Utah's Water Future

Local Perspectives on Water Issues In Cache Valley & Beyond

Summary Report of the 2014 Household Survey Findings

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Overview

In the summer of 2014, researchers from Utah State University, the University of Utah and the iUTAH Project (innovative Urban Transitions and Aridregion Hydro-sustainability) undertook a large survey of households on water issues across 23 neighborhoods in Cache Valley, Salt Lake Valley, and Heber Valley. Our goal was to assess household water use and resident perspectives on water issues within their city, valley, and state.

We used a "Drop-off/Pick-up" method where 16-page surveys were dropped off with willing, eligible participants at randomly selected households in the study neighborhoods and picked up from their front door within a day or two. When we were unable to reach residents at their door, surveys were sent by mail. Participants had the option to request results, and those reports will be sent in early 2015.

The following topics that were included in the survey are presented in this report:

I. Household Water Uses & Perspectives
- A. Familiarity with Water Use
- B. Lawn and Outdoor Watering
- C. Use of Water Conservation Practices
- D. Motivations to Conserve
- E. Secondary Water Systems

II. Water Perspectives & Experiences
- A. Perceptions of Water Supply
- B. Risk Perceptions
- C. Perceptions about Water Use and Water Quality
- D. Experience with Flooding
- E. Climate Change Perspectives

III. Water Policy & Management Perspectives
- A. Support for Local Water Management Strategies and Policies
- B. Support for State Water Strategies

IV. Additional Information
- A. Water Information Sources
- B. Satisfaction with Neighborhood and Community

This report highlights findings from the survey data for three neighborhoods in **Cache Valley, Utah**, with comparisons among Nibley, the Spring Creek area (parts of Providence and River Heights), and North Logan. We also include comparisons with results from neighborhoods in Logan City, the Heber Valley and Salt Lake Valley[1]. Additional reports and highlights from the study can be found at www.iutahepsecor.org/hhsurvey.

[1] More detailed information is available upon request from the project coordinator, Dr. Douglas Jackson-Smith who can be reached at (435) 797-0582 or doug.jackson-smith@usu.edu.

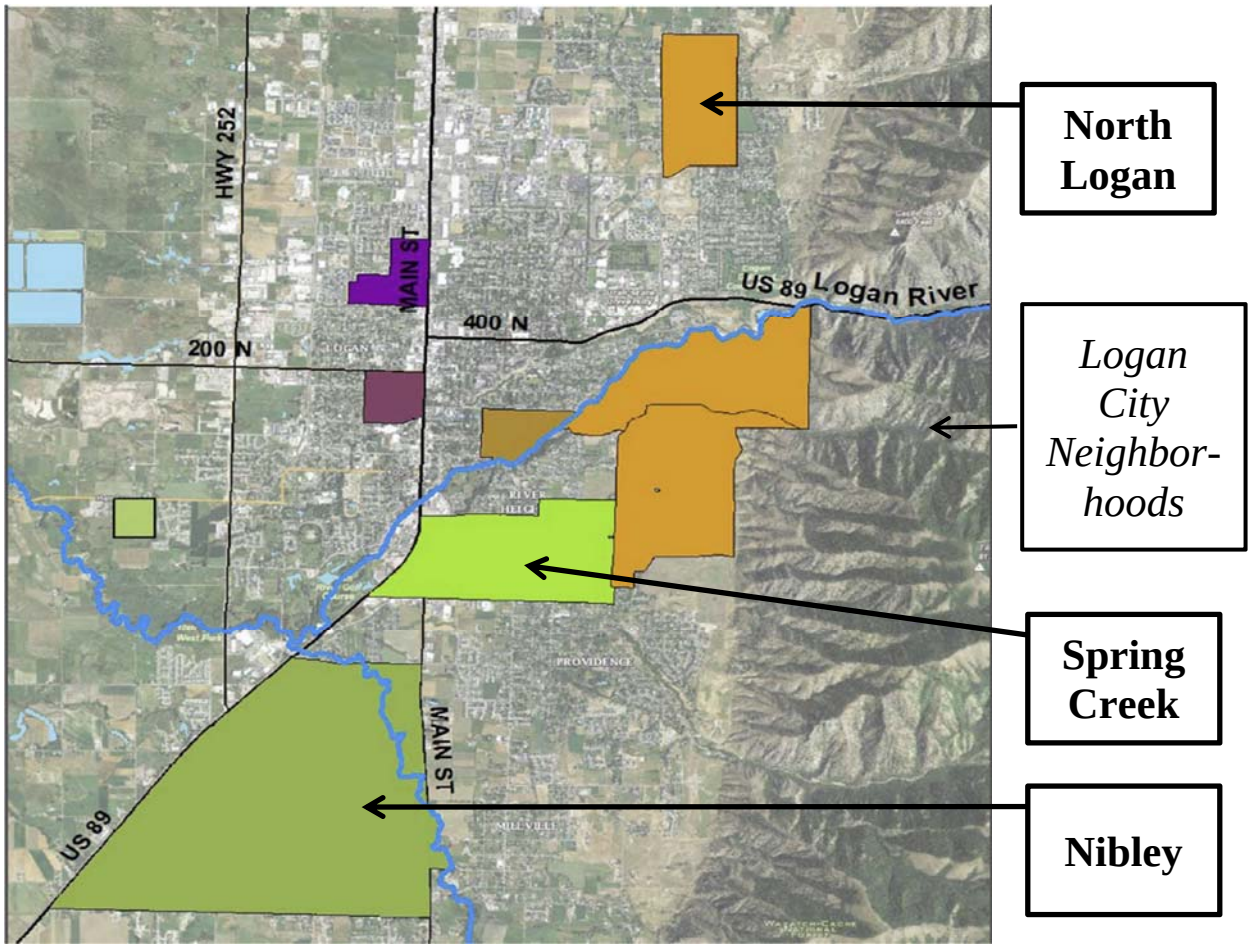
METHODS

In the Cache Valley, the survey was conducted in late June and early July 2014. We randomly sampled 180 households in Nibley (where there were 1,050 housing units), 180 households in Spring Creek (where there were 904 housing units), and 181 households in North Logan (where there were 441 housing units). Samples of this size can estimate the characteristics of the neighborhood residents with an accuracy of within +/- 6.9 to 8.6%.

After accounting for vacant homes, our final response rates[2] were:

- Nibley = 69% (116 respondents)
- Spring Creek = 74% (123 respondents)
- North Logan = 79% (138 respondents)

Map of Study Neighborhoods in Cache Valley



[2] We found 11 households to be ineligible in Nibley, 13 in Spring Creek, and 7 in North Logan due to vacancy. In comparison, the response rate from Heber Valley and Salt Lake Valley averaged 63% and 56% respectively. Across the entire three-county study area, we received 2,406 useable surveys, with an overall response rate of 62%.

Who Did We Hear From in the Cache Valley (outside of Logan)?

The characteristics of the respondents from the three Cache Valley neighborhoods (outside of Logan) that were included in the survey are summarized in Table 1 below.

As was true in most of our other study areas, respondents from Nibley, Spring Creek, and North Logan neighborhoods were predominantly non-Hispanic whites, most owned their home, and a majority reported being members of the Church of Jesus Christ and Latter Day Saints (LDS) faith. Over two-thirds of Nibley respondents have children under 18 living at home, compared to about half (51%) from Spring Creek, and just 39% in the North Logan neighborhood.

While 58 to 68% of respondents from these neighborhoods indicated they are Utah natives, less than half (29 to 43%) said they are originally from the Cache Valley. Moreover, a considerable number of respondents (42 to 49%) from Nibley or Spring Creek reported living in their current home for less than 5 years. By contrast, North Logan tended to be longer-term residents, with only 22% of respondents report living in their current home less than 5 years.

The income level of survey respondents was much higher in North Logan than in Nibley or Spring Creek with 50% of respondents in North Logan indicating household incomes over $75,000. Education levels were higher in both Spring Creek and North Logan (56% and 69% of respondents had 4-year college degrees respectively) than in Nibley (36% with a 4-year college degree).

North Logan and Nibley neighborhood respondents nearly all owned their homes, while 20 percent of Spring Creek respondents were renters. Over a third of the Spring Creek respondents belong to homeowner or condominium owner associations (HOA or COAs). This number is considerably lower for Nibley and North Logan.

The average age of respondents varied by neighborhood – with the youngest respondents in Nibley and the oldest respondents in North Logan. The average household size in Nibley was almost 4 persons, notably higher than in Spring Creek or North Logan, and likely reflects the greater number of younger families with children living at home in Nibley.

Table 1. Characteristics of Cache Valley Survey Respondents

Characteristic of Respondent	CACHE VALLEY NEIGHBORHOODS: **Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Comparisons: Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent of Respondents					
Female	**58**	**61**	**49**	*55*	*58*	*50*
Non-Hispanic White	**89**	**94**	**93**	*83*	*93*	*81*
LDS Religion	**73**	**80**	**82**	*56*	*57*	*39*
Has 4-year college degree	**36**	**56**	**69**	*47*	*48*	*47*
Has household income >$75,000	**29**	**28**	**50**	*23*	*42*	*41*
Has household income <$25,000	**5**	**16**	**3**	*29*	*11*	*15*
Rents their home	**6**	**20**	**8**	*43*	*21*	*24*
Is a member of HOA or COA	**15**	**37**	**7**	*24*	*30*	*14*
Is a seasonal resident	**1**	**1**	**3**	*3*	*6*	*2*
Has children under 18 in home	**68**	**51**	**39**	*46*	*53*	*44*
Has lived in this home < 5 years	**42**	**49**	**22**	*60*	*48*	*42*
Is originally from this valley	**43**	**31**	**29**	*31*	*22*	*45*
Is originally from Utah	**68**	**63**	**58**	*50*	*55*	*58*
Grew up in rural place or farm	**66**	**60**	**52**	*53*	*57*	*34*
	Average of Respondents					
Age of respondent	**43**	**47**	**58**	*45*	*51*	*48*
Number of people living in household	**4.0**	**3.1**	**3.2**	*3.1*	*3.4*	*3.1*

Representativeness of Respondents

By comparing the characteristics of survey respondents with information from the US Census, we see how representative our sample is of the actual population (Table 2).

For each of the three non-Logan city Cache Valley neighborhoods, which were operationalized as census block groups (CBGs), the respondents can be compared to the attributes of the population captured in recent government census counts in that particular CBG. In each case, we find that the sample captured a relatively representative set of adults from that neighborhood. The mean size of households and proportion of low-income households, and racial or ethnic minorities are close to the estimated population characteristics in each of the three neighborhoods. Adults within sampled households who completed the survey do tend to be older, more likely to be female, and have higher levels of formal education than the background population, but these differences are generally relatively small. In the Nibley and North Logan neighborhoods, households with incomes over $75,000 are under-represented in the sample, while in the Spring Creek area, these households are slightly over-represented. In all three neighborhoods, people who rent their homes are somewhat under-represented in the sample.

It should be noted that we did not sample from all neighborhoods in Providence, Nibley or North Logan. To see how these neighborhoods compare to city-wide totals, Table 2 includes additional information from the census that includes all residents of each municipality. Generally speaking, the study neighborhoods that we selected are typical of the overall city totals.

In Nibley, the study neighborhood area is virtually identical to the city as a whole.

In Spring Creek, the census block group (which mainly includes residents of Providence City, but also has an area under the jurisdiction of River Heights) where the populatoin appears to be somewhat younger, more racially diverse, less wealthy, and more likely to rent their homes than the city of Providence as a whole.

The section of North Logan included in the study appears to include an older, wealthier, and less racially diverse population than the city as a whole.

As a final comparison, Table 2 compares the combined respondent sample from all 8 study neighborhoods in Cache County with census data for the overall county population. The results suggest that our pooled Cache County respondents have similar racial, income, and household sizes as the county as a whole. As mentioned earlier, the sample does underrepresent renters and adults between 18-35 and has a slightly higher proportion of people over 65, women, and persons with college degrees than the county population.

