

# **Beyond the Colorado River: Groundwater Resources**


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# Water Issues: A History

**In 1970, the Colorado River was projected to meet Southern Nevada's water needs until 2020.**





# Water Issues: A History



## Population

**1950 – 47,000**

**1960 – 116,000**

**1970 – 270,000**

**1980 – 444,000**

**1990 – 800,000**





# **Southern Nevada Water Authority**

- **As population grew, conflict for Colorado River water arose among water purveyors**
- **The agencies ultimately agreed that water issues must be handled collaboratively on a regional basis**
- **The Southern Nevada Water Authority (SNWA) was formed in 1991 to address Southern Nevada's unique water needs on a regional basis**



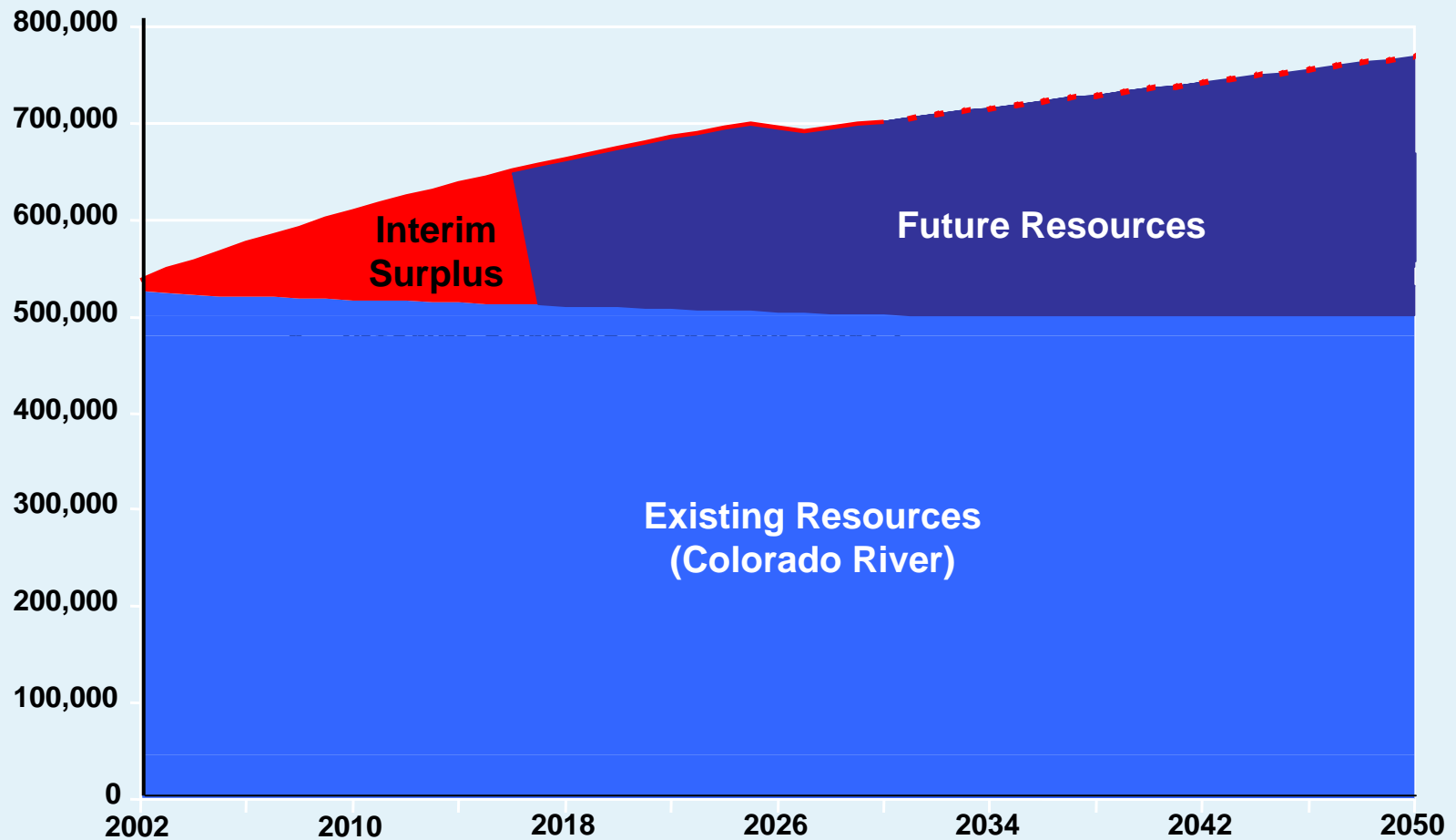
# **SNWA Water Resource Portfolio**

## **SNWA Water Resource Plan**

- **SNWA developed its first Water Resource Plan in 1996 to manage existing and future water resources, construct and manage facilities, and promote conservation**
