Basin Report: Truckee River

The Truckee River Basin in northeastern California and northwestern Nevada is a closed basin and includes the Lake Tahoe watershed and headwater tributaries along the eastern slope of the Sierra Nevada. It is the primary source of municipal and industrial water for Reno and Sparks, Nevada, with a population of nearly 700,000. Once it goes past the Reno/Sparks area, it flows into Pyramid Lake which is entirely within the boundaries of the Pyramid Lake Paiute Tribe Indian Reservation. Agriculture is important in the basin and its thriving livestock and dairy industries depend upon irrigation water for alfalfa, meadow hay and pasture. To protect these critical resources, Reclamation must continually evaluate and report on the risks and impacts from a changing climate and to identify appropriate adaptation and mitigation strategies utilizing the best available science in conjunction with stakeholders.

Future Changes in Climate and Hydrology

Reclamation's 2011 SECURE Water Act Report identifies climate challenges the Truckee River Basin could likely face:

- The temperature is projected to increase 5–6 °F over the 21st century with a slight decrease in precipitation from 0.3 to 1.6% by 2050.
- Mean annual runoff is projected to decrease by from 2.5 to 4.5% by 2050.
- Warmer conditions will likely transition wintertime snow into rain, increasing December–March runoff and decreasing April–July runoff.

Future Impacts for Water and Environmental Resources

These historical and projected climate changes have potential impacts for the basin:

- Reductions in runoff during the spring and early summer likely translate into water supply reductions for meeting irrigation demands, adversely impacting hydropower operations and increasing wintertime flood control challenges.
- Warmer conditions could result in increased fishery stress, increased electricity demand, increased water demands for instream ecosystems and thermoelectric power production and increased invasive species infestations.
- Increasing temperatures could impact Lake Tahoe's water quality because of increased nutrients from lake sediment which could produce long-lasting impacts on the food web for fish and wildlife.

Adequate and safe water supplies are fundamental to the health, economy and ecology of the United States and global climate change poses a significant challenge to the protection of these resources. Reclamation is taking a leading role in assessing risks to Western United States water resources and is dedicated to mitigate risks to ensure long-term water resource sustainability. To this end, Reclamation is refining these preliminary results with a detailed basin study of the Truckee River Basin through its WaterSMART program.

Where opportunities exist, Reclamation has begun adaptation actions in response to climate stresses as well as land use, population growth, invasive species and others. These activities include extending water supplies, water conservation, hydropower production, planning for future operations and supporting rural water development. Further, the Department of the Interior High Priority Goal for Climate includes activities of the Landscape Conservation Cooperatives and Climate Science Centers, assessing vulnerabilities to the natural and cultural resources management by the Department and activities to adapt to the stresses of climate change.

This fact sheet contains information from the SECURE Water Act Section 9503(c) - Reclamation Climate Change and Water 2011, Section 8 - Basin Report: Truckee. The full report may be read online at www.usbr.gov/climate.