

# **The Next 100 Years...**

## **Dependability through Regional Solutions**

**Tom Minwegen,  
Deputy General Manager**

**October 20, 2005**



**Southern Nevada Water Authority**



**Las Vegas Valley Water District**

# What is SNWA?

**The Southern Nevada Water Authority (SNWA) was formed in 1991 to address Southern Nevada's unique water needs on a regional basis**



**SNWA**

# SNWA Member Agencies

City of Las Vegas

City of Henderson

City of Boulder City

City of North Las Vegas

Big Bend Water District

Clark County Water Reclamation District

Las Vegas Valley Water District



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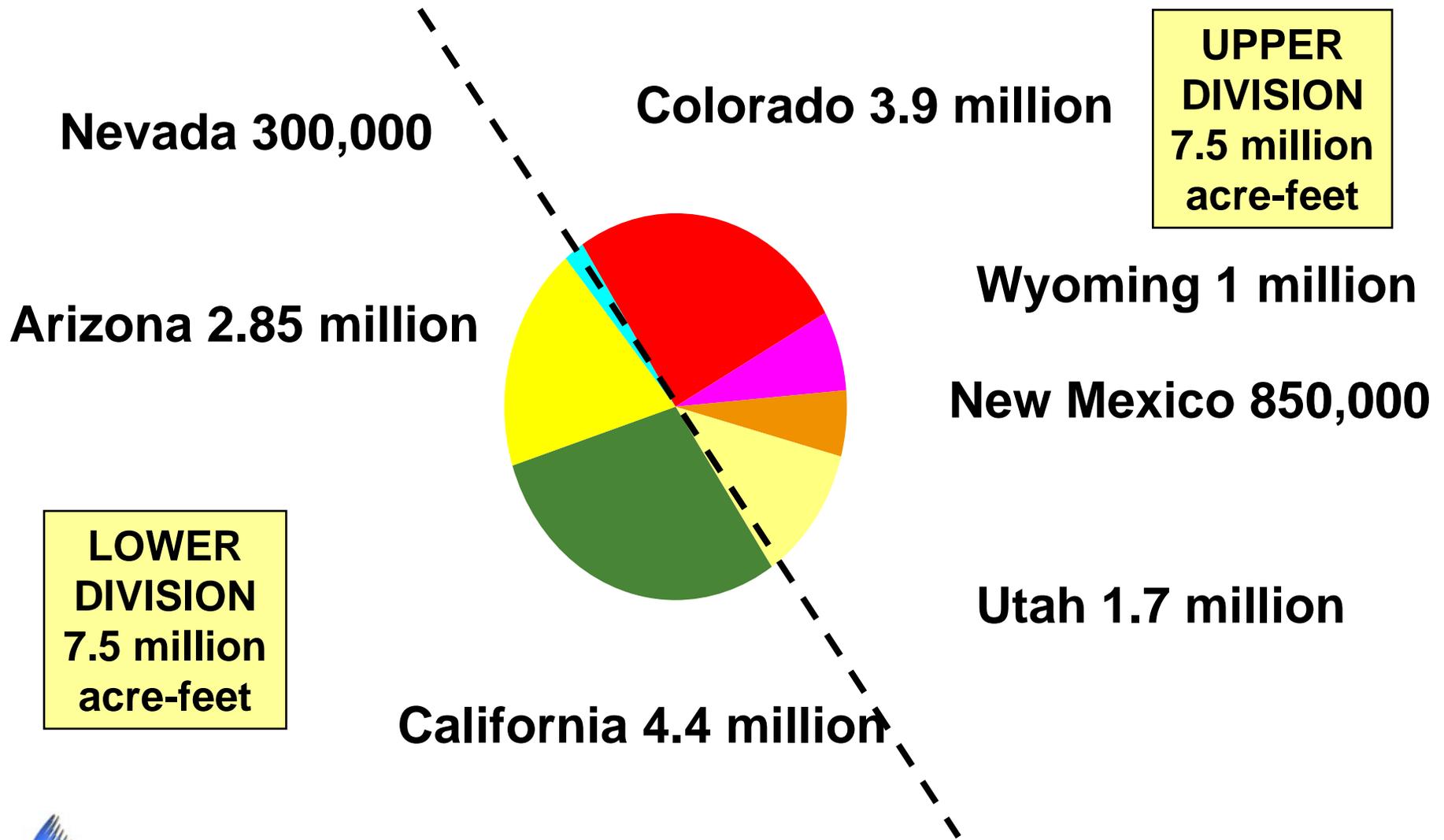
# Colorado River Overview

- **Upper & Lower Basins apportioned 7.5 mafy each**
- **Average runoff ~15 mafy**
- **60 maf of storage**
- **U.S. Bureau of Reclamation serves as water master**



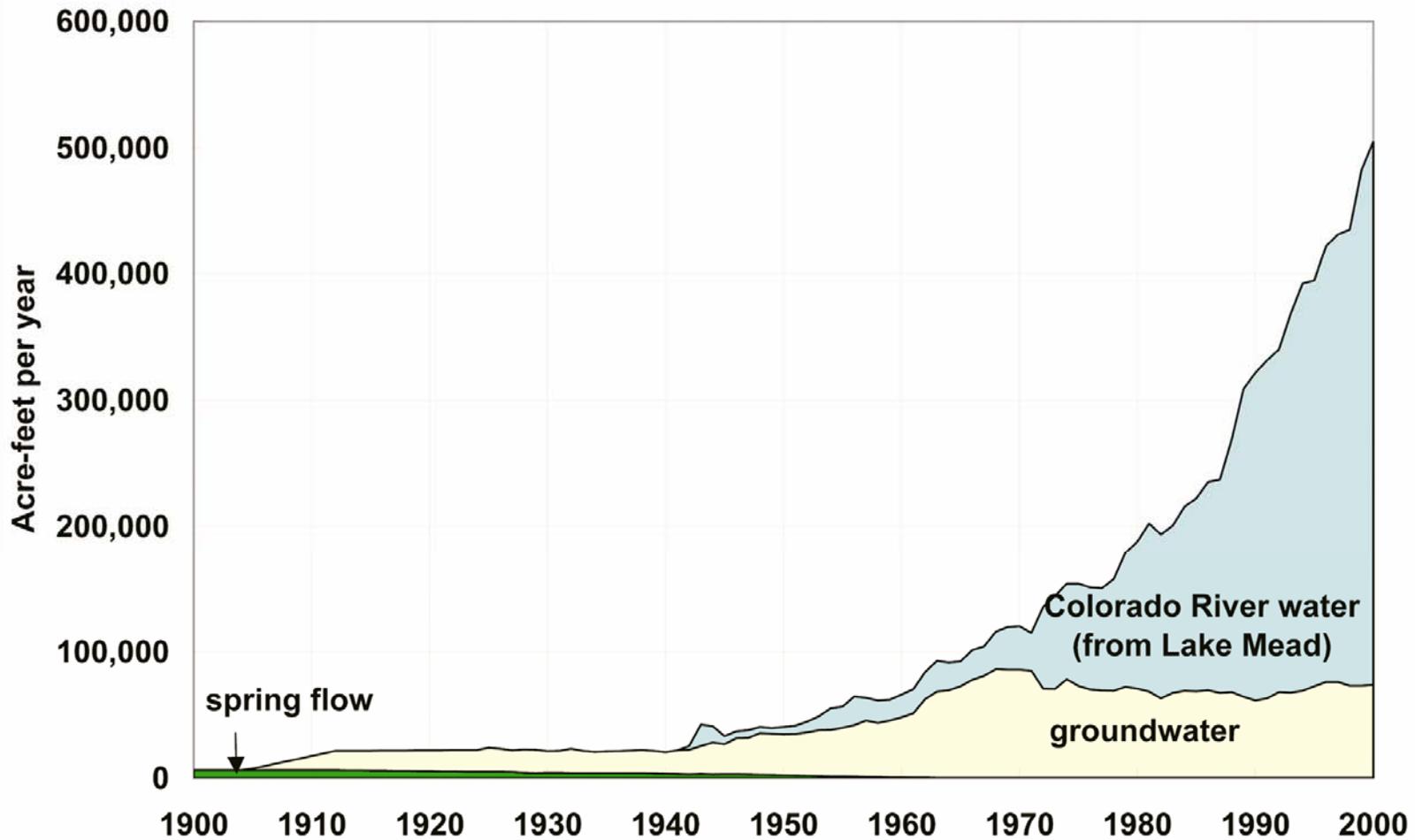
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# Colorado River Consumptive Use



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# Historic Water Use



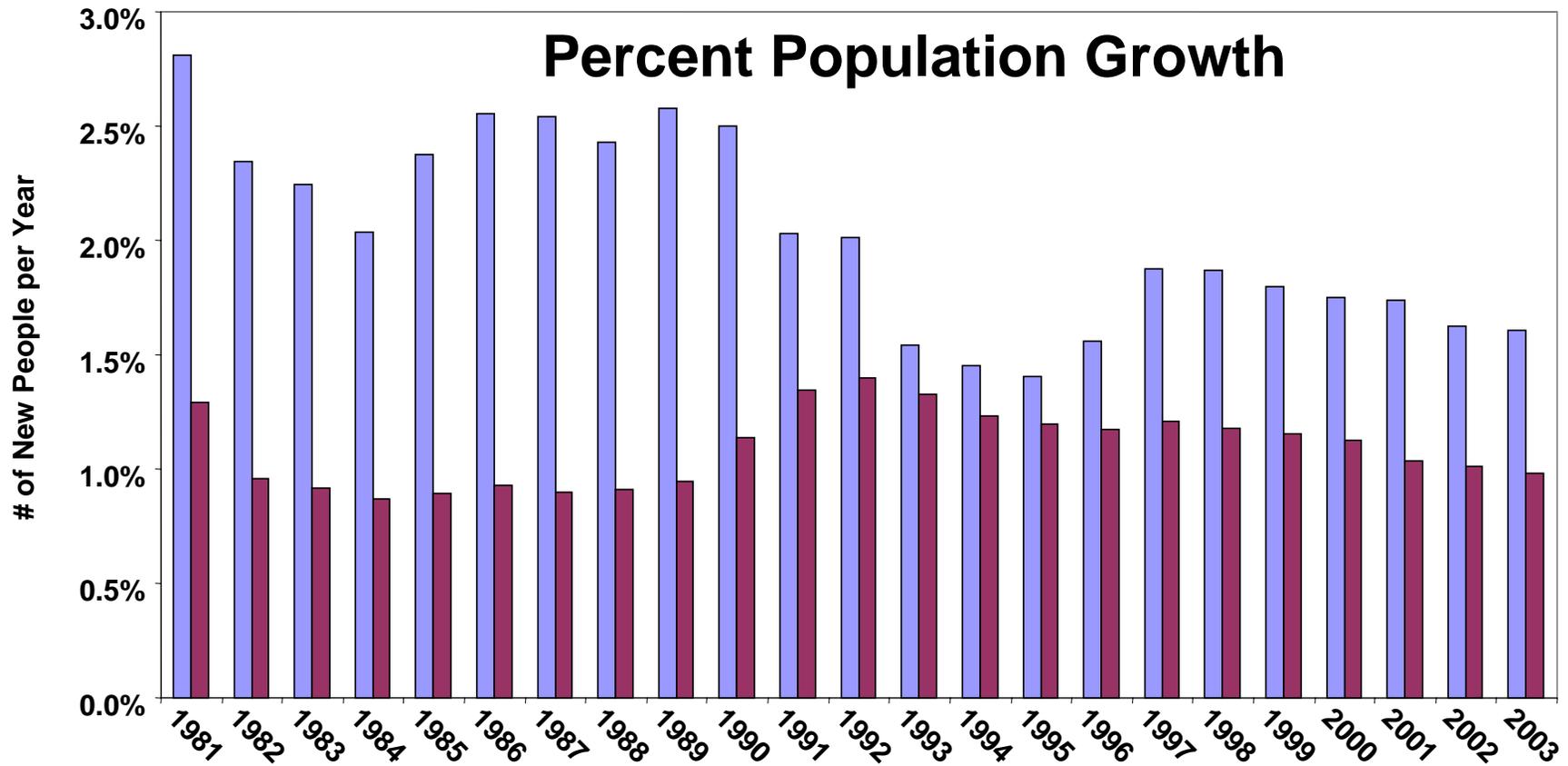
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# Challenges

