Impact of Lake-Level Reductions on Lake Conroe Area: Lake Area Property Values, Property Tax Revenues and Sales Tax Revenues

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Prepared for
Montgomery County

July 2012

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Bottom Line Summary

- The GRP scenarios are likely to impact lake-levels significantly. Lake-levels are expected to fall more than four feet below full pool 1.6 times more often in phase one than in prior periods, and increase to 8.5 times more often in phase four.
- Direct economic impacts are most likely to occur geographically near the lake.
- Residential properties in lakefront communities enjoy a 15% premium, which declines quickly with geographic distance.
- Residents in lakefront communities expect a 28% decline in residential property values, in which case losses in real estate values would amount to $1.1 billion in the area.
- For each foot of lake-level decline beyond the first two feet, retail trade revenue in the City of Montgomery decreases about $414,000 per quarter per foot, or about $1.6 million per year per foot.

Executive Summary

This research examines the impact of Lake Conroe lake-levels under various proposed water withdrawal scenarios on Montgomery County tax revenues. This research estimates: (1) the areas in Montgomery County in which property values, property tax revenues and sales tax revenues are most likely to be affected by lower lake-levels, and (2) the magnitude of those impacts. These fundamental questions are addressed in five areas: a review of lake-level study, a property value assessment, a sales tax revenue study, a survey of residents and interviews with business owners.

Review of Lake-level Study

The review of the Freese & Nichols lake-level study funded by SJRA provides an independent review that re-examines the projected impacts on water level, and identifies its primary strengths and weaknesses.

- The F&N report is based strictly on historical monthly lake-level records. It was found to be a reasonable (even conservative) projection of impact associated with the Groundwater Reduction Plan (GRP), however it is not an adequate planning model. The F&N results were used as the baseline for this research.
- The F&N results demonstrate significant impact on lake-levels. Lake-levels more than 4 feet below full pool have occurred only 2.8% of the time in the history of the lake, but are expected to occur 4.6%, 7.9%, 12.7% and 22.0% of the time in the future, progressively, under the Phase I to IV scenarios of the GRP. These increases represent potentially significant impacts on the lake community.

Property Value Assessment

The property value assessment seeks to provide a reference point for the impact Lake Conroe has on surrounding residential properties in terms of the amount of potential impacts and the geographic area of direct impact.

- Residential properties enjoy premium of around 15% in lake communities, which decays rapidly with distance becoming minimal at about 5 miles.

Sales Tax Revenue Study

The sales tax revenue study examines the extent to which lake-level reductions reduce sales tax revenues in government entities in Montgomery County, including the Cities of Conroe, Montgomery, and Willis.

- Quarterly retail trade revenues reported to the State Comptroller decline 11.5% (or $0.414 million per quarter or $1.6 million per year) in the City of Montgomery per foot of water in the lake (when lake-levels fall below two feet below full pool), but are not detectable in larger more diverse economies (The City of Conroe or Montgomery County) or more isolated economies (The City of Willis).

Survey of Residents

The survey of residents examines the anticipated impacts under future scenarios in the context of key factors expected to impact those perceptions. The survey data assess resident perceptions of the degree of property value reductions that likely to be experienced at lake-level reductions and durations that would result from the SJRA Groundwater Reduction Plan (GRP).

- While community resilience is reported at high levels, residents expressed considerable concern over the existing operational conditions associated with lack of local government control, ownership, groundwater policies and the lake as an alternative water source for the City of Houston.
- Respondents reported they expect future lake-levels to be lower than those expected under the F&N projections with worst-case conditions expected to reduce lake-levels from 6.3 to nearly 10.9 feet below full pool.
- Residents report being more than 3.5 times more likely to put their property on the market under the GRP scenarios in the future than they have been to date.
- Residents expect the overall impact of lake-level changes on residential properties in lake communities to be 28.2% or nearly $1.1 billion.
- All else is held constant, resident's concerns over operational control and perceptions of the GRP scenarios increase perceived impact by approximately 9.6% and 5.8%, respectively.

Interviews with Business Owners

Interviews with business owners examine the perceived impact of lake-level changes on local businesses.

- Recreational businesses report being greatly hampered when lake-levels drop below 2 to 3 feet below full pool.
- Many lake-restaurants are also located along the highway SH-105 corridor, which helps to limit losses.

Overarching Conclusions

- The local community is extremely resilient, with a diverse economy that is strongly associated with population growth in the area.
- Direct economic impacts of lake-level fluctuation occur primarily in the geographic area closest to the lake and most directly associated with retail trade activities.
- Population growth plays an important role in economic activity and water use, which suggest an urgency to diversify water sources beyond the historical sources that supported Montgomery County residents throughout the last century.
- Proactive water conservation measures should be encouraged immediately.
- Two areas of greatest expressed concern involve the lack of operational control by local city and county leaders, and the control exerted by the co-owners of SJRA and City of Houston. This suggests local governments should seek greater participation in lake matters and find mechanisms to exert their influence on operational matters.

Introduction

This research examines the impact of Lake Conroe lake-levels on Montgomery County property tax and sales tax revenues under various SJRA proposed scenarios to progressively withdraw larger amounts of water from the lake. As such, this research addresses the urgent need for independent objective information concerning important issues facing Montgomery County regarding water policy and strategic planning. The research addresses the most urgent needs in this regard (as currently understood) in hope of helping decision makers and local leaders make well-informed decisions. The lake-levels and durations projected for Lake Conroe in the Freese and Nichols study performed for the San Jacinto River Authority provide a starting point for this research.[1]

Background

Lake Conroe is one of the premiere assets of Montgomery County Texas. The lake is located seven miles NW of the City of Conroe. The lake was impounded in 1973 with an earthen dam about 11,300 feet in length with a height of approximately 80 feet (mid-point 30.3567 Lat, -95.56 Long).[2] While the lake is referred to as a constant level lake the actual water level in the lake has varied widely from as much as 205.61feet MSL (October 17, 1994) to as little as 196.17 feet MSL (January 11, 1989).[3] At extreme high pond the lake covers the northern approach to Walden Road Bridge, while at extreme lows the lake becomes generally treacherous for boaters, and many boatlifts are grounded in mud. The conservation pool of 201 feet MSL has a surface area of approximately 20,100 acres that extends into Walker County to the north, and contains approximately 416,200 acre-feet of water, of which 100,000 acre-feet can be withdrawn annually.[4] Each acre-foot is approximately 325,851 gallons of water, so 100,000 acre-feet per year is 89 million gallons per day. Lake Conroe's stated original purpose is for municipal water supply, industrial and mining uses, and was amended in 1987 to include non-consumptive recreational use.[2]

Montgomery County is one of the fastest growing counties in Texas and around the nation, but there is a serious problem—water. Historically Montgomery County has relied solely on ground water, but the current permitted use exceeds what the Lone Star Groundwater Conservation District has determined the aquifers in the county can replenish annually. Lone Star estimates that the county will require 154,000 acre-feet of water per year by 2040, but will limit ground water withdrawal to 64,000 acre-feet beginning in 2016.[5] Lone Star's proposal to make up for this approximately 90,000 acre-feet per year short fall requires existing and future water producers to reduce ground water pumping by 30 percent of 2009 use by 2016, and develop

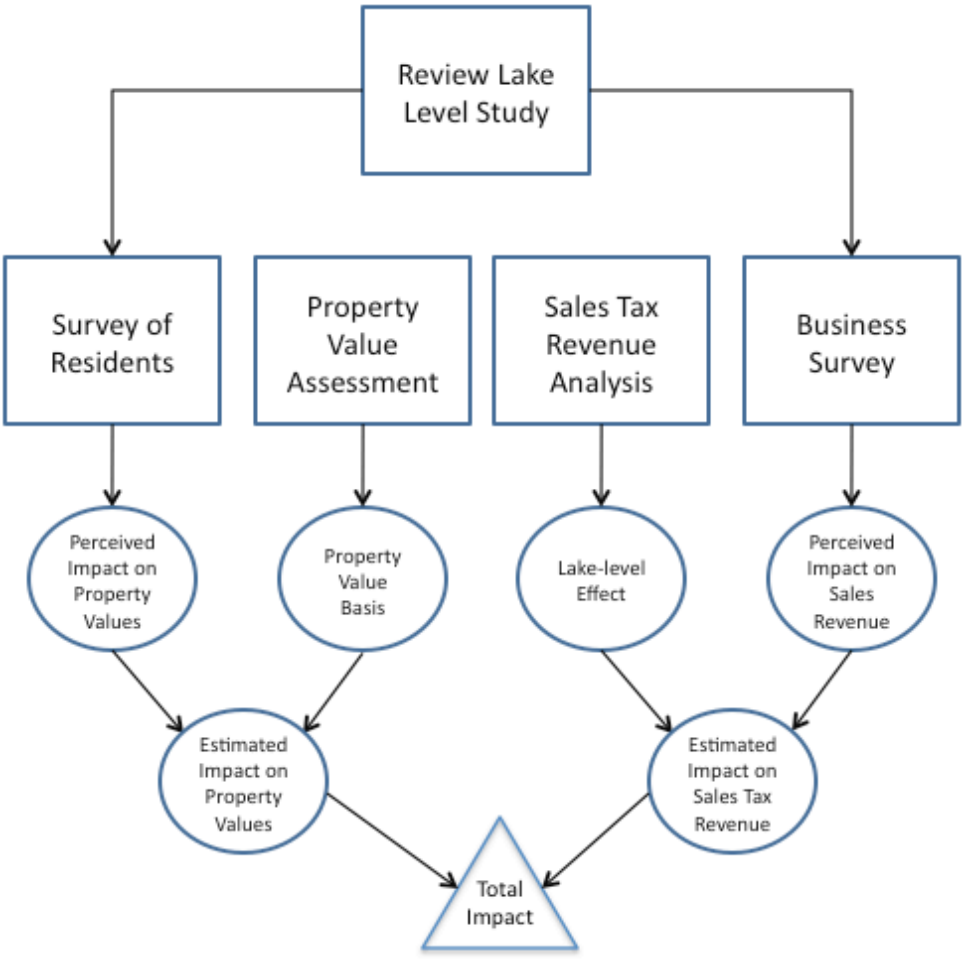
[1] Freese and Nichols Inc. (2010) Lake Diversion study for the San Jacinto River Authority
[2] Texas Water Development Board (2003) Volumetric Survey of Lake Conroe. Prepared for San Jacinto River Authority
[3] Freese and Nichols Inc. (2010) Lake Diversion study for the San Jacinto River Authority
[4] Texas Water Development Board (2003) Volumetric Survey of Lake Conroe. Prepared for San Jacinto River Authority
[5] TCB Inc, 2006 Regulatory Study and Facilities Implementation Plan for Lone Star Groundwater Conservation District and San Jacinto River Authority

alternative water sources to make up for lost ground water production. The use of surface water can be problematic for several reasons:

1. The largest single source of surface water in Montgomery County is Lake Conroe and San Jacinto River Authority (SJRA) and City of Houston own Lake Conroe water;[6]
2. surface water must be treated more than ground water; and
3. surface water requires a distribution system that does not exist today to connect surface water treatment facilities to existing local distribution systems.

The first problem requires that water suppliers in Montgomery County reach agreements with the San Jacinto River Authority and/or the City of Houston to acquire water rights. Meanwhile the initial costs (first phase) of the required infrastructure, in (2) and (3) above, have been estimated at of $480 million, with total cost of approximately $2.2 billion by 2045[5].

