

# OVERVIEW OF CARSON RIVER WATERSHED ACTIVITIES

Presented by:

**Edwin James**

**CWSD General Manager**

**August 28, 2014**

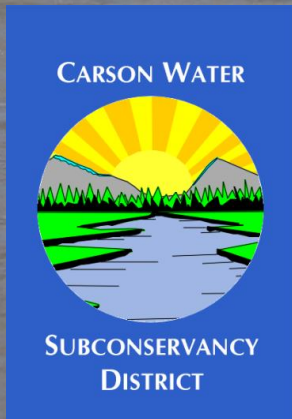


EXHIBIT I - LANDS  
Document consists of 36 pages.  
Entire exhibit provided.  
Meeting Date: 08-28-14

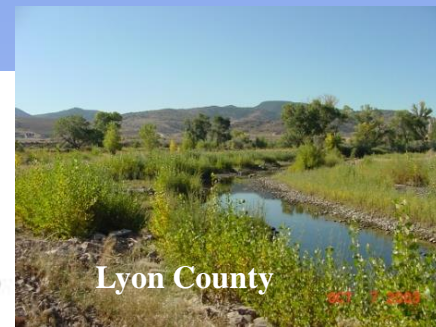
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Storey County, NV

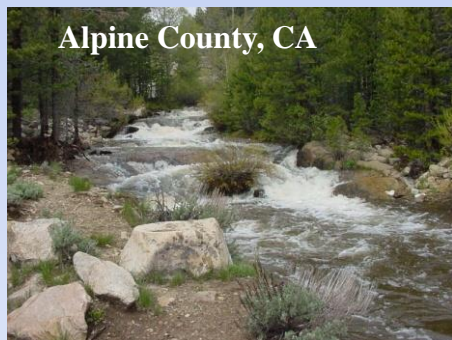
Carson Canyon-  
Carson City/Lyon County



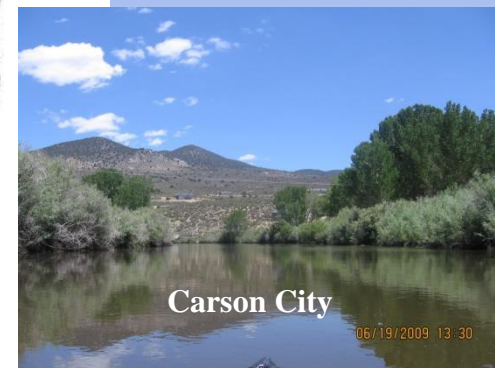
Lyon County



Douglas County, NV



Alpine County, CA



Carson City



Churchill County

# Carson River Watershed

# Carson River Watershed

- ~ 3,966 square miles
- Carson River - 184 miles
- Population:  
Current: 156,000  
Predicted: > 300,000 by 2050
- Limited Upstream Storage

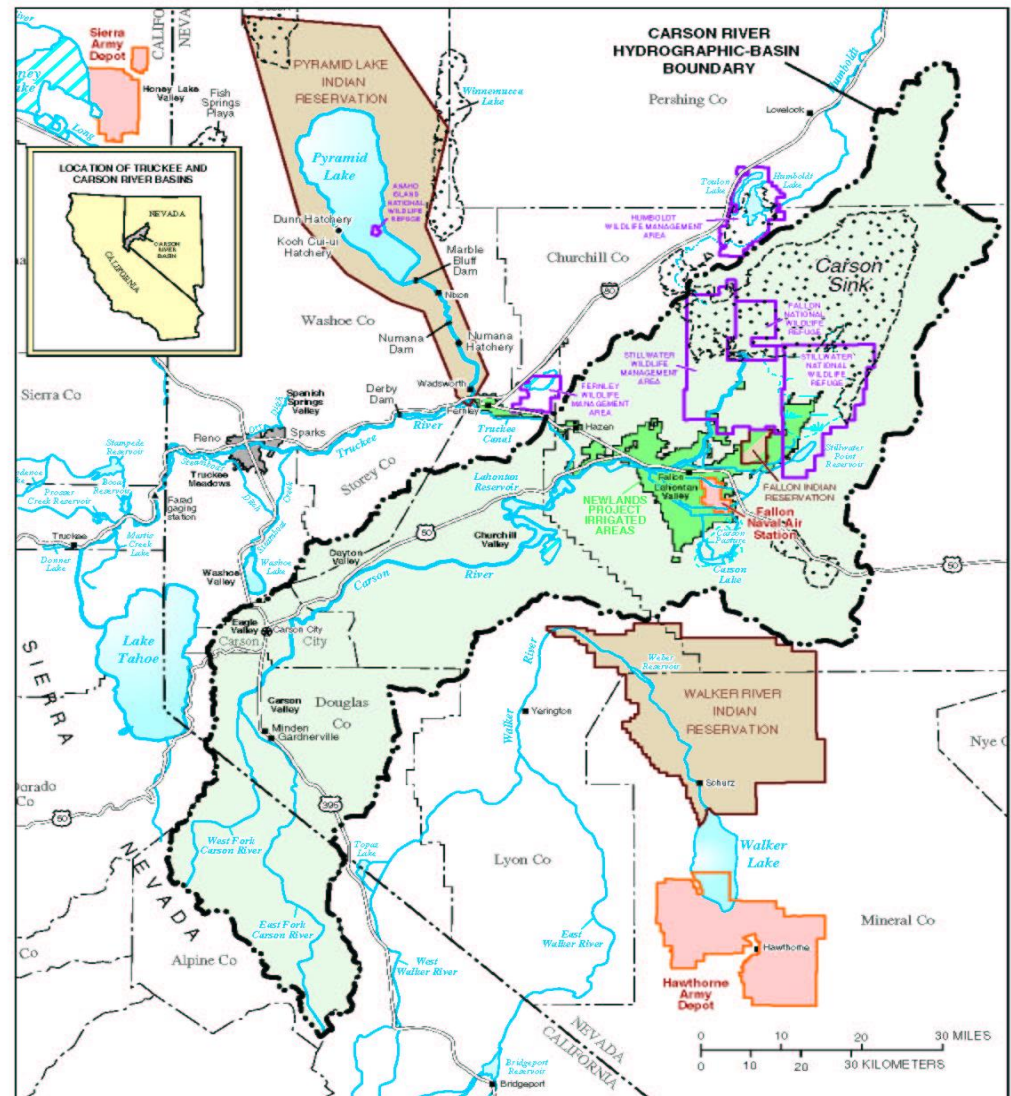
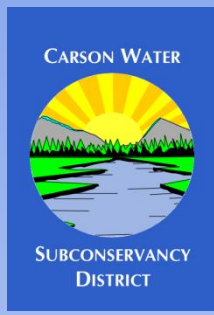


Figure1. USGS hydrologic features map of the Carson River watershed and surroundings.





