



Agenda

CITY CLERK'S OFFICE

DATE 8/1/16 TIME 8:43pm

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SANTA FE WATER CONSERVATION COMMITTEE MEETING

CITY HALL - 200 LINCOLN AVE.

CITY COUNCILORS' CONFERENCE ROOM

August 9, 2016

4:00 PM TO 6:00 PM

1. CALL TO ORDER
2. ROLL CALL
3. APPROVAL OF AGENDA
4. APPROVAL OF MINUTES TUESDAY JULY 12, 2016 WATER CONSERVATION COMMITTEE MEETING

DISCUSSION ITEMS:

5. Update on new billing system and badger meters (Nick Schiavo, 15 minutes)
6. Strategic Implementation Plan Presentation (Lynn Komer, 30 minutes)
7. Updates on Water Conservation Program (Christine Chavez, 15 minutes)

ACTION ITEMS:

8. A RESOLUTION CALLING ON THE NEW MEXICO OFFICE OF THE STATE ENGINEER TO ORDER MEASURING AND METERING OF ALL GROUNDWATER WELLS WITHIN THE CITY OF SANTA FE AND REQUESTING AN APPROPRIATION OF FUNDS FROM THE LEGISLATURE. (Councilor Ives) (Andrew Erdmann, 15 minutes))

INFORMATIONAL ITEMS:

9. Group Reports from Water Conservation Committee Working Groups (no updates)
 - A. GROUP A - Irrigation Rebate and QWEL (Tim Michael - 10 minutes)
 - B. GROUP B - Expansion of the K-12 Education Program
 - C. GROUP C - Grant Exploration and Ideas
 - D. GROUP D - Water Conservation Codes, Ordinances and Regulations
 - E. GROUP E - Water Conservation Scorecard (Robert Coombe, 10 minutes)
10. SOURCE OF SUPPLY - Drought Update

MATTERS FROM PUBLIC:

MATTERS FROM COMMITTEE:

NEXT MEETING - TUESDAY SEPTEMBER 13, 2016:

CAPTIONS: AUGUST 29, 2016 @ 3 PM.

PACKET MATERIAL: AUGUST 31, 2016 @ 3 PM.

ITEMS FOR NEXT AGENDA:

Green Building Code updates (Katherine Mortimer)

ADJOURN.

Persons with disabilities in need of accommodations, contact the City Clerk's office at 955-6520, five (5) working days prior to meeting date.

WATER CONSERVATION COMMITTEE
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August 9, 2016

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Roll Call/Call to Order	The Water Conservation Committee Meeting was called to order by Councilor Peter Ives, Chair, at 4:00 pm in the City Councilor's Conference Room. A quorum is reflected in roll call.	Page 1
Approval of Agenda Amended: 9A to 9E	<i>Mr. Wiman moved to approve the agenda as amended, second by Mr. Michael, motion carried by unanimous voice vote.</i>	Page 1
Approval of Minutes, July 12, 2016	<i>Mr. Pushard moved to approve the minutes of July 12, 2016 as presented, second by Mr. Lyon, motion carried by unanimous voice vote.</i>	Page 1
Discussion Items <ul style="list-style-type: none"> - Update on New Billing System and Badger Meters - Strategic Implementation Plan Presentation - Update on Water Conservation Program 	Informational, no formal action.	Page 2 - 4
Action Items <i>A Resolution calling on the New Mexico Office of the State Engineer to order measuring and metering of all groundwater wells within the city of Santa Fe and requesting an appropriation of funds from the legislature.</i>	<i>Mr. Michael moved to defer #8-a, "A Resolution calling on the New Mexico Office of the State Engineer to order measuring and metering of all groundwater wells within the city of Santa Fe and requesting an appropriation of funds from the legislature" to next meeting, second by Mr. Wiman, motion carried by unanimous voice vote.</i>	Page 4
Informational Items <ul style="list-style-type: none"> • Group Reports • Source of Supply Report 	Group Reports, Updates and reports included in minutes Source of Supply report included in packet.	Page 4
Matters from Committee	Informational	Page 4
Matters from the Public	None	Page 4-5
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Adjournment and signature	Meeting was adjourned at 6:05 pm	Page 5