- **Population Growth**
- **Drought**
- **Diversifying Water Resource Portfolio**
- **Facilities and Infrastructure**
- **Water Quality**
- **Developing Partnerships & Fostering Collaboration**



# Growth in the Southwest

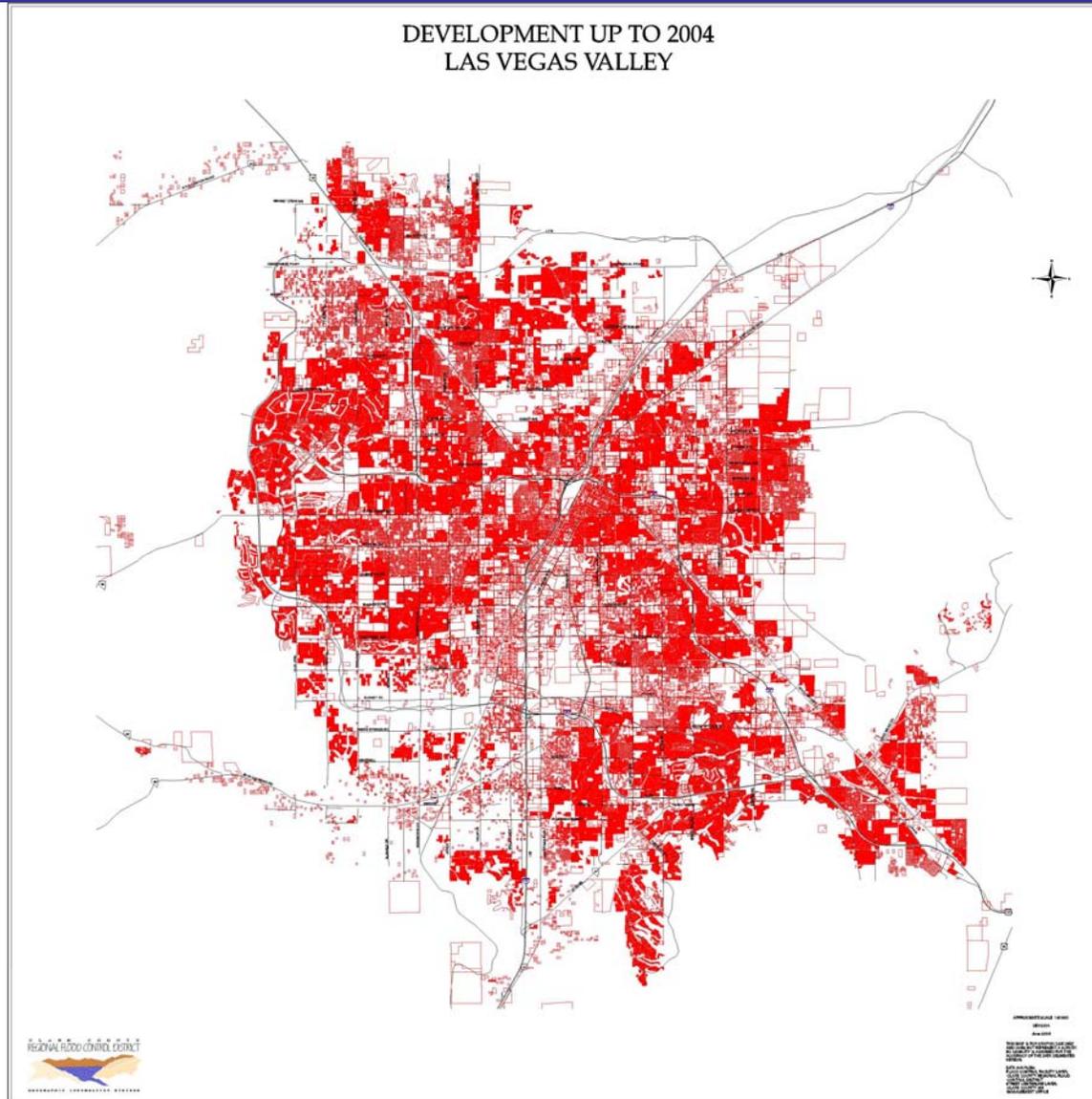


Source: U.S. Census Data



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# Population Increases



**1950**

47,000

**1960**

116,000

**1970**

262,000

**1980**

444,000

**1990**

708,000

**2004**

1,600,000



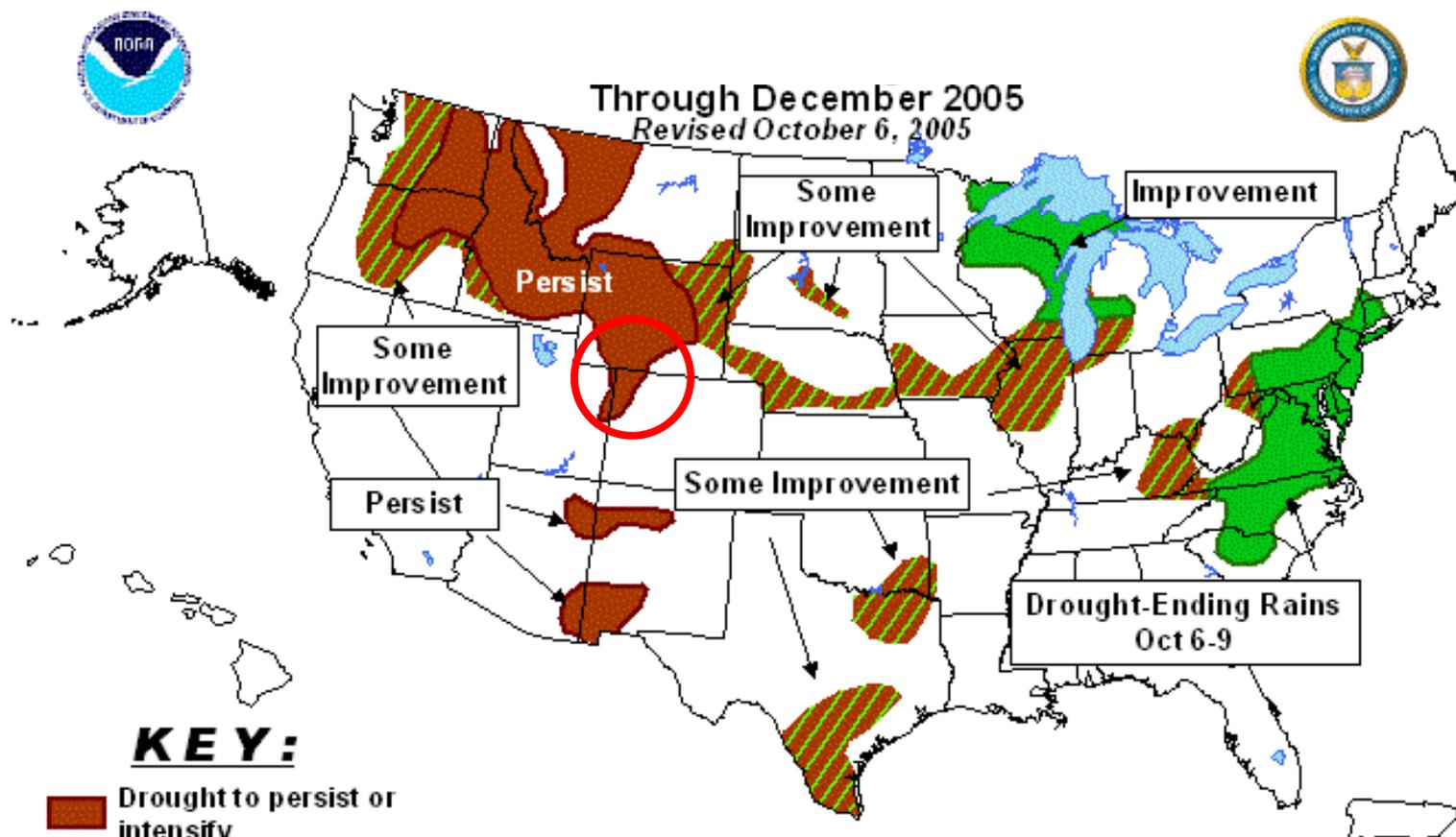
# Las Vegas Today

- 1.7 million population
- 36 million tourist population
- 300,000 acre-feet/year water allocation
- 4 inches of annual precipitation
- Less than 4 percent unaccounted water



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# US Seasonal Drought Outlook



