PO Box 6435 ■ Fernandina Beach, FL 32035 ■ Office (904) 277-9765

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Influence of Ground Water Levels on Residential Property Values:

Upper Santa Cruz and Verde regions in Arizona

Business for Water Stewardship a program of the Bonneville Environmental Foundation
Portland, OR

Executive Summary

Business for Water Stewardship, an organization committed to partnering with businesses to advance water solutions that sustain the well-being of communities, economies, and rivers, explored the effects of groundwater depletion on residential real estate sales prices in two targeted regions of Arizona. Real estate professionals from the Verde and Upper Santa Cruz regions of the state participated in a survey using the Delphi method, where they were presented with three scenarios ranging in severity of tangible effects linked to groundwater conditions in order to determine the threshold and magnitude of the impacts to home sales prices.

Based on the results, groundwater level reductions are likely to impact residential property sales when drought conditions reach moderate to severe levels (Table E1). Properties in the Verde region served by municipal water sources experience a 5% decline in sales price at that stage, with no additional declines in the face of worsening groundwater levels. Similar properties in the Upper Santa Cruz region also experience a 5% decline in sales price and a further decline as drought conditions become more severe. Properties served by private wells in both regions experience larger and increasing price reductions, given the same conditions.

Table E1. Average baseline sales price for hypothetical property and influence of drought and groundwater conditions on the baseline sales price

	Verde Region		Upper Santa Cruz	
	Water source		Water source	
	Municipal	Private	Municipal	Private
Average baseline residential property sales price	$418,250	$436,250	$361,667	$370,000
Price reduction under:				
Scenario 1: Abnormally dry to moderate drought conditions				
Percent change	0%	0%	0%	0%
Price change	$0	$0	$0	$0
Scenario 2: Moderate to severe drought conditions				
Percent change	-5%	-10%	-5%	-9%
Price change	-$20,910	-$43,625	-$18,083	-$33,300
Scenario three: Severe to extreme drought conditions				
Percent change	-5%	-21%	-12%	-15%
Price change	-$20,910	-91,610	-$43,400	-$55,500

The continued erosion of sales price, particularly in the case of homes served by private wells, is thought to be associated with both a greater awareness of water supply and a degree of vulnerability if conservation efforts or policy actions do not effectively slow groundwater level declines.

Strong population growth, economic development, water policy and management, and environmental factors have impacted the water supply and demand balance in Arizona and will continue to do so into the future. Declines in value such as these across residential properties in areas similar to the Verde and Upper Santa Cruz regions would likely result in a substantial aggregate loss.

Contents

List of Tables & Figures

Introduction

Population growth, economic development, water policy and management, legacy water uses, and environmental factors have impacted the water supply and demand balance in Arizona and will continue to do so well into the future. Business for Water Stewardship, an organization committed to partnering with businesses to advance water solutions that sustain the well-being of communities, economies, and rivers, wanted to explore the effects of groundwater depletion on residential real estate sales prices in rural Arizona; rural areas in the Verde and Upper Santa Cruz regions of Arizona were selected to serve as a pilot study that might inform other areas of the state.

Real estate professionals from the Verde and Upper Santa Cruz regions of the state participated in a survey using the Delphi method, where they were presented with three scenarios ranging in severity of tangible effects linked to groundwater conditions to determine the threshold and magnitude of the impacts to home sales prices. Consensus around the current and expected future residential real estate prices for an 'average' property was achieved through multiple rounds of confidential questioning.

Method

This project is intended to help explain the potential changes in real estate prices for rural residential properties located within the Verde and Upper Santa Cruz areas under three hypothetical scenarios: low, moderate, and high-level reductions in groundwater availability. Implementing a project of this kind required development of scenarios for future conditions that translate groundwater changes into tangible and quantifiable impacts on the real estate market. These scenarios rely on observed changes in groundwater levels but abstract away from specific data to paint a picture of the trade-offs future homebuyers would consider in making a decision to purchase a property.

