

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



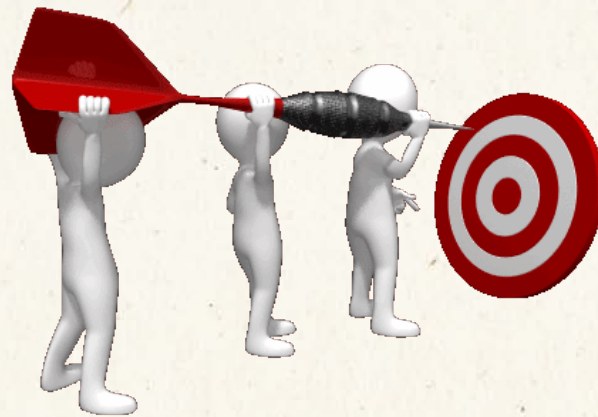
Targeted Site Visit Research Study and Birth of a New Program

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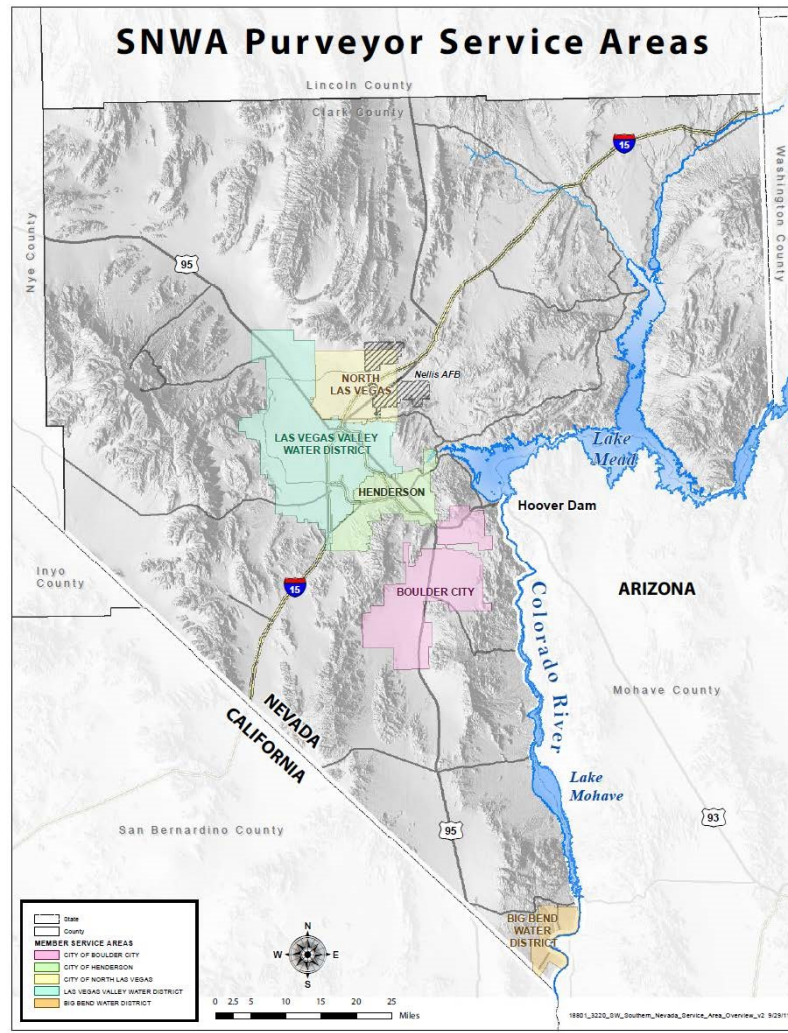
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SOUTHERN NEVADA WATER AUTHORITY®

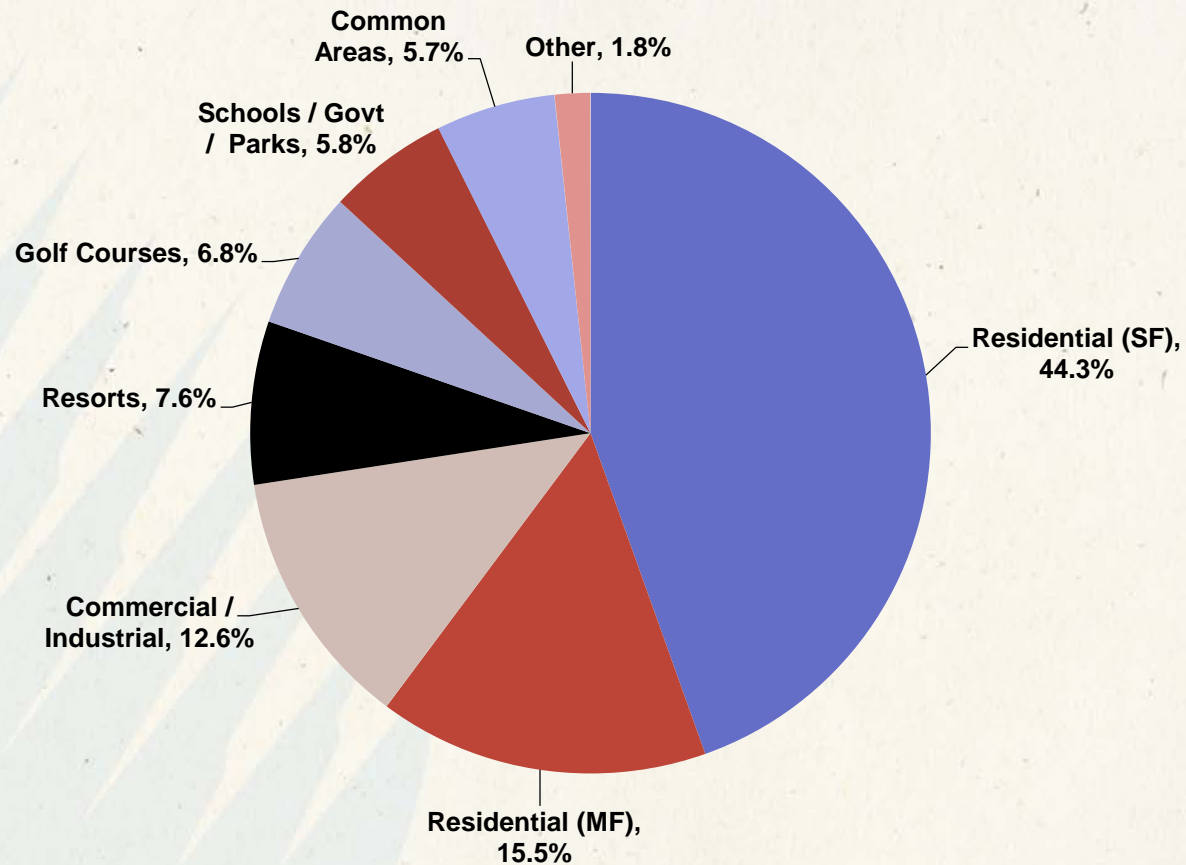
Southern Nevada Water Authority (SNWA)