# CWSD History



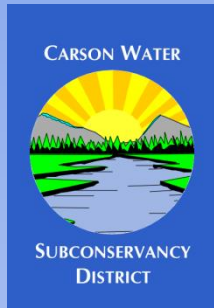
## **1950s through 1970s:**

- **1956: Washoe Project - Watasheamu Dam**
- **1959: CWSD was Established**
  - **Douglas & Lyon Counties**

## **1980's: Dam project abandoned by Federal government**

## **1989: Nevada Legislature changed the role of CWSD**

- **Management and Development  
Water Resources in the Upper Carson River**
- **Carson City joined CWSD**



# CWSD History



**1997: Flood Event**

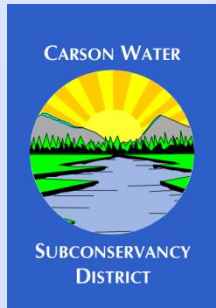
**1998: Carson River Conference**

- Integrated Watershed Planning
- Forming the Carson River Coalition (CRC)
- CWSD was asked to coordinate this effort

**1999: Churchill County joined CWSD**

- AB380 (water buy-out program in Churchill Co.)

**2001: Alpine County, CA became a member**



# CWSD History

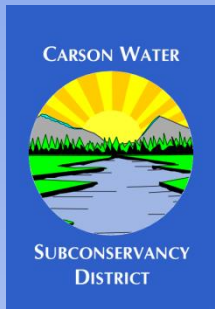
**2003: Designated 208 planning agency for Carson River (Clean Water Act)**

**2007: Stewardship Plan – EPA 319 compliant**

**2008: Regional Floodplain Management Plan**

**2009: Storey County became a non-voting member.**

**Today: CWSD works in entire Watershed**



# Structure of CWSD

## 14 Board Members

- 6 counties / 2 states

## Funding

- Property Tax
- Grants (State, Fed., & others)

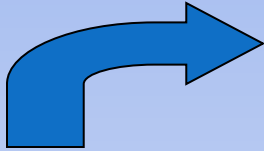
## Staffing

- 2 Full-Time
- 3 Part-Time

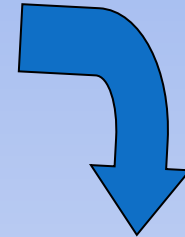




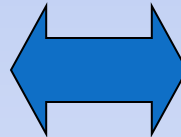
# SHARING WATER SUPPLIES



**Environmental**



**Agricultural**

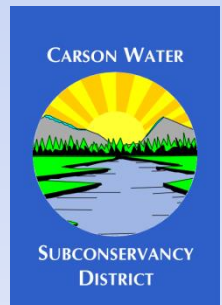


**Domestic**

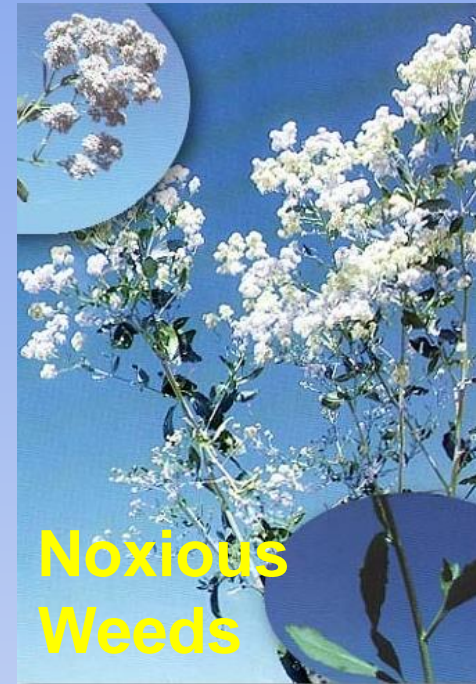
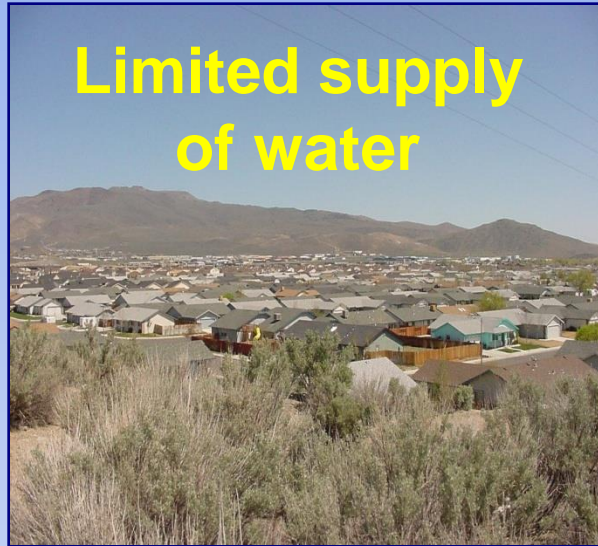


# **Watershed's Current Water Supply Situation**

- **Carson River fully appropriated**
- **95 %+ Carson River used for agricultural purposes**
- **Groundwater basins - over appropriated**
- **Actual GW pumping < Appropriated**
- **Limited upstream storage**
- **Water quality problems**
- **Runoff Pattern Changes**



# Watershed Challenges!





# Historical Human Impacts on WQ

- Historic mining impacts
- Superfund Sites
  - Leviathan Mine
    - 22 million tons overburden with sulfide to region
  - Carson River Mercury Site
    - Comstock Mining Era
    - 186 mills, 16 on river
    - 14 million lbs mercury
    - 40 yrs wood drives
- Channelization & levees
  - 70 miles of river channelized in 1960's



Wood drive on the East Fork of the Carson. Holding the wood at Young's Crossing, waiting for a head of water that would permit floating it through Carson Valley. (Courtesy of Nevada State Museum)



