



Agenda

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SUSTAINABLE SANTA FE COMMISSION

Tuesday, November 13, 2012
City Councilors' Conference Room
City Hall, 200 Lincoln Avenue
Santa Fe, NM
2:30 to 4:30 p.m.

- A. CALL TO ORDER
- B. ROLL CALL
- C. APPROVAL OF AGENDA
- D. APPROVAL OF MINUTES – September 18 and October 16, 2012
- E. COMMUNICATIONS FROM THE FLOOR
- F. REPORT FROM AND ASSIGNMENT OF ACTIONEER
- G. PRESENTATION/POSSIBLE ACTION ITEM: Recommendation on Climate Change and the Santa Fe Watershed study (C. Borchert) (20 min.)
- H. STAFF COMMUNICATIONS (5 min.)
 1. Report to PUC on USDN and ISC meetings
 2. Recycling outreach update
- I. DISCUSSION/ACTION ITEMS
 1. Strategic Plan follow-up
 - Update on Projects Underway –
(EMS, STAR, Communications & Public Outreach Campaign) (20 min.)
 - Process/Criteria for New Projects/Campaigns (20 min.)
- J. UPDATES AND OPPORTUNITIES (5 min.)
 1. Plastic Bag Ban
 3. Chapter 14
 4. Low Emission Sticker for Parking
- K. ITEMS FROM THE CHAIR- recommendation of Maria Rotunda for vacancy
- L. ITEMS FROM THE COMMISSION
- M. ITEMS FOR NEXT AGENDA
- N. ADJOURNMENT

Next Meeting: – December 18, 2012

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

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SUSTAINABLE SANTA FE COMMISSION
November 13, 2012

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MINUTES OF THE
CITY OF SANTA FE
SUSTAINABLE SANTA FE COMMISSION
November 13, 2012

CALL TO ORDER

A meeting of the City of Santa Fe Sustainable Santa Fe Commission was called to order by Bianca Sopoci-Belknap, Chair at 2:30 p.m. at the City Hall, City Councilors' Conference Room, Santa Fe, New Mexico.

ROLL CALL

Roll call indicated the presence of a quorum for conducting official business as follows:

MEMBERS PRESENT:

Bianca Sopoci-Belknap, Chair
Esha Chiocchio
Reina Fernandez
Isaac Raphael Garcia-Weinberger
Kim Kelly
Louise Pape

MEMBERS ABSENT:

Kim Shanahan, Vice Chair, resigned
Faren Dancer

STAFF PRESENT:

Claudia Borchert, Water Division, Water Resources Coordinator
Katlynn Jennings, Americorps Cadre Member
Katherine Mortimer, Environmental Services Division
Cindy Padilla, Environmental Services Division Director

OTHERS PRESENT:

Tiffany Joiner, visitor
Lisa Merrill, Solid Waste Management Agency
Jose Murlo, visitor
Andrea Romero, prospective candidate for Commission vacancy

Seth Roffman, *Green Fire Times*
Jo Ann G. Valdez, Stenographer

APPROVAL OF AGENDA

Commissioner Garcia-Weinberger moved to approve the agenda. Commissioner Fernandez seconded the motion. The motion passed unanimously by voice vote.

APPROVAL OF MINUTES: September 18, 2012

Commissioner Garcia-Weinberger moved to approve the Minutes of the September 18, 2012 meeting. Commissioner Fernandez seconded the motion. The motion passed unanimously by voice vote.

October 16, 2012

The following changes were offered to the Minutes of the October 16, 2012 meeting:

Page 7, 3rd paragraph from the bottom was changed to read: "*Commissioner Kelly noted that she has a meeting with the Parking Operations Manager...*"

Page 7, 5th paragraph from the bottom was changed to read: "*She explained that the City of Albuquerque suggested that the City of Santa Fe charge a \$10.00 registration fee to cover the costs of the program.*"

Commissioner Garcia-Weinberger moved to approve the Minutes of the October 16, 2012 meeting as amended. Commissioner Pape seconded the motion. The motion passed unanimously by voice vote.

COMMUNICATIONS FROM THE FLOOR

Introductions were made.

Chair Sopoci introduced Andrea Romero who is interested in possibly serving on the Commission.