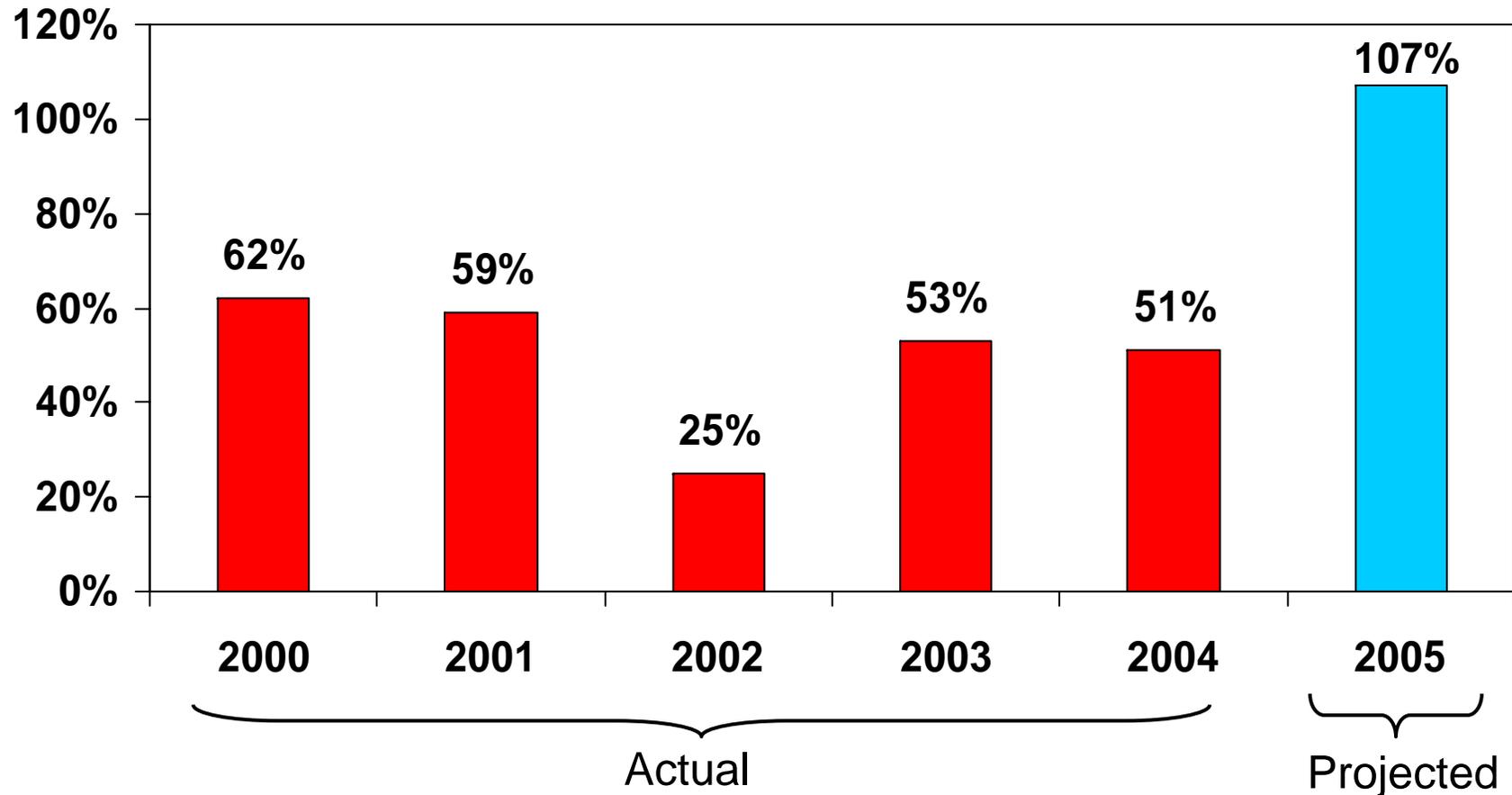
## KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

Depicts general, large-scale trends based on subjectively derived probabilities guided by numerous indicators, including short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance, so use caution if using this outlook for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are schematically approximated from the Drought Monitor (D1 to D4). For weekly drought updates, see the latest Drought Monitor map and text. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.



# Lake Powell Annual Inflows

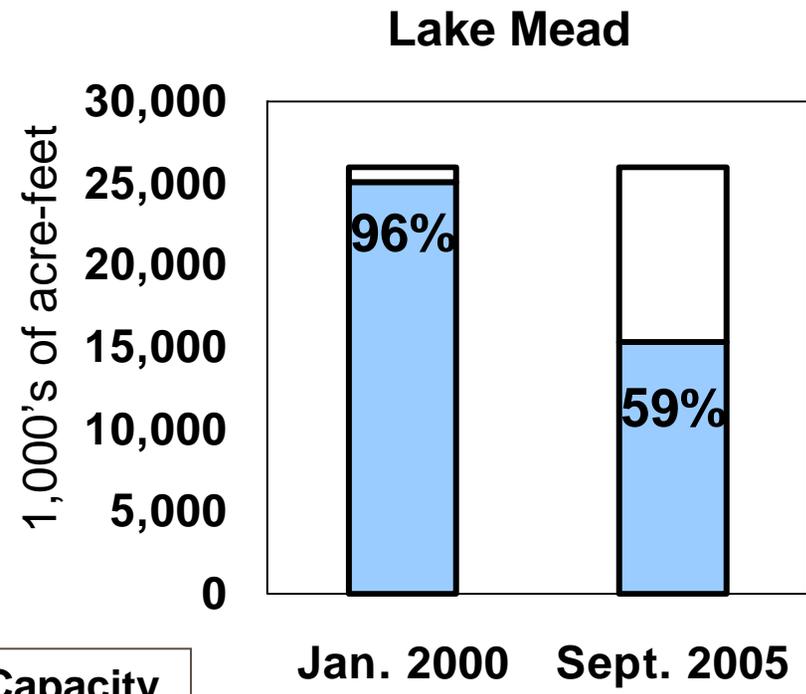
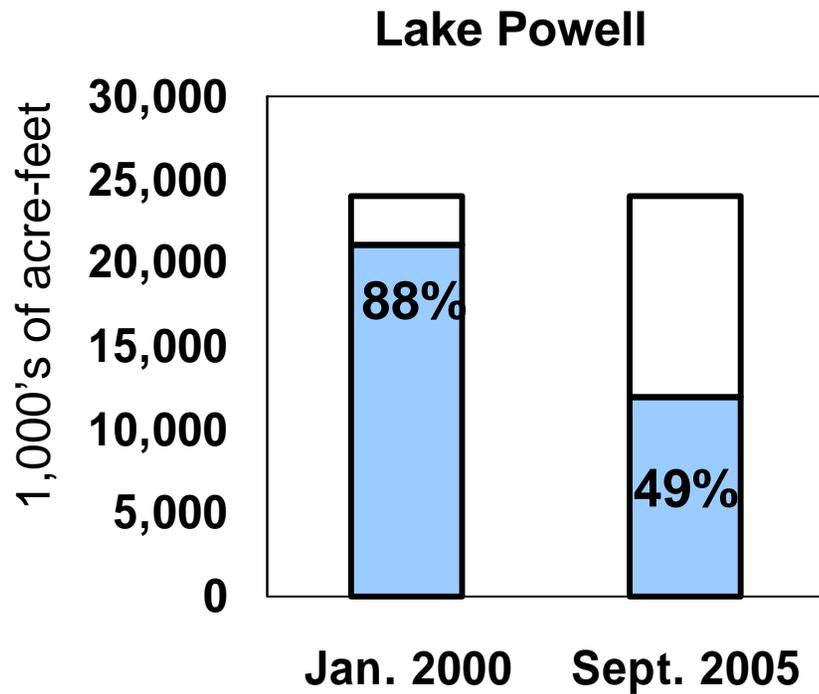


**5-Year Average Inflow: 50% of normal**



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# Lake Powell and Lake Mead Storage



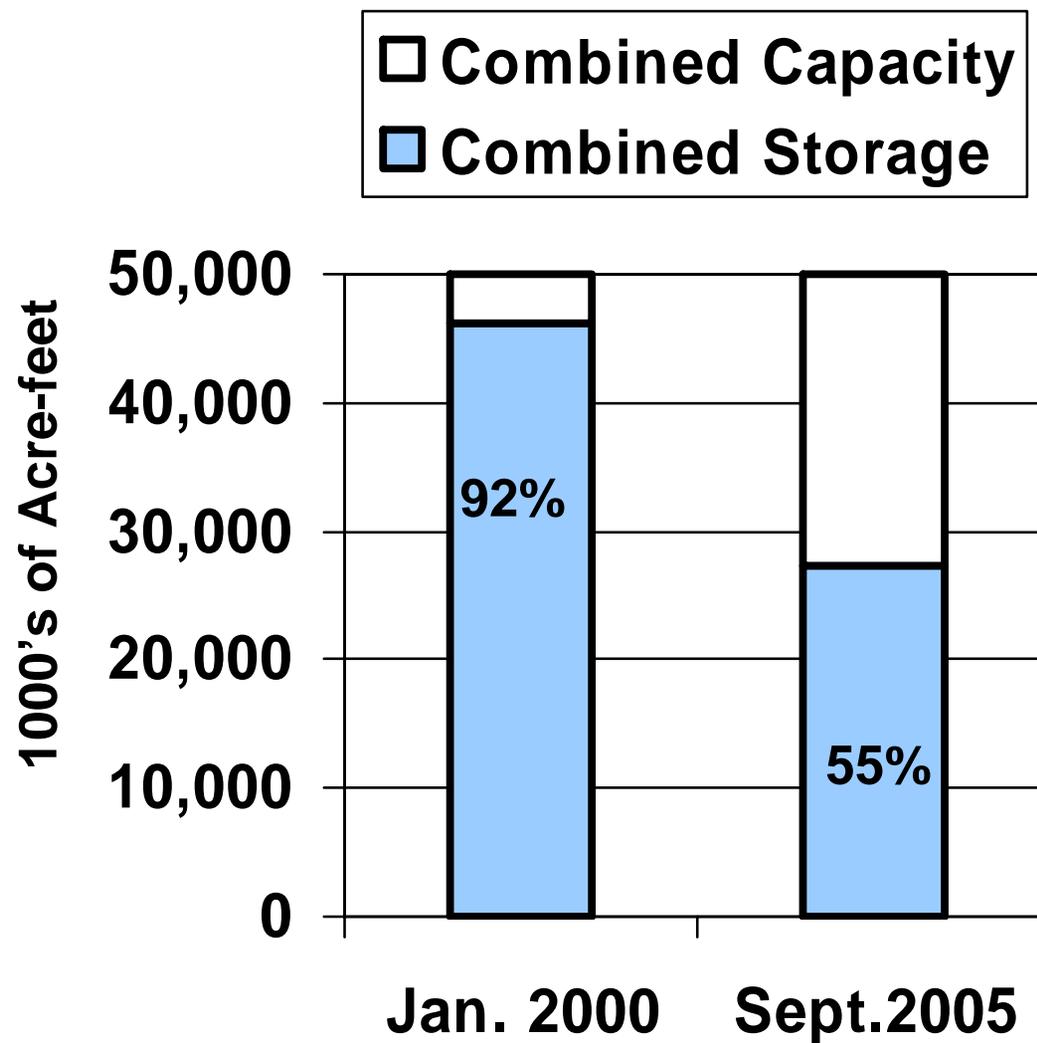
□ Capacity  
■ Storage

Elevation: 3,679' 3,602'