Leviathan Mine Superfund Site

# CUT BANKS



Water Quality Impacts



# River Restoration/Stabilization Projects



Work done by the local Conservation Districts

# **Carson River Coalition (CRC)**



# Carson River Coalition (CRC) Coordination

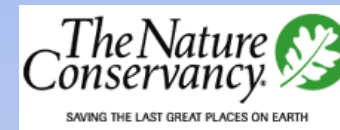
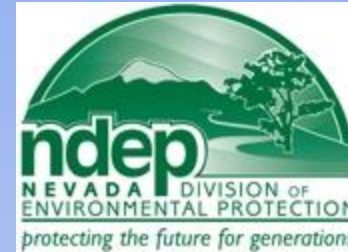
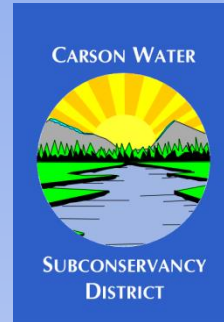
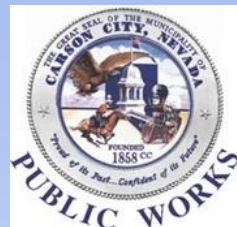


- **Facilitates Communication**
- **Coordinates & maintains CRC activities**
- **Community Outreach and Education**





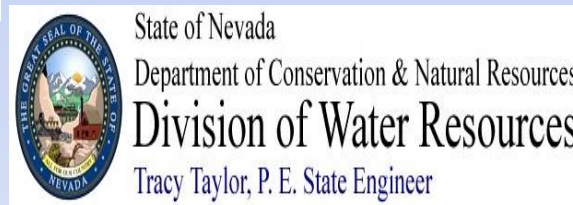
# Carson River Coalition



Private Citizens



**Conservation Districts:**  
Carson Valley  
Dayton Valley  
Lahontan  
Alpine



HDR





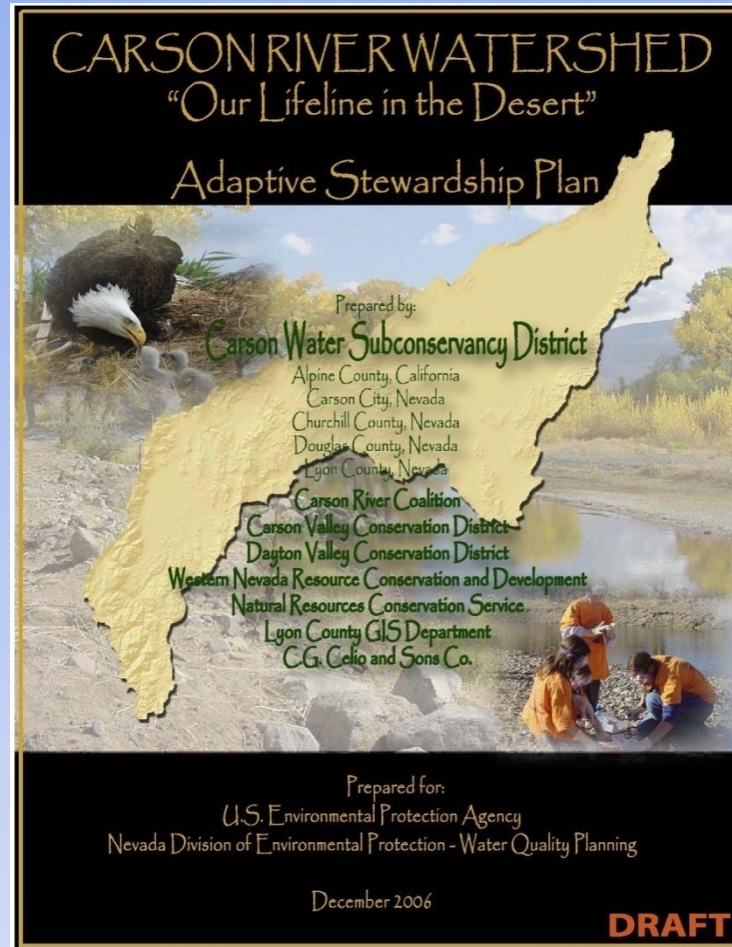
# CRC – Some Successes to Date



- Robust participation in the CRC Events/Groups
- Active Working Groups:
  - Education
  - Water Quality
  - River Corridor



# *Integrated Watershed Management*



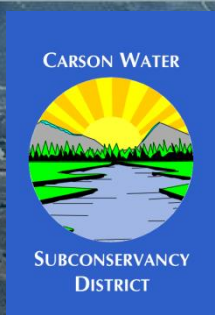
***Meets EPA 319 criteria for  
watershed plans***

**To view the document go to:**

**<http://www.cwsd.org/newcms/userpages/StewardshipPlan.aspx>**



# **Regional Floodplain Management**



# Regional Floodplain Management Plan

- Living River Concept
- 2004 Conference
- Developed through cooperative process  
Carson River Coalition River Corridor Working Group
- Public Workshops
- Goal - Reduce Flooding Hazards by Protecting Floodplains
- Adopted by all 5 Counties in 2008!



# **Regional Floodplain Planning**

- **CWSD is a Technical Cooperative Partner (TCP) with FEMA**
- **CWSD is working with FEMA to remap the Carson River floodplain from Alpine County to Lahontan Reservoir.**
- **Unsteady Flow Model**
  - **Hydrograph Modeling Input (time vs. flow)**
- **Recently entered into a Risk MAP Charter with FEMA. First one in Region 9.**

