

**June 29, 2010**

Testimony of Jeffrey D. Rieker

Before State Water Resources Control Board At Hearing Regarding  
Water Right Applications 31487 and 31488 by US Bureau of Reclamation  
Change Petition 5169 by Washoe County Water Conservation District,  
Change Petition 9247 by Truckee Meadows Water Authority,  
Change Petition 15673 by US Bureau of Reclamation  
Change Petition 18006 by US Bureau of Reclamation

## **I. Biographical Sketch**

My name is Jeffrey D. Rieker. I work for the Department of the Interior, Bureau of Reclamation's Lahontan Basin Area Office in Carson City, Nevada. I have worked with Reclamation for over 10 years. I began with Reclamation in 1999 as a hydraulic engineer in Reclamation's Technical Services Center in Denver, Colorado. I began working on Truckee and Carson River projects in 2003. I transferred to Reclamation's Carson City office in 2006 where I initially served as a hydrologic modeler and forecaster of river and reservoir operations. In 2007 I became the manager of the Special Studies Division, overseeing a variety of water resource planning and management issues related to the Truckee River as well as Reclamation's Newlands Project. The division includes staff from the Carson City office as well as a small field office in Fallon, Nevada.

I hold a B.S. degree in Civil Engineering from the University of Missouri at Rolla (now known as the Missouri University of Science and Technology); an M.S. degree in Civil Engineering with an emphasis in Water Resources Planning and Management from Colorado State University, and am currently pursuing my PhD in the same subject from Colorado State University. I am a registered Professional Engineer in the State of Nevada. USBR Exhibit-8 is a true and correct copy of my professional resume.

## **II. Purpose of this Testimony**

The purpose of this testimony is to describe the geography and setting of the Truckee River and lower Carson River, including the Bureau of Reclamation's Newlands Project. It also describes the dams, reservoirs, and other water control facilities on the Truckee River and lower Carson River. In addition, it provides an overview of the documents that govern the operation of the dams and other water control facilities on the rivers. Finally, it provides an overview of the water rights and water operations of the Newlands Project as they relate to the Truckee River.

## **III. Truckee River Geography**

The Truckee River flows from the outlet of Lake Tahoe high in the Sierra Nevada mountain range of California to its terminus at Pyramid Lake in the desert plains of Nevada. The river is approximately 120 miles long, and contains two distinct regions with differing physical characteristics. The upper half of the basin is characterized by cold, rapidly flowing water in

mountainous valleys and canyons. In the lower portion of the basin, the river slows as it progresses towards its terminus, passing through the metropolitan areas of Reno-Sparks and the rural areas of Fernley, Wadsworth, and Nixon before terminating in Pyramid Lake. The area is shown in Exhibit USBR-15.

The Truckee River Basin is a hydrographically closed basin, and encompasses approximately 3,060 square miles. Altitudes within the basin range from approximately 10,900 feet in the headwater areas to approximately 3,800 feet at Pyramid Lake. Precipitation amounts vary widely from the mountainous areas to the desert. Much of the precipitation within the basin is in the form of mountain snow, with annual measurements reaching more than 30 inches. The desert areas of the basin average less than 5 inches of precipitation, due largely to the fact that the basin lies within the rainshadow of the Sierra Nevada mountain range.

At the headwaters of the Truckee River lies the Lake Tahoe Basin. Within the Lake Tahoe Basin are a number of small creeks and streams, including the Upper Truckee River. The basin occupies approximately 506 square miles, of which approximately 192 square miles are covered by Lake Tahoe itself. Lake Tahoe is a naturally occurring lake, with its natural outlet on its northwestern shore. Lake Tahoe is the tenth deepest lake in the world, at approximately 1,650 feet at its deepest point. Lake Tahoe has long been known for the clarity of its water.

The outlet of Lake Tahoe is situated near Tahoe City, California, at an altitude of 6,223.0 feet above sea level. Water flows from the outlet of Lake Tahoe to the west, then turns north, generally following California Highway 89. Several smaller watersheds provide tributary flows to the Truckee River in this reach. Approximately 14 miles downstream from Lake Tahoe Dam, Donner Creek enters the Truckee River from the west. The Donner Creek watershed drains an area of approximately 30 square miles. After this point, the Truckee River generally flows in an easterly direction, passing through the town of Truckee, California.