1,214' 1,140'



# Powell and Mead Combined Storage



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# Working Toward Solutions

- **Conservation**
- **Systems**
- **Resources**



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# Water Conservation & Drought Response

## Incentive Programs

- Water Smart Landscapes
- Irrigation Clock Rebate
- Water Efficient Technologies
- Water Smart Carwash
- Water Smart Pool



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# Water Smart Landscapes Program

- **\$1 per square foot of turf replaced**
- **Maximum incentive per property is \$300,000**



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# Water Smart Landscapes Achievements



## Since inception in 1999:

- **Nearly 25,000 applicants**
- **Over 64 million square feet converted**
- **Saving over 3.5 billion gallons every year (>10,000 acre feet)**

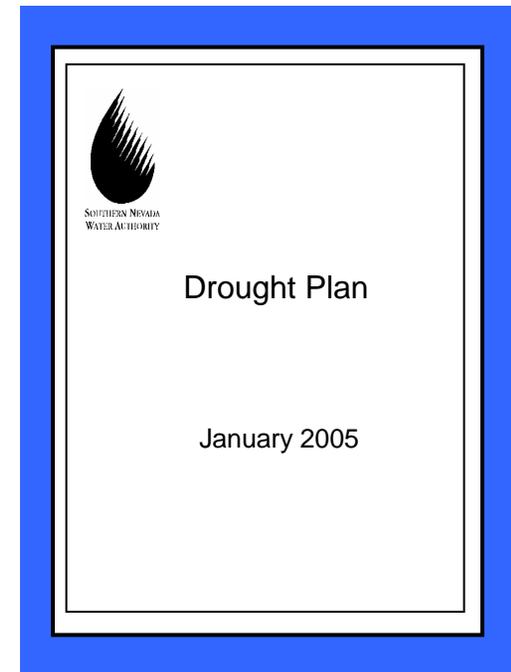


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# Water Conservation & Drought Response

## Policy

- Development codes (commercial & residential)
  - Indoor fixtures (for example, low flow devices)
  - Outdoor landscaping
- Time-of-day and day-of-week watering restrictions
- Water budgets for golf courses
- Water efficiency plans for resorts



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# Water Conservation & Drought Response

## Pricing

- The District utilizes tiered rate structures
- These structures target high water users, while protecting the rates for the smallest users
- The lowest tier represents what most customers use indoors

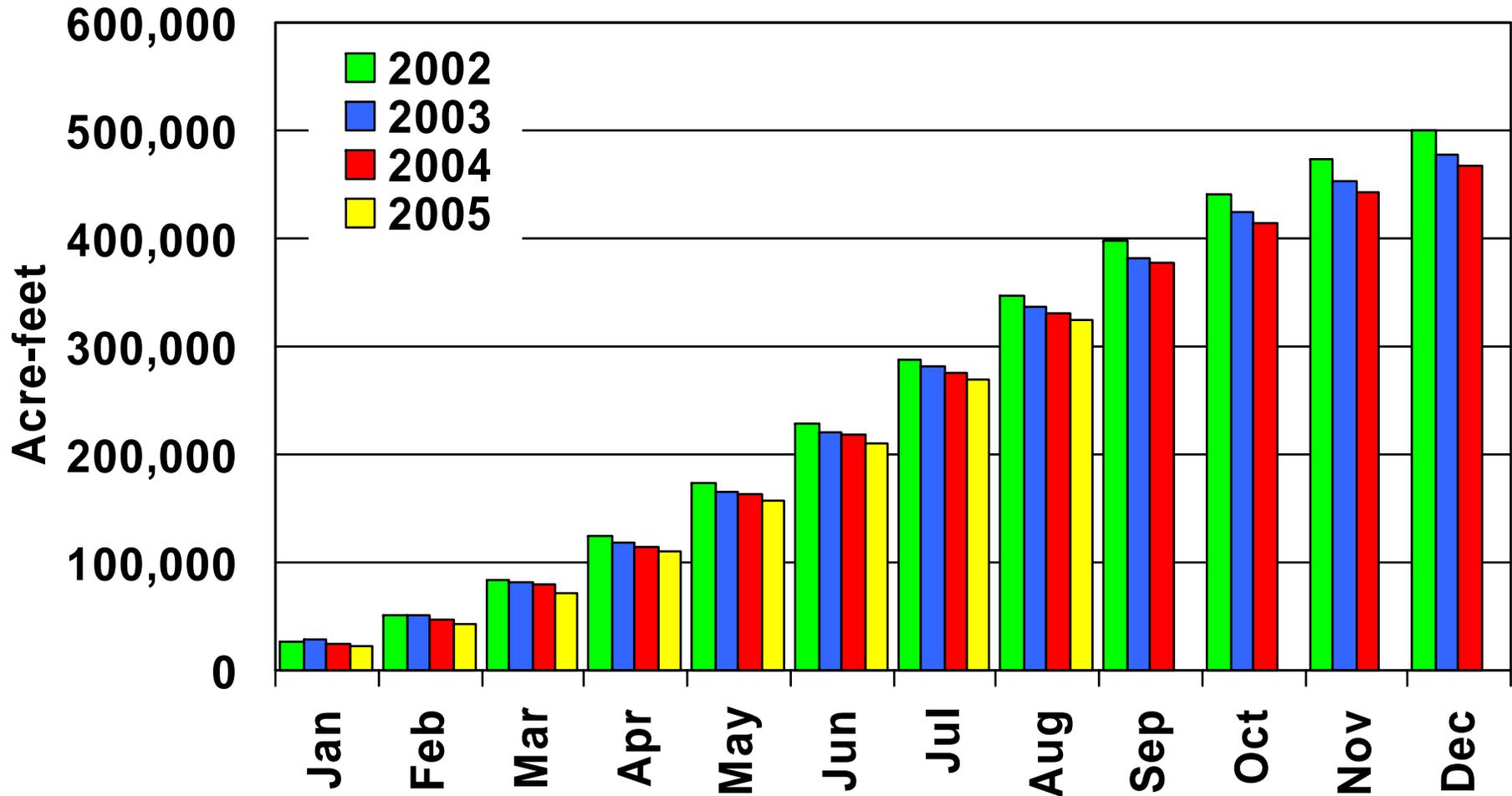


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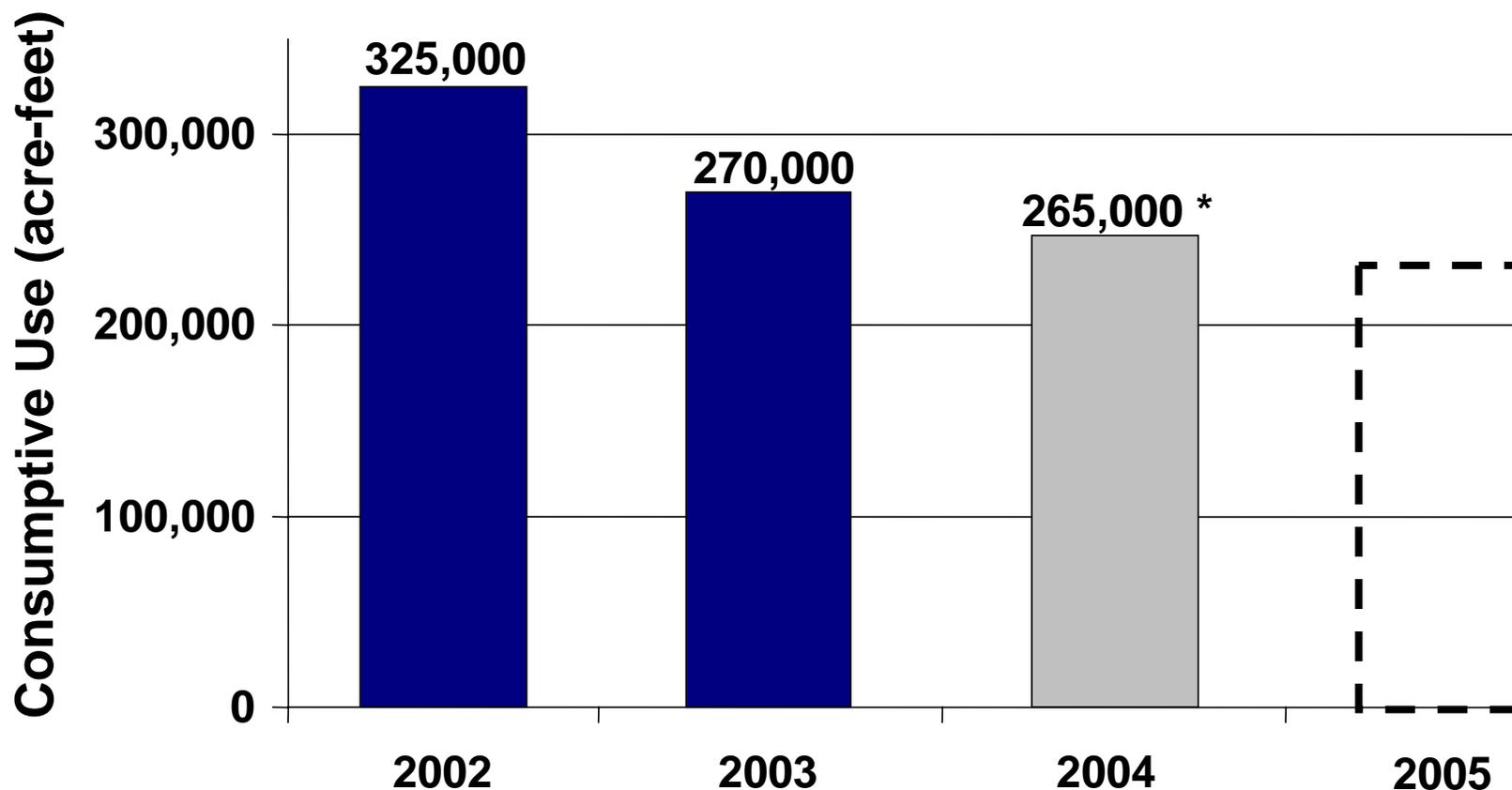
# Comparison of SNWA Cumulative Water Use (2002 to 2005)



