

Integrating Information to Manage Water Sustainably:

Arizona Water Institute's On-line Information System

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The screenshot shows the Arizona Water website. At the top, there is a navigation bar with 'Home | About | Other Resources'. Below that is a 'Search Directories' section with tabs for 'Organizations', 'Reports & Data', 'Research Facilities', 'Expertise', 'Degrees', and 'Centers'. A 'QuickSearch' box is prominently displayed. On the left side, there is a sidebar with a list of categories: Organizations, Reports & Data, Research Facilities, Expertise, Degrees, Short Courses, and Centers, each with a checkmark. Below this is a 'Submit Search >' button. Further down, there is a section titled 'Ask the Water Wizard' with a text input field and a 'Submit Search >' button. The main content area features a header with 'state-wide resources' and 'academic resources'. Below this, there is a text box that says 'Roll your mouse over the tabs above to see a brief summary about each section.' and an image of an open book. The main text area contains the following information: 'Arizona Water is your one-stop information center for water in Arizona. This integrated network of searchable databases includes water expertise, degree programs, and research efforts at all three state universities, and local, state, federal, and tribal organizations and associations and partnerships with responsibilities for water. You can also search for reports and data on water information for specific areas of the state.' Below this, there is a section titled 'In addition, Arizona Water provides links to other services and tools.' which lists 'Southwest Hydrology or Arizona Water Resource', 'search for water modeling software and algorithms with HydroArchive', and 'scan summaries of international water news translated from 8 languages with Water News Watch, and more.' The next section is titled 'Whether you are a homeowner, water manager, or research scientist, Arizona Water is designed to get you the information you need quickly and easily. Select and search one database, or perform a QuickSearch on several. Try using the Ask the Water Wizard for answers to Frequently Asked Questions. You can also email your questions to email@arizonawater.org, or call us at 520-628-0592.' Below this is a 'Now:' section that states 'Well data in Arizona from ADWR's GWSI database is now accessible over the internet thanks to a new web application developed by SAHRA: www.sahra.arizona.edu/wells/'. At the bottom, there is a footer that says 'This website was created by the Water Sustainability Program (WSP) of the University of Arizona. click here for more' and 'Edit data (admin website)'. The Water Sustainability Program logo is also visible.

Water in the west: We know we need it, we know it's a precious commodity; we know lots of people keep track of it. But how do we get to information that can help us manage it in a sustainable manner?

In Arizona, diverse agencies, researchers and institutions gather, archive and present water-related information independently. The United States Geological Survey and the Arizona Department of Water Resources (ADWR) produce the greatest amount of water-related data but many other organizations generate, store and manipulate data about precipitation, wells, water resources, water quality, and riparian areas. The Salt River Project, the Central Arizona Project, the Bureau of Reclamation, counties, cities, universities, federal land management agencies and non-governmental entities such as The Nature Conservancy and individual citizens all produce facts, figures and numbers that they store in databases located in many different places and often on individual computers. Data are not shared even among researchers and within agencies let alone widely disseminated for use by landowners or the general public.

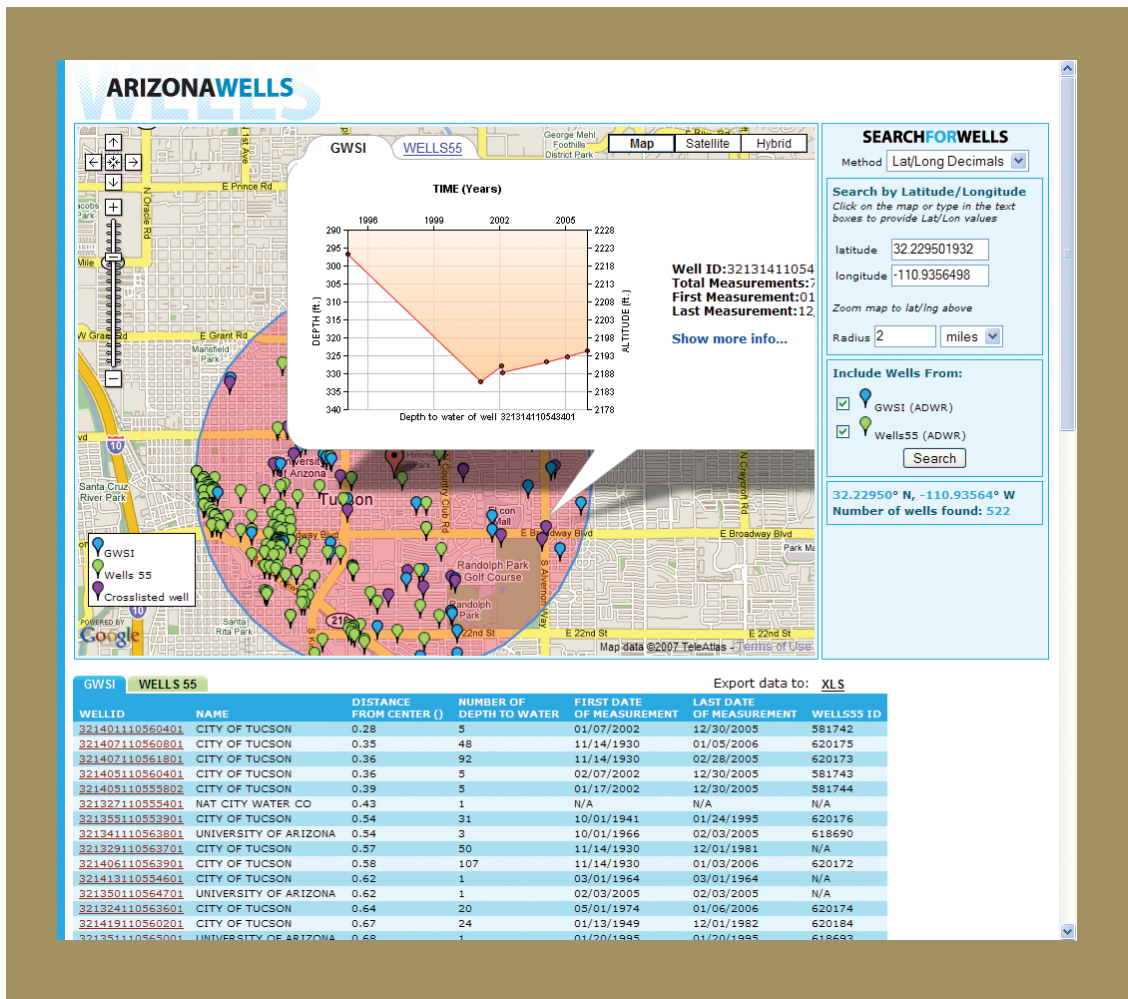
One of the most common concerns from individuals and professionals about water is the lack of hydrologic information or lack of access to hydrologic information. When these data become easily accessible, people can use and even combine the information sets available to produce new methods for solving ever more complex problems. A real need exists for a one-stop information resource. The easiest place to build this is on the Internet using web services, which are used to locate data and transform them into formats required by a particular user.