Downstream of the town of Truckee and approximately 7 miles downstream of the confluence with Donner Creek, the Truckee River gains tributary flow from Martis Creek. The Martis Creek basin occupies approximately 20 square miles and the creek enters the Truckee River from the south. In the same vicinity, Prosser Creek enters the Truckee River from the north, providing tributary flow from a watershed of approximately 50 square miles.

Just to the east of the confluence of Prosser Creek with the Truckee River, the Little Truckee River enters the Truckee River from the north. The Little Truckee River is the largest tributary to the Truckee River in California, draining approximately 173 square miles from the northwest quadrant of the Truckee River Basin. Within that watershed lies Independence Creek, a major tributary to the Little Truckee River. In addition, a transbasin diversion carries water from the Little Truckee River to the neighboring Sierra Valley.

From the confluence with the Little Truckee, the Truckee River flows east and then turns north through the small town of Floriston, California, and crosses the California-Nevada state line. It turns back to the east near Verdi, Nevada, and flows through Mogul and the Truckee Meadows area which includes the metropolitan cities of Reno and Sparks. Prior to reaching the Truckee Meadows, there are four run-of-the-river power plants located along the river. The power plants are fed by wooden flumes which run parallel to the river for several miles from their diversion points to the actual power plants. The four plants are Farad, Fleisch, Verdi, and Washoe.

From the California-Nevada state line through the Truckee Meadows a variety of irrigation and municipal water supply ditches and canals divert water from the Truckee River for

use within the Truckee Meadows, including larger diversions to the Steamboat Ditch, Highland Ditch, and Orr Ditch. Return flows to the river occur at various locations throughout the Truckee Meadows, with two of the largest return flows located at the eastern end of the Truckee Meadows near Sparks, Nevada. These are Steamboat Creek and the North Truckee Drain. Additionally, return flow of water from Truckee Meadows municipal uses comes primarily from the Truckee Meadows Water Reclamation Facility, a wastewater treatment facility located near the downstream end of Steamboat Creek near its confluence with the Truckee River.

Upon exiting the Truckee Meadows through a geologic rock feature known as the Vista Reefs, the Truckee River flows through a steeper, mountainous area within the Virginia Mountain range known as the Truckee Canyon. Approximately 18 miles east of Vista, the Truckee River reaches Derby Diversion Dam. This facility diverts water out of the Truckee River into the Truckee Canal to provide irrigation water for the Bureau of Reclamation's Newlands Project along the Truckee Canal near the city of Fernley, Nevada. Additionally, water taken from the Truckee at Derby Dam flows through the Truckee Canal out of the basin into Lahontan Reservoir on the Carson River, and is used as a supplemental water supply to irrigate agricultural lands in Reclamation's Newlands Project within the Carson basin, as well as to supply water to the Stillwater National Wildlife Refuge and the Fallon Paiute-Shoshone Indian Reservation.

After passing Derby Dam, the Truckee River continues to flow east. Approximately seven miles past Derby Dam, a large wasteway on the Truckee Canal sometimes returns flow from the Truckee Canal back into the Truckee River. The river then reaches the town of Wadsworth, where it turns north and crosses into the Pyramid Lake Indian Reservation at an area known as the Big Bend. The river passes several diversion structures for irrigation on Reservation lands, including Numana Diversion Dam. Just past Numana Dam, the river passes through the town of Nixon, Nevada and continues to flow north before reaching Marble Bluff Dam and Fish Facility, a Bureau of Reclamation grade control structure originally built in 1975 to halt erosive downcutting of the Truckee River while providing fish passage for migration and spawning activities. From Marble Bluff dam, the Truckee River flows back to the west and north before spreading out into a delta and entering Pyramid Lake.

Pyramid Lake, located on the Pyramid Lake Indian Reservation, is the terminus of the Truckee River. Water generally only leaves the lake by evaporation. Due to increased consumptive use of the river's water supply over the last one hundred years, as well as the transbasin diversion of water away from the Truckee River through the Truckee Canal to the Newlands Project, Pyramid Lake's water surface elevation has declined greatly at times. The lowest recorded lake elevation occurred in 1967, when the lake was almost 95 feet lower than its highest recorded elevation in 1891. The lake is home to two fish species that are on the federal threatened and endangered species list, the cui-ui and the Lahontan cutthroat trout (LCT). Additionally, seven other fish species are native to the Truckee basin, and approximately fourteen non-native species are known to reside in the Truckee River and its lakes and reservoirs.

