
PERCEPTIONS OF WATER QUALITY AND SUPPLY IN THE UNINCORPORATED AREAS OF BERNALILLO COUNTY

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Bureau of Business
and Economic Research



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EXECUTIVE SUMMARY

In 2001, the Bureau of Business and Economic Research surveyed 5,000 households in the unincorporated areas of Bernalillo County about residential water systems, perceptions of water quality, supply, delivery, and public policy related to water. The main findings of this survey, organized by topic and geographic area, include:

Survey finding for the entire study area:

Private individual wells supply most of the water used in the homes of almost half of survey respondents. Moreover, the overwhelming majority of residents with private wells consider their wells and plumbing to be in good or excellent condition while only 3% believe their private wells and plumbing are in poor condition. Two-thirds of all private wells are over 150 feet deep. Community systems provide water to an additional 40% of homes, of which roughly 50% are on community systems that serve 100 or more households. Well shares, on the other hand, are used by 11% of respondents. Water systems used in homes vary by geographic areas of the County.

The large majority of respondents (81%) believe unfiltered water from their faucet is safe to drink. A smaller percentage like the taste of their water, and about half believe that water stains household plumbing too much.

Slightly more than half of the respondents worry about the long-term supply of water to the households in their neighborhood, though most agree that their home has water whenever they need it. About 82% of respondents believe the water pressure in their home is good, and 45% believe that there is an adequate supply for fire protection. Additionally, 72% of respondents disagree with the statement “the cost of having water in my home is too high.” The overwhelming majority of respondents support water policies related to protecting the water supply and ensuring water quality.

Survey findings for the East Mountains, the Sandia Foothills, the North Valley and the South Valley include:

East Mountains

Private individual wells (40%) and community systems (46%) provide most of the residential water in the East Mountain. In comparison to the entire study area, these homes are slightly less likely to have had their water quality tested in the past year. East Mountain residents are most likely to use some type of water treatment, with almost half of respondents using a water softener. Almost all East Mountain homes use septic tanks.

Compared to the entire study area, a slightly higher percentage of East Mountain respondents believe (strongly agreeing and agreeing responses combined) that unfiltered water from their faucet is safe to drink. A high proportion of residents are concerned about the long-term supply of water though a small percentage believe that there is enough water for fire protection.

Sandia Foothills

The majority of homes in the Sandia Foothills use community systems. Homes in this area are most likely to have had their water quality tested in the past year. Compared with the other areas, bottled water is least likely to always be used as drinking water. Almost three-quarter of the area's homes use septic tanks.

Water quality perceptions in the Sandia Foothills are the most positive of the four geographic areas. This area has the highest rate of respondents strongly agreeing that they have good water pressure, that there is enough water pressure for fire protection, though also that the cost of water in their home is too high. Roughly equal percentages of respondents worry and don't worry about the long-term water supply.

North Valley

Homes in the North Valley primarily use private individual wells, of which 40% are 151 to 250 feet deep. Residents in this area are less likely to have had water quality tested in the past year. When compared to the study area, a smaller percentage of North Valley homes use no water treatment and 43% use water softener. Septic tanks are the primary source of wastewater disposal in the North Valley (85%).

Perceptions of water quality in the North Valley generally reflect those of the overall study area, though this area has the highest rate of respondents not worried about the long-term water supply. Slightly more respondents agree than disagree that there is enough water for fire protection.

South Valley

Homes in the South Valley primarily use private individual wells, of which roughly 40% are 151 to 250 feet deep. South Valley homes are the most likely to have never had water quality tested and the least likely to have been tested less than one year ago. The South Valley has the highest rate of wells (17%) and plumbing in fair and poor condition (6%). Almost one-third of South Valley homes use the sewer system for wastewater disposal while the remaining two-thirds use septic tanks.

Perceptions of water quality in the South Valley are the least positive of the four geographic areas. Only 63% of respondents believe (strongly agree and agree combined) that unfiltered water from the faucet is safe to drink. Also, the area has the highest rates of respondents who strongly agree and who agree that unfiltered water from the faucet will make them ill. Almost one-third of respondents disagree strongly with the statement that "they like the taste of unfiltered water from the kitchen."

Survey findings for the different water systems, including private individual wells, well shares, and community systems include:

Private Individual Well

Private individual well respondents are most likely to use no water treatment in their homes, to strongly disagree their unfiltered water is safe to drink, and to strongly agree

that they are worried that their water will make them ill. Additionally, respondents using private individual wells are most likely to always use bottled water for home drinking water. Private well users are also the most likely to believe that their water stains plumbing fixtures too much.

Private individual well respondents are worried about the long-term supply of water although they have water whenever needed. Those with private wells have the lowest rates of respondents that strongly agree and agree that there is enough water for fire protection.

Well Share

Well share respondents are the least likely to always use (and the most likely to never use) bottled water for home drinking water. Well share respondents are the least likely to use no water treatment in their homes, and the most likely to use water softener, faucet filters, and reverse osmosis units. Only 4% of respondents on well share have never had their water quality tested.

Almost matching the study area rate, over one-third of well share users strongly agree that their unfiltered water is safe to drink. Well share users also have the highest rate of respondents strongly agreeing that they like the taste of their water and the lowest percentage believing their water stains plumbing fixtures. Sixty-two percent of well share respondents are worried (strongly agree and agree combined) about the long-term supply of water in their neighborhood, the highest rate of the three systems.

Community System

When compared to all water system users, a smaller percentage of community system respondents always use bottled water, use no water treatment systems, and are the least likely to use water softener. Community system users are also most likely to have had their water quality tested in the past year.

Community systems have the highest rate of respondents that strongly agree (40%) their unfiltered water is safe to drink, the lowest rate (11%) that believe (strongly agree and agree combined) that their water will make them ill, and the lowest rate stating that they like the taste of their water.

Community system users are the most satisfied with water supply/delivery, with the highest rate of respondents that strongly agree that their homes have water whenever they need it, that they have good water pressure, and that there is enough water near their home for fire protection. This being stated, community system users believe that the cost of having water in their home is too high. Community system users also have the smallest rate of responses that believe (strongly agree and agree combined) that they are worried about the long-term water supply.

1: INTRODUCTION

The findings within this report were based on data compiled from surveys distributed to targeted areas within Bernalillo County. Surveys were designed by the New Mexico Bureau of Business and Economic Research (BBER) in order to solicit the following information from respondents:

- Perceptions of water safety, taste, availability, and quality
- Perceptions of water testing, education, and regulation
- Type of water supply system (city or well)
- Use of in-house water purification systems
- Perceptions regarding the cost of water
- Demographical make-up including age, gender, household children, and length of residency.

Two survey pretests were conducted on April 16-17 and 30, 2001 in order to assess the effectiveness of the survey form as originally designed. Recommendations were generated and incorporated into the final survey form.

This report is organized into four sections. Section 1 describes the design of the survey instrument, sample selection, response rates, and defines the study area. Section 2 presents an overview of the survey findings for the entire study area. Most of the data in Section 2 are presented in charts for ease of interpretation. Section 3 presents the survey findings of four geographic sub-areas and explores the relationship of geography and resident perceptions. Section 4 completes a similar analysis using type of residential water system as the unit of analysis. Data in Sections 3 and 4 are presented using tables to allow for comparison among the different units of analysis though each table contains the findings for the entire study area.

2: SURVEY DISTRIBUTION AND RESPONSE RATES

The following subsections describe survey instrument design, sample selection, survey distribution, and response rates.

2.1 SURVEY DESIGN AND DISTRIBUTION

BBER, in consultation with Bernalillo County Environmental Health, designed the survey instrument. The instrument was a one-page bubble survey in both English and Spanish. The survey instrument was pre-tested twice to ensure that respondents accurately understood the questions, survey content, and to confirm internal validations.

The survey was distributed to households by mail and was accompanied by a cover letter with the signature of the director of BBER (Appendix A). The survey and cover letters were addressed to the property owner or current resident. A reminder postcard followed the initial survey mailing. Approximately three weeks after the initial mailing, non-respondents were mailed another survey. Self-addressed stamped envelopes were included in both mailings for the return of the survey.

2.2 SAMPLE SELECTION AND RESPONSE RATES

The survey sample was selected from an universe of approximately 12,900 households in the unincorporated area of Bernalillo County that were believed to not receive residential drinking water from the City of Albuquerque or New Mexico Utilities. To achieve a more accurate address set, BBER identified 5,700 properties that had the same site and owner's address. From these 5,700 properties, 5,000 households were randomly selected as the survey sample.

Of the 5,000 surveys distributed, 348 surveys were "returned to sender" due to delivery complications, resulting in a total of 4,652 surveys actually reaching households. A total of 1,739 surveys were returned to BBER for a response rate of 37.4%. BBER excluded eight surveys due to incomplete responses that yielded the surveys unusable. Additionally, 66 surveys from respondents who indicated that most of their water was from the City of Albuquerque were also excluded from the analysis.

The sample was categorized into four geographical areas. These areas are identified in Map 2.1 and include the East Mountains, Sandia Foothills (which includes North Albuquerque Acres), North Valley, and South Valley. Table 2.1 presents the response rates for each of these areas and the study area as a whole. Response rates by geographic area range from 30.8% in the South Valley to 41.5% in the Sandia Foothills.