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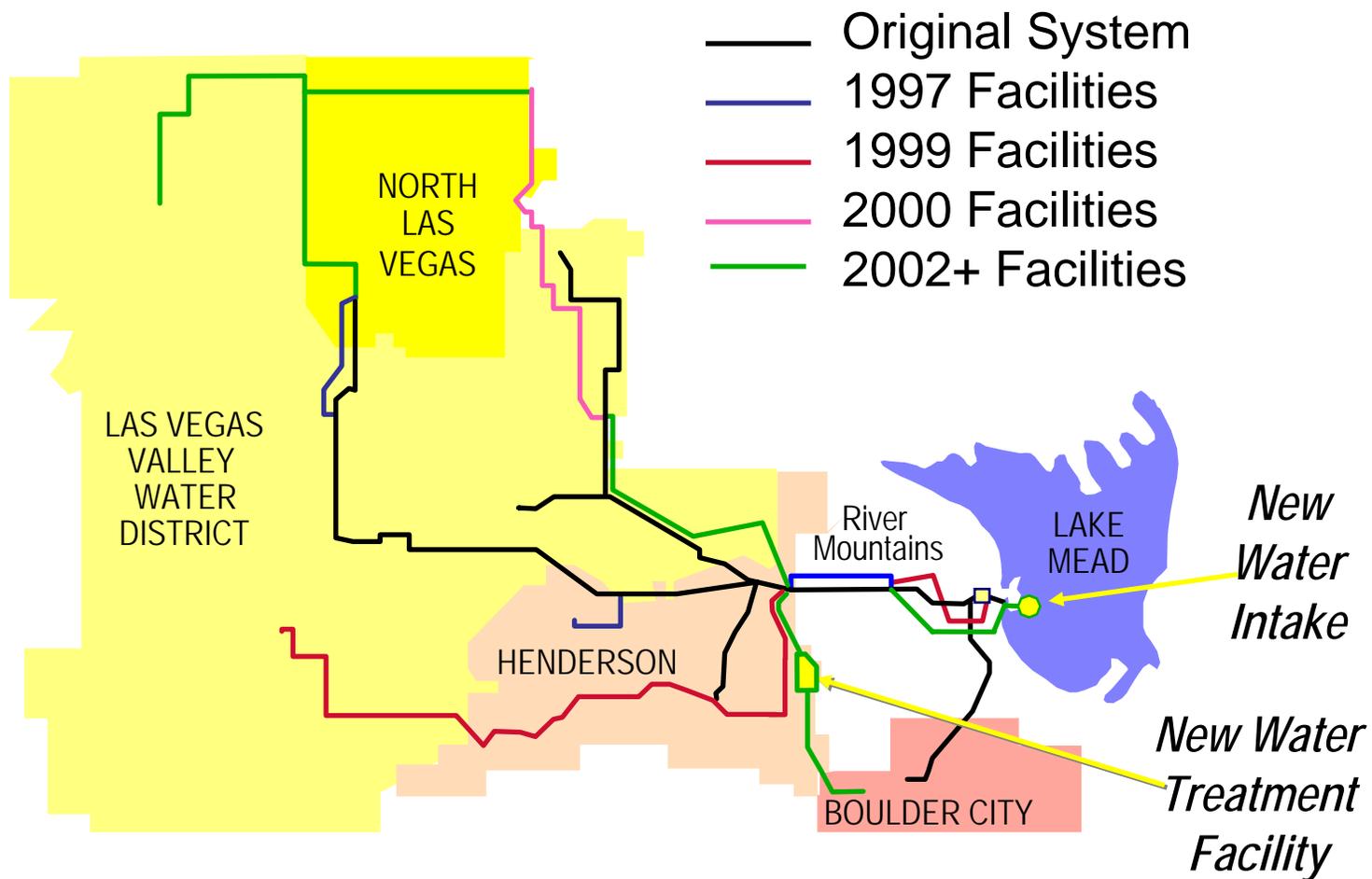
# Water Conservation & Drought Response

**Southern Nevada has made significant conservation gains**



\* Based on Preliminary 2004 Estimates

# Regional Water System

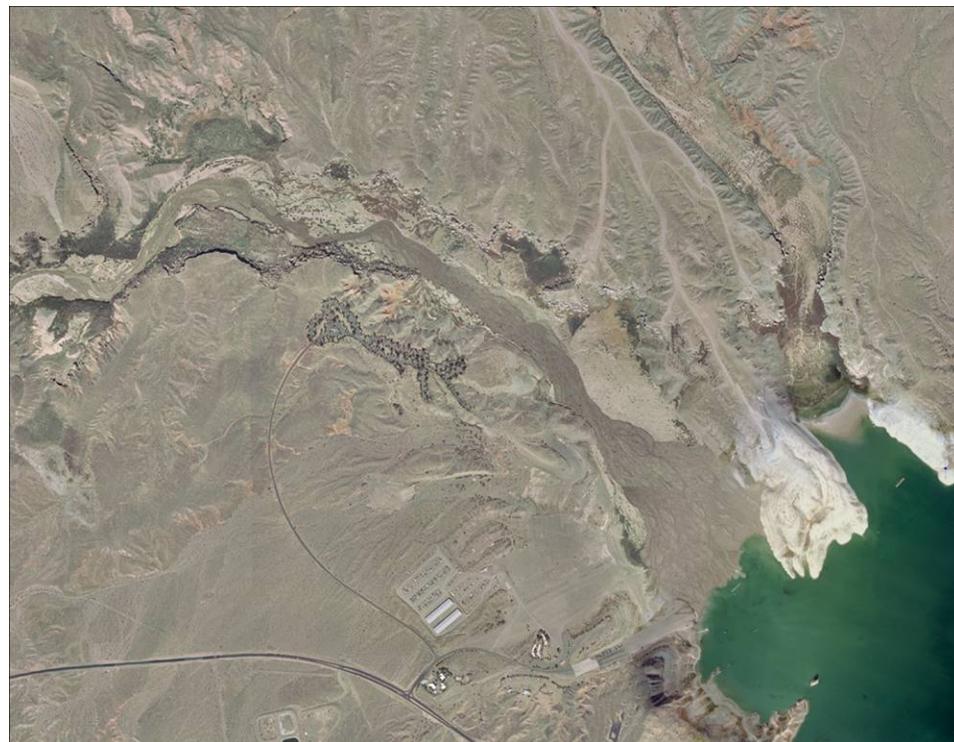


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# Lake Mead



Sep. 1998 Elevation: 1,215 ft.



Dec. 2003 Elevation: 1,139 ft.

# Hoover Dam



1983



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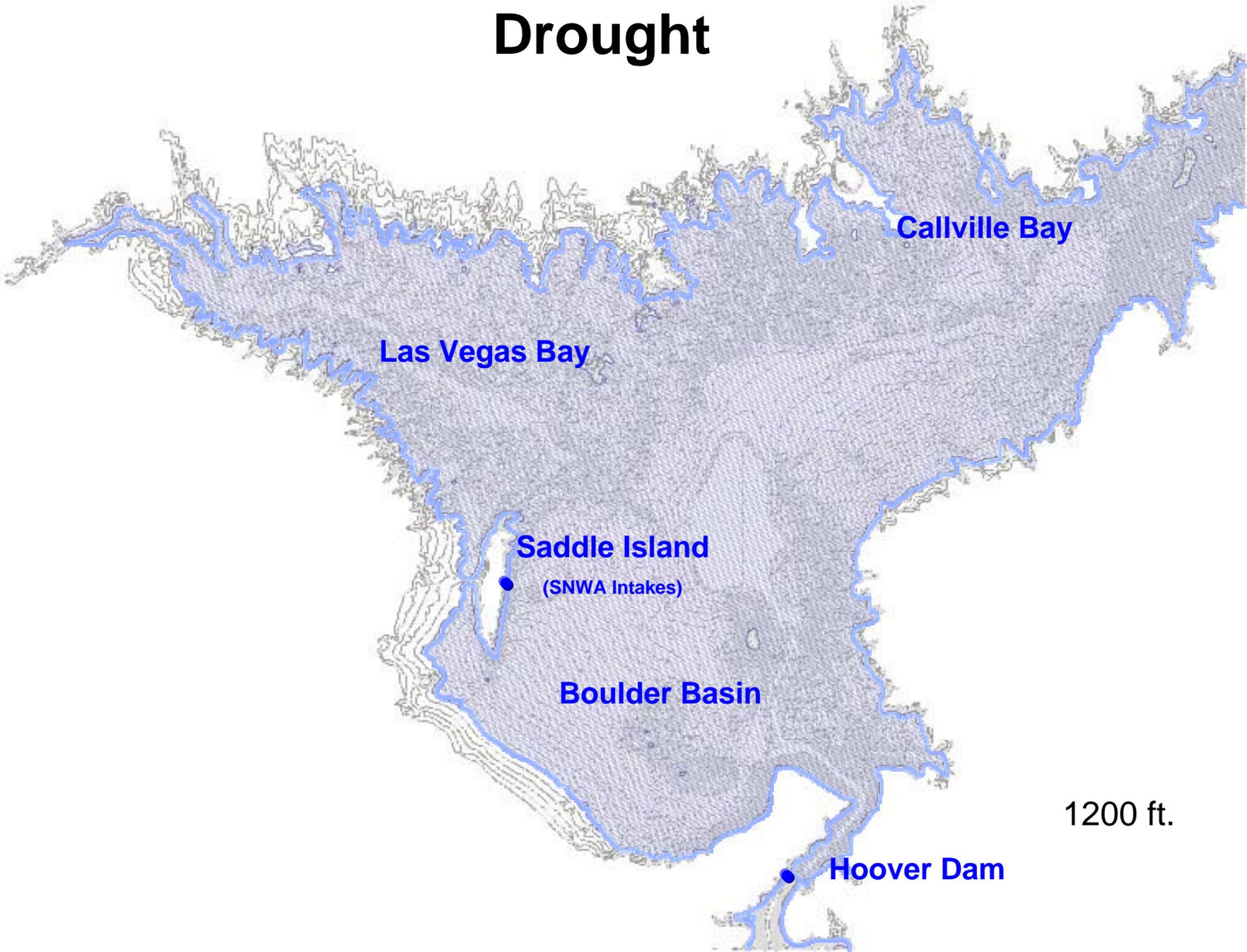