- **The plan provides a comprehensive overview of water resources and demand in Southern Nevada**

# SNWA Water Resource Portfolio

## 2002 Resource Plan



# SNWA Water Resource Portfolio

- In early 2000, several factors converged to cause water agencies to re-evaluate their resource plans
  - Interim Surplus Guidelines suspended
  - Ongoing drought
  - Continued growth





# In-State Resources

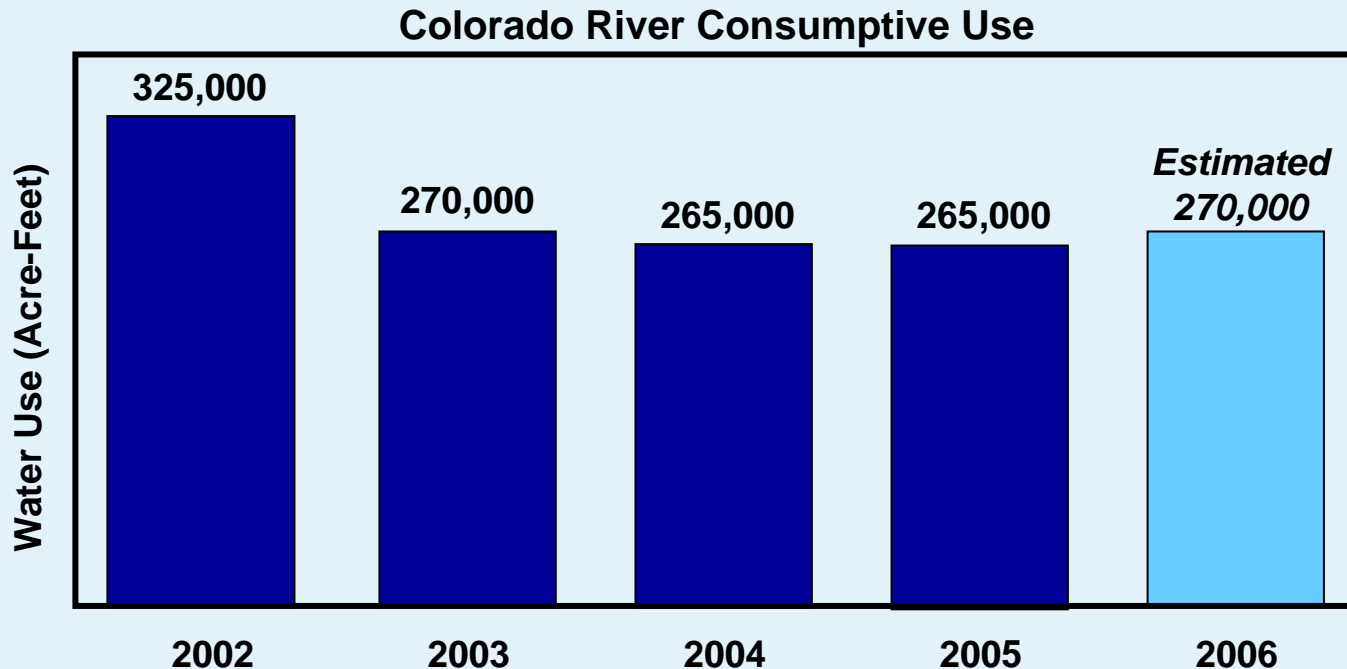


**Meeting future demands requires southern Nevada to develop all of its resource options, including conservation, Colorado River resources and In-State resources.**



# Conservation and Drought Response

**Southern Nevada implemented an aggressive conservation program, and has made significant conservation gains.**



**Southern Nevada's consumptive water use declined about 18 billion gallons between 2002 and 2006, despite the fact that there were nearly 330,000 new residents and nearly 40 million annual visitors.**