Figure 1 Elements of impact assessment and their relationships



In many ways the future of Lake Conroe is the future of Montgomery County. Lake Conroe has a major role in the local economy and real estate values. Lake Conroe plays a critical role in tourism and recreation, providing natural habitat for the fishery and waterfowl populations. And now under the GRP it is expected to contribute to the consumable

[6] The SJRA has completed an agreement with the City of Houston to use Houston's two-thirds ownership of Lake Conroe water to supply ground water users in Montgomery County who have elected to join SJRA's Groundwater Reduction Plan.

water supply in Montgomery County. Therefore considering strategies for the use of Lake Conroe water that may impact the lake-level requires thorough consideration by local government and business leaders. It is important that county leaders and residents understand the strategy and become "partners" with authorities in implementing the selected alternative(s). The selected alternatives will create infrastructure that will have to serve the county well into the future with limited adaptation. Failure is not an option; it's likely to be costly both initially and in ongoing operations; and the costs will be borne ultimately by county residents and businesses in increased local taxes (presumably to pay for bonds for construction), increased water rates, and potentially reduced real estate values either near the lake, and/or on land with limited access to consumable-water.

This research estimates:

(1) the areas in Montgomery County in which property values, property tax revenues and sales tax revenues are most likely to be affected by lower lake-levels, and
(2) the magnitude of those impacts.

This research examines five specific concerns expressed by community leaders by:

(1) reviewing the existing lake-level study conducted by Freese and Nichols for the San Jacinto River Authority,
(2) assessing Lake Conroe's impact on property values in the area,
(3) examining the sales tax revenue data for entities in the county to determine the extent to which historical lake-levels have been associated with business revenues,
(4) conducting a survey of residents to estimate the impact of projected lake-levels under future scenarios, and
(5) interviewing local business operators to validate sales tax impact estimates.

The interactions between these five components of the research are presented in Figure 1 above with further explanation of the five specific research objectives.

Study Objectives

1. **Review lake-level study**— Review the methodology employed in the SJRA lake-level study conducted by Freese and Nichols to determine the extent to which it is a suitable basis for determining the impact of SJRA's Groundwater Replacement Plan (GRP) on property tax revenues and sales tax revenues. This review examines the Freeze and Nichols report and the data used therein to provide detailed understanding of the estimation process used. The strengths and weaknesses of that approach, assumptions made and models employed are reported.
2. **Property value assessment**— The property value assessment examines the amount of potential loss in property values in terms of the assessed values of residential properties. The extent to which the location of a parcel near the lake impacts its value is evaluated in the

context of the characteristics of various properties, and estimates the premium associated with lake properties while statistically controlling for parcel and building characteristics.

3. **Sales Tax Revenue Study**—To what extent would lake-level reductions reduce sales tax revenues in Montgomery County, and the Cities of Conroe, Montgomery, and Willis. Similar to the property tax revenue assessment, this task estimates the amount of sales tax revenue associated with the lake-level effect. Specifically it seeks to associate historical sales tax revenue with historical lake-levels so that these associations can be used to estimate the sales tax revenue changes that can be expected from the lake-level changes anticipated under the GRP. These will be assessed in terms of geographic distribution and economic sector.
4. **Survey of Residents—**The survey of residents assesses the expected impact on residents as a result of the proposed withdrawal of water from Lake Conroe and reduction of lake-levels in the lake. The survey data will be used to assess the degree of property value reduction likely to be experienced at lake-level reductions and durations that would result from the SJRA Groundwater Reduction Plan (GRP). Participants were asked to recall the lowest lake-levels they have experienced and the kinds of impacts these levels had on them, their perceptions of the situations and the behavior and attitudes of their neighbors. These data benchmark the participant's expected behavior under lake-level scenarios in terms of reported behavior under the most similar conditions experienced. Participant expectation for each scenario is assessed for worst-case and most-likely scenarios. These scenarios and the historical worst-case is used to frame and estimate the property value impacts of lake-level reduction anticipated under the GRP.
5. **Interviews with Business Owners—**Interviews with business owners examine the perceived impact of lake-level changes on local businesses. Local businesses provide sales-tax revenue to the state Comptroller's Office and the Comptroller distributes these revenues to local government authorities after deducting a service fee. Hence understanding local business perception helps frame the potential impacts on the local economy. The business survey assesses the impacts on businesses under worst-case and most-likely conditions associated with each of the four GRP scenarios. These scenarios are placed in the context of historically experienced lake-levels.

Review of Lake-level Study

Texas A&M University was tasked to independently review the Freese and Nichols Study (hereafter F&N), identify its strengths and weaknesses, and provide some recommendations for future work.

- The F&N report is based strictly on historical monthly lake-level records. It was found to be a reasonable (even conservative) projection of impact associated with the GRP.
- The F&N results demonstrate significant impact on lake-levels, with lake-levels that have occurred only 2.8% of the time in the history of the lake, expected to occur 4.6%, 7.9%, 12.7% and 22.0% of the time in the future under the Groundwater Reduction Plan (GRP) scenarios. These increases represent potentially significant impacts on the lake community.
- For future planning purposes, a more comprehensive study is recommended. Such a study should account for current and projected hydrologic changes associated with urbanization and sedimentation, and potential authorized usage beyond the volumes associated with the GRP. It should also provide a range of estimates that are conditional upon levels of water conservation, seasonal variation and that account for uncertainty.

Given that drought will continue to be an issue for Lake Conroe, a comprehensive study aimed at predicting and planning for future drought scenarios is recommended.

Basic process

The original study data were obtained from Freese & Nichols, including all the working spreadsheets and macros. All available sources of data were obtained and crosschecked to verify that the best data available were used in the analysis. All the steps and calculations were checked thoroughly. A series of "sensitivity" tests were run to see how the results may differ with simple modifications to the methods; e.g., if lake volume from 1996 were used, if spills were not recovered, if evaporation had differed, and so forth. Finally, specific examples of past events were examined in detail to provide specific demonstrable examples of potential impacts.

Basic lake hydrology

Lake Conroe had a volume capacity of 430,260 acre-feet at the time it was built. Between the years of 1974 and 2008, Lake Conroe received a predicted 74,810 acre-feet per year from rainwater falling directly on the lake surface and an additional 175,755 acre-feet per year from upstream tributaries in an average year. An estimated 85,088 acre-feet evaporated, while approximately 172,489 acre-feet per year were sent downstream in the normal operations of the dam over the course of an average year. In relatively dry years such as occurred in 1980, inputs from rainwater and upstream flows decreased by 48% while outputs decreased by only 23%, which led to a net decrease in lake volume that year of 67,859 acre-feet.

Gradual sedimentation over time has effectively reduced the lake volume from a high of 430,260 acre-feet at the time of construction to 416,228 acre-feet in a 1996 survey conducted by the

Texas Water Development Board.[7] If the annual rate of sedimentation is relatively constant, the volume of the lake is predicted to decrease to 406,660 acre-feet by 2011 and will be approximately 384,975 by the year 2045 when the full 100,000 acre-feet of withdrawals are projected to begin. It is notable that the F&N study projections were based on the original lake volume not adjusted for sediment. Because of sedimentation, the GRP diversions from the lake will amount to an increasing proportion of the total lake volume.

Estimated Effects of Diversions Using Historical Data

Historical trends are useful to provide projections of lake-levels under the new scenarios of the Groundwater Reduction Plan (GRP). However, there are major limitations to the interpretation of these GRP projections because current pressures on water resources are not the same as they were in the past and future pressures are unlikely to be similar to either current or historical demands on resources. The rainfall deficit of a historical drought, if repeated today, would likely cause a worse impact on the lake than it did before. Consequently, superimposing the GRP scenarios on a past drought gives insights into how much lower lake-levels may have been at that time and how much longer the lake-levels would have remained low.

For instance, a drought that began in May of 1980 caused lake-levels to drop 3 feet. Levels did not recover to full pool for 1 year and 1 month. If that year had experienced 25,000 acre-feet of withdrawals, levels would have been about the same (down as much as 3 feet) and lasted about the same amount of time. While most of the recovery of losses could be made up by spilling less water out of the dam, SJRA is legally required to safely reduce lake pool level to 201.0 feet above mean sea level[8]. If that year had experienced 50,000 acre-feet of withdrawals, levels would have been down nearly 4 feet and lasted 6 months longer. If that year had experienced 75,000 acre-feet of withdrawals, levels would have been down about 4.5 feet and lasted 10 months longer. And finally, if that year had experienced 100,000 acre-feet of withdrawals, levels would have been down about 5.5 feet and nearly twice as long, an estimated 2 years before returning to full pool.

In short, under the GRP, future droughts will result in more frequent drops in lake-levels, lower lake-levels, and levels will remain low for longer periods compared with the same size drought in the past. Over the course of history from 1974 to 2008, lake-levels as low as 4 feet below full pool (197 feet above sea level) occurred only 2.8% of the time. In the future under the GRP scenarios such low levels are expected to occur 4.6%, 7.9%, 12.7% and 22.0% of the time. These increases represent potentially significant impacts on the lake community.

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[7] The 1996 study was part of the Texas Water Development Board (2003) Volumetric Survey of Lake Conroe. Prepared for San Jacinto River Authority.

[8] GRP diversions could potentially reduce lake-levels so that water previously spilled over the dam could be captured and retained.

Strengths and Weaknesses

The model used by F&N is based on the historical content from monthly observations (1973-2008). Lake volume is predicted from levels using the original contour survey. As mentioned previously, it does not account for sediment accumulations since the lake was built. However, according to F&N personnel, sediment accumulations were accounted for in the Water Availability Model (WAM) and still resulted in similar (yet higher) predicted levels. Note, the results from the WAM were not reported in sufficient detail to be included in the Texas A&M evaluation.

The proposed GRP diversions of 25,000, 50,000, 75,000, and 100,000 acre-feet were divided uniformly into monthly increments equal to 1/12 of annual withdrawals. This amount was then subtracted from historical values each month. This reflects the proposed plan to take water out uniformly to meet the lowest demand period of the year. Then any additional demand will be met using groundwater. This method is efficient because the water treatment plant will always receive a steady flow of water year-around.

The withdrawal amount for a given month is subtracted from the previous month's total volume first, then any spills and service outlet releases occurring that month are added back in. This assumes the GRP withdrawal for any given month can be foremost accounted for by spilling less water from the dam. This implies that spills are voluntary while service outlet releases are mandated by obligations to downstream users. The end result of the new policy is largely contingent on retaining the rights to keep the water in Lake Conroe. Because withdrawals free up storage capacity in the lake, spills that occur when the lake is too high will be reduced as the amount of time above full pool is reduced. Hence when the lake is below pool, all of the diverted water will contribute to lower lake-levels. When the lake is full at the onset of drought, the diverted water will be mitigated in part or in full by spilling less water. For that reason, rates of draw down in the early phases of drought would likely not deviate from historical trends.

In the F&N study, lake surface areas were compared with and without withdrawals to account for reductions in evaporative losses. This method assumes less water will evaporate if lake-levels drop. This approach was done to reasonably account for differences in evaporation with lake-level changes.

Recommendations for Future Planning

We recommend that a more detailed analysis be conducted that can better predict future drought scenarios. Such an analysis should use the best available input data of precipitation, stream flow, and evaporation. Importantly, using a model that incorporates naturalized flows rather than historical flows projected with current and future authorized uses, including the proposed withdrawals is recommended. It would be more dynamic to use daily data (rather than monthly) when available, to make precise predictions of time intervals when the lake will be below pool. Monthly predictions cannot accurately depict temporal dynamics when lake-levels are changing rapidly. The model should also account for shifting conditions of hydrology and sediment caused

by urbanization in the watershed, increased impervious surfaces, and the use of sediment control basins.

A major benefit of the above recommendations is that the predictive model could be made adjustable for "what if" scenarios, and thus can be used for planning purposes. For instance, it would be useful to test spill recovery ranging from 0-100% to show range of possible outcomes if not all spills could indeed be recovered (in contrast to the F&N approach where all spills were recoverable). It would also be useful to make predictions under conditions of potential drought restrictions on residents ranging from 0-30% to show range of possible outcomes if restrictions were implemented at varying levels and at varying points in time of the drought. And finally, it is prudent to demonstrate the uncertainty of predictions that are far off into the future, given unforeseen changes in both water resource availability and population growth. We recommend projecting a range of future conditions that shows such increasing uncertainty over time.

