

Attachment B

Preliminary Settlement Agreement

PRELIMINARY SETTLEMENT AGREEMENT

WHEREAS, on May 23, 1989, the Pyramid Lake Paiute Tribe of Indians (Tribe) and Sierra Pacific Power Company (Sierra) entered into a Preliminary Settlement Agreement, which contemplates the use of federally owned storage reservoirs in the Truckee River Basin in California for storage of the waters available under the described water rights for fishery and municipal and industrial purposes;

WHEREAS, a condition of the effectiveness of the Preliminary Settlement Agreement (see paragraph 29(g) of Article III of the Preliminary Settlement Agreement) is that the United States would become a party to the agreement and accept, approve and become bound by all of its terms and conditions to the same extent as the Tribe; and

WHEREAS, the United States has reviewed the terms and conditions of that Preliminary Settlement Agreement and found them to be generally acceptable.

NOW THEREFORE, the United States by its authorized official, ratifies, confirms and agrees by this instrument to become a party to that Agreement, and, subject to the following clarifications and understandings, accepts, approves, and agrees to be bound by said terms and conditions to the same extent as the Tribe:

A. Attached hereto and incorporated herein as Exhibit A is a clarified and revised Preliminary Settlement Agreement which includes the revisions to be made to that Agreement as a result of this ratification. The United States shall be bound only by the terms of Exhibit A and not by any other version of the Preliminary Settlement Agreement.

B. (1) The United States reserves the right to cancel in full and withdraw this Ratification Agreement if either the Tribe or Sierra attempts to rely upon condition (a) of Section 29 of Article III of the Preliminary Settlement in whole or in part.

(2) The Operating Agreement referred to in paragraph 28(f) of Article III of the Preliminary Settlement Agreement shall be construed to refer to the Operating Agreement, if any, required by Title II of the "Truckee-Carson-Pyramid Lake Water Rights Settlement Act."

(3) As to subsection (j) of Section 29 of Article III of the Preliminary Settlement Agreement, the United States shall not be bound by any of the provisions thereof in any respect unless and until it, through an authorized official, enters into a binding agreement relating to the subject matter thereof, but only to such extent and not otherwise. The discretion of the United States or its officers to enter into any such agreement shall not be impaired or affected in any degree by these provisions, and it shall remain discretionary with the United States as to whether to enter into any such Agreement and which terms such Agreement, if any, shall include, subject to the terms, conditions and limitations of all applicable laws.

C. Sierra Pacific and the Tribe must agree in carrying out the terms and provisions of this Agreement to abide by and comply with all applicable state and federal laws and to abide by all lawful regulations issued by the Secretary.

EXHIBIT "A" PRELIMINARY SETTLEMENT AGREEMENT

THIS AGREEMENT is entered into this 23rd day of May, 1989, between the Pyramid Lake Paiute Tribe of Indians ("Tribe") and Sierra Pacific Power Company ("Sierra").

I. RECITALS

1. The cui-ui (*Chasmistes cuiui*) is officially classified as an endangered species. It is the only pure species remaining in its genus, *Chasmistes*, and is found only in the Pyramid Lake/Lower Truckee River ecosystem in Nevada.

2. The Lahontan cutthroat trout (*Salmo clarki henshawi*) is officially classified as a threatened species. It is found in the Pyramid Lake/Truckee River ecosystem as well as other lakes, streams and rivers in the Great Basin.

3. The Tribe is organized under Section 16 of the Act of June 18, 1934 (25 U.S.C. 476) and governs the Pyramid Lake Indian Reservation which includes Pyramid Lake and a large portion of the Lower Truckee River.

4. The Tribe desires to increase flows in the Lower Truckee River in the spring and early summer months to improve Spawning Flows in the Lower Truckee River for the endangered cui-ui and the threatened Lahontan cutthroat trout.

5. Sierra serves water to the Cities of Reno and Sparks and unincorporated portions of Washoe County and also provides electricity to northern Nevada and portions of east central, California.

6. In addition to its other power generating facilities, Sierra owns and operates four run of the river hydroelectric plants on the Truckee River above Reno. Sierra owns and utilizes water rights for these hydroelectric plants utilizing water which is released from or passed through Lake Tahoe and other Truckee River reservoirs.

7. Sierra owns and utilizes substantial Truckee River water rights to provide water for municipal, industrial and domestic (M&I) purposes within its service area. Sierra also participates with the local governments of Reno, Sparks and Washoe County in an acquisition program approved by the Public Service Commission of Nevada to acquire agricultural water rights in the Truckee River Basin and to change them to M&I purposes.

of Article III of this Agreement and any supplies obtained or developed pursuant to Section 3 of this Agreement, but excluding all of the water sources and supplies described in Section 21 of Article III of this Agreement and 7,500 acre feet of water above the outlet facilities of Independence Lake.

17. "Sierra's Privately Owned Stored Water" means the stored water which Sierra now has or may hereafter acquire the right to use in Donner Lake and Independence Lake.

18. "Sierra's Service Area" means the retail and wholesale certificated boundaries as may be established from time to time by the Public Service Commission of Nevada as the territory in which Sierra is entitled to sell or to distribute water.

19. "Spawning Flows in the Lower Truckee River" means the water which provides suitable conditions for fish passage, maintaining habitat, attracting egg-taking, spawning and/or nursing of cut-throat and/or Lahontan cutthroat trout in the Lower Truckee River.

20. "Stampede Project Water" means the water that is currently captured and impounded in Stampede Reservoir and is released to support Spawning Flows in the Lower Truckee River.

21. "Truckee River Agreement" means the Agreement dated July 1, 1935, which was approved, adopted and incorporated in the Orr Ditch Decree.

22. "Truckee River General Electric Co. Decree" means the Final Decree entered on June 4, 1915 in the case of United States v. Truckee River General Electric Co., No. 14861, in the United States District Court for the Northern District of California which was transferred on February 9, 1968 to the United States District Court for the Eastern District of California and is now designated No. S-843.

23. "Truckee River Reservoirs" means the storage provided by the dam at the outlet of Lake Tahoe, Boca Reservoir, Prosser Creek Reservoir and Stampede Reservoir.

III. AGREEMENT

Section 1. Waiver of Single Purpose Hydroelectric Water. For purposes of this Agreement only, Sierra agrees to waive its rights to require releases or pass throughs of water from the Truckee River Reservoirs solely for the generation of hydroelectric power pursuant to the Truckee River General Electric Co. Decree and Claim Nos. 5, 6, 7, 8 and 9 of the Orr Ditch Decree. The water to which Sierra's rights are waived pursuant to this Section shall become Fishery Credit Water subject to the limitations set forth in Section 27 of Article III of this Agreement and shall be held in storage in the Truckee River Reservoirs and released for the sole use and benefit of the Pyramid Lake Fishery.

Section 2. Water Rights Required for New Service Commitments. Sierra agrees that it will not issue new service commitments unless such commitments are accompanied by such water rights provided directly to Sierra or through a municipal entity as are necessary to meet the new water service requirement. Sierra shall require new service commitments which rely on surface water rights to provide water rights at the rate of not less than 1.72 acre feet of water rights for every acre foot of commitment until such time as Sierra has committed to the

amount of water needed to meet a normal year demand of 80,000 acre feet within Sierra's Service Area. After the amount of water is provided to meet Sierra's normal year commitment of 80,000 acre feet and until such time as Sierra has committed to the amount of water required to meet a normal water year demand of 119,000 acre feet within Sierra's Service Area, the water rights provided to meet new service commitments in reliance upon surface water rights may be reduced to not less than 1 acre foot of water rights for every acre foot of new service commitment; provided, however, that if Sierra is able to develop the water supply referred to in Section 3(b) of Article III of this Agreement, then the ratio of new service commitments in reliance on surface water rights shall be not less than 1.11 acre feet of water rights for every acre foot of new service commitment.

Section 3. Development of Additional M&I Water Supplies. Sierra agrees to use its best efforts to implement the following measures on a schedule to be agreed upon in the operating agreement referred to in Section 29(f) of Article III of this Agreement, to the extent legally, technically and economically feasible, to help meet the water supply demands of its customers as Sierra's total normal year water demand increases to a maximum normal year demand of 119,000 acre feet:

(a) Development of the capacity to pump 2,000 acre feet of water annually from the Sparks pit source under Drought Conditions or Emergency or Repair Conditions;

(b) The right to develop an additional 3,000 acre feet annually of groundwater from the Truckee Meadows groundwater basin (over and above the currently approved 12,616 acre feet of groundwater available from the Truckee Meadows groundwater basin); and

(c) Acquisition and utilization of the right of the Truckee-Carson Irrigation District to store and use water in Donner Lake.

The Tribe and the United States waive any and all rights or claims they may have to object to Sierra's implementation and use of the water supply measures described in this Section or Section 21 of Article III.

The measures described in Sections 3(a) and 3(c) of Article III shall not be included in, and shall be in addition to, the water rights Sierra obtains to meet new service commitments pursuant to Section 2 of Article III of this Agreement.

Section 4. Storage of Firm and Non-Firm M&I Credit Water in Truckee River Reservoirs. Sierra shall have the right to establish Firm and Non-Firm M&I Credit Water by utilizing the Truckee River Reservoirs to store or retain its Privately Owned Stored Water and the consumptive use portion of Former Agricultural Water Rights which are not utilized to supply the demands of its customers in any given year for later use under Drought Conditions or Emergency or Repair Conditions for M&I purposes. Such water may be accumulated in those Reservoirs or may be transferred between those Reservoirs through acre foot for acre foot exchanges. Sierra agrees to use the full extent of the consumptive use portion of its Former Agricultural Water Rights which are not utilized to supply the demands of its customers in any given year to establish Firm or Non-Firm M&I Credit Water pursuant to the terms and conditions of this Agreement.

Section 5. Use of Firm and Non-Firm M&I Credit Water. Sierra may use Firm M&I Credit Water and Non-Firm M&I Credit Water to supply the demands of its customers under Drought Conditions to meet its normal water year demand, up to a maximum of 119,000 acre feet, less the sum of the quantities of water actually

conserved through the implementation of the measures required by Section 29(e) of Article III of this Agreement and the additional water supplies described in Section 3 of Article III of this Agreement and implemented in accordance with the operating agreement described in Section 29(f) of Article III of this Agreement. Sierra also may use Firm M&I Credit Water and Non-Firm M&I Credit Water to meet the demands of its customers under Emergency or Repair Conditions.

Section 6. Calculation of Base Amounts of Firm and Non-Firm M&I Credit Water. The base amount of Firm M&I Credit Water Sierra may store pursuant to Section 4 of Article III of this Agreement shall vary from 2,000 acre feet to 12,000 acre feet in relation to the amount of water needed to satisfy the normal water demand of Sierra's customers as shown on Exhibit "A". The base amount of Non-Firm M&I Credit Water Sierra may store pursuant to Section 4 of Article III of this Agreement shall vary from 4,000 acre feet to 20,000 acre feet in relation to the amount of water needed to satisfy the normal water year demand of Sierra's customers as shown on Exhibit "B" and as the amount of water depleted from the Truckee River, its tributaries and groundwater basins within California increases as shown on Exhibit "C". The amount of Non-Firm M&I Credit Water shown on Exhibit "B" shall be multiplied by the percentage factor shown on Exhibit "C" for the amount of water being depleted in a normal year from the Truckee River, its tributaries and groundwater basins within California at the time the calculation is made. The product so obtained shall be the base amount of Non-Firm M&I Credit Water which Sierra may store pursuant to Section 4 of Article III of this Agreement; provided, however, that the base amount of Non-Firm M&I Credit Water which Sierra may store shall not be less than 4,000 acre feet. Sierra may commence storing Firm and Non-Firm M&I Credit Water pursuant to the provisions of this Agreement when this Agreement becomes effective.