# In-State Resources

**Conservation alone  
will not protect  
Nevada from the  
effects of drought.**



**The future of Southern Nevada's water  
supplies depends on the development  
of its in-state resources.**



# SNWA Water Resource Portfolio

## **SNWA Water Resources**

### **Colorado River Resources**

- Nevada Basic Apportionment
- Return-flow Credits
- Surpluses
- Unused Apportionment (AZ/NV)
- Arizona Water Bank
- California Water Bank
- Southern Nevada Water Bank
- Transfers/Exchanges

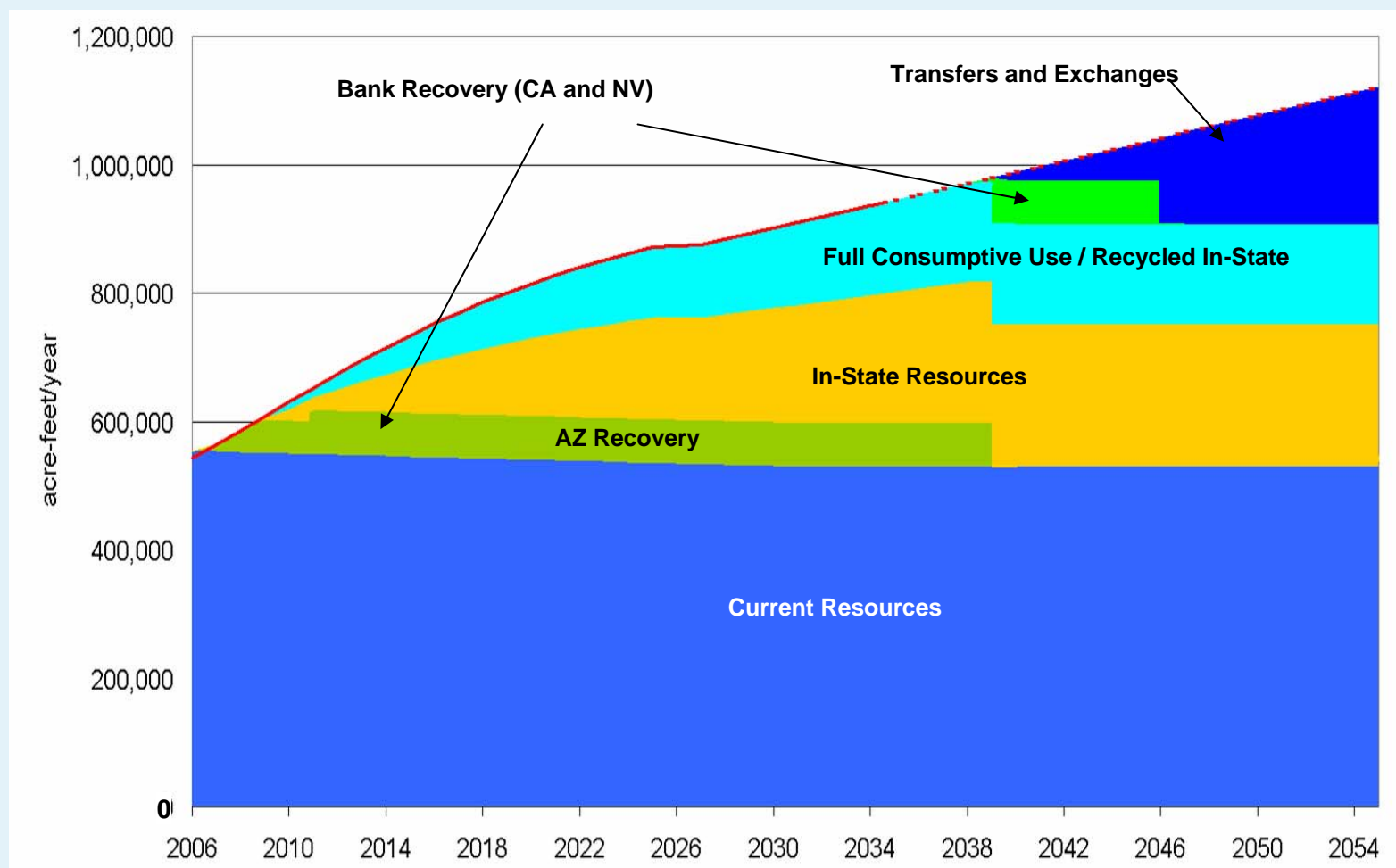
### **Non-Colorado River Resources**

- LV Valley Groundwater
- LV Valley Shallow Aquifer
- LV Valley Reclaimed Groundwater
- In-State Non-Colorado Resources
  - Muddy River
  - Virgin River
  - Groundwater in Clark, Lincoln & White Pine Counties
  - Reclaimed In-State Resources



