HOUSEHOLDS NOT SERVED BY PUBLIC WATER SYSTEMS

EPA estimates that approximately 16 million households obtain their drinking water from sources other than public water systems. Of these households, nearly 15 million are served by private drilled or dug wells, while 1 million use untreated surface water such as lakes, rivers, and springs. The adequacy of these supplies in terms of quality and quantity cannot be comprehensively assessed on a national or even individual State level due to a lack of data. This owes largely to the fact that most private supplies are not subject to the same rigorous federal or state monitoring requirements as public water systems.

In addition, an unknown number of people live in homes without running water. This population faces an increased risk of waterborne diseases and related illnesses, because a safe supply of running water is essential to basic sanitation.

Needs Included in the Survey. For households without access to safe drinking water, two DWSRF-eligible options are available for addressing the problem. An existing public water system can extend service to these households or a new public water system can be constructed to provide drinking water.

Although systems had the opportunity to identify these DWSRF-eligible needs, the survey likely underestimates the true needs for households without access to safe drinking water. The lack of comprehensive data on the water quality at private wells obscures the extent of the problem for many water systems and States. Thus, respondents may have overlooked these needs for lack of public health data. Also, in responding to the survey, most water systems concentrated their efforts on identifying projects for their current, rather than potential, customers. Therefore, the survey estimate of $6.0 billion to extend service to homes without safe drinking water understates the true need.

Private Wells. A lack of monitoring data prevents a comprehensive assessment of the quality of water supplied by private wells. Although EPA believes that most of the households served by private wells likely receive safe drinking water, several studies have found that contamination rates in some areas are very high.

New York State Department of Health

Pipe is installed to provide safe drinking water to homes in Rensselaer County, New York, that had previously used untreated water from a transmission line. The DWSRF contributed $4.9 million in funding assistance to this project.

- Based on data from six states, a 1997 General Accounting Office study reported bacterial and nitrate contamination as high as 42 and 18 percent, respectively, of the private wells tested.[1]

- A 1995 Centers for Disease Control and Prevention report found that total coliform bacteria exceeded the health-based standard in 46, 37, and 23 percent of the private wells tested in Illinois, Nebraska, and Wisconsin, respectively. The study also detected nitrate concentrations above the standard in 15, 15, and 7 percent of the wells sampled in these states, respectively.[2]

- Although data on pesticides, heavy metals, and volatile organic compounds are extremely limited, one study found that lead exceeded 15 ppb (an action level for public water systems) in 19 percent of the wells tested in Pennsylvania.[3]

Improper siting and construction is one of the main causes of contamination in older private wells. Because of land availability constraints, a lack of understanding of health implications, and a desire to minimize cost, some older private wells are located too close to septic systems or other potential sources of contamination. The length of the well casing also influences the susceptibility of wells to microbial contamination, with the probability of contamination increasing as casing length decreases.[4] Although all States now have well construction standards, an unknown number of private wells were constructed before these standards were established.

Hauled Water and Untreated Surface Water Sources. More than 1 million households obtain water directly from cisterns, springs, rivers, and lakes. Drinking water from untreated surface sources is often stored in barrels or cisterns which are susceptible to microbiological contamination. Census data show that 2 percent of American Indian households on federally recognized Tribal lands and 20 percent of mainland Alaska Native Village households obtain their water from untreated surface sources.

U.S. EPA

The proximity of this small ground water system to a gasoline station provides an example of a poorly sited well. Spills or leakage from underground gasoline storage tanks could contaminate the ground water. Wells such as this one should be replaced by new wells that are drilled away from potential sources of contamination or, alternatively, the source of contamination should be eliminated.

[1] *Well, Well, Well Water*. 1997. Environmental Health Perspectives 105(12):1290-1292.

[2] Center for Disease Control and Prevention, et.al. *A Survey of the Presence of Contaminants in Water in Private Wells in Nine Midwestern States*. Report in Draft.

[3] Swistock, B.R., W.E. Sharpe, and P.D. Robillard. *A Survey of Lead, Nitrate and Radon Contamination of Private Individual Water Systems in Pennsylvania*. 1993. Journal of Environmental Health 55(5):6-12.

[4] Tuthill A., D.B. Meikle, M. C.R. Alavanja. 1998. *Coliform Bacteria and Nitrate Contamination of Wells in Major Soils of Frederick, Maryland*. Journal of Environmental Health 60(8):16-20.

***Colonias* and Washeterias.** A significant number of consumers commonly use untreated sources of water or water hauled from unsanitary sources in areas called *colonias* along the Texas-Mexico border and in Alaska Native communities.