Section 7. Status of M&I Credit Water. All of Sierra's M&I Credit Water stored in Stampede Reservoir at any given time up to the base amount of Firm M&I Credit Water determined in accordance with Section 6 of Article III of this Agreement shall be considered Firm M&I Credit Water and shall have all of the attributes of Firm M&I Credit Water. All of Sierra's remaining M&I Credit Water stored in Stampede Reservoir and all of its M&I Credit Water in other Truckee River Reservoirs shall be considered Non-Firm M&I Credit Water.

Section 8. Annual Adjustment of M&I Credit Water. The amounts of Firm and Non-Firm M&I Credit Water in storage in the Truckee River Reservoirs shall be adjusted once annually not later than April 15 of each year based upon whether or not a Drought Situation exists utilizing the April 1 seasonal runoff forecast. Following that annual adjustment, during the ensuing 12 months and whether or not a Drought Situation exists, Sierra shall have the right to utilize the available space in the Truckee River Reservoirs to store its Privately Owned Stored water and the consumptive use portion of Former Agricultural Water Rights which are not needed to supply the demands of its customers to establish additional amounts of M&I Credit Storage in excess of the base amounts of Firm and Non-Firm M&I Credit Water set forth in Section 6 of Article III of this Agreement.

Section 9. Exchanges to Permit Firm M&I Credit Water to be Stored in Stampede Reservoir and to Avoid Unnecessary Spill or Displacement. The Tribe, the United States and Sierra agree to make exchanges and to take such other measures as are necessary to permit Firm M&I Credit Water to be stored in

Stampede Reservoir up to the base amount determined in accordance with Section 6 of Article III and to insure, to the maximum extent possible, that Firm M&I Credit Water, Non-Firm M&I Credit Water, Fishery Credit Water and Stampede Project Water will be available at the appropriate times and will not be displaced or caused to spill.

Section 10. Storage Priorities - Non-Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation does not exist, the Tribe and the United States agree as follows: (a) that Sierra shall have the first right to store Firm M&I Credit Water in Stampede Reservoir from the following July 1 through December 31 up to the base amount determined in accordance with Section 6 of Article III of this Agreement; (b) that Sierra may displace Fishery Credit Water in Stampede Reservoir and may displace Stampede Project Water from July 1 through the following December 31 of each year to the extent necessary to achieve and not exceed the base amount of Firm M&I Credit Water in storage; and (c) that Sierra may accumulate additional Non-Firm M&I Credit Water in Truckee River Reservoirs other than Stampede Reservoir to the extent Sierra's total Firm M&I Credit Water is less than the base amount of Firm M&I Credit Water determined pursuant to Section 6 of Article III. Such additional Non-Firm M&I Credit Water may displace Fishery Credit Water from July 1 through the following December 31, shall spill or be reduced for precautionary drawdowns after Fishery Credit Water and shall share the net evaporation losses proportionately with any other water in all such reservoirs except Lake Tahoe.

Section 11. Conversion of M&I Credit Water to Fishery Credit Water - Non-Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation does not exist, the amount of Non-Firm M&I Credit Water established in accordance with Section 8 of Article III of this Agreement in excess of the base amount determined in accordance with Section 6 of Article III of this Agreement shall become Fishery Credit Water. Sierra shall have the right to determine and identify the location of the excess Non-Firm M&I Credit Water stored in the Truckee River Reservoirs which shall become Fishery Credit Water.

Section 12. Credit Storage Rules - Non-Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation does not exist, then for the ensuing 12 months, the following rules shall apply: (a) the Fishery Credit water and Non-Firm M&I Credit Water shall share the net evaporation losses proportionately with any other water in Truckee River Reservoirs other than Lake Tahoe; (b) Non-Firm M&I Credit Water shall be the first water to spill from Stampede Reservoir; and (c) except as provided in Section 10 of Article III of this Agreement, Non-Firm M&I Credit Water and Fishery Credit Water shall spill or be reduced for precautionary drawdowns proportionately from all other Truckee River Reservoirs.

Section 13. Displacement of Fishery Credit Water and Stampede Project Water - Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation exists, the Tribe and the United States agree as follows: (a) to allow Sierra to displace Fishery Credit Water in Stampede Reservoir or Stampede Project Water from April 15 to July 1 to the extent necessary to enable Sierra to store up to 6,000 acre feet of the consumptive use portion of Former Agricultural Water Rights; (b) to allow Sierra to displace Fishery Credit Water in Stampede Reservoir or Stampede Project Water from July 1 to the

following April 1 to the extent necessary to enable Sierra to store the base amounts of Firm and Non-Firm M&I Credit Water determined in accordance with Section 6 of Article III of this Agreement, except that for this purpose only the base amount of Non-Firm M&I Credit Water shall not be adjusted by the Exhibit "C" percentage reduction based upon the amount of water depleted from the Truckee River and its tributaries and groundwater basins in California; and (c) to allow Sierra to displace Fishery Credit Water in Truckee River Reservoirs other than Stampede Reservoir to the extent necessary to enable Sierra to increase the amounts of Firm and Non-Firm M&I Credit Water to the maximum extent possible without regard to the limitations of Section 6 of Article III of this Agreement.

Section 14. Carryover of Firm and Non-Firm M&I Credit Storage - Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation exists, Sierra shall have the right to retain and carry over until the following year all of its Firm M&I Credit Water up to the base amount determined in accordance with Section 6 of Article III and all of its Non-Firm M&I Credit Water including the excess Non-Firm M&I Credit Water established in accordance with Sections 8 and 13 of Article III of this Agreement. All such excess Non-Firm M&I Credit Water may be retained and carried over and may continue to be increased pursuant to Sections 8 and 13 of Article III of this Agreement until, based upon a subsequent April 1 seasonal runoff forecast, a Drought Situation no longer exists.

Section 15. Credit Storage Rules - Drought Situation. Whenever, based upon the April 1 seasonal runoff forecast, a Drought Situation exists, for the ensuing 12 months the Fishery Credit Water in all Truckee River Reservoirs in which it is stored shall be the first water to spill or be reduced for precautionary drawdowns. Non-Firm M&I Credit Water and Fishery Credit Water shall share the net evaporation losses proportionately from all Truckee River Reservoirs in which they are stored except Lake Tahoe.

Section 16. Use of Sierra's Privately Owned Stored Water. Sierra's Privately Owned Stored Water may be used to supply the demands of its customers in normal water years, under Drought Conditions and under Emergency or Repair Conditions. Sierra agrees to use all available Donner Lake water and all but 7,500 acre feet of its water above the outlet facilities of Independence Lake before using any Firm M&I or Non-Firm M&I Credit Water or the remaining 7,500 acre feet in Independence Lake to meet the needs of its customers under Drought Conditions or Emergency or Repair Conditions. Except as provided in Section 22 of Article III of this Agreement, all of Sierra's Privately Owned Stored Water that is not carried over or used to meet the demands of its customers in normal water years, under Drought Conditions or under Emergency or Repair Conditions shall be used if legally and physically possible to establish Firm or Non-Firm M&I Credit Water pursuant to the terms and conditions of this Agreement.

Section 17. Sierra to Control Privately Owned Stored Water. The quantities of Firm and Non-Firm M&I Credit Water stored, held and used pursuant to this Agreement shall not include, and shall be in addition to, the quantities of Sierra's Privately Owned Stored Water in Donner Lake and Independence Lake at any given time. Sierra retains the sole right to control and manage Sierra's Privately Owned Stored Water in Donner Lake and Independence Lake subject to all applicable laws, conditions and regulations.

Section 18. Exchange of Fishery Credit Water and Prosser Creek Fishery Water to Enable Storage of M&I Credit Water in Stampede Reservoir. The Tribe and the United States agree to allow exchanges of their rights to store and use Fishery Credit Water and Prosser Creek Fishery Water for Sierra's right to store and use Non-Firm M&I Credit Water so as to enable Sierra to store the maximum amount of its Firm M&I Credit Water and Non-Firm M&I Credit Water in Stampede Reservoir. When releases of Stampede Project Water would otherwise be made, the Tribe and the United States agree to allow exchanges to enable Sierra to create Firm or Non-Firm M&I Credit Water in Stampede Reservoir.

Section 19. Additional Voluntary Exchanges of Credit Water. The Tribe, the United States and Sierra may agree to additional voluntary exchanges involving their respective rights and their Fishery, Firm M&I and Non-Firm M&I Credit Water as they may deem desirable and in furtherance of the objectives of this Agreement.

Section 20. Use of Fishery Credit Water. Subject to the provisions of Section 22 of Article III, all of the Fishery Credit Water established pursuant to this Agreement shall be stored in Truckee River Reservoirs and shall be utilized to provide Spawning Flows in the Lower Truckee River.

Section 21. Additional Water - Worse Than Critical Drought Period. To meet the demands of its customers in the event of water supply conditions which are worse than those experienced during the Critical Drought Period, after exhausting Sierra's Normal Water Supplies, the 7,500 acre feet of water above the outlet facilities of Independence Lake to the extent permissible under then applicable law, and all Firm and Non-Firm M&I Credit Water, Sierra shall have the right to obtain sufficient water to meet its normal year water demand, up to a maximum of 119,000 acre feet, less the sum of the quantities of water conserved through the implementation of Section 29(e) of Article III of this Agreement and the additional water supplies described in Section 3 of this Agreement, from the following sources in the following order:

(a) Pump up to 5,000 acre feet of water from below the outlet works of Independence Lake to the extent permitted after making all necessary applications for such use; provided that if such water is not made available at the time required to satisfy the demands of Sierra's customers, Sierra may utilize the water supplies available in Section 21(b) of Article III of this Agreement to the extent required;

(b) Utilize as necessary a maximum of 7,500 acre feet of Fishery Credit Water in Stampede Reservoir; and

(c) Pump water from Lake Tahoe in accordance with, and to the extent permissible under, then applicable law.

Section 22. Establishment of Fishery Credit Water for Worse Than Critical Drought Period. As soon as practicable after this Agreement becomes effective, the Tribe and the United States agree to take all measures necessary to provide and hold in Stampede Reservoir the 7,500 acre feet of Fishery Credit Water referred to in Section 21(b) of Article III of this Agreement subject to the same terms and conditions as Firm M&I Credit Water utilizing the first Fishery Credit Water obtained pursuant to Section 11 of Article III of this Agreement. Once the 7,500 acre feet is in storage, it shall not be used for the benefit of the Pyramid Lake Fishery, and spill and evaporation losses and minimum instream flow requirements shall not be charged against it unless it is the only water in Stampede Reservoir.

Sierra may, at its option, fill the 7,600 acre feet provided in Section 21(b) of Article III directly from Sierra's Privately Owned Stored Water. Any of the water referred to in Section 21(b) of Article III that is used by Sierra shall be replaced by the Tribe and the United States as soon as practicable.

Section 23. Credit Water To Have Attributes of Privately Owned Stored Water. All Fishery Credit Water and Firm and Non-Firm M&I Credit Water stored pursuant to this Agreement shall have all the attributes of privately owned stored water under the Truckee River Agreement.

Section 24. Development of Additional M&I Water Supplies Above 119,000 Acre Feet of Demand. Sierra may obtain additional supplies of water to meet the demands of its customers above 119,000 acre feet per year, either after normal demand reaches 119,000 acre feet or prior thereto, through: (i) the acquisition of water rights in addition to those provided under Sections 2 and 3 of Article III of this Agreement; (ii) the utilization of water from hydrologic basins outside the Truckee River Basin; (iii) the development of Truckee River groundwater basins in Nevada beyond the 15,816 acre foot supply referenced in Section 3 of Article III of this Agreement to the extent that Sierra has added customers through expansion of the boundaries of its Service Area and acquired a water supply adequate to meet full demands of the new Service Area both in normal water years and during Drought Conditions; and (iv) the implementation of other measures. Any supplies developed pursuant to this Section shall not adversely affect the rights secured to the Tribe or the United States under this Agreement, any right of the Tribe or the United States to the Remaining Waters of the Truckee River, any rights secured to the Tribe or the United States under the settlement legislation which may be enacted by the Congress, or any other rights that the United States or the Tribe may claim. Such supplies must also comply with such state, local and federal permits and approvals as may be required under the then existing and applicable laws, rules and regulations. Provided, however, that the water supplies made available to Sierra pursuant to other Sections of this Agreement may only be used to the extent provided in Sections 5, 18 and 21 of Article III of this Agreement.