Table 2: Characteristics of 2014 Cache Valley Neighborhood Respondents Compared with the 2010 Census and the American Community Survey (2008-2012)

	Neighborhoods / Census Block Groups (CBG) / Cities									Cache County	
	Nibley			Spring Creek			North Logan				
	Respondents	Census CBG*	Census City NIBLEY**	**Respondents**	Census CBG*	Census City PROVIDENCE**	**Respondents**	Census CBG*	Census City NORTH LOGAN**	**Cache County Respondents Combined*** **	Census County****
	percent of adults or households										
Percent 18-35	**35**	**51**	46	**29**	**44**	34	**7**	**27**	39	**32**	42
Percent over 65	**9**	**7**	7	**22**	**18**	18	**36**	**21**	15	**19**	12
Female Adults	**58**	**51**	50	**60**	**55**	52	**49**	**51**	50	**55**	51
Non-Hispanic White Adults	**89**	**86**	88	**94**	**91**	95	**93**	**95**	88	**87**	85
Adults w/ College Degree	**36**	**37**	39	**56**	**44**	47	**69**	**53**	51	**50**	38
Households with Income >$75,000	**29**	**40**	41	**28**	**24**	38	**50**	**64**	42	**29**	28
Households with Income < $25,000	**5**	**7**	7	**16**	**18**	12	**3**	**14**	14	**20**	22
Households that Rent their Home	**6**	**9**	8	**20**	**25**	15	**8**	**12**	8	**29**	34
Mean Household Size (#)	**4.0**	**3.8**	3.9	**3.1**	**2.9**	3.3	**3.2**	**3.1**	3.2	**3.2**	3.2

* = Reflects same area where survey sample was drawn.

** = Reflects city-wide totals (larger than study neighborhood)

*** = Includes all Cache County respondents (including those in Logan City)

**** = Includes all Cache County residents.

RESULTS

I. Household Water Uses & Perspectives

The survey included questions about how households currently use water, and their perspectives about a range of water issues.

A. Familiarity with Water Use

The survey asked how 'familiar' residents are with the amount of water they use and the cost of their water bill each month. Most respondents report a fairly high degree of familiarity with how much they *spend* on water each month, but far fewer are familiar with the volume of water they *use* (Table 3). Respondents in Spring Creek were the least familiar with how much they spend, perhaps because they are renting or live in an HOA.

Table 3: Familiarity with water use and cost by neighborhood.

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
	Nibley	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent of respondents familiar or very familiar…					
Respondent familiar with amount of water their household uses	**24**	**23**	**30**	*27*	*30*	*33*
Respondent familiar with how much household spends on water each month	**73**	**57**	**68**	*53*	*67*	*66*

B. Lawn & Outdoor Watering

Nearly all Nibley and North Logan respondents report having a lawn on the property where they live (12% of Spring Creek residents did not report having a lawn), and all of these regularly water their lawn. The survey asked people to indicate who is responsible for watering the lawn on their property. Results are shown in Table 4. Nearly all respondents in Nibley and North Logan (99%) water their lawn themselves, but a fifth of households in Midway City report that lawn watering is handled by a homeowners or condominium association (HOA or COA). A small number of lawns in Spring Creek and North Logan are watered by landlords of rental property. This means that in all three neighborhoods residents primarily make their own decisions about outdoor watering, but in Spring Creek, landlords, HOAs and COAs are also important decision-makers.

Table 4: Responsibility for Lawn Watering

	CACHE VALLEY NEIGHBORHOODS			Comparisons		
Who is responsible for watering the lawn?	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent of respondents who have lawns					
Lawn is Not Watered	**0**	**0**	**0**	*6*	*1*	*4*
Household	**99**	**73**	**99**	*77*	*84*	*85*
Landlord	**0**	**7**	**2**	*13*	*2*	*7*
Homeowner or Condo Association or other entity	**1**	**20**	**0**	*4*	*13*	*4*

Lawn Watering Practices

To get a sense of the rules of thumb used by residents watering their own lawns, we asked them to think about a typical July week. On average, people report watering their lawns three days per week. Cache Valley residents were also asked what time of day they typically water their lawns. Responses suggest that over 92% of respondents in all three non-Logan study neighborhoods usually water their lawns in the morning, evening, or at night. The proportion of households with underground sprinklers and automatic lawn watering timers is similar across these three neighborhoods (Table 5). These figures for sprinklers and automatic timers are considerably higher than reported in the other valleys.

Table 5: Irrigation Systems Used to Water Lawns

	CACHE VALLEY NEIGHBORHOODS			Comparisons		
	Nibley	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent of respondents who have lawns					
Uses underground sprinkler system to water lawn	**87**	**80**	**86**	*64*	*66*	*75*
Has automatic timer for lawn watering	**82**	**73**	**78**	*58*	*67*	*71*

Lawn Watering Considerations

To get a better feel for the factors that influence when and how much residents water their lawns, we asked respondents to indicate how important each of several common reasons are to their lawn watering decisions.

The results, shown in Table 6 below, suggest that most (84-89%) of households try to vary their lawn watering behaviors based on weather. With proportions higher than found elsewhere, between 75-79% of respondents in these neighborhoods also consider the impact of watering practices on their property value and seek to prevent brown spots on their lawn. Over half report that they are trying to conserve the amount of water they use (56-71%), with conservation a more important objective in Nibley than the other two neighborhoods. A similar proportion (59-70%) prefer to keep a regular watering schedule. About half (51-55%) seek to minimize the time they spend watering the lawn. A relatively small proportion of respondents (21-34%) suggest that keeping their neighbors happy is an important goal of their lawn watering decisions.

Table 6: Factors that Shape Lawn Watering Decisions

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
How important is each reason to your decisions about when and how much to water your lawn?	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent indicating important (4 or 5)					
Vary based on weather	**85**	**84**	**89**	*86*	*86*	*88*
Prevent brown spots on lawn	**76**	**79**	**76**	*70*	*65*	*59*
Maintain property value	**76**	**79**	**75**	*65*	*69*	*66*
Keep regular water schedule	**70**	**59**	**68**	*55*	*63*	*63*
Conserve amount of water used	**71**	**56**	**65**	*70*	*72*	*72*
Minimize time spent watering	**55**	**51**	**55**	*61*	*56*	*60*
Keep neighbors happy	**21**	**29**	**34**	*36*	*33*	*31*

C. Use of Water Conservation Practices

Indoor Water Use

Several questions in the survey explored the use of practices that are designed to reduce water consumption (Table 7). Respondents were asked how often people in their household do each of five types of conservation behaviors. An 'indoor conservation index' score was computed for each household. Interestingly, the scores on this index do not vary much across neighborhoods or across the three valleys in the study.

When asked how their household indoor water use has changed over the last 5 years, 34% of North Logan respondents indicate that they had decreased their indoor water consumption which is higher than typically found elsewhere. Respondents from Nibley and Spring Creek are less likely (13-16%) to report a recent decrease in indoor water consumption. A little over half of all household respondents from these three Cache Valley neighborhoods indicate that they believe they could do more to reduce indoor water use.

Outdoor water use

A similar set of questions explored the use of conservation practices in outdoor irrigation behaviors (Table 7). We asked if they used any of three recommended strategies to reduce lawn watering: sprinkler testing, irrigation planning, and installation of more efficient irrigation systems. Two-thirds of respondents from Nibley and North Logan report use of at least one of these practices; this number drops to 55 percent in Spring Creek.

Few households (11-18%) in these three neighborhoods report a decrease in outdoor water use over the last five years. A few more respondents (29-30%) in these three Cache Valley neighborhoods feel they could do more to conserve outdoor water. It is clear that respondents feel a greater ability to reduce indoor than outdoor water use in these neighborhoods. Finally, between 23-37 percent of respondents believe they use less water than their neighbors.

An illustration of how these Cache Valley neighborhood respondents compare to those in Logan City and in the two other study valleys on beliefs about their ability to reduce indoor and outdoor water use is shown on Figure 1. In general, the proportion of residents who believe they can reduce indoor water use does not vary much by neighborhood or across our three study valleys. Residents in Nibley, North Logan and Spring Creek are less likely to believe they can reduce outdoor use than respondents from Logan City or communities in the Salt Lake Valley.

Table 7: Water Conservation Behaviors and Perceptions

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
	Nibley	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
Use of Conservation Practices						
Mean score on index of use of indoor water conservation practices*	**19**	**19**	**19**	*18*	*19*	*19*
Percent using ANY of three outdoor water conservation practices**	**65**	**55**	**63**	*45*	*61*	*54*
Changes in Water Use						
Percent who decreased household indoor water use over last 5 years	**13**	**16**	**34**	*20*	*22*	*21*
Percent who decreased household outdoor water use over last 5 years	**14**	**11**	**18**	*20*	*16*	*20*
Percent who believe they can do more to conserve water INDOORS	**56**	**54**	**52**	*55*	*53*	*54*
Percent who believe they can do more to conserve water OUTDOORS	**29**	**30**	**30**	*37*	*31*	*43*
Believes they use LESS than average households in neighborhood	**23**	**30**	**37**	*42*	*35*	*35*

** = taking fewer or shorter showers, running dishwasher only when full, turning off water when brushing teeth, buying low water use appliances & fixtures, fixing leaky toilets and faucets (all measured on 5 point scale from never to always, minimum scale score = 5, maximum = 25)*
*** = Testing sprinklers to gauge amount of water applied; developing a plan to estimate amount of water needed by lawn, installation of a more efficient law watering system*

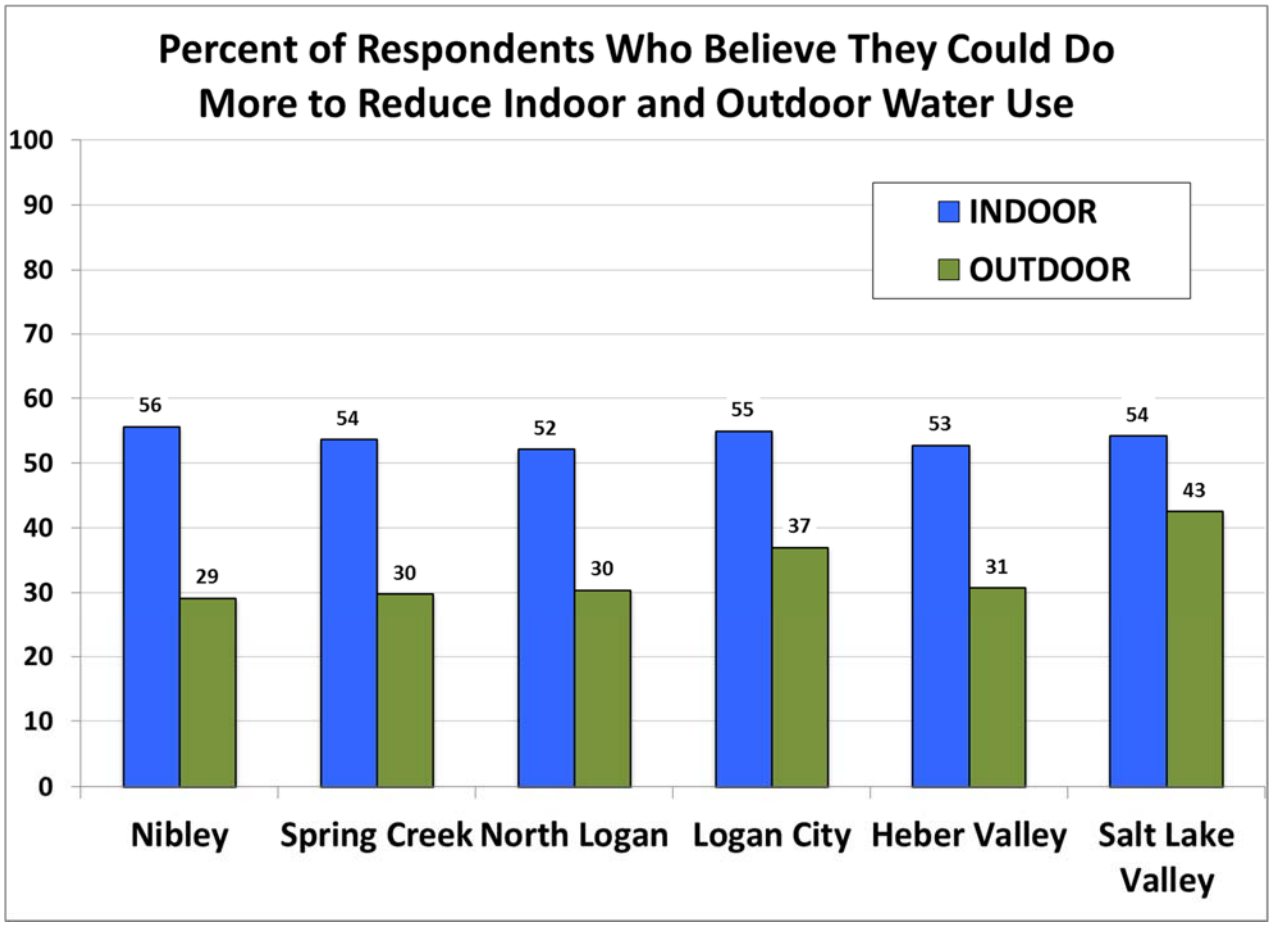


Figure 1: Percent of respondents who believe they can reduce water use.