**SANTA FE WATER CONSERVATION COMMITTEE MEETING
CITY HALL - 200 LINCOLN AVE.
CITY COUNCILORS' CONFERENCE ROOM**

August 9, 2016
4:00 PM TO 6:05 PM

MINUTES

1. CALL TO ORDER

Councilor Peter Ives, Chair for the Water Conservation Committee called the meeting to order at 4:00 pm in the City Councilors' Conference Room. A quorum is reflected in roll call.

2. ROLL CALL

Present:

Councilor Peter Ives, Chair
Doug Pushard
Tim Michael
Stephen K. Wiman
Bill Roth
Robert D. Coombe
Justin Lyon

Not Present:

Lisa Randall, Excused
Aaron T. Kauffman, Excused

Others Present:

Christine Y. Chavez, Water Conservation Manager
Caryn Grosse, Water Conservation Specialist
Nick Schiavo, Water Division, Engineer Supervisor
Lynn Komer, Contractor, PK Public Relations
Andrew Erdmann, Water Resources Coordinator
Jesse Guillen, Legislative Liaison
Andy Otto, Santa Fe Watershed Association
Fran Lucero, Stenographer

3. APPROVAL OF AGENDA

9A – Tim Michael – change to 9E

Mr. Wiman moved to approve the agenda as amended, second by Mr. Michael, motion carried by unanimous voice vote.

4. APPROVAL OF MINUTES TUESDAY JULY 12, 2016 WATER CONSERVATION COMMITTEE MEETING

Mr. Pushard moved to approve the minutes of July 12, 2016 as presented, second by Mr. Lyon, motion carried by unanimous voice vote.

DISCUSSION ITEMS:

5. Update on New Billing System and Badger Meters – Nick Schiavo
32,500 out of the 34,000 meters have been installed. (BEACON AMA was on the overhead for review). The meter reading statistics were shared with the committee. There are only 35 meters that are not able to communicate with the Water Department system and those meters are read manually. The report also shows where the leaks are taking place, it can be seen by day and month. Mr. Wood from the Water Department calls the resident to let them know how many gallons they are losing due to leaks. They are also putting back flow prevention and will be monitored. The report reflects the weekly use and the comparison from the prior 7-days. They are able to compare from a single day to a single week, in the past they could only compare by month. Slide view was explained on what the customer can see when they sign up to see their bill electronically. Mr. Schiavo recommends that if they see more than 3-5 gallons an hour there is an e-mail capability to let the Water Department know of this loss of water. The homeowner can actually export data to an excel spreadsheet for continuous reporting figures. Mr. Schiavo stated that most of the data comes in between midnight and 4:00 am. Mr. Pushard said in response to a comment from Ms. Chavez that we should track and report data on “water saved”. These are statistics we have not kept in the past. It was asked what opting out means. Opting out means that some people did not feel comfortable in having a meter that would hit the system, there are about 80 individuals who opted to have and retain their present meters and they are read manually. Mr. Lyon would like to have a report in the fall on how many leaks there have been. This information could also help to notify individuals about preparing their irrigation systems for the winter. The Chair said he would be interested to have an electronic read of our water usage posted at the Railyard for Consumer interest.
6. Strategic Implementation Plan Presentation (Lynn Komer)
(Slide Presentation) (Exhibit A)
 - The Components of Public Relations
 - Difference between Marketing and PR
 - Advertising is just one tool, messaging is through mass medias.
 - Three Types of Media
 - Paid, Earned and Owned.
 - Owned – Websites, blogs, newsletters and social media
 - Social Media and the New Media – Media gets their information through search engines and it has to be friendly.
 - Sources of News 2012-15: TV, online, print, and social media USA, Social is key and going up.
 - News Cycle – Starts with social media and is much more interactive.
 - Facebook and Twitter News Use is on the Rise
 - The use of Visuals is tied to increased sharing (engagement) and web traffic.
 - Instagram is all about visual storytelling.
 - Social Media Platform: General, Age/Gender, Why top social media site, Income/Education
 - 85% of adults are internet users and 67% are smartphone users
 - Communications with Latinos and Blacks more likely than whites. PEW Research Center report viewed.
 - On social, Hispanics keep in touch with family, alternate between Spanish and English.
 - Immigrants that come from Mexico are used to water scarcity, drinking water quality, water rationing; you want to look at messaging to strengthen what they already know.
 - Materials in Spanish as requested by the Mayor and City Council