Section 25. Use of Water Outside Truckee River Basin. Sierra may utilize outside of the Truckee River Basin any of its existing Truckee River water rights or any such rights that it may acquire in the future. For any use of water outside the Truckee River Basin, except the approximately 3,000 acre feet of water committed to the Stead, Silver Lake and Golden Valley areas prior to the date of this Agreement, additional water rights shall be acquired in order to insure that return flows to the Truckee River are no less than they would have been if the water had been used in the Truckee River Basin.

Section 26. Additional Measures to Carry Out Agreement. Sierra, the United States and the Tribe agree to do those things as may be reasonably necessary to carry out the terms and conditions of this Agreement.

Section 27. Protection of Existing Perfected Rights. Nothing in this Agreement shall be construed to:

(a) Alter or conflict with any recognized and perfected right of any other person or entity to use the waters of the Truckee River or its tributaries including, but not limited to, the rights of landowners within the Newlands Project for delivery of the waters of the Truckee River to Derby Dam and for diversion of such waters at Derby Dam pursuant to the Orr Ditch Decree or any applicable law;

(b) Affect the right of Sierra to acquire and use for M&I purposes in accordance with this Agreement any recognized and perfected rights to waters of the Truckee River or its tributaries held by any person or entity;

(c) Affect Sierra's right to generate power at its hydroelectric plants on the Truckee River with any water rights it has or may acquire other than the rights to require releases of water from the Truckee River Reservoirs solely for hydroelectric power generation which are waived pursuant to Section 1 of Article III of this Agreement;

(d) Affect the quantity of water that is retained or carried over in storage in, or released from, the Truckee River Reservoirs pursuant to the Orr Ditch Decree and the Truckee River Agreement to satisfy the non-hydroelectric water rights recognized in the Orr Ditch Decree except for the consumptive use portion of Former Agricultural Water Rights which may be stored pursuant to the provisions of this Agreement;

(e) Affect the operation of any Truckee River Reservoirs to satisfy any applicable dam safety or flood control requirements;

(f) Affect the implementation of the Tahoe-Prosser Exchange Agreement of June 15, 1959;

(g) Result in an abandonment or forfeiture of the water rights of any party hereto; or

(h) Evidence any intention of any party hereto to abandon or forfeit any water rights.

Section 28. Water Master May Require Releases of Credit Water to Protect Existing Perfected Rights. Nothing in this Agreement is intended to affect the power of the Orr Ditch Court and the Water Master under the administrative provisions of the Orr Ditch Decree to ensure that the owners of the recognized and perfected Truckee River water rights receive the amount of water to which they are entitled under the Orr Ditch Decree. To the extent that implementation of this Agreement results in owners not receiving the amount of water to which they are legally entitled under the Orr Ditch Decree, the United States, the Tribe and Sierra Pacific agree that the owners' water will be made up through releases of water stored in Truckee River Reservoirs pursuant to this Agreement utilizing the water of the party or parties benefitting from such storage.

Section 29. Conditions for Agreement to be Effective and Operative. The provisions of this Agreement shall not take effect and this Agreement shall not be operative unless and until each of the following has occurred:

(a) The Congress of the United States has enacted, and the President of the United States has signed, Pyramid Lake and Truckee River settlement legislation whose terms and provisions are satisfactory to the Tribe and Sierra;

(b) The Legislature of Nevada has enacted, and the Governor of Nevada has signed, legislation which repeals or substantially modifies N.R.S. 704.230 to permit installation of water meters on all old and new residences within Sierra's Service Area, excluding existing unmetered apartments and condominium units or complexes which have all outdoor irrigation use metered, and to permit water rates based on the amount of water delivered to each customer;

(c) A plan for financing and installing water meters in Sierra's Service Area has received required governmental approvals and there are no foreseeable obstacles to its implementation;

(d) Sierra has proposed, and the Nevada Public Service Commission has approved, an inverted block water rate structure which provides financial incentives for the conservation of water by Sierra's residential customers;

(e) All required governmental approvals have been obtained for a mandatory water conservation plan designed to produce annual water savings of 10 percent or more during the ensuing year whenever it appears, based on the April 1 seasonal Truckee River runoff forecast, that a Drought Situation exists;

(f) An operating agreement has been executed at least by the United States, the Tribe and Sierra whose provisions include: (i) all of the necessary details required for the administration and implementation of this Agreement; and (ii) the consequences in the event that any provisions of this Agreement cannot be fulfilled for reasons that are beyond the control of the parties hereto such as, by way of example, final outcomes of administrative proceedings or litigation involving other parties which are not consistent with the terms or conditions of this Agreement;

(g) The United States becomes a party to this Agreement and accepts, approves and becomes bound by all of its terms and conditions to the same extent as the Tribe;

(h) All contracts and governmental approvals required to carry out the terms and provisions of this Agreement and the operating agreement, including, without limitation, contracts for the use of space in Truckee River Reservoirs for purposes of storing and exchanging water as provided in this Agreement have been executed;

(i) This Agreement and the operating agreement referred to in subsection (f) above have been submitted to the Court in United States v. Orr Water Ditch Co., Equity No. A-3, (D.Nev.), and by the Court in United States v. Truckee River General Electric Company, Civil No. 14861 (now S-643) (E.D. Cal.), and found to be consistent with those Decrees or is otherwise approved.

(j) Sierra and the United States have reached agreement on: (i) the compensation Sierra shall pay to the United States for the right to use the storage capacity in the Truckee River Reservoirs; (ii) arrangements to compensate Sierra for the reduction in the amount of hydroelectric power generated at its four run of the river hydroelectric plants on the Truckee River above Reno which will result from the implementation of this Agreement; and (iii) indemnification with respect to water damage resulting from the operation of the dam and controlling works at the outlet of Lake Tahoe; and

(k) All pending litigation or the portions of pending litigation involving the Tribe, Sierra and the United States have been resolved to their mutual satisfaction.

At an appropriate time, the Tribe the United States and Sierra agree to execute a written document which shall either confirm or deny that the conditions set forth in this Section have been satisfied.

Section 30. Notices. All notices and other communications required or permitted to be given by this Agreement must be in writing and will be deemed given on the day when delivered in person or on the third business day after the day on which mailed from within the United States of America by certified or registered mail, return receipt requested, postage prepaid, addressed as follows:

If to the Tribe:	Pyramid Lake Paiute Tribal Chairman P.O. Box 266 Nixon, Nevada 89424
If to Sierra:	Philip G. Sege Senior Vice President Sierra Pacific Power Company P.O. Box 10100 Reno, Nevada 89520
If to United States:	Lahontan Basin Project Manager P.O. Box 640 705 North Plaza Carson City, Nevada 89702

or to such other place as either party may from time to time designate in a written notice to the other.

Section 31. Captions For Convenience Only. The captions of the Sections of this Agreement are for convenience only and shall not in any way affect the construction of the terms and conditions of this Agreement.

Section 32. Entire Agreement. This Agreement contains the entire agreement between the parties hereto and there are no promises, agreements, conditions, undertakings, warranties, or representations, oral or written, express or implied, between them other than as herein set forth. No change or modification of this Agreement or of any of the provisions hereof shall be valid or effective unless the same is in writing and signed by the parties hereto. No alleged or contended waiver of any of the provisions of this Agreement shall be valid or effective unless signed in writing by the party against whom it is sought to be enforced.

EXHIBIT A

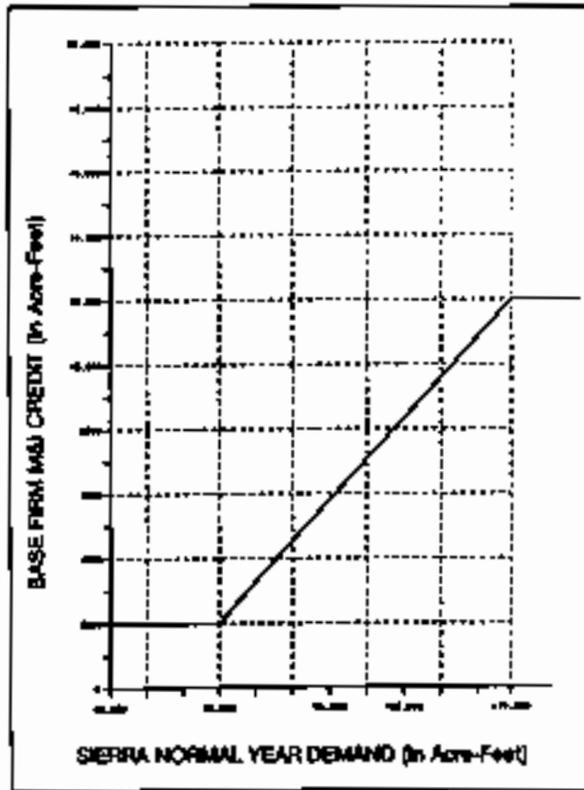


EXHIBIT B

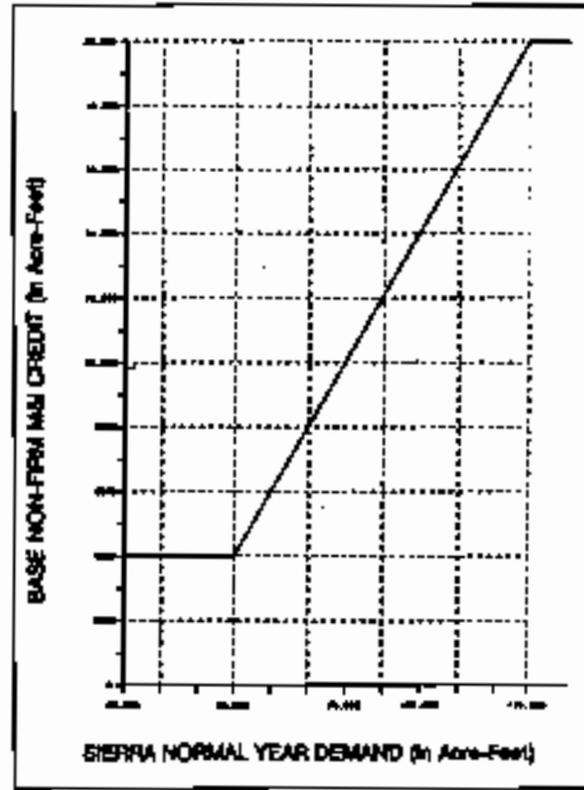
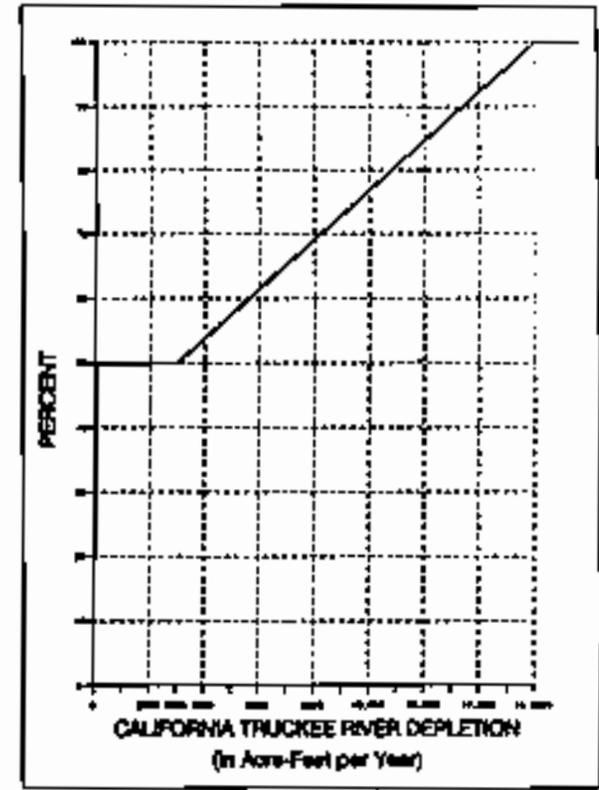


EXHIBIT C



Attachment C

TROA EIS/EIR Planning Assumptions –
Letter from Truckee Meadows Water Authority
Dated March 12, 2003



P.O. Box 31611, Reno, Nevada 89520-9111

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12 March 2003

Tom Streckal, Bureau of Indian Affairs
Western Nevada Agency
1677 Hot Springs Road
Carson City, NV 89706

RE: TROA EIS/EIR Planning Assumptions

Dear Tom:

This letter describes local planning and facility assumptions to be used for the Truckee River Operating Agreement (TROA) EIS/EIR. The local governmental entities preparing this letter are responsible for land use, water supply, and wastewater planning and implementation of TROA water supply to be used by the Truckee Meadows Water Authority (TMWA) the successor to the water division of Sierra Pacific Power Company. Three of these entities, Reno, Sparks and Washoe County, are also parties to the Truckee River Water Quality Settlement Agreement (WQSA). Collectively, the undersigned agencies have the responsibility for all of these issues in the Washoe County area and recommend that the following assumptions should be relied upon when developing the EIS/EIR for TROA. This letter describes general conditions applicable to all of the alternatives. It also provides our recommendations concerning water supply and wastewater assumptions to include in the Local Water Supply Alternative (LWSA), as the likely future case without TROA, and the No Action Alternative (NAA).