Member Agencies

- Big Bend Water District
- City of Boulder City
- City of Henderson
- City of Las Vegas
- City of North Las Vegas
- Clark County Reclamation District
- Las Vegas Valley Water District

SNWA 2014 Municipal Metered Water Use by Sector



Notes:

- (a) Municipal metered water consumption billed to customers from all sources (potable and non-potable)
- (b) Potable includes ground water and Colorado River water
- (c) Non-Potable includes raw Colorado River water, reclaimed and reused water
- (d) Reflects the service areas of all SNWA agencies providing potable and/or reclaimed water

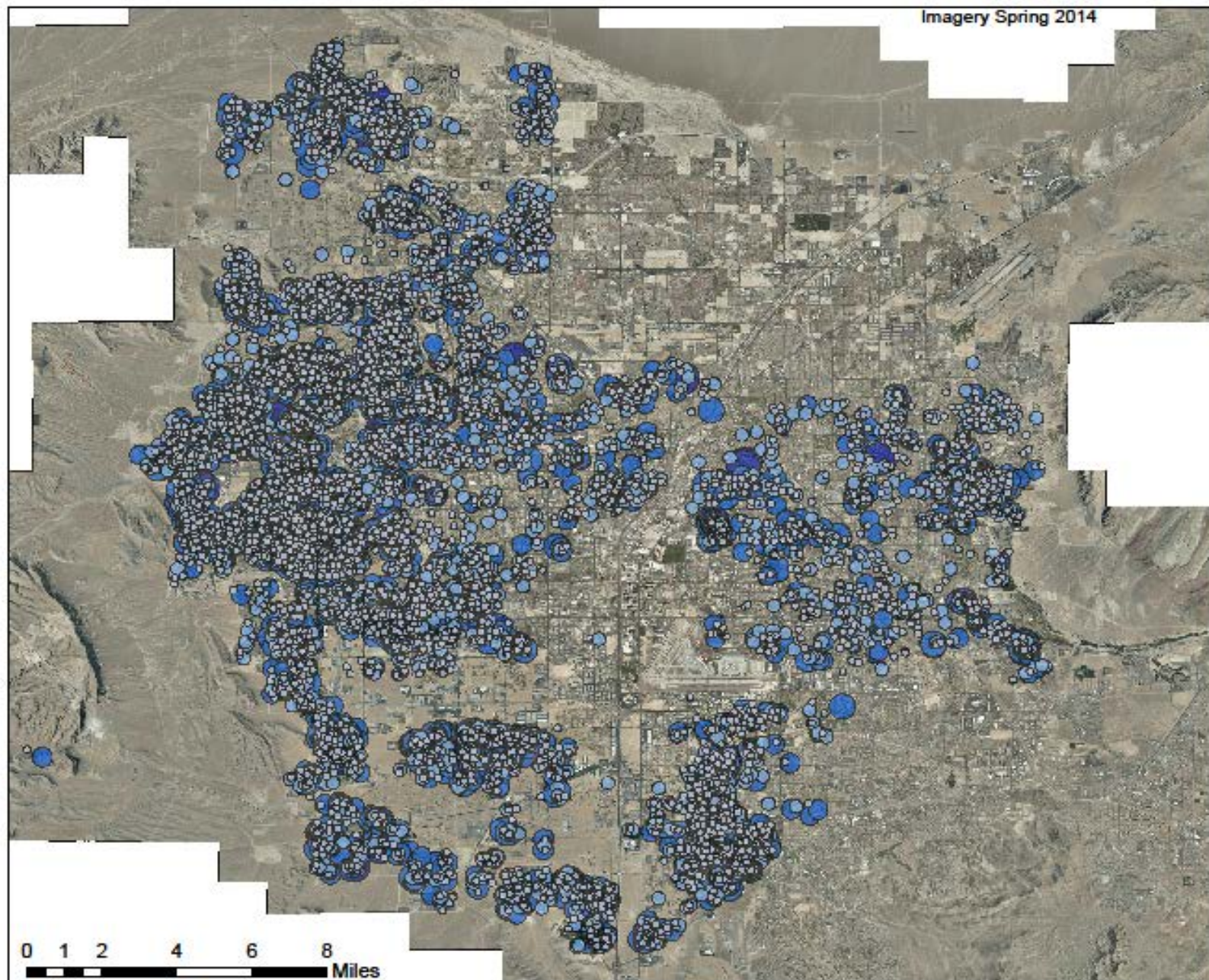
Objectives

- Purpose of the Study
- Background
- Methodology
- Analysis
- Pilot Project (Residential Water Use Evaluation)