Property Value Assessment

The property value assessment began with the acquisition of the property tax records from the County Assessor's Office.[9] Records with duplicate or missing identification numbers were eliminated from the 207,976 residential parcels, leaving 192,864. Because a major part of our assessment involves geographic location of the parcel, 86,440 records without a physical address or records without important parcel data dealing with structures on the property (e.g., year built or square footage of dwelling) were eliminated leaving 106,424 records. Sixty of these records reported residences with more than 10,000 square feet of heated space. These records were eliminated as unrepresentative of the distribution of residences in the area. A Hedonic model of property value was developed that included the square footage of the structure, the year built, the existence of a garage, whether it had sold, the distance to the nearest secondary road intersection, distance to the lake's edge, and being in a lake subdivision.[10] Being in a lake subdivision increases the value by about 22%, but properties lose value quickly within lake subdivisions (about $35 per foot). So in just 1000 feet, a property is expected to lose ($35 *1000 = $35,000) about 73% of the premium for being in a lake subdivision. So properties in lake subdivisions that are not lakefront properties may have limited premium for being near the lake.

- The Hedonic model shows that residential properties located in lake subdivisions are valued on average around 15% higher than similar properties (i.e., all else held constant) located elsewhere in the county.
- This "lake subdivision effect" on residential properties decays rapidly with distance from the lake's edge, and properties elsewhere in Montgomery County exhibit minimal lake effect. The "lake effect" is minimal beyond 5 miles.

These findings are similar to prior research at other lakes, in terms of the shape and decline of the impacts of lake-levels on property values. For example, Earnhart (2001) found that there was a 5.8% premium on home values adjacent to water-based services.[11] Lake Austin and Travis found little change after 2000 and 4000 feet respectively.[12] And the Lake Martin Study stated that 57.9% of economic impact occurs within 1 mile of the lake and a total of 78.9% of economic impact occurs within 5 miles of lake.[13] In all cases the relationship is found to be curvilinear and decay rapidly with distance, while the amount of the effect varies with unique circumstances.

[9] Property tax records provided by Montgomery County Appraisal district included tabular files on improvements, owner, land, property, sales and segments. Also provided by MCAD were associated GIS files for the county that included parcels, water bodies, roads, and city and special district boundaries

[10] The hedonic method is used to identify a property's price or value based on structural characteristics and external factors.

[11] Earnhart, D. (2001). Combining Revealed and Stated Preference Methods to Value Environmental Amenities at Residential Locations. Land Economics, 77, 1, 12-29.

[12] RCLCO (2011) Lake Travis Economic Impact. Lansford Jr., Jones, L.L. (1995) Marginal Price of Lake Recreation and Aesthetics: An Hedonic Approach. Journal of Agriculture and Applied Economics, 27(1):212-223.

[13] Southwick Associates, Inc. (2010) Effects of Increasing Duration of Summer Pool and Level of Winter Pool on Recreation Use and Selected Economic Indicators at Lake Martin, Alabama

Sales Tax Revenue Study

Several data sources at the state and federal level were used to determine the impact of lake-levels on the local economy surrounding Lake Conroe. This local economy is largely retail in nature, consisting of restaurants, retail stores, convenience stores, and water-related entertainment such as boat rentals, marinas, and docks. The retail sector serves as the closest comparable to predict the impact of lake-levels on the retail sector.

Due to the proprietary nature of individual businesses revenue report to the state, the best available data was obtained from the Texas State Comptroller's Office related to impact on the retail sector in the Lake Conroe area. This sales tax revenue data is available on a quarterly basis back to 1984. In addition to the revenue data, U.S. Census data at the city and county level were also included in the model. Since the Census data is not released on quarterly basis, missing data points were interpolated based on annual population trends to match the quarterly sales tax revenue data. The model was calibrated and multiple tests were conducted to ensure that the model was statistically significant. In other words, the model was rigorously tested to determine whether there was a relationship between the lake-levels and the retail sales tax revenue.

A time series regression was fit in simple linear fashion, to the quarterly retail trade revenues from 1984 to 2009. The parsimonious model has four effects. The significant effects are summarized in Table 1. The model accounts for the retail trade revenues associated with the population of the City of Montgomery, the economic context of unemployment in the State of Texas, and the seasonal adjustment of retail trade one year ago (four quarters in the past). The population effect accounts for most of the variance associated with an exponential trend in the growth of the local economy over time, while the rate of unemployment in Texas and prior year retail trade account for the fluctuations associated with the context of the regional economy and periodicity of seasonal variation. All the elements of the model are statistically significant ($p < .05$) and the model as a whole accounts for more than 61 percent of the observed variation ($R^2 = .615$) and is statistically significant ($p < .001$). Time series data afford the

Table 1 Time series regression of quarterly retail trade revenues in the City of Montgomery for 1984-2009

	b	Std Err	p
Population	12444.1	2665.8	0.000
Unemployment (TX)	-451665.700	171757.700	0.010
Retail Trade (seasonal)	0.342	0.092	0.000
Lake Level	-413898.400	198437.400	0.040
Lake Level Squared	-137534.100	53099.320	0.011
Number of obs=		103	
F(5, 96) =		31.24	
R-squared=		0.615	
Adj R-squared =		0.595	
Prob > F=		0.000	

analysis of causality. Lake-levels were not found to be a function of prior retail trade, while retail trade is a function of prior lake-levels. Hence, this analysis was able to statistically establish (by employing Granger's test of Causality) that prior lake-level is a causal factor in the retail trade of the present, but not the other way around.

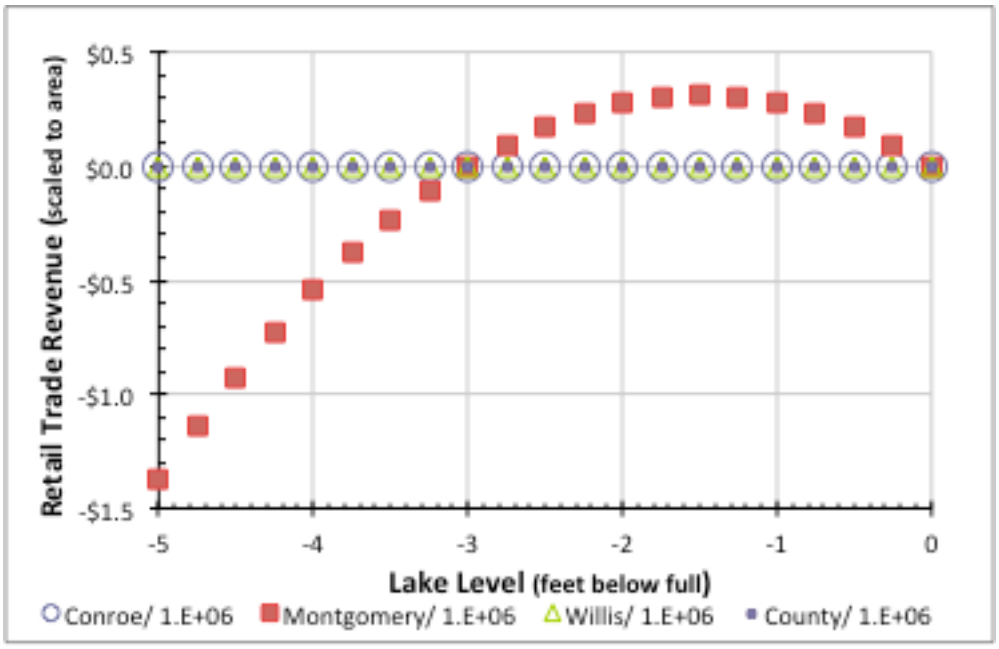
- The analysis of this retail trade data for all financial quarters since 1984 indicates that as lake-levels decline from full pool, retail trade revenues decline 11.5% per foot of lake-level drop in the City of Montgomery (or approximately $.414 million of the $3.6 million local economy each quarter).

These results indicate a curvilinear impact with lake-level declines less than two-feet below full pool increasing retail trade slightly, while reduction beyond two-feet below full pool decline rapidly, exceeding $1 million per quarter at 4.5 feet below full pool. Because the data analyzed herein include historical lake-level to almost five-feet below full pool, interpreting these results beyond the historical low lake-levels projects the outcome beyond the available empirical evidence.

- The models for the County of Montgomery, and the Cities of Conroe and Willis are similar in every respect except that lake-level is not directly related to quarterly retail trade revenues.

Lake-level impacts are not detectable in the economically more diverse economies and geographically more distant economies of the City of Conroe, the City of Wills, and Montgomery County. These trends are summarized in the adjacent figure on lake-level effect on quarterly retail trade revenues. Conroe and Willis both benefit from the proximity to and traffic from Interstate 45. At the county level, the size and impact of the Lake Conroe retail sector pales in comparison to the retail clout of The Woodlands.

Figure 2 Lake-level effect on quarterly retail trade revenues



Consistent with other lake-level studies, the effect is curvilinear, which limits the impact for the top two feet of water in the lake, and the impact becomes more dramatic from two to four feet below full pool. In the Lake Martin Study, recreational use was equal to 4.4 percent of the total

regional economy. In other words, there will be an impact, but it will likely be small as it relates to recreational use, and also localized due to the businesses directly affected by the lower lake-levels. In the Lake Lanier Study, despite the current economic downturn, the disposable incomes around the lake are higher on average than in the metropolitan area, suggesting that the economic impact is not due to the economic downturn, but more likely due to the low lake-levels.[14]

It is difficult to determine impacts for lake-levels in excess of four feet below full pool, because these levels have rarely occurred until this year (2-3 times historically depending on the temporal scale).

- These findings suggest that the levels of impact would continue to increase rather than decrease or become negligible.

While $413,898 per quarter per foot may not seem like a significant impact, taking into account the small business nature of the local economy, the magnitude of this impact across businesses can be detrimental to the lakeside economy. Moreover, this amounts to more than $1.6 million per year in lost sales tax revenue in the City of Montgomery alone for each foot of water in the lake beyond two feet below full pool.

[14] Bleakly Advisory Group Inc., Bruce A. Seaman, PBS&J Inc. (2010). Lake Sidney Lanier Economic Impact Analysis. Prepared for the 1071 Coalition.

Survey of Residents

The survey of residents was intended to provide insight into the public perception related to the impacts of lake-level fluctuations on the community in the future. The survey enhances our understanding of the meaning of the anticipated lake-level changes associated with the GRP. The survey of the residents in the area provides context to improve decisions by public and private entities and the general public. A summary of methods, the questionnaire, and resident responses are presented in the appendix.

Lake Experience

The first few questions were intended to be a touchstone in real experiences in the community. These questions were designed to provide an experience basis to the respondent's perspective, perceptions and behaviors. These questions began with open-ended questions about the most important issues facing the area and Lake Conroe respectively. These open ended responses provide "free-response" pertaining to the extent to which people in the area see lake-levels and associated issues are important to local residents. Respondents were also asked to provide the type and frequency of lake use, as well as any past disruptions of activity associated with lake-levels. These questions were conceived of as real life touchstones for responses, about future impacts, behavioral adjustments and perceptions. For example, what does it mean when a respondent reports the "worst experience" they have had at Lake Conroe. However, with the drought/lake conditions this year, the "worst conditions" reported reflected the 2011 experience.