Population and Water Demand Projections

The population forecast for Washoe County and the TMWA wholesale and retail service areas is presented in the following table along with the TMWA water demand forecast. These forecasts have been developed by TMWA and are incorporated into its November 5, 2002 draft 2005-2025 Water Resource Plan. TMWA will continue to serve much of the growth in Washoe County directly or through its various wholesale arrangements, including utilities managed by Washoe County. The wholesale areas served by TMWA are a combination of systems, some of which are solely supplied by TMWA and others use multiple resources to supply their customers.

Washoe County and TMWA Population Forecast and TMWA Water Demand Forecast

Year	Washoe County Population (persons)	Retail and Wholesale TMWA Service Area Population (persons)	TMWA Water Demand (AF/Year)
2000	339,466	284,147	82,173
2001	347,391	290,763	84,017
2002	355,390	297,458	86,055
2003	363,385	304,150	87,451
2004	370,443	310,058	87,674
2005	377,049	315,587	87,928
2006	383,618	321,085	88,305
2007	390,067	326,483	88,810
2008	396,486	331,855	89,438
2009	402,872	337,201	90,159
2010	409,152	342,457	90,975
2011	415,291	347,595	91,773
2012	421,266	352,596	93,266
2013	427,075	357,458	94,724
2014	432,730	362,192	96,148
2015	438,233	366,798	97,541
2016	443,581	371,273	98,902
2017	448,767	375,614	100,230
2018	453,862	379,879	101,537
2019	458,885	384,083	102,828
2020	463,838	388,229	104,106
2021	468,724	392,318	105,370
2022	473,540	396,349	106,620
2023	478,280	400,316	107,855
2024	482,939	404,216	109,073
2025	487,515	408,046	110,273
2026	492,739	412,419	111,455
2027	497,880	416,721	112,617
2028	502,932	420,950	113,769
2029	507,897	425,101	114,882
2030	512,756	429,172	115,982
2031	517,521	433,160	117,060
2032	522,182	437,062	118,115
2033	526,737	440,874	119,145
2034	531,181	444,594	120,150
2035	535,512	448,219	121,130
2036	539,725	451,745	122,083
2037	543,818	455,171	123,008
2038	547,786	458,493	123,906
2039	551,628	461,708	124,775
2040	555,339	464,814	125,615

The population estimates through 2022 are based upon an econometric model of Washoe County employment with the addition of a constraint upon the availability of developable land. The water demand projections are based upon estimated residential, commercial and industrial development that would correspond to the population and employment projections, using current consumption rates. Adjustments to consumption rates include conservative estimates of water savings to be achieved from conservation measures and water metering. The population and demand estimation procedure is more fully described in the TMWA resource plan that will be published later this year. Following 2022, the population and demand projections are linearly extrapolated.

Recommended Planning Horizon for EIS/EIR

In accordance with the Preliminary Settlement Agreement (PSA) and TROA, the planning horizon applicable for study of the "full implementation" investigations in the TROA EIS/EIR is the year when the projected development and population place a demand upon TMWA's normal-year water supply, as defined in TROA, of 119,000 acre-feet per year. This planning horizon is appropriate for both the TROA and non-TROA conditions. Similar levels of non-drought water conservation are envisioned under both TROA and non-TROA conditions. The TROA Alternative, NAA and LWSA share the same population and demand projection. The alternatives may have differing abilities to meet the projected demands as described later in this letter.

Based upon these population and water demand projections, the planning horizon for the TROA EIS/EIR is approximately the year 2033. The Washoe County population and employment not served by the TMWA retail and wholesale water supply will be served by other water resources and wastewater facilities. The population, land use and employment, and the corresponding water supply and wastewater management for these non-TMWA served areas are not anticipated to vary between the EIS/EIR alternatives.

Wastewater Quantity

Of the 119,000 acre-feet/year of water supply projected to be provided by TMWA to its wholesale and retail service area in the year 2033 (the planning horizon for the EIR/EIS as recommended above), the effluent associated with 3,000 acre-feet of demand to serve a portion of the North Valleys area (outside the Truckee River basin) is not required to be returned to the Truckee River basin. Such 3,000 acre-feet of North Valley's export of water is expected to be approximately the same under each of the alternatives in the EIS/EIR (TROA, LWSA, and NAA) and not subject to any return flow requirements.

Treated wastewater associated with the remaining 116,000 acre-feet of Truckee basin water consumption is estimated as 48% of water supply for all EIS/EIR

alternatives based upon the 10-year (1992-2001) average ratio of effluent to supply. This assumption results in the following:

$$\text{Annual Effluent Quantity} = 48\% \text{ of } 116,000 \text{ ac-ft} = 55,680 \text{ ac-ft/year}$$

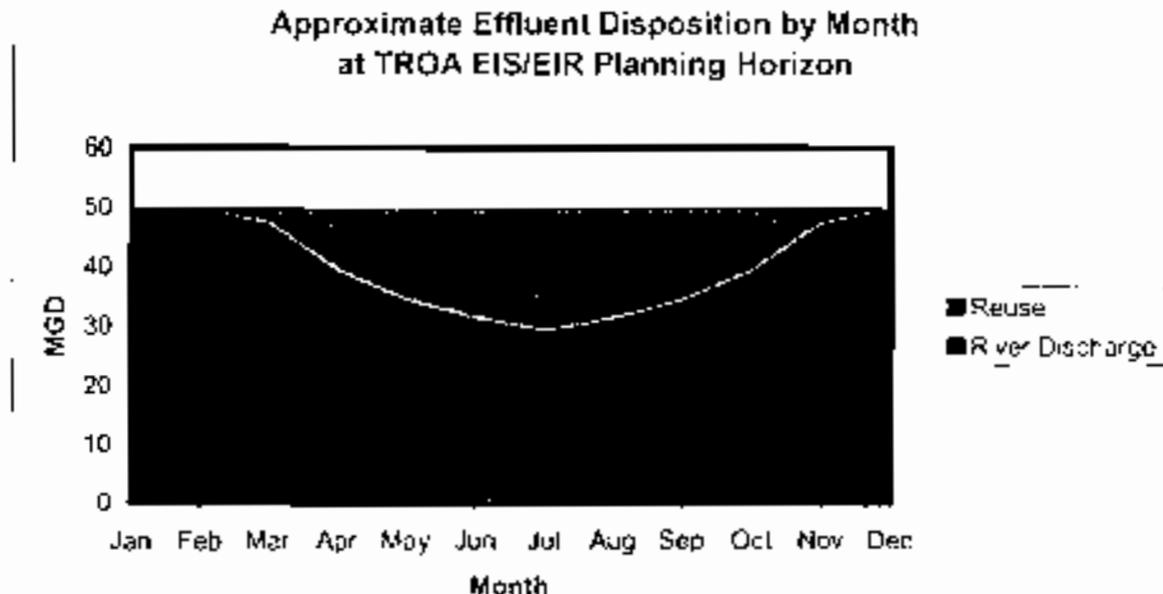
Wastewater Discharge to Truckee River and Reuse

Pursuant to relevant Nevada State Engineer's rulings and other agreements, wastewater effluent generated from the use of groundwater is not required to be returned to the Truckee River under the TROA, LWSA or NAA alternatives. However, pursuant to 1.F. 4 of TROA, the Pyramid Lake Paiute Tribe ("PLPT") has reserved its rights to object to the use of groundwater for effluent reuse; if PLPT were successful in its protest of the use of groundwater for effluent reuse by requiring return flow, then the 6700 acre feet of additional water quality water provided under TROA (as described on the next page) would not be used as water quality water, but instead would be part of the flow in the river available to all downstream users.

Based upon 48 percent of the 15,950 acre-feet of groundwater pumping by TMWA, 7,656 acre-feet of effluent is attributable to the use of TMWA groundwater rights and may be reused without providing return flows to the Truckee River.

The present discharge permit for the Truckee Meadows Water Reclamation Facility (TMWRF) allows a monthly average of 40 mgd of effluent to be discharged to the Truckee River. Assuming a constant daily discharge throughout the year for volume calculation purposes, this is equivalent to 44,800 acre-feet per year. Operationally, the TMWRF discharge to the Truckee River is assumed to be approximately 29 to 32 mgd in the summer months and 49.7 mgd in the winter months. The 10,880 acre-feet (55,680 less 44,800) of the effluent not discharged to the Truckee River will be used for landscape irrigation (such as parks, road medians, and golf courses) and agricultural irrigation (such as the UNR experiment station) in the Truckee Meadows and Spanish Springs Valley areas during the irrigation season. The 44,800 acre-foot portion of the effluent not used to meet reuse demands will be discharged to the Truckee River.

The following graph is an approximate representation of the monthly disposition of the wastewater effluent associated with the retail and wholesale water supply provided by TMWA in 2033. River discharge of effluent originating from the TMWA water supply is anticipated to only occur from TMWRF. Effluent reuse will be provided by multiple facilities, including TMWRF.



It is assumed the portion of the effluent reuse that is not associated with the groundwater component of the TMWA water supply (under each of the EIS/EIR alternatives) will require return flow water rights to be acquired and left in the Truckee River to be available to serve downstream water rights. This quantity can be determined as follows assuming a year-round constant discharge:

Annual effluent quantity	55,680 acre-feet
Less 40 mgd river discharge	- 44,800 acre-feet
Total amount of effluent reuse	= 10,880 acre-feet
Less groundwater component	- 7,656 acre-feet
Surface water component of reuse water	= 3,224 acre-feet

The 3,224 acre-feet of reuse is to be replaced by an assumed (1 for 1) acquisition of Truckee Meadows water rights in each of the EIS/EIR alternatives. In normal years these replacement water rights will remain in the river and are not required to be stored under any of the alternatives. In dry years, no replacement water is required for effluent reuse because credit water and POSW, which do not require return flow, are used to support water supplies to meet demands. As part of TROA, Reno/Sparks/Washoe County will acquire an additional 6,700 acre-feet of Truckee Meadows water rights to be managed for water quality under the provisions of the WQSA. Under LWSA and NAA, Reno/Sparks/Washoe County would not acquire 6,700 acre feet of Truckee Meadows water rights.

Water Right Acquisition to Serve TMWA Water Demands

Under TROA, approximately 93,550 acre-feet of irrigation water rights (referred to as "changed diversion rights" in TROA) will be needed to meet a TROA planning horizon demand of 119,000 acre-feet. This amount of acquired and transferred irrigation right is in conformance with TROA Sections 4.B.2, 4.B.3, and 4.B.4. The 93,550 acre-feet include an estimate that between June 30, 2002, and October 20, 2004, approximately 438 acre-feet of irrigation right acquisition will be associated with the Section 4.B.2(a) temporary suspension of the 0.11 acre-foot requirement.