- Strategies to Augmentation
- About 6-10 Americans get news from social media.
- Participation Marketing is at the Intersection of Content and Influencer Marketing

Strategic Plan - The Water Story

- PR Objectives
- Goals
- Measurements being adjusted.

Tactics – One Year

- Rebrand
- Data Collection
- Social Media
- Website as Promotional mix
- Commercial Rebate Promotion
- Advertisement as Promotional Mix
- WCC as Ambassadors
 - Follow Up: Ms. Komer would like a short bio on each member to introduce members to the public and get them better informed on the Water Conservation Committee.
- Radio: Re-evaluating the use of Radio to reach the public
- Results from a survey will tell us where we need to target.

The report from PK reflects what the city has committed to for example in Media: Hutton Broadcasting, KSWW-AM, Santa Fe Hometown News, Tumbleweeds and Edible.

Ms. Komer did explain the lapse in time and how her presentation reflects the “to do’s”, her contract went in to effect 2 weeks ago therefore the report and process explained above is a reflection of 2 weeks processing. Ms. Komer said there is also an opportunity to work with Sustainable Santa Fe.

The Chair expressed his thanks for addressing the items of concern that the Mayor and Council have communicated. The Chair also asked about the metrics and Ms. Komer said she will have measurements and analytics moving forward through her contract period. It was noted that Phase 2 is the survey and Phase 3 is incorporation of Badger. The Chair reiterated that it is important to have communications and collateral in Spanish. Thank you to Ms. Komer for her presentation.

7. Updates on Water Conservation Program (Christine Chavez)

Ms. Chavez asked the committee members for dates to meet regarding the committee/Group assignments.

Group Assignments from July 12, 2016 meeting minutes:

Bill Roth – Group D – Water Conservation Codes, Ordinances and Regulations

Stephen Wiman – Group D - Water Conservation Codes, Ordinances and Regulations

Justin Lyon – Group B - Expansion of the K-12 Education Program and/or A – Irrigation Rebate and QWEL

Doug Pushard – Group A and Group D

Robert Coombe – Group B - Expansion of the K-12 Education Program and/or Group E – Water Conservation Scorecard

Tim Michael – Group E

Aaron Kauffman – Group B and Group D

Mr. Andy Otto, Santa Fe Watershed, Group B

Councilor Ives will provide his expertise in all groups as needed.

Staff supporting the Groups are as follows: Bob Wood will do Irrigation Rebate and QWEL, Lisa Noriega will do Education and Caryn Grosse will do the Scorecard.

Ms. Chavez asked for feedback on projects and if there are any presentations the Committee members would like to have from staff in the near future.

- Watershed Thinning by Alan Hook.
- The Chair said that Mr. John Hawley spoke at the SFCC and his presentation was titled: Challenges Related to the Hydrologic Setting and Environmental Concerns for Santa Fe, New Mexico – sponsored by the USEPA and the NM Environment Department. Request is to have Mr. Bill Schneider present at a later date.
- Request that Lisa Randall present on Water Conservation at SFPS.

8. ACTION ITEMS:

- a. A RESOLUTION CALLING ON THE NEW MEXICO OFFICE OF THE STATE ENGINEER TO ORDER MEASURING AND METERING OF ALL GROUNDWATER WELLS WITHIN THE CITY OF SANTA FE AND REQUESTING AN APPROPRIATION OF FUNDS FROM THE LEGISLATURE. (Councilor Ives) (Andrew Erdmann, 15 minutes)

Mr. Michael moved to defer #8-a, "A Resolution calling on the New Mexico Office of the State Engineer to order measuring and metering of all groundwater wells within the city of Santa Fe and requesting an appropriation of funds from the legislature" to next meeting, second by Mr. Wiman, motion carried by unanimous voice vote.