#### **IV. Truckee Canal and Lower Carson River**

The Truckee Canal is a 31 mile long canal that diverts water from the Truckee River at Derby Dam. Both of these facilities were constructed by the Bureau of Reclamation in the early

1900's as a part of the Newlands Reclamation Project. The first nine miles of the Truckee Canal run parallel to the Truckee River in the Truckee Canyon. In this reach there are two major wasteway facilities known as the Derby Wasteway and the Gilpin Wasteway, capable of spilling water back to the Truckee River. The Derby Wasteway is generally not used, while the Gilpin Wasteway is generally used to adjust canal flows and vent large amounts of water from the canal in case of emergency. Nine miles downstream of Derby Dam, the flow of the Truckee Canal is measured by a United States Geological Survey (USGS) streamflow gage near Wadsworth (USGS gage number 10351300). At that point, the canal turns to the south and east, away from the Truckee River and into the city of Fernley, Nevada. The next 18 miles of canal provide irrigation water to the Truckee Division of the Newlands Project through 13 major lateral canals and a number of smaller direct takeouts. The Truckee Division of the Newlands Project is currently made up of approximately 2,085 acres of irrigated water righted farmland served by Truckee River water only. Historically the total acreage was much larger, but in recent years irrigated lands have been taken out of production and developed into the urban areas within the city of Fernley. Drainage from much of the Truckee Division irrigation typically flows to the Nevada Department of Wildlife's Fernley Wildlife Management Area.

Approximately 12 miles downstream of the USGS gage at Wadsworth, the Truckee Canal exits the city of Fernley and turns south. From there it passes near the town of Hazen, Nevada and along a tract of land known as the Swingle Bench, which is a portion of irrigated land within the Truckee Division. The canal then turns back to the southwest before passing through a large measurement structure known as the USGS gage near Hazen (USGS gage number 10351400) and entering Lahontan Reservoir.

Lahontan Dam is an earthfill dam on the Carson River owned by the Bureau of Reclamation. The dam provides storage of Carson River water to supply the Carson Division of the Newlands Project. Approximately 1,799 square miles within the Carson River Basin drain into Lahontan Reservoir, which is the only major storage facility on the river. Lahontan Reservoir has a capacity of approximately 289,700 acre-feet, which can be expanded to approximately 313,000 acre-feet with the use of flashboards on the spillways. Water from the Truckee River supplements the storage in Lahontan Reservoir in years when Carson River water is not projected to meet the various needs of the Carson Division of the Newlands Project. The Carson Division is currently made up of approximately 54,500 acres of irrigated water righted farmland and water righted wetlands. The Carson Division is located in a geographic region known as the Lahontan Valley.

The Fallon Paiute-Shoshone Indian Reservation is located within the Carson Division of the Newlands Project. The reservation contains approximately 2,670 acres of irrigated water righted farmlands and wetlands. The reservation has approximately 19,041.05 acre-feet of Newlands Project water rights appurtenant to the land. However, pursuant to Public Law 101-618, only 10,587.5 acre-feet of water is permitted to be used on the reservation. In addition, 1,614.4 acre-feet of water for wetlands has been acquired by the Bureau of Indian Affairs for use on the reservation.

The United States Fish and Wildlife Service's Stillwater National Wildlife Refuge is also located within the Carson Division. In addition, the United States Fish and Wildlife Service maintains the Fallon National Wildlife Refuge to the north and west of the Stillwater Refuge. Public Law 101-618 directs the Secretary of the Interior to ultimately sustain an average of 25,000 acres of "primary wetland habitat within the Lahontan Valley wetlands", and permits the

purchase and transfer of Newlands Project water rights to support that goal. The specific wetlands areas are defined in the Settlement Act. Other wetland and wildlife areas within the Lahontan Valley include the Carson Lake and Pasture and the Indian Lakes area, currently under management of the Bureau of Reclamation (through the State of Nevada in the case of Carson Lake and Pasture) but authorized by Public Law 101-618 to be transferred to the State of Nevada (and/or Churchill County in the case of the Indian Lakes area).

