June 28, 2010

Testimony of Ali Sharoody
Before California State Water Resources Control Board

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 am a professional water resource engineer and agricultural engineer, and a licensed agricultural and civil engineer in the State of California. I am the president of Stetson Engineers, Inc., and have been a consultant for the Pyramid Lake Paiute Tribe (Tribe) on matters pertaining to the Newlands Project and the Truckee and Carson Rivers since 1979 (31 years). I have also been a consultant and expert witness for the United States on Truckee and Carson Rivers matters. My Statement of Qualifications which includes education, professional licenses and experience is submitted with this testimony (*see* Exhibit 1, attached).

My testimony is presented in four parts. Parts I and II are the Water Availability Analyses for the Stampede Reservoir (Application 31487) and Prosser Creek Reservoir (Application 31488), respectively. Part III describes the historic decline of Pyramid Lake and the future benefits of the Truckee River Operating Agreement (TROA) on fish passage at Pyramid Lake. Part IV explains the enhancement of instream flows and water quality in the lower Truckee River under the TROA, and explains that under the TROA the Truckee River will more often achieve flow regimes with higher flows as recommended by the U.S. Fish and Wildlife Service. Finally, Part V reviews the Newlands Project Operating Criteria and Procedures (OCAP) and its relationship to Pyramid Lake.

I. Water Availability Analysis for Stampede Reservoir (Application 31487)

A. Introduction

The U.S. Bureau of Reclamation (Reclamation) filed Application 31487 with the California State Water Resources Control Board (SWRCB) on January 8, 2004. This application supplements Permit 11605 and seeks, among other things, to increase the maximum annual diversion to storage from 126,000 acre-feet to 226,500 acre-feet in Stampede Reservoir. SWRCB (May 2007) requested a Water Availability Analysis (WAA) in connection with water right Application 31487. Accordingly, I prepared a WAA for Reclamation for Stampede Reservoir (*see* Exh. 3, attached). *See also* Exh. 2, attached (SWRCB acceptance of WAA).

B. Background

The Truckee River originates at the outlet of Lake Tahoe at Tahoe City, California, and flows about 120 miles to its terminus in Pyramid Lake on the Pyramid Lake Indian Reservation. Most

of the runoff in the Truckee River basin occurs in the Sierra Nevada in California. A portion of that runoff is stored in Lake Tahoe, Prosser Creek, Stampede, Boca, and Martis Creek[1] Reservoirs, and Donner and Independence Lakes (*see* Figure 1). Operation of these reservoirs regulates much of the flow in the Truckee River basin in most years. These reservoirs together can store about a million acre-feet of water. A number of court decrees, agreements, and regulations govern day-to-day operations of these reservoirs, administered by the Federal Water Master for the *Orr Ditch* and *Alpine* Decree courts. The reservoirs are operated to capture runoff as available when flow in the Truckee River is greater than that needed to serve downstream water rights recognized by the *Orr Ditch* decree (Petitioners' Joint Exhibit 7) and met by streamflows in the Truckee River, known as Floriston Rates, measured at the Farad gauge near the California-Nevada State line. Floriston Rates provide water to serve hydropower generation, municipal and industrial use (M&I) in the Truckee Meadows area of Nevada, instream flows and agricultural water rights. Releases are made from the reservoirs as necessary to meet dam safety or flood control requirements. Releases are made from Lake Tahoe and Boca Reservoir when unregulated flow cannot meet Floriston Rates. Minimum reservoir releases are maintained as specified in applicable agreements and reservoir permits or licenses (Reclamation and CDWR, August 2004).

Water is stored in Prosser Creek, Stampede and Boca Reservoirs, Lake Tahoe, and Donner and Independence Lakes under a system of priorities. The following schedule has historically been followed by the Federal Water Master's Office (Water Master, November 1998):

1. Deliver pre-1870 irrigation rights (only if Floriston Rates are not met);

2. Divert up to 60 cfs to Sierra Valley (1870 priority) in accordance with the Sierra Valley decree;

3. Donner Lake and Independence Lake (first 3,000 acre-feet);

4. Provide Floriston Rate flows;

5. Lake Tahoe and Boca Reservoir (first 25,000 acre-feet);

6. Truckee River diversions to Newlands Project under Claim No. 3 of the Orr Ditch decree and OCAP;

7. Boca Reservoir;

8. Independence Lake;

9. Stampede Reservoir; and

10. Prosser Creek Reservoir.

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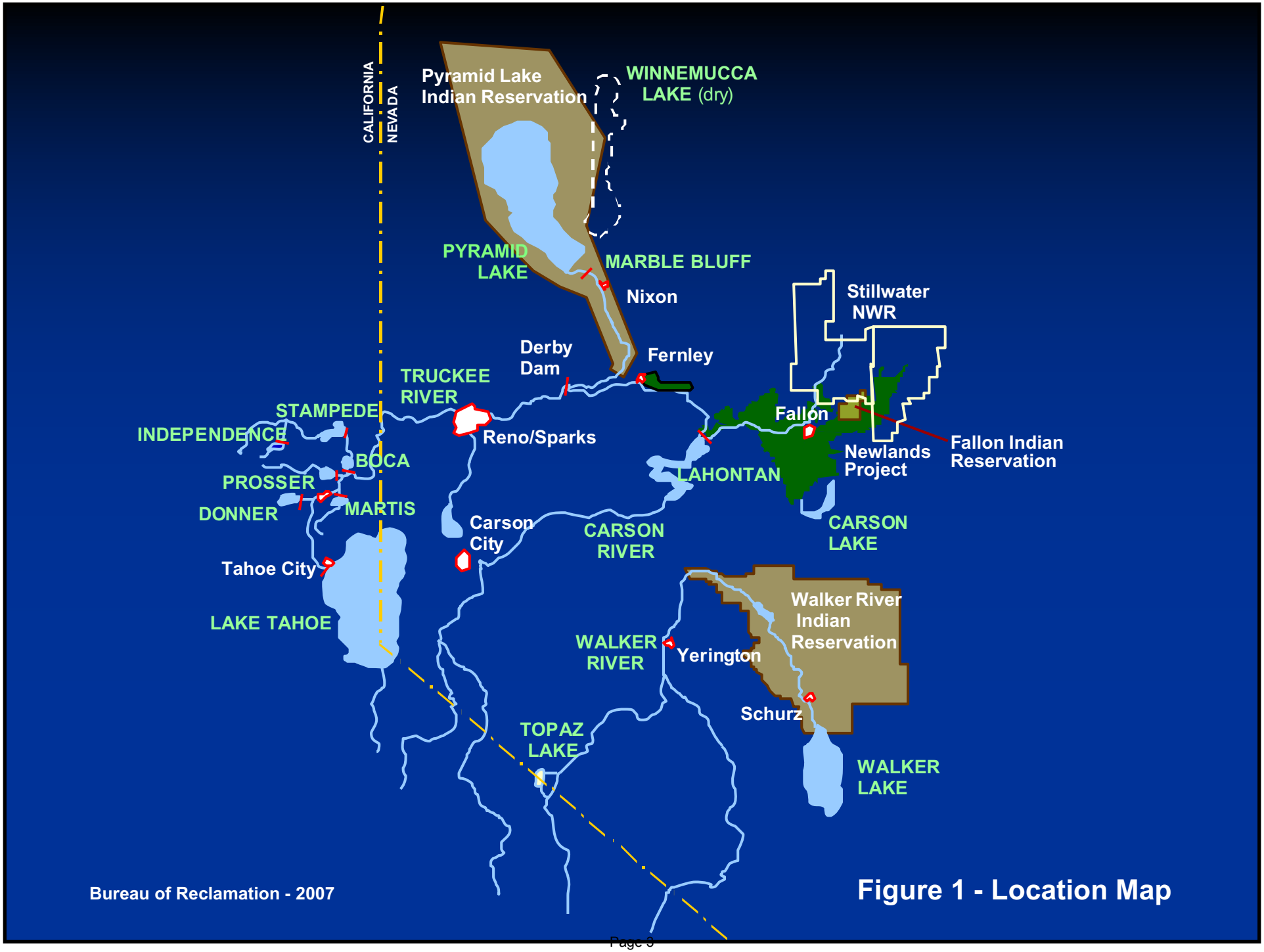
[1]Martis Creek Reservoir is used only for flood control purposes.


CALIFORNIA
NEVADA
Pyramid Lake
Indian Reservation
WINNEMUCCA
LAKE (dry)
PYRAMID
LAKE
MARBLE BLUFF
Nixon
Stillwater
NWR
Derby
Dam
Fernley
TRUCKEE
RIVER
STAMPEDE
INDEPENDENCE
Reno/Sparks
Fallon
Fallon Indian
Reservation
Newlands
Project
BOCA
PROSSER
DONNER
MARTIS
LAHONTAN
Carson
City
CARSON
RIVER
CARSON
LAKE
Tahoe City
LAKE TAHOE
Walker River
Indian
Reservation
WALKER
RIVER
Yerington
Schurz
TOPAZ
LAKE
WALKER
LAKE
Bureau of Reclamation - 2007
Figure 1 - Location Map

Truckee River water is diverted at Derby Diversion Dam (located about 36 miles upstream of Pyramid Lake) and into the Truckee Canal, according to Claim No. 3 of the *Orr Ditch* Decree (Petitioners' Joint Exhibit 7) and the Operating Criteria and Procedures (OCAP) for the Bureau of Reclamation's Newlands Irrigation Project (Petitioners' Joint Exhibit 9). The Truckee Canal extends about 32 miles through the Truckee Division of the Newlands Project to Lahontan Reservoir, located in the Carson Division of the Project in the lower Carson River basin. Lahontan Reservoir also captures Carson River inflow (Reclamation, August 2004).

C. Truckee River Reservoirs

Information on Truckee River reservoirs is summarized in Table 1, below (CDWR, June 1991).

D. Floriston Rates

The Truckee River is regulated to meet the Floriston Rates at Farad (State line). Floriston Rates are set forth in the Truckee River General Electric Decree (1915) (Petitioners' Joint Exh. 2), as modified by the Truckee River Agreement which is incorporated into the *Orr Ditch* Decree (Petitoners' Joint Exh. 7).

Floriston Rates and Reduced Floriston Rates are shown in Figure 2. The Truckee River General Electric Decree (Petitioners' Joint Exh. 2), *Orr Ditch* Decree (which incorporated the Truckee River Agreement) (Petitioners' Joint Exh. 7), and the Tahoe-Prosser Exchange Agreement (Petitioners' Joint Exh. 3) provide the current operational framework and rules for the operation of Lake Tahoe, Boca Reservoir and Prosser Creek Reservoir. These reservoirs may store water in accordance with their storage priorities when Floriston Rates are met from natural flow. Both Stampede and Prosser Creek Reservoirs are junior in priority to divert water in relation to other Truckee River reservoirs. Both Stampede and Prosser Creek Reservoirs are also junior in priority to divert water in relation to the allowable diversions at Derby Dam under Claim No. 3 of the *Orr Ditch* Decree and the OCAP (Petitioners' Joint Exh. 7 and 9, respectively).

E. Little Truckee River

Stampede Dam and Reservoir are located on the Little Truckee River. The Little Truckee River is the largest tributary to the Truckee River. The Little Truckee River is regulated by a dam on Webber Lake (privately owned) and by Stampede and Boca Reservoirs. Independence Creek, a tributary to the Little Truckee River upstream of Stampede Reservoir, is regulated by a dam on Independence Lake, which is owned by Truckee Meadows Water Authority (TMWA). In summer months, water is diverted from the Little Truckee River upstream of its confluence with Independence Creek, through the Little Truckee Ditch to the Sierra Valley (Feather River basin).

F. Stampede Reservoir

Stampede Reservoir was completed in 1970 (storage began in August 1969) by Reclamation as part of the Washoe Project. The zoned earthfill dam is 239 feet high and can impound up to 226,500 acre-feet of water, making Stampede the second largest reservoir on the Truckee River.

Table 1
Truckee River Reservoirs [1]

Reservoir Name	Dam Owner	Dam Operator	Usable Storage Capacity (*Acre-Feet*)	Dam Construction Date [2]	Dam Height (*feet*)	Drainage Area (*Square Miles*)
Lake Tahoe	U.S. Bureau of Reclamation	U.S. Bureau of Reclamation	744,600	1913	18	506
Donner Lake	Truckee Meadows Water Authority/Truckee-Carson Irrigation Dist.	Truckee Meadows Water Authority	9,500	1930's	14	14
Martis Creek	U.S. Army Corps of Engineers	U.S. Army Corps of Engineers	20400 [3]	1971	113	40
Prosser Creek	U.S. Bureau of Reclamation	U.S. Bureau of Reclamation	29,800	1962	163	50
Independence Lake	Truckee Meadows Water Authority	Truckee Meadows Water Authority	17,500	1939	31	8
Stampede Reservoir	U.S. Bureau of Reclamation	U.S. Bureau of Reclamation	226,500	1970	239	136
Boca Reservoir	U.S. Bureau of Reclamation	Washoe County Water Conservation Dist.	41,100	1937	116	172

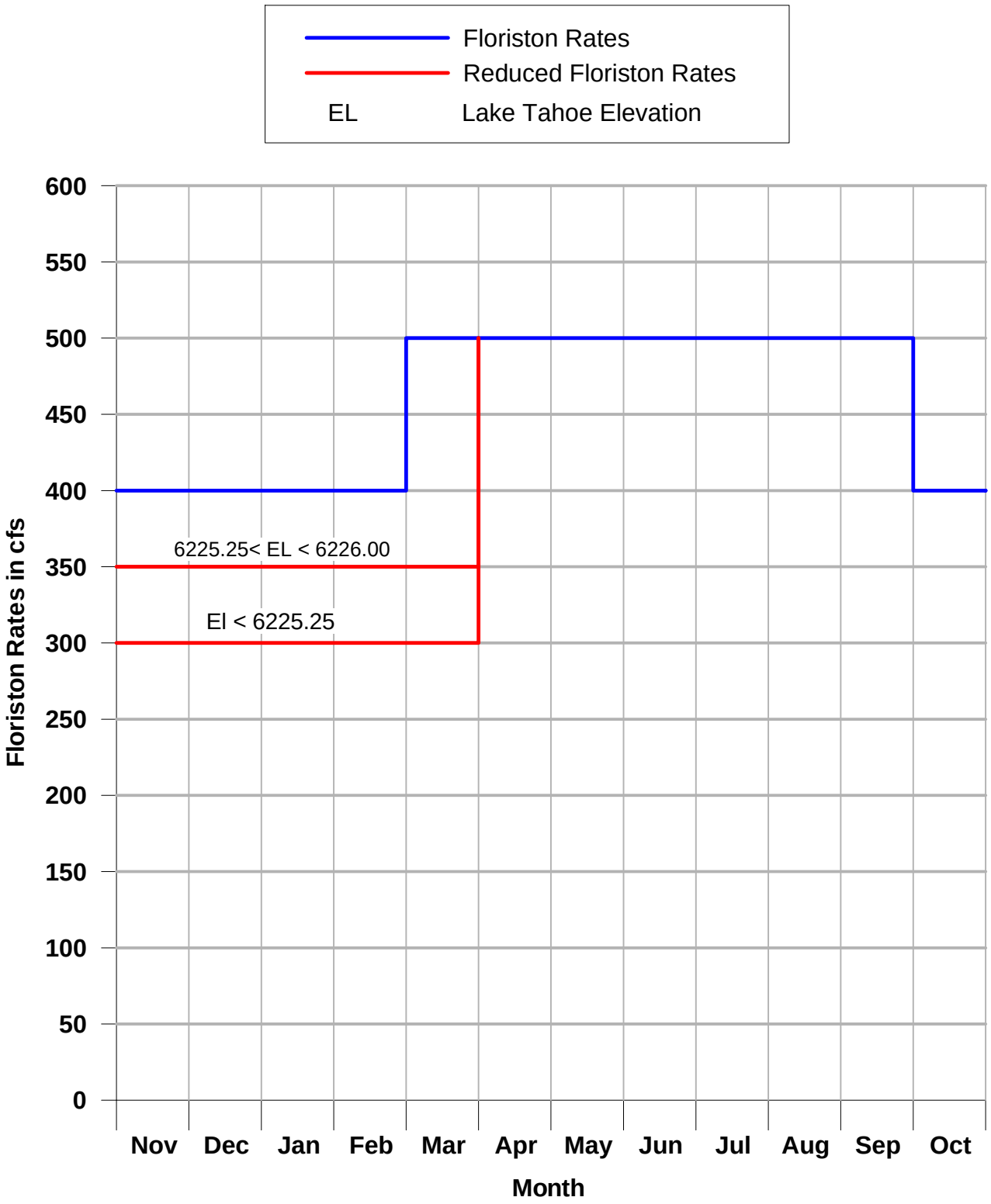
[1] Based on Truckee River Atlas, 1991.