# SNWA Water Resource Plan

## 2006 Resource Plan





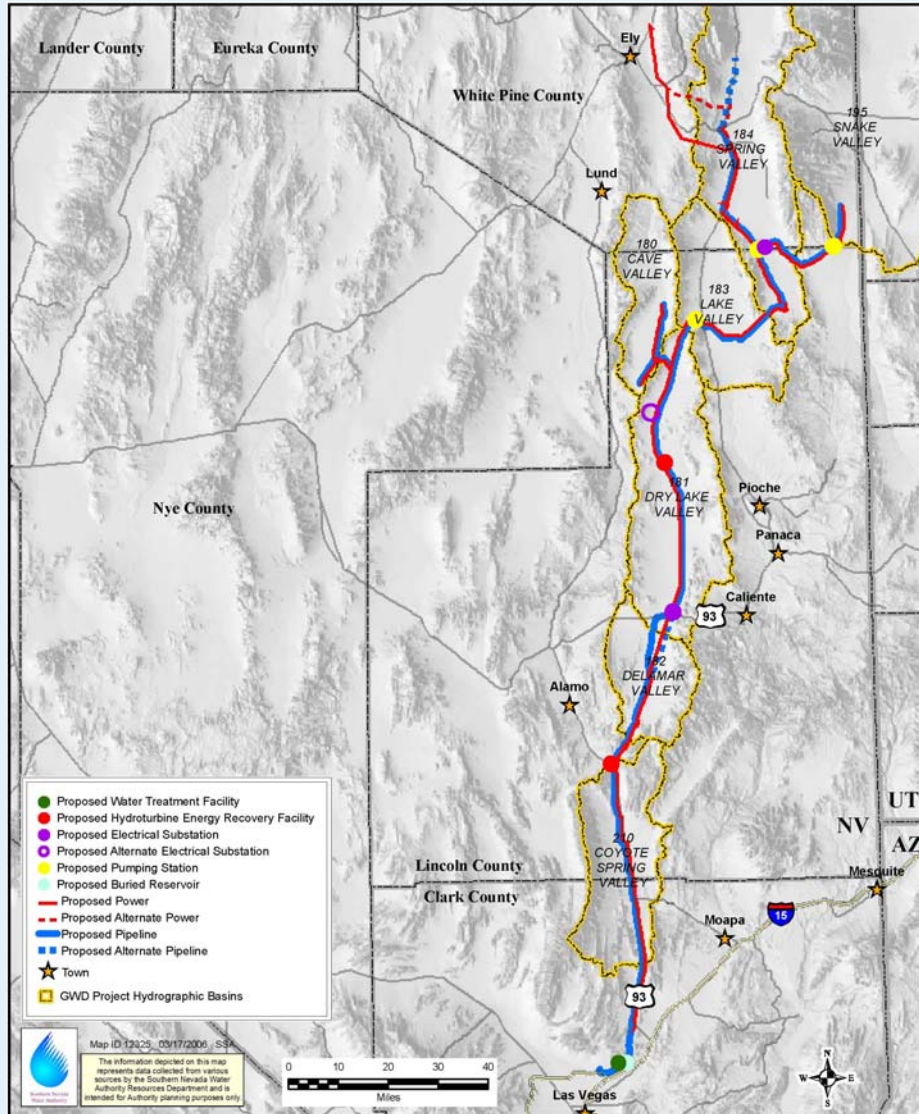
# In-State Resources



# In-State Resources

## Clark, Lincoln, and White Pine Counties Groundwater Development Project

- 285 miles pipeline
- 4 pumping stations
- 7 regulating tanks
- Buried storage reservoir
- Water treatment facility
- 315 miles of power line
- 2 electrical substations
- 4 hydroturbine energy recovery facilities
- Production Wells (+100)