Ms. Romero provided a brief history of her background noting that she is a native of Santa Fe and she recently moved back to Santa Fe.

Andrea Romero worked for the International Food Policy Research Institute in Washington, D.C. and she is very interested in doing this locally. Ms. Romero also ran a project in Africa on sustainable farming and water harvesting. She said she comes from a farming and policy perspective and wants to learn more about what is happening in Santa Fe. She is presently working for a startup company in Santa Fe called “G-3”.

Tiffany Joiner said she moved to Santa Fe in July and Andrea Romero invited her to the meeting.

Jose Murlo said he is working at the Boca Restaurant and he is interested in what the Commission is doing.

Seth Roffman distributed copies of the current issue of *Green Fire Times*, which is focused on clean energy, water and solar. He noted that there is an article about the City joining the Western Adaptation Alliance. The January issue will focus on food and agriculture issues.

REPORT FROM AND ASSIGNMENT OF ACTIONEER

Commissioner Garcia-Weinberger offered to be the Actioneer for this meeting.

PRESENTATION/POSSIBLE ACTION ITEM: Recommendation on Climate Change and the Santa Fe Watershed Study (Claudia Borchert)

{Copies of the *Executive Summary and the Table of Contents of the Climate Change and the Santa Fe Watershed: A Preliminary Assessment* were distributed. A copy is hereby incorporated to these Minutes as Exhibit “B”.}

Ms. Borchert said as directed by Resolution 2011-17 *A Resolution Directing Staff to Prepare Revisions to the City’s Long Range Water Supply Plan for the Governing Body’s Review with a Special Emphasis on Climate Change*, staff has been analyzing how projected climate change impacts will affect our watershed in general and water resources specifically. Through the Santa Fe Basin Study, as part of the Bureau of Reclamation’s WaterSMART Program Initiative, the City teamed with Santa Fe County and Reclamation to hold a public workshop on climate change (March 6, 2012) and produced this preliminary assessment. To save resources on a draft report, the rest of the assessment is available on line at www.cityofsantafe or can be provided on a CD upon request.

Ms. Borchert noted that there will also be a Phase 2 of the project. The second part of the Basin study will update the water resources system simulation model (WaterMAPS) to include Santa Fe water utility and to incorporate information that account for the projected climate change impacts on stream flow, temperature, precipitation and evaporation. The result of the Basin Study will determine to what extent projected climate change impacts will modify the current estimated “gap” between water supply and water demand and whether the solutions from the City’s current Long Range Water Supply Plan (2008) and the County’s 40-year Water Plan are adequate to meet the multiple future water challenges presented by climate change.

Staff is seeking feedback from the Public Utilities Committee and other committees before finalizing it. Staff will incorporate suggestions submitted through November 26th. Of note, Commissioner Pape has submitted her suggestions.

One priority is the request that all governmental actions consider the impact of a bill, resolution or contract on mitigation and adaptation of climate change before approval is granted, much as a Fiscal Impact Report is used to consider the financial implications of proposed actions.

Chair Sopoci-Belknap said incentive-mechanisms are extremely valuable.

STAFF COMMUNICATIONS

1. Report to Public Utilities Committee on USDN and ISC Meetings

Ms. Mortimer said staff gave a report to the Public Utilities Committee last week, on both the USDN annual meeting and the ISC training, and they did not receive much feedback. Staff had some recommended actions for the Public Utilities Committee to consider and discuss - on what actions the City and the County could take to make us more resilient and prepare ourselves to adapt to the effects of climate change.

Commissioner Pape asked if they recommended that an adaptation resolution be done.

Ms. Mortimer said no, an adaptation resolution did not move forward. The big piece of it is doing adaptation preparedness.

Ms. Padilla said this was probably the first recommendation staff made. Prior to the meeting they also met with staff from Emergency Management and the Emergency

Management Preparedness Director, to enlist his support to look at City operations and how prepared the City is in terms of changes in climate. This meeting went well and the Management Preparedness Director was very supportive. The City also issued a proposal for a hazard mitigation plan for the City.

Ms. Padilla said the other recommendation was the resolution supporting the City's membership into the Western Adaptation Alliance. She noted that the Public Utilities Committee did not take any action.