D. Motivations to Conserve

The households in the study were asked how willing they would be to reduce their water use if they knew the water they conserved would be used for different purposes. The results are shown in Table 8. Overall, people are most willing to reduce current water use if the savings were used to secure future local water supplies (73-80%). Conversely, people are least willing to conserve if the water they save is used to encourage new development in the area (19-23%). For about two-thirds of respondents, conserving water is attractive if they knew it would reduce their water bill and if it would ensure a future supply of water for agriculture (particularly in Spring Creek, where 70% supported this goal).

There is moderate support in these Cache Valley neighborhoods for using conserved water to improve fish and wildlife habitat, particularly in Spring Creek and Nibley. Compared to others in Logan City and the other two study valleys, respondents from Nibley and North Logan are less supportive of conserving water as a means to improve parks and open spaces or improve opportunities for outdoor recreation

Table 8: Willingness to Conserve Water Based on How Water Savings are Used.

How willing would you be to reduce your own water use if you knew the water you conserved would…	**CACHE VALLEY NEIGHBORHOODS**			*Comparisons*		
	Nibley	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent indicating willing or very willing (4 or 5)					
Ensure future supplies for your home	**73**	**79**	**80**	*80*	*81*	*81*
Reduce your water bill	**67**	**64**	**67**	*79*	*66*	*75*
Ensure future supply for agriculture	**62**	**70**	**62**	*67*	*62*	*66*
Improve fish & wildlife habitat	**57**	**61**	**48**	*71*	*68*	*70*
Improve urban parks & open spaces	**47**	**57**	**44**	*64*	*55*	*63*
Improve opportunities for outdoor recreation	**39**	**46**	**32**	*50*	*51*	*47*
Allow increased development in this area	**23**	**21**	**19**	*32*	*24*	*30*

E. Secondary Water Systems

Access to and Use of Secondary Water

Nearly two-thirds of homes in North Logan have access to a 'secondary' water system for outdoor irrigation purposes, compared to 19% in Spring Creek and 7% in Nibley (Table 10). Secondary water is non-drinkable water that is usually provided by an irrigation or canal company and is often outside of the control of the city public water utility.

In North Logan, the vast majority of secondary water users (87%) receive their secondary water through a pressurized pipe. In Spring Creek, however, most receive their secondary water from an open ditch or canal (86%). In North Logan, households who have access to secondary water systems mostly use the water for irrigating their lawn and other landscaping (95%), while just under a two-thirds of secondary water users in Spring Creek use it to water their lawn. Over two-thirds of respondents with secondary water in North Logan (69%) also use this water on a vegetable garden. Relatively few respondents in any of these three neighborhoods report using secondary water for agricultural purposes (watering pastures, crops or livestock), though this number is a bit higher in Spring Creek (14%) than in other neighborhoods or valleys.

Satisfaction with Service

Secondary water users in North Logan are generally satisfied with their systems with 73% indicating they are satisfied or very satisfied. By contrast, a relatively small minority of users from Spring Creek (19%) are satisfied with their secondary water system. Nibley respondents with secondary water are more confident in the future security of their secondary water supply (49%) than those from Spring Creek (36%). These figures are somewhat higher than equivalents from other valleys.

Relatively few people from Spring Creek who have secondary water service have attended any meetings with their secondary water provider. However, most secondary water users in Nibley (70%) have attended such meetings – much higher than in any other study neighborhood.

Table 9: Use and Perceptions of Secondary Water Systems

	Cache Valley			*Comparisons*		
	Nibley	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
		Percent of Respondents				
Has Access to Secondary water	**7**	**19**	**64**	14	*53*	*13*
Secondary water use:						
Has but does not use	na	**14**	**2**	25	*5*	*10*
Used for lawn and yard landscaping	na	**62**	**95**	64	*91*	*84*
Used for vegetable garden	na	**24**	**69**	43	*46*	*60*
Used to water pasture/crops	na	**14**	**3**	8	*9*	*10*
Used to water livestock	na	**5**	**3**	5	*5*	*4*
How secondary water received:						
Open ditch or canal	na	**86**	**12**	79	*17*	*29*
Pressurized pipe	na	**10**	**87**	16	*81*	*70*
Percent of secondary water households that:						
Are satisfied with secondary water system	na	**19**	**73**	38	*67*	*56*
Have attended meeting with secondary water provider	na	**23**	**70**	24	*20*	*16*
Are confident in the future security of the secondary water supply	na	**36**	**49**	29	*34*	*30*

n.a. = not enough respondents using secondary water to provide reliable estimates.

II. Water Perceptions & Experiences

A. Perceptions of Water Supply

Since planning for future water challenges is a major focus for local and state government officials, the survey included a block of questions that asked whether the respondent agreed with a set of statements that 'there is enough water to meet the needs of all people and businesses' in their city, valley and the state as a whole (Table 10).

Overall, the findings suggest half of Spring Creek and North Logan respondents and just over a third of Nibley respondents are confident about the current sufficiency of the water supply to meet the needs of people and businesses in their city. Confidence drops significantly when asked about sufficiency of future city water supplies (18-27%). Confidence in current valley water supplies is generally slightly lower than for cities.

By contrast, a relatively small percentage (8-20%) of respondents from these three Cache Valley neighborhood believe that there is a sufficient current or future supply of water to meet needs at the state level.

There is also significant ambivalence about the sufficiency of local water supplies. As shown in Figure 2 on the next page, 31-52% of respondents indicate they neither agree nor disagree with the statements about overall water sufficiency for their city. This ambivalence is highest among Nibley respondents.

Table 10: Percent of Respondents Agreeing that Water Supply is Sufficient

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
There is enough water to meet the needs of all people and businesses in…	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Indicating AGREEMENT with Statement					
CURRENTLY						
This City	36	50	50	47	47	36
This Valley	34	41	43	39	42	28
Utah	20	16	20	20	14	18
IN THE FUTURE						
This City	18	24	27	23	21	13
This Valley	14	19	19	18	18	10
Utah	9	13	8	12	7	7

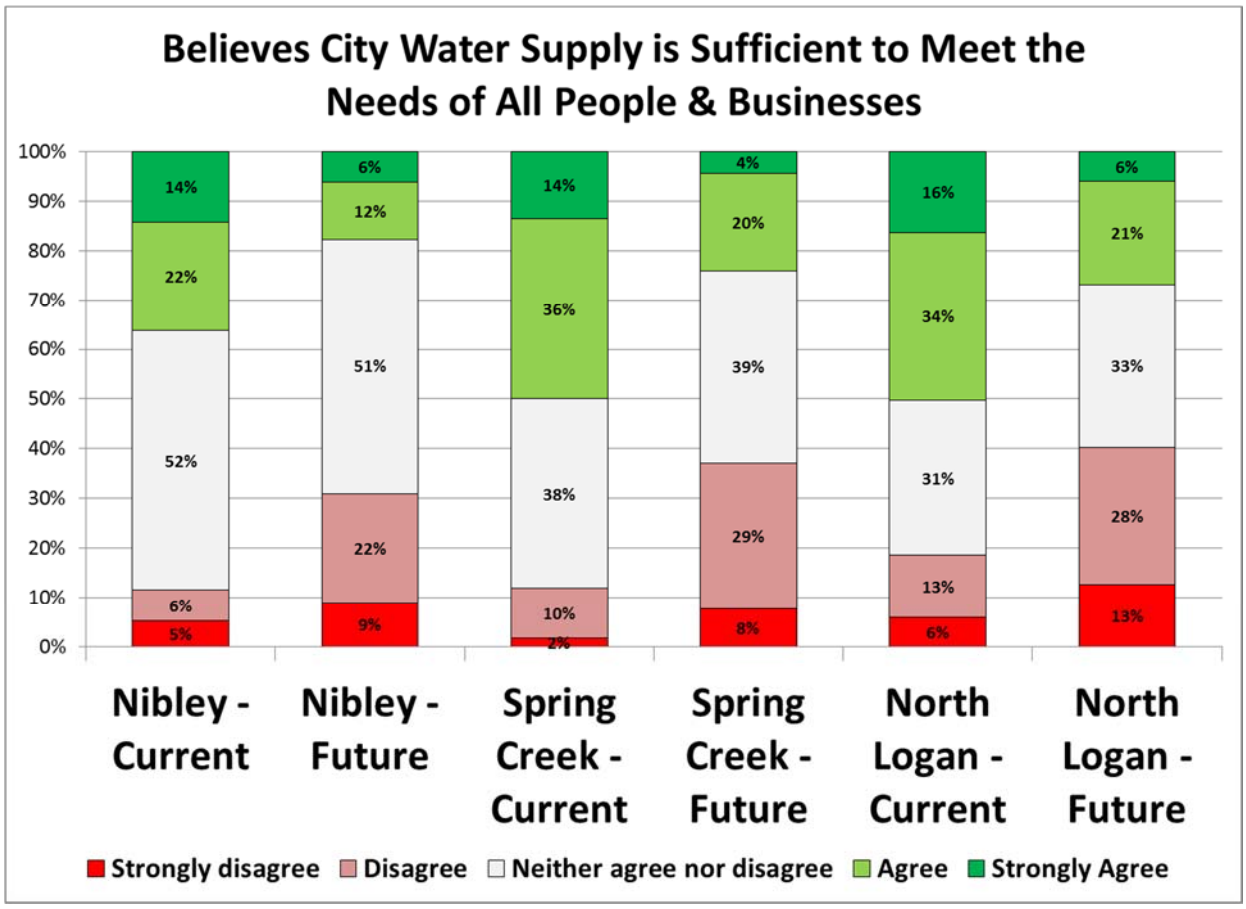


Figure 2: Agreement or Disagreement with Statement that City Water Supply is Sufficient to Meet the Current or Future Needs of All People and Businesses, By City.

B. Risk Perceptions

While water issues are likely to be important policy challenges for local and state governments in the coming years, there are a host of other important issues that compete for the attention of the public. To compare water issues to other topics, we asked respondents to indicate 'how concerned' they were about each of ten issues (Table 11).

For respondents from Spring Creek and North Logan, concerns about traffic congestion, air pollution and loss of open space are higher than for any of the water related issues. North Logan respondents also indicate more concern about population growth than any of the water related issues, though their level of concern about water shortages is higher than for those from the other two neighborhoods.

For Nibley, concern about the high cost of water is as high as concerns about traffic, but the other water related issues are considerably lower concerns than the growth and development related issues.

Concerns about flooding are higher in Nibley and Spring Creek (35-38% than in North Logan (16%), yet this issue is the lowest ranked concern across the board.

Table 11: Percent of Respondents Concerned about Various Issues

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
	Nibley	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Indicating Concern					
Traffic congestion	**76**	**79**	**86**	*79*	*75*	*82*
Air pollution	**71**	**77**	**79**	*78*	*69*	*86*
Loss of open space	**66**	**76**	**71**	*72*	*78*	*78*
High cost of water	**76**	**56**	**64**	*66*	*69*	*75*
Population growth	**55**	**61**	**67**	*66*	*76*	*72*
Water shortages	**59**	**56**	**64**	*54*	*60*	*70*
Deteriorating water infrastructure	**49**	**53**	**54**	*52*	*58*	*63*
Poor water quality	**47**	**48**	**39**	*46*	*52*	*64*
Climate change	**43**	**39**	**44**	*52*	*51*	*64*
Flooding	**35**	**38**	**16**	*28*	*20*	*24*

Water issues listed in bold text.

C. Perceptions about Water Use and Water Quality

Perceived Excessive Water Use

Given the concerns about water shortages discussed above, the survey included a block of questions designed to capture public perceptions about which, if any, sectors are responsible for using 'too much' water (Table 12).

The results suggest that more 'blame' for overuse of water is attributed to residential lawns, parks, and golf courses. By contrast, very few people (between 3-7 percent) have the impression that agriculture is using too much water.

Compared to those from Logan City and Salt Lake Valley, respondents from these three Cache Valley neighborhoods are less likely to think any entity uses too much water. The figures are generally more comparable to those from Heber Valley.

Table 12: Perceived 'Excessive' Water Use by Sector

	Cache Valley Neighborhoods			*Comparisons*		
Too much water is used for…	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Indicating Agreement (4 or 5)…					
Residential lawns	**44**	**45**	**47**	*54*	*44*	*64*
Parks and golf courses	**42**	**44**	**41**	*46*	*43*	*52*
Industry	**22**	**18**	**12**	*25*	*19*	*40*
Agriculture	**7**	**3**	**7**	*12*	*13*	*10*

Water Quality

We also assessed public perceptions of the water quality of different types of water bodies (Table 13 and Figures 3, 4 and 5). Overall, people are much more likely to assess all types of water in their area as 'good quality' than 'bad quality'. With respect to their drinking water supply, nearly all of the North Logan respondents (92%) see their water quality as good, while just 3% rate it as poor or bad. Drinking water is also rated as good or very good by the majority (74-85%) of Nibley and Spring Creek respondents. The drinking water supply is rated more positively in Cache Valley neighborhoods than among respondents from the Salt Lake Valley.