Groundwater levels manifest tangible impacts across a variety of systems, ranging from aesthetic changes in surface water levels and viewsheds to direct effects on household water systems and homeowner amenities. These issues can impact home buyers and developers in many ways, including a) assuring long-term supply for domestic use; b) maintaining water quality; c) minimizing homeowner expenses associated with drilling wells, pumping, or importing water; d) maintaining recreation and aesthetic benefits of rural living; e) facilitating clear permitting pathways for development; f) managing public perception and acceptance of new development in the face of growing community concern over water resources; and/or f) managing fire risk.

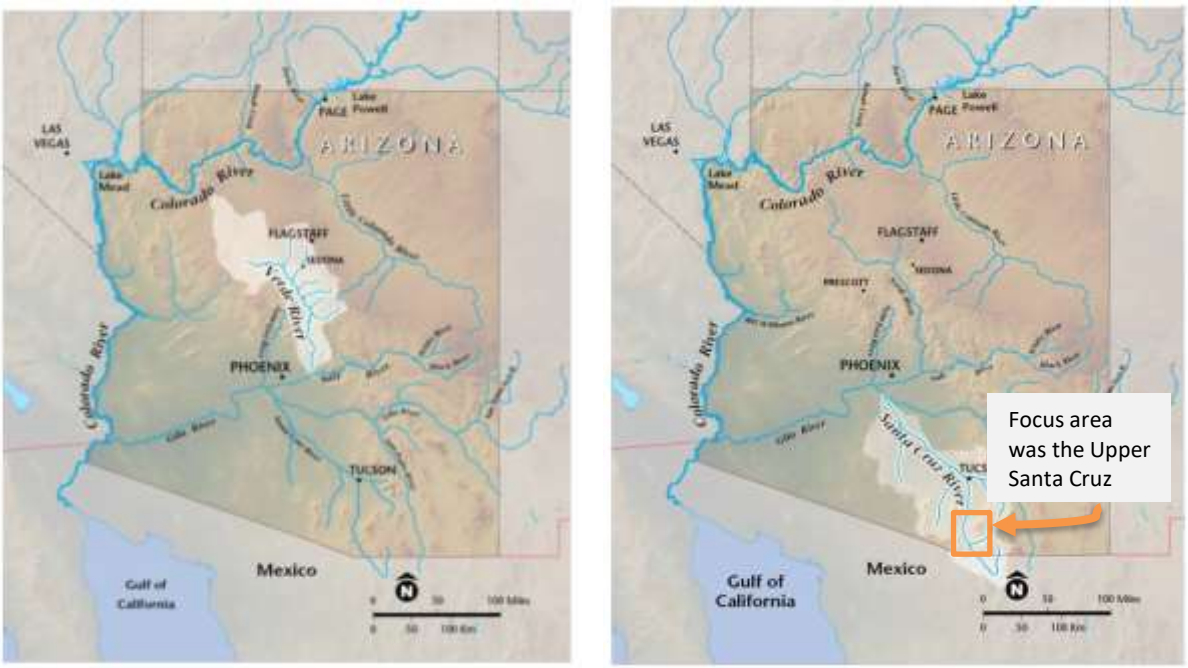
This report developed detailed and preliminary scenarios by evaluating existing water conservation practices and current and historical drought monitoring records across the state.

We then drew upon the experience and expertise of real estate professionals in each area to refine the preliminary scenarios.

The refinement process above involved collaborative discussions centered around how best to capture measurable changes to the real estate market that considered the nuances present in each region. The preliminary scenarios were revised and then finalized after a review by the contributing real estate professionals. Insights from this group aided the understanding of current conditions in each real estate market and allowed for the development of a representative or average residential "property." Detailed descriptions of the hypothetical property as well as each scenario are provided in the relevant section within the body of this report.