Commissioner Garcia-Weinberger asked what types of things people should be preparing for in terms of adaptation and climate change.

Ms. Mortimer said the model that the City is looking at starting out with is one that is based on the model that Flagstaff developed, which is really looking at city services in how those things will be delivered if we have the events that are anticipated with climate change. For examples, more frequency of fires and drought and the impact of surface water as a result. Also, Homeland Security has been directed to look at climate change.

Chair Sopoci-Belknap asked if a request for proposal will go out for the hazard mitigation plan.

Ms. Mortimer said a consultant has already been chosen. Adaptation to climate change will be included in the hazard mitigation plan.

Commissioner Garcia-Weinberger asked if there is anything the Commission can do.

In response, Chair Sopoci-Belknap mentioned that Commissioner Shanahan had originally drafted a letter that would go to staff and City Councilors. She offered to send it to the Commissioners electronically so they can review it and make edits, if necessary.

Commissioner Pape said it is really important to get department heads involved with regard to adaptation because they have the ability to implement policy.

2. Recycling Outreach Update

Ms. Padilla invited the Commissioners to the City Council meeting tomorrow where the Mayor will issue a Proclamation proclaiming November 15 as America Recycles Day in

Santa Fe. The Mayor will also recognize local businesses that have committed to recycling, are protecting the environment, and saving money. The recognition is being sponsored by the New Mexico Recycling Coalition, the New Mexico Green Chamber – Santa Fe Chapter and the city's Environmental Services Division. The following businesses will be recognized: Department of the Interior, Bureau of Land Management, Earthstone International, Gaia Gardens, New Mexico Highlands University, Positive Energy Solar, Restaurant Martin, Santa Fe Business Incubator, and the Santa Fe Public Schools.

The proclamation reinforces the city's commitment to protecting and preserving our natural resources reducing waste by increasing recycling, composting, reusing products and materials, and purchasing products with recycled content. It is important that we encourage businesses, state agencies, nonprofit organizations, schools and individuals to celebrate America Recycles Day 2012, as together we can further promote recycling as an environmentally and economically smart habit. Together we can make a difference in our community and recycling is an easy way to do your part.

Ms. Merrill noted that the County has put together a Solid Waste Task Force. Also, discussion was held at the Solid Waste Advisory Committee (SWAC) to do a re-use monthly study in May or June of 2013 to see if what they receive at the Transfer Station is actually reusable. They are presently drafting the request for proposals.

Ms. Merrill mentioned that the Friedman Recycling Facility that is being built in Albuquerque is scheduled to open in March 2013. She explained they are not ready to talk about recyclables as of yet.

DISCUSSION/ACTION ITEMS

1. Strategic Plan Follow-up

- Update on Projects Underway
(EMS, STAR, Communications & Public Outreach Campaign)

Chair Sopoci-Belknap said the Commission has strayed from their focus. She suggested that the Commission look at the things that are on their plate already and add other things carefully, so that they align with the Commission's sustainability goals and focus. She thinks in terms of subcommittee work, the focus should be on outreach efforts and getting the EMS template together so that there are concrete resources to offer to City department heads, businesses, non-profit organizations and individuals in the community, so that people can take action to reduce their impact on the climate. The process or criteria for new

projects/campaigns needs to be discussed. Chair Sopoci-Belknap said the Commission has no way of actually tracking their progress.

{Copies of the “*Pledge Form*” for businesses were distributed. A copy is hereby incorporated to these Minutes as Exhibit “A”.} This will be used to do outreach to the businesses in Santa Fe.

Ms. Jennings noted that the EMS template would not be ready for a while.

Commissioner Chiocchio mentioned that Aspen, Colorado has a similar model like this. Businesses that meet the criteria will get a green decal that they can put on their place of business that indicates that they are a green business. She noted that they have a link on-line and she offered to send the link to the Commissioners.

Chair Sopoci-Belknap said the Commission could alert the Green Chamber about the Aspen model.

Chair Sopoci-Belknap asked if anybody wanted to work on the public outreach efforts. Commissioner Fernandez, Ms. Merrill and Ms. Jennings offered to help with the public outreach campaign.

- Process/Criteria for New Projects/Campaigns
- This agenda item was briefly discussed above.