Nibley and Spring Creek respondents are less likely than North Logan residents to indicate that water in nearby irrigation canals and ditches and downstream reservoirs is seen as 'good', but still fewer than 10% of respondents indicate they believe these sources have 'bad' water quality. A higher proportion of respondents in Nibley and North Logan (34-36%) rate their groundwater as 'good' than those from Logan City, Heber Valley, or Salt Lake Valley. Spring Creek respondents are on a par with Heber Valley respondents at 29% assessing groundwater as 'good'.

Table 13: Perceived Water Quality of Different Types of Water Resources.

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
How would you rate the water quality of the following types of water in your area?	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Rating Quality Good					
Drinking water	**74**	**85**	**92**	*75*	*73*	*63*
Water in rivers and lakes upstream	**58**	**50**	**65**	*54*	*58*	*42*
Water in streams and creeks in neighborhood	**51**	**55**	**60**	*52*	*56*	*29*
Water in streams or rivers downstream	**40**	**41**	**42**	*36*	*48*	*22*
Water in reservoirs and lakes downstream	**44**	**42**	**42**	*32*	*43*	*23*
Water in nearby irrigation canals or ditches	**37**	**39**	**58**	*37*	*41*	*15*
Groundwater in neighborhood	**36**	**29**	**34**	*23*	*29*	*14*

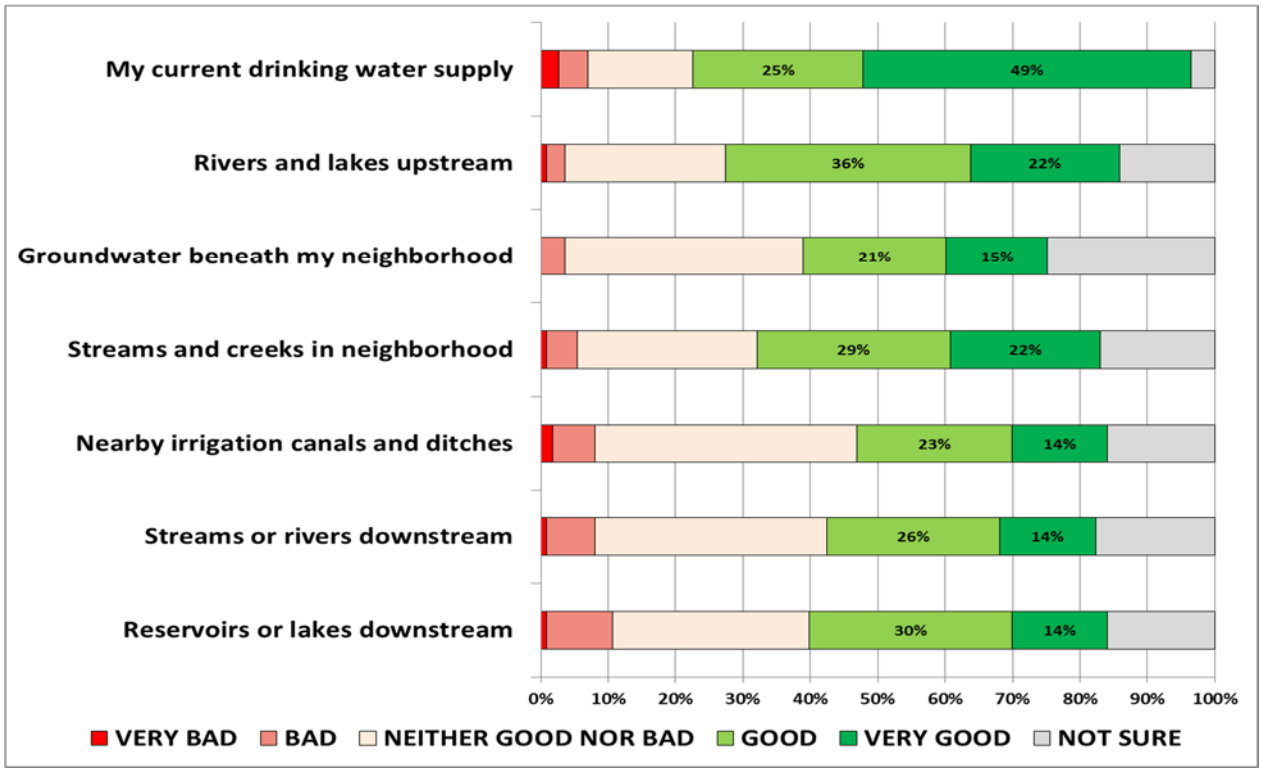


Figure 3: Perceived water quality for different types of water among Nibley respondents

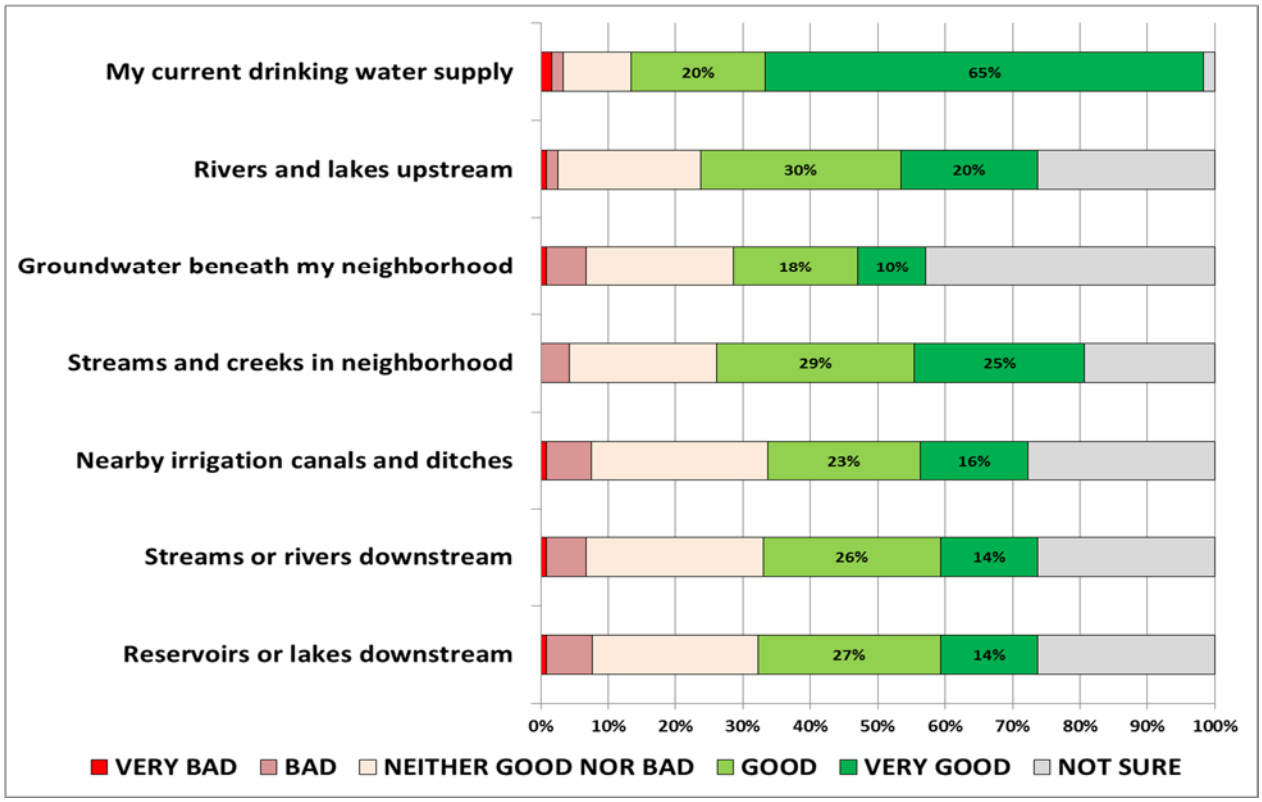


Figure 4: Perceived water quality for different types of water among Spring Creek respondents

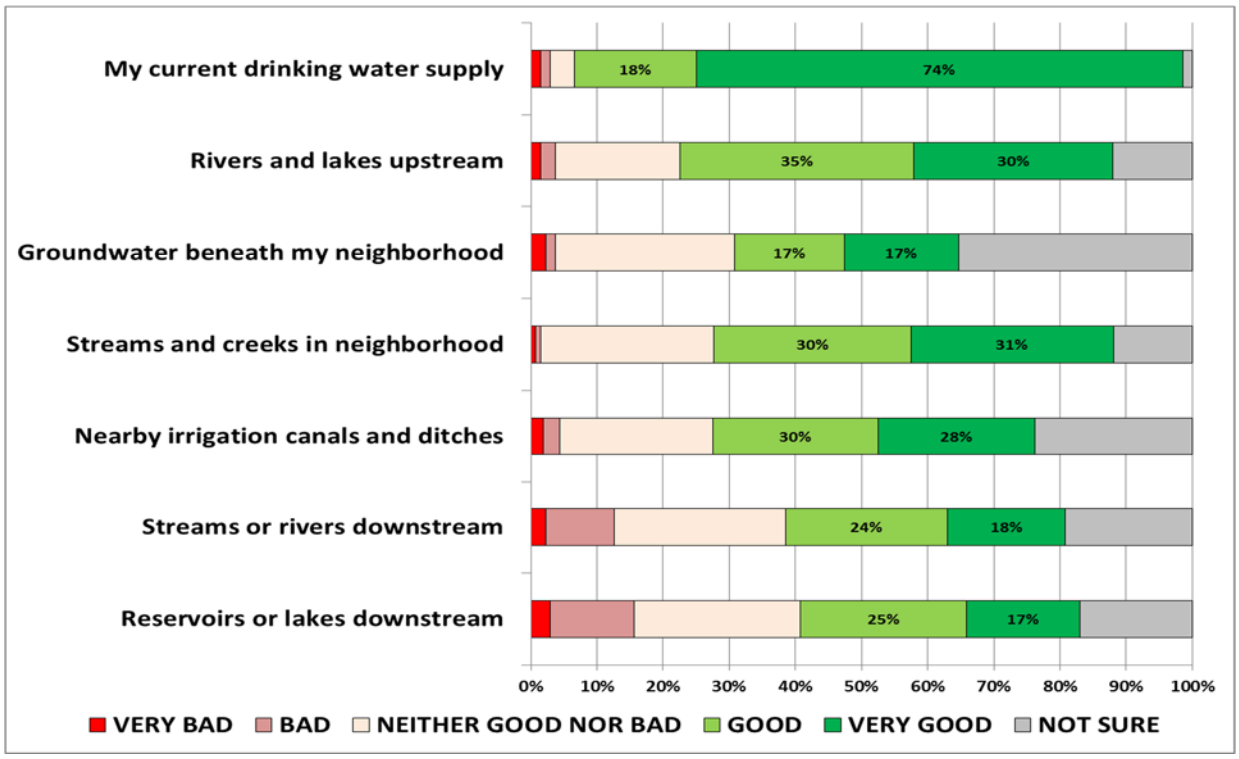


Figure 5: Water quality perceptions among North Logan respondents

D. Experience with Flooding

When asked if they or members of their household have personally experienced property damage over the last 10 years, over a third of households (39-41%) list impacts such as flooded basements or other property damage (Table 14). Just under half (43-49%) indicate any type of impact to their household. It should be noted that the survey only asked about impacts from flooding and/or stormwater and did not differentiate between flooding originating inside the home from external flooding sources.

More than three-quarters of respondents (79-89%) in these three Cache Valley neighborhoods indicate that their community has experienced impacts by flooding or stormwater damage in the last 10 years. The reports of community flooding impacts in Nibley, Spring Creek and North Logan are higher than those reported in Logan City and Salt Lake Valley and much higher than those reported in Heber Valley.

Table 14: Percent of Respondents indicating Impacts from Flooding on Household or Community.