In total, a panel of seven real estate professionals across the Verde (4 professionals) and Upper Santa Cruz (3 professionals) markets participated (Figure 1). This group took part in a Delphi study, a process that aims to achieve consensus on the current and expected future real estate values for the "average" residential property under the three different scenarios. This process used confidential questionnaires delivered over multiple rounds of surveys. The panelists were able to reinforce or modify their previous responses based on the response and input from the rest of the group. The questionnaires were administered anonymously, and the identity of the other participants was not disclosed to prevent bias. A monetary incentive was provided to improve recruitment and retention success.

Figure 1. Verde and Upper Santa Cruz regions in Arizona



Current conditions

According to the Arizona Department of Water Resources, parts of the state have been experiencing drought conditions, from mild to severe, since 1994. As part of a dynamic environmental system, drought conditions and impacts are location-specific and can vary from year to year.

Most recently, National Oceanic and Atmospheric Administration (NOAA) data indicate that conditions during the winter and early spring of 2021 were exceptionally dry, with 90% or more of the state experiencing moderate to severe drought conditions. Going forward, NOAA's climate prediction center forecasts the re-emergence of La Niña conditions in fall 2021 with potential for drier than normal conditions across Arizona, despite a record monsoon season in summer 2021. Arizona does remain on a trajectory of drought and reduced precipitation.

Arizona's groundwater reserves were established over thousands of years of natural recharge. In many locations across Arizona annual precipitation and surface water runoff recharge aquifers and groundwater levels. However, across much of the state, groundwater extraction exceeds recharge creating an imbalance between annual recharge and demand, a situation referred to as groundwater overdraft. Population growth, economic development, drought, water policy and environmental factors collectively impact the water supply and demand balance across all regions of the state. ***This study confirmed that imbalances between groundwater supply and demand translate into tangible impacts for the home buyer.***

Findings

While drought is an ever-present vulnerability for the state, water level awareness, water conservation actions, systems and water management policies can reduce the draw on freshwater resources. At present, groundwater access and pumping across roughly 80% of Arizona is unregulated with open access for pumpers and water users. In contrast, groundwater is actively managed through Arizona's Active Management Areas (AMA) and or Irrigation non-expansion Areas (INA)-- areas with active groundwater management. These regions comprise roughly 20% of the state but are home to approximately 80% of the state's population and include the Phoenix and Tucson metro areas in addition to the Santa Cruz region included in this analysis. Thus, Arizona's landscape of voluntary/regulatory and local/statewide water management practices is part of a dynamic policy and water use system that evolves with time in response to the water supply and demand imbalances.

The disparity between active groundwater management in select areas of Arizona and open access with unregulated groundwater pumping across 80% of the state creates a dynamic where most of rural Arizona lacks tools, authority, or policies to plan for and manage long-term and sustainable groundwater supplies. Because the State lacks policies to facilitate local groundwater management across much of rural Arizona, we explored three drought condition scenarios to understand impacts to future property values should groundwater overdraft conditions persist across parts of rural Arizona. To support this analysis, we developed three hypothetical scenarios relative to a '**baseline**', which is defined as a time of adequate groundwater availability that may or may not reflect current conditions.

Baseline

Each region included in this study holds a unique richness in its landscape and its houses. For this study, participants were asked to consider a common hypothetical residential property described as a single-family home of 2,000 square feet of living space with a one-car detached garage on one (1) acre of land. The house and garage are 15 years old and have been reasonably well maintained. Because the systems providing water to a household (municipal versus private) could be a significant influencing factor to the purchase decisions, the professionals were asked to consider the impacts of the environmental conditions for both types of systems.

The average baseline sales price for a residential property served by municipal water sources is just over $418,000 in the Verde region (Table 1). Residential properties served by private water sources sell for an average of just over $436,000. Baseline sales prices in the Upper Santa Cruz region are $362,000 and $370,000, for municipal and privately sourced water, respectively.