**Due to time constraints, the following agenda items were not discussed.*

UPDATES AND OPPORTUNITIES

- 1. Plastic Bag Ban**
- 2. Chapter 14**
- 3. Low Emission Sticker for Parking**

ITEMS FROM THE CHAIR

There were no items from the Chair.

ITEMS FROM THE COMMISSION

There were no items from the Commission.

ITEMS FOR NEXT AGENDA

Commissioners were asked to submit future agenda items that they would like to discuss to Chair Sopoci-Belknap so she can get them on the agenda.

ADJOURNMENT

Schedule next meeting/ adjournment

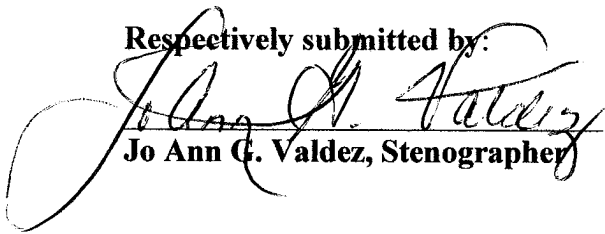
The next meeting is scheduled for December 18, 2012 from 2:30 p.m. to 4:30 p.m.

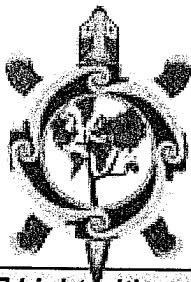
Commissioner Pape moved to adjourn, second by Commissioner Kelly, the meeting adjourned at 4:30 p.m.

Approved by:

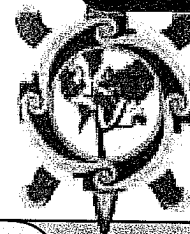
Bianca Sopoci-Belknap, Chair

Respectively submitted by:


Jo Ann G. Valdez, Stenographer



As a responsible business, we pledge to...



- ☐ **Light with compact fluorescents or LED bulbs**— Compact fluorescents can provide the same light as incandescent bulbs using about 67% less energy.
- ☐ **Eliminate phantom energy loads**— Turn off equipment when it's not being used and at the end of the day to reduce your energy consumption by up to 25%!
- ☐ **Insulate your water heater tank**— This will save you around 4%–9% in water heating costs and can be done for around \$20.
- ☐ **Program your thermostat**— to lower the temperature for times when your building is not occupied.

Reduce Energy Use

- ☐ **Install displacement toilet dams**— placing one or two sealed plastic containers filled with stones in the toilet's reservoir is a cheap and easy way to save up to 4 liters per flush!
- ☐ **Add low-flow aerators to compatible faucets**—
- ☐ **Use native, low-water plants in landscaping**— This will save you money on irrigation and display your commitment to the community.
- ☐ **Post signs** encouraging water-conscious behavior above sinks and near other water sources.

Conserve Water

- ☐ **Set printer settings to double-sided** and encourage document-sharing via email or online storage services to reduce paper waste. Think before you print!
- ☐ **Recycle**— Recycling reduces landfill gas generated by decaying matter and cuts the energy needed to manufacture new products.
- ☐ **Stock reuseable dishes** and utensils in your break room.
- ☐ **Refurbish**— Before purchasing new office furniture, see if your existing office furniture can be refurbished. It's less expensive and better for the environment.

Reduce Waste

- ☐ **Go Local**— Use restaurants or caterers that use local food and minimal, recycleable packaging for any catered meetings or business lunches.
- ☐ **Purchase alternative fuel vehicles** for your business.
- ☐ **Backhaul**— Choose suppliers who take back packaging for reuse or who have recycling
- ☐ **Buy energy efficient appliances**— Look for the Energy Star label for easy selection, and remember that these items pay back their upfront cost in long-term savings.