Purpose

- Can site visits and customized messaging targeted towards high water usage single-family residential (SFR) households be an effective tool to educate residents and reduce water consumption in the Las Vegas Valley?
- Might there be easier messaging ways of doing this?
- We are looking at the top 5% of water users based on water use per square footage of lot size (2010-2014)
 - 15,508 parcels
 - Average of approximately 311,000 gallons used annually
 - The overall average LVVWD wide is about 143,000 gallons per year
 - Just a 5 to 10 percent reduction could save 15 to 30 thousand gallons per property annually

Imagery Spring 2014



History

- Evaluation of past SNWA site visits found no significant reduction in water usage (2001)
- Site visits targeted towards higher water using SFR properties have had some success in other municipalities (San Antonio, Valencia)
- Targeted “marketing” towards high water using properties has proven success in reducing demand in other areas (EBMUD)
- Interest in resuming site visits found in Conservation Knowledge and Support team brainstorming session among employees and stakeholders

Research

- Background research on behavioral theory, conservation, site audits, etc...
- Site audit program interviews completed
 - SDCWA
 - Valencia Water
 - SmartUse
 - EBMUD
 - SAWS
 - Denver Water
- Site audit observation trips completed
 - SmartUse (Albuquerque, NM)
 - Valencia Water Company (CA)

Methodology

- Split study population into five groups for different treatments
 - Distribute mailings and wait for responses from homeowners
- A target of ≈ 200 properties to receive site audits by the conclusion of the study.
- Monitor water usage for two years
- If successful, to become a pilot project for SFR sector



Response Rates

Survey Only Group

- 1,294 mailed out
 - 100 on 6/23/15
 - 100 on 7/13/15
 - 1,094 on 3/16/16 through 3/23/16
- 155 responses
- 12.5% response rate

Comp. Messaging Group

- 1,000 mailed out 1st round
- 865 mailed out 2nd round

Response Rates

Site Visit Offer Group

- 2,937 letters mailed
 - 1st round
 - 65 responses
 - 2.0% Response Rate
- 2,147 Flyers mailed
 - 2nd round
 - 13 responses
 - 0.6% Response rate

Comp. Messaging & Site Visit Offer Group

- 1,939 letters mailed
 - 1st Round
 - 41 responses
 - 2.1% response rate
- 759 Letters mailed
 - 2nd round
 - 10 responses
 - 1.3% response rate

Site Audits

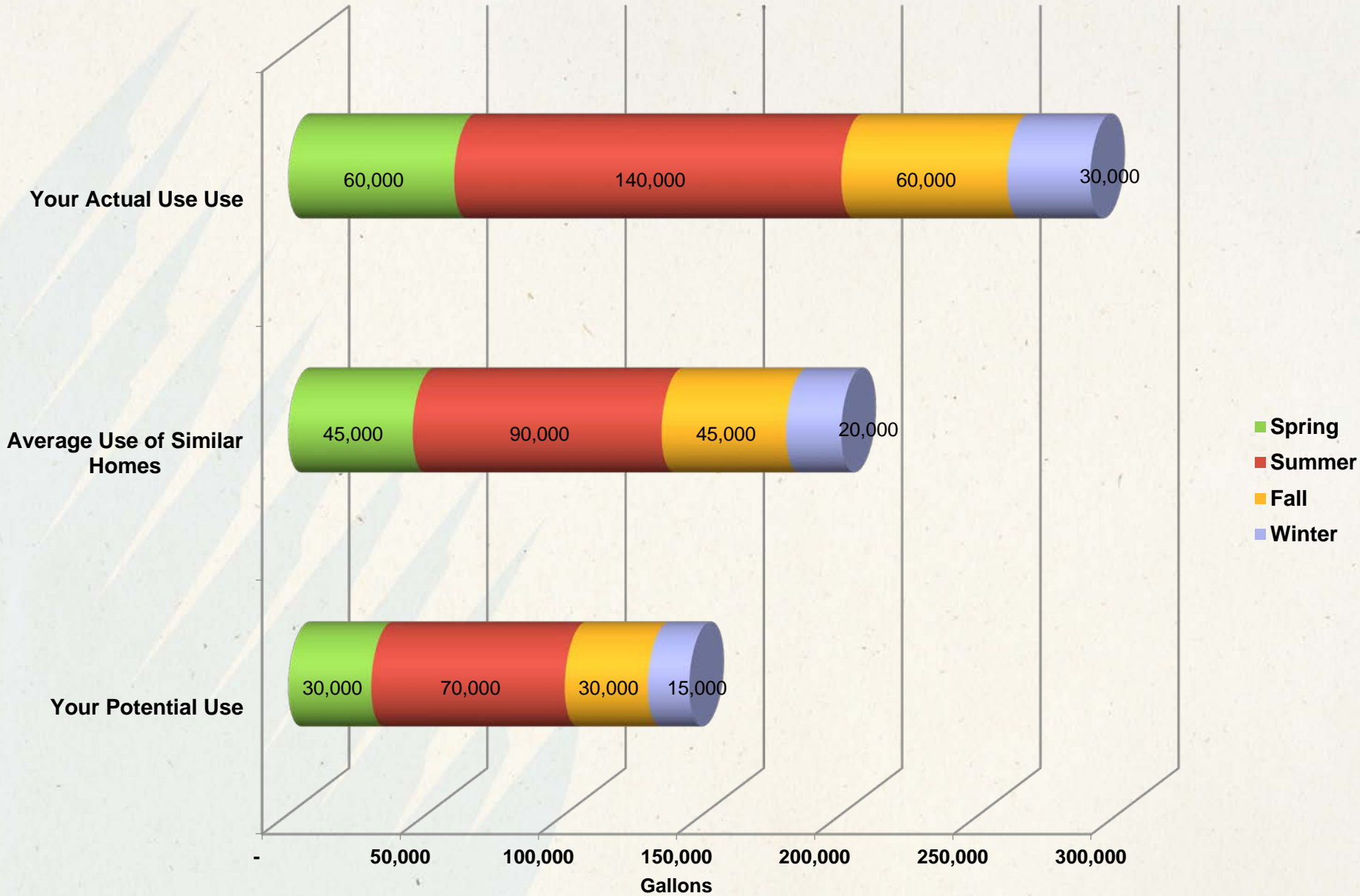
- **Total**
 - **130 Audits complete**
- **9 properties signed up and scheduled an audit, and then either no-showed or cancelled**
- **1 property decided not to go through the audit once we met with them**
- **5 “free-riders”**
 - **Not part of study group but heard of program through word of mouth**
- **2 follow-up audits**