Resilience

Resilience is the ability to detect and avoid, deflect or absorb undesirable events in a community. The resilience in a community can provide stability in the face of undesirable community events that create strain, environmental stress, conflict and loss. The survey asked the respondents to rate their ability an eleven-point scale where zero is "not able" and ten is "extremely able" to: (1)"persevere/persist in spite of negative-unwanted events that occur," (2) "detect and avoid potential threats before they occur," (3) "recover from potentially disastrous/catastrophic events in a timely manner," (4) "be self-sufficient when the need arises", (5) "support your family and friends during crises," and (5) "actively participate in community events."

- Community resilience in the area is relatively high with people reporting support for family and friends (8.3), being self-sufficient (8.0), and persevering or persisting in spite of hardship (7.0) at the highest levels on average, while recovering from difficult situations (6.8), detecting and avoiding potential hazards (6.7) and participating in community activities (6.7) were reported at the lowest levels on average. The confidence interval suggests that 95% of the resilience responses were uniformly above 6.4 and above 7.8 when it comes to being self-sufficient and support for family and friends.

Community Concerns

The survey elicits community concerns in terms of the importance of lake-level stability, and concerns about existing conditions and operations. The importance of stability is rated on an

eleven-point scale, where zero is not important, and ten is extremely important. Concern is also rated on an eleven-point scale where zero is not concerned and ten is extremely concerned.

- Residents find it extremely important (9.2) that lake-levels remain as stable in the future as they have been in the past.

Concerns over operating conditions were elicited for six underlying lake conditions: (1) "Lake Conroe was built as an alternative water supply for Houston." (2) "The water in Lake Conroe is jointly owned by the City of Houston and the SJRA who operates the reservoir." (3) "Local government entities have no financial or operational control over Lake Conroe." (4) "The Lone Star Ground Water Conservation District will require large-volume users to reduce ground water use by 30% in the near future." (5) "Lake Conroe is a relatively shallow lake with a gradually sloping bottom, where modest lake-level reductions can result in dramatically receding shorelines." And (6) "Excess waters are released from Lake Conroe when the lake-level exceeds the full pool of 201 feet above MSL.

- Concern related to existing operational conditions is relatively high, with the exception of the release of water above full pool (5.2). This includes, the shallowness of the lake (8.4), the lack of local government (city or county) operational control" (8.3), the control/ownership of the water being with SJRA and the City of Houston (7.8), the Lone Star Groundwater Conservation District policies (7.7), and the Lake as an alternative water source for Houston (7.5).

Some respondents were finding out about some of the operational conditions for what appeared to be the first time. They were sufficiently concerned about these conditions of operation to mention them spontaneously in the closing open-ended item calling for additional comments.

- Some respondents spontaneously reported not knowing that Houston could take water from the lake in times of need. They indicated that they would not have purchased their property had they known.

SJRA Scenario Conditions

Respondents were asked their perspectives of San Jacinto River Authority's Ground Water Reduction Plan. First, the survey asked the extent to which the GRP "projections over estimate or under estimate the impacts of the groundwater reduction plan as you see it?" Second, they were asked to "rate your concern for the SJRA Groundwater Reduction Plan Scenarios to withdraw water from Lake Conroe?" And third, their perception of the conditions resulting from each scenario in terms of "worst case conditions, for example a severe drought," and "most likely conditions, expected in a typical year," in terms of how far below full pool will the lake-level go? And for how long will it remain at that level? One concern raised here is a meaningful way to express the GRP scenarios, which are expressed as 25,000 acre-feet per year, 50,000 acre-feet per year, 75,000 acre-feet per year and 100,000 acre-feet per year in the GRP. Because Lake Conroe covers approximately 21,000 acres when full, 25000 acre-feet is 1 foot 2 inches of water in the lake. Hence, one inch per month or one foot per year conservatively understates the withdrawal under the various scenarios, but is simple and provides clarity for the residents.

- Respondents generally perceived the impacts to be worse than SJRA projected. Respondents reported that they perceived the SJRA estimates of future impacts of the GRP scenarios to underestimate the projected impacts (between -2.9 to -3.7 feet).
- Concern related to the GRP scenarios ranges from 6.3 to 7.2, to 8.0 and 8.6 for the one-, two-, three- and four-feet per year scenarios, respectively.
- Respondents reported they expect future lake-levels to be lower than those expected under the F&N projections. Under worst-case conditions such as those experienced in 2011, they anticipate lake-levels from 6.3 to nearly 10.9 feet below full pool. Under most-likely conditions such as those that might be experienced in a typical year they expect lake-levels of 2.8 to 7.0 feet below full pool.
- Respondents also reported that they expect lake-levels to remain low longer than projected in the F&N analysis. Under worst-case conditions the perception suggests that the lake may stay at lower levels for twice as long as historically experienced and range from 9.6 to 13.7 months. While under most-likely conditions they perceive the lake-levels as ranging from slightly worse than their prior experience at just 5.5 feet below full pool to about double their reported experience at 9.9 feet below full pool.

Behavioral Response (Fight, Flight or Adapt)

The survey assessed people's "fight, flight or adaptive" actions in terms of 23 activities that including fight activities such as, "complain or dialogue," "meet with HOA," "contact local official (e.g., mayor, judge, legislator)," "write letter to editor," "organize public protest or petition", "contact Governor", "write Congressperson", "seek appraisal change", "hire lawyer", flight activities such as "consider or talk about selling property", "place property on market", "reduce asking price or accept less", "sell business", "sell property", and "move out," adapt activities including, "pray", "property repairs e.g., leaky faucets, flow restrictors)", "spend less time at lake", "use less water", "property renovations (adding catchments system or xeriscaping)", "pull boat from marina", "sell boat", and "change retirement plans." These activities were assessed in terms of their neighbor's and their own activities to date, and what they are likely to do in the future under the GRP. Indicator activities for neighbors and self to date, and for the future were extracted from the pattern of responses.

- Most respondents indicated that their neighbors report fight or flight activities such as contacting local officials (31.9%), putting their property on the market (55.3%), while many report taking adaptive action such as spending less time at the lake (27.8%).
- Fewer people report their own fight or flight activities of contacting local officials (7.5%) or putting their property on the market (9.1%) at lower levels, while their own adaptive actions such as spending less time at the lake (25.7%), seems to indicate people are already taking adaptive actions to some extent.
- Respondents expect their future fight or flight activities such as contacting local officials (29.8%) or putting their property on the market (32.3%) are likely to increase, while adaptive responses, like spending less time at the lake (24.3%) may be hard to reduce beyond what has already been done.

- Interestingly respondents report that their neighbor's activities at higher levels than their own, but anticipate that their own activities will be more like those of their neighbors as the GRP scenarios have their impact on lake-levels in the future.

Property Impacts

The survey assessed the perception of impact on property values in the neighborhood first by assessing the anticipated change in property values. "Some of your neighbors may have put their property on the market or even sold their property. What impact do you think the anticipated changes in Lake Conroe will have on property values in your neighborhood?" Respondents were allowed to estimate positive or negative impacts of between ±50 percent, where no impact equals zero.

- People report that the anticipation of lake-level changes has reduced property values by 28.2% for their neighborhood, but feel the controversy to date has only reduced their property's worth by 17.4%. As the GRP scenarios have their impact on lake-levels, they expect the impacts to be more like those in the neighborhood in the future, 25.1%, or $1.1 billion in lake communities.
- Respondents also report willingness to pay around $205 per year to avoid the losses, and would purchase insurance for around $305 to avoid such losses in property value. For lake community residents, this indicates a $3.4 million impact annually, plus another $5.2 million annually for insurance.
- The perception of impact associated with future lake-levels has many components, including underlying property value, reported concerns about the owner/operators of Lake Conroe, the likelihood of taking flight actions, or adapting activities to lake-level changes.
    - After this context is taken into account, reported concern about SJRA/Houston ownership of Lake Conroe water contributes to increased perceived impact by $20,925 to $23,757 per unit, or 9.1% to 10.4%.
    - The impact associated with the perception of four GRP scenarios, after this context is accounted for, ranges from $9461 to $17213 per property in lake communities, or $160.8 million to $292.6 million in the lake communities as a whole (or about 4.1% to 7.5% of the total value of residential property in lake communities).

Interviews with Business Owners and Site Visits

Further solidifying the model results are the site visits and interviews with business owners. In reinforcing the time series model results, most marinas interviewed said that two feet below full pool is a level at which patrons report beginning to have minor problems with boating and accessibility on Lake Conroe. At four feet below full pool, these problems become a significant financial burden. A five-hour tour of the lake strengthened the residential survey results via firsthand observations. Homes on smaller inlets are unable to use their docks at two feet below full pool. At four feet below, many homes and businesses have areas below and around their docks that have been dry long enough that vegetation can easily be viewed growing from their new, yet unwanted, beachfront.

- Interviews with individual businesses revealed the likelihood that a small impact and/or a prolonged impact due to the low lake-levels will have a detrimental impact on the local economy.

Prior to 2011, low lake-levels had no significant impact on businesses based on interviews. Additionally, the historically low lake-levels in 2011 occurred after the summer busy season, indicating that the impact may be understated due to the lower level of lake traffic.

Many of the local restaurants do not have high profit margins as long-standing independent businesses. While they may be able to withstand a down economy, the low lake-levels may be enough to put them out of business.

- Recreational businesses report being greatly hampered when lake-levels drop below 2 to 3 feet below full pool.

Moreover, for many of the water-based services (marinas, rentals, storage, and related boat and recreational services), the cost for dredging docks to adapt to the low lake-levels is an unplanned business expense that can sway the decision to relocate versus dredge. The underlying reason is that if the lake-levels continue to drop, then it means marina owners would need to continue to dredge periodically. The Lake Detroit study reinforces this point in that unstable lake-levels cause people to seek other areas to develop their businesses and social relationships. Underlying this result is the fact that business planning is based on multiple years and a need for consistency.

Two interesting anecdotes came from interviews with the Lake Conroe Fire Department. Amongst all this negative information related to low levels is a silver lining: the emergency services district has noticed a drop in drunken boating arrests because the lake is no longer easily navigable by boat in the areas surrounding the restaurants with liquor licenses and, in some cases, they are inaccessible. Given the difficulties of navigating a boat due to low lake-levels, the combination of boating, low lake-levels and alcohol has led to people opting not to drink and go boating compared to previous levels. Another anecdote is that the Lake Conroe Fire Department can only assist if there is an emergency. If the boat runs aground due to the low lake-levels but there is no emergency, then the only thing the responders can do is call a boat towing company on the lake. Part of the problem is that the lake's depth toward the end of the summer busy

season was only 2.4 feet 150 feet from shore. The low lake-levels have resulted in fewer drunken, impaired boating citations as well as improved the bottom line for boat towing companies.

On the day we spent time on the lake, the distance from the side of the boat to the fixed docks near the retail area on State Highway 105 was 46 inches. This means that in order to access the dock requires scaling 46 inches from the boat to get onto the dock. Given the median age around the lake indicates an older, but mobile, population, it is highly unlikely that continued low lake-levels will encourage people to access this area by boat.

- Fixed dockage can become inoperative for elderly or disabled users even before the docks are technically dry due to the distance between the dock and the boat.

Once a person makes the decision to go somewhere by car, there are any number of places that they can go to in the entire area, which means they are no longer limited to lakeside restaurants. Conversely, a person does not need a boat to patronize any of the restaurants with the existence of SH-105.

- Many lake-restaurants are also located along the highway SH-105 corridor, which helps to limit losses.

For instance, one restaurant was packed during a weekday lunch hour, with no boats besides the one I was on going to the restaurant. The restaurants seem to be relatively stable given that they are still accessible via SH-105.

We also had the opportunity to speak to a diverse group of stakeholders by attending the Lake Conroe Association/Greater Conroe Chamber of Commerce Networking Breakfast in August of 2011. The people in attendance ranged from realtors, insurance agents, printers, cleaning services, financial services, and a variety of other sectors. In speaking with several people in service industries located near Lake Conroe, they had difficulty determining what impact, if any, the low lake-levels had on their businesses. This group of professional services would not likely see any immediate impact until people started moving away from Lake Conroe due to their inability to enjoy the lake.