The United States Navy's Fallon Naval Air Station is located in the Carson Division. The United States Navy owns and manages Newlands Project water rights and irrigated lands in the vicinity of the Naval Air Station. The City of Fallon, Nevada is also located within the Carson Division. Fallon's population is estimated to be approximately 8,525. The City of Fallon as well as the Carson Division and portions of the Truckee Division of the Newlands Project are located within Churchill County, Nevada. The county's population is estimated to be approximately 24,897.

The Carson River channel serves to convey water to various locations within the Newlands Project. Upon leaving the Newlands Project, the Carson River serves a limited number of small non-Newlands Project water rights before terminating in the Carson Sink.

## **V. Truckee River Dams and Reservoirs**

There are seven storage reservoirs located on the Truckee River in California. These reservoirs control approximately 70% of the flow in the Truckee River. Lake Tahoe, Donner Lake, and Independence Lake are natural mountain lakes which have dams controlling water storage above their natural rims. The concrete dam at Lake Tahoe is operated by the Bureau of Reclamation. The dam at Lake Tahoe regulates water storage when the lake's water surface elevation is above its natural rim of 6,223.0 feet above sea level. The dam provides a maximum storage capacity of approximately 744,600 acre-feet at an elevation of 6,229.1 feet. Only water stored above the natural rim of the lake by the dam is released for downstream purposes. At times when the water surface elevation is below the natural rim of the lake, no water exits Lake Tahoe into the Truckee River or is used for any downstream purposes. Independence Lake is owned by the Truckee Meadows Water Authority (TMWA) and the storage in Donner Lake is owned by both TMWA and the Truckee-Carson Irrigation District (TCID). Independence Lake has an earthfill dam which controls water levels from the lake's natural rim at 6,921.0 feet of elevation up to a maximum capacity of 17,500 acre-feet at an elevation of 6,949.3 feet. Donner Lake has a concrete dam controlling water storage from the lake's natural rim elevation of 5,923.8 feet up to an elevation of 5,935.8 feet, with a maximum capacity at that elevation of approximately 9,500 acre-feet.

Martis Reservoir is a flood control reservoir owned and operated by the US Army Corps of Engineers. It has a maximum capacity of approximately 20,400 acre-feet, but currently does not store water in any significant amount due to dam safety concerns involving excessive seepage.

Prosser Creek Dam, Stampede Dam, and Boca Dam are all earthfill dams owned by the Bureau of Reclamation. The Bureau of Reclamation operates Stampede Dam, while Prosser Creek Dam is operated under contract by the Federal Water Master's Office and Boca Dam is operated under contract by the Washoe County Water Conservation District. Prosser Creek Dam

provides a maximum capacity of approximately 29,800 acre-feet of storage space. Stampede Dam provides a maximum storage capacity of 226,500 acre-feet. Boca Dam provides a maximum storage capacity of 40,850 acre-feet. Stampede Dam has a small hydropower generation plant with a generation capacity of 3.6 megawatts.

Additional information on the operation of these facilities is provided in the testimony of Chad Blanchard and Mark Van Camp.

## **VI. Overview of Governing Documents**

Water storage and flow in the Truckee River have historically been and are currently governed and/or influenced by a number of court decrees, court decisions, agreements, laws, and regulations. These include the Truckee River General Electric Decree, Orr Ditch Decree, Truckee River Agreement, Tahoe-Prosser Exchange Agreement, the court decisions in *Carson-Truckee Water Conservancy District v. Watt et al.*, and *Pyramid Lake Tribe of Indians v. Morton*, Newlands Project Operating Criteria and Procedures (OCAP), Interim Storage Agreement, and the Memorandum of Agreement-Truckee River Water Management. In addition, most of the reservoirs contain flood operating guidelines set forth by the United States Army Corps of Engineers or the California Department of Water Resources' Division of Safety of Dams.

### **A. Truckee River General Electric Decree**

The Truckee River General Electric Decree is a final judgment and decree issued in *United States of America vs. The Truckee River General Electric Company* in 1915. Exhibit App./Pet. Joint-2. The decree granted to the United States an easement to control the dam at Lake Tahoe, but required that the flow in the Truckee River be maintained at a rate of 500 cubic feet per second (cfs) from March 1 through September 30 of each year. From October 1 through the last day in February, the flow requirement was reduced to 400 cfs. These rates of flow became known as the "Floriston Rates", and were measured by a streamgage at Iceland, California, near the present day USGS streamgage at Farad California (USGS gage number 10346000). These rates of flow were intended to protect downstream paper mills that no longer exist.