Rural Arizonans can benefit more than most people from easy and comprehensive web access to information about water in Arizona. They can benefit indirectly from research at universities that improves understanding, quality and sources. They can benefit directly by being informed about wells, drought and flood events that can affect their land and information that leads to more sustainable practices.

Established in 2006, the Arizona Water Institute (AWI) is a consortium of the three state universities (Arizona State University, Northern Arizona University and the University of Arizona) in partnership with three state agencies (Commerce, Environmental Quality and Water Resources). AWI's mission is to provide access to hydrologic information, to support communities and to develop technologies to promote water sustainability. One project that promotes all three aspects of its mission is the Arizona Hydrologic Information System (AHIS).

AHIS is one of the priority projects for AWI. AHIS is a one-stop resource that provides user-friendly access to water-related data. AHIS development began as one of AWI's four first year projects and continues as an ongoing effort of AWI in partnership with agencies, researchers and water-related centers – AHIS is an important long-term investment.

The initial product of AHIS was the website, *ArizonaWater*, www.arizonawater.org—a site developed with the Water Sustainability Program at the University of Arizona. This site is designed to help Arizonans more easily locate information about the state's water demands, supplies, quality and research. Anyone can go to the site and search the database for faculty and staff experts, research facilities, degree programs and short courses, and water centers on the three state campuses. The site also links to other water-related organizations such as governmental agencies, tribal entities, nongovernmental



organizations, private firms and professional organizations. Visitors to the site can sort the data by regions, scientific disciplines, organization types, schools and other mechanisms to narrow down searches to provide the most useful results.

The second product developed with ADWR, the US Geological Survey and the University of Arizona's Sustainability of semi-Arid Hydrology and Riparian Areas (SAHRA) is *ArizonaWells*, the access system for the ADWR wells databases found at www.sahra.arizona.edu/wells/. This site is designed to help homeowners, water professionals and state agency workers locate well information more easily. Site visitors can find well locations, water level, ownership and water quality information found in government databases.

AHIS programmers and scientists continue to develop products for the public, government and researchers. Working with a growing list of local, regional, national and even international partners at universities, governmental and non-governmental groups, AWI partnerships and collaborations are expanding the database accessibility and developing new services for AHIS. Current work includes accessing ground- and surface water quality data from the Arizona Department of Environmental Quality. Plans to establish a framework to build knowledge, analyze complex environmental changes and address

water management questions are underway for the southwest US—a region facing long-term drought and climate change impacts. AWI is also working with national organizations to incorporate the Arizona data and interfaces into national systems. In the coming year, the AHIS team will develop a central web portal through which state agencies, researchers, private sector partners and the public will be able to easily share data and acquire water-related data. Portals present information from diverse sources in a unified way. All these efforts will serve Arizona water users and managers, as well as researchers.

AHIS offers “one-stop shopping” for water-related data for the full range of users, from the public to water professionals to academic researchers. AHIS enables agencies, academic institutions, policymakers, consultants, researchers and others access to catalogs for data discovery and real-time connections to appropriately prepared data. It is designed to work easily and comprehensively for users to benefit their water use, management and research for a more sustainable future.

Visit the Arizona Water Institute website at www.azwaterinstitute.org for ongoing developments. AHIS is developing its own web portal for launch in 2008.