

Case Study Brief: New Jersey Private Well Testing Act



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INTRODUCTION

This case study describes implementation of the New Jersey Private Well Testing Act (PWTA), a statewide policy, and how groundwater quality data collected as a result of the policy has supported efforts to address private well water quality in New Jersey. Approximately 1.2 million New Jersey residents rely on 400,000 private wells for drinking water.^{1,2} Unlike public water systems, which are regulated by the Safe Drinking Water Act, there are no federal laws requiring that private wells be tested for water contaminants. New Jersey enacted the PWTA in 2001 in an effort to address this policy gap and to raise awareness about private well water quality. The PWTA states that the untreated groundwater from a private well providing potable drinking water to a home or business should be tested by a state-certified water

analysis lab every five years for rental properties and each time a property is sold. Compliance with the PWTA is required, but the statute does not contain any enforcement mechanisms. State-certified laboratories conduct the testing and submit test results both to the client that arranged for the test and directly to the New Jersey Department of Environmental Protection (NJDEP). NJDEP has used the data collected during implementation of the PWTA to build a statewide database of groundwater quality. This database has helped build community capacity to better address private residential well water quality in New Jersey. The lessons learned from the PWTA can be used to inform other state and local agencies that may undertake monitoring of private well water quality.

This case study is part of a series of six descriptive case studies of state and local safe home water access policies and programs. The research team collected and reviewed available background materials for each case and conducted semi-structured interviews with key informants about relevant community context and policies, program design, program implementation, and lessons learned. All six case studies and a summary report are available at: <https://www.hsph.harvard.edu/prc/projects/safe-home-water>

The research team also developed and compared estimates of the population reach and costs for widespread implementation of each case study policy or program based upon the prevalence of families with children 0-5 experiencing low income with concerns about tap water and/or lack of access to safe home tap water.



POLICY RATIONALE

Initially, the PWTA was motivated by the lack of testing requirements for existing private wells and concerns about groundwater contamination from New Jersey's high number of toxic spills and superfund cleanup sites.³ Private well water quality data reported to the NJDEP since the PWTA became effective in 2002 has shown that naturally occurring groundwater contaminants

like arsenic and gross alpha (a measure of radioactive elements) are more prevalent than the manmade contaminants that originally motivated adoption of the policy.³ As a result, naturally occurring groundwater contaminants are now the focus of water quality research and outreach efforts with private well users in the state.²



COMMUNITY PARTNERS

The PWTA requires that NJDEP collaborate with state-certified laboratories,⁴ local health authorities,⁵ and the state Drinking Water Quality Institute.⁶ Water samples must be collected and tested by state-certified laboratories and reported directly to NJDEP.⁷ The NJDEP must notify local health authorities when there is a contaminated well in their jurisdiction.⁵ The NJDEP also must consult with the Drinking Water Quality Institute to establish additional parameters for water contaminants of concern for inclusion in the PWTA testing requirements.⁶ The Drinking Water Quality Institute was established in 1984 and is responsible for developing water quality standards for hazardous contaminants in

drinking water and for recommending those standards to NJDEP.⁸ NJDEP has developed strategic partnerships beyond those required by the PWTA with the New Jersey Department of Health, public health researchers at the Lamont-Doherty Earth Observatory at Columbia University, environmental commissions, school boards, and local healthcare systems.^{2,9} As discussed below in the PWTA Results and Findings section, these strategic partnerships have led to additional programming to address private well water quality in the regions of New Jersey identified by PWTA-required testing as having a high risk of groundwater contamination.



PROGRAM FINANCING

When the PWTA was enacted, the NJDEP received a new \$1,000,000 appropriation from the New Jersey “Safe Drinking Water Fund” to administer the statute.^{10(p5),11} For ongoing financing, the PWTA directs the NJDEP to include a “sufficient sum” to administer the statute in its annual budget request to the state legislature.¹¹ To pay for the

water quality testing itself, the PWTA requires the private parties pay to test for the required parameters at an estimated cost of \$1,250 per well. There was no new funding appropriated directly for the discretionary activities of local health authorities contained in the PWTA.^{10(p5)}



KEY ACTIVITIES REQUIRED BY THE PWTA

The goal of the PWTA “is to ensure that purchasers and lessees of properties served by private potable wells are fully aware of the quality of the drinking water source prior to sale or lease of a home or business.”^{12(pv)} The key activities required by the PWTA are:

1. Periodic review of contaminants to be tested for in different parts of the state by NJDEP
2. Well water testing by a state-certified laboratory of rental properties every five years with tenant notification (landlord pays for testing); and whenever a property is sold (buyer or seller pays for testing)
3. Submission of test results from state-certified laboratories to the NJDEP

4. Notification of the local health authority of water quality test failures by the NJDEP
5. Optional notification of nearby private well owners by the local health authority when a home with a contaminated well is identified by PWTA-required testing
6. Public disclosure by NJDEP of de-identified, aggregated test results

Notably, the policy does not contain any enforcement mechanisms authorizing NJDEP to compel testing or notification.

Regulated Contaminants

The PWTA's current requirements specify that all properties with a potable drinking water supply from a private well must test their untreated well water for total coliform (and E.coli if total coliform is present), nitrate, iron, manganese, pH, volatile organic compounds (VOCs) lead, arsenic, and gross alpha particle activity.¹³ The statute authorizes NJDEP to conduct rulemaking to develop additional requirements for contaminants it deems to be of "significant" health concern in each county (e.g. mercury and uranium) in consultation with the state's Drinking Water Quality Institute.¹³ For example, in 2018 the NJDEP expanded the PWTA's arsenic testing requirement to all counties statewide,¹⁴ and in 2020, the PWTA was further expanded to include statewide testing for PFOS, PFOA, and PFNA.^{15(p2.1(a)(12))}

Testing & Notification

The PWTA requires that all water sampling and testing be conducted by a state-certified water analysis laboratory.⁴ For rental properties, the landlord is responsible for arranging and paying for testing every five years.¹⁶ A written copy of the most recent test results must be provided to each rental unit and the most recent test results are to be provided to new tenants.¹⁶ For property sales, the buyer and seller determine who will be responsible for arranging and paying for water testing.¹⁷ The real estate closing must include a copy of the test results and a disclosure signed by both the buyer and seller that they have received and reviewed the results.¹⁸

Data Collection & Publication

State-certified laboratories transmit to NJDEP test results with address information and a

GPS identifier for the property sampled.^{15(p7.9E-3.1(a))} Agency staff then de-identify the results and aggregate the data to evaluate trends in groundwater quality.¹⁰ NJDEP reviews and corrects errors in PWTA data submitted by laboratories (e.g. incorrect GPS coordinates for the address provided) and periodically issues public reports of aggregated test results.¹⁰ Specific addresses and location information of properties sampled are kept confidential.¹⁹

Role of Local Health Authorities

Under the PWTA, local health authorities have the option to notify properties in the vicinity of a private well that has exceeded a maximum contaminant level in order to encourage testing of other private wells in the area.⁵ If a local health authority opts to notify neighboring properties, it must, at a minimum, notify property owners within 200 feet of the property line of the property with the contaminated well and it must keep the location of the property with a contaminated well confidential.^{15(p7.9E-4.2(c))} These are discretionary activities as they are not required by the PWTA.



PROGRAM DESIGN STRATEGIES TO REACH PREGNANT PEOPLE AND FAMILIES WITH YOUNG CHILDREN

The PWTA itself is a universal requirement and does not explicitly contain elements designed to prioritize pregnant people or families with young children. A study of private well water testing for arsenic in New Jersey before and after enactment of the PWTA did find that:

“Although the PWTA did not intentionally target biologically susceptible groups such as pregnant women and families with children, such households are more likely to be buying homes, and in turn, the policy has an unintended benefit. Indeed, those who have purchased homes more recently are in general younger (median age 49 vs. 61), of higher income (median household income \$125–150,000 vs. \$100–125,000), and more likely to have children in the home than those who purchased their homes prior to the PWTA (60% vs. 32%).”⁹

The statute’s lack of enforcement mechanisms, however, indicates that families with children living in rental properties may be less likely to benefit from the policy. For example, a follow-up study of households with PWTA test results that exceeded the maximum contaminant level (MCL) for arsenic in an affluent region of New Jersey found that just 2 percent of respondents were renters.^{20(p13)} However, as described below, the statewide well water quality data collected by the PWTA has helped to build community capacity to address private well water quality with an emphasis on families with young children regardless of whether they own or lease their home.