# **In-State Resources**

## **Clark, Lincoln and White Pine Counties** **Groundwater Development Project**

- **Estimated to convey approximately 160,000 acre-feet per year of unused groundwater to Southern Nevada at a cost of approximately \$2 billion in 2005 dollars**
- **The water will be used to serve SNWA purveyor members in the Las Vegas Valley and customers of the Lincoln County Water District in Coyote Spring Valley**



# In-State Resources

## Two Processes

- **Federal:** Federal agencies must complete an environmental process before granting rights-of-way
- **State:** Nevada State Engineer is responsible for decisions on water rights



# **In-State Resources: Federal Process**

## **Clark, Lincoln and White Pine Counties** **Groundwater Development Project**

- **An Environmental Impact Statement (EIS) is being developed by the BLM to evaluate alternatives and identify environmental impacts before any water is transferred**
  - **The EIS is expected to be completed in 2008 / 2009**
  
- **In addition to the EIS, a comprehensive study of the selected region is being conducted by the United States Geological Survey (USGS) and Desert Research Institute (DRI): BARCASS (Basin And Range Carbonate Aquifer System Study)**



# **In-State Resources: Federal Process**

## **EIS Cooperating Agencies**

### **Federal Agencies**

- **Bureau of Indian Affairs**
- **Bureau of Reclamation**
- **U.S. Fish and Wildlife Service**
- **U.S. Forest Service**
- **National Park Service**
- **U.S. Air Force – Nellis AFB**

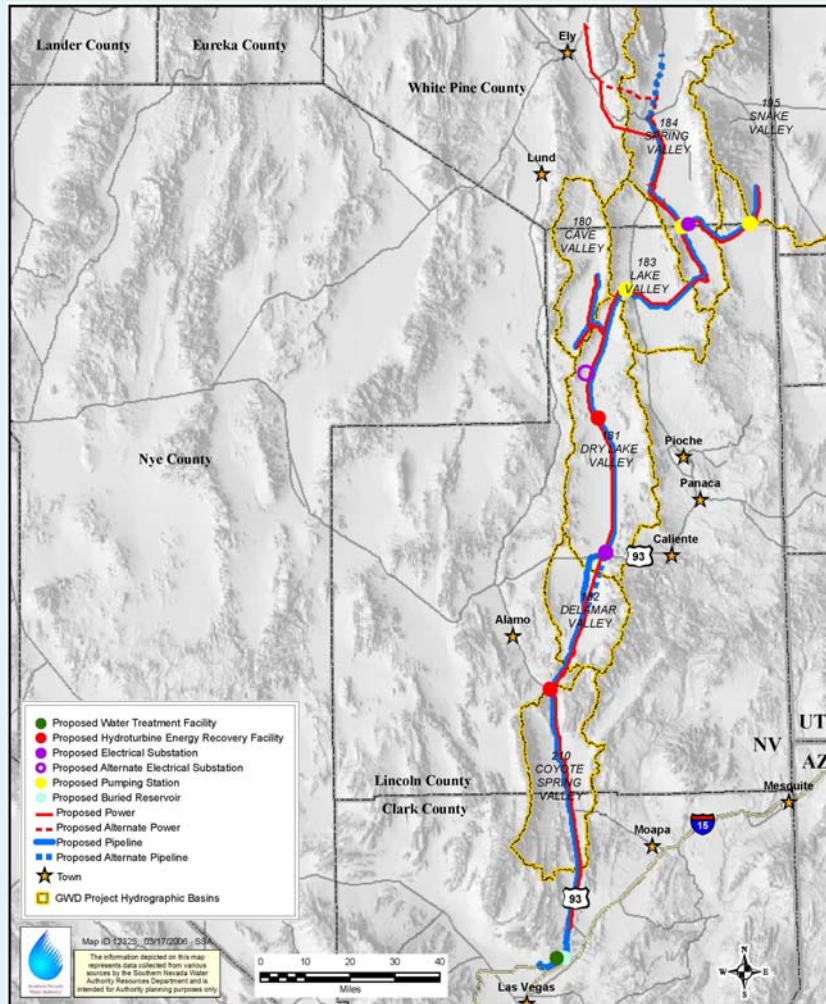
### **State Agencies**

- **Clark County, Nevada**
- **Lincoln County, Nevada**
- **White Pine County, Nevada**
- **Millard County, Utah**
- **Juab County, Utah**
- **Central Nevada Regional Water Authority**
- **State of Utah**