The major, direct impact due to low lake-levels from a business standpoint are the marinas around the lake. For this reason, interviews with marinas were vital to determine what the retail data from the Comptroller's Office could not assess due to its aggregated nature. All the marina owners interviewed stated that there was no obvious impact from previous low lake-levels compared to 2011. The interviews yielded multiple perspectives that all pointed to the same conclusion: another year of low lake-levels would significantly impact their businesses. Information from the interviews showed that marina revenues were down from eight percent to 50 percent, and one store affiliated with a marina reported a 95 percent drop in revenue. Several marinas reported slips and docks that were rendered useless due to the low lake-levels. Many

marinas spent anywhere from a few thousand dollars to over $300,000 for dredging to improve accessibility to their docks.

Marinas reported that long-term low lake-levels would cause many of their tenants to either sell their boats or relocate to another lake. When someone chooses to relocate their boat to another lake, it means less money spent at local gas stations, restaurants, and ancillary services. The low lake-levels do not necessarily mean that people choose to store their boats at local marinas instead. Boat storage in some cases is inaccessible due to the low lake-levels; at least one marina reported that only 25% of their storage capacity was usable and another marina reported a 60% drop in storage compared to previous years. In some cases, the low lake-levels resulted in people breaking their contracts with marinas because they were paying for services they couldn't use due to the low lake-levels. One anecdote was that the only industry related to boats showing an increase is the boat trailer industry as people move their boats to lakes that have stable levels.

The coping mechanisms for how marinas deal with the drop in revenue is to increase expenses for maintenance, defer rent increases, and layoff employees. Most of the employees live in Montgomery County, and these layoffs may require employees to relocate to other counties. In the case of other marinas, it required completely closing the marina for a month or two due to inaccessible ramps. The draw of the lake used to be more regional in nature, drawing people from Houston, College Station, and other larger cities. The low lake-levels mean that only fishermen knowledgeable of the lake consistently use it because people unfamiliar with the lake-level fluctuations have beached their boats or hit tree stumps.

Residential Survey – Open-Ended Responses

This section focuses on an overview of general comments related to businesses around the lake as a result of an open-ended question from the residential survey. There were 235 respondents who answered the open-ended question. Of these 235 respondents, 37 (13.5 percent) of them mentioned businesses. A majority of the responses tie the fate of home values with the health of businesses based on the lake. Continued low lake-levels, therefore, have an impact on property values as well as sales tax revenue.

Many of these open-ended responses demonstrate that lakeside residents have a full understanding of the Lake Conroe economy and the interdependent linkages between the residents, the businesses, and the lake. In some cases, the response was directly related to a resident who also had a lakeside business. In other cases, the response was indirect related to observations of the impact on businesses by residents.

Direct Survey Responses to Business Impact

The direct survey responses to the business impact due to low lake-levels means that a respondent was directly affiliated with a lakeside business based on their response. This fact is important because it means the respondent provided the business information unsolicited. There

were two clear responses to this open-ended question that were business-specific related to the impact.

> *My side business is based on recreational usage of the lake. As the level drops, recreational usage drops, putting me out of business…*
> *As a marina owner, along with owning a house on the lake, the continual loss of water is extremely disconcerting. Our marina business is down two-thirds compared to previous years.*

These answers confirm the hardship encountered due to low lake-levels on existing businesses. More importantly, the answers address current impacts to local, individual businesses to address the human element that statistical models often cannot address.

Indirect Survey Responses to Business Impact

The indirect survey responses related to the low lake-levels' impact on businesses shows that the lake is not a body of water in as much as it is a way of life for many people that is integral to the health of the community. People see the lake as the focus for life in the area and low lake-levels have a far-reaching impact on that lifestyle.

One respondent provided this response:

> *The economic impact on the local business will directly affect the people living here... With little or no access to the lake, there go the marinas, boat dealerships, restaurants, and the draw to La Torretta will be directly affected as well...*

Another resident provided the following observation:

> *...If the businesses have to close here then use of the lake will lower and have an impact not only for residents like me but for recreational users from Houston. This lake is not a good lake for large water supply issues as it does not have an ability to recover quickly from water losses. Failure of the local economy will have a bigger impact than lack of water to Houston.*

One respondent had another in-depth answer related to their typical, previous use of the lake versus their recent use of the lake:

> *Since the lake has been going down our boat has been off the dock since May. Therefore, no boating, buying gas, bait, ice or anything on the lake. We normally go to S. end of lake for 1-2 meals (5 persons) per week at least 6 months a year. We no longer do this at all. No money is being spent on anything at any waterfront business! Daughter's family take the boat, joint ownership, to other lakes, but not on Lake Conroe. The boat ramps are closing fast, so not even the fishermen can use the lake. LAKE CONROE IS JUST TOO SHALLOW TO BE USED FOR A SERIOUS WATER SUPPLY AND HAS TOO SMALL, 455 SQ. MILES, OF A WATERSHED.*

These open-ended responses from the residential survey show that the business impact due to low lake-levels is not a perceived problem, but an actual problem. Residents around the lake patronize local businesses, but should these residents move away, businesses will either move away or close.

Summary of Business Impact

The business impact of low lake-levels has been addressed using three different approaches. The first approach used a time series statistical model to show the retail impact of low lake-levels, estimated at $413,898 per quarter per foot below full pool, up to four feet below. The second approach incorporated site visits and interviews to corroborate the model results based on the impact on individual businesses. The third approach, based on the results from the original residential survey, provided additional business insight as well as a big picture view of the role of businesses in the health of Lake Conroe's economy. These three approaches all point to the same conclusion that continued low lake-levels are not sustainable for local businesses.

Overarching Conclusions

- The economy of Montgomery County is strong, healthy, and diversified. This is evidenced by the fact that in economic downturns of the last two decades the unemployment rate in Montgomery County has been below that of the State of Texas, and the nation. While this does not mean the local economy is immune to economic downturn, it does mean that economic slowdowns are typically less severe and recover faster than other places. This is good news for local communities, but it also suggests that lake conditions are unlikely to have significant impacts on the county as a whole, as the impact associated with the lake are likely to be absorbed in the broader, larger and diversified economy of the county.
- These findings suggest that the direct economic impact of the lake on revenue is limited to the City of Montgomery and the retail trade sector. In addition, the analysis of residential property suggests that the lake's impact is significant but decays rapidly with distance. Taken together these suggest that the economic impact of the lake is limited by geographic and economic distance, which suggests that the economic impacts are expected to be most severe for lakefront, lake-based businesses. The more the business relies on the lake traffic for business the greater the risk from lake fluctuations that may occur in the future.
- Montgomery County grew throughout the last half of the 20th Century and continues to grow up to the present. This growth has placed the county as one of the fastest growing counties in the State of Texas and the nation in the 2000 and 2010 Census. This growth is fundamentally related to the economic health of the county, but this growth is not sustainable without water. The current reliance on historically used freshwater aquifers, as the sole source of water is rapidly becoming a limitation on the future growth of the area.
- This suggests an urgency to diversify the water sources available to county residents in order to continue to support growth. This includes identifying viable sources of water for the area whether surface water or aquifer water. Surface water may arise from water within the San Jacinto Basin (e.g., Lake Creek) or from nearby river basins such as the Trinity (e.g., Bedias Creek). Ground water may include existing producing aquifers, or aquifers with lower quality water, or water considered too expensive to produce. These sources of water may prove essential as a part of a long-term solution.
- In the near term, immediate proactive conservation efforts should be encouraged. Incentives that promote using less water should be developed to provide strong leadership in water conservation.
- Lake activities like living at the lake, and scenic beauty are among most mentioned activities at Lake Conroe. This means that Lake Conroe is more than a recreational destination, it is a community, a place to live with all the amenities of a lake. This is underscored by a strong perception of resilience.
- Two areas of greatest concern expressed by residents and business owners involve the lack of operational control by the local city and county officials, and the co-owners of San Jacinto

River Authority and the City of Houston. Meanwhile people most frequently mentioned the SJRA and Montgomery County as among those entities that should provide support for alternative water sources to avoid the impact(s) discussed. This suggests that the residents are uncomfortable with their current voice in matters pertaining to Lake Conroe and feel that local governments should have greater "operational control" over the lake. Local city and county governments should seek greater participation in lake matters, and find mechanisms to exert their views into operational matters. This may mean, negotiating an ownership in the lake, or working toward identifiable role on the SJRA board, or enhanced proactive participation in SJRA activities and decisions.

Survey of Residents Appendix

The survey instrument was developed in the spring of 2011. It was pre-tested with advisory board members and selected members of the community to assure that questions were clear and answers would provide meaningful insight into Lake Conroe lake-level issues and surrounding context. But more importantly the pretest helped assess the burden on respondents. In short, the pretests provided preliminary insight into the survey's benefit-cost ratio. One aspect of the survey that became clear during the pretests was that the survey instrument would communicate information to the respondents, as well as collect information from the respondents. In particular, many participants expressed concern and some surprise that local county and city authorities have no "operational control" authority with respect to the lake. Hence some sections of the questionnaire provide information to the respondent to assure that respondents start with a meaningful shared factual "knowledge-base" for their perspectives.

A simple random sample of one-in-ten properties within four miles of Lake Conroe was selected. A simple post card was mailed to each selected property address. This card asked that the recipient visit a web site to take the survey. A total of 1693 post cards were first mailed on July 28, 2011. A total of 65 cards were returned due to inactive or invalid street address, yielding a total of 1628 cards that were received by residents. Residents without computer or Internet connection were instructed to call Texas A&M University to participate. These respondents were read the questionnaire over the phone and their responses recorded for them by the interviewer. Respondents were prevented from forwarding the request for participation or taking the survey multiple times by password access and limiting the responses to one completion only, respectively. This did occasionally cause some confusion when both adult members of the household attempted to take the survey independently. Only the first response was allowed, and recorded. Almost immediately numerous requests for participation were received by our sponsors. To allow for the fullest possible participation and simultaneously protect the random sample from encroachment; an independent non-random survey was set up to be perfectly parallel to the random survey. Two differences had to be addressed: (1) the street addresses of the random survey participants were known, but the email addresses were not, and (2) the email of the non-random participants was known, while the street address was not. The email question of the random sample was changed to acquire the street address on the non-random survey to assure completely parallel information was obtained. The invitation to participate in the non-random "interested parties" survey was sent via email to 2546 Lake Conroe Association supporters in August 2011.

Follow-up cards were mailed to owner addresses on August 24, 2011, and a final mailing of a first class letter was mailed October 12, 2011. While only slightly more than one-in-five households in the survey responded, approximately 85% of those that started the survey finished it. The survey was closed on November 28, 2011. The random sample survey had an overall response rate of 21.7%, while the non-random interested parties survey had a response rate of eleven percent.

The survey responses were coded into 174 quantitative variables, and 16 qualitative responses. A difference of means test was conducted on all quantitative variables. The mean scores from the two independent samples (i.e., random and non-random) are significantly different 40 of 174 or 23.0% of the time. Among these significantly different mean scores, interested parties survey produce larger mean scores 31 of 40 times, or 77.5% of the time. This suggests that the two

surveys can be combined for analysis without concern for bias when the two surveys produce similar mean scores on underlying variables of interest (i.e., when the two samples produce similar means in that they are not significantly different), which occurs for most quantitative variables 134 of 174 times, or 77% of the time. Results are reported for the combined sample when no significant differences in the variables of interest are detected; however, when significant differences are reflected in the two samples, the random sample results are used to avoid the potential for bias associated with the "interested parties" survey.