Site Visits

- Perform inventory of indoor fixtures and appliances
- Test as far as possible for leaks
- Catalog outdoor landscaping
- Inspect irrigation system
 - Timers, irrigation components
 - Record flow rates by station and clock settings
- Give recommendations to reduce usage
 - Reduce irrigation run times
 - Convert non-functional turf
 - Replace inefficient fixtures
 - Fix leaks

Comparative Messaging

- Give their usage vs. comparable properties
 - Similar sized
 - Within their neighborhood
 - Idealized “efficient” usage
- Compared their current usage with their previously lower usage
- Show how much can be saved by changing behaviors or making modifications (info on rebate and incentive programs)



Personalizes
regional
water
concerns



We are in the midst of an
historic drought

Lake levels have dropped
over 100 feet since 2000

Recruitment Letter Example Text



SOUTHERN NEVADA WATER AUTHORITY®

5/5/2015

Doug Bennett
Southern Nevada Water Authority
100 City Parkway, Suite 700 Las Vegas, NV 89106

«AddressBlock»

«Dear Resident»

As a community, we depend upon the Colorado River for 90 percent of our water. Ongoing and severe drought has threatened the availability of this supply and nothing demonstrates the severity of these conditions more than Lake Mead, the primary reservoir for our water supply, which now stands at less than 50 percent capacity.

Every drop of water is important. As your regional water agency, we are committed to the efficient use of our water supply.

You have the opportunity to participate in a pilot program to have a specialist visit your home to make specific water efficiency recommendations. This free service is offered on a limited basis beginning May 26, 2015.

SNWA staff will

- Determine whether leaks may be present;
- Assess plumbing fixtures, appliances and irrigation systems;
- Make recommendations to maximize water efficiency in alignment with your priorities;
- Explain programs available to assist you.

Limited appointments are available. Call (702) 862-3760 to schedule your site visit.

You can also visit snwa.com for tips and to enroll in any number of water conservation programs. Programs like the Water Smart Landscapes Program, which offers a rebate to remove water thirsty grass and replace it with a water-efficient landscape, can save more than 55 gallons of water per square foot removed each year.

I invite you to take advantage of these programs to help conserve resources and save money. Together, we can sustain our Southern Nevada's water resources for generations to come.

Sincerely,

Doug Bennett,
Conservation Manager
Southern Nevada Water Authority

2017 Analysis

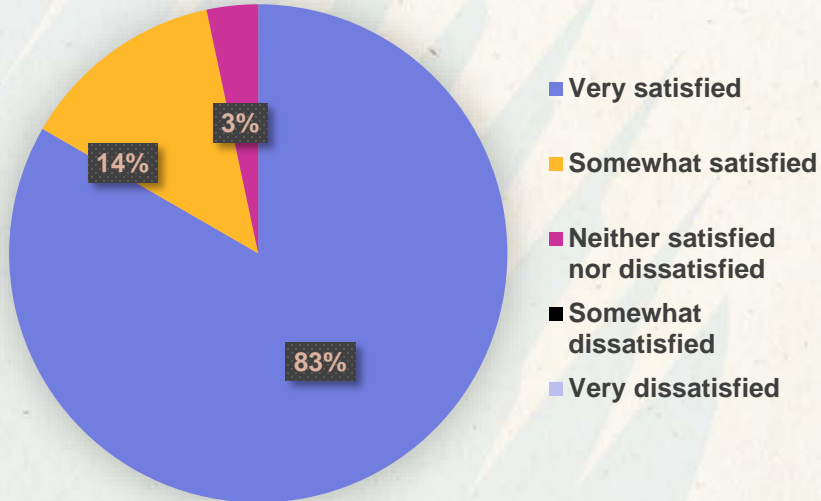
➤ Data Quality Assurance

- **11% applied to do Water Smart Landscapes conversion after the visit!** Removed all properties that participated in any other conservation program: Water Smart Landscapes, Pool Cover Coupon & Smart Irrigation Clock Rebate
- Removed any that had gaps in monthly usage
- Expanded pre & post monthly timeframes – on average 21.6 months for all except audited properties at 16.8
- Merged the groups that received Comparative Messaging and those that received audits into two additional “meta” groups
- Had enough members of both Site Visit (Audit) groups to do independent analysis of each.
- Simple t-tests for significance