Make Green Purchases

Pledged by: _____

Title: _____

Organization: _____

Contact: _____

City of Santa Fe, New Mexico

memo

EXHIBIT

tabbles

B

DATE: October 30, 2012
TO: Public Utilities Committee
VIA: Rick Carpenter, Water Resources and Conservation Section Manager *RC*
Brian K. Snyder, Public Utilities Department and Water Division Director *BKS*
FROM: Claudia I. Borchert, Water Resources Coordinator *CIB*
RE: Climate Change and the Santa Fe Watershed: A Preliminary Assessment

Item and Issue: Climate Change and the Santa Fe Watershed: A Preliminary Assessment

Included in this PUC packet is the executive summary and the table of contents of the *Climate Change and the Santa Fe Watershed: A Preliminary Assessment*. To save resources on a draft report, the rest of the assessment is available on line at www.cityofsantafe or can be provided on a CD upon request.

Highlights of the report:

- Section 2 summarizes the current state of the climate change science for our watershed.
- Section 3 captures the process of the workshop, and the subsequent activities that lead to this assessment.
- Section 4 describes the vulnerabilities of our watershed, grouped by water supply, ecosystem, agriculture/food security, land use/quality of life, energy, transportation, economic, and sociological systems.
- Section 5 is perhaps the most important section because it identifies 1) what can be done to adapt to projected climate change impacts and 2) what activities, and they are numerous, are currently being undertaken throughout the watershed. The list of activities, largely gathered from the public at the workshop is impressive, but likely incomplete.
- Appendices record the content of the presentations given by experts at the workshop and the feedback gathered from the workshop attendees. The expert presentations and other information related to this project are also available on the City's website at <http://www.santafenm.gov/index.aspx?NID=2577>.

Background

- ✧ As directed by Resolution 2011-17 *A Resolution Directing Staff To Prepare Revisions To The City's Long Range Water Supply Plan For the Governing Body's Review With A Special Emphasis on Climate Change*, staff has been analyzing how projected climate change impacts will affect our watershed in general and water resources specifically. Through the Santa Fe Basin Study, as part of the Bureau of Reclamation's (Reclamation) WaterSMART Program Initiative, the City teamed with

Santa Fe County and Reclamation to hold a public workshop on climate change (March 6, 2012) and produced this preliminary assessment.

The second part of the Basin Study will update the water resources system simulation model (WaterMAPS) to include Santa Fe County water utility and to incorporate information that account for the projected climate change impacts on stream flow, temperature, precipitation and evaporation. The result of the Basin Study will determine to what extent projected climate change impacts will modify the current estimated “gap” between water supply and water demand and whether the solutions from the City’s current Long Range Water Supply Plan (2008) and the County’s 40-year Water Plan are adequate to meet the multiple future water challenges presented by climate change.

Next Steps and Schedule:

November 2012

- Seek comments on assessment from Sustainable Santa Fe Commission, the Water Conservation Committee, River Commission and Santa Fe County Commission
- Finalize assessment
- Issue press release on assessment
- Post final assessment on City’s website

December 2012

- Create a polished flyer based on the assessment’s executive summary
- Seek governing body approval of CDMSmith contract for Part 2
- Circulate final assessment to workshop attendees
- Initiate monthly Climate Change brown bag lunch discussions

January 2013

- Begin Phase 2 work and analysis

August 2013

- Update to PUC on progress

April 2014

- Final draft of region’s water supply plan to PUC, other recommended committees and the City Council for approval, and Board of County Commission, if desired by County staff.

Requested Action:

Staff is seeking any feedback from the PUC on the assessment before finalizing it. Staff can incorporate suggestions submitted through November 26th, 2012.

October, 2012

Climate Change and the Santa Fe Watershed: A Preliminary Assessment

Bureau of Reclamation WaterSMART Program Initiative

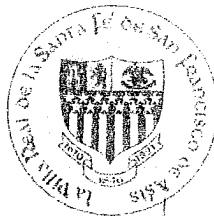


Prepared for:

Bureau of Reclamation

City of Santa Fe

Santa Fe County



Comments by 11/30/12

Prepared by:



Amy C. Lewis, Hydrology and Water Planning

And



ISET

Karen MacClune and Kari Tyler
Institute for Social and Environmental Transition

In cooperation with

Claudia Borchert¹, Dagmar Llewellyn², Karen Torres³,

¹ City of Santa Fe, ² Bureau of Reclamation, ³ Santa Fe County

Acknowledgments

The authors would like to thank the experts that presented at the Santa Fe Watershed Climate Change Workshop and provided the foundation for the summary of the projected climate change impacts in this assessment. Their presentations are available at: <http://www.santafenm.gov/index.aspx?NID=2577>. Reviewers of the document who, in part, provided information on existing actions in the Santa Fe watershed are also appreciated: Jan-Willem Jansen of Ecotone, and Craig O'Hare and Duncan Sill of Santa Fe County, Brian Drypolcher and Katherine Mortimer with the City of Santa Fe, Louise Pape with the Sustainable Santa Fe Commission, and Jonne Hower, Amanda Erath and Dave Truman, with the Bureau of Reclamation. Thanks the City of Santa Fe for providing the venue for the workshop and for the 120 members of the community that participated and offered their insights on the vulnerabilities of their systems.

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List of Abbreviations

Basin Study = Santa Fe Climate Change Basin Study
 City= City of Santa Fe
 County = Santa Fe County
 FDSI = Forest Drought Stress Index
 gpdc = gallons per capita per day
 NDVI = Normalized Difference Vegetation Index
 NMED = New Mexico Environment Department
 OSE = New Mexico Office of the State Engineer
 Reclamation = U.S. Department of the Interior Bureau of Reclamation
 SFWA = Santa Fe Watershed Association
 SJC = San Juan-Chama Project
 SWQB = Surface Water Quality Bureau
 TNC = The Nature Conservancy
 USGS = U.S. Geological Survey
 WaterSMART = Sustain and Manage America's Resources for Tomorrow

Executive Summary

Climate change is projected to have profound impacts on the Santa Fe watershed. The degree to which we will gracefully weather and adapt to the impacts will largely be determined by the preparations we engage in today. This preliminary assessment, collaboration among the City of Santa Fe, Santa Fe County and the Bureau of Reclamation, investigates how projected climate change impacts may influence some of the key natural and human systems in our watershed. The assessment also explores the adaptive actions that we, as stewards of this watershed, may consider implementing and details many of the ongoing activities that will increase the resiliency of our community.

CLIMATE CHANGE IMPACTS

Climate change has already begun and will continue to worsen. While exactly how the multiple changes will evolve is not totally certain, the experts in the field are confident in projecting, at a minimum, the following impacts to our watershed:

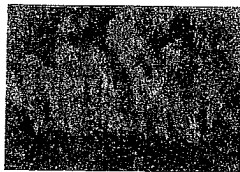
- Increased temperatures;
- Diminished snowpack and earlier spring melt of existing snowpack;
- Reduced stream flow due to greater evaporation rates and water use by plants;
- Earlier stream flow peak (from earlier snowmelt) and dampened peak flows;
- Drier mid- to late-summers;
- More severe and frequent droughts;
- Increased fire activity and risk of catastrophic fire; and
- More intense precipitation events resulting in increase peak storm flows, greater magnitude and frequency of flooding, higher erosion rates, more sediment transported by storm flows.

VULNERABILITIES

Through an interactive, public workshop held in Santa Fe on March 6th, 2011, the community and climate change adaptation experts identified the vulnerabilities of water supply, ecosystems, agriculture, land use and quality of life, energy, transportation, economic, and sociological systems. Even though each of these systems inherently overlaps with others and the boundaries are constructs, the systems approach allows us to focus on the most critical aspect of each. A summary of the vulnerabilities are briefly described below:



Water supply: decreased surface water availability; increased water use; unsustainable groundwater use; storage insufficient to capture storm events; debris flows triggered from catastrophic-fire causing loss of storage capacity; degradation of water quality; more frequent restrictions from Rio Grande Compact; increased competition over resource; less groundwater recharge.



Ecosystems: forests vulnerable to insects, fire, and desiccation; less available water; higher water needs; incursion of invasive species; habitat degradation from storms, flooding, erosion, and lack of water; loss of fisheries, upland forests, and grasslands; post-fire forests being replaced by grasses and shrubs, not the original native trees.



Agriculture: reduction in available water supply; increased crop water demand; greater divergence between highest stream flows and when water is needed for irrigation; increased damage to crop from pestilence, high winds, violent rain storms, and flooding; increased pressure to transfer agricultural rights to urban areas; rural-urban conflicts over water and water rights; failure of genetically engineered crops; reduction in viable grasslands for cattle; livestock reduction and mortality from extreme weather conditions and rising cost of feed; increasing food prices.