Survey Responses

The survey responses are presented as three surveys. The Random Survey represents the randomly selected survey of properties within four miles of Lake Conroe. The Non-Random Survey represents the "interested parties" survey of Lake Conroe Association supporters. Completed surveys from both of these surveys are combined as All Surveys.

1) What is the most important problem facing this area today? (limit 25 characters)

Category (Top 10) Response Count	All Surveys	Random Survey	Non-Random Survey
Lake Conroe water levels	257	126	131
water supply	105	62	43
drought	80	46	34
economy	36	23	13
property values	28	19	9
Lack of Rain	28	16	12
Population Growth	14	9	5
lake usage	12	10	2
water usage	10	3	7
Water Exporting/Drawing Lake Water	10	7	3
Houston water diversion	10	5	5
Traffic	10	8	2

2) What is the most important problem facing Lake Conroe today? (limit 25 characters)

Category (Top 10) Response Count	All Surveys	Random Survey	Non-Random Survey
Lake Conroe water levels	284	145	139
water supply	106	73	33
drought	52	29	23
lake usage	28	17	11
Water Exporting/Drawing Lake Water	28	14	14
Houston water diversion	25	11	14
economy	23	19	4
lack of rain	23	14	9
property values	16	9	7
ecosystem/habitat	11	6	5

(3) How important is it to you that lake-levels at Lake Conroe remain stable in the future? A slider-scale was used where zero represents "not important at all" and ten represents "extremely important."

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	0.00	10.00	9.28	1.49	607
Random Survey	0.00	10.00	9.17	1.59	337
Non-Random Survey	1.00	10.00	9.42	1.34	270

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(4) In your experience with Lake Conroe, in what year were lake-levels worst for you (and your family)?

Year	All Surveys	Random Survey	Non-Random Survey
2011	358 (56.38%)	208 (58.76%)	150 (53.38%)
2010	1	1	0
2009	14	11	3
2008	39	16	23
2007	26	13	13
2006	44	17	27
2005	24	13	11
2004	6	4	2
2002	1	0	1
2001	6	(	3
2000	9	3	6
1999	2	1	1
1998	4	4	0
1996	1	0	1
1995	1	1	0
1994	4	1	3
1990	2	2	0
1989	7	3	4
1985	1	0	1
1974	1	1	0
Blank	84	52	32
Total Responses	635	354	281

(5) Which of the following was most important in making this the worst experience?

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	access to lake	234	39%	124	37%	110	41%
2	reduced aesthetic quality	72	12%	50	15%	22	8%
3	shallow lake	160	26%	84	25%	76	28%
4	poor water quality	25	4%	13	4%	12	4%
5	boat safety	52	9%	30	9%	22	8%
6	other (please specify)	63	10%	34	10%	29	11%
	Total Responses	606	100%	335	100%	271	100%

All Surveys: other	Random Survey: other	Non-Random Survey: other
All of the above	All of the above	All of the above
Impact on Property Value	Impact on Property Value	Both access to lake and boat safety
Hydrilla	Property Damage	Hydrilla
Property Damage	Availability of Water	Impact on Property Value
Availability of Water	Local economy	Property Damage
Flooding	Hydrilla	Availability of Water
Overall safety	Hurricane Ike	Flooding
Poor fishing		Overall safety
Both access to lake and boat safety		Poor fishing
Local economy		
Hurricane Ike		

(6) How far below full was the lake-level when it became an issue? (in feet) **The slider-scale constrained responses from nine feet below full pool to one foot above full pool.**

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	-9.00	1.00	-3.39	1.49	569
Random Survey	-9.00	1.00	-3.57	1.52	311
Non-Random Survey	-9.00	0.10	-3.17	1.43	258

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(7) About how long was the lake at that level? (in months, 0.1 Month = 3 days) The slider-scale constrained responses from zero to twelve months.

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	0.00	12.00	5.27	3.14	562
Random Survey	0.40	12.00	4.99	2.94	306
Non-Random Survey	0.00	12.00	5.60	3.35	256

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(8) People use Lake Conroe in a variety of ways. What are you (and your family's) favorite activities at Lake Conroe? (check all that apply)

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	picnicking	41	7%	19	6%	22	8%
2	boating	442	75%	227	70%	215	81%
3	fishing	296	50%	156	48%	140	53%
4	swimming	203	34%	87	27%	116	44%
5	water skiing	204	35%	100	31%	104	39%
6	scenic beauty	367	62%	201	62%	166	63%
7	nature	197	33%	108	33%	89	34%
9	living at the lake	464	79%	245	75%	219	83%
8	other (please specify)	38	6%	17	5%	21	8%

All Surveys: other	Random Survey: other	Non-Random Survey: other
All of the above	All of the above	All of the above
Dining on & around Lake	Dining on & around Lake	bird watching
Golf	Golf	Dining on & around Lake
camping	camping	investment
investment		golf
bird watching		

(9) How often are you able to do your favorite activities at Lake Conroe? (select response that best characterizes your use of the lake.)

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	Daily	210	36%	99	31%	111	42%
2	2-3 Times a Week	140	24%	80	25%	60	23%
3	Once a Week	86	15%	48	15%	38	14%
4	2-3 Times a Month	85	14%	53	16%	32	12%
5	Once a Month	21	4%	16	5%	5	2%
6	Less than once a Month	19	3%	11	3%	8	3%
7	2-3 Times a Year	9	2%	7	2%	2	1%
8	Less than Once a Year	17	3%	10	3%	7	3%
	Total Responses	587	100%	324	100%	263	100%

Statistic	All Surveys	Random Survey	Non-Random Survey
Minimum Response*	1	1	1
Maximum Response*	8	8	8
Average Response*	2.57	2.75	2.34
Standard Deviation*	1.74	1.79	1.66
Total Responses	587	324	263

(10) Have you ever had these activities disrupted due to lake-level?

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	Yes	510	87%	271	84%	239	91%
2	No	78	13%	53	16%	25	9%
	Total	588	100%	324	100%	264	100%

(10a) When was the most recent occurrence?

Answer	All Surveys	Random Survey	Non-Random Survey
2011	423 (66.61%)	219 (61.86%)	204 (72.60%)
2010	9	7	2
2009	6	5	1
2008	19	10	9
2007	6	3	3
2006	17	9	8
2005	8	4	4
2004	2	2	0
2001	2	2	0
1996	1	0	1
1989	1	0	1
Blanks	141	93	48
Total Responses	635	354	281

(10b) How long did that disruption last? (in months, 0.3 Months = 3 days) **The slider-scale constrained responses from zero to twelve months.**

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	0.30	12.00	5.15	3.01	489
Random Survey	0.40	12.00	5.45	3.08	257
Non-Random Survey	0.30	12.00	4.83	2.90	232

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(10c) How important/serious was this disrupted activity for you (and your family)? **A slider-scale was used where zero represents "not important at all" and ten represents "extremely important."**

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	0.90	10.00	8.15	2.24	504
Random Survey	0.90	10.00	7.96	2.40	269
Non-Random Survey	0.90	10.00	8.37	2.04	235

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(11) Please rate your ability to: **A slider-scale was used where zero represents "not able" and ten represents "extremely able."**

#	All Surveys	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	persevere/persist in spite of negative-unwanted events that occur?	0.00	10.00	7.02	2.84	568
2	detect and avoid potential threats before they occur?	0.00	10.00	6.65	2.90	568
3	recover from potentially disastrous/ catastrophic events in a timely manner?	0.00	10.00	6.84	2.73	563
4	be self-sufficient when the need arises?	0.00	10.00	7.98	2.44	566
5	support your family and friends during crises?	0.00	10.00	8.28	2.27	566
6	actively participate in community events?	0.00	10.00	6.72	2.73	568

#	Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	persevere/persist in spite of negative-unwanted events that occur?	0.00	10.00	6.94	2.88	314
2	detect and avoid potential threats before they occur?	0.00	10.00	6.45	3.04	313
3	recover from potentially disastrous/ catastrophic events in a timely manner?	0.00	10.00	6.80	2.75	310
4	be self-sufficient when the need arises?	0.00	10.00	7.96	2.44	313
5	support your family and friends during crises?	0.00	10.00	8.19	2.37	312
6	actively participate in community events?	0.00	10.00	6.70	2.79	313

#	Non-Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	persevere/persist in spite of negative-unwanted events that occur?	0.00	10.00	7.12	2.80	254
2	detect and avoid potential threats before they occur?	0.00	10.00	6.90	2.68	255
3	recover from potentially disastrous/ catastrophic events in a timely manner?	0.00	10.00	6.89	2.71	253
4	be self-sufficient when the need arises?	0.00	10.00	8.01	2.43	253
5	support your family and friends during crises?	0.00	10.00	8.39	2.13	254
6	actively participate in community events?	0.00	10.00	6.74	2.67	255

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(12) Please rate your concern for the following existing criteria and operation. A slider-scale was used where zero represents "not at all" and ten represents "extreme concern."

#	All Surveys	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	Lake Conroe was built as an alternative water supply for Houston.	0.00	10.00	7.47	2.97	572
2	The water in Lake Conroe is jointly owned by the City of Houston and the SJRA who operates the reservoir.	0.00	10.00	7.76	2.72	570
3	Local government entities have no financial or operational control over Lake Conroe.	0.00	10.00	8.32	2.61	568
4	The Lone Star Ground Water Conservation District will require large-volume users to reduce ground water use by 30% in the near future.	0.00	10.00	7.75	2.79	570
5	Lake Conroe is a relatively shallow lake with a gradually sloping bottom, where modest lake-level reductions can result in dramatically receding shorelines.	0.00	10.00	8.62	2.29	573
6	Excess waters are released from Lake Conroe when the lake-level exceeds the full pool of 201 ft. above MSL.	0.00	10.00	5.16	3.70	568

#	Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	Lake Conroe was built as an alternative water supply for Houston.	0.00	10.00	7.22	3.18	318
2	The water in Lake Conroe is jointly owned by the City of Houston and the SJRA who operates the reservoir.	0.00	10.00	7.52	2.89	316
3	Local government entities have no financial or operational control over Lake Conroe.	0.00	10.00	8.26	2.68	314
4	The Lone Star Ground Water Conservation District will require large-volume users to reduce ground water use by 30% in the near future.	0.00	10.00	7.69	2.85	316
5	Lake Conroe is a relatively shallow lake with a gradually sloping bottom, where modest lake-level reductions can result in dramatically receding shorelines.	0.00	10.00	8.43	2.46	319
6	Excess waters are released from Lake Conroe when the lake-level exceeds the full pool of 201 ft. above MSL.	0.00	10.00	5.33	3.72	315

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

#	Non-Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	Lake Conroe was built as an alternative water supply for Houston.	0.00	10.00	7.78	2.66	254
2	The water in Lake Conroe is jointly owned by the City of Houston and the SJRA who operates the reservoir.	0.00	10.00	8.06	2.48	254
3	Local government entities have no financial or operational control over Lake Conroe.	0.00	10.00	8.40	2.52	254
4	The Lone Star Ground Water Conservation District will require large-volume users to reduce ground water use by 30% in the near future.	0.00	10.00	7.83	2.72	254
5	Lake Conroe is a relatively shallow lake with a gradually sloping bottom, where modest lake-level reductions can result in dramatically receding shorelines.	0.00	10.00	8.87	2.03	254
6	Excess waters are released from Lake Conroe when the lake-level exceeds the full pool of 201 ft. above MSL.	0.00	10.00	4.94	3.67	253

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(13) Projections of the future always involve uncertainty. To what extent do these SJRA projections over estimate or under estimate the impacts of the groundwater reduction plan as you see it? A slider-scale was used where minus-ten represents "extremely underestimate" zero represents "none" and ten represents "extremely over estimate."