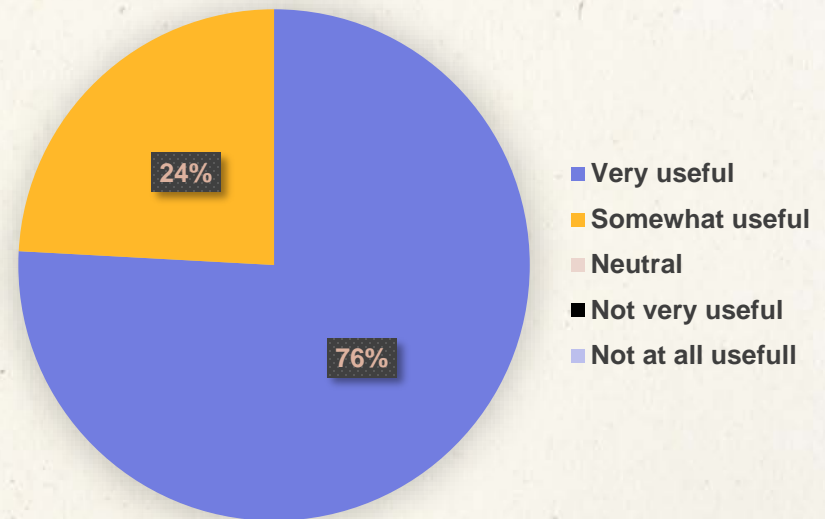
Satisfaction Survey

Sent out 105, received 30 back – 28.6 % response rate

Overall, how satisfied or dissatisfied are you with the site audit experience?



How useful did you find the summary report we emailed you after the audit?



Leaks

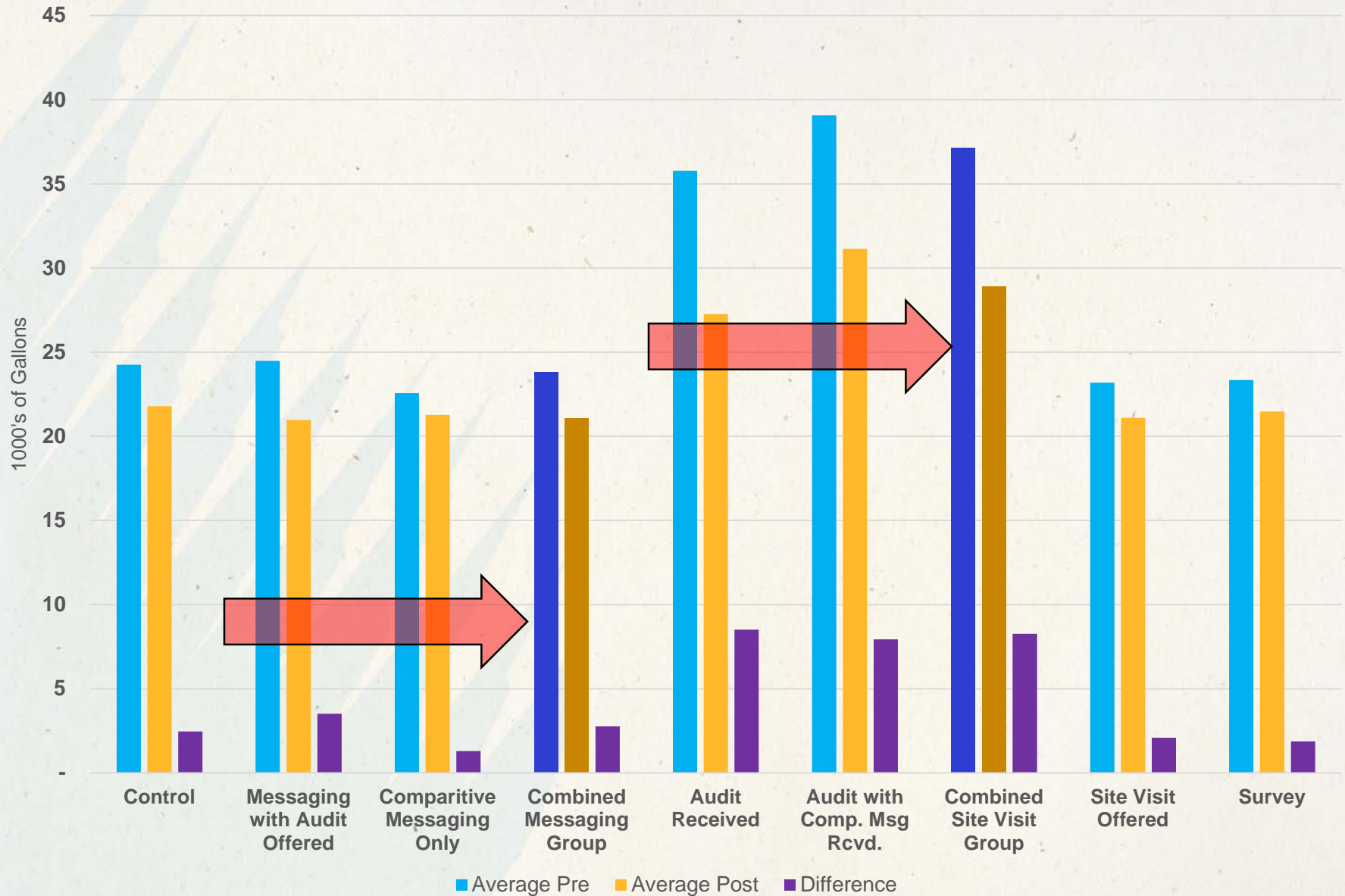
- Just over half of properties had some form of leak
 - 52%
 - 24 toilet related
 - 15 irrigation related
 - 8 service line
 - 2 water softener
 - 3 RO system
 - 6 multiple issues
- Over 90% had less than 1 gpm leak
- Over 50% had less than 0.1 gpm leak