In accordance with the 1989 statutes of Nevada, Chapter 617 ("AB 900"), water rights held by TMWA that are associated with a reduction in customer demand that may result from implementation of the residential water meter retrofit program under TROA cannot be allocated to normal year water service for future customers. Under non-TROA conditions (LWSA and NAA), it is anticipated that the TROA Section 4.B.2(b) requirement to acquire the 0.11 acre-foot component would not be continued when making commitments for new water service. Since the provisions of TROA and AB 900 would not be implemented under LWSA and NAA, conserved resources can be utilized to provide water for additional customers without providing additional water rights.

For these two reasons, LWSA and NAA will require fewer irrigation water rights to be acquired than the TROA alternative. LWSA requires 83,030 acre-feet of irrigation water rights to be acquired and transferred to M&I use by TMWA.

Under each of the alternatives, the water rights acquisitions will be implemented through developer dedications to TMWA or to Washoe County for the benefit of TMWA. The acquired water rights will be derived from a mixture of existing decreed agricultural water rights in the Truckee Meadows, Verdi, Spanish Springs and Tracy areas that may or may not be attached to water righted land. The proportions of water rights from each basin and their present uses will be determined by developer choices in the market place and are not expected to vary among the alternatives.

Presently, TMWA holds and has commitments against 51,206 acre-foot of acquired irrigation rights for the service of its current commitments of 87,173 acre-feet. It also holds 5,970 acre-feet of water rights in reserve for projects that have not yet received "will serve" letters. In each of the alternatives, the TMWA reserved water rights plus developer dedications will be used to reach the respective total irrigation water rights quantities stated in the first and third paragraphs of this section. Because TROA Sections 4.B.3 and 4.B.4 do not apply to NAA and LWSA, water rights associated with such TROA provisions and held by TMWA would be used to develop other drought supply alternatives to meet normal and dry-year water service demands for future customers under NAA and LWSA.

TMWA Water Supply Assumptions

For each alternative, the EIS/EIR operation studies may vary slightly in terms of monthly quantities and timing in the tables that appear in following sections of this letter. Such variations may result from different assumptions regarding water demand and water supply (such as Newlands Project demand, cui-ui operation, etc. that are not yet fully identified and scheduled) that will be used when the EIS/EIR operation studies are conducted.

TROA Alternative

It is assumed under TROA that TMWA's water supplies will also include:

- o Acquisition of TCID's share of Donner Lake
- o TROA credit storage (the Interim Contract is superceded)
- o Groundwater pumping up to 15,950 acre-feet in a year.

Previous investigations assumed that during dry years the TMWA conservation programs would reduce water demand by 10 percent below the normal year demand. However, since the previous EIS/EIR investigations, a normal year conservation program has been developed, approved and is being implemented. This program satisfies the 10 percent conservation commitment included in the Preliminary Settlement Agreement. Because such normal year conservation is greater than previously assumed, it is realistic to assume that dry-year conservation under TROA can be somewhat less than an additional 10 percent. For these studies it is recommended that dry-year conservation range between one percent during the winter and seven percent during the summer. This provides an annual dry-year conservation of less than five percent.

TMWA's demand will be supplied during normal water supply years utilizing 12,570 acre-feet of groundwater pumping, Hunter Creek Orr Ditch decree based diversion rights and Truckee River Orr Ditch decree based diversion rights. During a typical normal year, the TMWA water demand will be served approximately as shown in the following tabulation.

TROA EIS/EIR Planning Assumptions

March 12, 2003

Page 8 of 16

TROA Alternative – TMWA Normal-Year Water Supplies to Serve Customer Demand
(units in acre-feet)

	Groundwtr Pumping	Groundwtr Recharge Pumping	Hunter Creek	40 cfs M&I Right	Supply From Acquired Irrigation Rights	POSW	Credit Storage	TOTAL SUPPLY
	---a---	---b---	---c---	---d---	---e---	---f---	g---	---h---
Jan	0	0	350	2,430	3,710	0	0	6,490
Feb	0	0	330	2,220	3,540	0	0	6,090
Mar	0	0	360	2,430	3,930	0	0	6,720
Apr	0	0	510	2,360	6,090	0	0	8,960
May	920	0	750	2,430	8,110	0	0	12,210
Jun	1,800	0	600	2,360	9,070	0	0	13,920
Jul	3,700	0	560	2,430	8,760	0	0	15,450
Aug	3,770	0	420	2,430	8,670	0	0	15,290
Sep	1,830	0	330	2,360	7,480	0	0	12,000
Oct	550	0	340	2,430	5,520	0	0	8,840
Nov	0	0	320	2,360	3,850	0	0	6,540
Dec	0	0	300	2,430	3,760	0	0	6,490
Total	12,570	0	5,260	28,670	72,500	0	0	119,000

During a year when the Truckee River is unable to provide Floriston Rates the entire year, TMWA's customers' demands will be reduced by as much as 5,280 acre-feet of dry-year conservation measures. The normal year sources of supply will be supplemented by pumping additional groundwater, release of Privately Owned Stored Water (POSW) from Donner and Independence Lakes and release of TMWA's M&I Credit. Dry-year TMWA supply and conservation will be approximately as shown in the following tabulation.

TROA Alternative – TMWA Dry-Year Water Supplies to Serve Customer Demand
 (units in acre-feet)

	Groundwtr Pumping	Groundwtr Recharge Pumping	Hunter Creek	40 cfs M&I Right	Supply From Acquired Irrigation Rights	POSW	Credit Storage	TOTAL SUPPLY
	---a---	---b---	---c---	---d---	---e---	---f---	---g---	---h---
Jan	0	0	250	2,430	3,740	0	0	6,420
Feb	0	0	230	2,220	3,580	0	0	6,030
Mar	0	0	250	2,430	3,970	0	0	6,650
Apr	0	0	230	2,360	6,190	0	0	8,780
May	920	0	320	2,430	8,160	0	0	11,830
Jun	2,060	0	290	2,360	2,090	330	5,960	13,090
Jul	4,570	0	200	2,430	440	250	6,480	14,370
Aug	4,660	0	150	2,430	450	200	6,330	14,220
Sep	2,770	0	150	2,360	330	3,060	2,620	11,290
Oct	970	0	190	2,430	980	120	3,710	8,400
Nov	0	0	180	2,360	2,050	230	1,400	6,220
Dec	0	0	140	2,430	3,850	0	0	6,420
Total	15,950	0	2,580	28,670	35,830	4,190	26,500	113,720*

* The total demand of 119,000 acre-feet is reduced by 5,280 acre-feet as a result of dry-year conservation (113,720 + 5,280 = 119,000).

Local Water Supply Alternative (LWSA)

LWSA assumes that additional water supplies are acquired or developed which will substitute for most or all of the water supply provided by TROA credit storage. The development of these new resources would be the most probable approach to providing a non-TROA water supply. It is assumed under LWSA that TMWA's current surface water supplies will also be augmented by:

- o Continuation and renewal of the Interim Contract for storage in Stampede and Boca at the full 5000 acre-foot amount.
- o Groundwater pumping up to 22,000 acre-feet in a year under the Truckee Meadows Groundwater Banking Order.
- o Implementation of an artificial recharge project (described below) to increase firm drought year supply.

TMWA's demand during normal water supply years will be supplied utilizing 12,570 acre-feet per year of groundwater pumping from the Truckee Meadows under the current program for pumping of Truckee Meadows groundwater.

The artificial recharge project is estimated to recharge 1,000 acre-feet each year using well injection in the Truckee Meadows. During recent years, TMWA has

developed and improved its recharge program to obtain annual recharged amounts of 780 acre feet (1999), 1,720 acre-feet (2000) and 3,080 acre-feet (2001). During January through March of 2002, 1,920 acre-feet were recharged and TMWA expects to recharge another 1,000 to 1,500 acre-feet during November and December, resulting in annual recharge between 3,000 and 3,500 acre-feet during 2002. Thus, a program that recharges an average of 1,000 acre-feet each year between the months of November through March is well within TMWA's present capability. TMWA currently has State Engineer approval for underground injection, but the application and subsequent State Engineer approval to increase withdrawal of approximately 4,500 acre-feet groundwater above 22,000 acre-feet has yet to occur.

During a normal year, TMWA water demands will be served approximately as shown in the following tabulation.

LWSA Alternative - TMWA Normal-Year Water Supplies to Serve Customer Demand
 (units in acre-feet)

	Groundwtr Pumping	Groundwtr Recharge Pumping	Hunter Creek	40 cfs M&I Right	Supply From Acquired Irrigation Rights	POSW	Credit Storage	TOTAL SUPPLY
	---a---	---b---	---c---	---d---	---e---	---f---	---g---	---h---
Jan	0	0	350	2,430	3,710	0	0	6,490
Feb	0	0	330	2,220	3,540	0	0	6,090
Mar	0	0	360	2,430	3,930	0	0	6,720
Apr	0	0	510	2,360	6,090	0	0	8,960
May	920	0	750	2,430	8,110	0	0	12,210
Jun	1,800	0	690	2,360	9,070	0	0	13,920
Jul	3,700	0	560	2,430	8,760	0	0	15,450
Aug	3,770	0	420	2,430	8,670	0	0	15,290
Sep	1,830	0	330	2,360	7,480	0	0	12,000
Oct	550	0	340	2,430	5,520	0	0	8,840
Nov	0	0	320	2,360	3,860	0	0	6,540
Dec	0	0	300	2,430	3,760	0	0	6,490
Total	12,570	0	5,260	28,670	72,500	0	0	119,000

During a year when the Truckee River is unable to provide Floriston Rates the entire year, TMWA's supply to its water customers will be reduced by as much as 5,630 acre-feet by dry-year conservation measures. The normal year sources of supply will be supplemented by pumping additional groundwater from the Truckee Meadows. Pumping will increase to approximately 26,500 acre-feet, of which up to 22,000 will be associated with Truckee Meadows groundwater pumping in the State Engineer's existing order and approximately 4,500 acre-feet will be associated with the groundwater recharge program.

LWSA Alternative TMWA Dry-Year Water Supplies to Serve Customer Demand
(units in acre-feet)

	Groundwtr Pumping	Groundwtr Recharge Pumping	Hunter Creek	40 cfs M&I Right	Supply From Acquired Irrigation Rights	POSW	Credit Storage	TOTAL SUPPLY
	---a---	---b---	---c---	d	e	---f---	---g---	---h---
Jan	0	0	250	2,430	3,620	0	110	6,410
Feb	0	0	230	2,220	3,640	0	0	6,090
Mar	0	0	250	2,430	4,040	0	0	6,720
Apr	0	0	230	2,360	6,370	0	0	8,960
May	920	0	320	2,430	8,530	0	0	12,200
Jun	1,900	290	290	2,360	1,530	6,400	0	12,770
Jul	5,360	1,110	200	2,430	10	2,610	2,320	14,040
Aug	5,410	1,100	150	2,430	380	450	3,950	13,870
Sep	5,240	1,050	150	2,360	430	680	1,000	10,910
Oct	3,100	900	190	2,430	1,740	10	0	8,370
Nov	0	0	180	2,360	4,000	0	0	6,540
Dec	0	0	140	2,430	3,920	0	0	6,490
Total	21,930	4,450	2,580	28,670	38,210	10,150	7,380	113,370*

* The total demand of 119,000 acre-feet is reduced by 5,630 acre-feet as a result of drought year conservation ($113,370 + 5,630 = 119,000$)

No Action Alternative

NAA assumes that TMWA is unsuccessful in its attempts to obtain additional water supplies through TROA or LWSA. Under NAA it is assumed TMWA's current surface water supplies will also be augmented by:

- o Continuation and renewal of the Interim Contract for storage in Stampede and Boca at the full 5000 acre-foot amount.
- o Groundwater pumping up to 22,000 acre-feet in a year under the Truckee Meadows Groundwater Banking Order.