[2] Date existing dam was completed. With respect to Lake Tahoe and Donner and Independence Lakes, these dams replaced earlier constructions.

[3] Flood control storage only.

Figure 2

Floriston Rates



Stampede Reservoir was authorized for irrigation, flood control, M&I, fish and wildlife, recreation and other beneficial purposes. The primary use to date has been to store water for the threatened and endangered fishes of Pyramid Lake and for flood control. Incidental uses of Stampede Reservoir storage also include recreation and hydroelectric power.

Stampede is the only reservoir in the Truckee River watershed that has a hydroelectric power plant. A small hydroelectric plant was added to the dam's outlet works in 1988, and can produce up to 3.65 megawatts of electricity, depending on reservoir releases. Power production is incidental to the operation of the reservoir for other purposes (CDWR, June 1991).

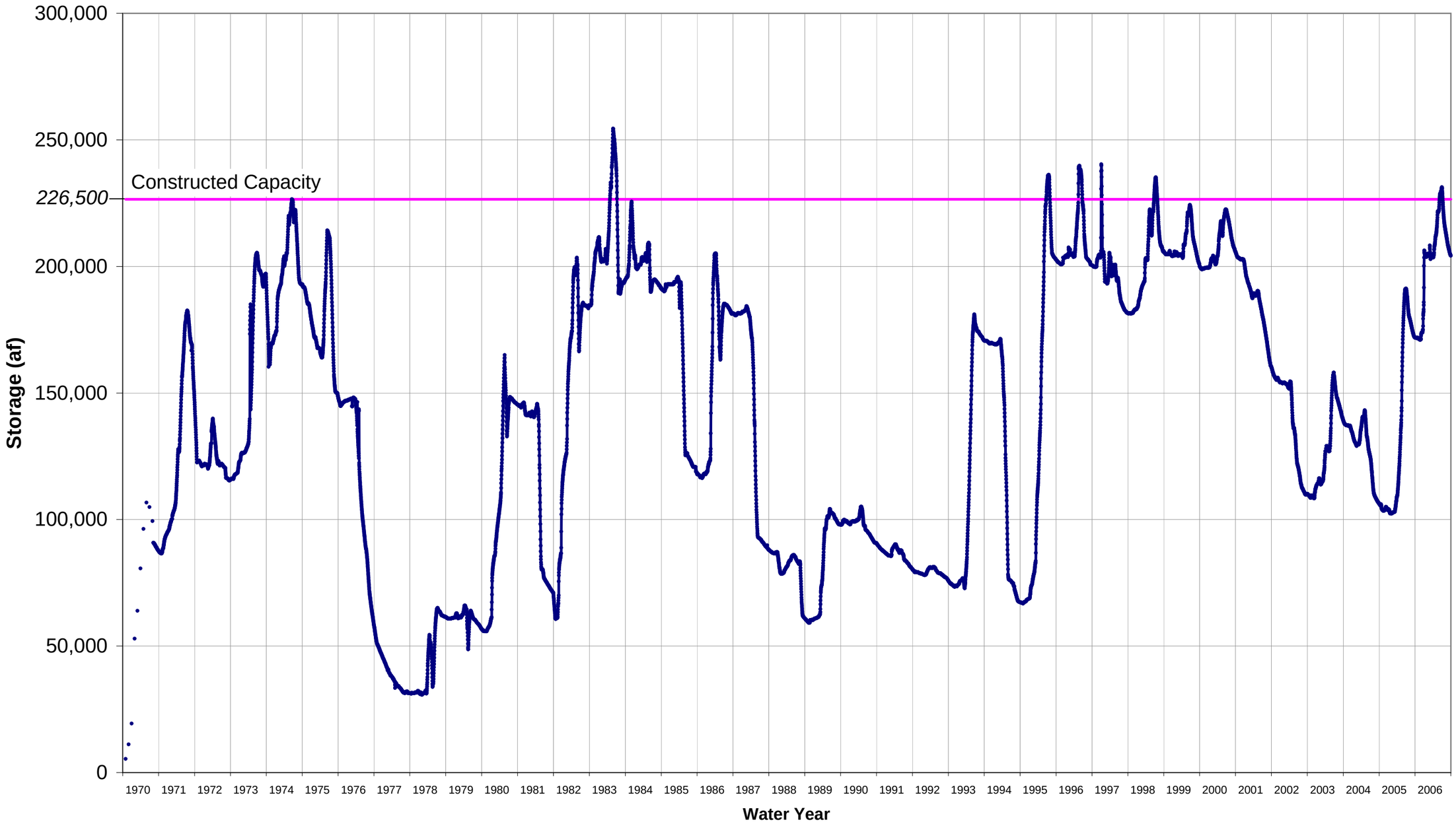
Application 15673 was filed by Reclamation on January 7, 1954. Permit 11605 (Application 15673) provides for 350 cubic feet per second (cfs) of direct diversion from about April 1 to about November 1 of each year, and for maximum diversion of 126,000 acre-feet to storage from January 1 to December 31 of each year. Application 15673 referred to a storage reservoir with a capacity of 126,000 acre-feet. However, Stampede Reservoir was actually constructed with a capacity of 226,500 acre-feet. Figure 3 shows the storage hydrograph of Stampede Reservoir for water years 1970 through 2006. Figure 3 shows that Stampede Reservoir was filled to nearly its full capacity of 226,500 acre-feet in ten years over the 37 years of record.

Reclamation filed Application 31487 on January 8, 2004, for the purpose of increasing the maximum diversion to storage from 126,000 acre-feet to 226,500 acre-feet in Stampede Reservoir annually. Application 31487 supplements permit 11605. The maximum annual quantity of water diverted to storage under Application 31487 and Permit 11605 is to be limited to 226,500 acre-feet per year (SWRCB, January 2007).

Figure 3

Storage in Stampede Reservoir

Water Years 1970 - 2006
USGS Gage (ID #10344300)



* Storage began Aug. 1. 1969. Daily data available starting Aug. 8, 1970. Missing daily data linearly interpolated.

G. Unappropriated Water

Section 210(a)(2)(B) of the Settlement Act (Public Law 101-618) (Petitioners' Joint Exh. 16) states:

> Section 204 of this title, the Preliminary Settlement Agreement as modified by the Ratification Agreement, and the Operating Agreement, shall not take effect until the Pyramid Lake Tribe's claim to the remaining waters of the Truckee River which are not subject to vested or perfected rights has been finally resolved in a manner satisfactory to the State of Nevada and the Pyramid Lake Tribe.

In 1993, the Pyramid Tribe and the State of Nevada signed a Memorandum of Understanding (MOU, July 1993) to implement Section 210(a)(2)(B) of the Settlement Act . The Nevada State Engineer's 1998 unappropriated water decisions, Rulings 4659 and 4683/4683A, approved the Tribe's Applications 48061 and 48494 (Nevada State Engineer, August and November 1998).[2] Approval of the Tribe's Applications 48061 and 48494 to appropriate the remaining waters of the Truckee River is consistent with the principle underlying Section 210(a)(2)(B) of the Settlement Act and 1993 MOU.

The last appeal requesting review of the Nevada State Engineer's rulings granting Applications 48061 and 48494 was dismissed by the Nevada Supreme Court on March 30, 2009. The permits which the Nevada State Engineer had issued in the meantime, as there was no stay requested by those appealing, Permits 48061 and 48494, became final on that date. The proceedings regarding a competing application by the Truckee-Carson Irrigation District continue, presently with a remand to the Nevada State Engineer.

H. Newlands Reclamation Project Operating Criteria and Procedures

Truckee River water is diverted at Derby Diversion Dam into the Truckee Canal for use at the Newlands Reclamation Project as provided in Claim No. 3 of the *Orr Ditch* Decree and the Operating Criteria and Procedures (OCAP) (Petitioners' Joint Exh. 7 and 9, respectively). The Truckee Canal extends about 32 miles through the Truckee Division of the Project to Lahontan Reservoir, which is located in the Carson Division of the Newlands Project in the lower Carson River basin. Lahontan Reservoir also captures Carson River inflow (Reclamation, August 2004). Water supply for the Truckee Division of the Newlands Project is solely provided from the Truckee River through the Truckee Canal. Water supply for the Carson Division is provided from the Carson and Truckee Rivers. Diversion of water from the Truckee River to Lahontan Reservoir for the Carson Division of the Newlands Project is limited by the *Orr Ditch* Decree and OCAP to what is needed to supplement the primary water supply provided by the Carson River (Petitioners' Joint Exh. 7 and 9).

OCAP were first instituted in 1967, and reinstituted annually through 1972. In 1973, the Federal

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[2]Tribe gives its consent to store water from the little Truckee River in Stampede Reservoir that would otherwise flow to Pyramid Lake.

District Court in Washington, D.C., ordered implementation of more restrictive OCAP to maximize the use of Carson River water and to minimize the use of Truckee River water within the Newlands Project. OCAP were modified in 1988 and were adjusted most recently in 1997 in response to changes in irrigated acreage in the Newlands Project (Reclamation, December 1987 and August 2004).

I. Instream Flows - Lower Truckee River

Water is released from Stampede Reservoir for maintaining instream flows for cui-ui and Lahontan cutthroat trout (LCT) in the lower Truckee River. Cui-ui and LCT are listed as endangered and threatened, respectively, under the Endangered Species Act of 1973, as amended. The goal of the U.S. Fish and Wildlife Service (FWS) and the Tribe is to conserve cui-ui and LCT in the lower Truckee River. To this end, Stampede Project water has been managed for the benefit of both species. Recently, FWS and the Tribe expanded the cui-ui/LCT conservation management to restore the lower Truckee River ecosystem, including establishment and maintenance of willows and cottonwoods in the river reach. Currently, the project water stored in Stampede and Prosser Creek Reservoirs for the benefit of Pyramid Lake fishes is managed using flow regime criteria based on six hydrologic year types and based upon the amount of project water stored in Stampede Reservoir on March 1. Table 2 shows the six flow regimes as inflow targets to Pyramid Lake (Reclamation, August 2004). For the purpose of the Water Availability Analysis, Flow Regime No. 1 (highest target flow rates) is assumed as the target flow in the lower Truckee River.

Table 2
Pyramid Lake Inflow Targets (cfs) for Flow Regimes 1–6

Month	1	2	3	4	5	6
January	160	150	120	110	100	90
February	160	150	120	110	100	90
March	290	220	200	160	160	140
April	590	490	420	350	300	200
May	1,000	800	600	530	400	300
June	800	600	500	400	270	170
July	300	300	300	200	150	120
August	200	200	200	200	150	110
September	170	170	120	110	100	100
October	160	150	120	110	100	100
November	160	150	120	110	100	90
December	160	150	120	110	100	90

Source: Revised Draft Environmental Impact Statement/Environmental Impact Report, Truckee River Operating Agreement, Aug. 2004 (SWRCB Exh. 7)

J. Water Availability Analysis

Water availability analysis for the diversion of water to storage in Stampede Reservoir is presented in the spreadsheet in Table 3. The analysis is based on the historical operation of Stampede Reservoir from August 1969 through September 2006. The amount of available water is calculated for the periods with higher Truckee River flows. In addition, the available amounts of water are calculated for the periods when the storage of such water would not interfere with any downstream water rights, and therefore the water would have otherwise flowed to Pyramid Lake if not stored. Storing this water will not interfere with any California water rights, including any new water that may be appropriated in California, because the Interstate Allocation between California and Nevada specifies that water for use in Nevada is junior in priority. The storage of water sought herein will not interfere with Nevada water rights because it will only be stored after all other Nevada water rights have been satisfied. The underpinnings of these conditions for the analysis are summarized below.

1. Water flowing to Stampede Reservoir occurs after the satisfaction of upstream rights in the Little Truckee River, including diversions to Sierra Valley.

2. Storage priority in Stampede Reservoir is junior to Boca Reservoir.

3. Water is not stored in Stampede and Boca Reservoirs adverse to Floriston Rates or Reduced Floriston Rates.

4. Water is not stored in Stampede Reservoir or as Additional Supplemental Storage (above 25,000 acre-feet) in Boca Reservoir unless allowable OCAP diversions at Derby Dam are satisfied.

5. Orr Ditch water rights are satisfied by meeting Floriston Rates or Reduced Floriston Rates (whichever is in effect) at Farad and allowable *Orr Ditch* Decree and OCAP diversions at Derby Dam.

6. Diversion requirements at Derby Dam are assumed to be the same as historical diversions for the purpose of this analysis.[3]

7. Water would not be diverted to storage in Stampede Reservoir unless target flows under Flow Regime No. 1 are met in the lower Truckee River.

[3]It should be noted that the allowable OCAP diversions at Derby Dam changed several times during the period from August 1969 through September 2006 and that there were times when the historical diversions substantially exceeded the allowable OCAP diversions.