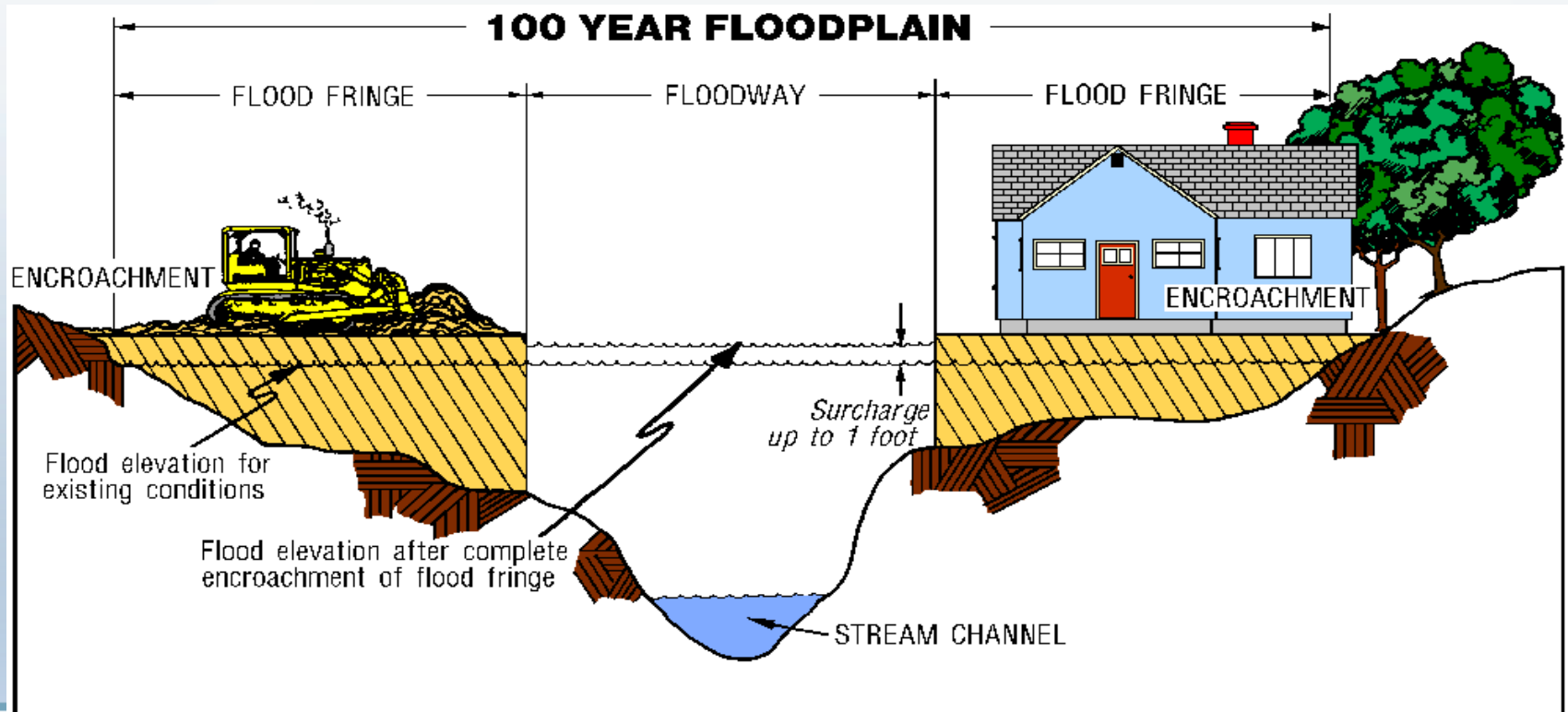
# Remapping Carson River Floodplains

- **2010 CWSD** as CTP Secures FEMA Grant Money to begin Remapping Carson River Floodplain Upstream of Lahontan Reservoir.
- **Phase 1:** 2010 Modeling & Mapping Lyon County Reach
- **Phase 2:** 2011 Modeling & Mapping Carson City Reach
- **Phase 3:** 2013 Modeling Douglas County and Alpine County Reach
- **Phase 4:** 2014 Mapping Douglas County and Alpine County Reach



# FEMA Floodway

- Limits encroachment on the 100-yr floodplain.



# FEMA Floodway and Floodplain





# **Other**

## **Suggested Actions in Progress**

- **Flood and Floodplain Awareness Outreach**
  - Flood Awareness Week – November 10 - 15th
- **Stormwater Management**
  - Promote of Low Impact Development (LID)
- **Protect Carson River Floodplains**
  - Conservation Easements