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
Over the last 10 years, how has your household or community been impacted by flooding or stormwater?	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent of Respondents Listing Impacts					
Household suffered property damage from flooding or stormwater	**39**	**40**	**41**	*36*	*31*	*33*
Household impacted in any way by flooding or stormwater damage*	**43**	**47**	**49**	*41*	*40*	*46*
Community impacted in any way by flooding or stormwater damage *	**89**	**89**	**79**	*76*	*51*	*72*

** = Combines all types of impacts, including flooded basement or other property damage, injury or loss of life, damage to public roads or infrastructure, contamination of drinking water or area streams. Listed if at least one type of impact was reported.*

E. Climate Change Perceptions

Climate change has received significant attention in the media and political debate. The respondents in Cache Valley were asked their views on climate change, and whether they were worried that climate change will significantly impact the water supplies in their valley. Results demonstrate a wide diversity of views on this topic. Overall, the majority of respondents from Nibley, Spring Creek, and North Logan believe that climate change is happening (67-83%), but they are split as to whether they see climate change as human-caused or part of a natural process (Table 15). Respondents from these three Cache Valley neighborhoods are less likely than those from the Logan City or Heber or Salt Lake Valleys to believe that climate change is happening and caused mainly by human activities. Respondents from North Logan were considerably less likely than those from the other two communities to report they 'do not know enough' to say if climate change is happening.

Between 30-39% of respondents across these three Cache Valley neighborhoods see climate change as a possible threat to water supplies in the valley, somewhat lower than among respondents in most of the other study areas, particularly in the Salt Lake Valley.

Table 15: Respondent Views on Climate Change Issues

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
How would you characterize your views on climate change?	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent of respondents					
Climate change is happening, and is caused mainly by human activities	**36**	**31**	**38**	*46*	*40*	*54*
Climate change is happening, and is caused both by human and natural causes	**4**	**8**	**5**	*4*	*5*	*4*
Climate change is happening and is caused mainly by natural processes	**27**	**32**	**40**	*26*	*32*	*22*
Climate change is not happening	**2**	**3**	**4**	*5*	*6*	*4*
I do not know enough to say if climate change is happening	**32**	**26**	**14**	*20*	*18*	*16*
Respondent is worried that climate change will significantly impact water supplies in this valley	**33**	**30**	**39**	*43*	*39*	*54*

III. Water Policy and Management Perspectives

A. Support for Local Water Management Strategies and Policies

Many survey questions assessed the levels of support or opposition to a wide range of potential local city water management policies and programs.

Addressing Short Term Water Shortages

First, respondents were asked, "If your city faced a short-term water shortage, how much would you oppose or support each of the following possible local policies or strategies?" (Table 16 and Figures 6, 7 and 8). There is very high level of support (81-95%) for educational and voluntary conservation programs across these three Cache Valley communities. Support for restrictions on watering in parks, golf courses, and public properties is lower, but still ranges from 66-84 percent of respondents.

Mandatory restrictions on watering to respond to short-term shortages are least popular, but still has support from 66-75 percent of respondents, with less than 10% indicating that they would oppose or strongly oppose such measures.

Table 16: Percent of Respondents Supporting Various Local Policy Options

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
To deal with a short-term water shortage, I would support or strongly support the following strategies…	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Indicating Support or Strong Support					
Educate public on water conservation	**85**	**87**	**95**	*88*	*92*	*90*
Encourage voluntary reductions in outdoor water use	**81**	**86**	**88**	*84*	*85*	*86*
Restrict watering in parks, golf courses, and other public properties	**75**	**78**	**84**	*73*	*72*	*77*
Mandatory watering restrictions	**66**	**74**	**75**	*66*	*64*	*66*

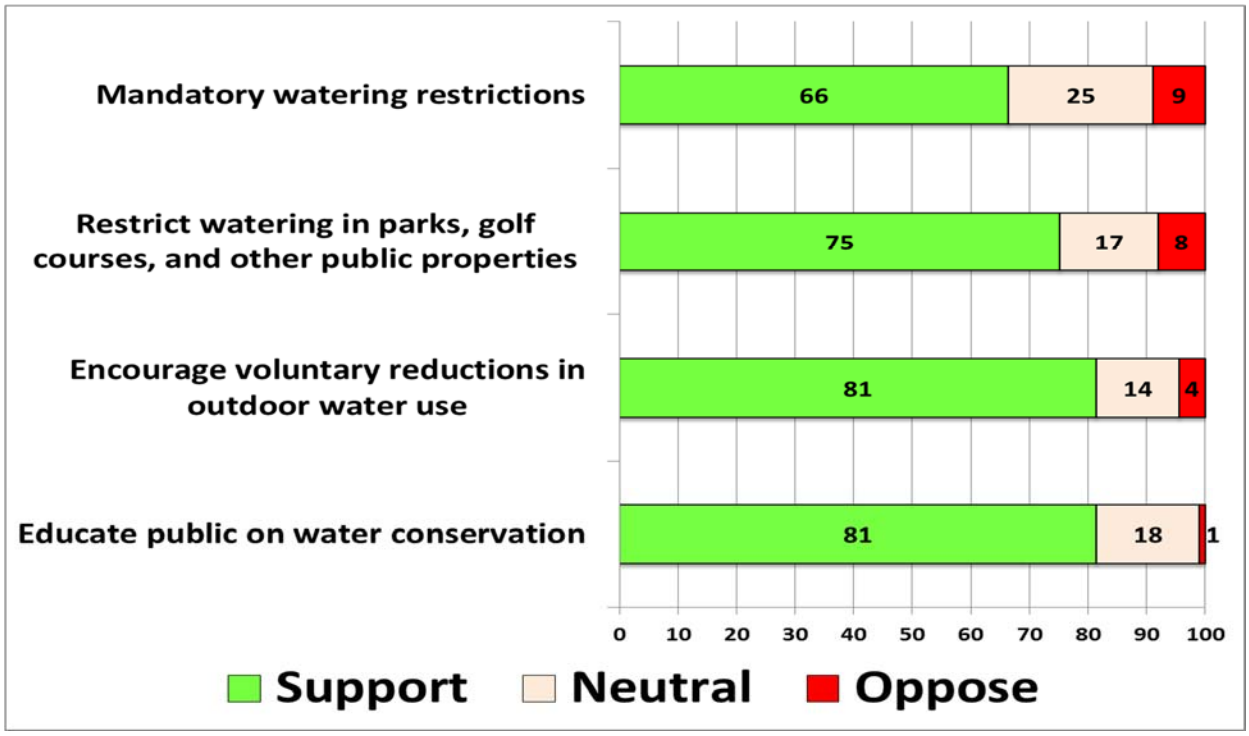


Figure 6: Percent of Nibley Respondents who Support or Oppose Various City Responses to Short Term Water Shortage.

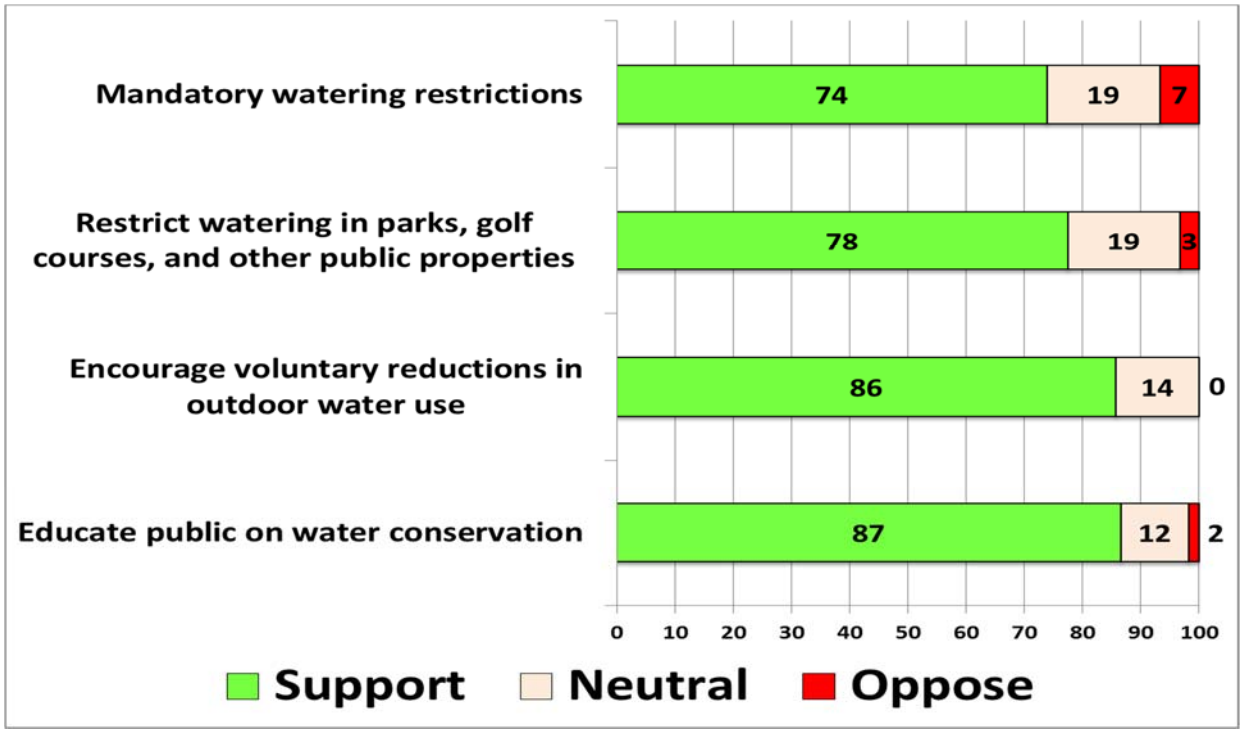


Figure 7: Percent of Spring Creek Respondents who Support or Oppose Various City Responses to Short Term Water Shortage.

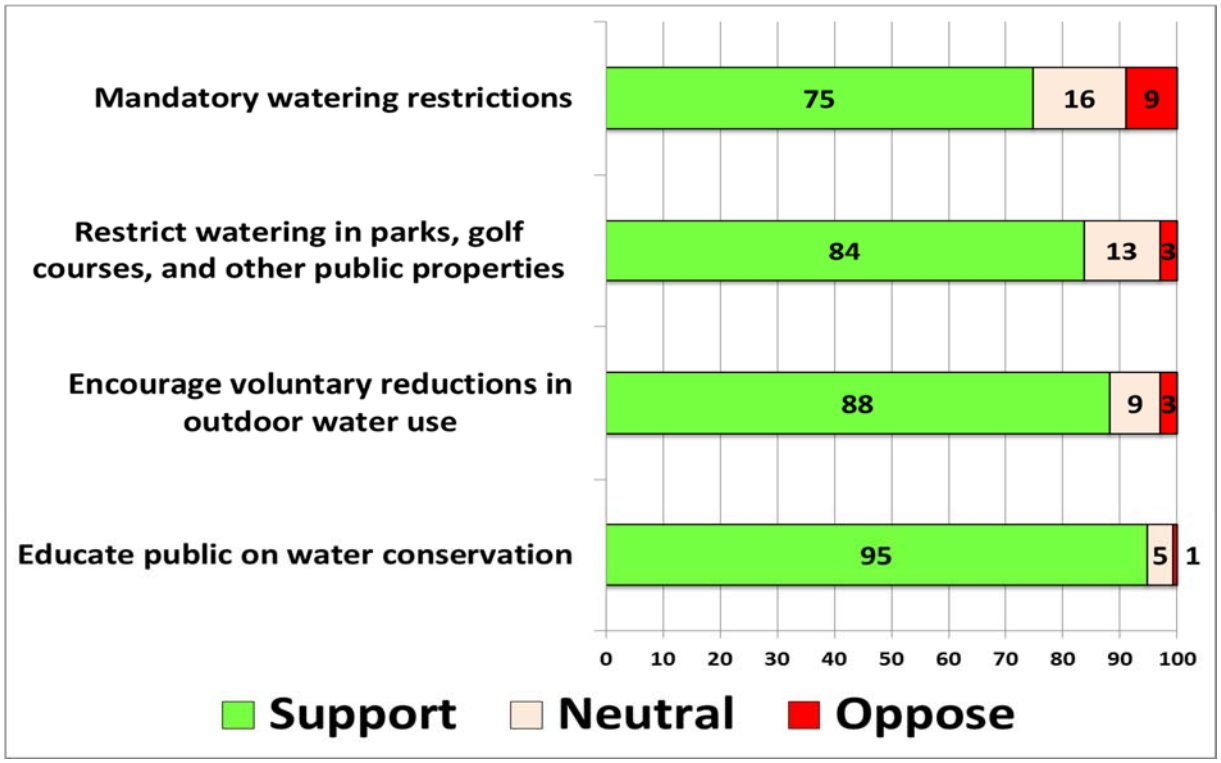


Figure 8: Percent of North Logan Respondents who Support or Oppose Various City Responses to Short Term Water Shortage.

Long Term City Water Management Strategies.