INFORMATIONAL ITEMS:

9. Group Reports from Water Conservation Committee Working Groups
 - A. Group A - Irrigation Rebate and QWEL
 - B. Group B – Expansion of the K-12 Education Program
 - C. Group C - Grant Exploration and Ideas, on hold until a future date.
 - D. Group D - Water Conservation Codes, Ordinances and Regulations – Standing report. (Report attached-Doug Pushard) Exhibit B
 - E. Group E - Water Conservation Scorecard (Robert Coombe and Tim Michael) – Exhibit C
Is the next step to correlate with water use in the next years? No
Are we going to relate to GPCD or Total Demand? Total Demand.

10. SOURCE OF SUPPLY – Drought Update

Memo included in packet, no questions from WCC members.

11. MATTERS FROM PUBLIC

NONE

12. MATTERS FROM COMMITTEE

Mr. Coombe attended the kick off meeting for the Strategic Marketing Plan. The elements of the plan were discussed and noted that there will be a lot of data and metrics. Rick Carpenter laid out the 5 items that are in Lynn's report during this presentation. He also talked at some length that he would like the public to know the good news, all the good things that have been done in the last 14-15 years. He spoke to the good condition that the city finds itself in with conservation being a large part of that as well. He spoke to the longer term plan of a GPCD figure of 85 and he did not think it could get lower than that. Having said that, how do you incorporate this information in to a marketing plan? Mr. Coombe would like to see the details of that long-term plan.

Presentation from the WESCAS (The Western Coalition of Arid States) will be sent to the WCC members as information only.

Doug Pushard: SAVE THE DATE: Next Generation Water Conference in Santa Fe, June 4-5-6, 2017 – A working committee has been created, Mr. Pushard will be presenting on the WERS group. Help is being solicited and Doug Pushard can be contacted.

NEXT MEETING – TUESDAY SEPTEMBER 13, 2016

Chair Ives will not be present at this meeting.

ITEMS FOR NEXT AGENDA:

Green Building Code updates (Katherine Mortimer)

Tour – (Map distributed – Exhibit D - Tim Michael)

13. ADJOURN

There being no further business to come before the Water Conservation Committee, the meeting was adjourned at 6:05 pm.

Signature Page:

Lisa Randall for Peter Ives
Peter Ives, Chair

Fran Lucero
Fran Lucero, Stenographer



**Public Relations Strategic Tactical Plan to Promote Santa Fe
Water Conservation
August 1, 2016 – June 30, 2017**

DISCUSSION DRAFT

ANCHOR CONCEPT – Tell the water division story

Background

The City of Santa Fe Water Division currently supplies water to about 80,000 residents in the City and portions of Santa Fe County. Water conservation is one of six components of the City's investment in a robust and diverse mixture of ground and surface water sources: Buckman Well Field (ground), City Well Field (ground), Watershed (surface), Buckman Direct Diversion (surface), Wastewater and Conservation.

Santa Fe's average daily water use is 89 gallons per person per day, which is one of the lowest in the country.

The challenge remains to continue to be proactive in both water management and in water conservation efforts.

Water conservation remains key to addressing and responding to drought, so it is critical Santa Feans remain committed to their water-wise lifestyles.

Big Picture

Studies of other water conscious communities note the water utility customers view supply, infrastructure, treated effluent and conservation as a singular water issue and best practices identified water conservation efforts should include education on how all water utility programs work together.

The acting water conservation director, Rick Carpenter, has identified the following water division story elements to be emphasized in outreach efforts:

1. Most reliable and diverse water supply in the country

Since the early 2000's, the City of Santa Fe has developed one of the most reliable and diverse supply in the country. The City came close to not meeting low-flow fire suppression requirements. As a result, improved aging infrastructure with the addition of five new Buckman Wells, water treatment plant upgrades, city well field improvements and the design and build of the Buckman Direct Diversion Water Treatment Plant.