### **Technical Advisers**

- **U.S. Geological Survey**
- **Nevada Division of Wildlife**

# In-State Resources: Federal Process



## Project Schedule

2004 – 2009	Environmental review process
2007 – 2012	Geotechnical, survey and design
2006 – 2009	Monitoring, testing, and exploratory wells
2008 – 2013	Production wells
2008 – 2014	Project construction

# In-State Resources

**The State, not Southern Nevada,  
will decide how much unused water  
can be pumped from  
neighboring counties each year.**







# **In-State Resources: State Engineer's Process**

## **Spring Valley Hearings**

- **In September 2006, the State Engineer held a hearing on SNWA's groundwater applications in Spring Valley, NV**
- **Prior to the hearing, the Department of the Interior agencies (BLM, FWS, NPS, BIA) dropped their protests after signing a stipulation with the SNWA**



# **In-State Resources: State Engineer's Process**

**GREAT NEWS! - The Ruling is in!**

**SPRING VALLEY RULING HIGHLIGHTS:**

**Perennial Yield of Spring Valley = 80,000 acre feet**

**Existing Consumptive Use Rights = ~ 11,000 acre feet**

**Long Term Use/Basin of Origin = ~ 9,000 acre feet**

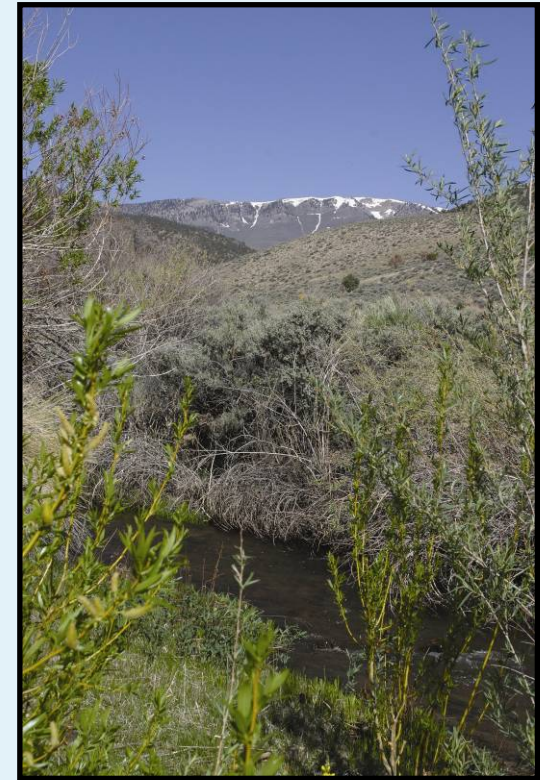
**4 of the 19 applications have potential to impact existing spring rights at the Cleve Creek fan**

**Recognition of the Federal Stipulation Agreement**

# **In-State Resources: State Engineer's Process**

**Factors the Nevada State Engineer considers when making water right decisions:**

- **Is there water available from the proposed source?**
- **Does it conflict with existing rights?**
- **Does it threaten to prove detrimental to the public interest?**
- **Does the applicant have the intention and capability of constructing the project to apply the water?**