Residents were also asked about the extent to which they supported a range of potential long-term approaches to water policy and management in their city (results shown in Table 17 and Figures 9, 10, and 11).

The most popular policy across the three study neighborhoods is to 'limit future housing development unless water supplies are secured,' which is supported by 61% of respondents in Nibley, 71% in Spring Creek and 80% in North Logan.

There is also strong majorities in each neighborhood who support the development of a system to use treated wastewater to supply residential irrigation (63-71%).

Building new water storage facilities is supported by 55-63% of respondents from these three Cache Valley neighborhoods, with Nibley respondents indicating less support than Spring Creek or North Logan respondents.

There is more modest support for several other local water policy options.

A majority of residents in Spring Creek and North Logan (51-55%) supported building structures to reduce stormwater runoff and reducing environmental protections to facilitate new water projects. The same policies received support from just 45% of Nibley residents. By contrast, a majority of Nibley respondents (53%) supported increasing budgets for storm water management, compared to 41-47% in the other two neighborhoods.

Between 42-48% of residents in all three neighborhoods support city programs to subsidize the purchase of low water use irrigation systems and appliances, roughly double the proportion who opposed such programs.

More residents support (44-47%) than oppose (20-22%) charging more per gallon for large users in North Logan and Spring Creek. However, opposition to this policy was higher than support in Nibley (39% to 28%). Similarly, Nibley residents on balance opposed policies that encouraged housing developments that use less water per person, while this policy option received more support in the other two neighborhoods.

The least supported policy option in Spring Creek and North Logan is for buying water rights from farms to use in the city (which was supported by just 19-27% of respondents). Nibley respondents were more supportive than the other two communities regarding the strategy of buying water rights from farms to use in the city (34%).

Table 17: Percent of Respondents Supporting Various Local Policy Options

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
Long Term Local Policy Options	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Indicating Support or Strong Support					
Limit future housing development unless water supplies are secured	**61**	**71**	**80**	*63*	*73*	*77*
Develop system to reuse treated wastewater for residential irrigation	**63**	**71**	**67**	74	69	75
Build new water storage facilities	**55**	**63**	**61**	*62*	*64*	*57*
Build structures to reduce storm water runoff	**45**	**51**	**55**	*57*	*63*	*45*
Increase budgets for storm water management	**53**	**41**	**47**	*49*	*53*	*35*
Subsidize purchase of low water use irrigation systems and appliances	**48**	**44**	**42**	*55*	*58*	*43*
Charge more per gallon for large water users	**28**	**44**	**47**	*45*	*53*	*45*
Implement ordinances to require low-water landscaping	**30**	**33**	**35**	*46*	*49*	*41*
Reduce requirements for environmental protection to facilitate new water projects	**30**	**29**	**33**	*31*	*35*	*27*
Encourage housing development that uses less water per person	**18**	**33**	**36**	*42*	*53*	*38*
Buy water rights from farms to use in the city	**34**	**19**	**27**	*23*	*24*	*27*

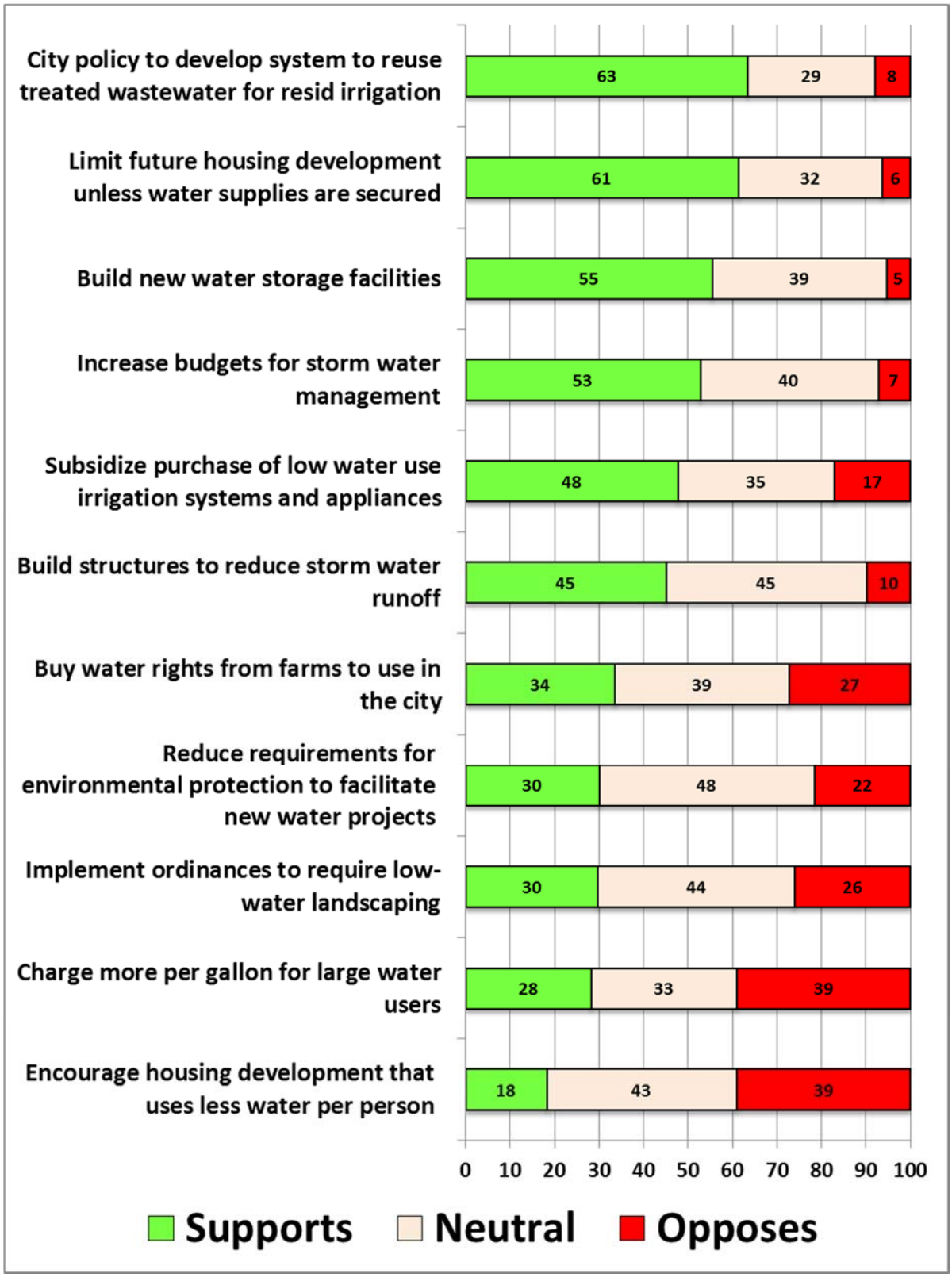


Figure 9: Nibley Respondent Support for Various Long-Term City Water Management Strategies.

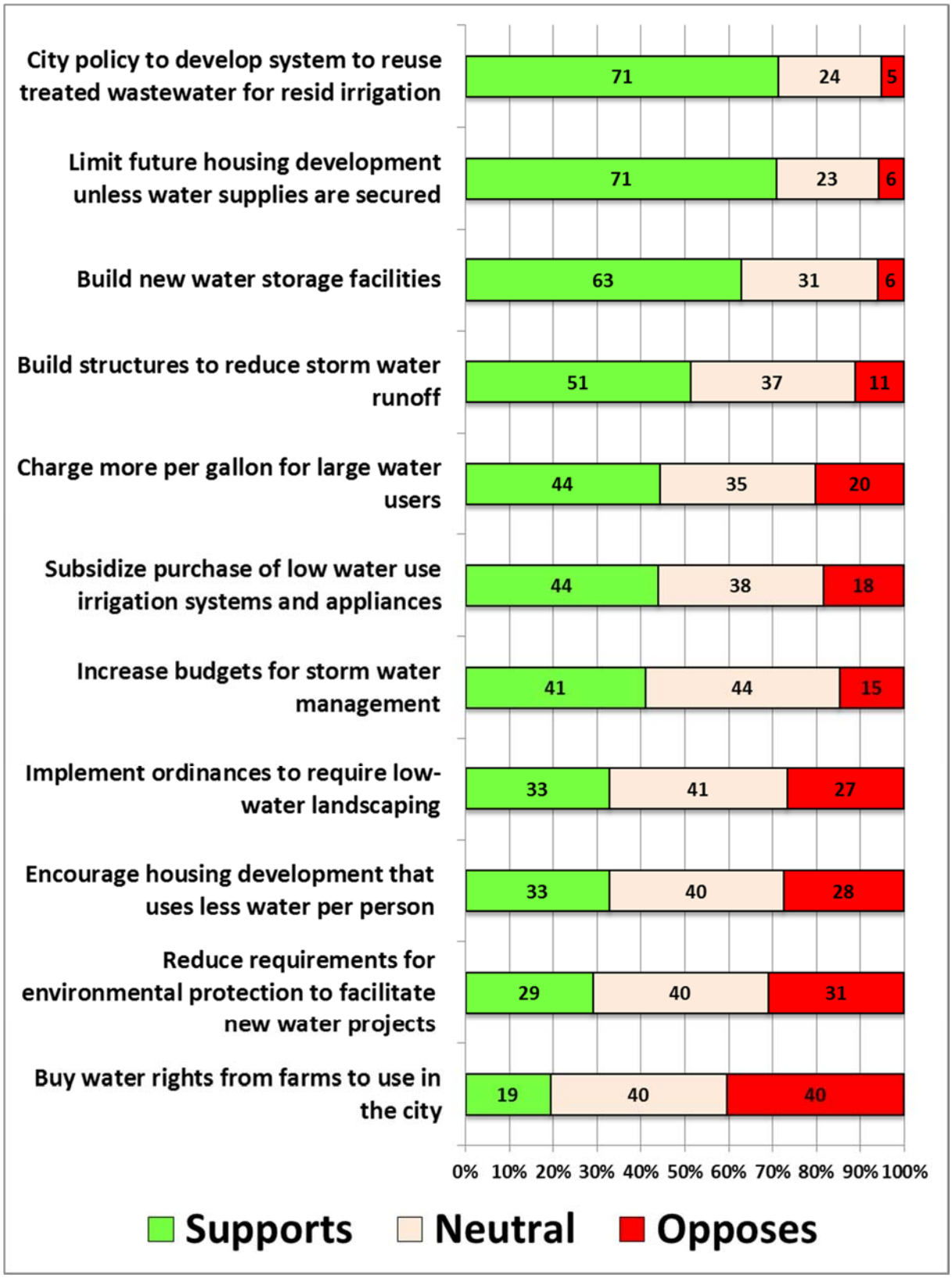


Figure 10: Spring Creek Respondent Support for Various Long-Term City Water Management Strategies.

