features, the National Wetlands Inventory, FEMA's Flood Data, and USGS water-resources data collected at approximately 1.5 million sites in the United States, the District of Columbia, and Puerto Rico.

Other Tools

The *Other Tools* subpage helps water managers to address some of the specific challenges of measuring, calculating, and evaluating water-related information. Various water calculators are provided to help with everything from converting water

measures correctly to estimating rainfall. Additionally, tools to help understand and evaluate regional watersheds are provided to guide water managers in understanding the context of their installation's water supply and the potential impact of demand on this supply from other sources. These tools include the Watershed Application of the Sustainable Installations Regional Resource Assessment tool (SIRRA), which was documented in Public Works Technical Bulletin 200-1-86, "Regional Water Availability Assessment Guidance."

Within *Other Tools* is *The Collaborative User Forums* page which provides links to various sites where water managers can exchange ideas and information with federal agencies, water experts, data experts, and each other. Several water data processing tools are provided to facilitate the conversion of data into a meaningful and usable source of information. Finally, various tools for mapping water-related data provide an assortment of useful information.

Regional and State Resources

The *Regional and State Resources* subpage organizes resources by region, recognizing that watersheds are not limited by political borders and that water issues vary significantly from region to region. Regions are aligned with the EPA divisions as follows: Region 1 - New England; Region 2 - New York and New Jersey; Region 3 - Mid-Atlantic; Region 4 - Southeast; Region 5 - Midwest; Region 6 - South Central; Region 7 - Great Plains; Region 8 - Mountain; Region 9 - Southwest; and, Region 10 - Pacific Northwest.

International Resources

The *International Resources* subpage provides information which may be useful for water managers at military installations abroad. It includes information on international organizations that focus on water issues, the European Union's approach to water policy, and specific information on U.S. installations overseas.

Other Resources

The *Other Resources* subpage provides links to a number of other resources that may be relevant but not covered by one of the previous pages. These organizations fall into the categories of public, non-profit, research, education, awareness, and water and climate change.

Favorites

The *Favorites* subpage is a list of our favorite water management websites and will change over time to remain current and relevant.

News

The *News* subpage includes links to water-related news agencies and important articles dealing with water conservation and management. It also lists water-related publications that support electronic subscription services.

Water Management Forum

The *Water Management Forum* subpage offers the opportunity for information exchange among the user community. Discussions will be moderated by the website sponsors.

Access

The Water Management Toolbox is an open website and is accessible to anyone seeking to learn more about water management. The toolbox is available at the following link:

<http://water-management-toolbox.com/>

Site Maintenance

Site maintenance will be conducted on an ongoing basis. Links will be checked periodically and content will be updated based on user feedback. Users may contact the webmaster by posting comments using the "Add Comment" button located on the bottom left of each page.

APPENDIX B:

ABBREVIATIONS

Term	Spellout
ACSIM	Assistant Chief of Staff for Installation Management
BMP	best management practice
CERL	Construction Engineering Research Laboratory
DC	District of Columbia
DoD	Department of Defense
EISA	Energy Independence and Security Act of 2007 (U.S.)
EO	Executive Order
EPA	Environmental Protection Agency
ERDC	Engineer Research and Development Center
FEMA	Federal Emergency Management Agency
FEMP	Federal Energy Management Program
FY	fiscal year
HQUSACE	Headquarters, U.S. Army Corps of Engineers
POC	Point of contact
PWTB	Public Works Technical Bulletin
SIRRA	Sustainable Installations Regional Resource Assessment
USGS	U.S. Geological Survey

APPENDIX C:

RELATED PUBLICATIONS

Jenicek, Elisabeth M., Natalie R.D. Myers, Donald F. Fournier, Kevin Miller, MeLena Hessel, Rebecca Carroll, and Ryan Holmes. 2009. *Army Installations Water Sustainability Assessment: An Evaluation of Vulnerability to Water Supply*. ERDC/CERL TR-09-38, ADA525795. Champaign, IL: U.S. Army Engineer Research and Development Center. Available at <http://libweb.wes.army.mil/uhtbin/hyperion/CERL-TR-09-38.pdf>.

Jenicek, Elisabeth M., Donald F. Fournier, Natalie R. Downs, and Brad Boesdorfer. 2005. *Watershed Application of the Sustainable Installations Regional Resource Assessment Tool*. ERDC/CERL TR-05-24, ADA444062. Champaign, IL: U.S. Army Engineer Research and Development Center. Available at <http://libweb.wes.army.mil/uhtbin/hyperion/CERL-TR-05-24.pdf>.

Jenicek, Elisabeth M., Natalie R.D. Myers, Laura Curvey, and Sarah Nemeth. 2010. *Army Overseas Water Sustainability Study*. ERDC/CERL draft technical report. Champaign, IL: U.S. Army Engineer Research and Development Center.

Public Works Technical Bulletin 200-1-85, 30 June 2010, *Installation Water Audit Guidelines*. Washington, DC: U.S. Army Corps of Engineers. Available at http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_85.pdf.

Public Works Technical Bulletin 200-1-86, 30 September 2010, *Regional Water Availability Assessment Guidance*. Washington, DC: U.S. Army Corps of Engineers. Available at http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_86.pdf.

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