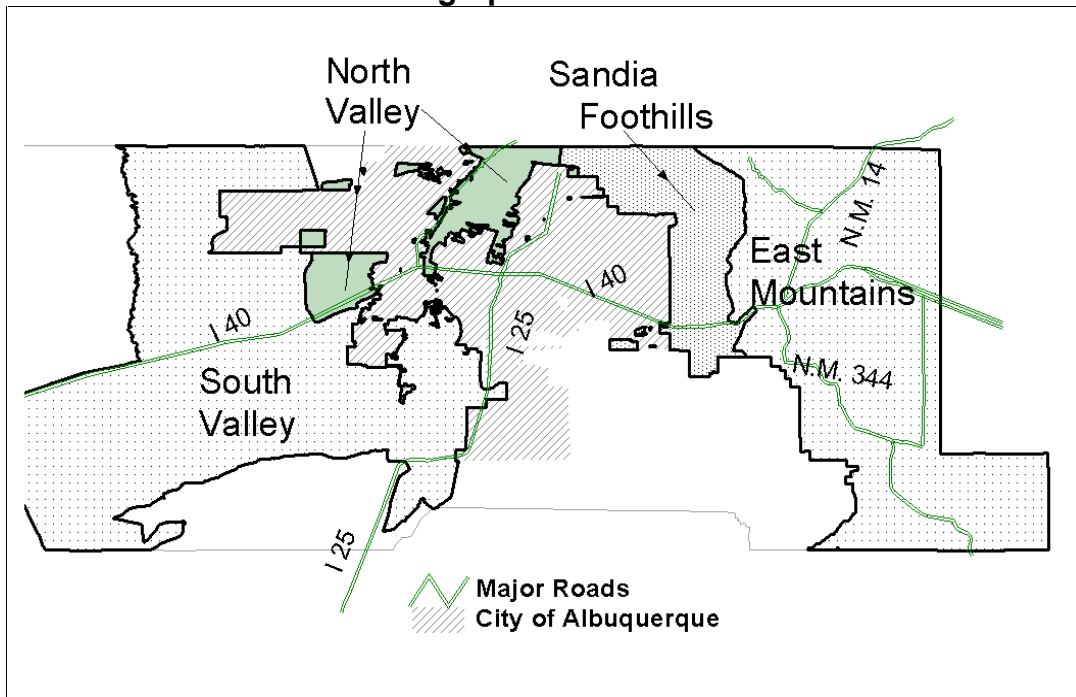
Survey responses from the Sandia Foothills were analyzed as a separate unit to identify water system characteristics and public perceptions within the area. The Sandia Foothills was divided into two sub-areas: North Albuquerque Acres (which is defined in this report as the unincorporated portion of the County west of Tramway Boulevard) and the area east of Tramway Boulevard. Data for these areas are included in tables presented in Appendix B.

Table 2.1
Survey Distribution and Response Rates

	Surveys Sent	Returned Surveys	Response Rate
East Mountains	1,226	480	39.2%
Sandia Foothills	1,730	718	41.5%
North Valley	279	97	34.8%
South Valley	1,417	436	30.8%
Total	4,652	1,731	37.2%

Respondent surveys were scanned by the University of New Mexico – Department of Computer and Information Resources and Technology (CIRT) and analyzed by BBER. The analysis presented in this report uses unweighted survey responses.

Map 2.1
Geographic Sub-areas



2.3 SAMPLE BIAS

The survey instrument included two demographic questions to identify any sample bias. The survey responses to these questions were compared to 2000 Census data for the study area. This comparison shows that survey respondents are generally older than the population. Higher portions of survey respondents are in the older age categories than shown in Census data, 56.4% aged 45 to 64 (compared to 33.5% according to the

Census) and 22.3% aged 65 and older (compared to 13.6% according to the Census). Respondents under the age of 44, which make up 52.9% of the study area population, comprise 21.3% of responses. Additionally, males are over-represented in the survey responses. Of the total respondents, 57% are male compared to 50% according to Census data.

Almost all (98.8%) of the respondents own their residence, which was expected given that homeowners were targeted as survey recipients. Additionally, 90% of respondents have one or more children under the age of five living in their homes. Thirty-two percent of survey respondents have lived in their current residence for 6-10 years, 29% for 11-20 years, 21% for 0-5 years and the remainder, 18%, for more than 20 years.

3: STUDY AREA SURVEY FINDINGS

3.1 WATER SYTEMS AND TREATMENT

As shown in Figure 3.1, almost half (47.6%) of the survey respondents indicate that private individual wells supply most of the water used in the home. Community systems provide water to an additional 39.7% of homes, and well shares an additional 10.6 percent. While “hauled water” was included on the survey instrument, no responses indicated the use of this water system.

As shown in Figure 3.2, 41.0% of respondents indicate that they never use bottled water as a source of drinking water in the home and that 17.3% always use bottled water. The remaining respondents are split almost equally between those that “seldom” and “sometimes” use bottled water.

Over 41% of respondents report that “no water treatment” is used in their home, 32.3% indicated the use of a “water softener,” 17.9% use a “faucet filter,” 13.5% use a “reverse osmosis unit,” 12.1% use a water pitcher with a filter on it, and 7.8% report that they use other methods, including boiling water. (Because survey respondents were asked to “mark ALL of the water treatment systems” which were used in their homes and were allowed to indicate more than one water treatment system, total responses exceed 100%). (Figure 3.3)

Figure 3.1

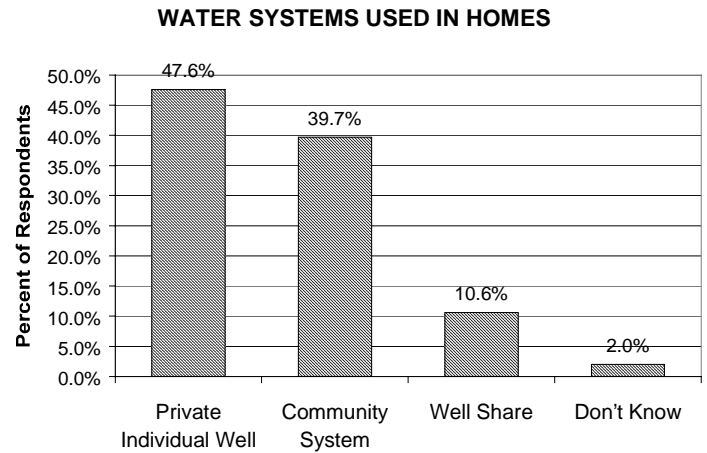


Figure 3.2

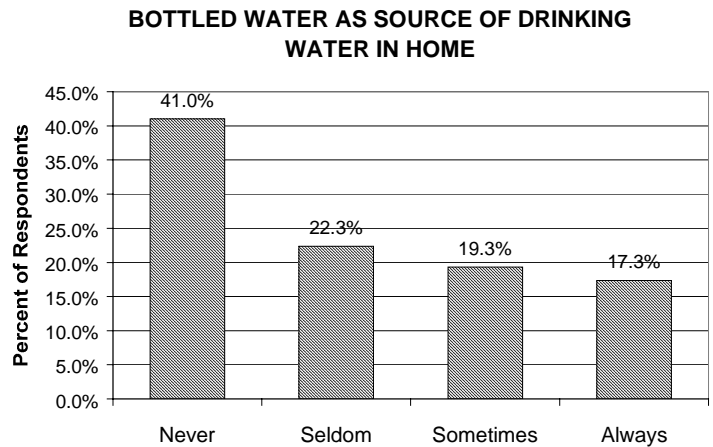
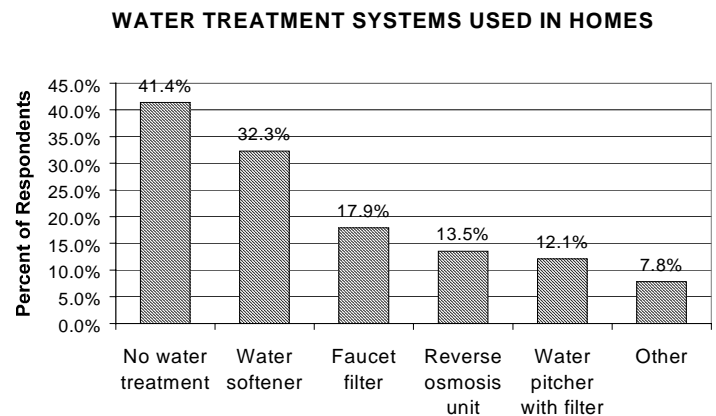


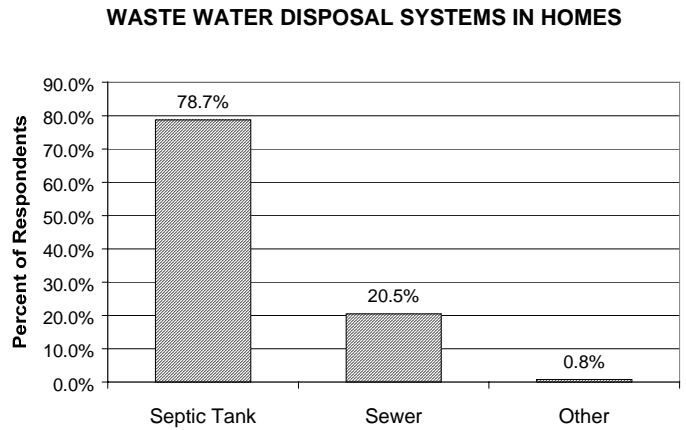
Figure 3.3



3.2 WASTE WATER DISPOSAL

Of total respondents, over three-quarters (78.7%) use a septic tank for wastewater disposal and 20.5% use a sewer system. Less than one percent use “other” systems for wastewater disposal. (Figure 3.4)

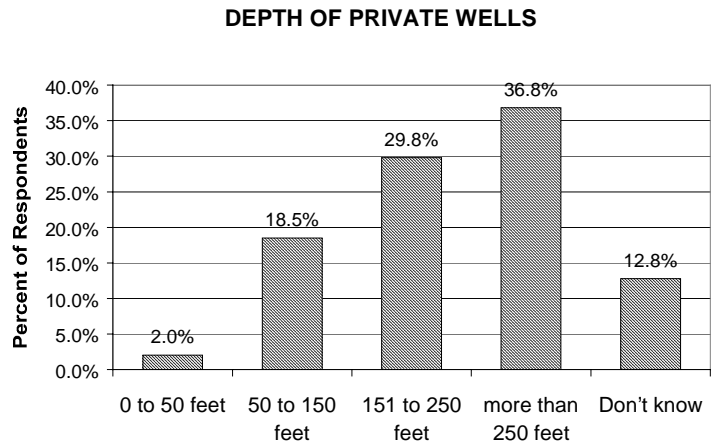
Figure 3.4



3.3 PRIVATE WELLS

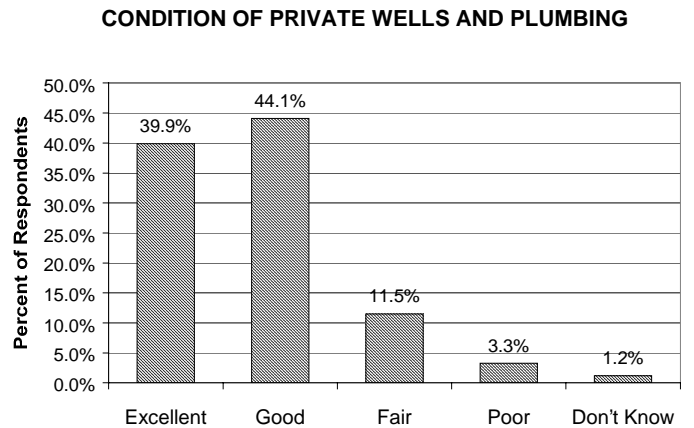
Figure 3.5 shows that of private wells users, 36.8% have wells more than 250 feet deep and 18.5% have wells between 151 to 250 feet deep. Approximately one-fifth of residents have wells of 150 feet deep or less. A relatively large portion (12.8%) of residents with private wells indicate they do not know the depth of their well.