The price premiums associated with the property sourced by private wells should not be attributed to the water system alone. Other facets of the property which can be more commonly associated with one or the other type of water source (rural versus urban location for example) also factor into the price premium. ***However, panelists did indicate that a property's water source and the quantity of water it provides can play a complex but integral role in the purchase decision.***

Table 1. Average baseline sales price for hypothetical property

	Verde Region		Upper Santa Cruz region	
	Municipal water source	**Private water source**	**Municipal water source**	**Private water source**
Average baseline residential property sales price	$418,250	$436,250	$361,667	$370,000

Groundwater level scenarios

Real estate professionals participating in the Delphi survey were asked to reflect on three hypothetical drought or water supply scenarios for the Verde and Upper Santa Cruz regions and consider possible impacts to residential properties with each scenario. They were then asked if those conditions would impact the residential property sales price and if so, to what extent. Those results are provided in the body of this report. Participants were also encouraged to share open-ended comments to targeted questions about their specific region. Those comments are included in their entirety in the Appendix.

Scenario one: Abnormally dry to moderate drought conditions

Participants were asked to reflect on a time when,

- Groundwater levels and surface water flows are slightly reduced and diminished enough to trigger water conservation practices.
- There are mild signs of drought in the natural landscape of the area.
- Outdoor water use from municipal water systems is restricted and not advised from private water systems, limiting residential irrigation.
- River flows are lower, yet most water-related recreation remains accessible.

Within both the Verde and Upper Santa Cruz regions, the conditions under this scenario would generate no significant change to the residential property sales price from the baseline (Table 2).

Table 2. Influence of abnormally dry to moderate drought conditions on the baseline sales price

	Verde region		Upper Santa Cruz region	
Price change	**Municipal water source**	**Private water source**	**Municipal water source**	**Private water source**
Increase	0%	0%	0%	0%
Stay the same	100%	100%	100%	100%
Decrease	0%	0%	0%	0%
Effective percent change	0%	0%	0%	0%

Scenario two: Moderate to severe drought conditions

Participants were asked to reflect on a time when,

- The area was experiencing moderate groundwater overdraft and decline due to a sustained period of decreased rainfall and snowpack, reducing the effective recharge of aquifers or reservoirs to sufficient levels.

- Along with the changes described above relating to minor groundwater conservation practices, water levels are not sufficient to replenish on-site small capacity water storage tanks used by homeowners for landscape irrigation, and outdoor water use is entirely restricted.
- Homeowners with private wells are experiencing inconsistent supply or increased pumping costs.
- Water quality for the property is mildly impacted. Treatment is recommended but not required.
- The signs of drought in the natural landscape of the area are notable.
- Streamside vegetation is diminished. Both farming activity and production is reduced, with fewer areas of green, irrigated ground.
- There is a moderate threat of fire activity.
- Water-related recreation is now limited due to lower surface-water flows across all waterways and some seasonal interruptions in shallow waterways.
- It's rare to see water in rivers or wetlands in the surrounding areas, impacting the visual integrity of the landscape and quality of life.

The conditions under this scenario, with insufficient natural replenishment but continual draw on groundwater supply, would place downward pressure on the residential property sales price from the baseline in both regions (Table 3). Properties supplied by municipal water systems are likely to see a sales price 5% lower than baseline while those supplied by private wells are likely to see a sales price 9% to 10% lower. These reductions in price equate to roughly a $21,000 and $44,000 decline, respectively, in the Verde region. For the Upper Santa Cruz region, those declines equate to an estimated $18,000 and $33,000 drop in sales price.

Table 3. Influence of moderate to severe drought conditions on the baseline sales price

	Verde region		Upper Santa Cruz region	
Price change	**Municipal water source**	**Private water source**	**Municipal water source**	**Private water source**
Increase	0%	0%	0%	0%
Stay the same	50%	50%	33%	0%
Decrease	50%	50%	67%	100%
Effective percent change	-5%	-10%	-5%	-9%
Effective price change	-$20,910	-$43,625	-$18,083	-$33,300

Scenario three: Severe to extreme drought conditions

Participants were asked to reflect on a time when,

- The area was experiencing severe groundwater reductions because rainfall and snowpack were substantially below levels needed to recharge reservoirs and aquifers. Both are at critically low levels.