2017 Analysis Groups

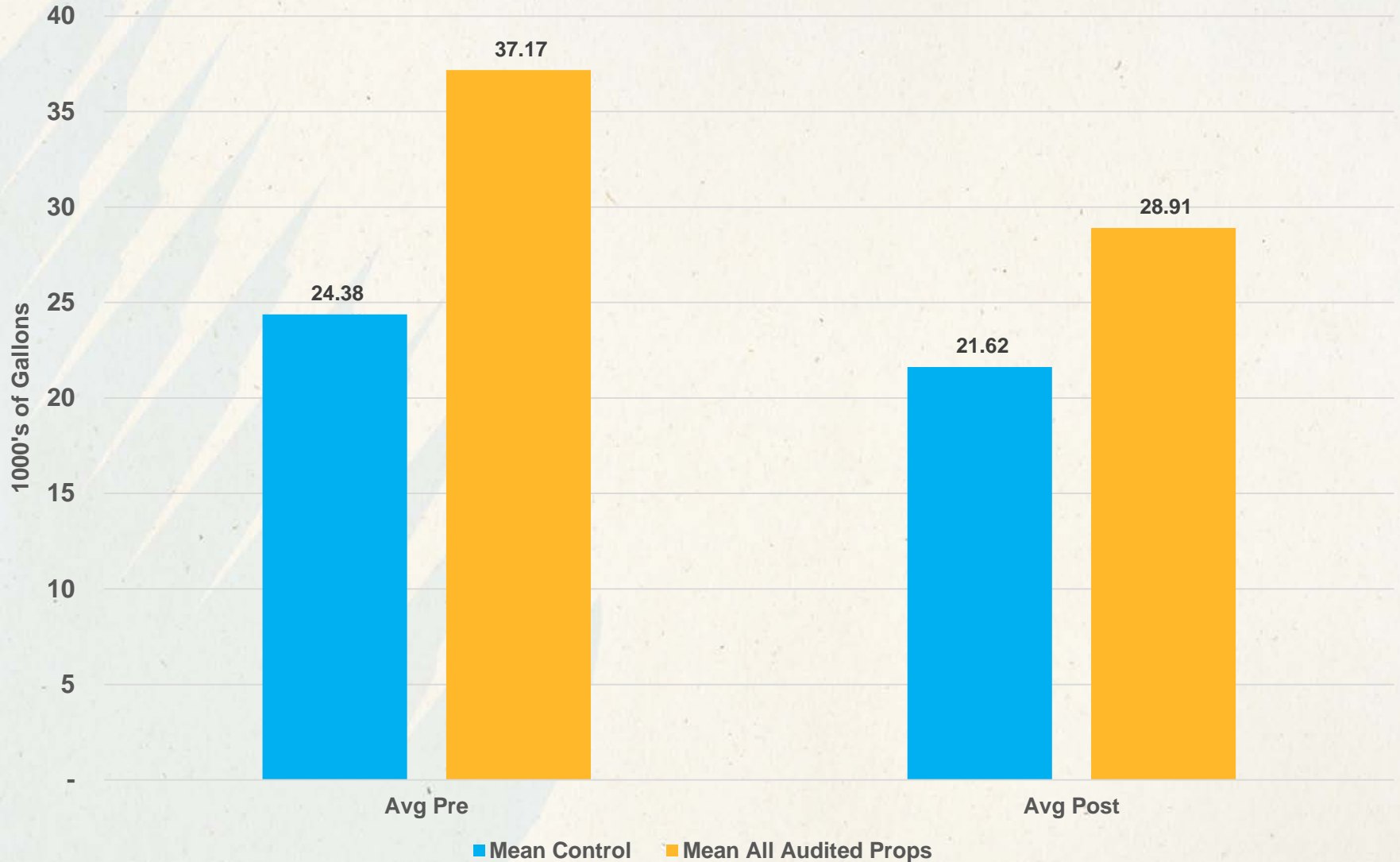
- Control: N = 2,616
- Messaging with Audit^{*} Offered (but did not participate): N = 352
- Comparative Messaging Only^{*}: N = 179
- Audit Received^{**}: N = 46
- Audit with Comparative Message Received^{**}: N = 34
- Site Visit Offered (but did not participate): 354
- Survey: N = 173

^{*} And ^{**} Groups indicate members of meta groups.