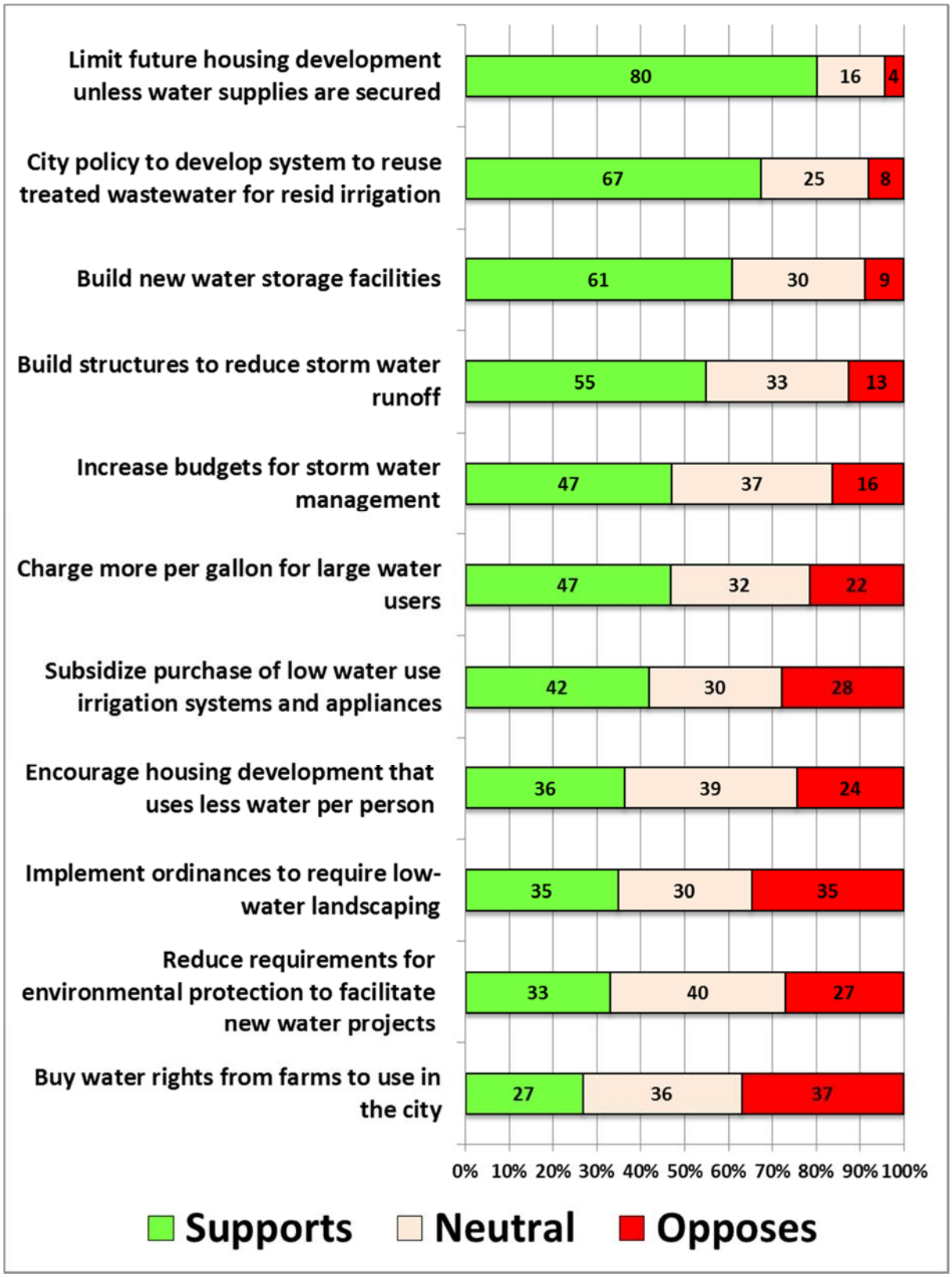


Figure 11: North Logan Respondent Support for Various Long-Term City Water Management Strategies.

Awareness of Cache County Master Plan

The survey in most Cache County neighborhoods and communities (except Nibley) included an item that asked "Over the last year, local and county officials have worked on a Cache County Water Master Plan to guide future policies and programs. Have you heard about this process or the details of the County Water Master Plan?". The proportion of respondents in each community who have heard about the Master Plan are illustrated in Figure 12 below.

Results suggest that a minority of respondents in all of our study areas were unfamiliar with the county Water Master Plan, but residents of North Logan are much more aware of the lan than those living in Logan City or the Spring Creek neighborhood.

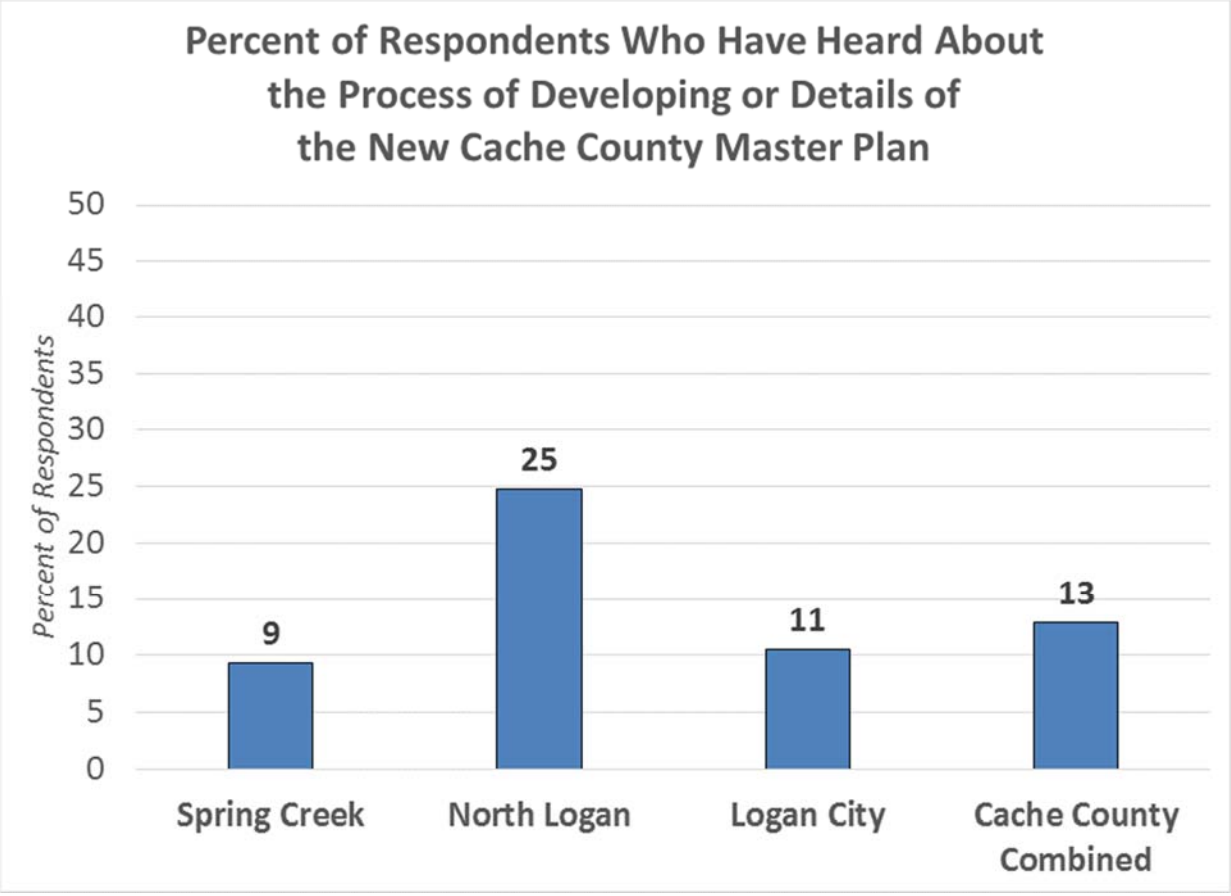


Figure 12: Awareness of Cache County Water Master Plan by Community.

B. Support for State Water Policies

State Water Policy Goals

The survey also asked residents to indicate their level of support for a variety of possible goals to guide state-level water policies and programs (Table 18). Protecting water quality and ensuring a supply of drinking water are overwhelmingly supported across Heber, Cache, and Salt Lake City valleys. Ensuring water supply for agriculture is also a high priority for respondents from these three Cache Valley neighborhoods (particularly for North Logan). Protecting wetlands and wildlife habitat is less supported by respondents from these three Cache Valley neighborhoods than by those who live in Logan City and our Heber Valley and Salt Lake Valley study neighborhoods. North Logan respondents are slightly more supportive of policies to ensure the supply for water for economic development than those from other locations.

Table 18: Percent of Respondents Supporting Different Goals for State Water Policies

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
	Nibley	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Indicating Support or Strong Support					
Ensure supply of drinking water	**96**	**96**	**99**	*97*	*96*	*96*
Protecting water quality	**91**	**94**	**98**	*94*	*95*	*95*
Ensure the supply of water for agriculture	**83**	**89**	**92**	*85*	*80*	*86*
Protecting wetlands and wildlife habitat	**64**	**64**	**56**	*73*	*75*	*76*
Saving taxpayer money	**55**	**50**	**58**	*57*	*52*	*59*
Ensure the supply of water for economic development	**43**	**40**	**52**	*48*	*41*	*48*

State Water Policy Strategies

We also assessed support among residents of these neighborhoods for a variety of statewide policies and programs that are currently being considered by state water planners and policy makers (Table 19, and Figures 13, 14 and 15).

Among all three Cache Valley communities, there is support from a strong majority of respondents (and relatively little opposition) to the use of state funds to build new reservoirs or storage projects and to help replace aging city water infrastructure.

In North Logan and Spring Creek, nearly 60 percent of respondents supported setting minimum state standards for new private residential construction to reduce water use. The same policy had support from just 39 percent of Nibley residents. Opposition to this type of policy was reported by just 10-11 percent of respondents in all three communities.

A majority of residents in all three neighborhoods supported state investments in research on water conservation technologies and practices.

A state policy that would allow people with water rights to sell water saved from conservation practices received support from a majority of respondents in North Logan and Spring Creek (and 49% in Nibley). That same policy was opposed by 6-8% of residents in those neighborhoods.

Roughly half of respondents in these three neighborhoods support using state funds to pay for efficiency improvement projects in agricultural irrigation systems. Just 7-11 percent opposed this type of program.

A majority in Spring Creek and 43-48% of respondents in Nibley and North Logan support state policy to establish minimum flow requirements for streams to protect fish habitat. This policy was opposed by 10-14% of respondents in the three communities.

Nibley respondents were generally less supportive of most state policy options, but particularly for programs that would set standards for new residential construction, ensure minimum flows in streams to protect fish habitat, and invest in more efficient agricultural irrigation systems.

Relatively few Cache Valley respondents would support efforts by the state to prioritize water efficiency over water rights, or to facilitate the transfer of water from agriculture to urban users.

Table 19: Percent of Respondents Supporting State Water Policy Strategies

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
	Nibley	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Indicating Support or Strong Support					
Use state funds to build new reservoirs or storage projects	**59**	**64**	**75**	*54*	*62*	*63*
Use state funds to help replace aging water system infrastructure in cities	**59**	**68**	**64**	*73*	*77*	*66*
Invest in research on new water conservation technologies and practices	**50**	**51**	**63**	*63*	*67*	*58*
Allow people with water rights to sell water saved from using conservation practices	**49**	**56**	**55**	*56*	*55*	*55*
Set minimum state standards for new private residential construction to reduce water use	**39**	**59**	**59**	*56*	*67*	*61*
Use state funds to pay for efficiency improvements in agricultural irrigation systems	**48**	**50**	**53**	*61*	*60*	*58*
Establish minimum flow requirements for streams to protect fish habitat	**43**	**53**	**48**	*56*	*64*	*59*
Ensure state policy prioritizes the efficient use of water over protecting existing water rights	**33**	**39**	**36**	*46*	*49*	*39*
Use state funds to construct pipelines to bring water to urban areas from other regions	**31**	**28**	**32**	*36*	*39*	*31*
Facilitate transfers of water from agriculture to urban users	**24**	**25**	**23**	*28*	*29*	*25*

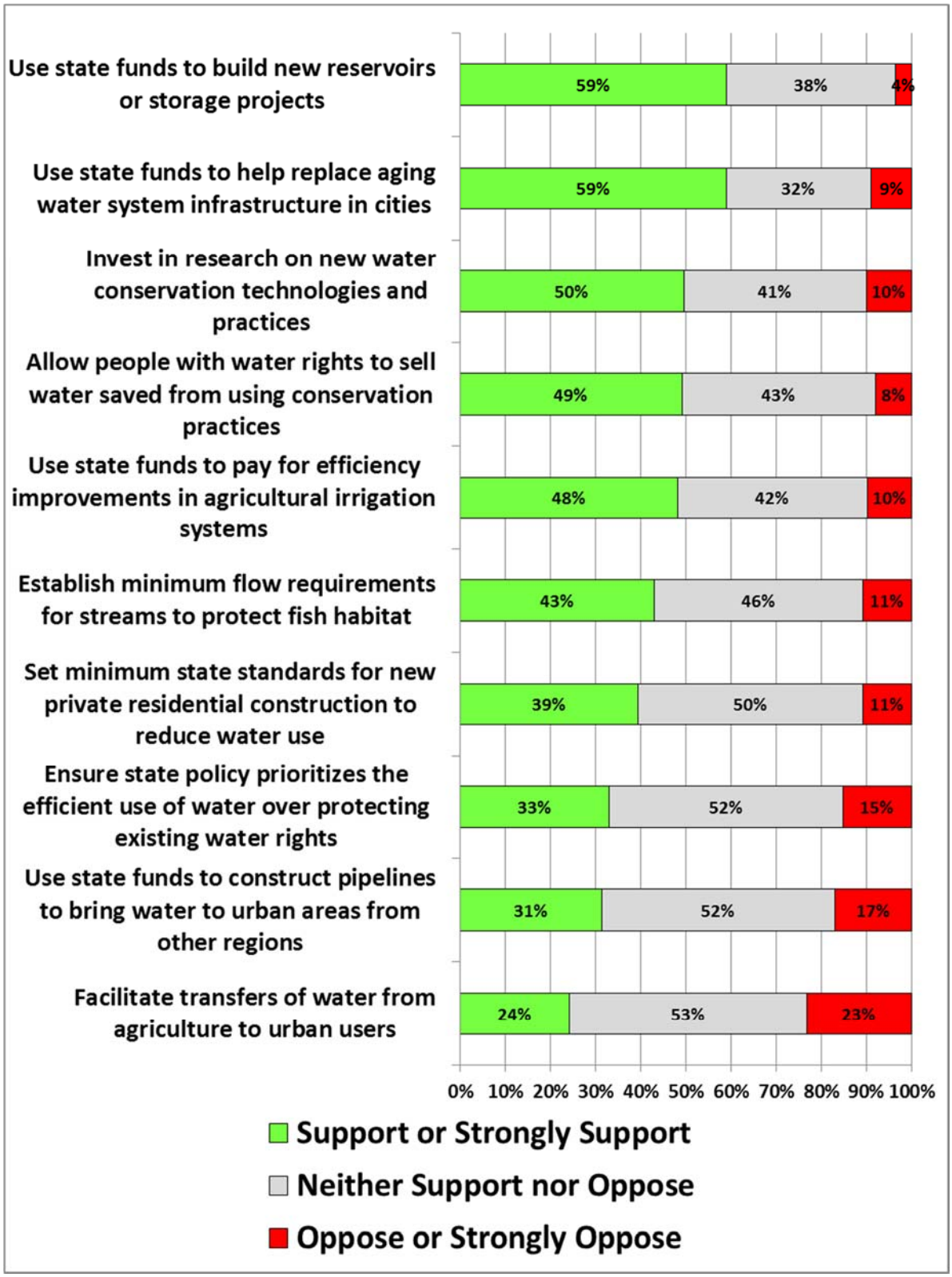


Figure 13: Percent of Nibley respondents supporting or opposing state policy strategies.