- Along with the changes described above relating to minor and moderate groundwater conservation practices, private dwellings are experiencing lack of water availability from existing wells and those on public water systems may experience rate increases tied to utility investment required to sustain water access and delivery. .
- Water quality for the property is significantly impacted. Treatment is required.
- The signs of drought in the natural landscape of the area are significant, survival of streamside vegetation and trees are threatened, and farming production is greatly reduced.
- A heightened threat of fire activity exists.
- Surface water is very limited and rarely visible in rivers, streams, and wetlands, significantly impacting the visual integrity of the landscape and quality of life.
- Water-related recreation is no longer possible.

Conditions under this scenario would also have an impact on the residential property sales price from the baseline (Table 4). Properties supplied by municipal water systems are likely to see a sales price 5% to 12% lower than baseline while those supplied by private water systems are likely to see a sales price 15% to 21% lower. These reductions in price equate to roughly a $21,000 and $92,000 decline, respectively, in the Verde region. For the Upper Santa Cruz region, those declines equate to an estimated $43,000 and $56,000 drop in sales price.

Table 4. Influence of severe to extreme drought conditions on sales price

	Verde region		Upper Santa Cruz region	
Price change	**Municipal water source**	**Private water source**	**Municipal water source**	**Private water source**
Increase	25%	0%	0%	0%
Stay the same	25%	25%	0%	0%
Decrease	50%	75%	100%	100%
Effective percent change	-5%	-21%	-12%	-15%
Effective price change	-$20,910	-$91,610	-$43,400	-$55,500

Summary

Groundwater level reductions do not impact residential property sales until they reach conditions that are moderate to severe. Properties in the Verde region served by municipal water sources experience a 5% decline in sales price at that stage, with no additional declines in the face of worsening groundwater levels. Similar properties in the Upper Santa Cruz region also experience a 5% decline in sales price and a further decline (12%) as drought conditions become more severe. Properties served by private water sources (i.e., wells) in both regions experience larger and increasing price reductions, given the same conditions. The continued erosion of sales price during times of declining water resources for properties supplied by private wells is thought to be associated with both a greater awareness of water supply on site and a higher degree of vulnerability if conservation efforts or policy actions do not effectively slow groundwater level declines.

Strong population growth, economic development, lack of regulation and management, and environmental factors have impacted the water supply and demand balance in Arizona and will continue to do so well into the future. Declines in value such as these across residential properties in areas similar to the Verde and Upper Santa Cruz regions would likely result in substantial aggregate property value reductions.

Because Arizona currently allows open access and unregulated pumping of groundwater across roughly 80% of the state, there is a notable risk that future groundwater pumping in select locations will lead to increasingly severe groundwater overdraft. This report suggests that groundwater overdraft events meeting or exceeding moderate to severe drought conditions as defined within will reduce real estate values.

Appendix

Comments provided from each survey round

Round 1 Survey[1]

[1] *The surveys for Rounds 2 and 3 were mirrors of the Round 1 survey except for presenting summary results for each question to the group for review and providing the opportunity to revise their earlier responses. Copies are available upon request*

Comments provided in Round 1

To help us better understand your responses to the preceding questions, please tell us how the difference between municipal and private water systems affects (or does not affect) the selling price of houses in the area?