Table 3
Estimates of Available Water for Storage in Stampede Reservoir

[1] Month-Year	[2] EOM Stampede Storage af	[3] Stampede Change in Storage af	[4] Little Truckee River above Boca (afm)	[5] Adjusted Little Truckee River above Boca (afm)	[6] EOM Boca Storage af	[7] Boca Change in Storage af	[8] Little Truckee River below Boca (afm)	[9] Adjusted Little Truckee River below Boca (afm)	[10] Truckee River at Farad (afm)	[11] Floriston Rates (afm)	[12] Flow at Farad in Excess of Floriston Rates (afm)	[13] Truckee Canal at Wadsworth (afm)	[14] Truckee River near Nixon (afm)	[15] Pyramid Lake inflow targets under Flow Regime No. 1 (afm)	[16] Inflow to Pyramid Lake above Flow Regime No. 1 (afm)	[17] Stampede Stored Water Adverse to Floriston Rates?	[18] Stampede Stored Water Within Flow Regime No. 1?	[19] Available Water in addition to Stored Amount in Stampede (afm)	[20] Available Water for Storage in Stampede Reservoir (afm)
	111,367				32,667														
Apr-71	127,333	15,967	15,475		33,667	1,000	19,458		61,222	29,752	31,470	23,901	45,800	35,107	10,693	no	no	10,693	26,660
May-71	157,639	30,306	23,318		37,400	3,733	20,771		114,641	30,744	83,897	45,304	75,884	61,488	14,396	no	no	14,396	44,702
Jun-71	177,867	20,227	25,942		40,800	3,400	21,717		137,157	29,752	107,405	30,432	103,775	47,603	56,172	no	no	21,717	41,944
Jul-71	180,167	2,300	12,676		39,667	-1,133	13,456	12,323	59,512	30,744	28,768	28,183	27,711	18,446	9,265	no	no	9,265	11,565
																		TOTAL	124,871
	126,667				29,433														
Mar-73	129,833	3,167	3,763		32,333	2,900	2,469		31,688	30,744	944	861	39,685	17,831	21,854	no	no	944	4,111
Apr-73	149,200	19,367	11,409		40,900	8,567	7,624		53,115	29,752	23,363	5,875	50,815	35,107	15,707	no	no	7,624	26,991
May-73	193,900	44,700	3,166		40,667	-233	3,655	3,422	79,565	30,744	48,821	12,720	60,924	61,488	-563	no	yes (563 af)	0	44,137
																		TOTAL	75,239
	162,633				32,733														
Nov-73	169,500	6,867	5,954		32,500	-233	6,512	6,278	40,693	23,802	16,891	31,595	19,513	9,521	9,993	no	no	5,954	12,821
Dec-73	172,793	3,293	4,532		32,200	-300	5,252	4,952	26,918	24,595	2,323	3,731	32,289	9,838	22,451	no	no	2,323	5,615
Jan-74	189,333	16,541	3,402		32,000	-200	6,946	6,746	62,846	24,595	38,251	835	79,702	9,838	69,864	no	no	3,402	19,942
Feb-74	193,267	3,933	2,146		31,500	-500	3,318	2,818	38,402	22,215	16,187	852	44,729	8,886	35,843	no	no	2,146	6,079
Mar-74	203,333	10,067	8,983		32,500	1,000	12,405		83,082	30,744	52,338	2,454	93,342	17,831	75,511	no	no	8,983	19,050
Apr-74	205,133	1,800	24,040		33,167	667	25,478		122,221	29,752	92,469	6,163	121,012	35,107	85,904	no	no	24,040	25,840
May-74	220,400	15,267	30,180		39,167	6,000	23,265		135,451	30,744	104,707	11,585	115,299	61,488	53,812	no	no	23,265	38,532
Jun-74	224,467	4,067	25,071		40,900	1,733	23,068		92,749	29,752	62,997	12,875	74,202	47,603	26,598	no	no	23,068	27,134
																		TOTAL	155,014
	166,600				37,033														
May-75	197,200	30,600	23,157		34,000	-3,033	32,272	29,239	172,324	30,744	141,580	10,278	158,335	61,488	96,847	no	no	23,157	53,757
Jun-75	212,233	15,033	28,905		41,000	7,000	21,792		120,603	29,752	90,851	12,797	109,922	47,603	62,319	no	no	21,792	36,826
																		TOTAL	90,583
	104,000				23,233														
Apr-80	133,300	29,300	4,917		22,933	-300	8,465	8,165	56,985	29,752	27,233	8,791	46,695	35,107	11,587	no	no	4,917	34,217
May-80	153,167	19,867	25,190		20,167	-2,767	28,931	26,164	125,117	30,744	94,374	11,808	103,835	61,488	42,347	no	no	25,190	45,057
																		TOTAL	79,274
	61,000				27,600														
Nov-81	82,233	21,233	4,249		30,433	2,833	3,223		58,038	17,851	40,187	28,122	37,551	9,521	28,030	no	no	3,223	24,456
Dec-81	114,267	32,033	3,501		32,500	2,067	5,042		79,571	24,595	54,976	34,181	62,640	9,838	52,802	no	no	3,501	35,534
Jan-82	124,367	10,100	2,142		31,667	-833	4,465	3,631	33,402	24,595	8,807	9,306	38,579	9,838	28,740	no	no	2,142	12,242
Feb-82	156,067	31,700	3,418		32,400	733	9,389		78,819	22,215	56,604	689	94,207	8,886	85,321	no	no	3,418	35,118
Mar-82	172,667	16,600	4,887		31,400	-1,000	10,899	9,899	54,938	30,744	24,194	341	68,545	17,831	50,713	no	no	4,887	21,487
Apr-82	198,867	26,200	17,306		32,100	700	23,958		141,116	29,752	111,364	7,813	147,586	35,107	112,479	no	no	17,306	43,506
May-82	200,800	1,933	57,122		32,700	600	56,295		264,476	30,744	233,732	13,648	248,985	61,488	187,498	no	no	56,295	58,228
Jun-82	176,667	-24,133	62,535	38,402	39,767	7,067	52,200		147,669	29,752	117,917	10,852	152,628	47,603	105,025	no	no	38,402	38,402
Jul-82	185,433	8,767	2,067		40,333	567	1,297		47,038	30,744	16,294	13,722	36,889	18,446	18,442	no	no	1,297	10,064
																		TOTAL	279,037
	202,500				24,300														
Mar-83	202,667	167	22,616		27,733	3,433	28,929		190,691	30,744	159,947	2,122	223,775	17,831	205,944	no	no	22,616	22,782
Apr-83	227,600	24,933	3,663		10,240	-17,493	29,992	12,499	185,891	29,752	156,139	4,683	201,124	35,107	166,017	no	no	3,663	28,597
May-83	254,400	26,800	63,003		30,800	20,560	47,213		242,936	30,744	212,192	9,866	249,997	61,488	188,509	no	no	47,213	74,013
Jun-83	239,867	-14,533	103,101	88,567	28,733	-2,067	106,393	104,327	310,235	29,752	280,483	10,366	321,183	47,603	273,580	no	no	88,567	88,567
Jul-83	192,667	-47,200	79,987	32,787	40,400	11,667	69,515		179,583	30,744	148,840	15,560	171,295	18,446	152,848	no	no	32,787	32,787
																		TOTAL	246,747
	194,567				35,200														
Oct-83	197,500	2,933	1,109		32,133	-3,067	4,206	1,139	27,128	24,595	2,533	4,014	26,041	9,838	16,203	no	no	1,109	4,042
Nov-83	223,533	26,033	1,406		16,233	-15,900	19,447	3,547	146,916	23,802	123,114	2,364	158,221	9,521	148,701	no	no	1,406	27,440

Table 3
Estimates of Available Water for Storage in Stampede Reservoir

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
Month-Year	EOM Stampede Storage af	Stampede Change in Storage af	Little Truckee River above Boca (afm)	Adjusted Little Truckee River above Boca (afm)	EOM Boca Storage af	Boca Change in Storage af	Little Truckee River below Boca (afm)	Adjusted Little Truckee River below Boca (afm)	Truckee River at Farad (afm)	Floriston Rates (afm)	Flow at Farad in Excess of Floriston Rates (afm)	Truckee Canal at Wadsworth (afm)	Truckee River near Nixon (afm)	Pyramid Lake inflow targets under Flow Regime No. 1 (afm)	Inflow to Pyramid Lake above Flow Regime No. 1 (afm)	Stampede Stored Water Adverse to Floriston Rates?	Stampede Stored Water Within Flow Regime No. 1?	Available Water in addition to Stored Amount in Stampede (afm)	Available Water for Storage in Stampede Reservoir (afm)
Dec-83	205,300	-18,233	43,690	25,457	27,533	11,300	34,941		221,117	24,595	196,522	1,379	240,139	9,838	230,301	no	no	25,457	25,457
Jan-84	198,933	-6,367	21,489	15,122	25,000	-2,533	25,196	22,663	187,716	24,595	163,121	724	210,883	9,838	201,045	no	no	15,122	15,122
Feb-84	200,600	1,667	6,613		25,467	467	7,587		100,145	23,008	77,137	1,638	118,909	9,203	109,706	no	no	6,613	8,280
Mar-84	202,967	2,367	16,370		31,700	6,233	14,454		81,055	30,744	50,311	4,762	95,861	17,831	78,030	no	no	14,454	16,820
Apr-84	204,833	1,867	22,019		32,767	1,067	22,727		62,787	29,752	33,035	6,728	65,798	35,107	30,690	no	no	22,019	23,885
May-84	208,733	3,900	37,305		40,700	7,933	30,307		102,587	30,744	71,843	12,391	94,651	61,488	33,164	no	no	30,307	34,207
Jun-84	192,900	-15,833	39,342	23,509	40,467	-233	40,129	39,895	84,861	29,752	55,109	12,347	76,715	47,603	29,111	no	no	23,509	23,509
																		TOTAL	178,762
	122,367				23,400														
Feb-86	159,467	37,100	4,415		31,367	7,967	8,940		132,936	22,215	110,721	18,091	183,874	8,886	174,988	no	no	4,415	41,515
Mar-86	204,833	45,367	12,292		30,367	-1,000	21,572	20,572	250,413	30,744	219,669	3,110	292,899	17,831	275,068	no	no	12,292	57,658
Apr-86	191,433	-13,400	54,930	41,530	31,367	1,000	58,013		151,993	29,752	122,241	7,444	172,602	35,107	137,494	no	no	41,530	41,530
May-86	167,067	-24,367	59,340	34,973	37,867	6,500	55,047		147,808	30,744	117,064	9,646	149,038	61,488	87,550	no	no	34,973	34,973
Jun-86	184,733	17,667	2,733		39,067	1,200	1,199		77,419	29,752	47,667	11,990	73,543	47,603	25,940	no	no	1,199	18,865
Jul-86	184,700	-33	2,559	2,525	40,600	1,533	665		31,914	30,744	1,170	12,188	15,852	18,446	-2,594	no	no	0	0
																		TOTAL	194,542
	113,055				37,442														
May-93	166,418	53,364	2,104		38,588	1,147	1,208		98,777	30,744	68,033	8,505	78,440	61,488	16,953	no	no	1,208	54,572
Jun-93	177,603	11,184	17,121		38,115	-473	17,903	17,430	75,927	29,752	46,175	6,311	63,959	47,603	16,356	no	no	16,356	27,540
																		TOTAL	82,112
	80,983				16,802														
Mar-95	113,122	32,140	5,601		31,206	14,404	8		67,537	18,446	49,091	27,463	72,960	17,831	55,129	no	no	8	32,148
Apr-95	147,337	34,215	3,283		34,853	3,647	5,004		56,987	29,752	27,235	2,910	61,892	35,107	26,785	no	no	3,283	37,497
May-95	200,501	53,164	13,569		34,224	-629	17,078	16,449	138,744	30,744	108,000	4,272	150,426	61,488	88,939	no	no	13,569	66,733
Jun-95	231,284	30,783	28,770		38,494	4,270	25,418		124,403	29,752	94,651	5,893	138,783	47,603	91,180	no	no	25,418	56,202
Jul-95	226,855	-4,430	32,071	27,641	36,882	-1,611	34,028	32,417	93,977	30,744	63,233	7,105	94,437	18,446	75,991	no	no	27,641	27,641
																		TOTAL	220,221
	203,933				28,223														
Feb-96	204,500	567	22,982		32,661	4,438	23,034		74,269	23,008	51,261	772	99,245	9,203	90,042	no	no	22,982	23,549
Mar-96	203,967	-533	25,716	25,182	32,501	-160	32,122	31,962	91,039	30,744	60,296	1,049	113,752	17,831	95,921	no	no	25,182	25,182
Apr-96	215,967	12,000	23,788		37,208	4,707	23,764		118,155	29,752	88,403	3,015	127,220	35,107	92,112	no	no	23,764	35,764
May-96	238,367	22,400	33,051		38,842	1,634	32,955		207,868	30,744	177,124	4,933	223,934	61,488	162,446	no	no	32,955	55,355
Jun-96	224,267	-14,100	30,718	16,618	38,589	-253	30,858	30,605	113,157	29,752	83,405	5,958	106,473	47,603	58,869	no	no	16,618	16,618
																		TOTAL	156,469
	199,833				14,144														
Nov-96	203,333	3,500	1,845		12,073	-2,072	3,912	1,841	31,014	23,802	7,212	4,982	32,747	9,521	23,226	no	no	1,841	5,341
Dec-96	209,567	6,233	14,196		23,893	11,821	5,313		126,377	24,595	101,782	20,144	125,871	9,838	116,033	no	no	5,313	11,546
Jan-97	203,900	-5,667	66,958	61,291	26,167	2,273	79,686		376,007	24,595	351,412	1,981	453,640	9,838	443,802	no	no	61,291	61,291
Feb-97	193,567	-10,333	17,153	6,820	25,891	-276	24,050	23,774	180,694	22,215	158,479	1,071	215,861	8,886	206,975	no	no	6,820	6,820
Mar-97	204,067	10,500	13,710		32,138	6,247	15,057		136,411	30,744	105,667	928	161,117	17,831	143,286	no	no	13,710	24,210
Apr-97	200,133	-3,933	28,124	24,190	34,883	2,745	33,761		95,008	29,752	65,256	2,945	106,235	35,107	71,127	no	no	24,190	24,190
May-97	198,333	-1,800	27,503	25,703	34,624	-259	35,381	35,122	99,352	30,744	68,608	6,081	102,407	61,488	40,919	no	no	25,703	25,703
Jun-97	192,833	-5,500	14,430	8,930	35,837	1,213	15,063		74,112	29,752	44,360	4,005	77,631	47,603	30,028	no	no	8,930	8,930
																		TOTAL	168,031
	187,533				19,144														
Feb-98	192,467	4,933	1,864		20,255	1,111	1,687		24,956	22,215	2,741	608	34,495	8,886	25,609	no	no	1,687	6,620
Mar-98	203,133	10,667	8,053		32,719	12,464	1,004		86,208	30,744	55,464	756	106,637	17,831	88,806	no	no	1,004	11,671
Apr-98	213,000	9,867	16,348		35,200	2,481	16,661		119,980	29,752	90,228	1,408	133,448	35,107	98,340	no	no	16,348	26,214
May-98	212,267	-733	44,331	43,597	32,106	-3,093	49,412	46,319	162,347	30,744	131,603	3,656	167,385	61,488	105,898	no	no	43,597	43,597
Jun-98	230,767	18,500	25,398		36,731	4,625	21,199		179,821	29,752	150,069	4,641	191,683	47,603	144,079	no	no	21,199	39,699
Jul-98	224,367	-6,400	19,753	13,353	35,523	-1,208	20,711	19,504	86,446	30,744	55,702	6,821	81,971	18,446	63,525	no	no	13,353	13,353
																		TOTAL	141,155