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	-10.00	10.00	-3.32	4.78	544
Random Survey	-10.00	10.00	-2.85	4.69	298
Non-Random Survey	-10.00	10.00	-3.88	4.83	246

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(14) Please rate your concern for the SJRA Groundwater Reduction Plan Scenarios to withdraw water from Lake. **A slider-scale was used where zero represents "not at all" and ten represents "extreme concern."**

#	All Surveys	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	10.00	6.58	3.30	560
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	10.00	7.55	2.78	561
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	10.00	8.34	2.55	558
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	10.00	8.84	2.55	556

#	Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	10.00	6.30	3.33	306
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	10.00	7.21	2.89	307
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	10.00	8.00	2.73	305
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	10.00	8.58	2.73	303

#	Non-Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	10.00	6.93	3.23	254
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	10.00	7.97	2.59	254
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	10.00	8.74	2.26	253
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	10.00	9.15	2.27	253

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(15) Under worst case conditions, for example a severe drought, how far below pool would you expect this plan to take the lake-level? (indicate your answers in feet, 0.5ft = 6 inches) A slider-scale constrained responses between 15 feet below full pool to one foot above full pool.

#	All Surveys	Minimum Response *	Maximum Response *	Average Response *	Standard Deviation *	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	-15.00	1.00	-6.32	3.56	537
2	2. Starting 2025: Withdraw 2 ft/yr	-15.00	1.00	-8.00	3.66	532
3	3. Starting 2035: Withdraw 3 ft/yr	-15.00	1.00	-9.51	3.82	532
4	4. Starting 2045: Withdraw 4 ft/yr	-15.00	1.00	-10.90	4.13	532

#	Random Survey	Minimum Response *	Maximum Response *	Average Response *	Standard Deviation *	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	-15.00	0.50	-6.27	3.73	290
2	2. Starting 2025: Withdraw 2 ft/yr	-15.00	1.00	-7.96	3.74	285
3	3. Starting 2035: Withdraw 3 ft/yr	-15.00	1.00	-9.43	3.80	285
4	4. Starting 2045: Withdraw 4 ft/yr	-15.00	1.00	-10.78	4.17	286

#	Non-Random Survey	Minimum Response *	Maximum Response *	Average Response *	Standard Deviation *	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	-15.00	1.00	-6.38	3.37	247
2	2. Starting 2025: Withdraw 2 ft/yr	-15.00	1.00	-8.05	3.57	247
3	3. Starting 2035: Withdraw 3 ft/yr	-15.00	1.00	-9.60	3.85	247
4	4. Starting 2045: Withdraw 4 ft/yr	-15.00	1.00	-11.02	4.08	246

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(16) Under most likely conditions, expected in a typical year, how far below pool would you expect this plan to take the lake-level? (indicate your answers in feet, 0.5ft = 6 inches) **A slider-scale constrained responses between 15 feet below full pool to one foot above full pool.**

#	All Surveys	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	-15.00	1.00	-2.83	2.68	531
2	2. Starting 2025: Withdraw 2 ft/yr	-15.00	1.00	-4.21	2.98	529
3	3. Starting 2035: Withdraw 3 ft/yr	-15.00	1.00	-5.59	3.41	527
4	4. Starting 2045: Withdraw 4 ft/yr	-15.00	1.00	-7.00	3.97	528

#	Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	-15.00	1.00	-2.87	2.75	288
2	2. Starting 2025: Withdraw 2 ft/yr	-15.00	1.00	-4.21	2.98	285
3	3. Starting 2035: Withdraw 3 ft/yr	-15.00	1.00	-5.58	3.34	284
4	4. Starting 2045: Withdraw 4 ft/yr	-15.00	1.00	-6.96	3.88	285

#	Non-Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	-15.00	1.00	-2.78	2.60	243
2	2. Starting 2025: Withdraw 2 ft/yr	-15.00	1.00	-4.21	2.97	244
3	3. Starting 2035: Withdraw 3 ft/yr	-15.00	1.00	-5.62	3.50	243
4	4. Starting 2045: Withdraw 4 ft/yr	-15.00	1.00	-7.05	4.08	243

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(17) Under worst case conditions, for example a severe drought, how long would you expect the lake-levels to stay near that level? (indicate your answers in months, 0.1 mo = 3 days) **A slider-scale constrained responses between zero and 18 months.**

#	All Surveys	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	18.00	9.55	4.92	534
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	18.00	11.07	4.81	529
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	18.00	12.39	4.87	528
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	18.00	13.73	5.07	525

#	Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	18.00	9.71	4.99	289
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	18.00	11.13	4.87	285
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	18.00	12.42	4.90	284
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	18.00	13.70	5.05	284

#	Non-Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	18.00	9.37	4.84	245
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	18.00	10.99	4.75	244
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	18.00	12.35	4.84	244
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	18.00	13.77	5.11	241

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(18) Under most likely case conditions, expected in a typical year, how long would you expect the lake-levels to stay near that level?(indicate your answers in months, 0.1 mo = 3 days) A slider-scale constrained responses between zero and 18 months.

#	All Surveys	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	18.00	5.49	4.28	522
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	18.00	6.86	4.34	519
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	18.00	8.37	4.68	519
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	18.00	9.88	5.22	519

#	Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	18.00	5.71	4.28	284
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	18.00	7.00	4.37	282
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	18.00	8.47	4.76	282
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	18.00	9.94	5.27	282

#	Non-Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	1. Starting 2015: Withdraw 1 ft/yr	0.00	18.00	5.22	4.27	238
2	2. Starting 2025: Withdraw 2 ft/yr	0.00	18.00	6.69	4.31	237
3	3. Starting 2035: Withdraw 3 ft/yr	0.00	18.00	8.26	4.58	237
4	4. Starting 2045: Withdraw 4 ft/yr	0.00	18.00	9.81	5.17	237

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(19) There are a number of things that people might decide to do as a result of changes in Lake Conroe. Which of the following activities have you heard about or observed your neighbors doing? (check all that apply)

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	Complain/Dialogue	408	75%	219	73%	189	76%
2	Meet with HOA	222	41%	122	41%	100	40%
3	Contact Local Official (mayor, judge, legislator)	196	36%	95	32%	101	41%
4	Write letter to editor	122	22%	62	21%	60	24%
7	Organize public protest/petition	133	24%	62	21%	71	29%
9	Contact Governor	92	17%	44	15%	48	19%
10	Write Congressperson	153	28%	78	26%	75	30%
11	Seek appraisal change	325	60%	172	58%	153	62%
12	Hire lawyer	51	9%	23	8%	28	11%
13	Consider/talk about selling property	403	74%	216	72%	187	75%
16	Place property on market	302	55%	161	54%	141	57%
17	Reduce asking price/accept less	271	50%	150	50%	121	49%
18	Sell business	127	23%	69	23%	58	23%
20	Sell property	321	59%	173	58%	148	60%
22	Move out	260	48%	141	47%	119	48%
24	Pray	249	46%	138	46%	111	45%
25	Property repairs (leaky faucets, flow restrictors)	152	28%	83	28%	69	28%
26	Spend less time at lake	357	65%	201	67%	156	63%
27	Use less water	262	48%	146	49%	116	47%
28	Property renovations (adding catchments system or xeriscaping)	56	10%	28	9%	28	11%
31	Pull boat from marina	336	62%	193	65%	143	58%
32	Sell boat	285	52%	161	54%	124	50%
34	Change retirement plans	252	46%	132	44%	120	48%
	Total Responses	546		298		248	

(20) Some of your neighbors may have put their property on the market or even sold their property. What impact do you think the anticipated changes in Lake Conroe will have on property values in your neighborhood? A slider-scale constrained responses between negative 50% and positive 50% where zero suggests no change from current value.

Survey	Answer	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	0 = Current Value Minus = Decline in Value Plus = Increase in Value	-50.00	50.00	-28.25	15.73	543
Random Survey		-50.00	29.10	-27.08	14.85	295
Non-Random Survey		-50.00	50.00	-29.64	16.65	248

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(21) Which of the following have you done? (check all that apply)

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	Complain/Dialogue	313	58%	160	54%	153	63%
2	Meet with HOA	123	23%	59	20%	64	26%
3	Contact Local Official (mayor, judge, legislator)	60	11%	22	7%	38	16%
4	Write letter to editor	16	3%	9	3%	7	3%
7	Organize public protest/petition	17	3%	10	3%	7	3%
9	Contact Governor	10	2%	4	1%	6	2%
10	Write Congressperson	42	8%	22	7%	20	8%
11	Seek appraisal change	166	31%	83	28%	83	34%
12	Hire lawyer	7	1%	3	1%	4	2%
13	Consider/talk about selling property	256	48%	137	47%	119	49%
16	Place property on market	49	9%	26	9%	23	10%
17	Reduce asking price/accept less	27	5%	16	5%	11	5%
18	Sell business	1	0%	1	0%	0	0%
20	Sell property	15	3%	8	3%	7	3%
22	Move out	17	3%	11	4%	6	2%
24	Pray	218	41%	127	43%	91	38%
25	Property repairs (leaky faucets, flow restrictors)	138	26%	75	26%	63	26%
26	Spend less time at lake	286	53%	163	55%	123	51%
27	Use less water	292	54%	169	57%	123	51%
28	Property renovations (adding catchments system or xeriscaping)	24	4%	13	4%	11	5%
31	Pull boat from marina	134	25%	71	24%	63	26%
32	Sell boat	51	10%	33	11%	18	7%
34	Change retirement plans	131	24%	71	24%	60	25%
	Total Responses	536		294		242	

(22) What impact have anticipated changes in Lake Conroe had on your property's value? A slider-scale constrained responses between negative 50% and positive 50% where zero suggests no change from current value.

Survey	Answer	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	0 = Current Value Minus = Decline in Value Plus = Increase in Value	-50.00	40.70	-17.39	14.45	535
Random Survey		-50.00	10.70	-17.17	13.41	290
Non-Random Survey		-50.00	40.70	-17.64	15.62	245

(23) In your view, which of the following agencies, organizations and entities should provide support for (or contribute to) alternative water sources in order to avoid the impact(s) you previously mentioned? (check all that apply)

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	Federal Government	99	18%	48	16%	51	21%
2	State of Texas	325	59%	158	53%	167	68%
3	Texas Water Development Board	348	64%	180	60%	168	68%
4	San Jacinto River Authority	451	82%	241	80%	210	85%
5	City of Houston	380	69%	210	70%	170	69%
6	Montgomery County	424	78%	215	72%	209	85%
7	City of Conroe	311	57%	156	52%	155	63%
8	Existing home owners	218	40%	111	37%	107	43%
9	New home builders	186	34%	90	30%	96	39%
10	End users of the water	302	55%	155	52%	147	60%
11	Lake Conroe users	275	50%	136	45%	139	56%
12	Others (please specify)	28	5%	9	3%	19	8%
	Total Responses	547		300		247	

All Surveys: other	Random Survey: other	Non-Random Survey: other
County Commissioners	County Commissioners	Lake Business Owners
The Woodlands	The Woodlands	The Woodlands
MCAD	MCAD	Commercial development
City of Montgomery	City of Montgomery	All lake users
All lake users	All lake users	LSGCD
MUD district 18	MUD district 18	MUD's
Industrial Companies	Industrial Companies	New Businesses
Lake Business Owners		Developers
Commercial development		Trinity river authority
LSGCD		
MUD's		
New Businesses		
Developers		
Trinity river authority		

(24) How much do you think an individual resident of Montgomery County should be willing to pay (per year) to avoid these impacts?

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*
All Surveys	0.00	5,000.00	204.15	384.71
Random Survey	0.00	5,000.00	219.95	459.81
Non-Random Survey	0.00	1,000.00	185.08	267.14

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(25) Suppose that there was insurance that could protect you and your family from losses in property value such as those discussed above, what would you be willing to pay per year for insurance to protect you and your family?