Verde Region

- Buyers rarely ask anything about water issues, whether municipal or private water. Their thought process is I turn on the tap and it gives me water. No concern about the source, just that it works.
- This is difficult to put an exact number too. In conversation with people when looking for properties I tend to see three preferences to municipal or private water systems. They either specifically say they do not want to be connected to anything with a city or the opposite. They don't want to deal with a water well or an on-site wastewater system, or they don't have a preference and their preference of area and home choice are the deciding factor.
- With the use of Private water systems, in particular wells, the likelihood of somebody understanding that their water resource is at risk is much greater than somebody who uses a municipal system. It has become the practice in the Verde for most municipal water systems run by cities and towns to paint a rosy picture, and even when there is the potential for restrictions, it is an often talked about in public. If you Are on an individual well or shared well, you are much more likely to know if your water levels are dropping.
- Homes with city water have substantial support of a government pulling for their water. The municipality lends some comfort of supply to the homeowner. Other city infrastructure provides entertainment and recreation options off water. Landowners with a well are on their own. If the well dries up the property is of no value unless water can be hauled. This is a big adjustment and demand for homes without water on the property would severely drop, fire risk severely increases, and recreation opportunities limited or no longer exist.

Santa Cruz Region

- Basically, the same as most public and private water system providers in the Santa Cruz AMA rely on the same primary or supporting adjacent aquifers
- In some respects, purchasers of homes, in my experience , have more confidence in a water supply that is provided by a municipality. however, in rural areas, I have found people like the independence of being on their own wells and being able to conserve based on their own use and not rely on the use of others and their impact on the system.
- More freedom with private water.

To help us better understand your responses to the preceding questions, please tell us which of the drought conditions (quantity, quality, viewshed, etc.) are most likely to affect (or not affect) the sales price?

Verde Region

- Our area in the Verde Valley has not been restricted depending on drought per say. There are requests to conserve, but no mandate. This is my view as of 2010 when I moved to the Valley. This question has never been asked to me regarding sales price.
- Drought conditions do affect the home values. This area is the Verde Valley, "Green Valley". Part of the deciding factor people live here is because of the water and the "greenness" of the area. If quantity, quality, viewshed, etc. are all affected to the negative, then that will be a considerable reduction in property values.
- I think primarily quantity would impact sales prices. If somebody must dig a well much deeper, that is clearly something that could impact the properties value.
- In order of importance: # 1 quantity #2 quality #3 Viewshed

Santa Cruz Region

- Watershed (as most of the Santa Cruz AMA is from groundwater) followed by quantity (measured and managed growth to manage depletion) followed by quality (treatment options for localized control).
- I think water availability for residential consumption and its impact on the view shed are the most critical.
- Light to moderate drought

Tell us if you think that the influence of the private versus municipal water system or the drought conditions is unique to the Verde area. Would the effects to sales prices be different in other communities within the state?

Verde Region

- Some conditions are unique to the Verde area and some not unique. Water rights (use) policies regarding existing wells are important in non management areas in the state like the Verde. Metering of wells in unincorporated areas could be established with any new well drilled and that would affect future vacant land sale values, but I believe as soon as it became a norm it would no longer affect values. Having no water or limited water would dramatically decrease existing home values and is on existing homeowner's minds when new high-density development is introduced when locals know Lake Powell is experiencing record lows. We know it is more complicated than just a lake level but existing homeowners' site this as evidence that water is an issue. The single well owner or prospective well owner has less potential to impact water as drastically as currently proposed high density projects being considered would. Water usage of proposed high-density projects is not being addressed at public meetings on a supervisor's level although it is the number one information request from existing homeowners because they know water availability will affect their home value. Workarounds by developers with county and municipalities are being used to plan and build single owner high density individual living spaces such as a 200+ acre mobile home park. Using this active issue as an example: if a high-density development draws off one large well, aquifer/stream system for 5000 new residential units (2 persons per unit) on a 285-acre area the population increase would be rapid and conservatively add 10,000 bodies consuming water at 120 gal a day that would be 1,200,000. However, if a that same 285-acre parcel could only be developed into 142 x 2 acre parcels the population estimate by unit would be 4 persons x 142 2-acre parcels or 568 bodies consuming water at 120 gal per day for a 68,160 gal consumption level per day. Because our area is so desirable, we have developers attracted to our area that are aggressively pursuing the high-density development. High density development should be required to have a water use footprint equal to current zoning. With the water shortages we are already facing high density development will decrease water availability faster than currently lower density zoning causing property values to ultimately drop due to water shortage. The Verde Valley has been rated as most desirable area to live recently on a national level. Private water vs municipal water use has everything to do with controlling the level of high-density new development and water availability especially when water systems and drought conditions can affect home values.