Table 3
Estimates of Available Water for Storage in Stampede Reservoir

[1] Month-Year	[2] EOM Stampede Storage af	[3] Stampede Change in Storage af	[4] Little Truckee River above Boca (afm)	[5] Adjusted Little Truckee River above Boca (afm)	[6] EOM Boca Storage af	[7] Boca Change in Storage af	[8] Little Truckee River below Boca (afm)	[9] Adjusted Little Truckee River below Boca (afm)	[10] Truckee River at Farad (afm)	[11] Floriston Rates (afm)	[12] Flow at Farad in Excess of Floriston Rates (afm)	[13] Truckee Canal at Wadsworth (afm)	[14] Truckee River near Nixon (afm)	[15] Pyramid Lake inflow targets under Flow Regime No. 1 (afm)	[16] Inflow to Pyramid Lake above Flow Regime No. 1 (afm)	[17] Stampede Stored Water Adverse to Floriston Rates?	[18] Stampede Stored Water Within Flow Regime No. 1?	[19] Available Water in addition to Stored Amount in Stampede (afm)	[20] Available Water for Storage in Stampede Reservoir (afm)
	204,133				32,800														
Jan-99	204,600	467	5,994		32,800	0	7,290		41,316	24,595	16,721	413	53,619	9,838	43,781	no	no	5,994	6,461
Feb-99	204,333	-267	8,360	8,094	32,967	167	8,481		109,474	22,215	87,259	346	128,943	8,886	120,058	no	no	8,094	8,094
Mar-99	204,567	233	15,646		32,467	-500	21,648	21,148	113,098	30,744	82,354	937	131,286	17,831	113,455	no	no	15,646	15,879
Apr-99	208,300	3,733	26,727		34,800	2,333	30,440		103,615	29,752	73,862	1,897	117,302	35,107	82,195	no	no	26,727	30,461
May-99	220,200	11,900	41,399		35,933	1,133	42,653		182,340	30,744	151,597	4,931	188,588	61,488	127,101	no	no	41,399	53,299
Jun-99	223,433	3,233	30,530		40,000	4,067	26,223		127,240	29,752	97,488	4,253	127,716	47,603	80,112	no	no	26,223	29,457
																		TOTAL	**143,650**
	202,300				19,927														
Mar-00	204,033	1,733	9,842		31,763	11,836	299		42,167	30,744	11,423	42	47,445	17,831	29,613	no	no	299	2,032
Apr-00	216,233	12,200	16,818		33,415	1,652	16,330		62,047	29,752	32,295	1,885	61,811	35,107	26,703	no	no	16,330	28,530
May-00	217,667	1,433	25,712		38,860	5,445	20,057		75,213	30,744	44,469	4,850	63,533	61,488	2,045	no	no	2,045	3,478
Jun-00	222,156	4,490	3,779		37,690	-1,170	4,509	3,339	38,811	29,752	9,059	4,550	25,214	47,603	-22,389	no	yes (4490 af)	0	0
																		TOTAL	**34,041**
	125,600				19,300														
Apr-03	128,000	2,400	14,624		23,533	4,233	12,603		44,156	29,752	14,404	31,333	15,840	35,107	-19,267	no	yes (2400 af)	0	0
May-03	140,667	12,667	15,346		29,933	6,400	9,877		59,472	30,744	28,729	7,422	47,714	61,488	-13,773	no	yes (12667 af)	0	0
Jun-03	157,000	16,333	3,396		30,867	933	1,910		44,257	29,752	14,505	5,129	33,616	47,603	-13,987	no	yes (13987 af)	0	2,346
																		TOTAL	**2,346**
	126,267				21,867														
May-05	173,333	47,067	7,035		29,367	7,500	67		99,685	30,744	68,941	3,535	96,091	61,488	34,604	no	no	67	47,134
Jun-05	191,233	17,900	4,211		30,300	933	2,839		60,555	29,752	30,803	4,489	56,356	47,603	8,753	no	no	2,839	20,739
																		TOTAL	**67,873**
	171,300				22,467														
Dec-05	197,333	26,033	2,822		28,533	6,067	46		60,934	21,521	39,414	135	63,418	9,838	53,580	no	no	46	26,079
Jan-06	204,267	6,933	17,443		32,300	3,767	17,796		89,236	21,521	67,716	0	124,905	9,838	115,067	no	no	17,443	24,376
Feb-06	207,933	3,667	10,324		34,000	1,700	10,875		47,288	22,215	25,073	0	51,481	8,886	42,595	no	no	10,324	13,991
Mar-06	203,967	-3,967	22,869	18,903	32,167	-1,833	30,635	28,801	83,211	30,744	52,467	476	92,356	17,831	74,525	no	no	18,903	18,903
Apr-06	212,033	8,067	33,463		35,667	3,500	39,053		120,417	29,752	90,664	1,042	122,479	35,107	87,372	no	no	33,463	41,530
May-06	221,833	9,800	46,415		38,600	2,933	48,583		175,260	30,744	144,516	4,199	166,433	61,488	104,945	no	no	46,415	56,215
Jun-06	231,233	9,400	15,261		40,400	1,800	14,751		96,575	29,752	66,823	4,742	85,864	47,603	38,261	no	no	14,751	24,151
																		TOTAL	**205,245**

Column	Explanation
[1]	Month within water year (Oct. 1 - Sept 30.)
[2]	USGS Gage (ID# 10344300) Stampede Reservoir near Truckee. End-of-month 8:00am reading was prorated to end-of-month midnight reading. (8am reading from current day * 8 + 8am reading from next day * 16 / 24 = 12 am storage of current day).
[3]	Difference in Stampede storage between end of current month and end of preceding month. Positive or negative signs represent gain or reduction in storage, respectively.
[4]	USGS Gage (ID# 10344400) Little Truckee River above Boca Reservoir near Truckee.
[5]	USGS Gage (ID# 10344400) flow adjusted for stored water releases from Stampede Reservoir [4] + [3] if value in [3] is negative.
[6]	USGS Gage (ID# 10344900) Boca Reservoir near Truckee. End-of-month reading prorated (see explanation of [2]).
[7]	Difference in Boca Storage (see explanation of [3]).
[8]	USGS Gage (ID# 10344500) Little Truckee River below Boca Dam near Truckee.
[9]	USGS Gage (ID# 10344500) flow adjusted for stored water releases from Boca Reservoir. [8] + [7] if value in [7] is negative.
[10]	USGS Gage (ID# 10346000) Truckee River at Farad
[11]	See Figure 1. Months with reduced Floriston Rates include: Feb-1980, Mar-1980, Mar-1993, Feb-1995, and Mar-1995. During all of these months, Lake Tahoe elevation was below 6225.25 feet, except for February 1980 in which Lake Tahoe elevation ranged from 6224.8 to 6225.51 feet.
[12]	[10] - [11]
[13]	USGS Gage (ID# 10351300) Truckee Canal near Wadsworth. Diversions to Truckee Canal are implemented by U.S. Bureau of Reclamation under OCAP.
[14]	USGS Gage (ID# 10351700) Truckee river near Nixon
[15]	See Table 2. Flow Regime No. 1 used for water availability analysis.
[16]	[14] - [15]
[17]	No: if value in [12] is positive. Yes: if value in [12] is negative.
[18]	No: if value in [16] is positive. Yes: if value in [16] is negative and Stampede is storing water; value shown in parentheses.
[19]	Smaller of [4], [8], [12], or [16] but greater than zero. Values in [4] and [8] are substituted by [5] and [9], respectively, if flows are adjusted.
[20]	[3] + [19] - [18] but greater than zero. Negative values in [3] are treated as zero.

The spreadsheet analysis is aimed at periods when full or near full storage in Boca Reservoir is achieved. In other words, Stampede Reservoir was in priority to store water. In addition, flows at Farad exceed the applicable Floriston Rates and flows in the lower Truckee River exceed the target flows under Flow Regime No. 1.

Generally, during wet periods all downstream water rights in the Truckee River basin can be served by unregulated runoff into the main stem of the Truckee River, leaving sufficient additional runoff in the Little Truckee River to fill both Stampede and Boca Reservoirs.

K. Summary of Results

The estimates of water available for diversion to storage in Stampede Reservoir for water years 1970 through 2006 (37 years) are summarized in Table 4.

Table 4
Available Water for Storage in Stampede Reservoir (WY 1970-2006)

Water Year	Acre-Feet
1971	124,870
1973	75,240
1974	155,010
1975	90,580
1980	79,270
1982	279,040
1983	246,750
1984	178,760
1986	194,540
1993	82,110
1995	220,220
1996	156,470
1997	168,030
1998	141,150
1999	143,650
2000	34,040
2003	2,350
2005	67,870
2006	205,250

Table 4 indicates that the amounts of water available for diversion to storage in Stampede Reservoir ranged from 2,350 to 279,040 acre-feet per year during the period 1970 through 2006 (37 years). There were 11 years out of 37 years of record when in excess of 126,000 acre-feet of water was available for diversion to storage in Stampede Reservoir. The result of this analysis indicates that as much as 279,040 acre-feet could be available for diversion to storage in Stampede Reservoir in a single year.

Water is carried over in Stampede Reservoir depending on hydrologic conditions and releases made for the Pyramid Lake fishes in the lower Truckee River in prior years. During dry periods, a significant portion of water stored in Stampede Reservoir is released for the benefit of listed fishes in the lower Truckee River. For example, Stampede Reservoir was practically emptied in water years 1976 and 1977. If the period 1976–1977 were followed by 1982 or 1983, Stampede Reservoir could be filled to its capacity (226,500 acre-feet) in one year.

L. Hydrologic Year Type Classification

Table 6 shows estimates of Little Truckee River runoff at the Stampede damsite in spring and summer (March-September) for the period 1901–2006 (106 years). The hydrologic year type classification for the Little Truckee River is based on estimated runoff at the Stampede damsite. The year types used in this analysis are consistent with the SWRCB classification method, and runoff in the Little Truckee River is used as an index for water year classification. Figure 4 shows a frequency analysis of Little Truckee River runoff in spring and summer (March–September) for the period 1901–2006. The frequency analysis was conducted to determine five hydrologic year types based on roughly twenty-percentile groupings of ranked data. The resulting runoff index for the five hydrologic year types are shown in Table 5 below. Table 6 shows the hydrologic year classes for the period 1901–2006 based on the runoff index of the Little Truckee River.

Table 7 shows the hydrologic year types for the years with available water for diversion to storage in Stampede Reservoir for the period 1970–2006 (Table 4). Table 7 indicates that water availability for diversion to storage in Stampede Reservoir primarily occurs in wet and above average years.

Table 5
Little Truckee River Runoff Index For Year Type Classification

Hyrodologic Year Type	Index (Runoff at Stampede damsite in acre-feet)
Wet	Greater than 150,000
Above Average	Equal to or less than 150,000 and Greater than 107,000
Average	Equal to or less than 107,000 and Greater than 52,000
Below Average	Equal to or less than 76,000 and Greater than 52,000
Dry	Equal to or less than 52,000

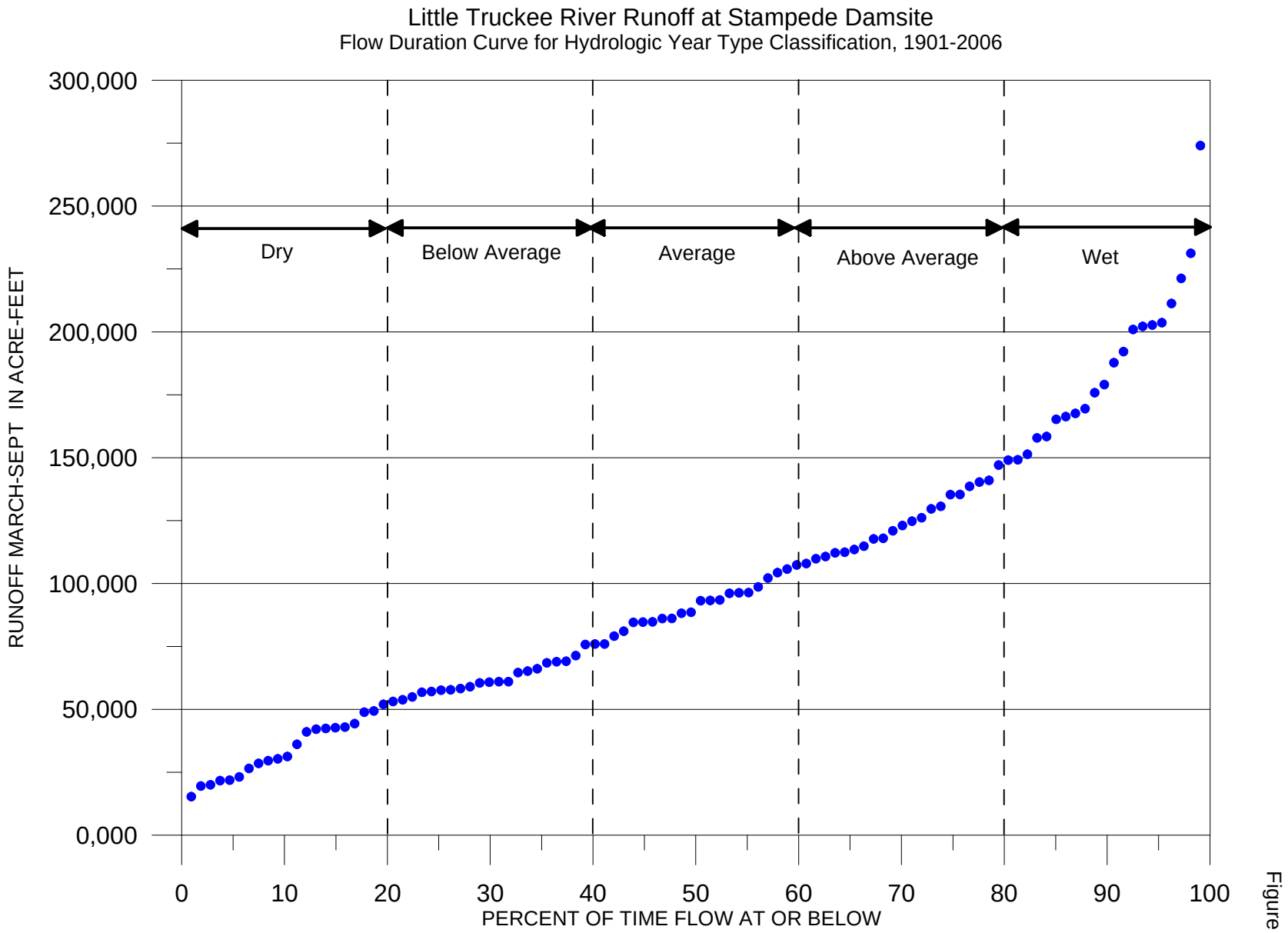

Little Truckee River Runoff at Stampede Damsite
Flow Duration Curve for Hydrologic Year Type Classification, 1901-2006
RUNOFF MARCH-SEPT IN ACRE-FEET
300,000
250,000
200,000
150,000
100,000
50,000
0,000
Dry
Below Average
Average
Above Average
Wet
0
10
20
30
40
50
60
70
80
90
100
PERCENT OF TIME FLOW AT OR BELOW

Figure 4

Table 6
Little Truckee River Runoff at Stampede Damsite
and Hydrologic Year Type Classification
1901-2006

Year	Runoff at Stampede Damsite[1, 2] (acre-feet)	Hydrologic Year Type
1901	149,000	Above Average
1902	102,180	Average
1903	88,220	Average
1904	202,190	Wet
1905	86,120	Average
1906	169,520	Wet
1907	221,250	Wet
1908	68,920	Below Average
1909	167,630	Wet
1910	105,770	Average
1911	211,290	Wet
1912	54,930	Below Average
1913	60,500	Below Average
1914	187,740	Wet
1915	96,130	Average
1916	179,040	Wet
1917	110,750	Above Average
1918	69,130	Below Average
1919	107,370	Average
1920	59,000	Below Average
1921	117,950	Above Average
1922	166,350	Wet
1923	93,480	Average
1924	19,550	Dry
1925	64,650	Below Average
1926	49,390	Dry
1927	135,420	Above Average
1928	84,700	Average
1929	42,430	Dry
1930	65,240	Below Average
1931	36,110	Dry
1932	104,370	Average
1933	52,030	Below Average
1934	31,280	Dry
1935	96,320	Average
1936	117,720	Above Average
1937	93,250	Average
1938	192,140	Wet
1939	41,040	Dry
1940	126,130	Above Average

Table 6 (Continued)
Little Truckee River Runoff at Stampede Damsite
and Hydrologic Year Type Classification
1901-2006

Year	Runoff at Stampede Damsite[1, 2] (acre-feet)	Hydrologic Year Type
1941	98,690	Average
1942	120,990	Above Average
1943	112,240	Above Average
1944	56,830	Below Average
1945	84,780	Average
1946	93,180	Average
1947	42,150	Dry
1948	60,960	Below Average
1949	53,130	Below Average
1950	96,440	Average
1951	75,980	Average
1952	202,730	Wet
1953	114,850	Above Average
1954	48,890	Dry
1955	53,800	Below Average
1956	151,390	Wet
1957	81,070	Average
1958	165,280	Wet
1959	44,300	Dry
1960	57,620	Below Average
1961	29,590	Dry
1962	75,750	Below Average
1963	109,890	Above Average
1964	68,480	Below Average
1965	140,340	Above Average
1966	60,980	Below Average
1967	200,950	Wet
1968	60,810	Below Average
1969	203,630	Wet
1970	84,600	Average
1971	157,900	Wet
1972	71,392	Below Average
1973	107,961	Above Average
1974	130,703	Above Average
1975	124,803	Above Average
1976	21,639	Dry
1977	15,313	Dry
1978	123,095	Above Average
1979	57,757	Below Average
1980	129,681	Above Average
1981	28,550	Dry