TMWA's demand will be supplied during normal water supply years utilizing 12,570 acre-feet of groundwater pumping, Hunter Creek Orr Ditch decree based diversion rights and Truckee River Orr Ditch decree based diversion rights. During a typical normal year, the TMWA water demand will be served approximately as shown in the following tabulation.

NAA Alternative – TMWA Normal-Year Water Supplies to Serve Customer Demand
(units in acre-feet)

	Groundwtr Pumping	Groundwtr Recharge Pumping	Hunter Creek	40 cfs M&I Right	Supply From Acquired Irrigation Rights	POSW	Credit Storage	TOTAL SUPPLY
	---a---	---b---	---c---	---d---	---e---	---f---	---g---	---h---
Jan	0	0	350	2,430	3,710	0	0	6,490
Feb	0	0	330	2,220	3,540	0	0	6,090
Mar	0	0	360	2,430	3,930	0	0	6,720
Apr	0	0	510	2,360	6,090	0	0	8,960
May	920	0	750	2,430	8,110	0	0	12,210
Jun	1,800	0	690	2,360	9,070	0	0	13,920
Jul	3,700	0	560	2,430	8,760	0	0	15,450
Aug	3,770	0	420	2,430	8,670	0	0	15,290
Sep	1,830	0	330	2,360	7,480	0	0	12,000
Oct	550	0	340	2,430	5,520	0	0	8,840
Nov	0	0	320	2,360	3,860	0	0	6,540
Dec	0	0	300	2,430	3,760	0	0	6,490
Total	12,570	0	5,260	28,670	72,500	0	0	119,000

During a year when the Truckee River is unable to provide Flowsion Rates the entire year, TMWA's customers' demands will be reduced by as much as 11,020 acre-feet by dry-year conservation measures. The normal year sources of supply will be supplemented by pumping additional groundwater from the Truckee Meadows, release of Privately Owned Stored Water from Donner and Independence Lakes and release of TMWA's M&I Credit (available under the Interim Storage Agreement). Dry-year TMWA supply will be served approximately as shown in the following tabulation.

NAA Alternative TMWA Dry-Year Water Supplies to Serve Customer Demand
(units in acre-feet)

	Groundwtr Pumping	Groundwtr Recharge Pumping	Hunter Creek	40 cfs M&I Right	Supply From Acquired Irrigation Rights	POSW	Credit Storage	TOTAL SUPPLY
	---a---	---b---	---c---	---d---	---e---	---f---	---g---	---h---
Jan	0	0	250	2,430	3,790	0	0	6,470
Feb	0	0	230	2,220	3,640	0	0	6,090
Mar	0	0	250	2,430	4,040	0	0	6,720
Apr	0	0	230	2,360	6,370	0	0	8,960
May	920	0	320	2,430	8,540	0	0	12,210
Jun	1,900	0	290	2,360	1,540	5,710	0	11,800
Jul	5,360	0	200	2,430	0	3,270	1,700	12,960
Aug	5,410	0	150	2,430	380	300	4,070	12,860
Sep	5,240	0	150	2,360	430	1,000	890	10,070
Oct	3,100	0	190	2,430	1,730	10	60	7,520
Nov	0	0	180	2,360	3,350	0	0	5,890
Dec	0	0	140	2,430	3,920	0	0	6,490
Total	21,930	0	2,580	28,670	37,730	10,350	6,720	107,980*

* The total demand of 119,000 acre-feet is reduced by 11,020 acre-feet as a result of dry-year conservation and/or shortage (107,980 + 11,020 = 119,000).

Truckee Meadows Groundwater Usage for LWSA and NAA

The groundwater supply assumed under LWSA and under NAA consists of utilizing the Truckee Meadows groundwater banking order of the Nevada State Engineer which allows for a banking of all groundwater resources owned by TMWA in the Truckee Meadows through the conjunctive use of surface water rights with the 15,950 acre-feet of rights referenced in the TROA alternative and the use of the "capped" groundwater permits owned by TMWA. The State Engineer's order allows for total pumping of no more than 22,000 acre-feet per year of groundwater against the "capped" groundwater rights through the accumulation of credits from reducing normal year groundwater pumping to less than the 15,950 acre-feet per year.

LWSA utilizes groundwater from groundwater recharge in the Truckee Meadows as well as the Truckee Meadows groundwater pumping associated with the groundwater banking order. The artificial recharge project is estimated to recharge 1,000 acre-feet each year using well injection in the Truckee Meadows. The following tabulation lists the LWSA amounts of modeled Truckee Meadows groundwater pumping associated with TMWA's permits and the recharge program during the historic 1987-1994 drought for the years 1985 through 1997.

LWSA-Groundwater Pumping (units in thousands of acre-feet)

Calendar Year	Permitted Pumping	Recharge Pumping	Annual Pumping
1985	12.57	0.00	12.57
1986	12.57	0.00	12.57
1987	12.57	0.00	12.57
1988	21.55	3.05	24.60
1989	12.57	0.00	12.57
1990	20.17	3.05	23.22
1991	18.78	2.15	20.93
1992	21.93	4.45	26.38
1993	12.93	0.00	12.93
1994	21.93	3.89	25.82
1995	12.57	0.00	12.57
1996	12.57	0.00	12.57
1997	12.57	0.00	12.57

The following tabulation lists the NAA amounts of modeled Truckee Meadows groundwater pumping associated with TMWA's permits during the historic 1987-1994 drought for the years 1985 through 1997.

NAA-Groundwater Pumping (units in thousands of acre-feet)

Calendar Year	Permitted Pumping (1000 a-ft)	Recharge Pumping (1000 a-ft)	Annual Pumping (1000 a-ft)
1985	12.57	0.00	12.57
1986	12.57	0.00	12.57
1987	12.57	0.00	12.57
1988	21.00	0.00	21.00
1989	12.57	0.00	12.57
1990	20.17	0.00	20.17
1991	19.47	0.00	19.47
1992	21.93	0.00	21.93
1993	12.93	0.00	12.93
1994	21.65	0.00	21.65
1995	12.57	0.00	12.57
1996	12.57	0.00	12.57
1997	12.57	0.00	12.57

Conservation Measures and Drought Conservation

The undersigned entities are parties to an agreement with the PLPT addressing water conservation measures that are currently in force. That agreement, among other things, provides for normal year water conservation measures to be implemented and replaces the program for drought conservation required by the PSA. In addition to the normal year conservation measures, the local governments have adopted ordinances (city codes) providing a mechanism to implement incremental levels of drought conservation measures, including placing various predefined limits on outdoor irrigation. Under severe shortages, resulting from extreme drought or other emergencies, outdoor irrigation can be prohibited. The drought and emergency provisions of the existing local ordinances are likely to be continued under LWSA and NAA because each of these alternatives relies upon conservation to address a portion of the demand in the summer months of a drought.

The conservation programs for LWSA are assumed to produce up to 10 percent maximum monthly conservation rate in summer months during droughts. For NAA insufficient water supply results in additional conservation or shortage (up to 17 percent of demand during summer months) will be required. As shown by the previous dry-year water supply tables, dry-year conservation measures play a role in reducing the demand in drought years under each of the three EIS/EIR alternatives. Conservation associated with each alternative water supply indicated with the previous examples of dry-year operation is summarized as shown in the following tabulation.

Dry-year Conservation by Month For Each Alternative

Month	Normal	TROA		LWSA		NAA	
	Year	Conservation		Conservation		Conservation/Shortage	
	Demand		Monthly		Monthly		Monthly
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)	(%)
	-----a-----	-----b-----	-----c-----	-----d-----	-----e-----	-----f-----	-----g-----
January	6,490	70	1.1	80	1.2	20	0.3
February	6,090	60	1.0	0	0.0	0	0.0
March	6,720	70	1.0	0	0.0	0	0.0
April	8,960	180	2.0	0	0.0	0	0.0
May	12,210	380	3.1	0	0.0	0	0.0
June	13,920	830	6.0	1,150	8.3	2,120	15.2
July	15,450	1,080	7.0	1,410	9.1	2,490	16.1
August	15,290	1,070	7.0	1,420	9.3	2,490	16.3
September	12,000	710	5.9	1,090	9.1	1,930	16.1
October	8,840	440	5.0	480	5.3	1,320	14.9
November	6,540	320	4.9	0	0.0	650	9.9
December	6,490	70	1.1	0	0.0	0	0.0
Annual	119,000	5,280	4.4 *	5,630	4.7 *	11,020	9.3 *

* These values are the annual percent conservation.

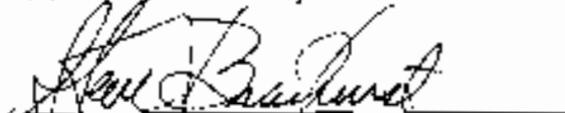
Please feel free to contact Don Mahin or John Erwin as principal members of the TMWA team that generated the assumptions contained herein, or with any other ideas or concerns you may have.

For Truckee Meadows Water Authority



John A. Erwin

For Washoe County



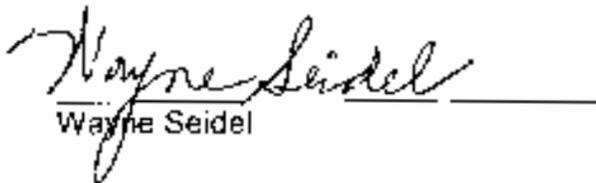
Steve Bradhurst

For City of Reno



Greg Dennis

For City of Sparks



Wayne Seidel

CC:

Gordon Depaoli

Rod Hall

Sue Oldham

Attachment D

Water Use Estimates for the Lake Tahoe and
Truckee River Basins –
Letter from the Department of Water Resources
Dated June 2, 2003

DEPARTMENT OF WATER RESOURCES

CENTRAL DISTRICT
3251 S STREET
SACRAMENTO, CA 95816-7017



JUN 02 2003

Mr. Tom Strekal
Western Nevada Agency
1677 Hot Springs Road
Carson City, Nevada 89706

ST. 001
1000
BUREAU OF LAND MANAGEMENT
Laboratory Program Area Office

Subject: Water Use Estimates for the Lake Tahoe and Truckee River Basins

Dear Mr. Strekal:

This letter is to transmit information for the Truckee-Carson Water Accounting Model in accordance with the request by the TROA EIS/EIR Management Team. The TROA EIS/EIR Management Team requested further specificity in the updated estimates of water use in the California portions of the Lake Tahoe and Truckee River Basins that we provided in our April 16th letter. These updated estimates were determined from the California Department of Finance's 2000 census numbers. These estimates are used as input parameters in the Truckee-Carson Water Accounting Model for year 2002 and year 2033 alternatives.

The following tables list estimates and projections of water use in the Lake Tahoe and Truckee River Basins in the years 2002 and 2033, the years identified for the current and future TROA EIS/EIR conditions. Estimates are provided for current use and each of the alternatives that will be considered in the TROA EIS/EIR: the No Action Alternative, the Local Water Supply Alternative, and TROA Alternative. The estimates also include both surface and ground water use along with the exercise of U.S. Forest Service and State Parks water rights in the Lake Tahoe Basin.

Table 1 - Lake Tahoe Basin Water Use (AF/year)

		Surface & Ground Water	Forest Service	State Parks	Total Water Use
Current Use	(2002)	17,286	1,103	308	18,697
EIS/EIR Alternatives					
No Action	(2033)	20,090	2,560	350	23,000
Local Water Supply	(2033)	20,090	2,560	350	23,000
TROA	(2033)	20,090	2,560	350	23,000

The following table shows the Truckee River Basin water uses needed for the input to the model. The surface water uses are divided into Municipal and Industrial (M & I), Agricultural (Ag), and Recreational (Rec) water use.