### **B. Orr Ditch Decree and Truckee River Agreement**

The 1944 Orr Ditch Decree is an order, judgment, and decree entered in *United States of America vs. Orr Ditch Water Company, et al.* Exhibit App./Pet. Joint-7. The decree was sought by the United States to adjudicate Truckee River water rights in the state of Nevada. The decree adjudicated Truckee River water rights and incorporated the 1935 Truckee River Agreement as binding among the parties to that agreement. Exhibit App./Pet. Joint 6. The Truckee River Agreement is an operations agreement that provided for storage of Truckee River waters, among other things. The decree appointed a Water Master to carry out and enforce its provisions.

### C. Tahoe-Prosser Exchange Agreement

The Tahoe-Prosser Exchange Agreement was signed in 1959 by the United States, Truckee-Carson Irrigation District, Washoe County Water Conservation District, and Sierra Pacific Power Company. Exhibit App/Pet. Joint 3. The agreement provided for the construction of Prosser Creek Dam and Reservoir. The agreement also described the operating procedures for the dam and reservoir.

### D. Carson-Truckee Water Conservancy District v. Watt et al. and Memorandum of Agreement-Truckee River Water Management

The basic operation of Stampede Dam and Reservoir set forth by the Secretary of the Interior was affirmed by the judgment and opinion issued in 1983 in *Carson-Truckee Water Conservancy District v. Watt et al.* Exhibit App./Pet. Joint-12. The 1983 judgment and opinion requires the Secretary to use all waters stored in Stampede Reservoir for the benefit of the Pyramid Lake Fishery until both the cui-ui and Lahontan cutthroat trout are no longer threatened or endangered or other sources of water are made available to conserve the species. The Memorandum of Agreement-Truckee River Water Management is an agreement signed by the United States Fish and Wildlife Service, Pyramid Lake Paiute Tribe, Bureau of Reclamation, and Bureau of Indian Affairs in 1999 that delineated the roles and responsibilities for development of decisions and operating plans for management of Truckee River water for the protection and conservation of the two listed species. Exhibit App./Pet. Joint-22. Under this agreement, the Pyramid Lake Paiute Tribe takes the lead role in those decisions and plans, with the other signatory agencies providing technical support. The primary responsibilities for the team include management of the waters of Stampede Reservoir and the waters of Prosser Creek Reservoir not categorized as “Tahoe Exchange Water.”

### E. Interim Storage Agreement

The Interim Storage Agreement was signed by the United States, Pyramid Lake Paiute Tribe, Sierra Pacific Power Company, and Washoe County Water Conservation District in 1994. Exhibit App/Pet. Joint 15. The agreement permits the storage of privately owned water in Stampede and Boca Reservoirs by the Sierra Pacific Power Company (now its successor Truckee Meadows Water Authority). The agreement sets forth rules for establishment, storage, and exchange of privately owned (non-project) water within the reservoirs.

### F. Flood Control

Flood control limitations have been placed on Martis Creek Reservoir, Prosser Creek Reservoir, Stampede Reservoir, and Boca Reservoir by the United States Army Corps of Engineers. These limitations generally consist of a date in the fall by which the reservoir must be drawn down to a certain water surface elevation. They also restrict the timing when the reservoir may be brought back to its full capacity in the spring based on the status of the winter snowpack. The season for the maximum flood control limits on these dams begins on November 1 and ends on April 10 of each year, after which the reservoirs may gradually increase towards

their full capacity depending on the snowpack. The winter flood control limitation for Martis Creek Reservoir is 800 acre-feet, Prosser Creek Reservoir is 9,800 acre-feet, Stampede Reservoir is 204,500 acre-feet, and Boca Reservoir is 32,900 acre-feet.

Flood control mechanisms for Donner Lake, Independence Lake, and Lake Tahoe will be discussed in the testimony of Chad Blanchard and Mark Van Camp.