Table 6 (Continued)
Little Truckee River Runoff at Stampede Damsite
and Hydrologic Year Type Classification
1901-2006

Year	Runoff at Stampede Damsite[1, 2] (acre-feet)	Hydrologic Year Type
1982	175,844	Wet
1983	274,035	Wet
1984	113,526	Above Average
1985	66,169	Below Average
1986	158,405	Wet
1987	30,338	Dry
1988	20,031	Dry
1989	88,597	Average
1990	42,761	Dry
1991	42,965	Dry
1992	26,516	Dry
1993	147,109	Above Average
1994	23,127	Dry
1995	231,247	Wet
1996	135,371	Above Average
1997	86,142	Average
1998	149,196	Above Average
1999	138,651	Above Average
2000	75,971	Below Average
2001	21,909	Dry
2002	58,291	Below Average
2003	79,125	Average
2004	57,120	Below Average
2005	112,452	Above Average
2006	141,060	Above Average

1. *March through September.*
2. *Based on data originally developed by USBR for use in the Washoe Project analysis and the OCAP analysis (1901-1980). Flow was recorded by USGS prior to construction of Stampede Reservoir (1940-1969). Data based on USGS record of storage and releases from Stampede Reservoir (1970-2006).*

Table 7
Hydrologic Year Types for Years with
Available Water for Storage in
Stampede Reservoir
WY 1970-2006

Water Year	Available Water for Storage (acre-feet)	Hydrologic Year Type
1971	124,870	Wet
1973	75,240	Above Average
1974	155,010	Above Average
1975	90,580	Above Average
1980	79,270	Above Average
1982	279,040	Wet
1983	246,750	Wet
1984	178,760	Above Average
1986	194,540	Wet
1993	82,110	Above Average
1995	220,220	Wet
1996	156,470	Above Average
1997	168,030	Average
1998	141,150	Above Average
1999	143,650	Above Average
2000	34,040	Below Average
2003	2,350	Average
2005	67,870	Above Average
2006	205,250	Above Average

M. Conclusions.

Results of this water availability analysis show that water is available in the Little Truckee River to be diverted to storage in Stampede Reservoir above the current diversion quantity of 126,000 acre-feet per annum. This is water that would otherwise flow into Pyramid Lake. Results of the analysis also show that the applied for water can be diverted to storage in Stampede Reservoir without any impairment to downstream water rights or the flow targets in the lower Truckee River. Based on the results of this water availability analysis, water is available in the Little Truckee River to increase the maximum diversion to storage from 126,000 acre-feet per annum to 226,000 acre-feet per annum in Stampede Reservoir, as requested in Application 31487 filed by Reclamation with the SWRCB on January 8, 2004.

II. Water Availability Analysis for Prosser Creek Reservoir (Application 31488)

A. Introduction

The U.S. Bureau of Reclamation (Reclamation) filed water right Application 31488 with the California State Water Resources Control Board (SWRCB) on January 8, 2004. This application supplements License 10180 (Application 18006) and seeks, among other things, to increase the maximum annual withdrawal above 20,162 acre-feet from Prosser Creek Reservoir. In addition, the application seeks to extend the fill season for Prosser Creek Reservoir from the current April 10–August 10 season under the existing license to October 1–August 10. SWRCB (May 2007) requested a Water Availability Analysis (WAA) in connection with water right Application 31488. Accordingly, this WAA was prepared by the applicant for Prosser Creek Reservoir (*see* Exhibit 4, attached hereto). *See also* Exh. 2, attached (SWRCB acceptance of WAA).

B. Background

Background information on the Truckee River, reservoirs and operating criteria is provided in Part I of this testimony for Stampede Reservoir. Similarly, matters related to the Settlement Act (Public Law 101-618), Newlands Project OCAP and instream flows for the lower Truckee River are presented in Part I of this testimony for Stampede Reservoir.

C. Prosser Creek

Prosser Creek Dam and Reservoir are located on Prosser Creek. The drainage area of Prosser Creek at the dam site is about 50 square miles. Prosser Creek is not regulated by a dam or reservoir upstream of Prosser Creek Reservoir.

D. Prosser Creek Reservoir

Prosser Creek Reservoir was completed in 1962 (storage began in January 1963) by Reclamation as part of the Washoe Project. The zoned earthfill dam is 163 feet high and impounds about 29,800 acre-feet of water. Reservoir storage is lowered to 9,800 acre-feet to provide 20,000 acre-feet of space for flood control by November 1 of each year. The flood control reservation is maintained at 20,000 acre-feet through April 10 (U.S. Army Corps of Engineers, 1985).

The reservoir was authorized for irrigation, flood control, municipal, fish and wildlife, recreation and other beneficial purposes. The primary use to date has been flood control, storage of water for the Tahoe-Prosser exchange and for threatened and endangered fishes of Pyramid Lake. Incidental uses of water include recreation and hydroelectric power generation by run-of-river plants along the Truckee River.

Tahoe-Prosser exchange is implemented under the Agreement for Water Exchange Operations of Lake Tahoe and Prosser Creek Reservoir, dated June 15, 1959 (Petitioners' Joint Exh. 3). The agreement provides for releases from Lake Tahoe for streamflow maintenance downstream from Tahoe Dam when releases are unnecessary to meet Floriston Rates. Minimum releases of 70 cfs

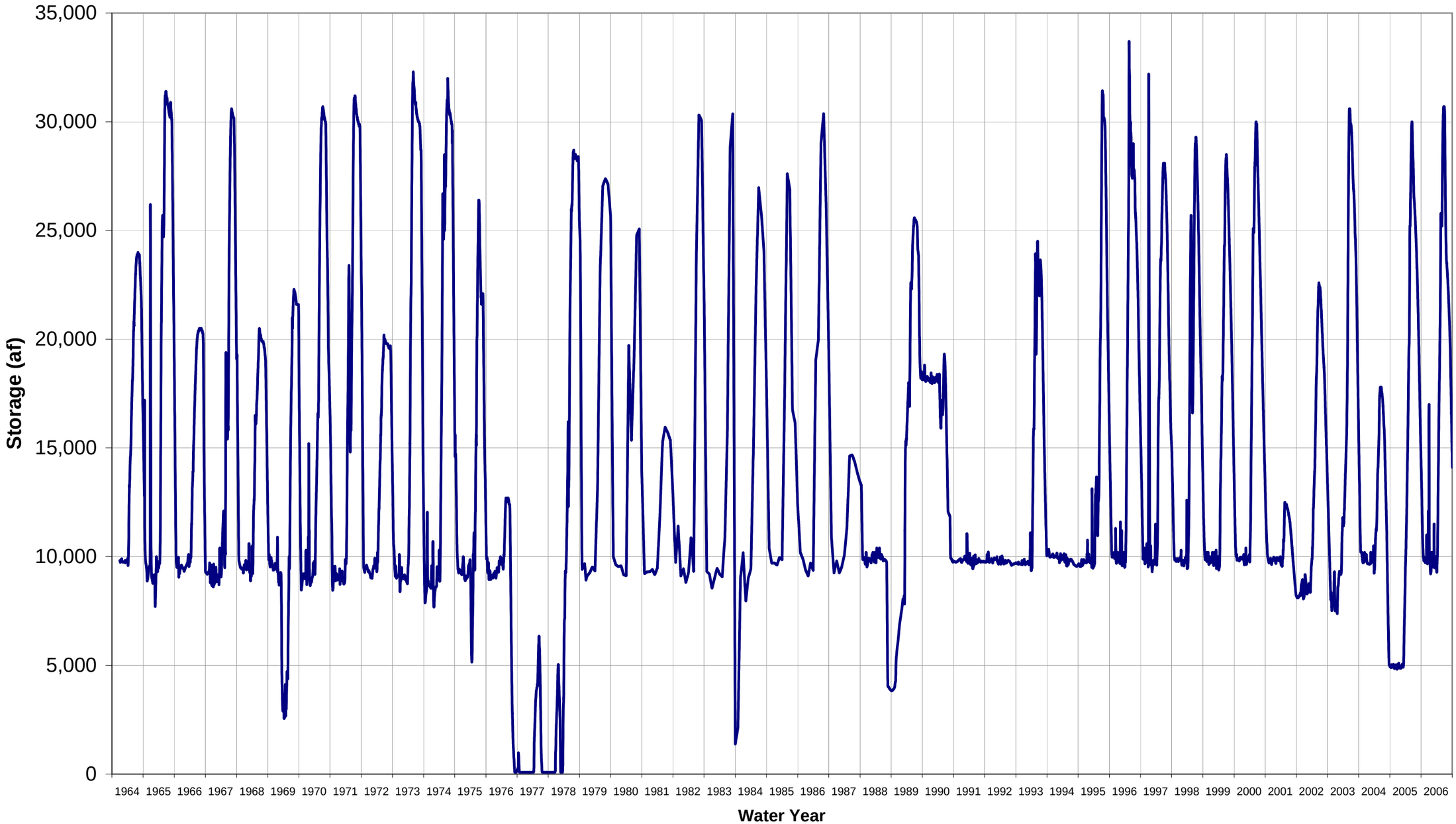
from April through September and 50 cfs the remainder of the year are maintained at the lake outlet when an equivalent amount of water is available for exchange in Prosser Creek Reservoir. If there is no available storage, and inflow to Prosser Creek Reservoir is less than these releases, minimum release from Lake Tahoe is reduced to that of Prosser Creek inflow. The equivalent amount of water credited in Prosser Creek Reservoir for these releases from Lake Tahoe is referred to as "Tahoe-Prosser Exchange Water." Exchange water stored in Prosser Creek Reservoir is released when necessary in amounts required to maintain Floriston Rates or Reduced Floriston Rates. Exchange water stored in Prosser Creek Reservoir does not incur reservoir evaporation losses.

Application 18006 was filed by Reclamation on February 18, 1958. License 10180 provides for maximum diversion of 30,000 acre-feet to storage from April 10 to August 10 of each year. License 10180 limits the withdrawal from storage in Prosser Creek Reservoir to a maximum amount of 20,162 acre-feet in any one year. Figure 5 shows the storage hydrograph of Prosser Creek Reservoir for water years 1964 through 2006. Figure 5 shows that Prosser Creek Reservoir nearly filled to its full capacity of about 30,000 acre-feet in 17 years over the 43 years of record.

Reclamation filed water right Application 31488 on January 8, 2004, for the purpose of increasing the existing maximum withdrawal from storage in Prosser Creek Reservoir above 20,162 acre-feet in any one year, and to extend the fill season from the current April 10–August 10 to October 1–August 10. Application 31488 supplements License 10180. The total quantity of water diverted to storage under Application 31488 and License 10180 will remain at 30,000 acre-feet per year (SWRCB, January 2007).

Storage in Prosser Creek Reservoir

Water Years 1964 - 2006
USGS Gage (ID #10340300)



* Only monthly data available for period January 1979 through September 1987.

E. Water Availability Analysis

License 10180 allows for a total quantity of water up to 30,000 acre-feet to be diverted to storage in Prosser Creek Reservoir and limits the maximum withdrawal to 20,162 acre-feet in any one year, leaving approximately 9,800 acre-feet in the reservoir in most years. Application 31488 is requesting to remove the withdrawal limitation of 20,162 acre-feet in any one year, and to extend the fill season from the current April 10–August 10 to October 1–August 10. With the removal of the withdrawal limitation, the reservoir may be lowered below 9,800 acre-feet more often. This analysis examines the availability of water to fill a lower reservoir in any one year. In addition, this analysis also addresses the potential availability of water to be diverted to storage in Prosser Creek Reservoir during the additional fill period October–March in any one year.

A water availability analysis for the diversion of water to storage in Prosser Creek Reservoir is presented in the spreadsheet in Table 8. The analysis is based on the historical operation of Prosser Creek Reservoir for the period when Stampede Reservoir was in operation (August 1969 through September 2006). The amount of available water is calculated for those periods with higher Truckee River flows. In addition, the amounts of water available are calculated for the periods when the storage of such water would not interfere with any downstream water rights and would be water which would have otherwise flowed to Pyramid Lake or been stored under the Tahoe-Prosser Exchange Agreement.

Storing this water will not interfere with any California water rights, including any new water that may be appropriated in California, because the interstate allocation in Section 204 of the Settlement Act provides that water for use in Nevada is junior in priority to California appropriations. The requested changes also will not interfere with Nevada water rights because water will only be stored in priority after all other Nevada water rights have been satisfied or stored under the Tahoe-Prosser Exchange Agreement. The underpinnings for the analysis are summarized below:

1. Water flowing to Prosser Creek Reservoir occurs after the satisfaction of any upstream rights in Prosser Creek.

2. Storage priority in Prosser Creek Reservoir is junior to Stampede and Boca Reservoirs.

3. Water is not stored in Prosser Creek Reservoir adverse to Floriston Rates or Reduced Floriston Rates.

4. Water is not stored in Prosser Creek Reservoir unless allowable OCAP diversions at Derby Dam are satisfied.

5. Orr Ditch water rights are satisfied by meeting Floriston Rates or Reduced Floriston Rates (whichever is in effect) at Farad and allowable *Orr Ditch*