2017 Average Pre vs. Post-contact Usage Comparison



Audited Properties vs. Matched Controls



Savings Estimate

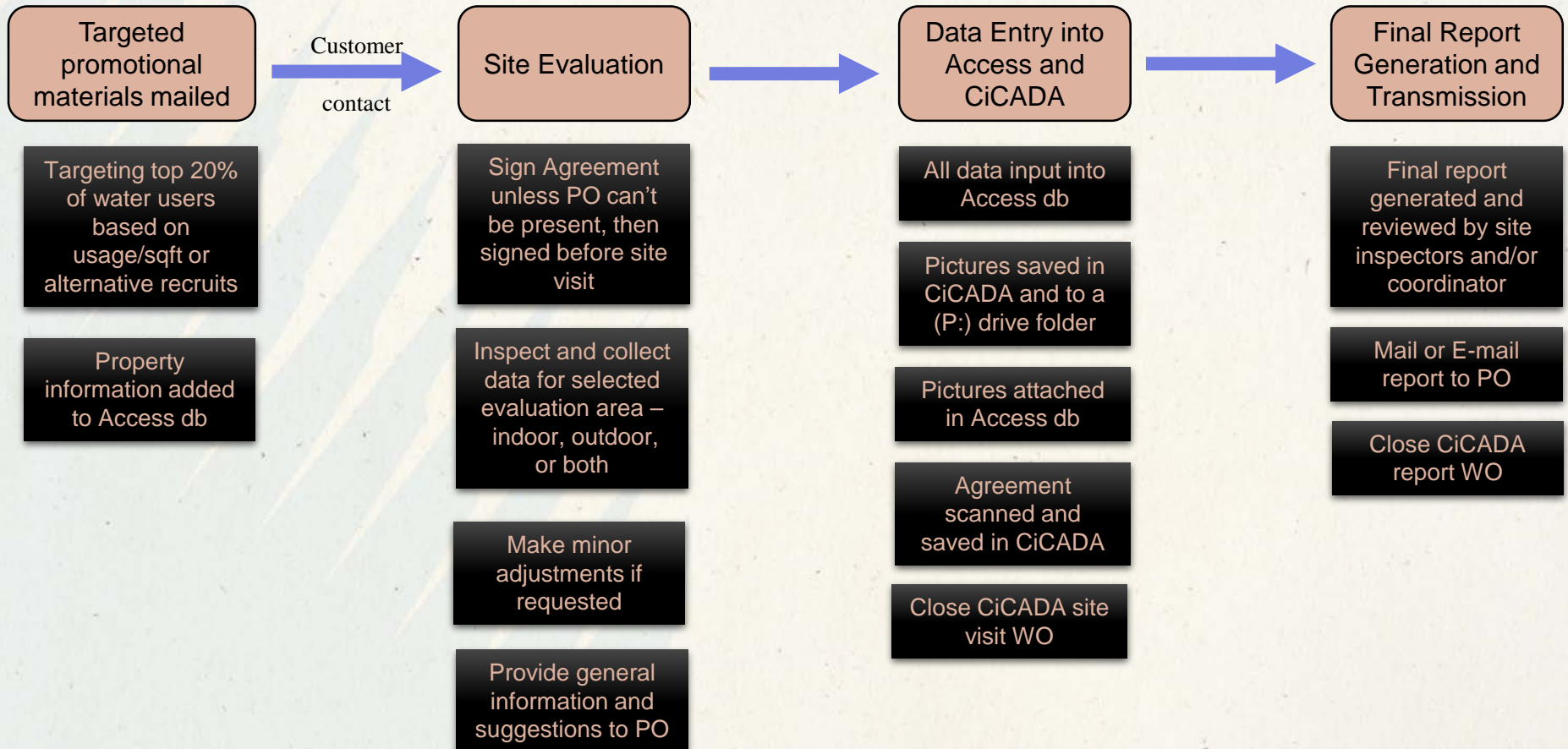
- All audited properties average monthly use before our visit: 37,169 gallons, 28,909 post-visit. 8,260 gallons difference
- Control sites represent background conservation rate: $24,378 - 21,624 = 2,753$ gallons difference
- $8,260 - 2,753 = 5,507$ gallons saved per month
- **66,080 for a 12 month period!**

Pilot Project


- In process for a early 2018 roll out – limited to Las Vegas Valley Water District customers initially.

- Major Challenge - managing workflow
 - Approximately 30 minutes is needed for each site audit administratively before visit (appointment preparation)
 - 2.5 hours needed for each audit including drive time (some required more)
 - Approximately 1 hour is needed to prepare each report (reduce with automation)
 - Approximately 45 minutes is needed administratively for each audit after each visit (study related work)
 - Currently about five hours total for each audit – look to cut to three.

General Workflow




Participation Agreement



Southern Nevada Water Authority

Residential Water Use Evaluation

Participation Agreement



Property Owner Name:			
Address:			
City, Zip Code:			
Contact Person (if not Owner):			
Telephone Number(s):			
E-mail Address:			<input type="checkbox"/> I prefer email correspondence.
Mailing address (if different):			

Evaluation Location: ☐ Indoor ☐ Outdoor _____ I agree to provide access to the areas required to perform my chosen evaluation. *(please initial)*
(mark one or both)

Modifications and Adjustments: *(Please initial only one option)*
 _____ I only want recommendations. Do not make any minor modifications or adjustments.
 _____ I authorize the Authority's representative(s) to make minor modifications or adjustments.

For any questions regarding this process or provided recommendations, please call (702) 862-3760.

By executing this form, you represent and certify that you own the property at the address listed above or are the owner's representative authorized to execute this Residential Water Use Evaluation Participation Agreement ("Agreement") on the owner's behalf, and that you have read and agree to the Agreement's terms and conditions, listed on the back.

Owner/Designee's signature _____

Date _____

Owner/Designee's printed name (include professional title if you are the owner's designee) _____

SNWA Representative's signature _____

Date _____

SNWA USE ONLY

Representative(s): _____

Product provided? Yes No Type: _____

Critical Issues/Concerns: _____

Modifications and/or Adjustments performed: _____

I acknowledge that the Representative's above notations accurately reflect the critical issues mentioned and minor modifications or adjustments performed.

Initials _____

Date _____

Mail both copies to: SNWA Conservation – P.O. Box 99956 – Las Vegas, NV 89193-9956
Version August 8, 2018

- Reviewed and approved by Legal and Conservation staff

- Complete

Field Worksheets

Paper Forms

The image shows two paper field worksheets. The left worksheet is titled 'General' and 'Indoor Water Use'. It includes sections for 'Property Address', 'Water Using Appliances' (with sub-sections for Dishwasher, Clothes Washer, Water Softener, and Water Heater), 'Toilets', 'Faucets', and 'Showers'. The right worksheet is titled 'Outdoor Water Use' and 'Pool and Spa'. It includes sections for 'Landscape', 'Irrigation Controller', 'Current Irrigation Schedule', and 'New Suggested Irrigation Schedule'.