Colonias—Nearly 400,000 people live in communities, known as *colonias*, which extend along the border with Mexico. These communities have the largest concentration of people living without basic services in the nation. Most *colonias* do not have a safe supply of running water. Therefore, people must haul water from central watering points or untreated sources such as irrigation canals. The lack of water service to homes in *colonias* tends to limit hand-washing and bathing. Consequently, these households face an increased risk from communicable diseases including Hepatitis A, shigellosis, and Impetigo.

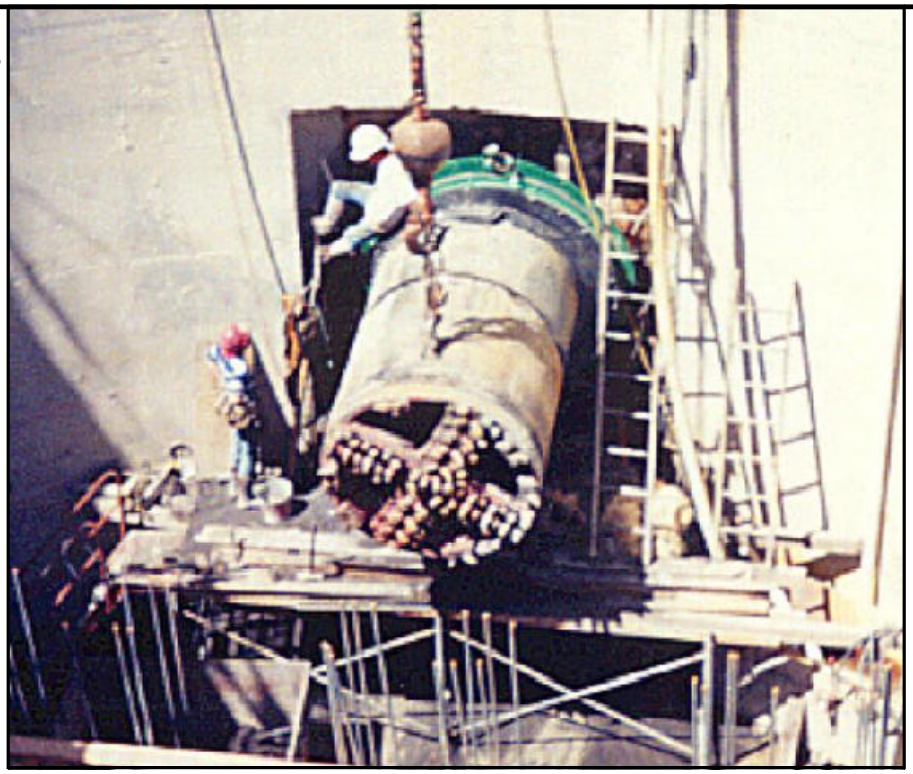
The Needs Survey includes the capital needs of *colonias* only to the extent that States have identified the water systems serving these communities. The survey likely underestimates the needs of *colonias*, as most States have yet to locate all of these systems for inclusion in their inventory.

Washeterias Serving Alaska Native Communities—Approximately 30,000 Alaskans, or 30 percent of the population, live in rural communities without adequate water and sewer facilities. The only drinking water available to many Alaska Natives is from the community washeteria, particularly during cold weather when snow and ice make alternative sources of water inaccessible. A washeteria is a single building with showers, toilets, and washing machines. The washeteria often doubles as a water treatment plant with heated water storage. Residents haul drinking water, usually by walking along a boardwalk, from a watering point at the washeteria. In most cases, the access boardwalk is also used to haul sewage to disposal sites. As sewage spills are not uncommon, there is a high risk of contaminating the drinking water. Other sources of water include rain, melting snow, rivers, lakes, individual wells, and individual storage tanks. In addition, container vehicles are used to transport water to, and sewage from, these communities.

Texas Water Development Board

The City of El Paso, Texas, received a $15 million loan from the Texas DWSRF program to expand the capacity of the Jonathan Rogers Treatment Plant. This project will provide water to colonias *that lack access to safe drinking water.*

Kimberlie Staheli, Bennett Staheli, Engineers



Workers retrieve a tunnel boring machine (TBM) used to excavate an underground passage for a transmission line. TBMs allow water systems to bore through rock at rates faster than conventional drilling and blasting methods. By avoiding the need to tear up streets and set underground explosives, TBMs also minimize traffic disruption and noise for the surrounding areas.