Table 8
Estimates of Available Water for Storage in Prosser Creek Reservoir

[1] Month-Year	[2] EOM Prosser Storage af	[3] Prosser Change in Storage af	[4] Prosser Ck below Prosser (afm)	[5] Adjusted Prosser Ck below Prosser (afm)	[6] Truckee River at Farad (afm)	[7] Floriston Rates (afm)	[8] Flow at Farad in Excess of Floriston Rates (afm)	[9] Truckee Canal at Wadsworth (afm)	[10] Truckee River near Nixon (afm)	[11] Pyramid Lake inflow targets under Flow Regime No. 1 (afm)	[12] Inflow to Pyramid Lake above Flow Regime No. 1 (afm)	[13] Prosser Stored Water Adverse to Floriston Rates?	[14] Prosser Stored Water Within Flow Regime No. 1?	[15] Available Water in addition to Stored Amount in Prosser (afm)	[16] Available Water for Storage in Prosser Creek Reservoir (afm)
	9,830														
Apr-71	18,900	9,070	5,677		61,222	29,752	31,470	23,901	45,800	35,107	10,693	no	no	5,677	14,747
May-71	15,900	-3,000	25,234	22,234	114,641	30,744	83,897	45,304	75,884	61,488	14,396	no	no	14,396	14,396
Jun-71	29,167	13,267	5,482		137,157	29,752	107,405	30,432	103,775	47,603	56,172	no	no	5,482	18,749
Jul-71	30,600	1,433	6,147		59,512	30,744	28,768	28,183	27,711	18,446	9,265	no	no	6,147	7,580
														TOTAL	**55,472**
	9,073														
Mar-73	9,547	473	3,535		31,688	30,744	944	861	39,685	17,831	21,854	no	no	944	1,417
Apr-73	20,567	11,020	4,296		53,115	29,752	23,363	5,875	50,815	35,107	15,707	no	no	4,296	15,316
May-73	32,267	11,700	9,584		79,565	30,744	48,821	12,720	60,924	61,488	-563	no	yes (563 af)	0	11,137
														TOTAL	**27,870**
	8,380														
Nov-73	8,687	307	7,737		40,693	23,802	16,891	31,595	19,513	9,521	9,993	no	no	7,737	8,044
Dec-73	9,460	773	3,721		26,918	24,595	2,323	3,731	32,289	9,838	22,451	no	no	2,323	3,096
Jan-74	7,873	-1,587	13,726	12,139	62,846	24,595	38,251	835	79,702	9,838	69,864	no	no	12,139	12,139
Feb-74	8,660	787	3,174		38,402	22,215	16,187	852	44,729	8,886	35,843	no	no	3,174	3,960
Mar-74	10,020	1,360	8,951		83,082	30,744	52,338	2,454	93,342	17,831	75,511	no	no	8,951	10,311
Apr-74	18,033	8,013	5,611		122,221	29,752	92,469	6,163	121,012	35,107	85,904	no	no	5,611	13,625
May-74	27,600	9,567	12,774		135,451	30,744	104,707	11,585	115,299	61,488	53,812	no	no	12,774	22,340
Jun-74	30,867	3,267	8,533		92,749	29,752	62,997	12,875	74,202	47,603	26,598	no	no	8,533	11,800
														TOTAL	**85,315**
	8,053														
May-75	13,000	4,947	22,264		172,324	30,744	141,580	10,278	158,335	61,488	96,847	no	no	22,264	27,211
Jun-75	24,700	11,700	8,541		120,603	29,752	90,851	12,797	109,922	47,603	62,319	no	no	8,541	20,241
														TOTAL	**47,452**
	9,123														
Apr-80	19,716	10,593	5,034		56,985	29,752	27,233	8,791	46,695	35,107	11,587	no	no	5,034	15,627
May-80	15,348	-4,368	23,260	18,892	125,117	30,744	94,374	11,808	103,835	61,488	42,347	no	no	18,892	18,892
														TOTAL	**34,519**
	9,730														
Nov-81	11,410	1,680	12,730		58,038	17,851	40,187	28,122	37,551	9,521	28,030	no	no	12,730	14,410
Dec-81	9,107	-2,303	18,555	16,252	79,571	24,595	54,976	34,181	62,640	9,838	52,802	no	no	16,252	16,252
Jan-82	9,448	341	5,086		33,402	24,595	8,807	9,306	38,579	9,838	28,740	no	no	5,086	5,427
Feb-82	8,808	-640	15,943	15,303	78,819	22,215	56,604	689	94,207	8,886	85,321	no	no	15,303	15,303
Mar-82	9,267	459	9,275		54,938	30,744	24,194	341	68,545	17,831	50,713	no	no	9,275	9,734
Apr-82	10,870	1,603	18,530		141,116	29,752	111,364	7,813	147,586	35,107	112,479	no	no	18,530	20,133
May-82	9,316	-1,554	30,107	28,553	264,476	30,744	233,732	13,648	248,985	61,488	187,498	no	no	28,553	28,553
Jun-82	23,759	14,443	3,051		147,669	29,752	117,917	10,852	152,628	47,603	105,025	no	no	3,051	17,494
Jul-82	30,318	6,559	1,490		47,038	30,744	16,294	13,722	36,889	18,446	18,442	no	no	1,490	8,049
														TOTAL	**135,354**
	9,464														
Mar-83	9,203	-261	12,668	12,407	190,691	30,744	159,947	2,122	223,775	17,831	205,944	no	no	12,407	12,407
Apr-83	9,075	-128	13,111	12,983	185,891	29,752	156,139	4,683	201,124	35,107	166,017	no	no	12,983	12,983
May-83	10,906	1,831	33,517		242,936	30,744	212,192	9,866	249,997	61,488	188,509	no	no	33,517	35,348
Jun-83	15,881	4,975	29,377		310,235	29,752	280,483	10,366	321,183	47,603	273,580	no	no	29,377	34,352
Jul-83	28,804	12,923	885		179,583	30,744	148,840	15,560	171,295	18,446	152,848	no	no	885	13,808
														TOTAL	**108,898**
	1,378														
Oct-83	2,140	762	1,480		27,128	24,595	2,533	4,014	26,041	9,838	16,203	no	no	1,480	2,242
Nov-83	9,011	6,871	5,971		146,916	23,802	123,114	2,364	158,221	9,521	148,701	no	no	5,971	12,842

Table 8
Estimates of Available Water for Storage in Prosser Creek Reservoir

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
Month-Year	EOM Prosser Storage af	Prosser Change in Storage af	Prosser Ck below Prosser (afm)	Adjusted Prosser Ck below Prosser (afm)	Truckee River at Farad (afm)	Floriston Rates (afm)	Flow at Farad in Excess of Floriston Rates (afm)	Truckee Canal at Wadsworth (afm)	Truckee River near Nixon (afm)	Pyramid Lake inflow targets under Flow Regime No. 1 (afm)	Inflow to Pyramid Lake above Flow Regime No. 1 (afm)	Prosser Stored Water Adverse to Floriston Rates?	Prosser Stored Water Within Flow Regime No. 1?	Available Water in addition to Stored Amount in Prosser (afm)	Available Water for Storage in Prosser Creek Reservoir (afm)
Dec-83	10,184	1,173	10,147		221,117	24,595	196,522	1,379	240,139	9,838	230,301	no	no	10,147	11,320
Jan-84	7,958	-2,226	9,287	7,061	187,716	24,595	163,121	724	210,883	9,838	201,045	no	no	7,061	7,061
Feb-84	9,005	1,047	3,642		100,145	23,008	77,137	1,638	118,909	9,203	109,706	no	no	3,642	4,689
Mar-84	9,448	443	8,977		81,055	30,744	50,311	4,762	95,861	17,831	78,030	no	no	8,977	9,420
Apr-84	15,112	5,664	5,776		62,787	29,752	33,035	6,728	65,798	35,107	30,690	no	no	5,776	11,440
May-84	22,406	7,294	12,895		102,587	30,744	71,843	12,391	94,651	61,488	33,164	no	no	12,895	20,189
Jun-84	26,972	4,566	6,718		84,861	29,752	55,109	12,347	76,715	47,603	29,111	no	no	6,718	11,284
														TOTAL	90,486
	9,107														
Feb-86	9,706	599	22,030		132,936	22,215	110,721	18,091	183,874	8,886	174,988	no	no	22,030	22,629
Mar-86	9,365	-341	22,822	22,481	250,413	30,744	219,669	3,110	292,899	17,831	275,068	no	no	22,481	22,481
Apr-86	19,062	9,697	6,827		151,993	29,752	122,241	7,444	172,602	35,107	137,494	no	no	6,827	16,524
May-86	19,977	915	17,228		147,808	30,744	117,064	9,646	149,038	61,488	87,550	no	no	17,228	18,143
Jun-86	29,008	9,031	3,963		77,419	29,752	47,667	11,990	73,543	47,603	25,940	no	no	3,963	12,994
Jul-86	30,375	1,367	2,221		31,914	30,744	1,170	12,188	15,852	18,446	-2,594	no	yes (1,367 af)	0	0
														TOTAL	92,772
	16,233														
May-93	20,849	4,616	22,015		98,777	30,744	68,033	8,505	78,440	61,488	16,953	no	no	16,953	21,569
Jun-93	22,145	1,295	12,397		75,927	29,752	46,175	6,311	63,959	47,603	16,356	no	no	12,397	13,692
														TOTAL	35,261
	9,875														
Mar-95	9,613	-262	18,155	17,892	67,537	18,446	49,091	27,463	72,960	17,831	55,129	no	no	17,892	17,892
Apr-95	13,615	4,002	11,520		56,987	29,752	27,235	2,910	61,892	35,107	26,785	no	no	11,520	15,522
May-95	13,026	-588	29,578	28,989	138,744	30,744	108,000	4,272	150,426	61,488	88,939	no	no	28,989	28,989
Jun-95	27,410	14,383	9,330		124,403	29,752	94,651	5,893	138,783	47,603	91,180	no	no	9,330	23,714
Jul-95	30,160	2,750	9,677		93,977	30,744	63,233	7,105	94,437	18,446	75,991	no	no	9,677	12,427
														TOTAL	98,544
	9,687														
Feb-96	9,597	-90	12,738	12,648	74,269	23,008	51,261	772	99,245	9,203	90,042	no	no	12,648	12,648
Mar-96	9,547	-50	9,727	9,677	91,039	30,744	60,296	1,049	113,752	17,831	95,921	no	no	9,677	9,677
Apr-96	19,600	10,053	7,817		118,155	29,752	88,403	3,015	127,220	35,107	92,112	no	no	7,817	17,870
May-96	29,800	10,200	16,528		207,868	30,744	177,124	4,933	223,934	61,488	162,446	no	no	16,528	26,728
Jun-96	28,133	-1,667	12,127	10,460	113,157	29,752	83,405	5,958	106,473	47,603	58,869	no	no	10,460	10,460
														TOTAL	77,384
	9,937														
Nov-96	9,797	-140	3,608	3,468	31,014	23,802	7,212	4,982	32,747	9,521	23,226	no	no	3,468	3,468
Dec-96	13,367	3,570	7,781		126,377	24,595	101,782	20,144	125,871	9,838	116,033	no	no	7,781	11,351
Jan-97	9,767	-3,600	34,709	31,109	376,007	24,595	351,412	1,981	453,640	9,838	443,802	no	no	31,109	31,109
Feb-97	9,800	33	4,998		180,694	22,215	158,479	1,071	215,861	8,886	206,975	no	no	4,998	5,032
Mar-97	9,960	160	11,907		136,411	30,744	105,667	928	161,117	17,831	143,286	no	no	11,907	12,067
Apr-97	17,267	7,307	9,132		95,008	29,752	65,256	2,945	106,235	35,107	71,127	no	no	9,132	16,439
May-97	24,233	6,967	8,957		99,352	30,744	68,608	6,081	102,407	61,488	40,919	no	no	8,957	15,924
Jun-97	28,000	3,767	4,161		74,112	29,752	44,360	4,005	77,631	47,603	30,028	no	no	4,161	7,928
														TOTAL	103,317
	9,600														
Feb-98	9,767	167	2,620		24,956	22,215	2,741	608	34,495	8,886	25,609	no	no	2,620	2,787
Mar-98	9,527	-240	10,159	9,919	86,208	30,744	55,464	756	106,637	17,831	88,806	no	no	9,919	9,919
Apr-98	18,900	9,373	4,483		119,980	29,752	90,228	1,408	133,448	35,107	98,340	no	no	4,483	13,856
May-98	16,667	-2,233	22,140	19,906	162,347	30,744	131,603	3,656	167,385	61,488	105,898	no	no	19,906	19,906
Jun-98	28,900	12,233	9,162		179,821	29,752	150,069	4,641	191,683	47,603	144,079	no	no	9,162	21,395
Jul-98	26,767	-2,133	10,223	8,089	86,446	30,744	55,702	6,821	81,971	18,446	63,525	no	no	8,089	8,089
														TOTAL	75,953

Table 8
Estimates of Available Water for Storage in Prosser Creek Reservoir

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
Month-Year	EOM Prosser Storage af	Prosser Change in Storage af	Prosser Ck below Prosser (afm)	Adjusted Prosser Ck below Prosser (afm)	Truckee River at Farad (afm)	Floriston Rates (afm)	Flow at Farad in Excess of Floriston Rates (afm)	Truckee Canal at Wadsworth (afm)	Truckee River near Nixon (afm)	Pyramid Lake inflow targets under Flow Regime No. 1 (afm)	Inflow to Pyramid Lake above Flow Regime No. 1 (afm)	Prosser Stored Water Adverse to Floriston Rates?	Prosser Stored Water Within Flow Regime No. 1?	Available Water in addition to Stored Amount in Prosser (afm)	Available Water for Storage in Prosser Creek Reservoir (afm)
	9,753														
Jan-99	9,653	-100	3,832	3,732	41,316	24,595	16,721	413	53,619	9,838	43,781	no	no	3,732	3,732
Feb-99	9,927	273	4,340		109,474	22,215	87,259	346	128,943	8,886	120,058	no	no	4,340	4,613
Mar-99	9,723	-203	9,275	9,071	113,098	30,744	82,354	937	131,286	17,831	113,455	no	no	9,071	9,071
Apr-99	14,700	4,977	10,082		103,615	29,752	73,862	1,897	117,302	35,107	82,195	no	no	10,082	15,059
May-99	21,533	6,833	21,380		182,340	30,744	151,597	4,931	188,588	61,488	127,101	no	no	21,380	28,213
Jun-99	28,367	6,833	10,062		127,240	29,752	97,488	4,253	127,716	47,603	80,112	no	no	10,062	16,895
														TOTAL	**77,584**
	9,863														
Mar-00	9,767	-97	6,653	6,556	42,167	30,744	11,423	42	47,445	17,831	29,613	no	no	6,556	6,556
Apr-00	20,067	10,300	4,145		62,047	29,752	32,295	1,885	61,811	35,107	26,703	no	no	4,145	14,445
May-00	28,067	8,000	5,919		75,213	30,744	44,469	4,850	63,533	61,488	2,045	no	no	2,045	10,045
Jun-00	28,367	300	5,702		38,811	29,752	9,059	4,550	25,214	47,603	-22,389	no	yes (300 af)	0	0
														TOTAL	**31,046**
	11,400														
Apr-03	14,167	2,767	5,103		44,156	29,752	14,404	31,333	15,840	35,107	-19,267	no	yes (2,767 af)	0	0
May-03	26,133	11,967	3,021		59,472	30,744	28,729	7,422	47,714	61,488	-13,773	no	yes (11,967 af)	0	0
Jun-03	29,900	3,767	6,988		44,257	29,752	14,505	5,129	33,616	47,603	-13,987	no	yes (3,767 af)	0	0
														TOTAL	**0**
	16,300														
May-05	27,000	10,700	14,461		99,685	30,744	68,941	3,535	96,091	61,488	34,604	no	no	14,461	25,161
Jun-05	27,833	833	10,885		60,555	29,752	30,803	4,489	56,356	47,603	8,753	no	no	8,753	9,586
														TOTAL	**34,748**
	9,993														
Dec-05	14,967	4,973	10,485		60,934	21,521	39,414	135	63,418	9,838	53,580	no	no	10,485	15,458
Jan-06	9,863	-5,103	17,209	12,105	89,236	21,521	67,716	0	124,905	9,838	115,067	no	no	12,105	12,105
Feb-06	11,367	1,503	6,198		47,288	22,215	25,073	0	51,481	8,886	42,595	no	no	6,198	7,702
Mar-06	9,490	-1,877	10,312	8,435	83,211	30,744	52,467	476	92,356	17,831	74,525	no	no	8,435	8,435
Apr-06	17,600	8,110	10,840		120,417	29,752	90,664	1,042	122,479	35,107	87,372	no	no	10,840	18,950
May-06	25,200	7,600	19,041		175,260	30,744	144,516	4,199	166,433	61,488	104,945	no	no	19,041	26,641
Jun-06	30,633	5,433	7,799		96,575	29,752	66,823	4,742	85,864	47,603	38,261	no	no	7,799	13,232
														TOTAL	**102,524**

Decree and OCAP diversions at Derby Dam.

6. Diversion requirements at Derby Dam are assumed to be the same as historical diversions for the purpose of this analysis.[4]

7. Water would not be diverted to storage in Prosser Creek Reservoir unless target flows under Flow Regime No. 1 are met in the lower Truckee River.

The spreadsheet analysis is aimed at periods of full or nearly full storage in Boca Reservoir when Stampede Reservoir is in priority to store water.[5] In addition, flows at Farad exceed the applicable Floriston Rates and flows in the lower Truckee River exceed the target flows under Flow Regime No. 1.

Generally, during wet periods all downstream water rights in the basin can be served by unregulated runoff into the mainstem of the Truckee River, leaving sufficient additional runoff in Prosser Creek and the Little Truckee River to fill Prosser Creek Reservoir, and Stampede and Boca Reservoirs, respectively.

F. Summary of Results

The estimates of water available for diversion to storage in Prosser Creek Reservoir for the specified years during the period extending from water years 1970 through 2006 (37 years) are summarized in Table 9.

Table 9 indicates that the amounts of water available for diversion to storage in Prosser Creek Reservoir ranged from 27,870 to 135,350 acre-feet per year during the period 1970 through 2006 (37 years). There were 17 out of 37 years of record when in excess of 30,000 acre-feet of water was available in each of those years for diversion to storage in Prosser Creek Reservoir. The result of this analysis indicates that potentially as much as 135,350 acre-feet could be available for diversion to storage in Prosser Creek Reservoir in a single year.

