Lake Mead Intake No. 3

Total Project Scope
Lake Mead Intake No. 3
Total Project Scope

Vegas Tunnel Constructors
- 60% Complete -

Renda Pacific
- 50% Complete -

Barnard
- Complete -

Timeline of Intake Issues and Events

Normal River Flow

Year
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C-2
Timeline of Intake Issues and Events

Normal River Flow

Lake Mead Elevation (feet)


Timeline of Intake Issues and Events

Water Quality

Concerns at Intake No. 1

Construct Pipe Extension for Intake No. 1

Evaluation of Pipe Extension for Intake No. 2

CWC Outfall

Normal River Flow

Lake Mead Elevation (feet)


Timeline of Intake Issues and Events

Underlying Intake No. 3 Factors

- Lake Mead is the primary water source for So. Nevada – 90% of supply
- No guarantees on:
  - Lake water quality
  - Lake water level
- Nevada is responsible for:
  - Water treatment
  - Water conveyance

When lake water level was high, as it was from 1975 to 2000, there were no difficulties achieving water quality and water conveyance objectives.
Lake Mead Historic Water Elevations

Water Quality Concerns in 2002

- Beginnings of an extreme drought
  - Rapidly declining lake levels
  - Decreasing lake water quality
- Increasingly stringent water quality regulations
- Increasing concern about climate change effects

Source: http://www.usbr.gov/lc/region/g4000/hourly/mead-elv.html
Las Vegas Wash Discharge
Primary Source of Undesirable Constituents
Lake Elevation 1,169-ft.

Algae growth at the surface – an indicator of many other constituents

2004 Computer Model Results

Water Quality of Lake Mead

Typical August Temp. Profile

Intakes below the thermocline substantially avoid the impacts of poor water quality effects from Las Vegas Wash discharges
Intakes below the thermocline substantially avoid the impacts of poor water quality effects from Las Vegas Wash discharges.

Typical November Temp. Profile

Typical January Temp. Profile
Impact of Lower Lake Level in 2002

Initial Water Quality Response to Lower Lake Level
At lower lake levels, intakes downstream of Las Vegas Wash would be impacted by degraded water quality.

Additional water treatment processes would be required to meet new regulations for treating water from:

1. Above the Thermocline or
2. Close to Wastewater Discharge Source

These additional treatment process could cost hundreds of millions of dollars (estimated in 2004 - current estimates are closer to $1 billion).
BOR’s simulation assumed mandatory shortages would be imposed on combined Colorado River water use to absolutely protect a lake elevation of 1,000 feet. There is no guarantee for protecting a lake elevation of 1,000 feet. Below elevation 1,000 feet, SNWA Intake No. 2 becomes inoperable.

Relevant Conditions in 2003-2005

- Water demands are rapidly increasing.
- If lake level falls below 1,050-ft, Intake No. 1 will be out of service.
- Total system capacity will be reduced from 900 mgd to less than 600 mgd
Conclusion in 2004

- Only a third intake tunnel could address both:
  - Water quality and
  - Pumping capacity

at very low lake levels
Stakeholder Participants in Broad-based Community Decision Making

Presentations and discussions on the third intake concepts were conducted with the following stakeholders from 2004 to 2005:

- Water Purveyor Technical Managers
- City, County and Water Agency General Managers
- Clean Water Coalition
- Integrated Water Planning Advisory Committee
- Colorado River Basin States
- SNWA Board Members
Tunnel Alternatives
Black Island

- Allows installation of pumping station, pipelines, and power lines very close to existing SNWA facilities.
- The tunnel would be long and would cross under the Las Vegas Wash.
- Intake would be upstream of Las Vegas Wash (near Black Island).
- A pipe could extend intake farther upstream for improved water quality, if necessary.
Existing Las Vegas Wash Discharge

Lake Elevation 1,000-ft.

Algae growth at the surface – an indicator of many other constituents

Selected Intake Location

Existing Intakes

Las Vegas Wash

Chlorophyll (μg/L)

2004 Computer Model Results
Tunnel Alternatives

\[ \text{Intake No. 1} \quad \text{Intake No. 2} \quad \text{Intake No. 3} \]

\[ \sim 1/3 \text{ mile} \quad \sim 3 \text{ miles} \]

\[ 1,050-\text{ft.} \quad 1,000-\text{ft.} \quad 860-\text{ft.} \]

2004 Tunnel Conclusions

- Meets both water quality and pumping capacity objectives
  - Facilitates construction of an intake upstream of LV Wash to secure desired water quality benefits, including reduced treatment costs.
  - Preserves the ability to pump water at lake levels at least as low as for the existing Intake No. 2 and even deeper, if needed.

- Provides good operational flexibility for changing conditions
Funding Sources

All revenue streams have been impacted.

Sources of Funds
FY 2005/2006

- Wholesale Delivery Charge
- Commodity Charge
- Regional Connection Charge
- Reliability Surcharge
- Sales Tax

Sources of Funds
FY 2009/2010

- Wholesale Delivery Charge
- Commodity Charge
- Sales Tax
- Reliability Surcharge
- Regional Connection Charge

Sales Tax Helps Small Systems

Small water systems throughout rural Clark County benefit from the sales tax

- Boulder City: $7,794,748
- Virgin Valley: $8,160,987
- Laughlin: $7,031,772
- Moapa Valley: $3,289,505
- Big Bend: $571,480
- Kyle Canyon: $567,407
- Jean: $382,602
- Searchlight: $319,456
- Blue Diamond: $148,245
Why do we need SB 432?

- Infrastructure sales tax will sunset in June 2025, or when $2.3 billion has been collected, whichever occurs first.

- Over the past decade, the tax has generated approximately $823 million, with the SNWA retaining $509 million.

- Clark County is the only county where a sunset on its sales tax was imposed, making it difficult to be used for long-term bonding of water projects.

- The quarter-cent sales tax enhances the credit worthiness of bonds backed only by revenues.

Why do we need SB 432?

- The Infrastructure Sales Tax law is enabling; county commissions decide to impose it.

- SB 432 treats all counties equally by removing the state limitation on Clark County.

- Clark County is still required to review the tax at least once every 10 years and vote to continue imposition.

- Without the sales tax, water rates will have to generate at least $42 million more each year to make up the lost revenue.