Figure 3.5



The overwhelming majority of residents with private wells indicate their wells and plumbing are in good or excellent condition: 39.9% indicating excellent and 44.1% good. Only 3.3% state that their private wells and plumbing are in poor condition. Less than 4% indicate they do not know the conditions of their well and plumbing. (Figure 3.6)

Figure 3.6



3.4 COMMUNITY SYSTEM CHARACTERISTICS

Those residents receiving most of their water through community systems were asked the name of the system providing their water. Shown in Table 3.1, the grouped open-ended responses show that almost two-thirds (62.5%) of those on community systems receive their water from Sandia Heights Services. Entrosa Water provides water to an additional 23.2% of residences and the remaining 14.3% of residences use a variety of different community systems.

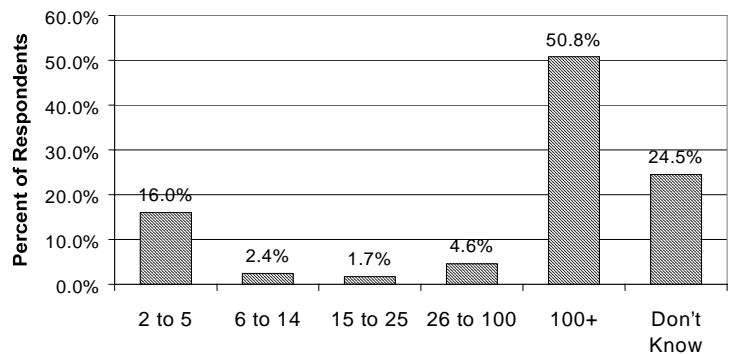
Table 3.1
Community Systems Providing Residential Water

	Survey Respondents	Percent of Total
Sandia Heights Services	336	62.5%
Entrosa Water	125	23.2%
The Independent Utility Co.	27	5.0%
Tranquillo Pines Water Co-Op	10	1.9%
Other	40	7.4%
Total	538	100.0%

Roughly half of the households on community systems indicate that they are on systems which serve 100 or more households. Sixteen percent of respondents indicate that their system serves 2 to 5 households and an additional 8.7% are on systems serving between 6 and 100 households. Almost one-quarter of respondents on a well share or community system do not know how many households the system serves. (Figure 3.7)

Figure 3.7

TOTAL NUMBER OF HOUSEHOLDS SERVED BY WELL SHARE OR COMMUNITY SYSTEM



3.5 PUBLIC PERCEPTIONS

Residents were asked a series of questions relating to their perceptions of water quality, water supply and delivery, and public policy related to residential water. The study area responses, grouped by topic, are presented in Tables 3.2 to 3.4.

3.5.1 Water Quality

As shown in Table 3.2, the large majority of residents indicate that they feel the unfiltered water from the faucet in their home is safe to drink. Overall, 80.6% of residents perceive their water to be safe, with roughly one-third of respondents strongly agreeing and half agreeing that the unfiltered water from the faucet is safe to drink. These findings are supported by 79.4% of respondents either disagreeing or strongly disagreeing with the statement that they “are worried that unfiltered water from the faucet will make them ill if they drink it.”

While the large majority (80.6%) of respondents believe their water is safe, a smaller portion likes the taste of the water coming directly from the kitchen. Overall, 63.4% of respondents strongly agree or agree that they like the taste of their water (28.2% and 35.2%, respectively) while the remaining 36.6% either disagree or strongly disagree. A slightly smaller portion of respondents, roughly half, believes that water does not stain household plumbing fixtures “too much.”

Table 3.2
Perceptions of Residential Water Quality

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
Unfiltered water from faucet is safe to drink.						
Responses	528	743	137	103	65	1,576
Percent	33.5%	47.1%	8.7%	6.5%	4.1%	100.0%
Like taste of unfiltered water that comes directly from kitchen.						
Responses	444	554	289	260	29	1,576
Percent	28.2%	35.2%	18.3%	16.5%	1.8%	100.0%
Water in home stains plumbing fixtures too much.						
Responses	328	449	529	240	29	1,575
Percent	20.8%	28.5%	33.6%	15.2%	1.8%	100.0%
Worried that unfiltered water from faucet will make them ill if they drink it.						
Responses	106	154	552	699	64	1,575
Percent	6.7%	9.8%	35.0%	44.4%	4.1%	100.0%

3.5.2 Delivery/Supply

Table 3.3 presents the study area survey findings on perceptions of residential water supply and delivery. Over half (55.1%) of the respondents worry about the long-term supply of water to the households in their neighborhood. While concerns over long-term supply exist, almost all (94.9%) of respondents agree or strongly agree that their home has water whenever they need it. A smaller portion of residents (81.5%) believes that the water pressure in their home is good. When asked if there was an adequate supply of water at or near their home for fire protection, 14.0% responded that they do not know. The remaining responses were almost equally divided between those that believe there is an adequate supply (44.8%) of water and those that disagree (41.2%). Additionally, 71.6% of respondents disagree with the statement “the cost of having water in my home is too high.”

Table 3.3
Perceptions of Residential Water Supply/Delivery

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
I worry about the long term supply of water to the households in my neighborhoods.						
Responses	318	550	433	202	75	1,578
Percent	20.2%	34.9%	27.4%	12.8%	4.8%	100.0%
My home has water whenever I need it.						
Responses	853	649	60	20	1	1,583
Percent	53.9%	41.0%	3.8%	1.3%	0.1%	100.0%
I have good water pressure in my home.						
Responses	611	676	207	85	1	1,580
Percent	38.7%	42.8%	13.1%	5.4%	0.1%	100.0%
There is enough water at or near my home for fire protection.						
Responses	280	428	307	344	221	1,580
Percent	17.7%	27.1%	19.4%	21.8%	14.0%	100.0%
The cost of having water in my home is too high.						
Responses	85	220	770	355	141	1,571
Percent	5.4%	14.0%	49.0%	22.6%	9.0%	100.0%

3.5.3 Water Policy

The overwhelming majority of study area residents agree or strongly agree with statements supporting an active County role in water policies related to protecting the water supply and ensuring water quality (Table 3.4). Of the total residents responding to the survey, 87.6% agree that the County should provide education to the general public about protecting the water supply. Showing support for local water quality testing, 88.4% of respondents disagree with the statement “regular testing for water quality is NOT necessary” while only 8.1% agree or strongly agree. Over 90% of residents agree or strongly agree that the County should protect wells by passing and enforcing laws that make sure there is a safe distance between well and sources of pollution. There is also support for policies aimed at well drillers and water system operators: 86.7% of respondents agree/strongly agree that well drillers should be provided training about water quality and 85.6% believe (strongly disagree and disagree combined) that persons that operate water systems should NOT be required to be licensed and certified.

Table 3.4
Perceptions of Water Policy

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
Bernalillo County should provide education to the general public about protecting the water supply.						
Responses	619	757	88	42	65	1,571
Percent	39.4%	48.2%	5.6%	2.7%	4.1%	100.0%
Well drillers should be provided with training about water quality.						
Responses	662	708	66	26	118	1,580
Percent	41.9%	44.8%	4.2%	1.6%	7.5%	100.0%
Persons who operate water systems should NOT be required to be licensed and certified.						
Responses	45	67	384	968	114	1,578
Percent	2.9%	4.2%	24.3%	61.3%	7.2%	100.0%
Bernalillo County should pass and enforce laws to make sure that there is a safe distance between wells and sources of pollution such as septic tanks and gas stations.						
Responses	864	544	50	63	39	1,560
Percent	55.4%	34.9%	3.2%	4.0%	2.5%	100.0%
Regular testing for local water quality is NOT necessary.						
Responses	38	89	506	883	54	1,570
Percent	2.4%	5.7%	32.2%	56.2%	3.4%	100.0%

4: FINDINGS BY GEOGRAPHIC AREA

This section presents the survey findings based on four different geographic areas and explores the relationship of geography, residential water use characteristics, and resident perceptions.

4.1 WATER SYSTEMS AND TREATMENT

Water systems used in homes vary by geographic areas of the County. Homes in the North Valley and South Valley primarily use private individual wells, 89.3% and 92.6%, respectively (compared to the study area average of 47.6%), with the remainder of homes using well shares and community systems at relatively equal rates. The majority of homes (62.8%) in the Sandia Foothills use community systems to provide water (compared to the study area average of 39.7%), though 20.8% use private individual wells and 14.2% use well shares. Residential users in the East Mountains use private individual wells and community systems almost equally, 39.4% and 45.4%, respectively. (Table 4.1)

Table 4.1
Water Systems Used in Homes

	Private Individual Well	Well Share	Community System	Don't Know	Total
East Mountains	180 39.4%	56 12.3%	208 45.5%	13 2.8%	457 100.0%
Sandia Foothills	136 20.8%	93 14.2%	411 62.8%	14 2.1%	654 100.0%
North Valley	67 89.3%	3 4.0%	3 4.0%	2 2.7%	75 100.0%
South Valley	374 92.6%	17 4.2%	10 2.5%	3 0.7%	404 100.0%
Total	757 47.6%	169 10.6%	632 39.7%	32 2.0%	1,590 100.0%

As shown in Table 4.2, the last time household water quality was tested also varies by geographic area. The water quality of homes in Sandia Foothills is most likely to have been tested in the past year and next to least likely to never have been tested. Homes in the South Valley are the most likely to have never been tested and the least likely to have been tested less than one year ago. Homes in the East Mountains are slightly less likely to have been tested in the past year compared to the study area (19.2% compared to 24.0%) though more likely to have been tested between 1 and 5 years ago (36.1% compared to 27.9%). Compared to the study area, water in North Valley homes was less likely to be tested in the past year and less likely to never have been tested, though more likely to have been tested more than one year ago.