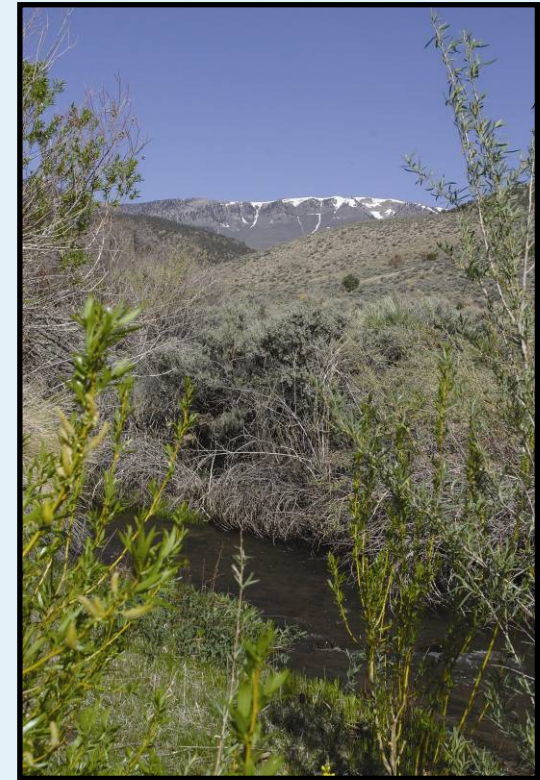




# **In-State Resources: State Engineer's Process**

## **Factors the Nevada State Engineer considers when making water right decisions:**

- **Is there water available from the proposed source?**
  - **YES**
- **Does it conflict with existing rights?**
  - **No (15 of 19 applications)**
- **Does it threaten to prove detrimental to the public interest?**
  - **No**
- **Does the applicant have the intention and capability of constructing the project to apply the water?**
  - **Yes**







# **In-State Resources: State Engineer's Process**

## **SPRING VALLEY RULING HIGHLIGHTS:**

**Requires an approved Monitoring and Mitigation plan of biological and hydrological parameters**

**5-years of biological and hydrological baseline data**

**Staged groundwater development**

**10-years...35,000 afy – 40,000 afy exported from the Valley**

**Predictive Groundwater Flow Model**

**Permitted SNWA 60,000 acre feet**

**Combined Duty under 15 remaining permits**



# Environmental Safeguards

## Federal Stipulation

- **Manage the development of groundwater by SNWA in Spring Valley without causing injury to Federal water rights, and/or unreasonable adverse effects to Federal resources**
- **Avoid effects from groundwater withdrawal on Federal resources located within the boundaries of Great Basin National Park**
- **Avoid degradation of the scenic values of and visibility from Great Basin National Park**



# Environmental Safeguards

## Federal Stipulation

- Establishes a hydrologic monitoring, management and mitigation plan for development of groundwater in Spring Valley
  - Establishes a hydrologic data collection network to define baseline and monitor any potential effects due to development of water resources in Spring Valley
- Establishes a biologic monitoring, management and mitigation plan for development of groundwater in Spring Valley
  - To establish a biologic data collection network to define baseline and monitor any potential effects due to development of water resources in Spring Valley