2003

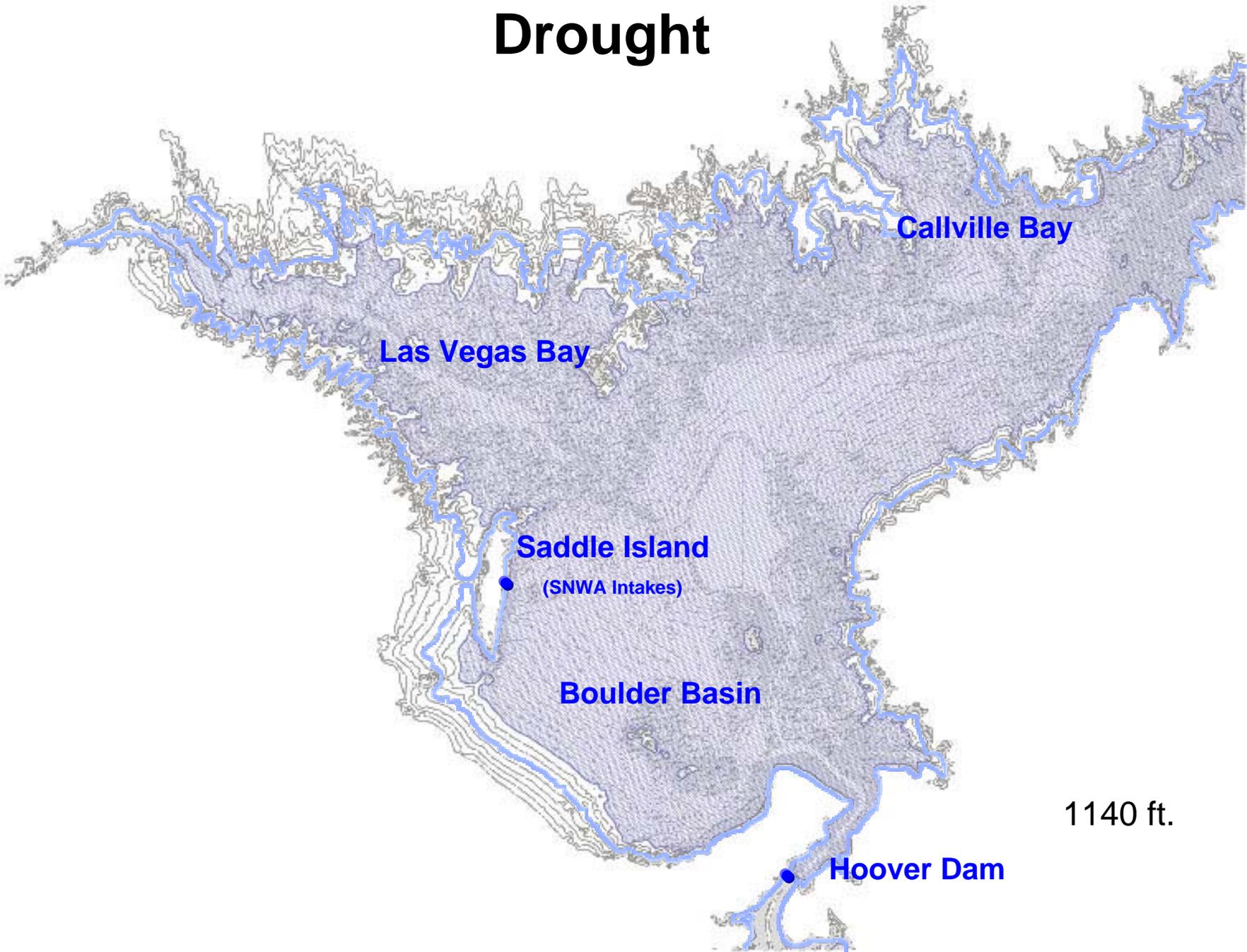


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# Drought



# Drought



Las Vegas Bay

Callville Bay

Saddle Island  
(SNWA Intakes)

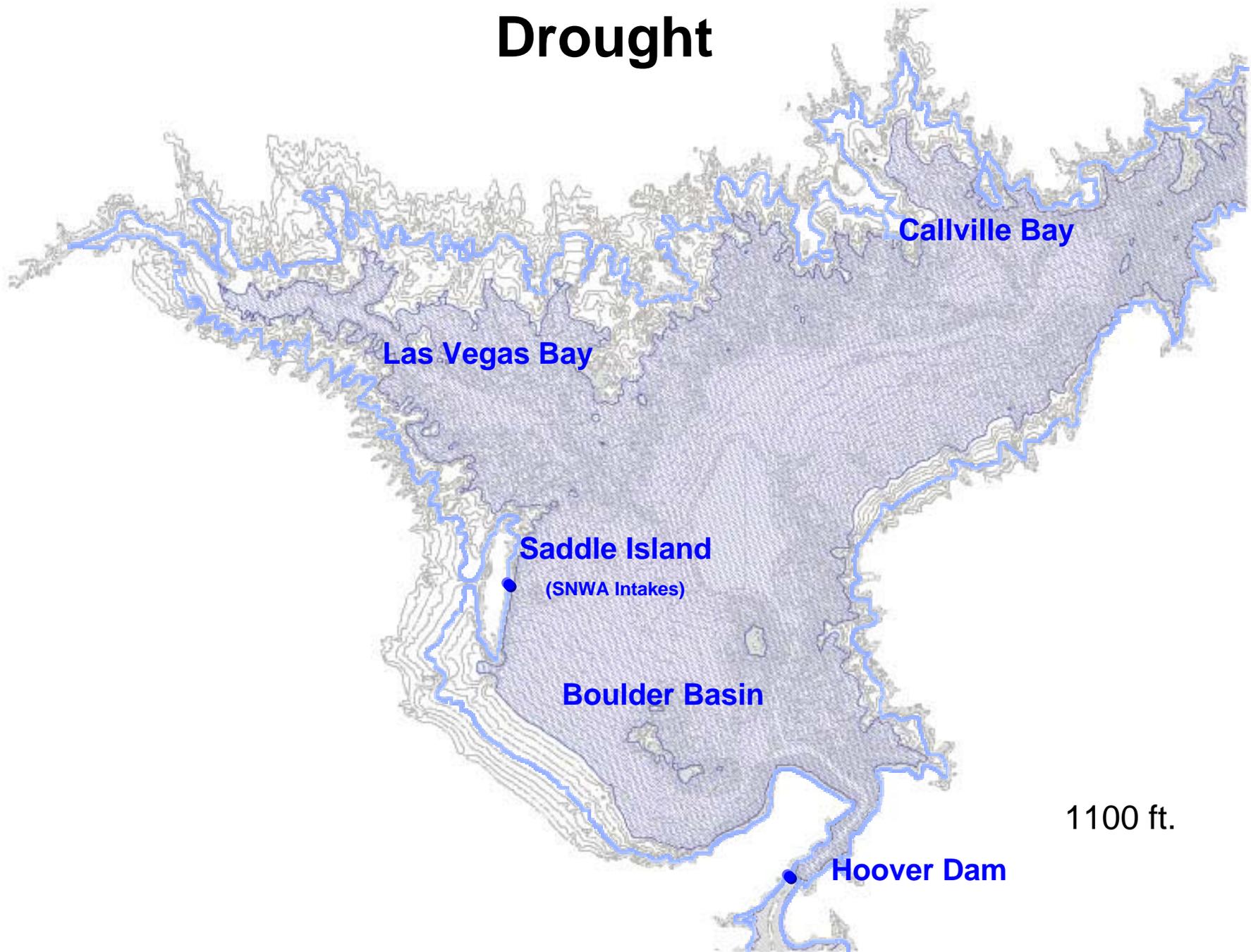
Boulder Basin

Hoover Dam

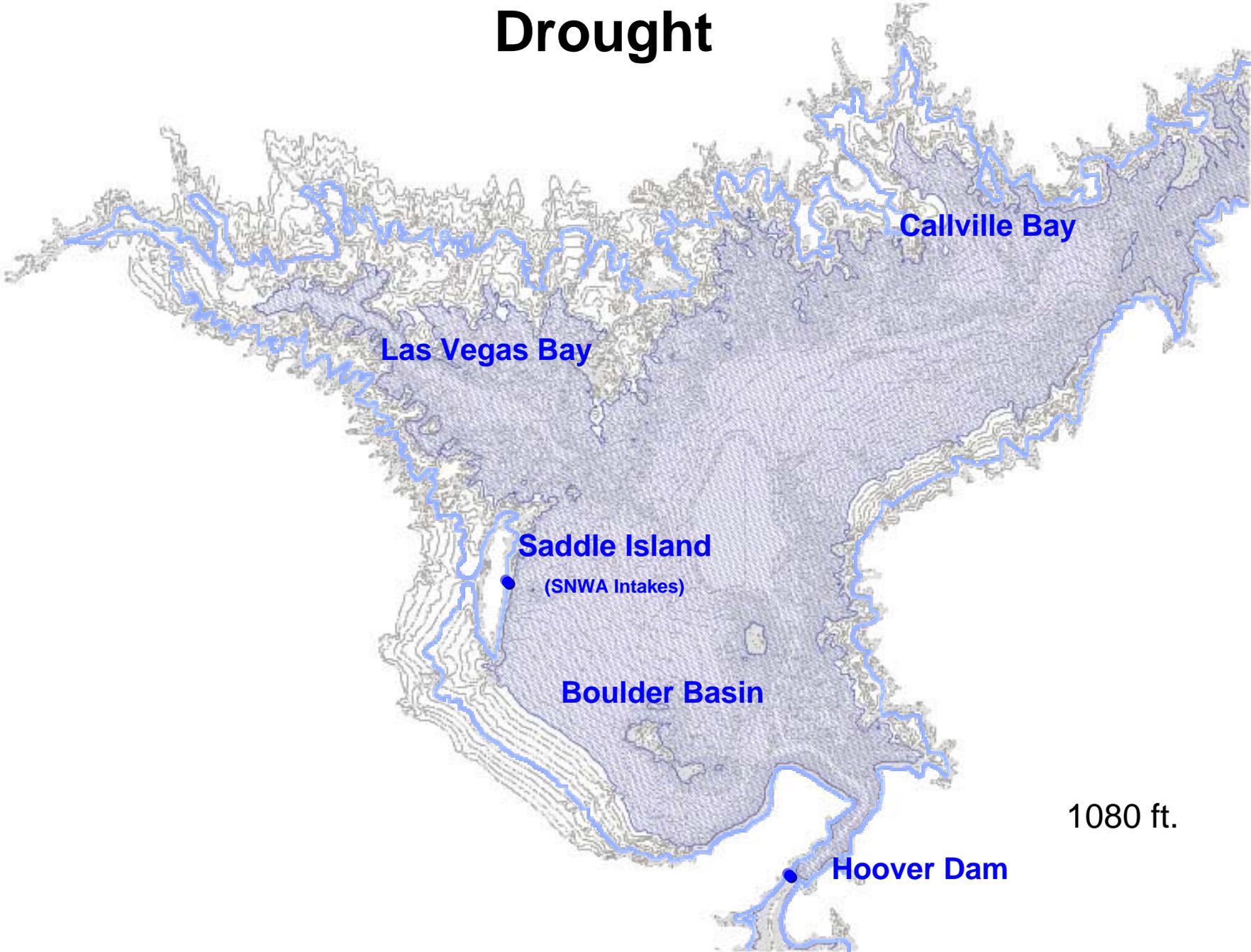
1140 ft.