Table 4.2
Last Time Household Water was Tested for Water Quality

	Less than 1 year ago	Between 1 & 5 yrs ago	More than 5 years ago	Never	Don't Know	Total
East Mountains	87 19.2%	143 31.6%	86 19.0%	45 9.9%	92 20.3%	453 100.0%
Sandia Foothills	245 38.5%	129 20.3%	77 12.1%	43 6.8%	143 22.4%	637 100.0%
North Valley	9 12.0%	27 36.0%	24 32.0%	5 6.7%	10 13.3%	75 100.0%
South Valley	34 8.5%	137 34.3%	130 32.6%	49 12.3%	49 12.3%	399 100.0%
Total	375 24.0%	436 27.9%	317 20.3%	142 9.1%	294 18.8%	1,564 100.0%

Table 4.3 describes the use of bottled water by geographic area. Compared to the other areas, bottled water is most likely to always be used as a source of home drinking water in the South Valley (30.4% of respondents) and the least likely in Sandia Foothills (7.6% of respondents). Almost half the homes in the Sandia Foothills never use bottled water. Homes in the East Mountains are more likely to always, sometimes, and seldom use bottled water and less likely to never use bottled water.

Table 4.3
Bottled Water as Source of Drinking Water in Home

	Always	Sometimes	Seldom	Never	Total
East Mountains	89 20.0%	93 20.9%	107 24.0%	157 35.2%	446 100.0%
Sandia Foothills	49 7.6%	128 19.8%	157 24.3%	311 48.2%	645 100.0%
North Valley	12 16.7%	16 22.2%	13 18.1%	31 43.1%	72 100.0%
South Valley	120 30.4%	64 16.2%	71 18.0%	140 35.4%	395 100.0%
Total	270 17.3%	301 19.3%	348 22.3%	639 41.0%	1,558 100.0%

Respondents from the South Valley and Sandia Foothills are most likely to use no water treatment (47.7% and 47.4%, respectively) (Table 4.4). The East Mountains are most likely to use some type of treatment (71.9% of homes) and almost half of respondents use a water softener. Only 34.0% of North Valley homes use no water treatment, compared to 41.4% of homes in the study area. Slightly more than 43% of North Valley respondents use water softener.

Table 4.4
Water Treatment Systems Used in Homes

	No water treatment	Water softener	Faucet filter	Reverse osmosis unit	Water pitcher with filter	Other	Total
East Mountains	135 28.1%	234 48.8%	88 18.3%	108 22.5%	77 16.0%	38 8.0%	680 141.7%
Sandia Foothills	340 47.4%	157 21.9%	125 17.4%	78 10.9%	97 13.5%	42 5.8%	839 116.9%
North Valley	33 34.0%	42 43.3%	22 22.7%	15 15.5%	7 7.2%	8 8.2%	127 130.9%
South Valley	208 47.7%	126 28.9%	74 17.0%	33 7.6%	29 6.7%	47 10.8%	517 118.7%
Total	716 41.4%	559 32.3%	309 17.9%	234 13.5%	210 12.1%	135 7.8%	2,163 125.0%

Almost one-third of homes in the South Valley use the sewer system for wastewater disposal, with the remaining two-thirds primarily using septic tanks. Almost all East Mountain homes uses septic tanks (96.8%). Septic tanks are also the primary source of wastewater disposal for homes in the North Valley (84.9%) and Sandia Foothills (72.7%) (Table 4.5).

Table 4.5
System Used for Wastewater Disposal

	Sewer	Septic Tank	Other	Total
East Mountains	8 1.8%	422 96.8%	6 1.4%	436 100.0%
Sandia Foothills	180 27.2%	481 72.7%	1 0.2%	662 100.0%
North Valley	12 14.0%	73 84.9%	1 1.2%	86 100.0%
South Valley	121 31.8%	255 66.9%	5 1.3%	381 100.0%
Total	321 20.5%	1,231 78.7%	13 0.8%	1,565 100.0%

The depth of private wells varies by geographic area. Sandia Foothills and the East Mountains have the highest percentage of wells that are more than 250 feet deep, 76.5% and 62.9%, respectively. In the South Valley and the North Valley, roughly 25% of private wells are 50 to 150 feet deep and an additional 40% are 151 to 250 feet deep (Table 4.6).

Table 4.6
Depth of Private Wells

	0 to 50 feet	50 to 150 feet	151 to 250 feet	more than 250 feet	Don't know	Total
East Mountains	0 0.0%	14 7.9%	35 19.7%	112 62.9%	17 9.6%	178 100.0%
Sandia Foothills	1 0.7%	7 5.1%	15 11.0%	104 76.5%	9 6.6%	136 100.0%
North Valley	1 1.5%	16 24.2%	27 40.9%	13 19.7%	9 13.6%	66 100.0%
South Valley	13 3.6%	101 27.7%	145 39.8%	45 12.4%	60 16.5%	364 100.0%
Total	15 2.0%	138 18.5%	222 29.8%	274 36.8%	95 12.8%	744 100.0%

Overall, the large majority of respondents believe their private wells and plumbing are in excellent or good shape. These responses combine to capture 91.0% of homes in the East Mountains, 92.3% in the Sandia Foothills, 85.7% in the North Valley and 76.9% in the South Valley. The South Valley has the highest portion of wells and plumbing in fair and poor condition, 16.7% and 5.5%, respectively. (Table 4.7)

Table 4.7
Condition of Private Wells and Plumbing

	Excellent	Good	Fair	Poor	Don't Know	Total
East Mountains	68 41.0%	83 50.0%	11 6.6%	3 1.8%	1 0.6%	166 100.0%
Sandia Foothills	73 55.7%	48 36.6%	6 4.6%	0 0.0%	4 3.1%	131 100.0%
North Valley	25 39.7%	29 46.0%	7 11.1%	2 3.2%	0 0.0%	63 100.0%
South Valley	109 33.1%	144 43.8%	55 16.7%	18 5.5%	3 0.9%	329 100.0%
Total	275 39.9%	304 44.1%	79 11.5%	23 3.3%	8 1.2%	689 100.0%

Table 4.8 shows that households in the East Mountains and Sandia Foothills are most likely to be on community systems with 100 or more households, 44.4% and 56.7%, respectively. Of households on well shares and community systems, 29.4% of respondents in the East Mountains are on systems with less than 100 households compared to 20.2% in Sandia Foothills. While Table 4.8 reports the survey findings for the North Valley and South Valley, there are too few responses to interpret conclusively.

Survey findings on the number of households served by well share or community system by geographic area should be interpreted with care because of the small number of overall respondents and the large number of “don’t know” responses (24.5% overall).

Table 4.8
Total Number of Households Served by Well Share or Community System

	Number of Households					Don't Know	Total
	2 to 5	6 to 14	15 to 25	26 to 100	100+		
East Mountains	38 15.3%	6 2.4%	9 3.6%	20 8.1%	110 44.4%	65 26.2%	248 100.0%
Sandia Foothills	64 15.1%	10 2.4%	2 0.5%	10 2.4%	241 56.7%	98 23.1%	425 100.0%
North Valley	3 60.0%	0 0.0%	0 0.0%	0 0.0%	1 20.0%	1 20.0%	5 100.0%
South Valley	7 33.3%	1 4.8%	1 4.8%	2 9.5%	3 14.3%	7 33.3%	21 100.0%
Total	112 16.0%	17 2.4%	12 1.7%	32 4.6%	355 50.8%	171 24.5%	699 100.0%

4.2 PUBLIC PERCEPTIONS

4.2.1 Quality

Table 4.9, on page 17, presents survey findings on perceptions of water quality by area. The following section summarizes these findings by area.

East Mountains

When compared to the overall study area, respondents from the East Mountains are slightly more likely to believe (strongly agree and agree combined) that unfiltered water from their faucet is safe to drink, and less likely to think this water will make them ill. When compared to the study area, a smaller portion of East Mountains respondents strongly agree/agree that they like the taste of the unfiltered water that comes directly from their kitchen faucet, 63.3% of respondents in the study area compared to 51.4%. Roughly equal portions, about half, of East Mountains and study area respondents indicate they strongly agree/agree that the water in their home stains their plumbing fixtures too much.

Sandia Foothills

Perceptions of water quality in the Sandia Foothills are the most positive of the four areas. In comparison to the other areas, Sandia Foothills has by far the highest portion (46.3%) of responses strongly agreeing that they feel the water that comes from the faucet is safe to drink. Consistent with this finding, the Sandia Foothills also has the lowest percentage of responses indicating that residents both strongly agree and agree that the water from the faucet will make them ill, 3.1% and 4.6%, respectively. Seventy-nine percent of residents (those who strongly agree and agree combined) responding also state that they like the

taste of the water that comes directly from the kitchen faucet (the North Valley is a distant second with 60.8% linking the taste of their water). Only 14.2% strongly agree and 25.8% agree - the lowest percentages of the areas in both categories - that the water in their home stains plumbing fixtures too much.

North Valley

Even though the number of North Valley responses is small, perceptions of water quality in the area generally reflect the findings for the overall study area. When compared to the overall study area, a smaller percentage of responses strongly agree that unfiltered water from the faucet is safe to drink, though the rate of strongly agree and agree combined in the North Valley exceeds the overall study area, 85.1% to 80.6%, respectively. The rate of North Valley residents that strongly agree and agree that the unfiltered water from the faucet will make them ill is slightly lower than in the overall study area, 14.9% compared to 16.5%. The North Valley has the smallest percentage of responses strongly agreeing that they like the taste of the unfiltered water directly from the kitchen faucet, though the area fares better when strongly agreeing and agreeing responses are combined (60.3% compared to 63.3% in the overall study area). The North Valley has the smallest portion of residents strongly agreeing that they like the taste of unfiltered water from the kitchen faucet. Responses regarding water staining plumbing fixtures closely resemble overall study area responses.