2. Watershed thinning

Thinning the watershed (fuels reduction) is imperative. Snowmelt runoff that feeds the reservoir accounts for 50 percent of supply. A crown fire would make the reservoir useless for more than a decade. U.S. Forest Service and other organizational support is important. Public outreach is necessary and also for timely updates if someone sees smoke, where do they go for more information.

3. Wastewater as potable supply

Wastewater as potable water will make the water supply more diverse. Prediction models indicate there is a gap in supply and population demand in 40 years. The model assumes 85 GPCD. Public acceptance of potable wastewater is a key requirement.

4. CIP Project Development

Until recently, engineering capacity has limited the City's ability to develop and manage design and build CIP projects to paid for from water rates accumulation. The City anticipates two new wells and a a new hospital tank and other water storage projects.

5. New Meter Customer Water Use App

New meter (Badger) system includes a customer downloadable app that will track and notify water usage to both prevent long-term leaks and provide comparative use as a water saving tool. The new system is in pilot stage and community education on the map will be necessary.

GOALS

Use year-one of a four-year plan to build a data and results-driven integrated PR and marketing plan as a key adaption strategy to help reduce a predicted 40-year water demand production gap between supply and population demand.

PR OBJECTIVES

- I. More strongly promote the City of Santa Fe's Water Division story to build proactive public acceptance of emerging supply programs.
- II. Frame the issue and align segment audiences using psychographic behavioral data gleaned from data collection.
- III. Use and improve strategic alliances to increase the public's understanding of how water issues are connected and the role they play.
- IV. Ensure the water conservation office has the tools to engage customers on communication platforms they prefer.
- V. Use data to identify target audience and develop advertising creative and strategically purchase and place advertisements.

TARGET AUDIENCES – TO BE DETERMINED BASED ON DATA COLLECTION

Primary

Secondary

(commercial, short-term rentals, tier-2 water users)

MESSAGING – TO BE DETERMINED BASED ON DATA COLLECTION RESULTS

STRATEGY COMPONENTS

The following strategies were accepted by the City Council on February 17, 2016 as part of a four-year plan and serve as the guiding foundation for informing the implementation tactics.

The measurable success rates are currently being modified for the current one-year contract.

Component A – *Guide targeted customers on how to take ownership of using water efficiently.*

Success Metric - maintaining GPCD levels at 95 or below and/or 2 percent increase in Water Bank.

Component B – *Promote commercial business incentives to assist commercial customers to change water related equipment to make permanent reductions in water use and modify end-use customer behaviors.*

Measurable success rate is defined as x percent increase in hotel, food/beverage and spa participation in Santa Fe Green Lodging initiative and rebate participation.

Component C – *Promote outdoor rebates is not a part of the one-year contract due an ordinance revision, but outdoor watering will continue to be promoted as an integral piece of Santa Fe's water saving story.*

Component D – *Continuation of ongoing general awareness news items and event promotions.*

Measurable success rate is defined as 200,000 reach and 100,000 impressions in earned media. Earned media will also be calculated for tone, placement and message. Education and community events are currently being re-evaluated for FY 2017-2018 budget cycles.

Component E – *Add new and social media to the promotional mix to reach more customers through the media they use.*

Measurable Success is initially defined as 250,000 reach and 500,000 impressions. Analytic tools will guide revision of the success metric and will be reviewed weekly and monthly.

Component F – *Integrate digital (on-line/social) and traditional advertisement with targeted placement.*

TACTICS TO ACHIEVE OBJECTIVES

i. Re-brand the logo and tagline – Priority

What's Important?

- The logo design is difficult to read and print.
- The color-scheme is outdated.
- The re-branding will inform the website revision, social platforms, photo winner signage and all other plan elements.
- Photo contest winner signage will not be finalized until re-brand.

ii. Data collection survey coordination

What's Important?