Land use and quality of life: increased water needs for green spaces; increase of urban flooding; reduction in quality fishing opportunities; reduction in length of skiing and rafting seasons; diminished hiking, biking, and hunting opportunities due to fire; poorer air quality; increased heat stress in elderly, the infirmed, and infants from higher summer daytime and nighttime temperatures.



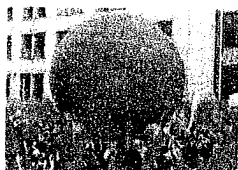
Energy: increased competition for water with energy production of water-intensive coal, natural gas and nuclear; less hydropower production; reduction in solar production because of higher temperatures and more air particulates; increased energy consumption during the summer and extreme cold weather events; reduced power and gas reliability during extreme conditions.



Transportation: increased interruptions from dust storms, intense rains, and smoke; failure of infrastructure (paved roads, bridges, culverts, rails) designed for less extreme conditions; more difficult flying conditions under higher temperatures.



Economic: tourism and population growth may decrease if climate conditions are unfavorable (e.g. too hot, not enough snow, smoky); insurance premiums may rise for services impacted by natural hazards; cost of energy and water may increase as each becomes more expensive to acquire and transmit.



Sociological: limited local and regional governmental resources to provide emergency services for increased severe weather events; maladaptation of institutions inflexible to rapidly changing conditions; disruption in cultural identities and traditions.

The value of identifying vulnerabilities lies in finding adaptation actions that will address vulnerabilities and thereby increase the watershed's resiliency. While it may seem daunting to

face the long and sobering list of liabilities, a silver lining exists. First, most of the adaptation actions fall into the "no-regrets" category - meaning that the benefits of the proposed activities render adaption worthwhile, regardless of the future conditions. Second, the Santa Fe community has collectively already engaged in a number of actions that have already increased the ability of our collective watershed- humans included- to respond and adapt to projected changes.

The recommended adaptation activities listed below are limited to those that have not, to some degree, been implemented. Current ongoing efforts are listed in the following section and their continuation is also advised.

RECOMMENDED ADAPTATION ACTIVITIES

- ❖ Improve ecosystem biodiversity.
- ❖ Manage and plan restoration holistically.
- ❖ Design or modify bridges and culverts to handle higher intensity runoff events.
- ❖ Incorporate urban agriculture in water and land use planning.
- ❖ Cultivate climate appropriate crops.
- ❖ Transfer water from agriculture to urban during drought for limited-term.
- ❖ Adjudicate Santa Fe basin water rights.
- ❖ Provide incentives and programs to significantly reduce high water users.
- ❖ Augment potable water supplies with reclaimed wastewater.
- ❖ Increase water storage capacity.
- ❖ Require pervious pavement where appropriate.
- ❖ Decentralize energy infrastructure.
- ❖ Municipalize energy system.
- ❖ Expand water harvesting techniques.
- ❖ Install solar panels over parking lots and elsewhere to reflect heat and produce energy.
- ❖ Establish a climate-change targeted monitoring system.

John Jones' email to this from 11/20/13

Katherine, Building strategies?

CURRENT ACTIONS

FOREST THINNING

RECLAIMED WATER USE

RIPARIAN RESTORATION

STORM-FLOW MANAGEMENT

SEED SOVEREIGNTY

WATER SUPPLY PLANNING

EDUCATION AND OUTREACH

LAND PRESERVATION

DROUGHT MANAGEMENT PLANS

EMERGENCY RESPONSE CAPACITY

CONJUNCTIVE USE OF WATER

WATER FOR ECOSYSTEMS

IMPROVED WATER QUALITY

DOMESTIC WELL RESTRICTIONS

LOCALLY-SOURCED FOOD

IRRIGATION EFFICIENCY

URBAN FORESTS

LOCAL AND RENEWABLE ENERGY

ARROYO STABILIZATION

ENERGY-WISE BUILDING CODES

SMALL-SCALE LAND SHAPING

PUBLIC INVOLVEMENT

PRESERVATION OF GREEN SPACES

WATER CONSERVATION

REGIONAL COOPERATION

MONITORING

RANGELAND IMPROVEMENTS

STORM-WATER RETENTION

ART-INSPIRED ACTIONS

AQUIFER STORAGE / RECOVERY

URBAN GARDENING

WATER DEMAND MANAGEMENT

Recommendations for Policy on Water and Agricultural Management in a Drying West

Agriculture:

1. Agriculture in New Mexico is a 3 to 4 billion dollar industry, and agriculture is one of the state's principle industries.
2. In 2011, cattle comprise approximately 1.7 billion for 41% of agricultural income while dairy comprises 1.6 billion for 38%, which totals for the two 79%
3. 23,000 direct jobs are supported

On many ranches, it is the water that allows biodiversity and prevention of water table depletion.

Can a farm or ranch turn off water for a year?

1. This is like telling a family business their store doors will be closed and that they cannot earn an income for a year- or possibly more. Since most people depend on an annual income, this means that these farms and ranches will be forced into permanent abandonment.
2. If the land is not being used for agriculture, the taxes skyrocket, and will force a sale or foreclosure, even if the producers could go without income for a year.
3. Inventory could be in jeopardy. A ranch that raises animals would be forced to sell their entire herd at rock-bottom prices. This is already happening, with billions of dollars lost in states like Texas and Oklahoma. One cannot easily replace these animals the next year, creating shortage-derived higher prices for years into the future.
4. Strategic planning could offer some **adaptive solutions**. Four major changes are suggested here.

One, **adaptive water storage regulations**: the state has strict rules about holding water in ponds and stock tanks. These rules need to be adapted to these new conditions so that more water can be stored on the land, which would preserve some production capacity. For example, it is possible to water a 2 acre vegetable farm using pond water that gets replenished in the spring with 2 weeks of refill.

Two, **financing water storage**: money would be needed to create water storage systems so Federal and other funds would have to be obtained to provide for these improvements.

Three, **soil resiliency improvements**: more requirements to improve soils with increases in carbon (organic soils) allows for better water retention and absorption, which buffers the impacts of both drought and flooding. Shifting to organic soils is critical under water restricted climate.

Four, **sustainable practices**: there are a variety of sustainable methods for ranching and farming. Some local organizations such as Quivira Coalition and organic organizations hold conferences on these techniques. The more we move to sustainable ranching and farming, the more we can prevent absolute agricultural collapse.

The price of food is already rising significantly and reducing supply only exacerbates this disturbing trend. The logic of cheap water for desert cities that gets squandered on wasteful American habits that then leads to more expensive food is questionable, and a real social justice issue.

Urban Agriculture:

Carefully planned urban agriculture could possibly alleviate some of the mainstream ag issues, requiring major shifts in our food systems. This should happen anyway, merely to greatly reduce food miles, food packaging, and waste production. Some urban methods can produce food with a mere fraction of the water required for standard agriculture. Water capturing is also possible to support food growth in cities.

Residential Usage:

While the average household usage is viewed as low compared to other cities, the question remains whether some of this is because many homes only have part-time residents.

There is tremendous opportunity for reduction of city water usage. For example, in Santa Fe at the Commons with full-time residents, when all water usage is averaged for August, 2012, each home is responsible for 8,900 gallons in one month, despite the fact that the land is very limited, and resources are shared, and also includes one household that does serious water conservation. Yet we know that water usage can be far below this amount without major deprivation.

Drought Stages:

"Drought" is a vague term. If we wish to designate a serious drought, it might be better to use Drought 4-extreme drought where water users are required to reduce water usage 30%, with penalties if this restriction is not observed. Of course, this may- even is likely to- become a permanent condition. Water in the desert needs to be managed as desert water at all times, even in good years.

New Mexico precipitation for the first nine months of 2012 was 63% of average, and the 9th driest start of any year on record. If we say that we shut down agriculture when there is "drought," that *really* is most likely to mean no more farms and ranches into the future.

Shared Sacrifice:

Climate change will be creating major changes in multiple areas, and the only way that is sustainable is for all sectors of society to share sacrifices. During World War II, rationing of foods and fuel were across the board. Even the White House was serving meals that reflected what the average household could serve.

The guiding principle of shifting society to higher sustainability is *shared sacrifice*.