South Valley

Perceptions of water quality in the South Valley are the least positive of the four geographic areas. Only 63.1% of respondents strongly agree/agree that unfiltered water from the faucet is safe to drink compared to 80.6% in the overall study area. South Valley responses strongly agreeing and agreeing that unfiltered water from the faucet will make them ill if they drink it are the highest of the geographic areas. While a similar percentage of South Valley, East Mountain and North Valley responses strongly agree that they like the taste of unfiltered water from the kitchen, a much larger percentage of South Valley residents, 30.3%, strongly disagree. The South Valley also has the highest percent of responses strongly agreeing that the water in the home stains plumbing fixtures too much.

Table 4.9
Perceptions on Residential Water Quality by Area

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
Unfiltered water from faucet is safe to drink.						
East Mountains	132 29.1%	238 52.4%	42 9.3%	19 4.2%	23 5.1%	454 100.0%
Sandia Foothills	301 46.3%	286 44.0%	30 4.6%	13 2.0%	20 3.1%	650 100.0%
North Valley	16 21.6%	47 63.5%	4 5.4%	6 8.1%	1 1.4%	74 100.0%
South Valley	79 19.8%	172 43.2%	61 15.3%	65 16.3%	21 5.3%	398 100.0%
Total	528 33.5%	743 47.1%	137 8.7%	103 6.5%	65 4.1%	1,576 100.0%
Worried that the unfiltered water from faucet will make them ill if they drink it.						
East Mountains	18 4.0%	48 10.6%	178 39.2%	192 42.3%	18 4.0%	454 100.0%
Sandia Foothills	20 3.1%	30 4.6%	216 33.2%	359 55.1%	26 4.0%	651 100.0%
North Valley	7 9.5%	4 5.4%	29 39.2%	29 39.2%	5 6.8%	74 100.0%
South Valley	61 15.4%	72 18.2%	129 32.6%	119 30.1%	15 3.8%	396 100.0%
Total	106 6.7%	154 9.8%	552 35.0%	699 44.4%	64 4.1%	1,575 100.0%
Like the taste of unfiltered water that comes directly from kitchen.						
East Mountains	101 22.3%	132 29.1%	113 24.9%	94 20.8%	13 2.9%	453 100.0%
Sandia Foothills	242 37.2%	268 41.2%	88 13.5%	38 5.8%	14 2.2%	650 100.0%
North Valley	15 20.3%	30 40.5%	22 29.7%	7 9.5%	0 0.0%	74 100.0%
South Valley	86 21.6%	124 31.1%	66 16.5%	121 30.3%	2 0.5%	399 100.0%
Total	444 28.2%	554 35.2%	289 18.3%	260 16.5%	29 1.8%	1,576 100.0%

Table 4.9

Perceptions on Residential Water Quality by Area (continued)

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No	Total
Water in home stains plumbing fixtures too much.						
East Mountains	95 20.9%	139 30.6%	154 33.9%	54 11.9%	12 2.6%	454 100.0%
Sandia Foothills	92 14.2%	168 25.8%	251 38.6%	128 19.7%	11 1.7%	650 100.0%
North Valley	16 21.9%	21 28.8%	25 34.2%	9 12.3%	2 2.7%	73 100.0%
South Valley	125 31.4%	121 30.4%	99 24.9%	49 12.3%	4 1.0%	398 100.0%
Total	328 20.8%	449 28.5%	529 33.6%	240 15.2%	29 1.8%	1,575 100.0%

4.2.2 Delivery/Supply

Table 4.10, on page 19, presents survey findings on perceptions of water supply and delivery by area. The following section summarizes these findings by area.

East Mountains

The East Mountains has the highest percentage of residents that strongly agree and agreeing that they worry about the long-term supply of water to households in their neighborhood (70.6% compared to 55.0% in the study area), and 92.1% strongly agree/agree that their home has water whenever they need it. Close to the study area average of 81.5%, 82.4% of East Mountains respondents strongly agree/agree that they have good water pressure in their home, though a much smaller percentage (36.3%) believes that there is enough water near their home for fire protection. The percentages of respondents that both strongly agree and agree that the cost of having water in their home is too high reflect the overall study area rates.

Sandia Heights

Roughly equal percentages of respondents strongly agree/agree (47.2%) and strongly disagree/disagree (48.2%) that they worry about the long-term supply of water to the households in their neighborhood (compared to 55.0% and 40.2%, respectively, in the study area) and almost all (98.6%) indicate that their home has water whenever they need it. Over 50% of the area's respondents (the highest of all areas) strongly agree that they have good water pressure in their home and almost two-thirds strongly agree/agree that there is enough water pressure at or near their home for fire protection, also the highest of the areas. By a very slight margin, Sandia Foothills also has the highest percentage of responses that strongly agree that the cost of water in their home is too high.

North Valley

Compared to other areas, the North Valley has the highest percentage of respondents that disagree strongly and disagree that they are worried about the long-term supply of water to households in their neighborhoods. Almost 96% of respondents believe (strongly agree and agree combined) that their home has water whenever they need it and three-quarters of respondents believe (strongly agree and agree combined) that the homes have good water pressure. A slightly larger percentage of respondents agree than disagree that there is enough water pressure for fire protection, 45.3% compared to 41.3%. The North Valley has the highest percentage of respondents who strongly disagree/disagree that the cost of water in their home is too high.

South Valley

South Valley perceptions of water supply and availability generally follow those of the overall study area, though a slightly smaller percent of respondents believe (strongly agree and agree combined) that they have good water pressure. The percentage of respondents strongly disagreeing that there is enough water for fire protection (43.1%) far exceeds the rate of the overall study area (21.8%).

Table 4.10
Perceptions on Residential Supply/Delivery by Area

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
I worry about the long term supply of water to the households in my neighborhoods.						
East Mountains	148 32.5%	174 38.2%	83 18.2%	35 7.7%	16 3.5%	456 100.0%
Sandia Foothills	68 10.5%	239 36.8%	216 33.2%	97 14.9%	30 4.6%	650 100.0%
North Valley	10 13.3%	24 32.0%	25 33.3%	12 16.0%	4 5.3%	75 100.0%
South Valley	92 23.2%	113 28.5%	109 27.5%	58 14.6%	25 6.3%	397 100.0%
Total	318 20.2%	550 34.9%	433 27.4%	202 12.8%	75 4.8%	1,578 100.0%
My home has water whenever I need it.						
East Mountains	203 44.4%	218 47.7%	27 5.9%	8 1.8%	1 0.2%	457 100.0%
Sandia Foothills	449 69.0%	193 29.6%	7 1.1%	2 0.3%	0 0.0%	651 100.0%
North Valley	33 44.6%	38 51.4%	3 4.1%	0 0.0%	0 0.0%	74 100.0%
South Valley	168 41.9%	200 49.9%	23 5.7%	10 2.5%	0 0.0%	401 100.0%
Total	853 53.9%	649 41.0%	60 3.8%	20 1.3%	1 0.1%	1583 100.0%

Table 4.10
Perceptions on Residential Supply/Delivery by Area (continued)

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
I have good water pressure in my home.						
East Mountains	140 30.8%	235 51.6%	58 12.7%	22 4.8%	0 0.0%	455 100.0%
Sandia Foothills	330 50.7%	238 36.6%	69 10.6%	13 2.0%	1 0.2%	651 100.0%
North Valley	26 35.1%	31 41.9%	16 21.6%	1 1.4%	0 0.0%	74 100.0%
South Valley	115 28.8%	172 43.0%	64 16.0%	49 12.3%	0 0.0%	400 100.0%
Total	611 38.7%	676 42.8%	207 13.1%	85 5.4%	1 0.1%	1580 100.0%
There is enough water at or near my home for fire protection.						
East Mountains	59 13.0%	106 23.3%	121 26.7%	114 25.1%	54 11.9%	454 100.0%
Sandia Foothills	187 28.7%	235 36.0%	78 12.0%	48 7.4%	104 16.0%	652 100.0%
North Valley	11 14.7%	23 30.7%	21 28.0%	10 13.3%	10 13.3%	75 100.0%
South Valley	23 5.8%	64 16.0%	87 21.8%	172 43.1%	53 13.3%	399 100.0%
Total	280 17.7%	428 27.1%	307 19.4%	344 21.8%	221 14.0%	1,580 100.0%
The cost of having water in my home is too high.						
East Mountains	23 5.1%	71 15.7%	237 52.3%	98 21.6%	24 5.3%	453 100.0%
Sandia Foothills	38 5.8%	99 15.2%	337 51.8%	137 21.0%	40 6.1%	651 100.0%
North Valley	3 4.1%	4 5.4%	40 54.1%	18 24.3%	9 12.2%	74 100.0%
South Valley	21 5.3%	46 11.7%	156 39.7%	102 26.0%	68 17.3%	393 100.0%
Total	85 5.4%	220 14.0%	770 49.0%	355 22.6%	141 9.0%	1,571 100.0%

4.2.3 Policy

Table 4.11 presents the survey findings on water policy questions. With few exceptions, the perceptions of public regarding water policies follow the same pattern in the four

geographic areas. In all areas, over 85% of respondents believe (strongly agree and agree combined) that the County should provide education to the general public about protecting the water supply. The South Valley has the largest percentage of responses strongly agreeing and the North Valley the smallest. Over 85% of respondents believe (strongly agree and agree combined) that well drillers should be provided with training about water quality, again with the South Valley having the highest percentage strongly agreeing. Similar levels of support exist for licensing and certifying public water systems operators, with 85.7% of study area respondents indicating they do not believe (strongly disagree and disagree combined) that public water system operators should NOT be certified. The area with the highest percentage of respondents disagreeing is the Sandia Foothills and the smallest percentage was in the North Valley. Over 90% of study area responses believe (strongly agree and agree combined) that laws should be passed and enforced to make sure that there is safe distance between wells and sources of pollution, making it the policy with the largest amount of support. The Sandia Foothills has the largest percentage of responses that strongly agree (59.1%) while the South Valley has the largest percentage that strongly disagree (6.4%) that the County should make and enforce laws ensuring safe distances.