# **SNWA Ranch Acquisitions**



**Southern Nevada Water Authority**

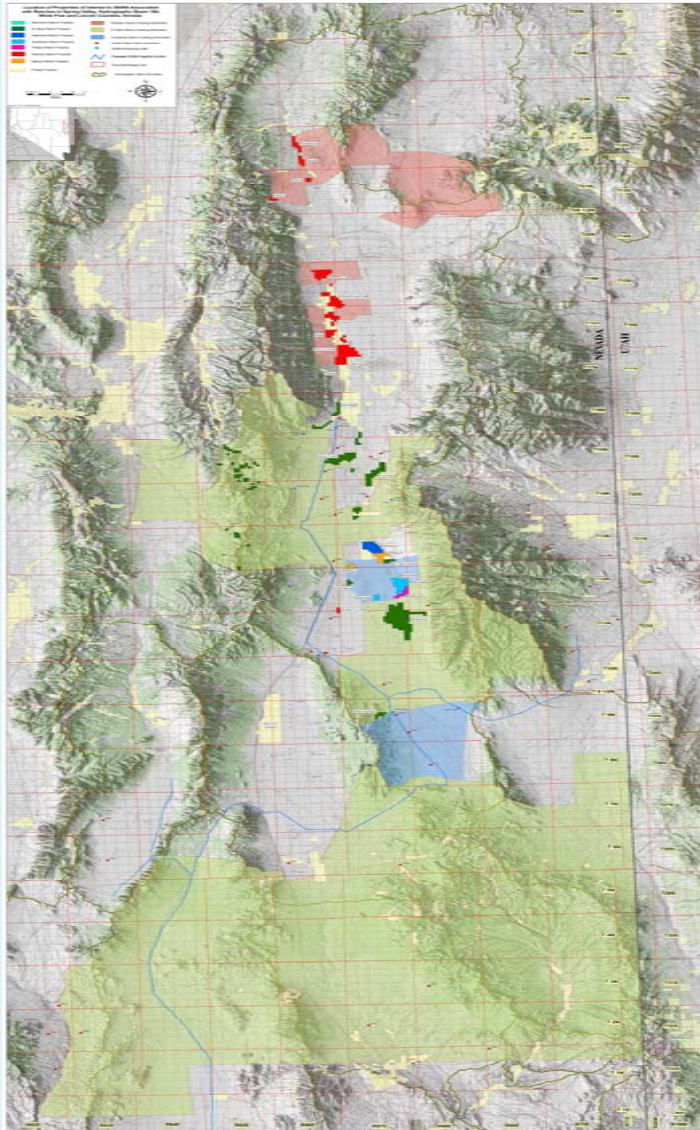


# Ranch Acquisitions

## Ranch Acquisitions

- **The SNWA has recently purchased privately owned properties within Spring Valley located in White Pine County, Nevada**
- **Water rights acquired in connection with these ranches will be used to manage groundwater development in a manner that ensures the availability of that resource to Southern Nevada, while also protecting the aesthetic values and wildlife of Spring Valley and meeting the terms established under the Federal Stipulation**

# Ranch Acquisitions



## Properties in Spring Valley

Robison Ranch

Harbecke Ranch

Phillips Ranch

Bransford Ranch

Wahoo Ranch

El Tejon Ranch

Huntsman Ranch



# Summary of Ranch Purchases

Ranch	Acreage	Water Rights (afy)			Grazing Permits (AUMs)
		Surface	Groundwater	Supplemental	
Robison	7,154.61	11,984.05	1,258.25	5,364.24	7,407.00
Harbecke	1,369.96	1,713.00	1,781.00	657.00	
Phillips	440.00	1,205.96	554.04	2,700.45	
Bransford	80.00	0.00	317.72	55.08	
Wahoo	880.00	0.00	1,738.15	1,842.24	803.00
El Tejon	11,800.00	14,342.13	0.00	7,859.73	44,694.00
Huntsman	1,560.00	4,657.47	364.52	5,389.60	3,475.00
Total	23,284.57	33,902.61	6,013.68	23,868.34	56,379.00



# Ranch Acquisitions

## **Goals / Key Concepts for Ranch Management**

- **Manage all ranches in a manner that supports the permitting, construction and long-term operation of the Groundwater Development Project.**
- **Manage land and water acquisitions in Spring Valley in a manner that enhances the biological integrity and ecological health of the area.**



# Ranch Acquisitions

## Goals / Key Concepts - Con't.

- **Operate and maintain ranches in a manner that enhances socioeconomic, cultural and aesthetic values within Spring Valley.**
- **Create and maintain cooperative partnerships and create educational opportunities.**
- **Operate ranching activities in a manner that is financially self-sustaining.**





# **Collaborative Solutions**

**The SNWA has an established history of developing mutually beneficial agreements:**

- **Coyote Spring stipulation**
- **Coyote Spring MOA**
- **Moapa Valley Water District Agreement**
- **Lincoln County Agreement**
- **Lincoln County General Capacity Agreement**
- **Three Lakes stipulation**
- **The Las Vegas Wash Improvements Program**
- **Virgin River water rights sharing with the City of Mesquite**

# Collaborative Solutions

**Southern Nevada has also worked collaboratively with the Seven Basin States to secure a number of “bridge resources” as temporary supplies until more permanent resources can be developed**





# Collaborative Solutions

## “Bridge” Resources

<b><u>Resource</u></b>	<b><u>Amount of Water (in AF)</u></b>
<b>Southern Nevada Groundwater Bank</b>	<b>320,000</b>
<b>Arizona Water Bank</b>	<b>1.25 M beginning in 2007</b>
<b>California Water Bank</b>	<b>20,000 (~20,000 by end of 2006)</b>
<b>Proposed Drop 2</b>	<b>~280,000 (Limited to 40,000/year)</b>
<b>Proposed Interim Surplus Guidelines</b>	<b>Variable (limited to demands through 2026 – no banking)</b>
<b>Full Surpluses</b>	<b>Variable</b>





# Collaborative Solutions

**The SNWA will continue to work with stakeholders to manage the region's water resources and develop collaborative solutions that will ensure adequate future water supplies.**



**Questions?**