Are there other factors, such as water rights policies, which would affect property values differently here versus other areas of the state?

Verde Region

- There might be a rural population that this is a concern for. I can't weigh in for that.
- The adjudication that will be taking place in our future plays a role in our property values, although I don't believe the seriousness is completely understood by property owners yet. My opinion is that the state's water is wasted throughout the state by numerous entities.
- Again, I think water rights or something that the general public has a little knowledge about. I do think the Verde River being in the Verde Valley does impact property values positively. It means we have greater access to outdoor recreation specifically boating which is unique to our community.

Santa Cruz Region

- Changes (further restrictions) to current water right policies would most likely decrease the Santa Cruz AMA property values (as most of the areas development has been limited already based on limits imposed by both historic and current laws regulating grandfathered water rights and groundwater usage limitations).
- I'm sure the ability of farmers to use water wisely has a connection to overall water availability in our communities, however I can also say that if farms were curtailed to the point of not planting crops etc., the view shed would also be significantly impacted.
- In an AMA

Comments provided in Round 2

To help us better understand the adjustments you made to your Round 1 responses, please tell us what motivated you to respond differently? If you made no adjustments, please skip to the next question.

Verde Region

- The recent fires have heightened the awareness of water issues making the scarcity more likely to impact prices.
- I feel and see the current market has had somewhat of a slight correction.

Comments provided in Round 3

To help us better understand the adjustments you made to your Round 1 or 2 responses, please tell us what motivated you to respond differently?

Verde Region

- An increase in awareness of the impacts of decreased water levels would impact price regardless of the water source.
- I adjusted my estimation on the sale price of the example property, within the last month, prices have adjusted to the market.
- My reduction in pricing is based on current market changes. Since the last survey we have had a slowing of appreciation and listings are no longer able to push the price high and get offers. Also, since the last survey we have had a record heat wave and experienced a record number of wildfires in multiple communities in our area. Combined with reservoir levels reporting record lows in the region it is reasonable to assume that this has had a greater impact on sales that in past years during the same season.

Round 1 Survey

Residential property and groundwater Delphi study

*1) This project will help explain the potential changes in real estate values for residential properties located within the Verde and Upper Santa Cruz areas under three scenarios, low, moderate, and high groundwater level reductions relative to a baseline. These maps provide the frame of reference for the Verde and Upper Santa Cruz areas defined in this study. Which region is your primary sales region? **

( )	Santa Cruz Region	( )	Verde Region

*2) At a time when rainfall and snowpack are sufficient to supply reservoirs, groundwater, and waterways, such that there are no dry or drought conditions and no drought-related restrictions are needed (referred to as the '***baseline***' throughout the rest of the survey), what would be the approximate selling price for such a house in the Santa Cruz area?*

Hypothetical property: A single-family home of 2,000 square feet of living space with a one-car detached garage on one (1) acre of land. The house and garage are 15 years old and have been reasonably well maintained.

	Served by municipal water systems	**Served by private water systems (for example a well)**
Baseline hypothetical residential property value		

*3) At a time when rainfall and snowpack are sufficient to supply reservoirs, groundwater, and waterways, such that there are no dry or drought conditions and no drought-related restrictions are needed (referred to as the '***baseline***' throughout the rest of the survey), what would be the approximate selling price for such a house in the Verde area?*

Hypothetical property: A single-family home of 2,000 square feet of living space with a one-car detached garage on one (1) acre of land. The house and garage are 15 years old and have been reasonably well maintained.