PWTA RESULTS AND FINDINGS

The section will discuss the PWTA test results, research findings about whether PWTA testing results in private well water treatment, and private well water quality initiatives that have been informed by PWTA data.

Test Results

From when PWTA testing began in 2002 to 2018, about 28 percent of the approximately 400,000 private wells in New Jersey have been tested (Table 1).² In other words, after 19 years of PWTA implementation, there are still about 289,000 private wells that have not been tested pursuant to the PWTA. It is unknown how many of the properties that were tested are homes or businesses, nor how many wells were tested during a real estate transaction or to comply with the periodic testing requirement (every five years) for rental properties.

Statewide PWTA testing data from 2002–2018 found that 14.5 percent of wells tested demonstrated an exceedance for at least one contaminant of health concern (Table 1). An analysis of PWTA data from 2002–2014 found that wells often exceeded the state MCL for more than one contaminant, and that the most common exceedances were for gross alpha (10.1 percent) and arsenic (8.9 percent).²

Impact of PWTA Testing on Home Well Water Treatment

The PWTA does not require water treatment or mitigation if an exceedance is found. A survey of

well owners with arsenic above the New Jersey MCL of 5 ppb identified during PWTA-required testing found that 28 percent of surveyed households did not take any action to reduce arsenic exposure.⁹ Of the 72 percent of surveyed households that did take action, 31 percent installed a new treatment device, 33 percent used an existing treatment device, and 8 percent reported that they avoid drinking their tap water (e.g. drink bottled water).⁹

The survey also compared participants' actual PWTA test results with responses to questions about the household's water quality and water treatment steps taken. It found that participants did not accurately remember their arsenic test results and often did not know what treatments they were using.⁹ For those that did have a treatment system, many described inadequate maintenance and monitoring of their treatment system (e.g. no routine maintenance scheduled).⁹

Table 1: PWTA Test Results (2002–2018)¹⁴

Estimated number of private wells in New Jersey	400,000
Number of private wells tested to comply with PWTA	111,011
Percent of wells tested with at least one exceedance	14.5%
Percent of wells tested with a gross alpha exceedance	10.9%
Percent of wells tested with an arsenic exceedance	8.3%

Use of PWTA Data to Inform Targeted Well Water Quality Programming

The NJDEP’s statewide database of groundwater quality has informed focused outreach and free water testing for households with a private well in regions of the state with a high “fail rate” for contaminants like arsenic.² For example, the Kingwood Township Environmental Commission and the NJ Geological and Water Survey offered free well water testing via schools in a region of the state identified as a hotspot by PWTA testing for arsenic and boron.² The program sent a water test kit and educational materials home with students and asked them to bring the sample back to school.² The program collected samples from 376 private wells in one week and found that 25 percent of the wells tested exceeded the state MCL for arsenic and 5 percent exceeded the EPA Health Advisory Level for boron.²

Another free testing initiative was carried out by the Hunterdon Healthcare System in collaboration with Columbia University researchers in an area of New Jersey with a high fail rate for arsenic in groundwater.² The program distributed educational materials and free water test kits to five healthcare clinics, and conducted additional outreach through the mass media and targeted social media marketing (Table 2). The majority of households that took advantage of the free water quality testing were families with children (75.3 percent).

Table 2: Results of Hunterdon Healthcare and Columbia University Free Testing Initiative²

Tests Provided	807
Samples Returned	433
% Arsenic Exceedance	10.9%
% Families with Children	75.3%
% Household with a Pregnant Person	7.9%



PWTA IMPLICATIONS

New Jersey's PWTA is a unique approach to require private well water testing in the United States.³ The statute was designed to be a consumer information law for people purchasing or leasing real estate. The provisions of the PWTA that make well water quality testing a required step in the real estate closing process have resulted in the vast majority of PWTA testing.^{20(p13)}

Requiring that PWTA testing be completed during a real estate closing may also have the benefit of reaching families with young children who may be more likely to be purchasing homes. The data gathered as a result of the PWTA has also provided a statewide picture of groundwater quality that has raised awareness about ground water quality in New Jersey. The identification of hotspots for contaminants like arsenic has built community capacity and fostered strategic partnerships between state agencies, local schools, environmental commissions and

healthcare providers. These community partners have conducted targeted outreach through education campaigns and free testing initiatives that have benefited families with children in some of the communities most affected by groundwater contaminants in private wells in New Jersey.



SUGGESTED CITATION

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