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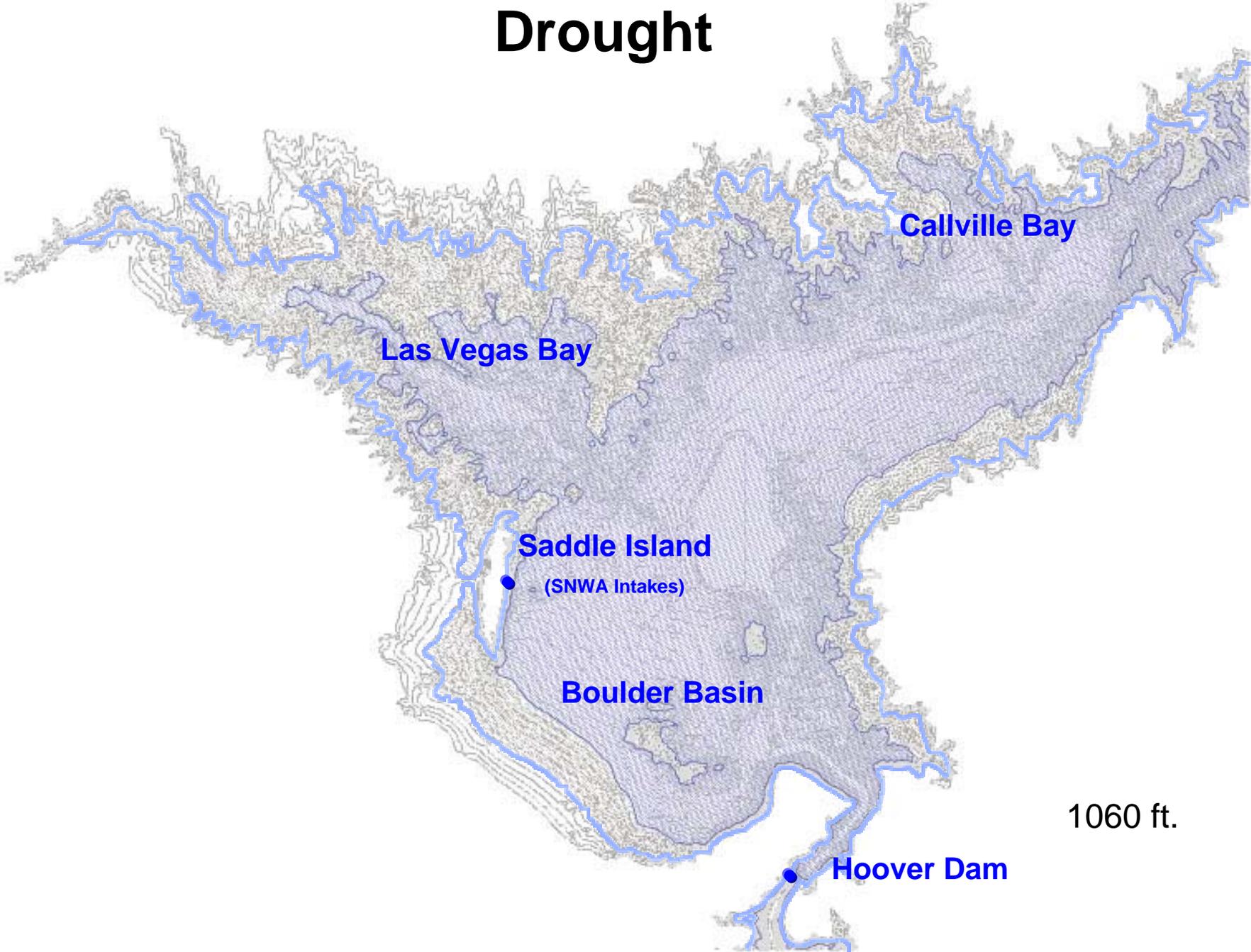
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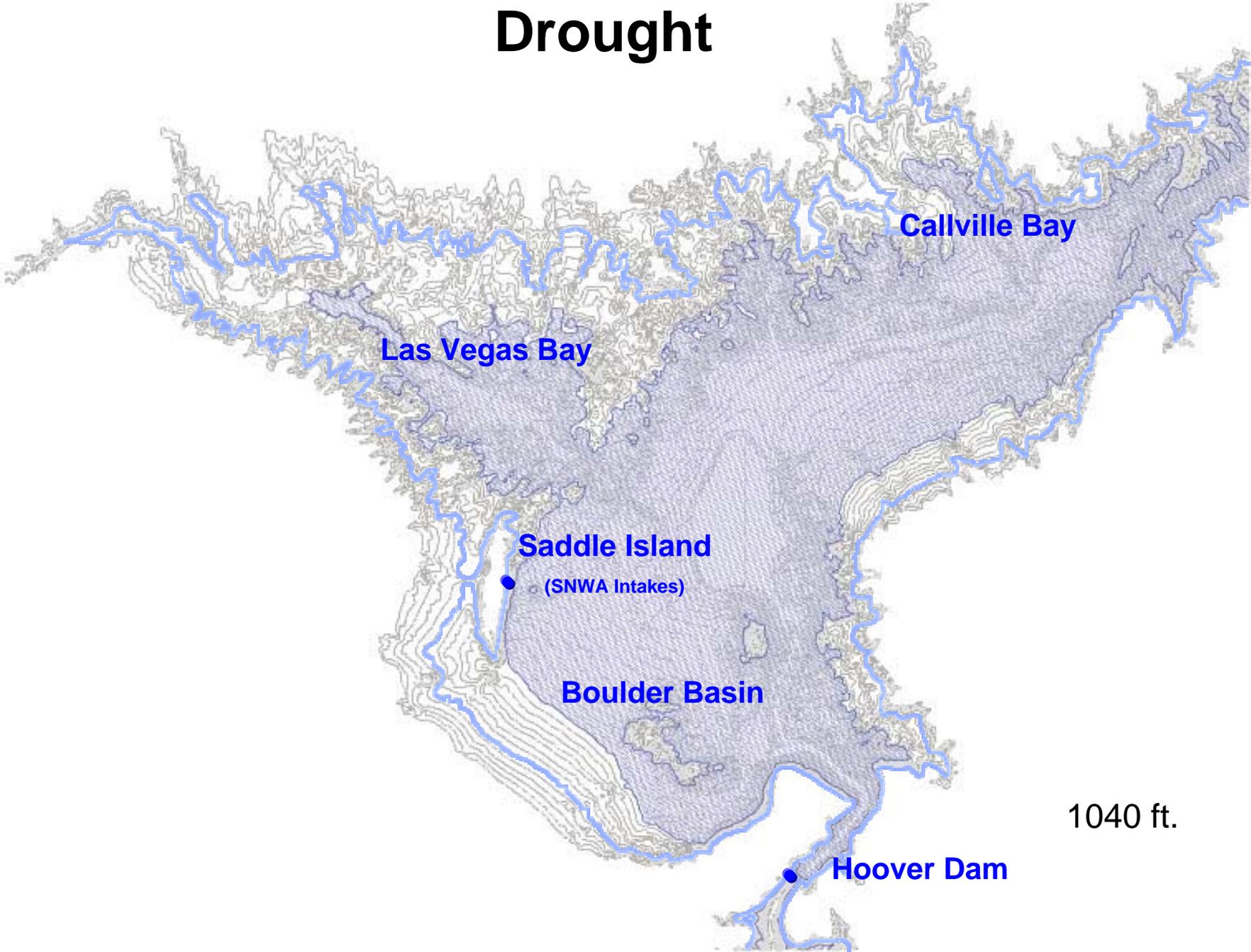
# Drought



# Drought



# Drought



1040 ft.

