

Solutions

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There's a reason that water has become a national priority. Between 1950 and 2000, the U.S. population nearly doubled. In that same period, public demand for water more than tripled! The increased demand has put additional stress on water supplies and distribution systems, threatening both human health and the environment.

Water is one of our most precious natural resources. Even though the United States has an abundant supply, it is not evenly distributed throughout the country. Droughts in the past decade illustrate that many areas are severely undersupplied. A government survey showed at least 36 states are anticipating local, regional or statewide water shortages by 2013.

Water efficiency is an integral part of every comprehensive energy/resource management program because water requires significant energy input for treatment, pumping, heating and process uses. By using water more efficiently, we can help preserve water

supplies for future generations, save money and protect the environment.

Water Efficiency Basics

1. *Water resources are becoming increasingly scarce.* Although two-thirds of the Earth's surface is water, less than one-half of one percent of that water is currently available for our use. As the U.S. population increases, so does our water use. Many regions are starting to feel the strain, as indicated by data on the overuse of groundwater and the intrusion of saltwater into many areas. Reducing climate impacts, saving money, and saving water are the goals of projects and programs linked by energy use and water use. Identifying approaches to integrate energy-efficient practices into daily management and long-term planning of the water sector can only contribute to the long-term sustainability of water resources.

2. *Water utility rates have been rising steadily.* Unlike electric rates, water rates are projected to increase in the future. Between 1986 and 1996, water rates rose between 100% and 400% in

some areas. A conservative estimate of future increases in water rates is about 10% per-year nationwide.

3. *Federal legislation mandates conservation.* Policies that lead to reduced water consumption could address climate change more efficiently than requiring businesses and households to use less energy. For example, it may be cheaper for consumers to reduce the overall hot-water usage in their homes than to replace their incandescent light bulbs with more energy-efficient alternatives. Some of the cheapest greenhouse gas emission reductions available seem to be not-energy-efficiency programs, but water-efficiency programs, according to water expert Peter Gleick, speaking at Worldwatch Institute. Mr. Gleick is President of Pacific Institute, a global water-research center located in Oakland, California (www.pacinst.org).

A better understanding of the relationship between energy and water will be necessary to ensure that the world has adequate supplies of both.



Arizona Safe Drinking Water Program

Since its inception in 1998, President Ramesh Narasimhan has been committed to expanding NCS' service area to include rural communities of the Southwest. He wanted to develop strong relationships with outlying townships to deliver technically sound and cost-effective solutions to their water-treatment facilities' dilemmas.



and ownership type. ADEQ, in conjunction with the Water Infrastructure Finance Authority (WIFA), can offer assistance ranging from site evaluations and training to low-cost loans for infrastructure repair or improvement.

To make that commitment a reality, NCS is working with the Safe Drinking Water: Capacity Development Program of the Arizona Department of Environmental Quality (ADEQ).

Capacity Development Program Overview

In 1999, ADEQ mandated the Capacity Development Program for new public water systems to demonstrate technical, managerial and financial components necessary to deliver safe drinking water to their consumers. New community and non-transient, non-community public water systems must provide an Elementary Business Plan for the Capacity Development Evaluation. The Drinking Water Section issues approval to the applicant for presentation to the Water Quality Division Engineering Review Staff for the review and approval of plans and specifications for the operation of the new public water system.

Technical Assistance Program: The ADEQ created the Capacity Development Strategy to assist existing public water systems attain and improve technical, managerial and financial elements of managing a public water system. The Technical Assistance Program is a voluntary part of the strategy where systems may request assistance, including but not limited to, a facility System Evaluation. Eligibility is based on many factors, including system size, population served

NCS as an ADEQ Contractor . . .

NCS' role as an ADEQ Contractor for the Capacity Development Program is to perform on-site visits to ADEQ-designated facilities and evaluate their water systems using a 400-question evaluation developed by ADEQ. Evaluations include a site inspection, including system maintenance, procedures and recordkeeping, and documents and files review.

NCS provides a report to ADEQ summarizing current facility status and prioritizing recommendations for compliance (if necessary); and for improving technical, managerial and financial operations by owners, operators and managers of the public water system.