- The draft behavioral survey is drafted and has been reviewed by CC & RC
- Sustainable Santa Fe is also conducting a survey and coordination for survey collection and promotion are possible.

Deliverables & Timeline

- 8/01 Schedule Sustainable Santa Fe meeting
 - i. Identify cross-promotional opportunities
 - ii. Identify collection and results process

iii. Social media as promotional mix

What's Important?

- PKPR has sub-contracted (start date 8/8) to ensure continuity and maintain social media customer engagement.
- Analytic results will drive engagement strategy and be collected weekly.
- Content will be scheduled, but allow for topical and time-sensitive engagement.

Deliverables & Timeline

- 8/10 PKPR to purchase social media analytic tools
- 8/10 PKPR to draft content (48) for eleven-month schedule
- 8/10 PKPR draft process for identifying unscheduled content

iv. Website as promotional mix

What's Important?

- Website needs to be compatible with social media platforms
- Visual content drives customer engagement
- Website engagement is more effective with “behind the scenes and “how to” videos
- The website platform was developed in 2012

Deliverables & Timeline:

- 8/10 Interview website vendors
- 8/17 Solicit 3 bids
- 8/19 CC to review bids
- 8/28 Schedule website review meeting (CC, PKPR, Vendor)
- 9/03 Vendor to provide timeline, needs and review process
- Late Fall/Early Winter Website goes live

v. Commercial rebate promotion

What's Important?

- Businesses are not aware of new commercial rebate
- Previous plan not implemented
- Green Hotel Initiative is a partner
- Sustainable Santa Fe is a partner
- City has increased the # of short-term rentals

Deliverables & Timeline

- 8/01 CC to provide PKPR with overview of Hotel initiative
- 8/15 PKPR to meet with CC to identify planning
- 8/15 Short-term rental discussion

vi. Advertisement as promotional mix

What's Important?

- Approximate \$75,000 AD budget from separate line item
- To have ad firm direct purchase would require either an ad RFP or PKPR contract amendment by City Council
- During contract lapse, purchase orders were placed with 5 vendors:

Hutton Broadcasting – \$11,975.70 for Radio

2,160:30 total commercials

180 :30 commercials to air the first two or last two weeks of each mo.

All radio creative and production included

Monday – Sun 5a-8p

10 spots on 6 channels

Monday – Sun 5a-Mid

10 spots on 6 channels

Monday – Sun Mid-Mid

10 spots on 6 channels

Bonus

SantaFe.com Featured Business Profile

(need to review profile)

KSWV-AM (soon FM) - \$11,156.14

Weekly Water Talk Show

Santa Fe Hometown News - \$4,874.04

12-month monthly advertising

Tumbleweeds - \$3,574.31

Half page 4x (horizontal half page with full color)

Edible - \$6,135.41

½ page ad for six months for 2016 late summer through early 2017 summer

- Without data and target segmentation, other vendors have not been identified for the remainder of the \$75 budget.
- Peak advertisement is seasonal (March – September)
- Water Conservation staff have previously developed ads internally
- Advertisement placement was not strategically aligned with planning

Deliverables & Timeline

- City to provide Edible information
- PKPR to schedule meeting with KSWV to identify program planning, topics & podcast share
- PKPR to review business profiles
- 8/10 PKPR & Esparza to review contracts & identify placement schedule (who, what & when) for existing POs
- Work with Hutton to provide plan on to how best use radio spots
- FALL Team to review data survey results
- FALL develop ad creative and placement suggestions for existing ad POs and remainder budget (data survey will drive creative and placement.
- MARCH Advertisement to be rolled-out during seasonal peak (March-September)
- MARCH/APRIL PKPR will seek contract adjustment in March to move the advertising budget line item into PKPR contract to by-pass individual PO or RFP in order to improve advertising ROI and sub-contract with Esparza for FY17-18 for full ad budget placement starting July 1, 2017).

vii. Water Conservation Committee as ambassadors

What's Important?

- WCC members are working on project that directly align with office programming.
- WCC alignment with outreach will increase effectiveness.