Table 2 - Truckee River Basin Water Use (AF/year)

	Ground Water (2002)	Surface Water Uses				Total Water Use
		M & I	Ag.	Rec.	Total	
Current Use	7,573	1,000	1,500	300	2,800	10,370
EIS/EIR Alternatives						
No Action	(2033) 19,600	1,000	1,500	600	3,100	22,700
Local Water Supply	(2033) 18,400	2,200	1,500	600	4,300	22,700
TROA	(2033) 18,400	2,200	1,500	600	4,300	22,700

We understand that additional information is needed for the Accounting Model on two diversions of water out of the Lake Tahoe and Truckee River Basins. About 7000 AF/year is diverted out of the Little Truckee River for irrigation in Sierra Valley, which is in the Feather River Basin of the Sacramento River Region. About 2000 AF/year is diverted out of the Lake Tahoe Basin from Echo Lake into the South Fork of the American River. We project that both of these will remain relatively unchanged through to the year 2033.

Similarly, the model will also utilize wastewater discharge information. The South Tahoe Public Utility District (STPUD) discharges treated wastewater into holding ponds in the Carson River Basin. The source of this wastewater is water diverted within the Lake Tahoe Basin, which is then used in the STPUD service area and treated at the STPUD wastewater treatment plant. The current year 2002 estimated average annual flow of treated wastewater from the Tahoe Basin to the Carson Basin is 5,000 AF/year. This is projected to increase to 6,500 AF/year by the year 2033.

Another special model requirement is Tahoe-Truckee Sanitation Agency (T-TSA) discharge information. The T-TSA collects wastewater in North Lake Tahoe and Truckee River Basins. After treatment, T-TSA discharges the wastewater onto lands southwest of the confluence of the Truckee River with Martis Creek. The actual discharges can vary significantly due to flood events that produce high infiltration and inflows. The following table shows actual discharges in the year 2002 and projections of average annual discharges from T-TSA for 2033.

Attachment E

Nevada State Engineer's Groundwater Management
Order 1161, Dated May 16, 2000

IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA

1161

GROUNDWATER BANKING ORDER

TRUCKEE MEADOWS GROUNDWATER BASIN

WHEREAS, under the provisions of Chapter 534 of the Nevada Revised Statutes (NRS) the State Engineer issued Order No. 708 in 1978, which designated the Truckee Meadows Groundwater Basin as a basin in need of additional administration (Hydrographic Basin 37)

WHEREAS, the State Engineer issued sixteen certificates for municipal use of groundwater within the Truckee Meadows Groundwater Basin to Sierra Pacific Power Company ("Sierra") in years prior to 1981 and recognized one claim of vested right (Attachment A). The total diversion rate of these rights is 86.8 cubic feet per second, and in 1986 the State Engineer imposed a pumping limit of 12,000 acre-feet per year on these pre-1981 groundwater certificates and one claim of vested right as being the limit and extent of the beneficial use. Sierra also holds other permits and certificates for groundwater and surface water issued by the State Engineer for municipal purposes.

WHEREAS, under the provisions of Chapter 534 of the Nevada Revised Statutes (NRS) the State Engineer may issue Orders to manage certain groundwater as a "Bank", in which more water is extracted in some years than the stated duty of a groundwater permit based on reduced extractions in other years.

WHEREAS, the Truckee River, which provides, on average, over 80% of the municipal water supply for customers in Sierra's service area, produces highly variable flows from year to year and endured the most severe drought on record between 1986 and 1994. During and immediately following this drought, Sierra implemented a preliminary conjunctive use operation, with the approval of the State Engineer, in which up to 15,728 acre-feet of groundwater was pumped during a severe drought year (1994), and as little as 7,744 acre-feet was pumped during a post-drought year (1998). The Truckee Meadows groundwater aquifer recovered fully after the drought.

WHEREAS, the total population in Washoe County is projected to grow from 312,000 in 1998 to 418,000 in 2015. Future water demand projections indicate Sierra's water demand will increase from 68,000 acre-feet in 1998 to 85,000 acre-feet in 2015. Sierra's Water Resource Plan approved by the Regional Water Planning Commission and the Public Utilities Commission directs continued reliance on the Truckee River as the primary water supply for Sierra's service area, but recognizes that the River requires supplemental water from other sources during droughts.

WHEREAS, Sierra has implemented management practices that reduce its use of groundwater during non drought periods, including the construction of a year-round surface water treatment plant at Chalk Bluff to increase the use of Truckee River water; during winter months, the execution of a contract for storage of water in Stampede Reservoir with the United States, and continued efforts to complete the Truckee River Operating Agreement which will triple Sierra's drought reserves

WHEREAS, the State Engineer supports the conjunctive use of groundwater and surface water which allows for optimal use of surface water rights during years when surface water is available thereby allowing the Truckee Meadows Groundwater Basin to rest, in return for pumping additional groundwater during drought years when surface water availability is at a minimum.

NOW THEREFORE, the State Engineer orders and allows as follows

1. Commencing on January 1, 2000, Sierra shall manage its Truckee Meadows Groundwater Basin rights as a banked resource under rules set forth in this Order. The management provisions of this Order shall apply to all Truckee Meadows Groundwater Basin rights held by Sierra, whether from its Vested water rights and certificates listed in Attachment A or by subsequent acquisition or appropriation of groundwater rights or domestic well credits. Pumping from other water systems which Sierra may acquire and rights located in other hydrographic basins are not included in this Order.
2. The baseline, or long-term average amount of groundwater Sierra may pump shall be 15,950 acre-feet per year, based on Sierra's 12,000 acre-foot administrative cap, an additional 1,105 acre-feet found by the State Engineer to have been beneficially used by Sierra under its pre-1981 certificates, 200 acre-feet allowance for domestic well credits owned by the Airport Authority, and 2,645 acre-feet of groundwater rights acquired prior to the date of this Order. Any year in which Sierra pumps less than 15,950 acre-feet in the Truckee Meadows Groundwater Basin shall result in a credit to the Bank balance; pumping in excess of 15,950 acre-feet shall result in a debit against the Bank balance. Any amounts of water artificially recharged shall be credited to the Bank balance in accordance with the terms of the recharge permit. A hypothetical illustration of this accounting procedure is found in Attachment B.
3. The Bank set forth in Paragraph 2 shall be administered on a calendar year basis. The beginning balance on January 1, 2000, shall be 1,799 acre-feet, representing the quantity of water Sierra had artificially recharged into the

Truckee Meadows Groundwater Basin under Permit No. 010 prior to that date.

4. Notwithstanding that the Bank balance may be larger than 22,000 acre feet in a future year, Sierra may pump a maximum of 22,000 acre-feet from the Truckee Meadows Groundwater Basin during any calendar year from the bank balance. Such volume of pumping shall not continue for more than three years in succession.
5. To the extent that year-round pumping is required for permitted environmental remediation or dewatering projects, and these projects discharge water into Sierra's system, pumping during the months of June through September shall be counted against Sierra's bank balance. During the remaining months of the year only ground water pumped in excess of that required for permitted environmental remediation or dewatering projects shall also be counted against Sierra's bank balance.
6. Based on 1,105 acre-feet of groundwater rights held by Sierra not previously allowed for pumping and a 200 acre-feet well credit for the Airport Authority, Sierra may issue well-serves commitments up to 1,305 acre-feet against its Truckee Meadows Groundwater Basin rights, pursuant to this Order.
7. The Truckee Meadows Groundwater Basin rights of Sierra Pacific Power Company shall not be subject to forfeiture under NRS 534.090 when operated in accordance with this Order. In the Truckee Meadows Groundwater Basin cumulation and rotation procedures using all Sierra's groundwater rights may be utilized to allow a maximum flow rate greater than the diversion rate for any single water right provided that the total combined diversion rate authorized under all rights is not exceeded.
8. Sierra shall continue to abide by the "Groundwater Management Agreement" dated September 5, 1991 with Truckee-Carson Irrigation District unless it terminates by its terms.
9. Sierra shall continue to monitor water levels and water quality and report to the State Engineer at the end of the calendar year with their results.
10. Sierra may petition the State Engineer to increase the baseline amount under Paragraph 2 and may petition to adjust the 22,000 acre-foot limit in Paragraph 4.

11 The State Engineer retains the authority to limit Sierra's pumpage at any given location in the event that unreasonable drawdown or water quality degradation as a result of Sierra's pumping occurs.

_____ 
R. MICHAEL TURNIPSEED, P.E.
State Engineer

Dated at Carson City, Nevada, this

16th day of May, 2000.

ATTACHMENT A

**Sierra Pacific Power Company Pre-1981 Groundwater Rights
At Original Point of Diversion¹**

Permit	Certificate	Diversion Rate (cfs)	(Well)
V-05533		4.5 ²	Fourth Street
17585	5678	4.0	Stanford Way
17838	5365	4.0	Mill Street
18414	5292	6.0	Popular #1
19185	5677	3.3	Terminal
19909	5802	6.7	High Street
20207	5489	2.5	Mill Street
20371	6116	6.2	Momli
20372	6573	4.7	Peckham
23847	7627	2.9	Poplar #2
23848	7623	2.9	Greg Street
24758	8274	2.2	S. Virginia
24869	8044	5.6	View Street
25997	8811	1.1	Delucchi Lane
26193	8939	5.5	Kietzke Lane
26310	8767	1.6	Sparks Ave
28055	10641	3.1	Pezzi
TOTAL		66.8 cubic feet per second	

¹ Many rights have been changed to new locations since certified.

² Based on 2,000 gpm pump capacity.

**ATTACHMENT B
BANK ACCOUNTING ILLUSTRATION**

Year	Description a	Baseline Pumping b	Annual Pumpage c	Recharge d	Credit/Debit (b-c+d) e	Ending Balance f
	Beginning Balance					1799
1	Non-Drought	15950	11000	1000	5950	7749
2	Non-Drought	15950	10500	1500	6950	14699
3	Non-Drought	15950	11000	1700	6650	21349
4	Non-Drought	15950	9000	1500	8450	29799
5	Drought	15950	22000	500	5550	24249
6	Drought	15950	22000	750	-5300	18949
7	Drought	15950	22000	500	-5550	13399
8	Non-Drought	15950	12000	1700	5650	19049
9	Non-Drought	15950	8000	1000	8950	27999
10	Non-Drought	15950	10000	1200	7150	35149

Attachment F

Draft of Sample
California Guidelines for Truckee River Reservoir
Operations to Meet Instream Flow and
Recreation Objectives

SAMPLE

**CALIFORNIA GUIDELINES
FOR TRUCKEE RIVER RESERVOIR
OPERATIONS
TO MEET INSTREAM FLOW AND
RECREATION OBJECTIVES**

FOREWORD

After the Truckee River Operating Agreement (TROA) is signed and becomes effective, California will annually submit Guidelines for Truckee River Reservoir Operations concerning instream flow, reservoir levels, and other environmental objectives in the California portion of the Truckee River Basin. California's TROA representative, with advice and counsel from appropriate State agencies and California Truckee River Basin local interest groups, will be responsible for preparing and submitting these Guidelines. The general content and process for submittal of the Guidelines are included in TROA Sections 9.F and 11.C.2(b), respectively. The Guidelines will be submitted to the TROA Administrator and Scheduling Parties each spring to provide the Administrator the opportunity to encourage inclusion of recommendations in the Guidelines during the subsequent TROA water operations scheduling process.

The purpose of this sample of the California Guidelines is to show what these Guidelines might look like when they are submitted to the TROA Administrator. These Guidelines do not represent a practical plan for current operations without TROA. The Department of Water Resources has prepared this sample in anticipation of TROA being signed for several reasons: (1) California local interests and potential TROA signatories have expressed interest in seeing an example of the Guidelines so they may have a better understanding of what to expect when TROA is operative; (2) during the upcoming TROA EIR/EIS process, information from this sample of the Guidelines will be used to develop criteria for scheduling use of California's Joint Program Fish Credit Water and other reservoir operations in model runs that will help analyze the environmental impacts from TROA operations; and (3) preparation and discussion of this sample of the Guidelines will help in developing an understanding among all parties of the expected type of items that will be addressed in the Guidelines and how they could be presented.