Working together, NCS and ADEQ are committed to protecting the environment and providing Arizona residents with the peace of mind that comes with knowing drinking water is safe and clean.

NCS wishes to acknowledge Kathryn D. Stevens from ADEQ's Drinking Water Section, Programs Unit, for her contributions of time and information to this article. She can be reached at ADEQ at (602) 771-4653 or kds@azdeq.gov.

"The Green Generation" / "Be Water Wise."

Earth Day 2009 marked the beginning of the Green Generation Campaign. This two-year initiative, which began on April 22, 2009, will culminate with Earth Day's 40th anniversary in 2010.

With negotiations for a new global climate agreement coming up in December, Earth Day 2009 was a day of action and civic participation to support the Green Generation's core principles:

- A carbon-free future based on renewable energy that will end our common dependency on fossil fuels, including coal.
- An individual's commitment to responsible sustainable consumption.



- Creation of a new green economy that lifts people out of poverty by creating millions of quality green jobs and transforming the global education system into a green one.

On college campuses across the globe, "Earth Day on Campus" events were held as a call-to-action for the most environmentally aware generation yet to lead the way for social change.

Earth Day Network partnered with National Environmental Education Week (EE Week), to promote understanding and protection of the natural world by actively engaging K-12th grade students and educators of all subjects in an inspired week of environmental learning and service. This year's EE Week theme was "Be Water Wise."



Coming Down the Pipeline



The Project Files for this issue come from Harish Arora, Ph.D., P.E., NCS Director of Water Treatment Processes. Dr. Arora is located in our Baltimore, Maryland office.

Buckman Wellfield Pilot Testing Study

The project consists of developing an arsenic treatment master plan for the Buckman Wellfield, owned and operated by the City of Santa Fe, New Mexico. As part of the project, pilot investigations will be conducted for three adsorptions (adsorption refers to the accumulation of material at the interface between two phases [water and solid media]), one ion exchange and two coagulation/filtration technologies. The pilot units have been assembled at Well 12, and the pilot study began in April.

City of Rio Rancho Well 23 Equipping and Treatment

Due to an increase in population, the City of Rio Rancho continues to develop new water resources. A new well, Well 23, is being installed by the City. Based on its water quality, treatment would be required for total dissolved solids, arsenic, iron and potentially for radionuclides. The treatment

train would be refined based on a preliminary engineering report (PER), which is underway. Design and construction of treatment and other related facilities (pumping station, storage tank, transmission main, etc.) for a 2,400 gpm facility would begin after completion of the PER.

West Basin Municipal Utilities Water-Quality Study

West Basin Municipal Utilities, in California, supplies reclaimed wastewater to several industrial and commercial clients for their not-potable water consumption. Due to water quality of distributed reclaimed water, the customers have experienced several aesthetic and operational issues. NCS assisted in a study to evaluate different treatment options and associated costs to comply with customer's water quality needs.



Buckman Wellfield Site in Santa Fe, New Mexico



Joe Baca
Purchasing Manager
City of Rio Rancho, New Mexico

NCS has been privileged to work with the City of Rio Rancho, New Mexico since June 2004. An integral part of that working relationship has been with the Purchasing Department.

Rio Rancho, New Mexico is located approximately 15 miles northeast of Albuquerque. It is the third largest city in New Mexico, with an estimated 76,000 residents (<http://www.citypopulation.de/USA-NewMexico.html>).

Joe, how long have you been with the City of Rio Rancho?

I started with the City of Rio Rancho as a temp in October 1994. I became full-time in December 1994, in the Finance Department Purchasing Division. My first position was a clerk. I moved up to Senior Buyer, Contracts Specialist then Purchasing Manager.

How did you get into purchasing for a large municipality?

It was just luck. I knew nothing about public purchasing. The purchasing manager at that time left the City shortly after I was hired, so I was basically on my own – until this beautiful purchasing manager was hired and taught me everything I know. I married her. Today she works for Procurement in Bernalillo County. There are times when discussing purchasing never leaves the dinner table.

Why do you love what you do?

The best part about my job in procurement is that it is never the same. The Purchasing Division adheres to the Procurement Code which applies to all expenditures by the City of Rio Rancho

for procurement of tangible personal property, services and construction.