Table 4.11
Perceptions on Residential Water Policy by Area

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
Bernalillo County should provide education to the general public about protecting the water supply.						
East Mountains	169 37.5%	224 49.7%	27 6.0%	12 2.7%	19 4.2%	451 100.0%
Sandia Foothills	262 40.4%	309 47.7%	35 5.4%	14 2.2%	28 4.3%	648 100.0%
North Valley	25 34.2%	42 57.5%	3 4.1%	2 2.7%	1 1.4%	73 100.0%
South Valley	163 40.9%	182 45.6%	23 5.8%	14 3.5%	17 4.3%	399 100.0%
Total	619 39.4%	757 48.2%	88 5.6%	42 2.7%	65 4.1%	1,571 100.0%

Table 4.11
Perceptions on Residential Water Policy by Area (continued)

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
Well drillers should be provided with training about water quality.						
East Mountains	175 38.6%	221 48.8%	25 5.5%	8 1.8%	24 5.3%	453 100.0%
Sandia Foothills	266 40.9%	284 43.6%	27 4.1%	9 1.4%	65 10.0%	651 100.0%
North Valley	29 38.7%	38 50.7%	2 2.7%	1 1.3%	5 6.7%	75 100.0%
South Valley	192 47.9%	165 41.1%	12 3.0%	8 2.0%	24 6.0%	401 100.0%
Total	662 41.9%	708 44.8%	66 4.2%	26 1.6%	118 7.5%	1,580 100.0%

Persons who operate water systems should NOT be required to be licensed and certified.

East Mountains	11 2.4%	13 2.9%	130 28.7%	275 60.7%	24 5.3%	453 100.0%
Sandia Foothills	16 2.5%	27 4.1%	146 22.4%	419 64.4%	43 6.6%	651 100.0%
North Valley	3 4.1%	3 4.1%	24 32.4%	35 47.3%	9 12.2%	74 100.0%
South Valley	15 3.8%	24 6.0%	84 21.0%	239 59.8%	38 9.5%	400 100.0%
Total	45 2.9%	67 4.2%	384 24.3%	968 61.3%	114 7.2%	1,578 100.0%

Bernalillo County should pass and enforce laws to make sure that there is a safe distance between wells and sources of pollution such as septic tanks and gas stations.

East Mountains	237 52.4%	175 38.7%	15 3.3%	16 3.5%	9 2.0%	452 100.0%
Sandia Foothills	381 59.1%	207 32.1%	22 3.4%	20 3.1%	15 2.3%	645 100.0%
North Valley	34 45.9%	34 45.9%	2 2.7%	2 2.7%	2 2.7%	74 100.0%
South Valley	212 54.5%	128 32.9%	11 2.8%	25 6.4%	13 3.3%	389 100.0%
Total	864 55.4%	544 34.9%	50 3.2%	63 4.0%	39 2.5%	1,560 100.0%

Table 4.11

Perceptions on Residential Water Policy by Area (continued)

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
Regular testing for local water quality is NOT necessary.						
East Mountains	9 2.0%	25 5.5%	160 35.4%	246 54.4%	12 2.7%	452 100.0%
Sandia Foothills	14 2.2%	29 4.5%	201 31.1%	385 59.6%	17 2.6%	646 100.0%
North Valley	1 1.4%	9 12.5%	28 38.9%	33 45.8%	1 1.4%	72 100.0%
South Valley	14 3.5%	26 6.5%	117 29.3%	219 54.8%	24 6.0%	400 100.0%
Total	38 2.4%	89 5.7%	506 32.2%	883 56.2%	54 3.4%	1,570 100.0%

5: FINDINGS BY TYPE OF WATER SYSTEM

This section presents the survey findings grouped by type of residential water system and explores the relationship of geography and resident perceptions.

5.1 WATER SYSTEMS AND TREATMENT

Tables 5.1 to 5.3 present water use characteristics by three residential water system types: private individual well, well share and community system. The following narrative describes survey findings on water use by each type of system.

Private Individual Well

Respondents using private individual wells (21.3%) are most likely to always use bottled water for home drinking water, compared to those on well shares (12.7%), and community systems (13.5%). This being stated, the percentage of those homes never using bottled water is slightly higher than the study area average, 41.6% compared to 41.4%. Private individual well respondents are also most likely to use no water treatment in their homes (43.6%), and only 10.5% of respondents have had their water quality tested less than one year ago (compared to the system-wide average of 24.1%.)

Well Share

Respondents getting residential water through well share are the least likely to always use bottled water for home drinking water (12.7%) and the most likely to never use bottled water (47.6%). While this is the case, well share respondents are the least likely to use no water treatment in their homes and the most likely to use water softener, faucet filters, and reverse osmosis units. While 34.1% of well share respondents had their household water quality tested in the past year, only 3.6% never had their water quality tested. Slightly more than 16% of well share respondents did not know when their water quality was last tested.

Table 5.1
Bottled Water as Source of Drinking Water in Homes

	Always	Sometimes	Seldom	Never	Total
Private					
Individual Well	159 21.3%	121 16.2%	155 20.8%	310 41.6%	745 100.0%
Well Share	21 12.7%	26 15.7%	40 24.1%	79 47.6%	166 100.0%
Community					
System	84 13.5%	146 23.4%	147 23.6%	247 39.6%	624 100.0%
Total	264 17.2%	293 19.1%	342 22.3%	636 41.4%	1,535 100.0%

Table 5.2
Water Treatment Systems Used in Homes

	No water treatment	Water softener	Faucet filter	Reverse Osmosis unit	Water pitcher with filter	Other
Private						
Individual Well	332 43.6%	250 32.9%	125 16.4%	94 12.4%	58 7.6%	80 10.5%
Well Share	65 38.5%	61 36.1%	36 21.3%	33 19.5%	18 10.7%	8 4.7%
Community System	257 40.4%	206 32.4%	115 18.1%	89 14.0%	107 16.8%	35 5.5%
Total	654 41.8%	517 33.0%	276 17.6%	216 13.8%	183 11.7%	123 7.9%

Table 5.3
Last Time Household Water was Tested for Water Quality

	Don't Know	Less than 1 year ago	1 & 5 years ago	More than 5 years ago	Never	Total
Private						
Individual Well	66 8.8%	79 10.5%	287 38.1%	254 33.7%	67 8.9%	753 100.0%
Well Share	27 16.2%	57 34.1%	48 28.7%	29 17.4%	6 3.6%	167 100.0%
Community System	191 30.8%	235 37.8%	101 16.3%	34 5.5%	60 9.7%	621 100.0%
Total	284 18.4%	371 24.1%	436 28.3%	317 20.6%	133 8.6%	1,541 100.0%

Community System

When compared to all water system users, a smaller percentage of community system respondents always use bottled water, 17.2% and 13.5%, respectively. Almost 40% of community system homes never use bottled water. When compared to the study area average, community system respondents are slightly less likely to use no water treatment systems in their homes and are least likely to use water softener. Community system users are most likely to have had their water quality tested in the past year, though almost 31% indicated they did not know when their water was last tested.

5.2 PERCEPTIONS BY WATER SYSTEM TYPE

5.2.1 Quality

Tables 5.4, on the following page, presents survey findings on perceptions of water quality by residential water system. The following section summarizes these findings.

Private Individual Well

Private individual well users have the highest rate of respondents that do not believe (strongly disagreeing and disagree) that unfiltered water that comes from their faucet is safe to drink, 18.8% compared to 11.0% for all water systems, and the highest rate of respondents that both strongly agree and agree that they are worried that their unfiltered water will make them ill. Slightly more than 30% strongly agree that they like the taste of their water and 34.2% strongly disagree/disagree. Private well users also have the highest rates of respondents that both strongly agree and agree that their water stains plumbing fixtures too much.

Well Share

Almost matching the rate for all water systems, over one-third of well share users strongly agree that their unfiltered water is safe to drink and a higher rate of well users strongly disagree that their water will make them ill. Well share users also have the highest rate of respondents strongly agreeing (33.7%) that they like the taste of their water and the lowest rate of respondents that believe (strongly agree and agree combined) that their water stains plumbing fixtures too much (41.4%).

Community Systems

Community systems have the highest rate of respondents (39.4%) that strongly agree that their unfiltered water is safe to drink and the lowest rate of respondents (11.4%) that strongly believe that their unfiltered water will make them ill. While this is the case, community systems have the lowest rate of respondents that believe (strongly agree and agree combined) that they like the taste of their water from the kitchen faucet. The perceptions of community system respondents as to whether their water stains plumbing fixtures too much almost mirrors the system-wide findings.

Table 5.4

Perceptions on Residential Water Quality by Water System

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
The unfiltered water that comes from my faucet is safe to drink.						
Private Individual Well	223 29.8%	350 46.7%	70 9.3%	71 9.5%	35 4.7%	749 100.0%
Well Share	57 33.7%	80 47.3%	14 8.3%	10 5.9%	8 4.7%	169 100.0%
Community System	250 39.4%	294 46.4%	51 8.0%	19 3.0%	20 3.2%	634 100.0%
Total	530 34.1%	724 46.6%	135 8.7%	100 6.4%	63 4.1%	1,552 100.0%
Worried that the unfiltered water from faucet will make them ill if they drink it.						
Private Individual Well	72 9.6%	87 11.6%	263 35.1%	300 40.0%	28 3.7%	750 100.0%
Well Share	7 4.1%	15 8.9%	59 34.9%	82 48.5%	6 3.6%	169 100.0%
Community System	25 4.0%	47 7.4%	216 34.2%	316 50.0%	28 4.4%	632 100.0%
Total	104 6.7%	149 9.6%	538 34.7%	698 45.0%	62 4.0%	1,551 100.0%
I like the taste of the unfiltered water that comes directly from my kitchen.						
Private Individual Well	228 30.4%	252 33.6%	114 15.2%	142 19.0%	13 1.7%	749 100.0%
Well Share	57 33.7%	59 34.9%	34 20.1%	15 8.9%	4 2.4%	169 100.0%
Community System	161 25.4%	236 37.2%	129 20.3%	96 15.1%	12 1.9%	634 100.0%
Total	446 28.7%	547 35.2%	277 17.8%	253 16.3%	29 1.9%	1,552 100.0%
The water in my home stains plumbing fixtures too much.						
Private Individual Well	174 23.2%	220 29.3%	242 32.3%	106 14.1%	8 1.1%	750 100.0%
Well Share	25 14.8%	45 26.6%	63 37.3%	32 18.9%	4 2.4%	169 100.0%
Community System	121 19.1%	174 27.5%	220 34.8%	102 16.1%	15 2.4%	632 100.0%
Total	320 20.6%	439 28.3%	525 33.8%	240 15.5%	27 1.7%	1,551 100.0%

Table 5.4

Perceptions on Residential Water Quality by Water System (continued)

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
My home has water whenever I need it.						
Private						
Individual Well	359 47.5%	350 46.3%	34 4.5%	12 1.6%	1 0.1%	756 100.0%
Well Share	75 44.4%	80 47.3%	11 6.5%	3 1.8%	0 0.0%	169 100.0%
Community System	414 65.3%	205 32.3%	11 1.7%	4 0.6%	0 0.0%	634 100.0%
Total	848 54.4%	635 40.7%	56 3.6%	19 1.2%	1 0.1%	1,559 100.0%

5.2.2 Delivery/Supply

Table 5.5, on page 29, presents survey findings on perceptions of delivery/supply by residential water system. The following section summarizes these findings.