OR

Digital Forms



- Paper forms are ready for use
 - Not carbon copy, so they can be revised relatively quickly if collection of certain information is judged unnecessary
- Have experimented with a digital form for use with tablets.

Access Database

Database is completed and ready for use

Residential Site Evaluation Tracking System

Find Parcel: Find Property Address:

Parcel Number: Hansen Number: Property Address: Property City: 2017 Top 100 Site: ☐

Property Zip: Lot Size In Acres: Purveyor: Internal Property Note:

Property Evaluation:

General Indoor Items Outdoor Areas Irrigation Clock Settings Report Irrig. Schedules Pictures Dev Links

First Name: Last Name: Cell: Work: Work Ext. Home: Email: Preferred ☒ Rpt Cover Pic:

Different Mailing Address: ☐ Address: City: ST: Zip: Country: ID:

Evaluation Date: 1st Evaluator: 2nd Evaluator: Inspection Location: ☒ Indoor ☐ Outdoor ☐ Both

Rec / Adj: ☐ Recommendations Only ☒ Minor Adjustments

Incentive Given: General Internal Note:

Meter Read: Static Pressure: Start Read: End Read: Leak Amount (GPM): Leak Detected ☒ Leak Source:

Backflow:

Backflow Issues	Report Note
I - Inspected, No Issues	Of all the gin joints in all the towns in all the world
N - None located	My Mama always said, 'Life was like a box of choc
L - Leak	Time flies like an arrow. Fruit flies like a banana.
C - Corrosion	Those are my principles, and if you don't like them
BH - Broken handle(s)	I refuse to join any club that would have me as a m
2L - Installed too low	I have had a perfectly wonderful evening, but this

Indoor Shut-off:

Shutoff Issues	Report Note
N - None located	
I - Inspected, No Issues	INSPECTOR NOTE: Neque porro quisquam est,
BH - Broken handle	Mrs. Robinson, are you trying to seduce me?
L - Leak	I gotta leak like you wouldn't believe.

Hose Bibs: Number:

Hosebib Issues	Report Note
I - Inspected, No Issues	
B - Broken	
C - Corrosion	
LH - Leaking handle	
LS - Leaking spout	Report note

Report Summary Section Note: Provide a brief, general overview of the areas where there were issues

Trust me guys, you're gonna want that cowbell!
I gotta have more cowbell!
Testy testy

Evaluation Selection Controls (Most Recent Shown First)

Record: 1 of 4 No Filter Search

General note to include on report

Final Report

Residential Site Evaluation

Wednesday Addams at 0001 CEMETARY LN

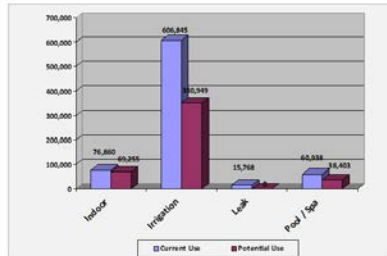


- Report generation piece is complete, including:

- Current vs Potential Use graph
- Current and New/Suggested irrigation schedule tables
- Issue Photos attachment
- Manual to accompany in progress

Current & Potential Use

The graph below shows your current estimated water use and your potential efficient water use if you implement all the suggestions in this report:



Original Irrigation Schedule for Current Season

Season	Irrigation Type	Program	Stations	Days	Start Times	Run Times
Summer	Drip	A	3, 4, 6-6, 10-14, 17, 18	Tues, Thurs, Sat (also Sat if green become stressed)	2 times, mid morning	20-25 min
Summer	Bubbler	A	9, 15	Mon, Tues, Thurs, Sat	2 times, early morning	8 min

Suggested New Irrigation Schedule for All Seasons

Season	Irrigation Type	Program	Stations	Days	Start Times	Run Times
Spring / Fall	Bubbler / Sprink	B	3, 7, 10	Mon, Wed, Fri	2 times, early morning	8 min
Spring / Fall	Drip	A	3, 4, 6 & 9	Mon, Tues, Sat	3 times, mid morning	20-15 min
Summer	Bubbler	C	Front gate, Irrig 7	Mon, Wed, Fri, Sat	2 times, mid morning	20-20 min
Summer	Drip	B	Frontgate 4 & 6, Guest House 6, Front gate Irrig 5-6, Front gate Irrig 15-16	Mon, Wed, Fri	2 times*, late morning	20-20 min*
Summer	Sprink / Combo	A	Irrigation 3-5, 5, Guest House 1, 4-5, Front gate Irrig 1-4, Front gate Irrig 2-3, 4	Mon-Sat	3 times, early morning	3-4 min
Winter	Sprink / Combo	A	Frontgate 4 & 6, Guest House 1, 4-5, Front gate Irrig 1-4, Front gate Irrig 2-3, 4	Mon	3 times, mid morning	3-4 min
Winter	Bubbler	C	Front gate Irrig 7	Mon	2 times, late morning	20-20 min
Winter	Drip	B	Frontgate 4 & 6, Guest House 1, Front gate Irrig 5-6, Front gate Irrig 15-16	Mon	2 times*, late morning	20-20 min*

Issue Photos

► Dabbia Doo nada - Station 1: Drip, Back



► Water Heater



Marketing piece in development

Questions?



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