What kind of things do you purchase for Rio Rancho?

We purchase everything from office supplies to construction of buildings to water and wastewater facilities.

What is the best purchase you've ever coordinated?

One of the best procurements I was involved in was our new City Hall. It took a team of employees who were very dedicated, but the outcome was great.

What are your greatest challenges?

With Rio Rancho being the third largest and fastest growing city in New Mexico, public infrastructure projects have been very challenging, especially meeting federal guidelines for arsenic in municipal and public wells.

What do you do for fun and relaxation?

Spend time with my wife and family.

Any words of wisdom that you would like to share?

Kind words win over harsh judgement every time.

Happenin's in the 'Hood



Pranam Joshi, P.E.

NCS' Pranam Joshi recently added P.E. after his name. P.E. stands for Professional Engineer and is a legal term for someone who is

licensed and certified to sign and seal or "stamp" engineering documents. Though the initials are short, the process to become a licensed P.E. is long and requires a graduate degree in engineering, completion of several written exams and accumulation of engineering experience.

What is your current job?

I am the Hydraulic Modeling Team Leader and Project Leader with NCS. I am responsible for hydraulic, water-quality modeling related projects as well as value-added analysis such as genetic algorithm computations and software-based engineering analysis. Typically, I manage most of the modeling and computer-related projects across the country.

Why did you choose to become an engineer?

I chose engineering because I felt inclined towards it. My undergraduate studies were in India. The system there is merit-based, which means you choose the discipline and school to attend.

What prompted you to get a Professional Engineer's license?

I wanted a P.E. so that I could take responsibility for my own work. Having

a Professional Engineer's license gives me a sense of accomplishment and allows me to grow professionally, as well as personally.

Who is your professional role model?

I try to learn as much as I can from everyone. I have always been blessed to have good role models for achieving different things in life. My current manager, Ramesh, is an excellent role model to demonstrate how brilliance, perseverance, dedication and positive outlook can help you achieve the best rewards in life. My previous manager, Jack, essentially showed me how to progressively give responsibilities to those working with you and empower them, which in turn helps you succeed as a good manager.

What is your proudest engineering accomplishment?

Developing solutions for utility operations using advanced genetic-algorithm techniques and seeing their implementation in the field is by far the most satisfying experience.

What do you consider to be the greatest engineering feat?

I am a water guy so I cannot say anything else but Bernoulli's work. His basic equation to relate elevation, pressure and velocity in fluid dynamics forms the basis of the entire field and, in my opinion, is still one of the biggest engineering feats without which the entire water/wastewater modeling field would not exist.

Rio Rancho Office:

Support Your Local K9

When President Ramesh Narasimhan became aware of the challenges for K9 training units in Rio Rancho, New Mexico through his work with Evan Anderson, Vice President at Bradbury Stamm Construction, he was moved to action. Along with Bradbury Stamm Construction, NCS has become a supporter of the National Police Dog Foundation in an on-going drive to raise awareness and funds.

There is an increasing need for intelligent, courageous and well-trained Police Dogs. Across the country K9s work day and night protecting our neighborhoods, schools and work places. It costs approximately \$21,500 plus veterinary care, maintenance training, food and care to have one K9 on a police force.

If you would like more information about this worthwhile cause, please contact Alyse Walton, Alyse@ncseng.com, for more information or go to National PoliceDogFoundation.org.

President's Corner

Reflections

Dear Friends,

Despite the challenging economic times, NCS continues to remain successful and maintain our workload. However, NCS is also adapting our business model to cater to the economic challenges faced by the water and wastewater industry. Offering value-added and cost-saving services is essential for our success. "Wish List" and fringe projects have been eliminated by most utilities, so we are focusing on infrastructure rehabilitation projects that save future replacement costs. Examples include developing accurate water models (not over-predicting demands) and master plans, providing energy savings, pump optimization and water-quality optimization programs.

Through these revitalized efforts, NCS remains successful and competitive in the water and wastewater industry, with a focus on providing services that are valued by the industry. Looking forward, 2009 and 2010 offers many unique and interesting project opportunities for our staff and clients.

Keep it flowing,
Ramesh Narasimhan, P.E.
President

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