Private Individual Wells

Private individual well users have the highest rate of respondents that strongly agree that they are worried about the long-term supply of water in their neighborhood. The rate of respondents that believe (strongly agree and agree combined) that their home has water whenever needed is only slightly lower than the system-wide rate. Compared to a study area rate of 39.1%, a slightly smaller portion (34.4%) of private well respondents strongly agree that they have good water pressure. Those on private wells had the lowest rates of respondents that strongly agree and agree that there is enough water near their home for fire protection. The rate (4.3%) of those that strongly agree the price of home water is too high is between the well share rate (1.8%) and the community system rate (7.6%).

Well Share

Well share respondents that believe (strongly agree and agree combined) that they are worried about the long-term supply of water in their neighborhood combine for 61.5% of responses, the highest rate of the three systems. Well share respondents have the highest rate of responses that disagree strongly and disagree that their home has water whenever they need it. Slightly more than half of the respondents don't believe (strongly disagree and disagree combined) that there is enough water near their home for fire protection, compared to 41.5% system-wide. Well share respondents have the highest rate of respondents that strongly disagree that the cost of their home water is too high.

Community System

Community system users have the highest rate of responses that strongly agree that their homes have water whenever they need it, that they have good water pressure, that there is enough water near their home for fire protection and also that the cost of having water in

their home is too high. Community system users also had the smallest rate of responses that are (strongly agree and agree) worried about the long-term supply of water in their neighborhood.

Table 5.5
Perceptions on Residential Supply/Delivery by Water System

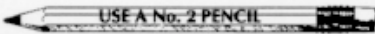
	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
I worry about the long term supply of water to the households in my neighborhoods.						
Private						
Individual Well	172 22.9%	253 33.7%	198 26.4%	93 12.4%	35 4.7%	751 100.0%
Well Share	31 18.3%	73 43.2%	46 27.2%	10 5.9%	9 5.3%	169 100.0%
Community System						
	111 17.5%	215 33.9%	180 28.4%	99 15.6%	29 4.6%	634 100.0%
Total	314 20.2%	541 34.8%	424 27.3%	202 13.0%	73 4.7%	1,554 100.0%
My home has water whenever I need it.						
Private						
Individual Well	359 47.5%	350 46.3%	34 4.5%	12 1.6%	1 0.1%	756 100.0%
Well Share	75 44.4%	80 47.3%	11 6.5%	3 1.8%	0 0.0%	169 100.0%
Community System						
	414 65.3%	205 32.3%	11 1.7%	4 0.6%	0 0.0%	634 100.0%
Total	848 54.4%	635 40.7%	56 3.6%	19 1.2%	1 0.1%	1,559 100.0%
I have good water pressure in my home.						
Private						
Individual Well	259 34.4%	340 45.1%	106 14.1%	49 6.5%	0 0.0%	754 100.0%
Well Share	51 30.4%	78 46.4%	30 17.9%	8 4.8%	1 0.6%	168 100.0%
Community System						
	298 47.0%	244 38.5%	66 10.4%	26 4.1%	0 0.0%	634 100.0%
Total	608 39.1%	662 42.5%	202 13.0%	83 5.3%	1 0.1%	1,556 100.0%

Table 5.5
Perceptions on Residential Supply/Delivery by Water System
(continued)

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
There is enough water at or near my home for fire protection.						
Private						
Individual Well	72 9.5%	142 18.8%	192 25.5%	260 34.5%	88 11.7%	754 100.0%
Well Share	23 13.6%	39 23.1%	50 29.6%	35 20.7%	22 13.0%	169 100.0%
Community						
System	182 28.8%	237 37.4%	63 10.0%	45 7.1%	106 16.7%	633 100.0%
Total	277 17.8%	418 26.9%	305 19.6%	340 21.9%	216 13.9%	1,556 100.0%
The cost of having water in my home is too high						
Private						
Individual Well	32 4.3%	58 7.8%	341 45.8%	218 29.3%	95 12.8%	744 100.0%
Well Share	3 1.8%	23 13.6%	76 45.0%	54 32.0%	13 7.7%	169 100.0%
Community						
System	48 7.6%	130 20.5%	341 53.8%	85 13.4%	30 4.7%	634 100.0%
Total	83 5.4%	211 13.6%	758 49.0%	357 23.1%	138 8.9%	1,547 100.0%

APPENDIX A: SURVEY INSTRUMENT

Your Thoughts About Water

Tell us whether you agree or disagree with the following statements about the water in your home.  USE A No. 2 PENCIL

Strongly Agree
Agree
Disagree
Disagree Strongly
Don't know/No opinion

1. The unfiltered water that comes from my faucet is safe to drink. (4 3 2 1 0)
2. I like the taste of the unfiltered water that comes directly from my kitchen faucet. (4 3 2 1 0)
3. My home has water whenever I need it. (4 3 2 1 0)
4. I have good water pressure in my home. (4 3 2 1 0)
5. There is enough water at or near my home for fire protection. (4 3 2 1 0)
6. The water in my home stains plumbing fixtures too much. (4 3 2 1 0)
7. I worry that the unfiltered water from my faucet will make me ill if I drink it. (4 3 2 1 0)
8. I worry about the long term supply of water to the households in my neighborhood. (4 3 2 1 0)
9. The cost of having water in my home is too high. (4 3 2 1 0)
10. Bernalillo County should provide education to the general public about protecting the water supply. (4 3 2 1 0)
11. Well drillers should be provided with training about water quality. (4 3 2 1 0)
12. Persons who operate water systems should NOT be required to be licensed and certified. (4 3 2 1 0)
13. Bernalillo County should pass and enforce laws to make sure that there is a safe distance between wells and sources of pollution such as septic tanks and gas stations. (4 3 2 1 0)
14. Regular testing for local water quality is NOT necessary. (4 3 2 1 0)
15. What should Bernalillo County do to protect water quality? (write-in below)

Your Home's Water System

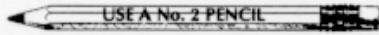
16. What type of system does your home have for waste water disposal?
 S Sewer T Septic Tank O Other(specify)
17. From what type of system do you get most of the water you use in your home?
 A Albuquerque City Water D Don't know
 P Private Individual Well C Community System name _____
 W Well Share H Hauled Water O Other(specify)
- 17.a. If you have a private well, how deep is the well?
 1 less than 50 feet 3 151 to 250 feet
 2 50 to 150 feet 4 more than 250 feet
 0 Don't know - not applicable
- 17.b. If you have a well share or community system, what is the total number of households served by your well share or community system?
 1 2 to 5 households 5 more than 100 households
 2 5 to 14 households 0 Don't know
 3 15 to 25 households - Not applicable
18. What is the condition of your well and its plumbing?
 1 Excellent 2 Good 3 Fair 4 Poor 0 Don't Know
19. When was the last time your household water was tested for water quality?
 1 Less than 1 year ago 3 More than 5 years ago
 2 Between 1 & 5 yrs ago 4 Never
 0 Don't know
20. How often do you use bottled water as your source of drinking water in your home?
 1 Always 2 Sometimes 3 Seldom 4 Never
21. Mark ALL of the water treatment systems you use in your home?
 no water treatment
 faucet filter water pitcher with a filter on it
 water softener boil water before drinking
 reverse osmosis unit other(specify)

Please Tell Us About Yourself:

22. Age:: 1 Under 18 years 4 45-64 years
 2 18-24 years 5 65 years and over
 3 25-44 years
23. Gender: M Male F Female
24. Are there one or more children under 5 years old living in your home? Y Yes N No
25. How long have you lived at your current address?
 1 0 to 5 years 2 11 to 20 years
 3 6 to 10 years 3 more than 20 years
26. Do you own or rent current place of residence? O Own R Rent

Sus Opiniones Sobre El Agua

Díganos si usted esta de acuerdo o no con las siguientes declaraciones sobre el agua en su casa.