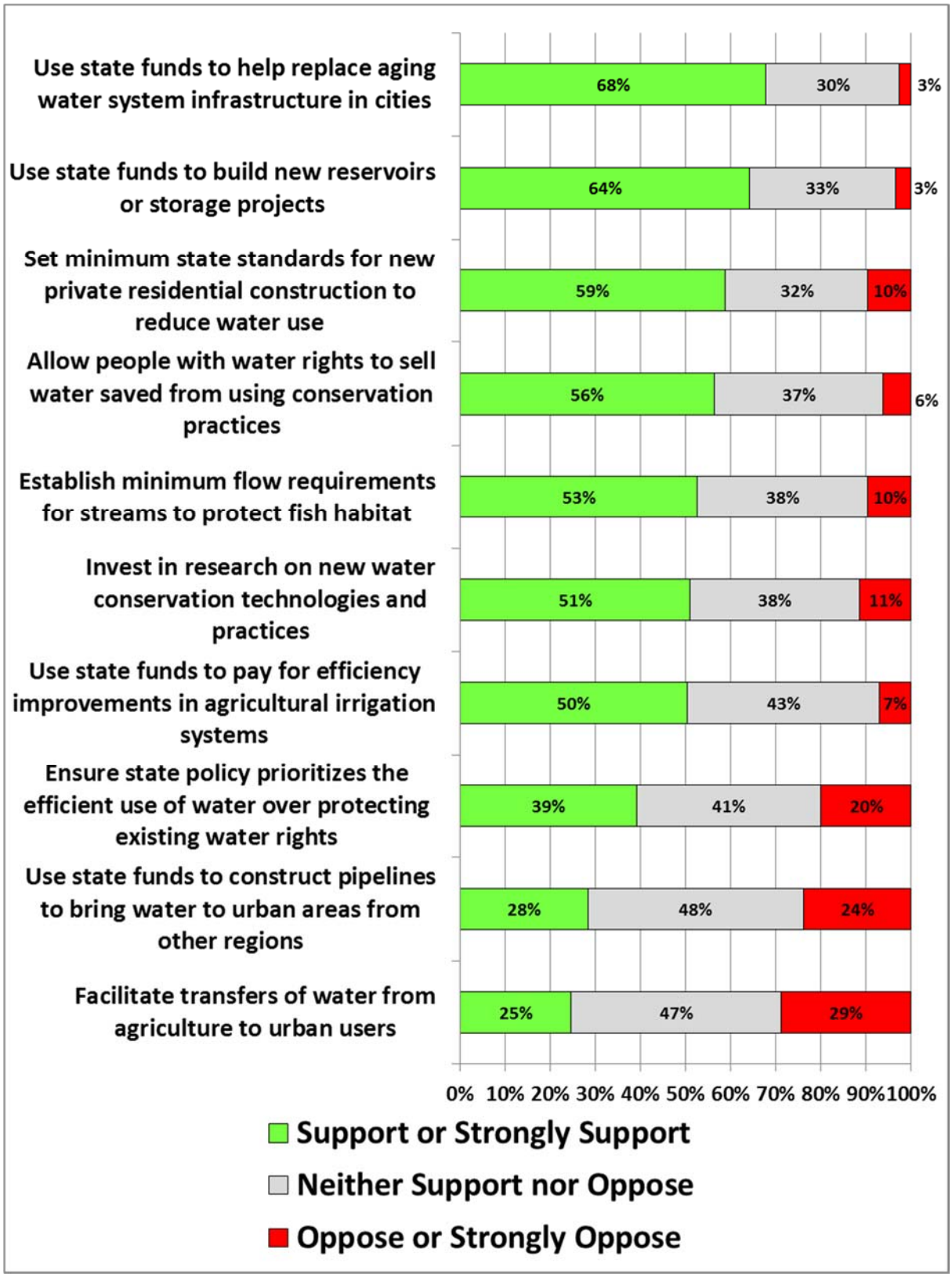


Figure 14: Percent of Spring Creek respondents supporting or opposing state policy strategies.

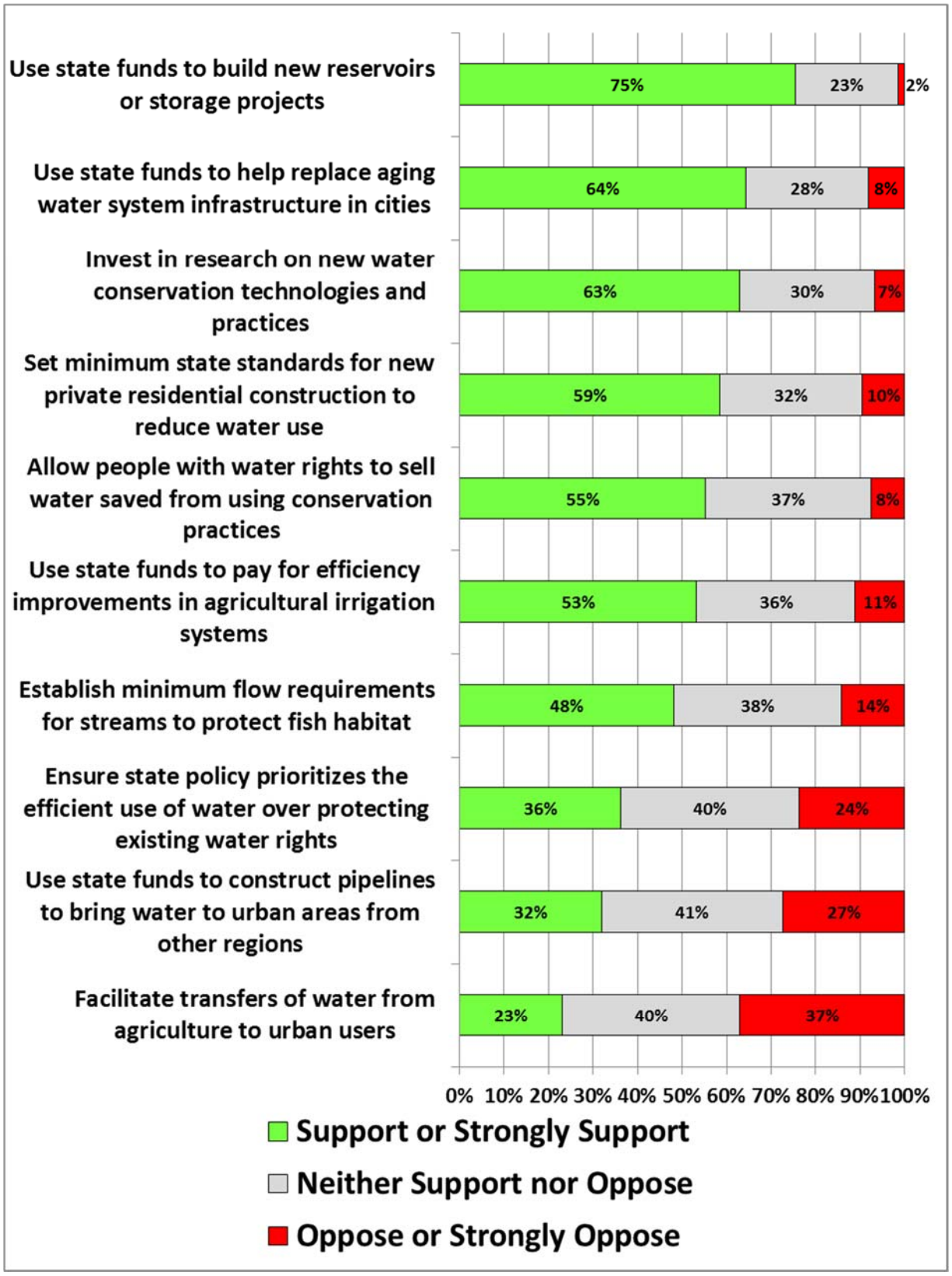


Figure 15: Percent of North Logan respondents supporting or opposing state policy strategies.

IV. Additional Information

A. Water Information Sources

Residents were asked to indicate where they find information about water issues (Table 20). TV and radio are the most common information sources across all three neighborhoods. Newspapers and friends and neighbors were much more important sources of information among residents in North Logan than in Nibley and Spring Creek. Other moderately ranked sources include internet/social media and mailings from providers. Not surprisingly, the local newspaper (Logan Herald Journal) was the most widely read paper among residents in these three neighborhoods.

Table 20: Sources of Information about Water Issues

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
Sources of Information about Water Issues	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City Neighborhoods*	*Heber Valley*	*Salt Lake Valley*
	Percent indicating use of the source					
TV/Radio	**68**	**56**	**76**	*63*	*73*	*67*
Friends and neighbors	**56**	**55**	**73**	*54*	*50*	*62*
Mailings from water providers	**42**	**55**	**68**	*40*	*52*	*48*
Internet/social media	**60**	**48**	**57**	*54*	*60*	*55*
Any newspaper	**40**	**40**	**74**	*49*	*45*	*56*
Logan Herald Journal (Cache Valley only)	**39**	**36**	**73**	*43*	*n/a*	*n/a*
Deseret News	**7**	**12**	**19**	*10*	*17*	*18*
Salt Lake Tribune	**8**	**10**	**20**	*13*	*38*	*22*
Homeowners or Neighborhood Association	**6**	**24**	**27**	*7*	*9*	*21*

B. Satisfaction with Neighborhood and Community

Survey respondents were asked to assess their level of satisfaction with various aspects of their neighborhood and community (Table 21). A very high percentage of respondents in each of these Cache Valley communities are satisfied with their overall quality of life (90-92%). In general, North Logan respondents are more satisfied with all aspects of their community. Nibley and Spring Creek respondents are significantly less satisfied than North Logan respondents with regard to the number of shade trees.

Table 21: Percent of Respondents Satisfied with Aspects of their Neighborhood

	CACHE VALLEY NEIGHBORHOODS			*Comparisons*		
Aspect of Neighborhood	**Nibley**	**Spring Creek** *(Providence & River Heights)*	**North Logan**	*Logan City*	*Heber Valley*	*Salt Lake Valley*
	Percent Satisfied or Very Satisfied					
Overall quality of life	**90**	**89**	**92**	*80*	*76*	*88*
Opportunities to interact with neighbors	**71**	**79**	**85**	*55*	*55*	*67*
Quality of parks and common spaces	**70**	**75**	**83**	*71*	*64*	*70*
Appearance of homes and yards	**63**	**75**	**83**	*58*	*56*	*68*
Number of shade trees	**42**	**57**	**85**	*64*	*57*	*59*

Summary

This concludes our preliminary reporting of findings from the 2014 iUTAH Household Water Survey for these three Cache Valley neighborhoods. We anticipate continued analysis of data from the survey and we will post additional findings as they become available at www.iutahepsecor.org/hhsurvey. Please contact us if you have any questions. Dr. Douglas Jackson-Smith can be reached at (435) 797-0582 or doug.jackson-smith@usu.edu.