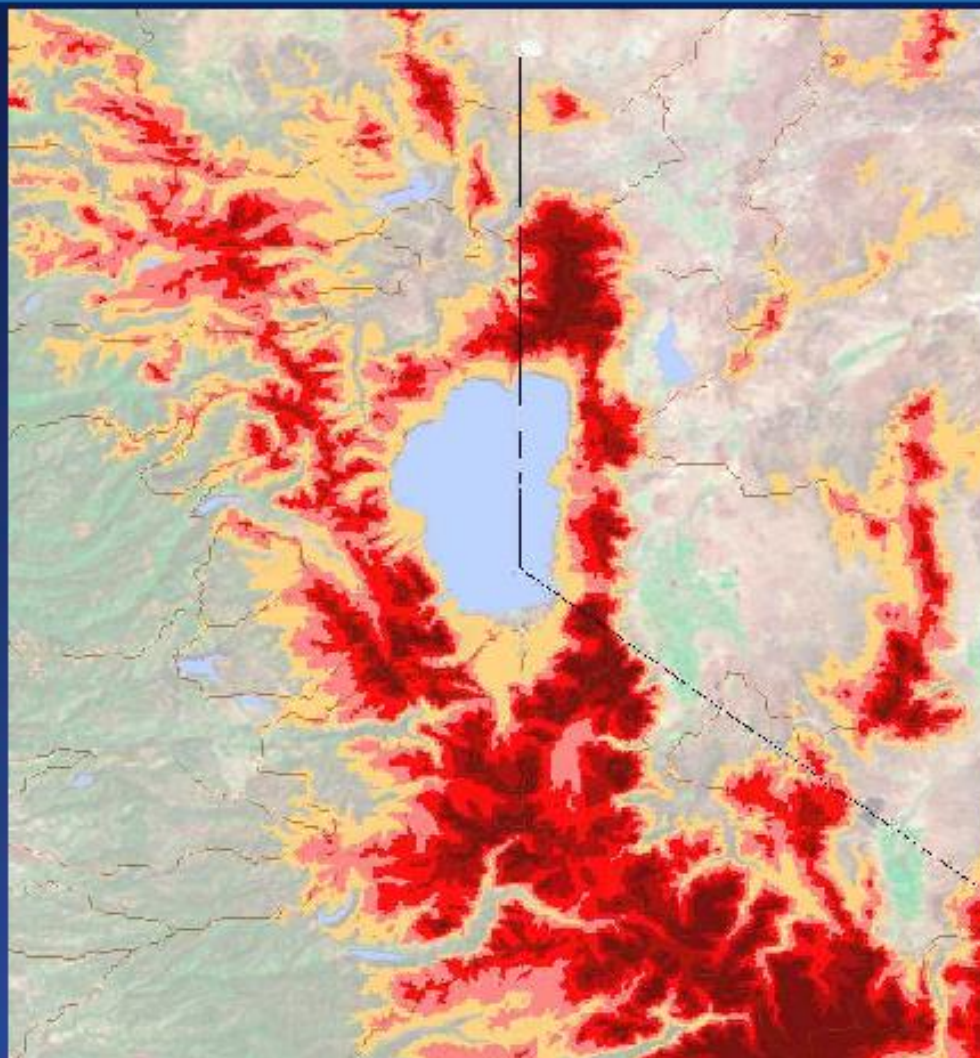
# **Regional Water Supply**

# **Comprehensive Regional Management Plan**

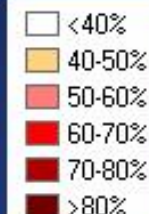
- **Develop 30- year Comprehensive Regional Water Management Plan Report**
- **Evaluate potential climate and runoff changes**
- **Develop a Regional Water Conservation Plan**
- **Evaluate current and future water demands/supplies for all the major water purveyor located in the Carson River Watershed**
- **Project future regional infrastructure needs.**
- **Working w/ BOR on Basin Plan & NSF Water Sustainability Study**



United States Department of Agriculture  
Natural Resources Conservation Service



**Percent of annual  
precipitation falling  
as snow**



**Rainy**

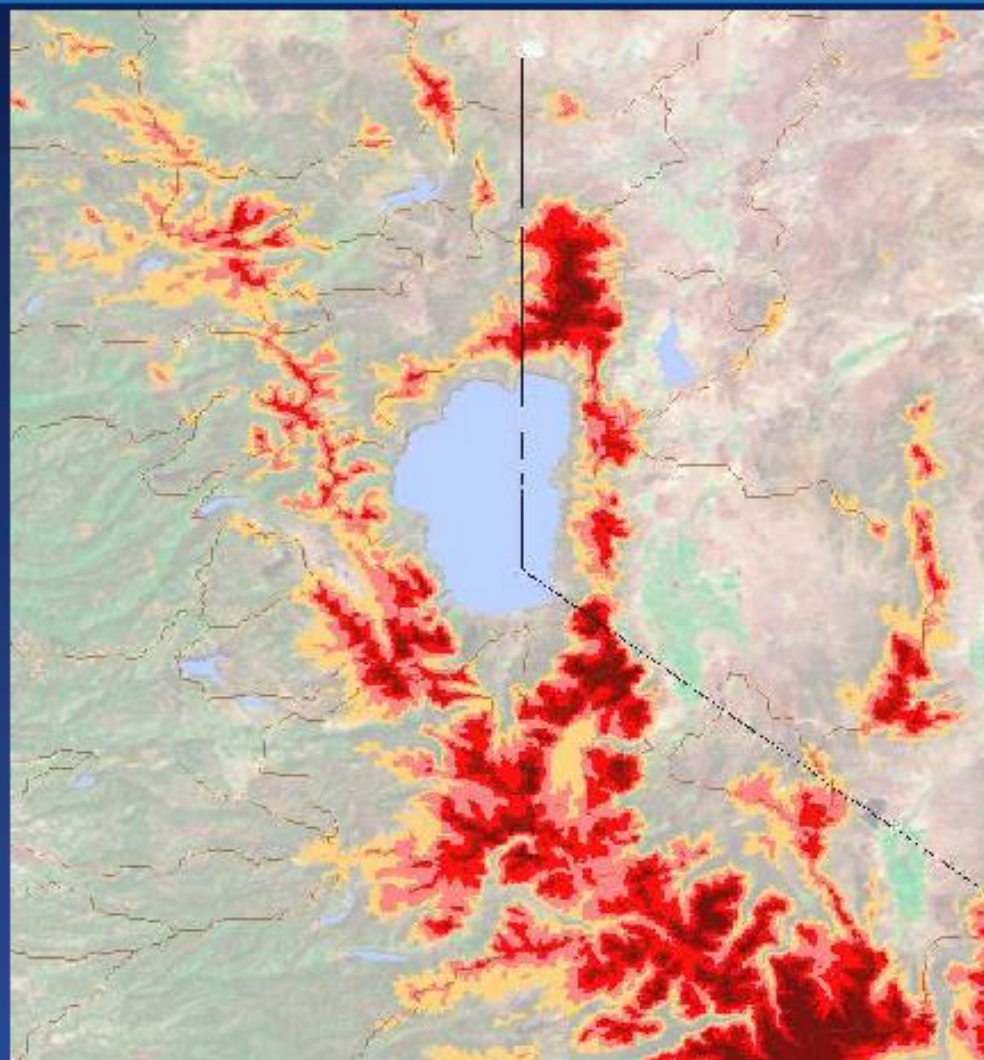
**Snowy**

**Current climate  
(1990-2007)**

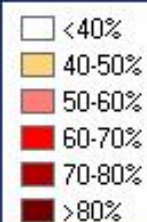
**How this was made:**

For historical SNOTEL station data, sum of precipitation on days that average temperature  $>0^{\circ}\text{C}$ ,  $>-1^{\circ}\text{C}$ ,  $>-2^{\circ}\text{C}$  etc, divided by total annual precipitation on days that temperature was available. Regress resulting ratio versus elevation. Transform high spatial resolution elevation dataset by regression relationship.