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*
All Surveys	0.00	9,999.00	305.72	672.61
Random Survey	0.00	5,000.00	284.92	606.21
Non-Random Survey	0.00	9,999.00	330.79	745.34

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(26) As the withdrawal of water from Lake Conroe takes place in the future, which of the following are you likely to do? (check all that apply)

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	Complain/Dialogue	316	59%	168	58%	148	61%
2	Meet with HOA	195	36%	96	33%	99	41%
3	Contact Local Official (mayor, judge, legislator)	187	35%	87	30%	100	41%
4	Write letter to editor	71	13%	26	9%	45	19%
7	Organize public protest/petition	105	20%	48	16%	57	23%
9	Contact Governor	118	22%	58	20%	60	25%
10	Write Congressperson	190	36%	97	33%	93	38%
11	Seek appraisal change	315	59%	160	55%	155	64%
12	Hire lawyer	45	8%	20	7%	25	10%
13	Consider/talk about selling property	249	47%	110	38%	139	57%
16	Place property on market	173	32%	88	30%	85	35%
17	Reduce asking price/accept less	97	18%	51	17%	46	19%
18	Sell business	23	4%	9	3%	14	6%
20	Sell property	243	45%	126	43%	117	48%
22	Move out	172	32%	90	31%	82	34%
24	Pray	206	39%	116	40%	90	37%
25	Property repairs (leaky faucets, flow restrictors)	130	24%	71	24%	59	24%
26	Spend less time at lake	290	54%	164	56%	126	52%
27	Use less water	257	48%	145	50%	112	46%
28	Property renovations (adding catchments system or xeriscaping)	47	9%	20	7%	27	11%
31	Pull boat from marina	127	24%	69	24%	58	24%
32	Sell boat	191	36%	97	33%	94	39%
34	Change retirement plans	174	33%	88	30%	86	35%
	Total Responses	535		292		243	

(26a) (if "consider/talk about selling property" was selected in question 26) As lake-levels consistently decline in the future under the Groundwater Reduction Plan scenarios, at what lake-level are you likely to engage in the activities you listed? (indicate your answers in feet, 0.5ft = 6 inches) **A slider-scale constrained responses between 15 feet below full pool to one foot above full pool.**

Answer: Consider/talk about selling property	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	-15.00	1.00	-4.39	2.84	244
Random Survey	-15.00	1.00	-4.85	3.12	108
Non-Random Survey	-15.00	1.00	-4.01	2.55	136

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(26b) (if "place property on market" was selected in question 26) As lake-levels consistently decline in the future under the Groundwater Reduction Plan scenarios, at what lake-level are you likely to engage in the activities you listed? (indicate your answers in feet, 0.5ft = 6 inches) **A slider-scale constrained responses between 15 feet below full pool to one foot above full pool.**

Answer: Place Property on Market	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	-15.00	1.00	-4.84	3.14	170
Random Survey	-15.00	-0.80	-5.37	3.34	86
Non-Random Survey	-15.00	1.00	-4.29	2.84	84

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(26c) (if "sell property" was selected in question 26) As lake-levels consistently decline in the future under the Groundwater Reduction Plan scenarios, at what lake-level are you likely to engage in the activities you listed? (indicate your answers in feet, 0.5ft = 6 inches) **A slider-scale constrained responses between 15 feet below full pool to one foot above full pool.**

Answer: sell property	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	-15.00	1.00	-4.95	3.26	237
Random Survey	-15.00	1.00	-5.34	3.48	122
Non-Random Survey	-15.00	1.00	-4.55	2.97	115

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(26d) (if "move out" was selected in question 26) As lake-levels consistently decline in the future under the Groundwater Reduction Plan scenarios, at what lake-level are you likely to engage in the activities you listed? (indicate your answers in feet, 0.5ft = 6 inches) **A slider-scale constrained responses between 15 feet below full pool to one foot above full pool.**

Answer: Move Out	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	-15.00	1.00	-5.30	3.52	167
Random Survey	-15.00	1.00	-5.85	3.87	86
Non-Random Survey	-13.30	1.00	-4.71	3.02	81

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(27) What impact are future changes in Lake Conroe likely to have on your property's value? **A slider-scale constrained responses between negative 50% and positive 50% where zero suggests no change from current value.**

Survey	Answer	Minimum Response *	Maximum Response *	Average Response *	Standard Deviation *	Total Responses
All Surveys	0 = Current Value Minus = Decline in Value Plus = Increase in Value	-50.00	50.00	-27.00	15.89	537
Random Survey		-50.00	50.00	-25.14	16.30	293
Non-Random Survey		-50.00	9.80	-29.22	15.13	244

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(28) Please help us better understand your connection to your community and Montgomery County. How long have you lived in: In years

#	All Surveys	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	Montgomery County?	0.00	66.00	14.28	11.01	538
2	Current Property?	0.00	50.00	9.70	7.36	538
3	Current Neighborhood?	0.00	67.00	10.17	8.09	538

#	Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
1	Montgomery County?	0.00	54.00	14.70	10.92	296
2	Current Property?	0.00	40.00	9.61	7.16	295
3	Current Neighborhood?	0.00	52.00	10.11	7.73	295

#	Non-Random Survey	Minimum Response*	Maximum Response*	Average esponse*	Standard eviation*	Total Responses
1	Montgomery County?	0.00	66.00	13.77	11.11	242
2	Current Property?	0.00	50.00	9.79	7.62	243
3	Current Neighborhood?	0.00	67.00	10.24	8.51	243

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(29) In which of the following have you engaged as a resident of Montgomery County? (check all that apply)

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	discussed community concerns with a neighbor	481	90%	258	88%	223	93%
2	engaged with neighbors	453	85%	246	84%	207	86%
3	contributed to a political campaign	220	41%	117	40%	103	43%
4	run for public office	7	1%	2	1%	5	2%
5	made new friends here	448	84%	244	83%	204	85%
6	served on board of a local charity	84	16%	46	16%	38	16%
7	feel strongly attached to the neighborhood	393	74%	205	70%	188	78%
8	actively participated in a local civic organization	199	37%	107	37%	92	38%
9	borrowed something from neighbor	371	69%	196	67%	175	73%
10	served as an officer of a civic organization	109	20%	57	19%	52	22%
11	served on Home Owner's Association board	137	26%	66	23%	71	29%
12	held public office	8	1%	5	2%	3	1%
13	loaned something to a neighbor	433	81%	235	80%	198	82%
14	talked with a neighbor about a personal crisis	301	56%	162	55%	139	58%
	Total Responses	534		293		241	

(30) Which of the following best describes your ownership of this property?

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	owned outright by you (or your family)	250	46%	133	45%	117	48%
2	owned with a mortgage	288	53%	163	55%	125	51%
3	rented	1	0%	0	0%	1	0%
	Total Responses	539	100%	296	100%	243	100%

(30a) Approximately what percentage of your mortgage is paid?

Survey	Minimum Response *	Maximum Response *	Average Response *	Standard Deviation *	Total Responses
All Surveys	0.00	100.00	43.15	26.62	285
Random Survey	0.00	99.00	44.59	26.76	162
Non-Random Survey	0.00	100.00	41.26	26.42	123

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(31) Which of the following best describes your use of this property?

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	used as primary residence	461	85%	259	88%	202	83%
2	used seasonally (e.g., as a winter place, as a summer place)	5	1%	2	1%	3	1%
3	used as a vacation place (e.g., visiting for a few weeks at a time)	6	1%	1	0%	5	2%
4	used as a weekend retreat	68	13%	34	11%	34	14%
	Total	540	100%	296	100%	244	100%

(31a) About how often is the property used as a weekend place (annually)? A slider-scale constrained responses between zero and 52 times per year.

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	10.00	52.00	34.40	12.01	68
Random Survey	10.00	52.00	35.00	11.07	34
Non-Random Survey	10.00	52.00	33.79	13.02	34

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(32) Insurance is one way people deal with the risk of loss. For example, most insurance policies do not cover flooding, earthquakes, wind, or mold. To what extent would you say you are covered for potential loss of value in your residence? A slider-scale was used where zero represents "no coverage self insured" and ten represents "maximum possible coverage for all hazards."

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*	Total Responses
All Surveys	0.00	10.00	6.67	3.40	500
Random Survey	0.00	10.00	6.85	3.24	272
Non-Random Survey	0.00	10.00	6.45	3.58	228

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(33) What is your age? (in years at last birthday)

Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*
All Surveys	0.00	98.00	59.31	14.24
Random Survey	0.00	98.00	60.63	12.73
Non-Random Survey	0.00	83.00	58.01	15.81

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(34) How many people (including yourself) are in your household?

#	All Surveys	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*
1	less than 18 years of age	0.00	8.00	0.40	0.94
2	between 18-65 years of age	0.00	8.00	1.41	1.19
3	over 65 years of age	0.00	3.00	0.59	0.84

#	Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*
1	less than 18 years of age	0.00	5.00	0.39	0.88
2	between 18-65 years of age	0.00	6.00	1.42	1.12
3	over 65 years of age	0.00	2.00	0.58	0.82

#	Non-Random Survey	Minimum Response*	Maximum Response*	Average Response*	Standard Deviation*
1	less than 18 years of age	0.00	8.00	0.42	1.00
2	between 18-65 years of age	0.00	8.00	1.39	1.27
3	over 65 years of age	0.00	3.00	0.61	0.86

* Minimum and maximum responses are the lowest and highest responses given by a respondent. The average response and standard deviation are statistical measures of central tendency and variability of the distribution of all responses.

(35) What is your gender?

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	male	400	74%	219	74%	181	75%
2	female	137	26%	77	26%	60	25%
	Total	537	100%	296	100%	241	100%

(36) What is the highest grade of school you have completed?

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	some high school	2	0%	2	1%	0	0%
2	high school graduate	18	3%	9	3%	9	4%
3	some college/ vocational school	121	22%	72	24%	49	20%
4	college graduate	238	44%	122	41%	116	48%
5	graduate school	160	30%	91	31%	69	28%
	Total Responses	539	100%	296	100%	243	100%

(37) What is your occupational status?

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	employed full-time	178	33%	106	36%	72	30%
2	employed part-time	21	4%	14	5%	7	3%
3	self-employed business owner	98	18%	39	13%	59	24%
4	retired	227	42%	130	44%	97	40%
5	homemaker	12	2%	6	2%	6	2%
6	unemployed	3	1%	1	0%	2	1%
	Total Responses	539	100%	296	100%	243	100%

(38) What household income category best describes you (and your family)?

#	Answer	All Surveys	All Percent	Random Survey	Random Percent	Non-Random Survey	Non-Random Percent
1	less than $25,000/year	8	2%	3	1%	5	2%
2	$25,001 to $50,000/year	49	10%	30	11%	19	9%
3	$50,001 to $100,000/year	121	24%	75	27%	46	21%
4	$100,001 to $150,000/year	125	25%	70	25%	55	25%
5	$150,001 to $250,000/year	106	21%	61	22%	45	20%
6	$250,001 to $500,000/year	58	12%	21	8%	37	17%
7	$500,001 to $1,000,000/year	22	4%	15	5%	7	3%
8	more than $1,000,000/year	11	2%	5	2%	6	3%
	Total	500	100%	280	100%	220	100%

Statistic	All Surveys	Random Survey	Non-Random Survey
Minimum Response*	1	1	1
Maximum Response*	8	8	8
Average Response*	4.18	4.09	4.30
Standard Deviation*	1.47	1.44	1.51
Total Responses	500	280	220

(39) Your views are important to us. If you have something else you would like us to know that has not been covered in your responses above, please feel free to write it below.

Survey	Total Responses
All Surveys	273
Random Survey	137
Non-Random Survey	136

(40) If you are interested in receiving electronic feedback on this topic please enter your email address.

Survey	Total Responses
All Surveys	401
Random Survey	180
Non-Random Survey	221