[4]It should be noted that the allowable OCAP diversions at Derby Dam changed several times during the period from August 1969 through September 2006 and that there were times when the historical diversions substantially exceeded the allowable OCAP diversions.

[5]*See* Water Availability Analysis for Stampede Reservoir, Application 31487.

Table 9
Water Available for Storage in Prosser Creek Reservoir
WY 1970–2006

Water Year	Acre-Feet
1971	55,470
1973	27,870
1974	85,310
1975	47,450
1980	34,520
1982	135,350
1983	108,900
1984	90,490
1986	92,770
1993	35,260
1995	98,540
1996	77,380
1997	103,320
1998	75,950
1999	77,580
2000	31,050
2005	34,750
2006	102,520

Water is carried over in Prosser Creek Reservoir depending on hydrologic conditions, Tahoe-Prosser exchange, and releases made for Pyramid Lake fishes in prior years. Prosser Creek Reservoir was, however, emptied in the drought years of 1976 and 1977 (*see* Figure 5).

Table 10 provides the estimate of water available for diversion to storage in Prosser Creek Reservoir during October–March for the period of analysis extending from water years 1970 through 2006 (37 years). It shows that the amounts of water available for diversion to storage in Prosser Creek Reservoir during October–March ranged from 1,420 to 63,030 acre-feet per year for the period 1970 through 2006 (37 years). There were 13 out of 37 years of record when there was water available for diversion to storage in October–March. However, the amount that can be diverted to storage in Prosser Creek Reservoir is limited by the inviolate flood control space from November 1–April 10, and storage in Prosser Creek Reservoir is therefore limited to 9,800 acre-feet during this period.

Table 10
Water Available for Storage in Prosser Creek Reservoir
During October - March
WY 1970-2006

Water Year	Acre-Feet
1973	1,420
1974	37,550
1982	61,130
1983	12,410
1984	47,570
1986	45,110
1995	17,890
1996	22,330
1997	63,030
1998	12,710
1999	17,420
2000	6,560
2006	43,700

G. Hydrologic Year Type Classification

The result of hydrologic analysis conducted for the Little Truckee River is used to classify year types for Prosser Creek. The hydrologic year type analysis for the Little Truckee River is presented in the Water Availability Analysis for Stampede Reservoir, Application 31487.

Table 11 shows the hydrologic year types for the years with water available for diversion to storage in Prosser Creek Reservoir for the period 1970–2006 (Table 9). Table 11 indicates that water availability for diversion to storage in Prosser Creek Reservoir primarily occurs in wet and above average years.

Table 11
Hydrologic Year Types for Years with
Water Available for Storage in
Prosser Creek Reservoir
WY 1970-2006

Water Year	Water Available for Storage (acre-feet)	Hydrologic Year Type
1971	55,470	Wet
1973	27,870	Above Average
1974	85,310	Above Average
1975	47,450	Above Average
1980	34,520	Above Average
1982	135,350	Wet
1983	108,900	Wet
1984	90,490	Above Average
1986	92,770	Wet
1993	35,260	Above Average
1995	98,540	Wet
1996	77,380	Above Average
1997	103,320	Average
1998	75,950	Above Average
1999	77,580	Above Average
2000	31,050	Below Average
2005	34,750	Above Average
2006	102,520	Above Average

H. Conclusions

Results of this water availability analysis show that water which would otherwise flow to Pyramid Lake is available in Prosser Creek to be diverted to storage in Prosser Creek Reservoir from October 1 through August 10 each year. Results of the analysis show that the removal of the existing withdrawal limitation and extending the fill season in Prosser Creek Reservoir will not cause any impairment to downstream water rights or affect the achievement of flow targets in the lower Truckee River. This water availability analysis demonstrates that water is available in Prosser Creek to extend the fill season from the current April 10–August 10 to October 1–August 10, and to increase the existing maximum withdrawal in any one year above 20,162 acre-feet for Prosser Creek Reservoir as requested in Application 31488.

References for Stampede and Prosser Creek Reservoirs

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III. Pyramid Lake Decline and TROA Benefits

A. Introduction

This part of my testimony provides a summary overview of the decline in Pyramid Lake elevation, Winnemucca Lake, Marble Bluff Dam and Fishway, Stampede Reservoir releases, and TROA benefits to fish passage at Pyramid Lake.

B. Decline in Lake Elevation

Prior to the early 1900's, fluctuations of water surface elevations in Pyramid Lake and Winnemucca Lake depended primarily on natural hydrologic factors. Construction of the Truckee Canal, a transbasin diversion canal from the lower Truckee River basin to the lower Carson River basin, was completed in 1905. Truckee Canal and Derby Diversion Dam, as part of the Newlands Reclamation Project, became the largest single diversion work on the Truckee River.

After diversions from the Truckee River to the Newlands Project began in 1906, water surface elevations in Pyramid Lake and Winnemucca Lake began to decline. Figure 6 shows the historical measurements of water elevation in Pyramid Lake from the early 1900's to 2010 (about 100 years of record). As demonstrated, Pyramid Lake elevation followed a trend of decline after the Truckee Canal diversions began in 1906. By 1938, Winnemucca Lake had gone dry. Pyramid Lake elevation reached its lowest historic level (3,784 feet) in 1967, as shown on Figure 6. This represented a drop of more than 85 feet from its historic highs. In 1967, the Secretary of the Interior issued regulations known as OCAP to limit diversions from the Truckee River to the Newlands Project.

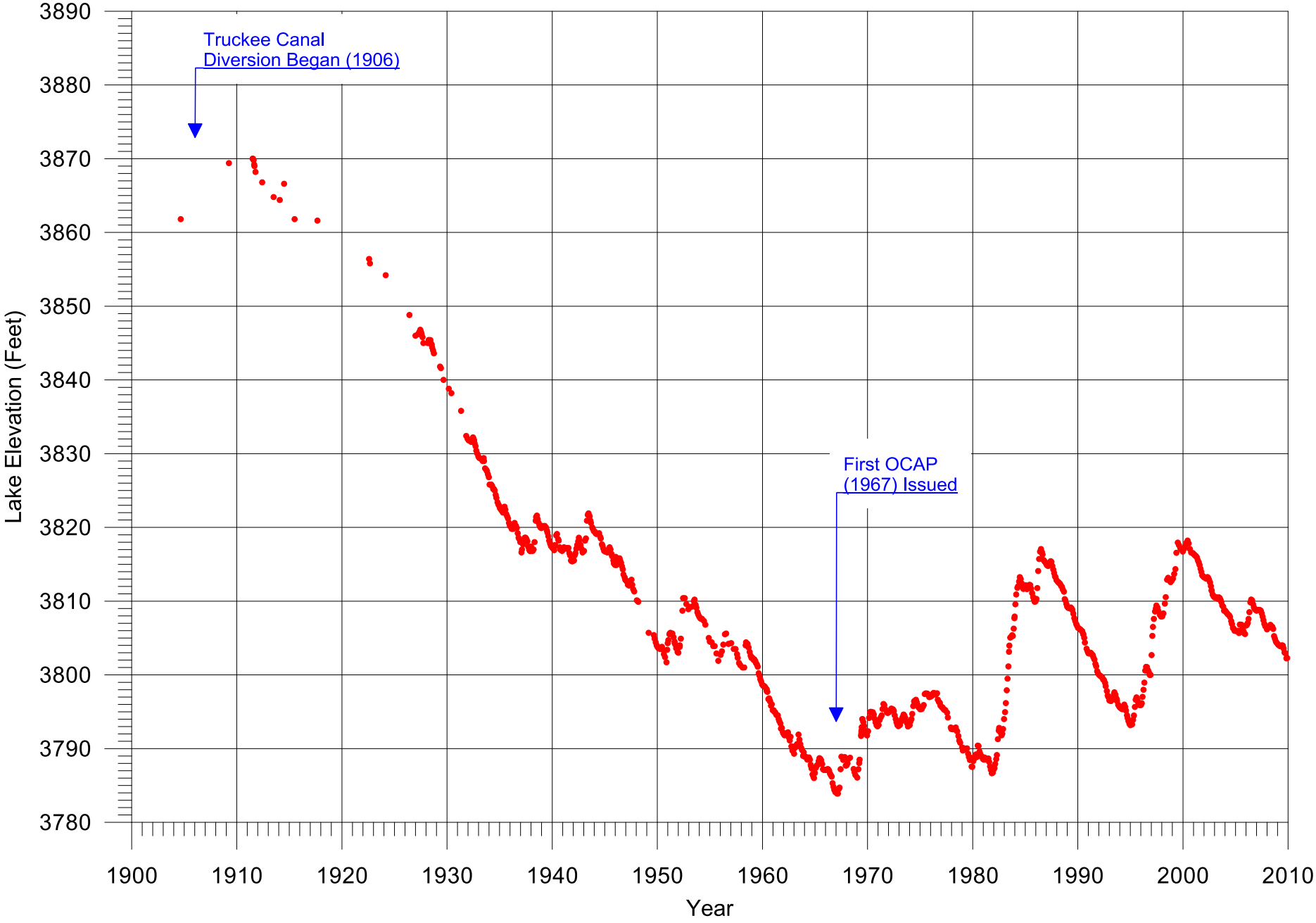
C. Winnemucca Lake

Immediately to the east of Pyramid Lake is the bed of what was formerly Winnemucca Lake. Pyramid Lake was connected to Winnemucca Lake through an overflow channel from Pyramid Lake to Winnemucca Lake. In 1967, when Pyramid Lake reached its lowest elevation (3,784 feet), it was 80 feet below its overflow elevation into Winnemucca Lake.

Winnemucca Lake was replenished by overflow from Pyramid Lake and with water diverted by the bifurcation of the Truckee River during high flows at a point downstream of the town of Nixon, NV. Winnemucca Lake at one time had abundant cui-ui and Lahontan cutthroat trout (LCT), and its extensive marshes created a large migratory waterfowl habitat. Under Presidential Executive Order No. 7435, Winnemucca Lake was designated a National Wildlife Refuge on August 19, 1936. Ironically, by the time the Executive Order was issued, Winnemucca Lake was almost dry because of significant diversions from the Truckee River and the drought of 1930's. By 1938, Winnemucca Lake was completely dry and has been dry ever since, except for an insignificant amount of local runoff.

Pyramid Lake

Historical Lake Elevations from early 1900 to 2010



D. Status of Cui-ui and LCT

The lowered Pyramid Lake elevation and reduced Truckee River inflows have resulted in the creation of a delta at Pyramid Lake (U.S. Army Corps of Engineers, 1995). The delta, lowered lake elevation and reduced flows act as a barrier to cui-ui and LCT moving into the Truckee River from Pyramid Lake for spawning. In the 1930s, the Pyramid Lake elevation dropped rapidly and a large delta was formed at the mouth of the Truckee River. The original strain of LCT in Pyramid Lake became extinct by the early 1940's. In most years after the 1930's, cui-ui and LCT were not able to gain access to the river for spawning. Subsequently, the cui-ui was listed as endangered in 1967 and the LCT as threatened in 1975.

E. Marble Bluff Dam and Fishway

Declining Pyramid Lake elevations resulted in steepening the river gradient and also created a large delta area at the mouth of the Truckee River. This drop in elevation resulted in erosion and headcutting upstream. In 1975, Reclamation, as part of the Washoe Project, constructed the Marble Bluff Dam and Pyramid Lake Fishway. Marble Bluff Dam was designed to stabilize the rapidly degrading river channel and reduce erosion and upstream headcuttings along the lower Truckee River. The Pyramid Lake Fishway was designed to aid migration of Pyramid Lake fishes, cui-ui and Lahontan Cutthroat Trout (LCT), when they are unable to migrate upriver either because of low river flow or low lake elevations. The Fishway extends for a distance of about three miles, providing a passageway from Pyramid Lake to the Truckee River at Marble Bluff Dam. Marble Bluff Dam routes streamflow through the Pyramid Lake Fishway to provide river access for cui-ui and LCT. Unfortunately, the Fishway has been mostly ineffective because of high velocities impeding cui-ui passage, design defects and maintenance problems related to changing lake elevations.

A fish-lifting facility (mechanical hoist) was also constructed at the toe of the Marble Bluff Dam to provide passage (lift). The purpose of fish lift was to aid in river access for cui-ui and LCT during their annual spawning migration from Pyramid Lake to the Truckee River. In 1998, the hoist system was replaced by a lock system which lifts the upstream migrants to the river above the Marble Bluff Dam. The fish lock at the dam provides a means of capturing fish as well as passage over the dam for fish which migrate via the river.

F. Stampede Reservoir

Water stored in Stampede Reservoir, that would have otherwise flowed to Pyramid Lake, has been utilized by the United States Fish and Wildlife Service (USFWS) for the benefit of Pyramid Lake fishes—cui-ui and LCT. As stated in Part I of my testimony, the Stampede Project was authorized under the Washoe Project Act and Reclamation completed the construction of the Stampede Dam and Reservoir on the Little Truckee River in 1970. The Carson-Truckee Water Conservancy District, Sierra Pacific Power Company and the State of Nevada sued the Secretary of the Interior to contract for sale of Stampede Project water for irrigation and municipal and industrial (M&I) purposes under the Washoe Project Act. However, the Secretary had determined that to do so would violate the Endangered Species Act (ESA). The Stampede Dam

and Reservoir was being operated to conserve the Pyramid Lake listed fishes—cui-ui and LCT. As a result of the litigation (*Carson-Truckee Water Conservancy District v. Clark*, 1984) (Petitioners' Joint Exh. 14), Federal courts upheld the determination of the Secretary that his obligation under the ESA took precedence over his obligation to contract for delivery of water for irrigation and M&I uses from Stampede Reservoir. The courts ruled that the Secretary must use all water stored in Stampede Reservoir under the Stampede Project for the benefit of the Pyramid Lake fishes until cui-ui and LCT are no longer endangered or threatened, or until sufficient water for their conservation became available from other sources.

Water from Stampede and Prosser Creek reservoirs is released to support the passage flows for cui-ui to migrate and overcome the delta in the mouth of the Truckee River at Pyramid Lake, which acts as a barrier to spawning runs. In addition to releases for spawning, water is also released to maintain the habitat in the lower Truckee River year round. The flows are also targeted for the recruitment and maintenance of natural riparian vegetation, such as willows and cottonwood, in the lower Truckee River. However, Fish Water stored in Stampede and Prosser Creek reservoirs is not adequate to meet the flow targets to overcome the passage barrier at the delta and provide higher flows for habitat maintenance in the lower Truckee River in most years.

G. TROA Benefits for Passage

TROA would allow the Pyramid Lake Paiute Tribe to accumulate water in the Truckee River reservoirs that would have otherwise flowed to Pyramid Lake. Under the TROA, such water will be stored as Fish Credit Water in the Truckee River reservoirs within the permit conditions of those reservoirs. Some of the water accumulated would occur in wet years. Additional accumulation would be in winter months through the waiver of the hydroelectric water rights of the Truckee Meadows Water Authority (TMWA). In other words, a portion of water released in winter months to meet the hydroelectric rights under the Floriston Rates would be held back in storage as Fish Credit Water. The portion held back in storage as Fish Credit Water would be the water that would have otherwise flowed to Pyramid Lake. Under the TROA, Fish Credit Water would also be accumulated through the exchange or conversion of other credit waters established in the Truckee River reservoirs.

Fish Credit Water in the Truckee River reservoirs, as well as Stampede Project water and Fish Water from Prosser Creek Reservoir, would be released to assist the cui-ui passage at the Pyramid Lake delta. The delta, with its braided channels, acts as an obstacle to passage by Pyramid Lake fishes—cui-ui and LCT. Increased releases would provide the hydraulic depth for cui-ui to migrate through the delta and provide protection against predation. Increased releases would also provide for spawning flows and improved habitat flows in the lower Truckee River. Improved habitat flows would be maintained year round. Increased releases would also help to improve water quality in the lower Truckee River.