United States Department of Agriculture  
Natural Resources Conservation Service



**Percent of annual  
precipitation falling  
as snow**



**Rainy**

**Snowy**

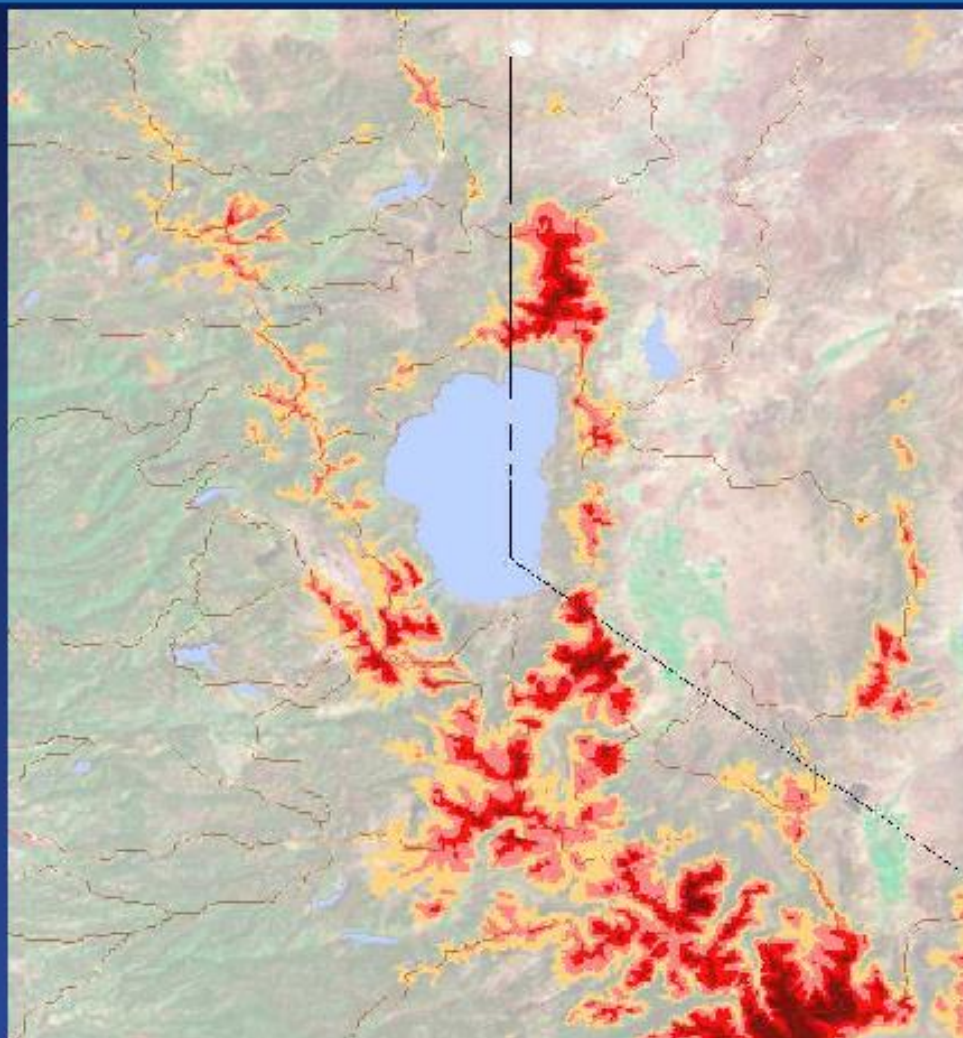
**Climate +1 deg C  
warmer**

**How this was made:**

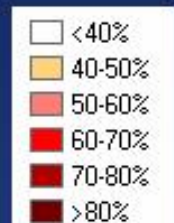
For historical SNOTEL station data, sum of precipitation on days that average temperature  $>0^{\circ}\text{C}$ ,  $>-1^{\circ}\text{C}$ ,  $>-2^{\circ}\text{C}$  etc, divided by total annual precipitation on days that temperature was available. Regress resulting ratio versus elevation. Transform high spatial resolution elevation dataset by regression relationship.