- | | | | | | |
|---|----------------|------------|---------------|-------------------|----------------------------|
| | muy de acuerdo | de acuerdo | en desacuerdo | muy en desacuerdo | no sé/no tengo una opinión |
| 1. El agua no filtrada que viene del chorro es segura para tomar. | 4 | 3 | 2 | 1 | 0 |
| 2. Me gusta el sabor del agua no filtrada que viene directamente del chorro en mi cocina. | 4 | 3 | 2 | 1 | 0 |
| 3. Mi casa tiene agua en cualquier tiempo que yo la necesite. | 4 | 3 | 2 | 1 | 0 |
| 4. El agua en mi casa tiene buena presión. | 4 | 3 | 2 | 1 | 0 |
| 5. Hay bastante agua en o cerca de mi casa para proveer protección en caso de incendio. | 4 | 3 | 2 | 1 | 0 |
| 6. El agua en mi casa mancha las cañerías demasiado. | 4 | 3 | 2 | 1 | 0 |
| 7. Me preocupo que el agua no filtrada del chorro en mi casa me pondrá enfermo si la tomo. | 4 | 3 | 2 | 1 | 0 |
| 8. Me preocupo del abastecimiento a largo plazo de agua a las viviendas en mi barrio. | 4 | 3 | 2 | 1 | 0 |
| 9. El costo de tener agua en mi casa es demasiado alto. | 4 | 3 | 2 | 1 | 0 |
| 10. El Condado de Bernalillo debe proveer educación al público general sobre como proteger el abastecimiento del agua. | 4 | 3 | 2 | 1 | 0 |
| 11. Se debe proveerles entrenamiento sobre la calidad de agua a los cavadores de pozos. | 4 | 3 | 2 | 1 | 0 |
| 12. Las personas que operan el sistema de agua NO tienen que tener una licencia o certificación. | 4 | 3 | 2 | 1 | 0 |
| 13. El Condado de Bernalillo debe pasar y enforzar leyes que aseguren que haya una distancia segura entre los pozos y las fuentes de contaminación como los tanques sépticos y las gasolineras. | 4 | 3 | 2 | 1 | 0 |
| 14. Examinar regularmente el agua local para observar su calidad NO es necesario. | 4 | 3 | 2 | 1 | 0 |
| 15. ¿Que debe hacer el Condado de Bernalillo para proteger la calidad del agua? (escriba su respuesta) | | | | | |

El Sistema de Agua en Su Casa

16. ¿Qué clase de sistema tiene su casa para quitar las aguas negras?
 1 Alcantarillado 2 Tanque Séptico 3 Otro (escriba)
17. ¿Desde que clase de sistema recibe usted la mayoría del agua que usted usa en su casa?
 A Agua Municipal de Albuquerque D No sé
 P Pozo privado individual C Sistema comunitario (nombre)
 W Pozo compartido O Otro sistema
- 17.a. ¿Si usted tiene un pozo privado, cuantos pies tiene de profundidad?
 1 menos de 50 pies 3 151 to 250 pies
 2 entre 50 y 150 pies 4 más de 250 pies
 0 No sé - no se aplica
- 17.b. ¿Si usted tiene un pozo compartido o un sistema comunitario, a cuantas viviendas les sirve.
 4 26 a 100 viviendas
 1 entre 2 y 5 viviendas 5 mas que 100 viviendas
 2 5 a 14 viviendas 0 no sé
 3 15 a 25 viviendas - no se aplica
18. ¿En que condicion está su pozo y su plomeria?
 1 Excelente 2 Buena 3 Regular 4 Mala
19. ¿Cuando fue la última vez que el agua es su casa fue examinada para observar su cualidad?
 1 Hace menos que uno año 3 más que 5 años
 2 Hace entre 1 y cinco años 4 nunca
 0 no sé
20. ¿Con que frecuencia usa usted agua embotellada como su fuente de agua potable en su casa?
 1 Siempre 2 a veces 3 rara vez 4 nunca
21. ¿Cuales de los siguientes sistemas de tratamiento de agua usa usted en su casa? (marque todos que usted usa)
 no hay tratamiento
 Filtro en el chorro jarra de agua con filtro
 ablandador de agua Hervir el agua antes de beberla
 un aparato "reverse osmosis en reverso" otra(escriba)

Por Favor Cuéntenos más sobre usted:

22. Edad: 3 entre 25-44 años 4 entre 45-64 años
 1 menos de 18 años 5 65 años o más
 2 entre 18-24 años
23. Sexo: M Masculino F Feminino
24. ¿Hay uno o más niños menores de 5 años viviendo en su casa? S Si N No
25. ¿Por cuanto tiempo ha vivido en la dirección actual?
 0 entre 0-5 años 2 entre 11 a 20 años
 1 entre 6 a 10 años 3 Más de 20 años
26. ¿Es usted dueño o arrendador de la casa donde vive? O Dueño R esta rentando la casa

APPENDIX B: SANDIA FOOTHILLS TABLES

TABLE B1
Water Systems Used in Homes

	Private Individual Well	Well Share	Community System	Don't Know	Total
North Albuquerque Acres	117 44.2%	73 27.5%	72 27.2%	3 1.1%	265 100.0%
Sandia Foothills	19 4.9%	20 5.1%	339 87.1%	11 2.8%	389 100.0%
Total	136 20.8%	93 14.2%	411 62.8%	14 2.1%	654 100.0%

Table B2
Time Household Water was Tested for Water Quality

	Less than 1 year ago	Between 1 & 5 yrs ago	More than 5 years ago	Never	Don't Know	Total
North Albuquerque Acres	63 23.2%	78 28.8%	60 22.1%	25 9.2%	45 16.6%	271 100.0%
Sandia Foothills	202 48.1%	61 14.5%	19 4.5%	25 6.0%	113 26.9%	420 100.0%
Total	265 38.4%	139 20.1%	79 11.4%	50 7.2%	158 22.9%	691 100.0%

Table B3
Bottled Water as Source of Drinking Water in Home

	Always	Sometimes	Seldom	Never	Total
North Albuquerque Acres	25 9.1%	51 18.5%	58 21.0%	142 51.4%	276 100.0%
Sandia Foothills	28 6.6%	93 21.9%	111 26.2%	192 45.3%	424 100.0%
Total	53 7.6%	144 20.6%	169 24.1%	334 47.7%	700 100.0%

Table B4
Depth of Private Wells

	0 to 50 feet	50 to 150 feet	151 to 250 feet	more than 250 feet	Don't know	Total
North Albuquerque Acres	1 0.5%	6 3.2%	6 3.2%	158 84.5%	16 8.6%	187 100.0%
Sandia Foothills	0 0.0%	4 14.8%	11 40.7%	8 29.6%	4 14.8%	27 100.0%
Total	1 0.5%	10 4.7%	17 7.9%	166 77.6%	20 9.3%	214 100.0%

Table B5
Condition of Private Wells and Plumbing

	Excellent	Good	Fair	Don't Know	Total
North Albuquerque Acres	109 55.9%	75 38.5%	7 3.6%	4 2.1%	195 100.0%
Sandia Foothills	39 37.5%	46 44.2%	6 5.8%	13 12.5%	104 100.0%
Total	148 49.5%	121 40.5%	13 4.3%	17 5.7%	299 100.0%

Table B6
Total Number of Households Served by Well Share or Community System

	2 to 5	6 to 14	15 to 25	26 to 100	100+	Don't Know	Total
North Albuquerque Acres	63 46.3%	10 7.4%	2 1.5%	6 4.4%	28 20.6%	27 19.9%	136 100.0%
Sandia Foothills	6 1.9%	1 0.3%	0 0.0%	5 1.6%	224 69.8%	85 26.5%	321 100.0%
Total	69 15.1%	11 2.4%	2 0.4%	11 2.4%	252 55.1%	112 24.5%	457 100.0%

Table B7
Perceptions on Residential Water Quality by Area

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
Unfiltered water from faucet is safe to drink.						
North Albuquerque Acres	120 43.3%	120 43.3%	16 5.8%	9 3.2%	12 4.3%	277 100.0%
Sandia Foothills	201 46.4%	198 45.7%	17 3.9%	6 1.4%	11 2.5%	433 100.0%
Total	321 45.2%	318 44.8%	33 4.6%	15 2.1%	23 3.2%	710 100.0%
Worried that the unfiltered water from faucet will make them ill if they drink it.						
North Albuquerque Acres	12 4.3%	12 4.3%	95 34.1%	148 53.0%	12 4.3%	279 100.0%
Sandia Foothills	10 2.3%	22 5.1%	141 32.7%	240 55.7%	18 4.2%	431 100.0%
Total	22 3.1%	34 4.8%	236 33.2%	388 54.6%	30 4.2%	710 100.0%
Like the taste of unfiltered water that comes directly from the kitchen.						
North Albuquerque Acres	113 40.6%	107 38.5%	30 10.8%	17 6.1%	11 4.0%	278 100.0%
Sandia Foothills	144 33.3%	197 45.6%	61 14.1%	24 5.6%	6 1.4%	432 100.0%
Total	257 36.2%	304 42.8%	91 12.8%	41 5.8%	17 2.4%	710 100.0%
Water in home stains plumbing fixtures too much.						
North Albuquerque Acres	40 14.3%	73 26.2%	113 40.5%	49 17.6%	4 1.4%	279 100.0%
Sandia Foothills	60 13.9%	114 26.4%	160 37.0%	90 20.8%	8 1.9%	432 100.0%
Total	100 14.1%	187 26.3%	273 38.4%	139 19.5%	12 1.7%	711 100.0%

Table B8
Perceptions on Residential Supply/Delivery by Area

	Strongly Agree	Agree	Disagree	Disagree Strongly	Don't Know / No Opinion	Total
I worry about the long term supply of water to the households in my neighborhoods.						
North Albuquerque Acres	32 11.4%	120 42.9%	86 30.7%	29 10.4%	13 4.6%	280 100.0%
Sandia Foothills	44 10.2%	139 32.3%	151 35.0%	78 18.1%	19 4.4%	431 100.0%
Total	76 10.7%	259 36.4%	237 33.3%	107 15.0%	32 4.5%	711 100.0%
My home has water whenever I need it.						
North Albuquerque Acres	175 62.7%	98 35.1%	4 1.4%	2 0.7%	0 0.0%	279 100.0%
Sandia Foothills	308 71.1%	122 28.2%	3 0.7%	0 0.0%	0 0.0%	433 100.0%
Total	483 67.8%	220 30.9%	7 1.0%	2 0.3%	0 0.0%	712 100.0%
I have good water pressure in my home.						
North Albuquerque Acres	120 43.0%	110 39.4%	36 12.9%	13 4.7%	0 0.0%	279 100.0%
Sandia Foothills	237 54.7%	151 34.9%	42 9.7%	2 0.5%	1 0.2%	433 100.0%
Total	357 50.1%	261 36.7%	78 11.0%	15 2.1%	1 0.1%	712 100.0%
There is enough water at or near my home for fire protection.						
North Albuquerque Acres	65 23.2%	77 27.5%	52 18.6%	37 13.2%	49 17.5%	280 100.0%
Sandia Foothills	142 32.8%	182 42.0%	29 6.7%	15 3.5%	65 15.0%	433 100.0%
Total	207 29.0%	259 36.3%	81 11.4%	52 7.3%	114 16.0%	713 100.0%
The cost of having water in my home is too high.						
North Albuquerque Acres	19 6.8%	44 15.7%	122 43.6%	76 27.1%	19 6.8%	280 100.0%
Sandia Foothills	21 4.9%	73 16.9%	245 56.7%	70 16.2%	23 5.3%	432 100.0%
Total	40 5.6%	117 16.4%	367 51.5%	146 20.5%	42 5.9%	712 100.0%