The average annual inflow to Pyramid Lake under the TROA would be increased compared to current conditions. This is primarily attributed to 6,700 acre-feet of water rights to be provided by the Cities of Reno, Sparks and Washoe County for the purpose of water quality improvement in the lower Truckee River. Cities of Reno, Sparks and Washoe County agree to provide 6,700

acre-feet of water rights when TROA takes effect (TROA, Section 1.E.4). Similarly, the elevation of Pyramid Lake would be higher under the TROA compared to current conditions over an extended period of time.

IV. Instream Flows and Water Quality in the Lower Truckee River

A. Introduction

This part of my testimony briefly addresses the enhancement of instream flows and water quality in the lower Truckee River under the TROA. It also discusses achieving these benefits to the Tribe's trust resources under the TROA with no injury to any other legal user of water in the basin.

B. Enhancement of Instream Flows

Under the TROA, the Pyramid Lake Paiute Tribe would be able to accumulate water in the Truckee River reservoirs that would have otherwise flowed to Pyramid Lake (Petitioners' Joint Exh. 19). Water would be stored as Fish Credit Water. Most of this Fish Credit Water would be accumulated in winter months and early spring. Water would be released to supplement flows and mimic the natural hydrograph for cui-ui spawning in the lower Truckee River in the spring. Under the TROA, Fish Credit Water stored in the Truckee River reservoirs would be managed in a manner to increase the frequency of higher flows for cui-ui spawning. In addition, Fish Credit Water would be used to improve flows for the maintenance of habitat in the lower Truckee River. The goal is to maintain the improved habitat flows year round. The improved instream flows in the lower Truckee River benefit both cui-ui and LCT and help in maintaining or enhancing the growth of riparian vegetation.

The U.S. Fish and Wildlife Service (USFWS) in cooperation with the Pyramid Lake Paiute Tribe developed six flow regimes, shown in Table 2 (Part 1) of my testimony. Flow regimes with higher flows are designated as Flow Regimes 1 and 2. With releases of Fish Credit Water under the TROA, the frequency of achieving flow regimes with higher flows would be increased. Under the TROA, Flow Regimes 1 and 2 are expected to be achieved more frequently compared to current conditions, which would be a significant beneficial effect for cui-ui and LCT.

Similarly, increased frequency of Flow Regimes 1 and 2 is expected to provide higher flows in April-June under the TROA compared to current conditions. This is considered to be a significant beneficial effect and reflects the intent of TROA to make more water available for cottonwood regeneration when sufficient water is available.

C. Improvement in Water Quality

The Nevada Division of Environmental Protection (NDEP) has established water quality standards for the Truckee River within the State of Nevada, and particularly water quality in the lower Truckee River is monitored as part of the Clean Water Act NPDES permit for the Truckee Meadows Water Reclamation Facility (TMWRF). At times, water quality standards at various stations in the lower Truckee River between TMWRF and Pyramid Lake are not met because of reduced instream flows.

The primary water quality concerns in the lower Truckee River are warm temperatures and low dissolved oxygen (DO) concentrations. In warm weather and low flow conditions, water temperatures gradually increase downstream. Warm temperatures, low flows and nutrients, such as nitrogen and phosphorus, induce algae growth which results in depressed DO concentrations in the lower Truckee River. The best indicator of water quality in the lower Truckee River is flow volume, which affects all aspects of water quality, including temperature and DO as well as nutrient concentrations. High flows improve water quality in the lower river, while low flows result in poor water quality downstream.

In dry and very dry hydrologic conditions, flows in the lower Truckee River would be higher compared to current conditions. This is primarily attributed to 6,700 acre-feet of water rights to be provided by the Cities of Reno and Sparks and Washoe County for the purpose of water quality improvement in the lower Truckee River. In addition, storage and release of water rights acquired under the Water Quality Settlement Agreement would improve water quality in the lower Truckee River during drought periods. TROA provides for the storage of Water Quality Credit Water in the Truckee River reservoirs. Without the TROA in effect, there would not be Water Quality Credit Water in Truckee River reservoirs. Increased flows in the lower Truckee River during dry periods are expected to improve water quality in terms of temperature and dissolved oxygen under the Nevada Water Quality Standards.

Higher flow rates will dilute the concentration of total dissolved solids (TDS) and assist in meeting the TDS water quality standards in the lower Truckee River. Improvements to water quality under the TROA are consistent with the Tribe's policy of protecting and enhancing the water quality of the Truckee River within the Reservation.

D. No Injury to Other Water Rights

Consistent with the provisions of the Settlement Act and TROA, water would be stored and released from the Truckee River reservoirs without affecting the exercise of vested or perfected *Orr Ditch* Decree water rights. Section 205(a)(2)(D) of the Settlement Act (Public Law 101-618 (Petitioners' Joint Exh. 16)) states that the TROA must "ensure that water is stored in and released from Truckee River facilities to satisfy the exercise of water rights in conformance with *Orr Ditch* Decree and Truckee River General Electric Decree." Additionally, the Settlement Act protects the vested and perfected rights of the users of Truckee River water as provided in Section 210(b)(13) of Public Law 101-618:

> Nothing in this title is intended to affect the power of the *Orr Ditch* court or the *Alpine* court to ensure that the owners of vested and perfected Truckee River water rights receive the amount of water to which they are entitled under the *Orr Ditch* Decree or the *Alpine* Decree. Nothing in this title is intended to alter or conflict with any vested and perfected right of any person or entity to use the water of the Truckee River or its tributaries, including, but not limited to, the rights of landowners within the Newlands Project for delivery of the water of the Truckee River to Derby Dam and for the diversion of such waters at Derby Dam

> pursuant to the *Orr Ditch* Decree or any applicable law. (Petitioners' Joint Exh. 16)

Consistent with the above provisions of the Settlement Act, the TROA makes sure that the owners of vested and perfected Truckee River water rights are protected as provided in Section 1.C.1. of the TROA:

> Nothing in this Agreement shall be construed to (a) affect the power of the *Orr Ditch* Court to ensure that the owners of vested and perfected Truckee River water rights receive the amount of water to which they are entitled under the *Orr Ditch* Decree; or (b) alter or conflict with any vested or perfected right of any Person to use the water of the Truckee River or its tributaries, including, but not limited to, the rights of landowners within the Newlands Project for the delivery of Truckee River water to Derby Dam and for the diversion of such water at Derby Dam pursuant to the *Orr Ditch* Decree or any applicable law. (Petitioners' Joint Exh. 19)

The Truckee River Operating Agreement takes an additional step to protect owners of *Orr Ditch* Decree water rights as provided in Section 1.C.2 of the TROA:

> If the implementation of any provision or provisions of this Agreement would or does result in an owner of an Exercised *Orr Ditch* Decree Water Right not receiving the amount of water to which that owner is legally entitled, the Administrator shall, as soon as practicable, (a) implement a remedy mutually acceptable to affected parties, or (b) make up the amount of water to which the owner of the Exercised *Orr Ditch* Decree Water Right is legally entitled, utilizing water of the Scheduling Party or Scheduling Parties who benefitted as a result of implementation of the provision or provisions of this Agreement which caused such result. (Petitioners' Joint Exh. 19)

Consistent with the above provisions, TROA operations, including storage, releases and exchanges in the Truckee River reservoirs, would not impair or conflict with the exercise of vested or perfected *Orr Ditch* Decree water rights. As also stated in Parts I, II and III of my testimony, accumulation of water by the Pyramid Lake Paiute Tribe in the Truckee River reservoirs under the TROA would be water that would have otherwise flowed to Pyramid Lake. The storage of such water would not interfere with any downstream rights or any owners of vested or perfected Orr Ditch decree rights.

Water Right Applications 31487 and 31488 filed by the United States Bureau of Reclamation and Petitions to Change License 3723 (Application 5169) filed Washoe County Water Conservation District, License 4196 (Application 9247) of Truckee Meadows Water Authority, Permit 11605 (Application 15673) and License 10180 (Application 18006) of the United States Bureau of Reclamation are before the California Water Resources Control Board. Based on the provisions of the TROA, the above water right applications and change petitions will not injure any legal user of water. The above change petitions will not initiate a new water right because

the amount of water to be diverted to storage and the amount of water to be withdrawn from storage will not change under the above permits and licenses. Similarly, the diversion season or the source will not change.

TROA allows the parties to re-store their legally stored water through Exchanges and Trades. All Credit Water will have to bear their proportionate losses (evaporation and conveyance) under the TROA. The proposed water right applications and change petitions provide coordinated use of water through the TROA.

V. Newlands Project Operation Criteria and Procedures (OCAP)

In 1903, the Secretary of the Interior authorized the Newlands Project under the provisions of the Reclamation Act of 1902. The Newlands Reclamation Project supplies water for about 60,000 acres of irrigable land, of which less than 10 percent is in the Truckee Division and over 90 percent is in the Carson Division. The Truckee Canal and Derby Dam were constructed in 1905 to divert Truckee River water to the Newlands Project. Construction of the Lahontan Reservoir on the lower Carson River was completed in 1915. The Truckee Canal extends about 32 miles through the Truckee Division of the Newlands Project to Lahontan Reservoir, located in the Carson Division of the Newlands Project in the Lower Carson River basin. Lahontan Reservoir, with a capacity of about 317,000 acre-feet, captures Carson River inflows. Water for the Carson Division is provided from both the Carson and Truckee Rivers. Truckee River water diverted through the Truckee Canal is supplemental to Carson River water supplied to the Carson Division of the Newlands Project. The Secretary of the Interior transferred the operation and maintenance of the Newlands Project to the Truckee Carson Irrigation District (TCID) in a contract effective December 31, 1926.

1. Claim No. 3

In 1913, to secure water rights for the Newlands Project and Pyramid Lake Indian Reservation, the United States filed a lawsuit in Federal court (*United States v. Orr Water Ditch Company, et al.*), seeking a comprehensive adjudication of all surface water rights on the Truckee River and its tributaries. This resulted in the *Orr Ditch* Decree in 1944. The United States' rights to divert water from the Truckee River for the Newlands Project is defined under Claim No. 3 in the Orr-Ditch decree. The provision under Claim No. 3 states:

> Subject to prior appropriations and vested rights permitted and confirmed by the Act of Congress of July 26, 1866, the plaintiff [United States] is entitled and allowed to divert, with a priority of July 2, 1902, through the Truckee Canal 1,500 cubic feet of water per second flowing in the Truckee River 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 plaintiff [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. (underline added)

The *Orr Ditch* Decree gives the United States the discretion to "control, dispos[e] and regulat[e]" water diverted under Claim No. 3 at Derby Dam, provided that the amount of water applied for the irrigation of bottom lands and bench lands in the Newlands Project shall not exceed 3.5 and 4.5 acre-feet per acre, respectively.

2. 1967 OCAP

In 1964, the Secretary of the Interior formed a task force to study the problems concerning the use of Truckee and Carson River water. The task force recommended, among other things, that every effort should be made to maintain the maximum practicable flow to Pyramid Lake. The task force also recommended operating criteria and procedures which subsequently led to the formulation of the Operating Criteria and Procedures (OCAP) for the Newlands Project. The primary objective of the OCAP was to maximize the use of Carson River water on the Newlands Reclamation Project service area (Carson Division) and minimize diversions from the Truckee River, thus increasing the amount of Truckee River water reaching Pyramid Lake. As a result of the recommendation by the Interior task force in 1964, the Secretary of the Interior established the OCAP to regulate the diversion of water from the Truckee River. The OCAP were first instituted in 1967, and were reinstituted annually through 1972. The 1967 OCAP limited the maximum allowable diversions (MAD) within the Newlands Project to 406,000 acre-feet per year and eliminated the diversion and use of water for winter power generation at Lahontan Dam.

The maximum allowable diversion (MAD) is determined based on: (1) acres of eligible lands anticipated to actually be irrigated during the year; (2) water duties for those lands; and (3) established efficiency of the water distribution system within the Newlands Project. Currently, the MAD amount for the Newlands Project as determined by the Bureau of Reclamation is about 290,000 acre-feet per year.

3. 1973 OCAP

The Pyramid Lake Paiute Tribe expressed concerns that the 1967 OCAP were wasteful and the Secretary had trust responsibilities that were not being met to protect Pyramid Lake and its fishery. The Tribe also claimed that the Secretary was acting in an arbitrary and capricious manner by setting annual operating criteria that permitted excessive diversions of water into the Newlands Project. In 1970, the Pyramid Lake Paiute Tribe sued the Secretary of the Interior in Federal District Court in Washington, D.C. As a result of that litigation (*Pyramid Lake Paiute Tribe v. Morton*, 1973), the federal court ruled that the OCAP then in effect was insufficiently protective of Pyramid Lake and its fishery.

The federal court issued an opinion and an order setting the operating criteria for the Newlands Project. The opinion defined the duties of the Secretary and his trust responsibilities to the Pyramid Lake Paiute Tribe and Pyramid Lake, and defined his responsibility to the Newlands Reclamation Project and its water users. The court limited the MAD within the project to about 288,000 acre-feet per year. The court also stated that, "[i]n satisfying the diversion for agricultural purposes, maximum use will be made of Carson River water and diversions through the Truckee Canal will be minimized." The Secretary issued new OCAP in February 1973 to comply with the court order. The 1973 OCAP imposed stricter limits on diversions from the Truckee River to the Newlands Project than the 1967 OCAP. The Truckee-Carson Irrigation District (TCID) did not comply with the 1973 OCAP and the Secretary attempted to terminate the 1926 operation and maintenance contract with TCID in 1974.

4. 1988 Final OCAP

The *Alpine* Decree adjudicated the rights to the use of water from the Carson River, including Newlands Project lands diverting water from Lahontan Reservoir. Following this 1983 Court decision, the Secretary instituted Interim OCAP for the Newlands Project in 1985, 1986, and 1987. The Secretary formed an OCAP task force in 1987 to develop Final OCAP. Following the NEPA process and publication of the Final EIS on December 24, 1987, the Secretary issued the Record of Decision (ROD) for the 1988 Final OCAP. The Record of Decision states:

> This action provides notice of final decisions made by the Secretary of the Interior concerning Operating Criteria and Procedures (OCAP) for the Newlands Project which specify the diversion and storage of Truckee River and Carson River water through and in Federal facilities, delivery of that water to valid water right holders within the Project, monitoring activities, and compliance procedures to achieve efficient Project operation.

The 1988 OCAP were adjusted in 1997 based on changes in the expected irrigated acreage in the Newlands Project.

5. The Settlement Act, Public Law 101-618

In implementing the OCAP, the Secretary is bound by the trust responsibilities to the Pyramid Lake Paiute Tribe. The Secretary's fiduciary responsibilities towards the Tribe and Pyramid Lake in carrying out the OCAP as set forth in the court decision (*Pyramid Lake Paiute Tribe v. Morton*, 1973) are also emphasized in the Settlement Act. Section 209(j)(1) in Public Law 101-618 states: "Operating Criteria and Procedures. (1) In carrying out the provisions of this title, the Secretary shall act in a manner that is fully consistent with the decision in the case of *Pyramid Lake Paiute Tribe of Indians v. Morton*, 354 F. Supp. 252 (D. D.C. 1973)."

6. Conclusion

The OCAP should be implemented in a manner to carry out the requirements of *Pyramid Lake Paiute Tribe v. Morton* by providing sufficient water to meet eligible decreed rights on the Newlands Project by insuring that water in the Truckee River not needed for those rights flows to Pyramid Lake. Consistent with the purposes of OCAP and *Pyramid Lake Paiute Tribe v. Morton*, maximum use should be made of Carson River water to satisfy the agricultural rights in the Project and diversions of Truckee River water to the Truckee Canal should be minimized.