United States Department of Agriculture  
Natural Resources Conservation Service



## Percent of annual precipitation falling as snow



**Rainy**

**Snowy**

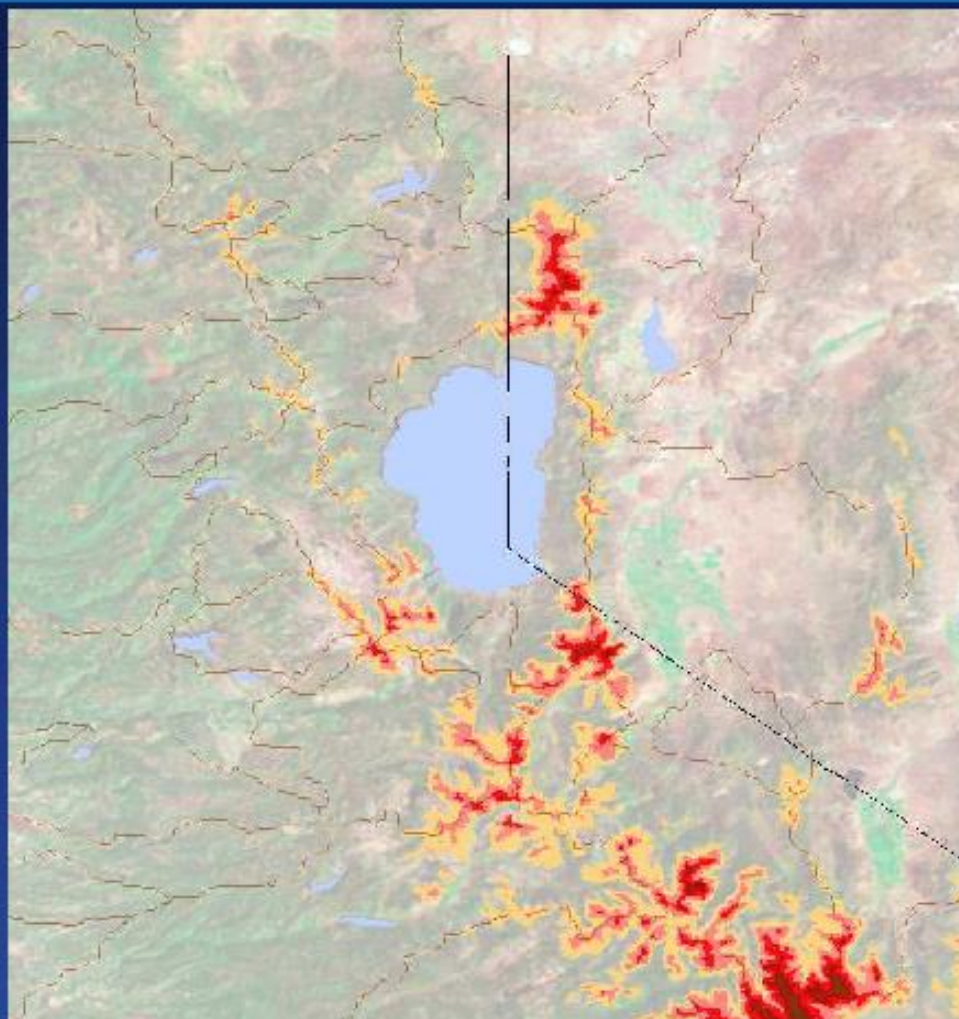
**Climate +2 deg C  
warmer**

### How this was made:

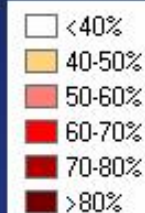
For historical SNOTEL station data, sum of precipitation on days that average temperature  $>0^{\circ}\text{C}$ ,  $>-1^{\circ}\text{C}$ ,  $>-2^{\circ}\text{C}$  etc, divided by total annual precipitation on days that temperature was available. Regress resulting ratio versus elevation. Transform high spatial resolution elevation dataset by regression relationship.



United States Department of Agriculture  
Natural Resources Conservation Service



**Percent of annual  
precipitation falling  
as snow**



**Rainy**

**Snowy**

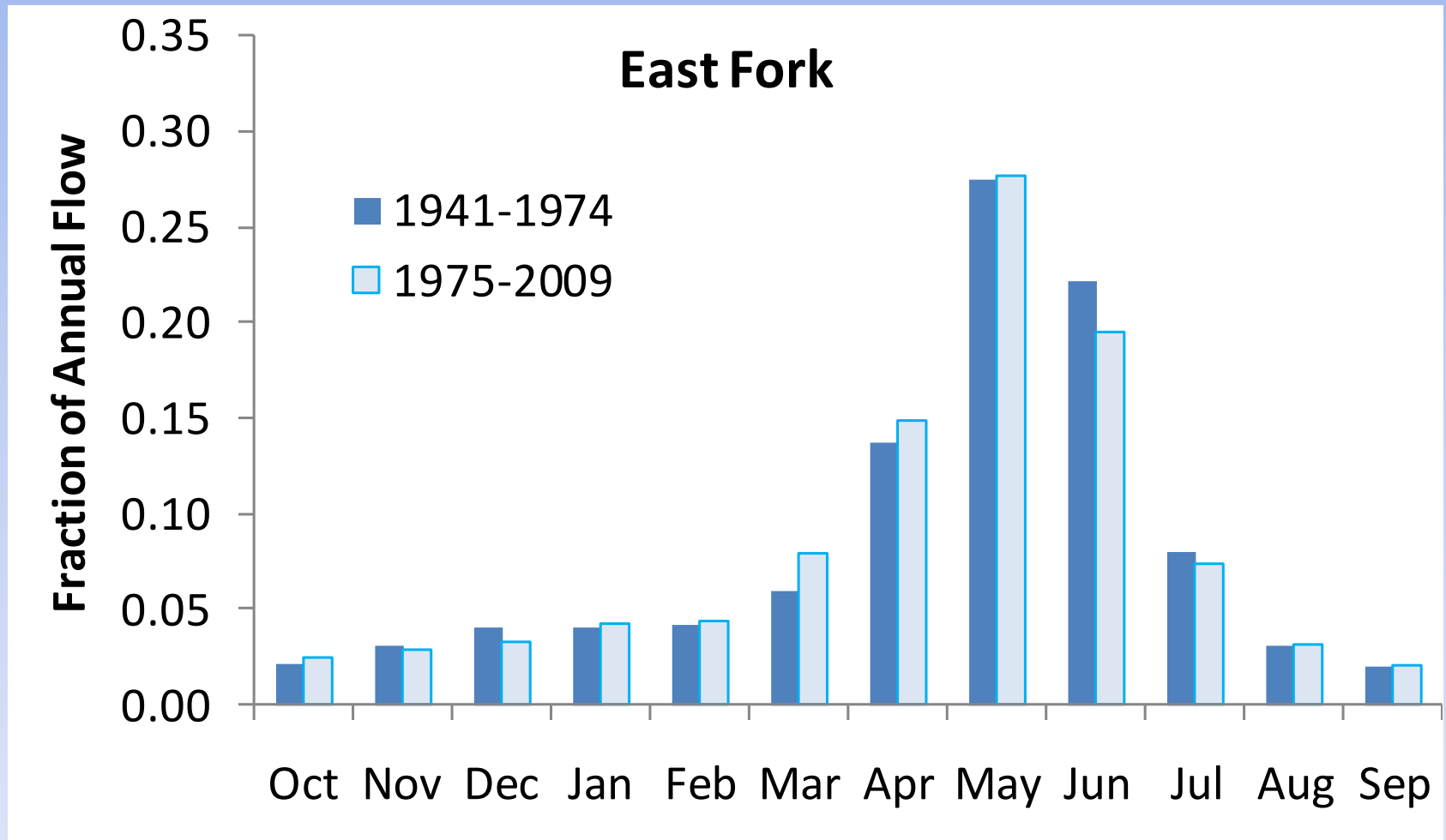
**Climate +3 deg C  
warmer**

**How this was made:**

For historical SNOTEL station data, sum of precipitation on days that average temperature >0C, >-1C, >-2C etc, divided by total annual precipitation on days that temperature was available. Regress resulting ratio versus elevation. Transform high spatial resolution elevation dataset by regression relationship.