Hoover Dam

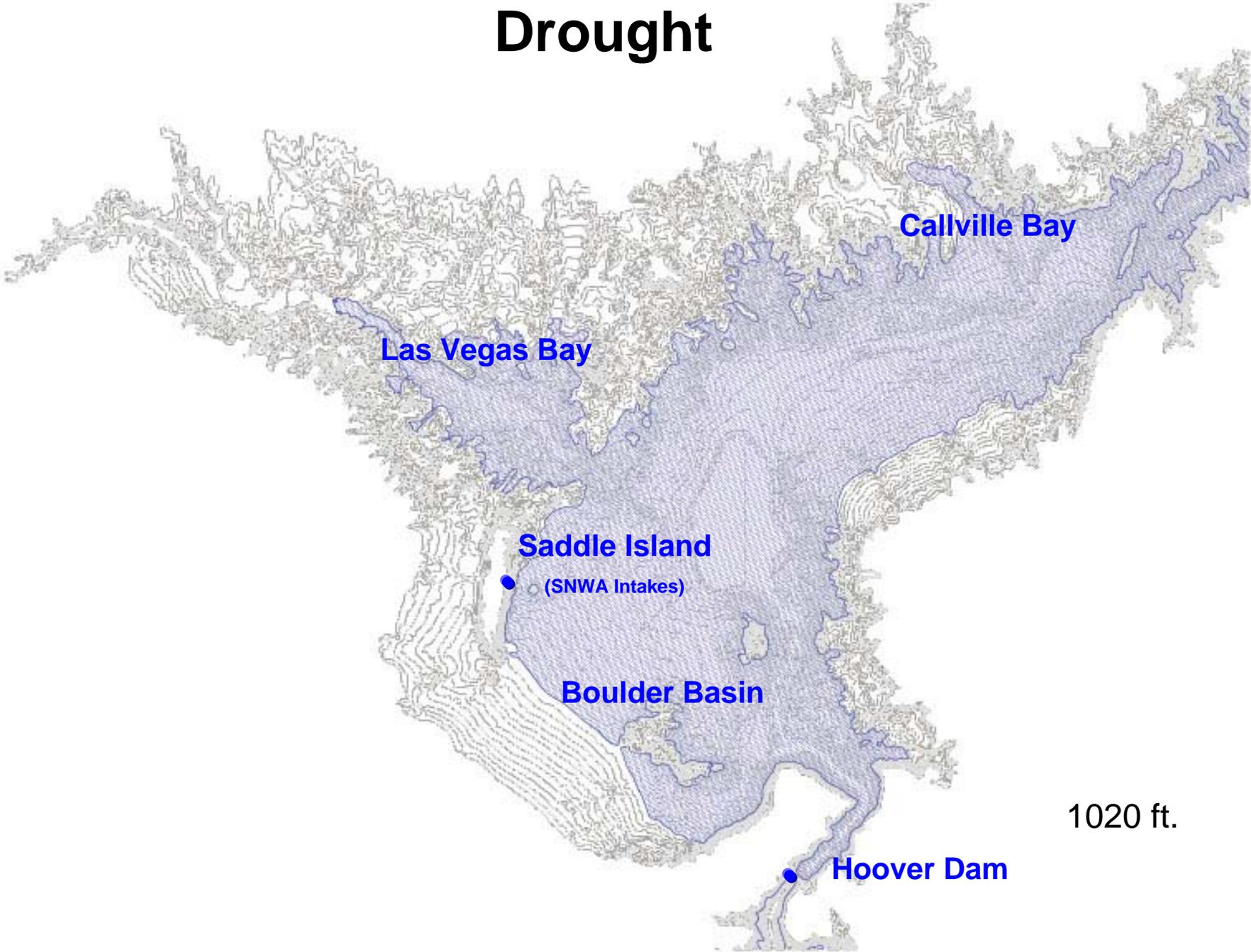
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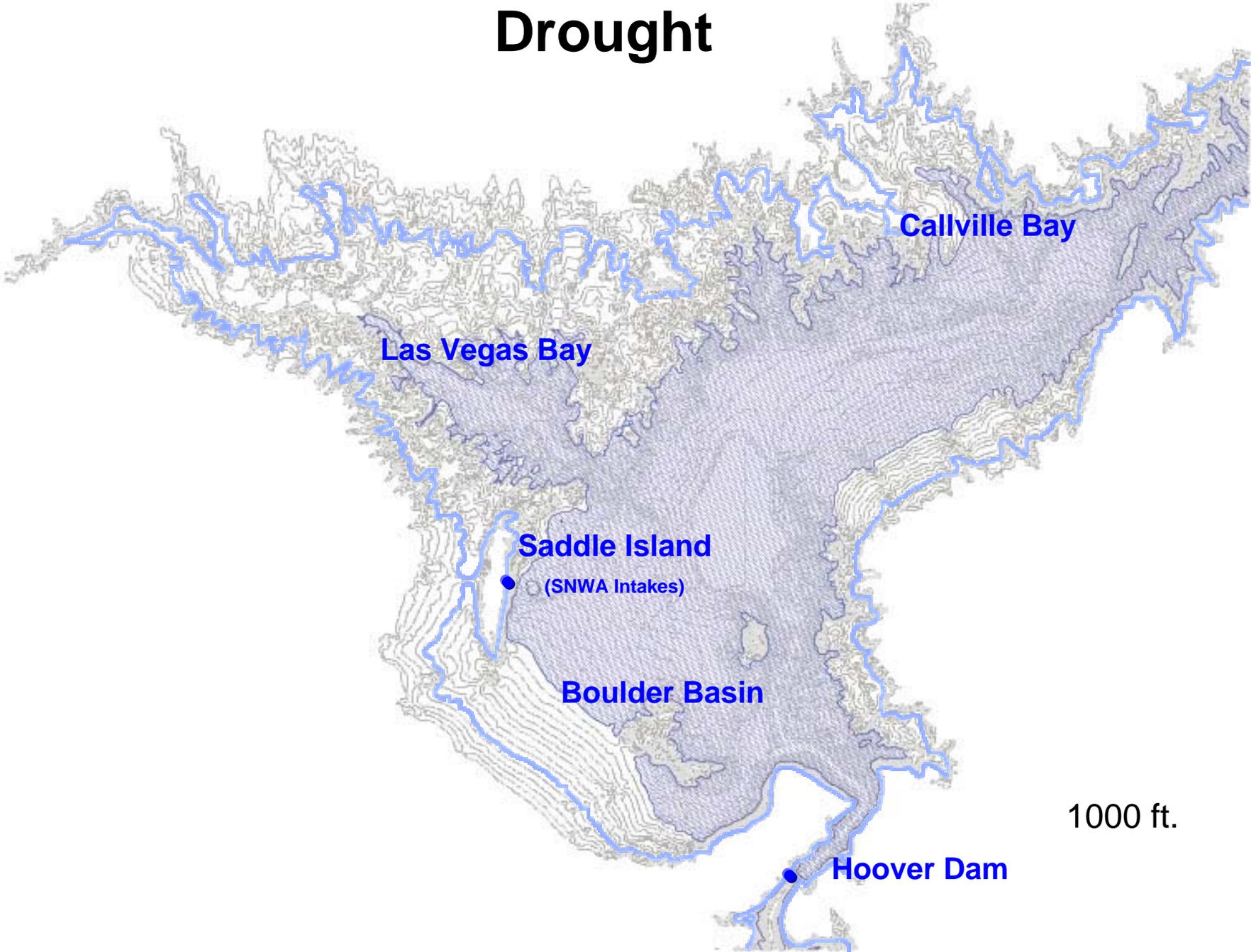
Las Vegas Bay

Callville Bay

# Drought



# Drought





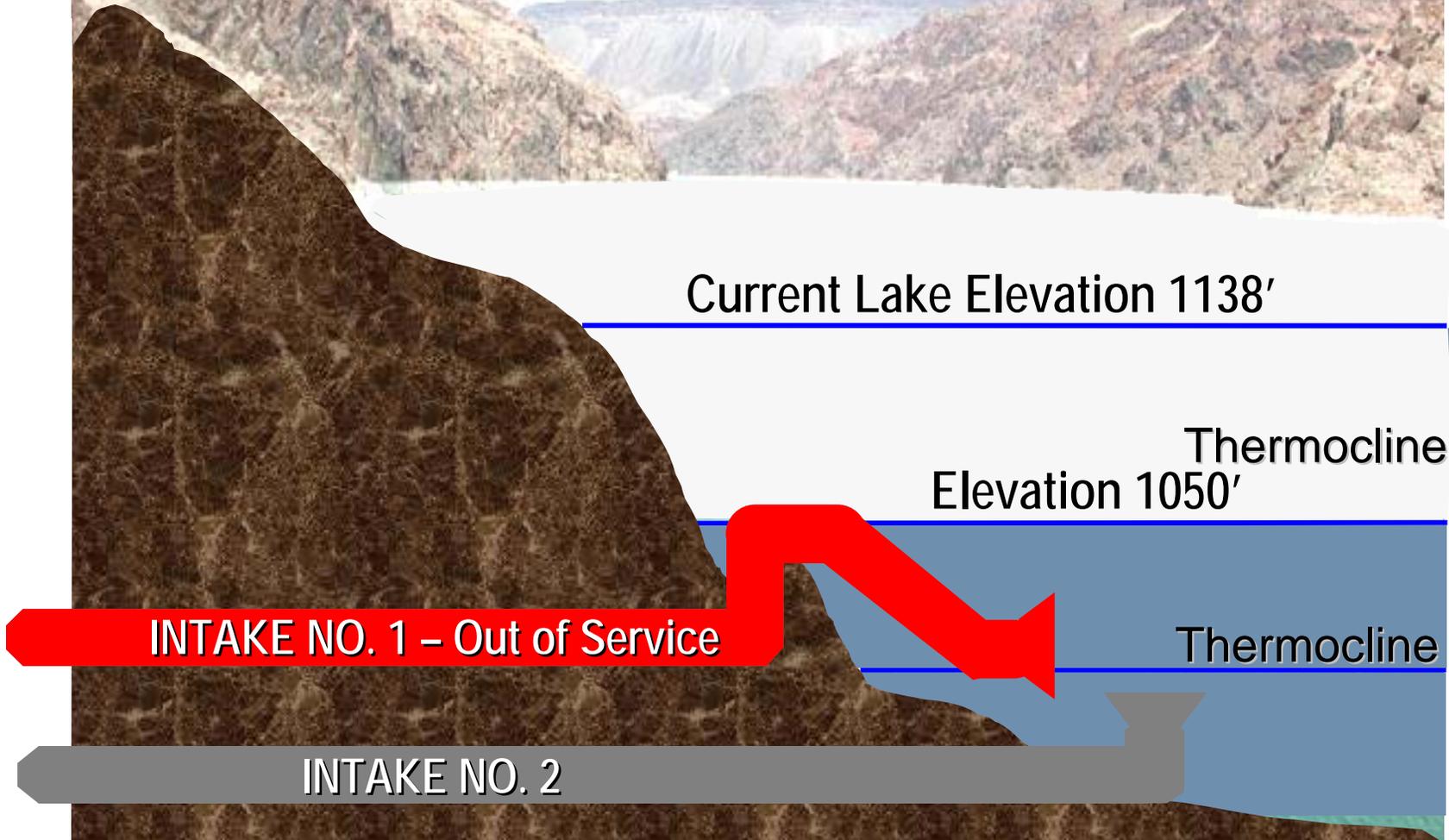
Current Lake Elevation 1138'

Thermocline  
Elevation 1050'

INTAKE NO. 1 – Out of Service

Thermocline

INTAKE NO. 2



- **If lake level falls below 1,050 feet:**
  - Intake No. 1 will be out of service
  - Capacity will be reduced from 900 to 600 mgd

**A new intake system will be needed  
to preserve existing capacity  
if lake levels continue to decline.**

# Major Construction Program

- Traditional Approach:
  - 3-5 Year Program
  - Planning projections where growth will occur
- Just-in-Time Facilities Approach:
  - Respond to demand in an orderly and systematic manner
  - Continuously evolving process
- Maintain a 30-Year “System” outlook

# Replacement and Rehabilitation Program

- Existing system facilities date back to 1940's
- Service Lateral Replacement program
- Cast Iron Main Replacement program
- Backflow Prevention Retrofit program
- Miscellaneous connections to ensure system hydraulics – water quality and demand
- Coordination with County and City street rehabilitation projects
- Maintain high level of service and reliability throughout the system

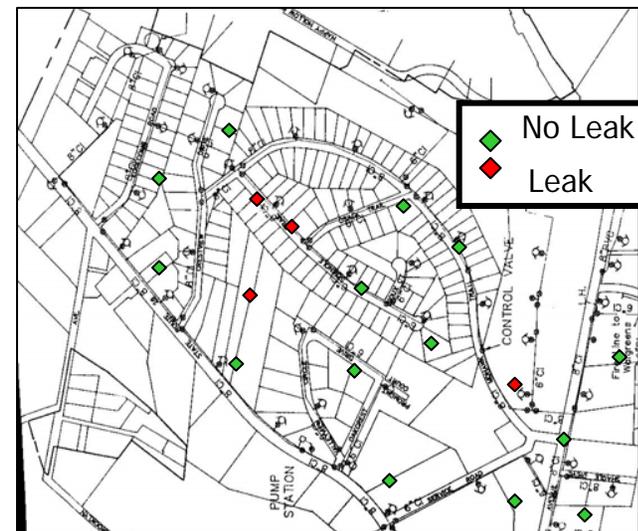


# Water Reuse

- Saves on pumping and distribution costs
- The right water for the right use
- Large turf irrigation needs – golf courses and parks (consumptive uses)



# Leak Detection System



- **Radio Frequency (FM) Technology**
- **Target: Underground Leaks**



**LVVWD**

# Systems

- **World class Operations and Maintenance approach that is reliability centered**
- **Redundancy for reliability**
- **Distribution system storage**
- **EWQMS**



# Resources

- **Developing in-state water resources**
- **Aquifer storage & recovery, including recharge**
- **Banking**
- **Water reuse**
- **Conservation**
- **Other collaborative projects**



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