Deliverables & Timeline

- 8/09 PKPR to provide PR training to WCC
- 8/20 PKPR to provide input on PR element of scorecard
- 10/5 PKPR to update downloadable general presentation

Christine

Below is a report from the Code/Regulations/Legislation Workgroup. I will bring copies to hand out today.

ICC Rainwater Code

Committee votes on changes to code due August 27th

City of Santa Fe UPC 2015 Plumbing Code Approval

UPC 2015 covers new alternatives water sources (i.e. rainwater and greywater). It requires locks on outdoor hydrants/spigots. It adopts Chapter 17, where the state made this optional.

- Approved City Council Meeting
- Public Utilities on 1/6/16
- Public Works on 1/11/16
- Council Request to Publish on 1/13/16
- Finance on 1/19/16
- Council Public Hearing on 2/10/1

On the agenda for the September meeting.

Other Water News

Risk Analysis Approach to Rainwater Harvesting Systems

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwjOxs-snLXOAhXEOCYKHfzIAaMQFggxMAE&url=http%3A%2F%2Fwww.mdpi.com%2F2073-4441%2F8%2F8%2F337%2Fpdf&usg=AFQjCNFThwGTNMnhhV4qKVbU_KzpWLK8Dw&sig2=wroVfoY1dB6FJio0LhyYUA

Tucson implementing rebate program targeted at low income

http://tucson.com/news/local/low-income-residents-left-out-of-tucson-water-harvesting-rebates/article_acb89804-e9b3-5929-adf3-ea9d443ab089.html

http://tucson.com/news/local/govt-and-politics/tucson-city-council-bans-sale-of-high-capacity-guns-at/article_582bc693-e3ce-5751-9a4d-f412b00d8934.html

Nevada Drought Forum Recommendations

<http://lasvegassun.com/news/2016/may/21/act-now-to-save-water-for-the-future/>

UC Davis researchers partner with brewery to collect urine and generate fertilizer

<http://www.sacbee.com/news/local/environment/article93174522.html#storylink>

Group D - Doug Pushard

Exhibit B

8/9/2016 3:08 PM

The following explains how I obtained and handled the data.

Search **WRCC**

Click **Western Regional Climate Center** <http://www.wrcc.dri.edu/>

Under Historical Data, click **Climate Summaries** <http://www.wrcc.dri.edu/climate-summaries/>

Click

Western U.S. Climate Summaries – NOAA coop stations <http://www.wrcc.dri.edu/climatedata/climsum/>

Click on map (**US COOP Station Map**) <http://www.wrcc.dri.edu/coopmap/>

Zoom to Santa Fe, and press "**show stations**"

The map and table (the table below "show stations") will show 20 to 40 stations depending on the zoom level. Thirteen of them have no data. At distances greater than 10 miles, three stations (PECOS NM, COCHITI DAM, and AND LOS ALAMOS) have data to 2016.

Of those within 10 miles of the Santa Fe plaza, the following three have data to 2016.

SANTA FE SETON <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm8088>,
SANTA FE 2 <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm8085>, and
SANTA FE CO MUNI AP <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm8078>)

To access the tabular precipitation data for SANTA FE 2, click on SANTA FE 2 Coop ID number (298085) in the list below the map. This brings up the period of record climate summary. Scroll on left side to Precipitation/Quantity/•Monthly Precipitation Listings/Monthly Totals. The table shows monthly totals from 1972 to the present. The data can be imported (copy/paste) into an Excel spreadsheet.

In the case of missing data, the report attaches symbols to the data, described as follows:

a = 1 day missing, b = 2 days missing, c = 3 days... etc.,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS: 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

The missing data is a problem. I considered the stations in the following order, according to the following rules:

For SANTAFESETON, I entered the largest value from the other two stations, unless the SANTAFESETON station value was already the same or larger, in which case I used that value.

For the SANTAFE2 station, I used the average of the other two stations, unless the SANTAFE2 station value was already the same or larger, in which case I used that value.