# Runoff Changes

## Monthly Streamflow – East Fork





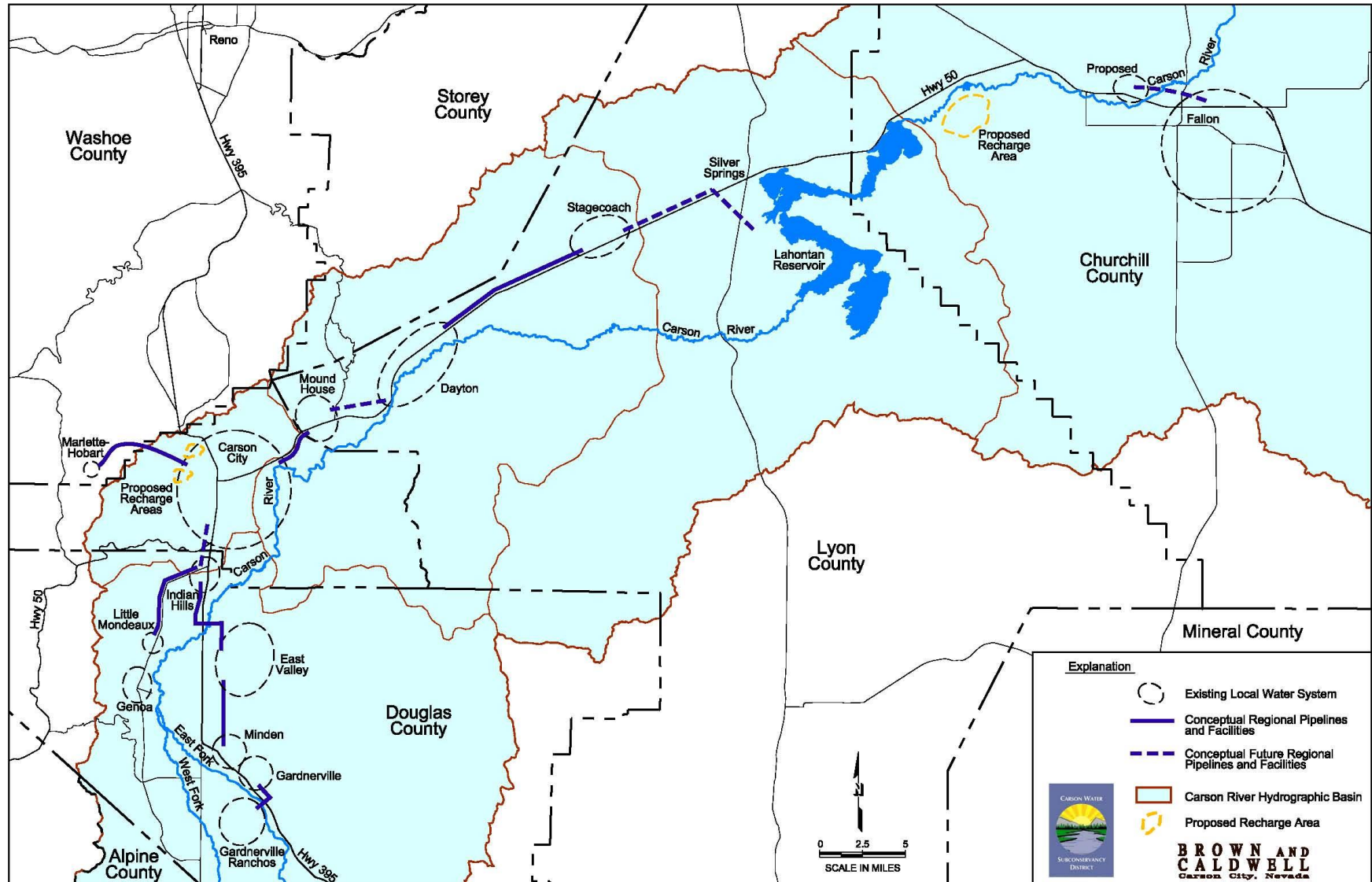
# Regional Infrastructure



- Douglas/Carson City Regional Pipeline
  - Town of Minden, North Douglas Co, Indian Hills GID, Carson City
- Carson City/Lyon County Intertie
- Stagecoach Pipeline Upsize

Ultimate Goal: Intertie all Water Purveyors

# Regional Infrastructure





# Our New Website: WWW.CWSD.org

The screenshot shows a web browser window displaying the Carson Water Subconservancy District website. The browser's address bar shows 'www.cwsd.org'. The website has a blue header with a logo on the left and navigation links: 'Our Home', 'Who We Are', 'What We Do', 'What You Can Do', 'What's Happening', and 'Resources'. A search icon is also present. Below the header, a large banner image shows a river flowing through a desert landscape with mountains in the background. The text 'Promoting Cooperative Action for the Carson River Watershed' is overlaid on the banner. Below the banner, the text 'Carson River, Our Lifeline in the Desert' is displayed. The main content area features a section titled 'Carson River Watershed' with a paragraph describing the river's importance and a link to 'human settlement'. To the right, a 'QUICK ACCESS' sidebar lists 'Join the CRC', 'Interactive Watershed Map', and 'CWSD Board Meetings'. Below this, an 'EVENTS' section shows a calendar for August. The browser's taskbar at the bottom shows various application icons and the system clock indicating 1:22 PM on 8/19/2014.

Workspace Webmail x Doodle: CRC-River C x Carson Water Subco x

www.cwsd.org

Apps New Tab ASFPM CFM Exa... Montana Water... Services | Green... Home - Berkshi... Welcome to the... stylized ripples ... CRWC Individual Land ... Workspace Login Nevada Depart... Sign in - eXtens... Other bookmarks

Sign Up For Newsletter Contact Us

CARSON WATER  
SUBCONSERVANCY  
DISTRICT

Our Home Who We Are What We Do What You Can Do What's Happening Resources

*Promoting Cooperative Action  
for the Carson River Watershed*

Courtesy Brenda Hunt

**Carson River, Our Lifeline in the Desert**

**Carson River Watershed**

The Carson River is our lifeline in the desert. Its' precious water supports our [Watershed's](#) environment, economy, and quality of life. The Carson River meanders 184 miles from the snow pack in California's high Sierra through green alpine meadows, wide valleys, rock-lined canyons, cottonwood galleries, and high desert sage brush plateaus to the intermittent lake beds and wetlands in Nevada's Carson Sink. The river basin's natural resources have always attracted [human settlement](#). This is evidenced by the several rural and urban communities, tribal lands, irrigated agricultural areas, historic sites, parks, open space and recreation areas the river travels through and near.

There is approximately 3,965 square miles of land from which water drains into the river creating the Carson River Watershed. The river itself is terminal or endorheic, meaning it is one of a few rivers in the world that do not flow to an ocean.

QUICK ACCESS:

- Join the CRC
- Interactive Watershed Map
- CWSD Board Meetings

EVENTS:

August

1:22 PM  
8/19/2014



# Questions?

[www.cwsd.org](http://www.cwsd.org)

Photo by: Juan Guzman