*G. OCAP, Pyramid Lake Paiute Tribe of Indians v. Morton and water rights and water supply of the Newlands Project*

As referenced above, the Orr Ditch decree adjudicated water rights of the Truckee River in Nevada, including specification of priority dates and amounts of water for each decreed water right. Two of the most senior rights on the Truckee River were decreed to the Pyramid Lake Paiute Tribe, and are designated as Claims 1 and 2, with a priority date of December 8, 1859. The Orr Ditch decree also decreed one of the more junior rights to the United States for the right to divert water to the Truckee Canal, designated as Claim 3, with a priority date of July 2, 1902. The United States' right under Claim 3 provided for diversion of up to 1,500 cfs into the Truckee Canal "for the irrigation of 232,800 acres of lands on the Newlands Project, for storage in the Lahontan Reservoir, for generating power, for supplying the inhabitants of cities and towns on the project and for domestic and other purposes, and under such control, disposal and regulation as the [United States] may make or desire, provided that the amount of this water allowed or used for irrigation shall not exceed, after transportation loss and when applied to the land, 3.5 acre feet per acre for the bottom lands, nor 4.5 acre feet per acre for the bench lands under the Newlands Project." Irrigation is limited overall to the beneficial use of water and to no more than 3.5 acre-feet per acre annually on bottom land and 4.5 acre-feet per acre annually of bench land for the Newlands Project. The decree's provision that diversions under Claim 3 are subject to the control and regulation of the United States is carried out through the Secretary of the Interior.

The Secretary of the Interior has exercised this control through the Operating Criteria and Procedures for the Newlands Reclamation Project, Nevada (OCAP), which is a federal regulation found in the Code of Federal Regulations Volume 43, Part 418. Exhibit App./Pet. Joint-9. The OCAP were originally promulgated as a federal rule in 1967 to address the water supply issues on the Truckee River below Derby Dam as they related to the operation of the Truckee Canal to divert water to the Newlands Project. The 1967 OCAP placed an upper limit on the amount of water used by the Newlands Project, and ended previous use of water for single-purpose power generation by limiting power generation from Lahontan Reservoir and the V-Canal in the Carson Division to only that generation incidental to consumptive uses, spills, or precautionary reservoir drawdowns. In 1973, the United States District Court for the District of Columbia, per Judge Gerhard Gesell, issued a judgment and order in *Pyramid Lake Paiute Tribe of Indians v. Morton* which included a new set of OCAP. Exhibit App./Pet. Joint-8. The associated opinion issued by the judge provided clear direction to the Secretary of the Interior that "all water not obligated by court decree or contract with the [Truckee-Carson Irrigation District] goes to Pyramid Lake." Subsequent OCAP developed periodically from 1975 through 1997 were designed to maximize the use of the Carson River water supply to serve the Newlands Project, and minimize the use of the Truckee River water, which is a supplementary supply for the

Newlands Project. The Newlands Project is currently operated under the OCAP as revised in 1997.

The 1997 OCAP set forth a procedure for annually determining the maximum amount of water allowed to be diverted out of the Truckee Canal and Lahontan Reservoir to meet Newlands Project demand based on actual land irrigated in previous years and land anticipated to be irrigated in the upcoming year. The OCAP limits the amount of water that can be diverted from the Truckee River to Lahontan Reservoir each month through a system of storage targets on Lahontan Reservoir. Storage targets are calculated based on recent year demand. In addition, targets from January through May take into account the forecasted spring runoff from the Carson River basin. Each month, the storage targets are calculated and the amount of supplementary water necessary from the Truckee River, if any, is estimated. This amount is permitted to be diverted through the Truckee Canal to the extent that water supply from the Truckee River and the capacity of the canal allow. The canal's capacity is currently limited by Reclamation due to safety concerns, as well as by an interim temporary restraining order issued by U.S. District Court for the District of Nevada in 2008, both as a result of the January 5, 2008 breach of the canal in Fernley, Nevada.

Additionally, the use by the Newlands Project of Reclamation project water stored in Stampede and Prosser Reservoirs is subject to the OCAP and, as stated above, such stored water is to be used by the Secretary to comply with the Endangered Species Act over all other project purposes. For these reasons, the Newlands Project does not have entitlement to storage in the Truckee River reservoirs beyond what is granted by the Secretary of the Interior under the OCAP, which is limited to the storage provided in the OCAP provisions pertaining to Newlands Project Credit Storage. To date this provision of OCAP has not been used.