	Served by municipal water systems?	**Served by private water systems (for example a well)?**
Baseline hypothetical residential property value		

4) Compared to the **baseline** *value of a hypothetical property with* ***municipal water systems*** *you reported above, would the selling price increase, decrease or stay the same given the potential change in water levels described in Scenario 1: Abnormally dry to moderate drought conditions?*

( ) Increase
( ) Decrease
( ) Stay the same

5) How much would you think the **baseline** *sales price would change? Please use dropdown box to report percent change.*
( ) 1
.
.
.
( ) 100

6) Compared to the **baseline** *value of a hypothetical property with* ***private water systems*** *(for example a well) you reported above, would the selling price increase, decrease or stay the same given the potential change in water levels described in Scenario 1: Abnormally dry to moderate drought conditions?*

( ) Increase
( ) Decrease
( ) Stay the same

7) How much would you think the **baseline** *sales price would change. Please use dropdown box to report percent change.*
( ) 1
.
.
.
( ) 100

8) Compared to the **baseline** *value of a hypothetical property with* ***municipal water systems*** *you reported above, would the selling price increase, decrease or stay the same given the potential change in water levels described in Scenario 2: Moderate to severe drought conditions?*

( ) Increase
( ) Decrease
( ) Stay the same

9) How much would you think the **baseline** *sales price would change? Please use dropdown box to report percent change.*
( ) 1
.
.
.
( ) 100

10) Compared to the **baseline** *value of a hypothetical property with* ***private water systems*** *you reported above, would the selling price increase, decrease or stay the same given the potential change in water levels described in Scenario 2: Moderate to severe drought conditions?*

( ) Increase
( ) Decrease
( ) Stay the same

11) How much would you think the **baseline** *sales price would change? Please use dropdown box to report percent change.*
( ) 1
.
.
.
( ) 100

12) Compared to the **baseline** *value of a hypothetical property with* ***municipal water systems*** *you reported above, would the selling price increase, decrease or stay the same given the potential change in water levels described in Scenario 3: Severe to extreme drought conditions?*

( ) Increase
( ) Decrease
( ) Stay the same

13) How much would you think the **baseline** *sales price would change? Please use dropdown box to report percent change.*
( ) 1
.
.
.
( ) 100

14) Compared to the **baseline** *value of a hypothetical property with* ***private water systems*** *you reported above, would the selling price increase, decrease or stay the same given the potential change in water levels described in Scenario 3: Severe to extreme drought conditions?*

( ) Increase
( ) Decrease
( ) Stay the same

15) How much would you think the **baseline** *sales price would change? Please use dropdown box to report percent change.*
( ) 1
.
.
.
( ) 100

16) To help us better understand your responses to the preceding questions, please tell us how the difference between municipal and private water systems affects (or does not affect) the selling price of houses in the area?

_____

17) To help us better understand your responses to the preceding questions, please tell us which of the drought conditions (quantity, quality, viewshed, etc.) are most likely to affect (or not affect) the sales price?

_____

18) Tell us if you think that the influence of the municipal versus private water system or the drought conditions is unique to the Santa Cruz area. Would the effects to sales prices be different in other communities within the state?
( ) Yes
( ) No
( ) Not sure

19) Please explain how changes in water systems and drought conditions would affect property values differently in the Santa Cruz area versus other areas of the state.

_____

20) Tell us if you think that the influence of the private versus municipal water system or the drought conditions is unique to the Verde area. Would the affects to sales prices be different in other communities within the state?
( ) Yes
( ) No
( ) Not sure

21) Please explain how changes in water systems and drought conditions would affect property values differently in the Verde area versus other areas of the state.

_____

22) Are there other factors, such as water rights policies, which would affect property values differently here versus other areas of the state?
_____

23) Your response is very important to this effort and will be combined with those of other professionals who are participating in this survey. We will provide you the summarized results and ask you a few follow-up questions this May. The process will be repeated in a brief, final round to address any needed clarifications in the results. After the completion of the third (final) round, you will receive the stipend. To ensure receipt, please provide the name and address we should use for mailing purposes.

First name: _____
Last name: _____
Mailing address: _____
Phone number: _____

Thank You!