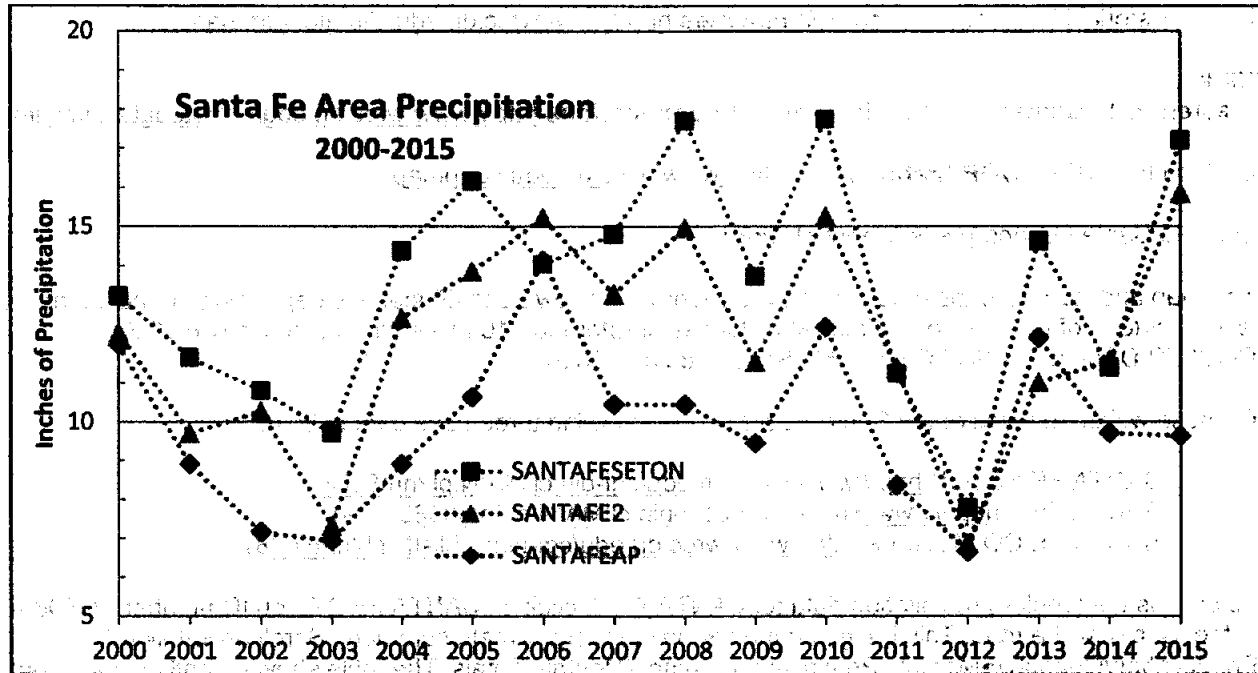
For the SANTAFEAP station, if the missing data code was a, b or c (1, 2, or 3 days missing), I used the monthly total as given. Otherwise, I used the smallest value from the other two stations, unless the SANTAFEAP station value was greater, in which case I used that value.

Group E - *Liam Michael
Robert Crumbe*

Exhibit C

I looked at precipitation data from three Santa Fe area stations for January 2000 through June 2016. The Santa Fe Seton station is two miles SW of El Gancho; the Santa Fe 2 station is one mile SW of St. Francis & I-25; the third station is at the airport.

Annual summary results are graphed below:



Annual summaries:

YEAR	SANTA FE SETON	SANTA FE 2	SANTA FE AIRPORT
2000	13.24	12.28	10.97
2001	11.66	9.71	8.91
2002	10.81	10.27	7.17
2003	9.72	7.33	6.95
2004	14.40	12.66	8.91
2005	16.17	13.86	10.65
2006	14.05	15.23	14.14
2007	14.81	13.28	10.46
2008	17.71	14.97	10.45
2009	13.74	11.55	9.46
2010	17.76	15.27	12.44
2011	11.26	11.39	8.38
2012	7.80	6.86	6.67
2013	14.65	11.02	12.16
2014	11.41	11.56	9.72
2015	17.22	15.86	9.65