This sample of the Guidelines is based on hydrologic conditions forecasted in the March 25, 2002, United States Bureau of Reclamation, Truckee River Operation Study, which includes anticipated water demands from Nevada water right holders in the Truckee River Basin.

INTRODUCTION

These Guidelines are transmitted to the TROA Administrator and TROA Scheduling Parties for use during the water operations scheduling process. Under varying conditions of water availability and anticipated use, there is often more than one option for operating upstream reservoirs without significant risk of adverse impacts to existing water rights. Section 9.F.2 of TROA calls for the TROA Administrator to encourage the scheduling parties to schedule in accordance with the California Guidelines and to engage in voluntary exchanges and re-storage options to the extent practicable and consistent with the exercise of water rights, assurance of water supplies, operational considerations, the Settlement Act (Public Law 101-618), and TROA. It is anticipated that, given the opportunity, the TROA Scheduling Parties will use these Guidelines to schedule their operations to help meet California's objectives for reservoir storage and instream flows below the reservoirs.

These Guidelines are divided into two parts. Part 1 is "Specific Goals and Objectives for Truckee River Reservoir Operations – 2002," consisting of operational goals and objectives based on a March forecast of 2002 hydrologic conditions and reservoir storage, anticipated water use, and reservoir operations. Part 2 is "General Goals and Objectives for Truckee River Reservoir Operations," consisting of operational goals and objectives for instream flows and reservoir storage that are general in nature and do not usually change from year to year. These general objectives have been developed and are included here to provide continuing overall guidance to the Administrator and other TROA scheduling parties and to provide a continuing framework within which the annual specific goals objectives are presented.

The TROA Scheduling Parties are encouraged to take the California Guidelines into account during the TROA scheduling process and to schedule and adjust their water operations to help meet California's goals and objectives. California may revise and resubmit these 2002 Guidelines to the TROA Administrator and Scheduling Parties in response to their comments and recommendations, changes in schedules for reservoir operations, and changes in forecasted hydrologic conditions.

PART 1 - SPECIFIC GOALS AND OBJECTIVES FOR TRUCKEE RIVER RESERVOIR OPERATIONS – SAMPLE YEAR - 2002

Reservoir Storage and Instream Flow Goals and Objectives For 2002

Specific proposals to achieve California's goals for improving instream flows and recreation pools in the Truckee River Basin have been developed based on the March 25, 2002, United States Bureau of Reclamation (USBR) forecast of Truckee River reservoir storages and releases. These proposals are shown in Table 1 and summarized below:

- Alternate releases between Prosser and Stampede, re-storing some of this water in Boca, where it can be released to meet Pyramid Lake fish needs in November and December to: (1) increase the Stampede release to or above the minimum of 45 cfs in July through October, (2) increase the Prosser release above the minimum of 16 cfs in June, and (3) generally even out releases from Stampede and Prosser toward the Preferred Instream Flows.
- Eliminate the predicted spike in releases from Independence Lake in September through consultation with TMWA, releasing water from Independence at a consistent rate over a longer period in July, August and September and re-storing the earlier release as needed to meet TMWA's long-term objectives.
- Increase the predicted below-minimum releases from Donner Lake in July and August toward the minimum of 8 cfs and reduce it an equivalent amount in September and October without allowing the lake to drop below 8,000 acre-feet before the end of August.

Table 2 shows the USBR forecast of Truckee River Basin reservoir storage and releases and corresponding storage and releases due to implementing these current year reservoir storage and instream flow objectives. The corresponding storage levels are computed based on proposed changes in releases.

California also plans to coordinate with the United States and the Pyramid Tribe as soon as practicable to further propose a TROA Section 8.S Exchange. This would increase low releases of water from Lake Tahoe in lieu of high Stampede releases during the Spring Cui-ui run with an equivalent increase in low releases from Stampede in lieu of high Lake Tahoe releases in late Summer and early Fall. If such an exchange can be implemented, California will resubmit these Guidelines to take into account this considerable change in scheduled operations.

Goals for Management of Joint Program Fish Credit Water, Environmental Credit Water, and Additional Environmental Credit Water

As of April 1, 2002, prior schedules indicate that California will have established 6,000 acre-feet of Joint Program Fish Credit Water, of which 3,000 acre-feet is in Lake Tahoe and 3,000 acre-feet is in Stampede Reservoir. California's goal is to use this Credit Water to meet the Reservoir Storage and Instream Flow Goals and Objectives that are not met through proposals made to the TROA Administrator and Scheduling Parties as identified in the previous section and shown in Tables 1 and 2.

A schedule for releases of Joint Program Fish Credit Water is in Table 3. Included in this schedule is an exchange of 3,000 acre-feet of Fish Credit Water from Lake Tahoe to Stampede, as per a Memorandum of Understanding with the U.S and Pyramid Lake Tribe. On a monthly basis, the release, re-storage and exchange schedule for the period of April 2002 through December 2002 is:

April	Release 1,800 acre-feet from Lake Tahoe, accumulating all 1,800 acre-feet in Prosser via an exchange.
May	Release 2,100 acre-feet from Tahoe and 1,500 acre-feet from Stampede, accumulating only 900 acre-feet in Boca and 1,200 acre-feet in Prosser via an exchange.
June	Release 2,100 acre-feet from Tahoe and 1,800 acre-feet from Prosser and 900 acre-feet from Boca, accumulating only 3,300 acre-feet in Stampede via an exchange.
July	Release 600 acre-feet from Prosser and 300 acre-feet from Stampede, accumulating all 300 acre-feet in Independence and 600 acre-feet in Boca via an exchange.
August	Release 600 acre-feet from Prosser, accumulating all 600 acre-feet in Boca via an exchange.
September	Release 600 acre-feet from Stampede, accumulating all 300 acre-feet in Donner and 300 acre-feet in Boca via an exchange.
October	Release 600 acre-feet from Stampede and 300 acre-feet in Donner, accumulating all 900 acre-feet in Boca via an exchange
November	Release 600 acre-feet from Stampede and 300 acre-feet from Independence, accumulating all 900 acre-feet in Boca via an exchange.
December	Release 300 acre-feet from Stampede, accumulating all 300 acre-feet in Boca via an exchange.

Table 4 shows the anticipated result of these releases if scheduled along with implementation of the specific proposals for improving instream flows and recreation pools in Tables 1 and 2. We also anticipate that, after these releases and exchanges are made, 3,000 acre-feet of Fish Credit Water will remain in Stampede, 3,000 acre-feet of Joint Program Fish Credit Water will remain in Boca, and 3,000 acre-feet of Joint Program Fish Credit Water will have been released without being exchanged.

Consultation between California and Other TROA Parties

As pointed out in the Introduction to these California Guidelines, they are transmitted to the TROA Administrator and Scheduling Parties so they may be used to schedule operations (to the extent practicable and consistent with the exercise of water rights, assurance of water supplies, operational considerations, the Settlement Act and TROA) to help meet California's objectives for preferred instream flows and reservoir-based recreation, to limit or eliminate releases above the maximum instream flows, and to provide ramping of flows. Any questions regarding these specific-year reservoir storage and instream flow goals and objectives, or California's management of Joint Program Fish Credit Water, Environmental Credit Water, or Additional Environmental Credit Water should be directed to California's TROA representative.

PART 2 - GENERAL GOALS AND OBJECTIVES FOR TRUCKEE RIVER RESERVOIR OPERATIONS

General Objectives for Instream Flows below Reservoirs

California's general objective for instream flows below reservoirs is that, to the extent possible, they will be maintained between the "Minimum Flows" and the "Maximums Flows" for each reach as shown in Table 5. When possible, the "Preferred Flows" shown in Table 5 should be maintained in as many reaches and for as long a time as is feasible. If options to achieve preferred flows in any given year are limited and a choice is to be made among stream reaches, the desired priority, from highest to lowest, is:

- 1) Little Truckee River (Stampede Dam to Boca Reservoir);
- 2) Truckee River from Lake Tahoe to California Border;
- 3) Little Truckee River (Independence Lake Dam to Stampede Reservoir);
- 4) Prosser Creek from Prosser Creek Reservoir to the Truckee River; and
- 5) Donner Creek from Donner Lake Dam to the Truckee River.

Another instream flow objective is to avoid rapid changes in flow rates through "ramping" of reservoir releases. It is best to limit the rate of increase or decrease to the smallest steps feasible. Ramping is most important in the reaches below Lake Tahoe, Donner Lake, Prosser Creek Reservoir, and Stampede Reservoir, and it is more important to ramp releases down slowly (limit the rate of decrease) than ramp releases up slowly. California's recommendations for ramping flows are as follows:

- Increasing flows - Flows should not be increased more than 100% during a 24-hour period; the change during the 24-hour period should occur in a minimum of three, proportional amounts (i.e., one-third the total 24-hour change per 8 hours).
- Decreasing flows - Flows should not be decreased more than 50% during a 24-hour period; the change during the 24-hour period should occur in a minimum of three, proportional amounts (i.e., one-third the total 24-hour change per 8 hours).

One further instream flow objective is to prevent the Truckee River and its tributaries from freezing solid in the winter months. To prevent icing in the stream sections outlined below, the recommended minimum flows in these stream sections during the winter months is for:

- Donner Creek, Donner Lake to the Truckee River – 3 cfs.
- Prosser Creek – To be developed in accordance with TROA Section 9.C.5(d).
- Independence Creek, Independence Lake to the Little Truckee River – 4 cfs.
- Truckee River, Lake Tahoe to Donner Creek – 30 cfs.
- Truckee River, Donner Creek to the Little Truckee River – 50 cfs.

General Objectives for Reservoir Storage

California's general objective for reservoir storage is that they be maintained at or above the "Preferred Minimum Storage" levels shown in Table 6, from the start of the Memorial Day weekend to the end of the Labor Day weekend of each year. This is to maintain maximum reservoir recreation-based opportunities in California reservoirs in the Truckee River Basin

For Donner Lake, every effort should be made to maintain the "Preferred Minimum Storage" of 8,000 acre-feet through the Labor Day weekend, even at the expense of drawing down other reservoirs through exchanges.

If options to achieve the preferred minimum storage in reservoirs other than Donner Lake are limited, and a choice is necessary to maximize recreation opportunities, the preferred order of operations is as follows:

1. If any reservoir drops below the "Minimum Storage" identified in Table 6, releases from that reservoir should be continued until the reservoir reaches the minimum fish pool, in lieu of releases from other reservoirs, to allow higher storages to be maintained in the other reservoirs.
2. Avoid dropping any reservoir below levels that are necessary to protect fish ("Minimum Fish Storage") specified in Table 6. If it becomes necessary to drop the reservoirs below minimum fish storage levels please consult with California's TROA representative since more specific priorities among reservoirs may have been developed after this writing.
3. Whenever storage in Stampede Reservoir is above the "Preferred Minimum Storage" specified in Table 6, it is preferable to release water from Lake Tahoe or Stampede Reservoir in lieu of releases from Boca or Prosser Creek Reservoirs to meet water demands; so that Boca and Prosser Creek Reservoirs do not drop below their "Preferred Minimum Storages" as specified in Table 6.
4. If the storage in Stampede Reservoir drops below its "Preferred Minimum Storage" specified in Table 6 and a release from Lake Tahoe is not feasible, releases should be made from Prosser Creek Reservoir and Boca Reservoir in lieu of releases from Stampede Reservoir to meet water demands.

Establishing Priorities among Instream Flow and Reservoir Storage Objectives

Instream flow objectives could, at times, conflict with the reservoir storage objectives. The "Specific Goals and Objectives" in Part 1 will, under most circumstances, describe how to best make this choice given existing hydrologic conditions.

The California TROA representative will make recommendations to the TROA Administrator on instream flow needs and reservoir levels to support recreation in consultation with California interests. If there are competing or conflicting demands for instream flows or reservoir-based

recreation, prior to making such recommendations, the California TROA representative will consult with potentially affected California interests to assist in determining the best course of action. During the consultation process, until a decision is made, maintenance of instream flows should be given priority. Parties that may be consulted during this examination process include the following:

- Truckee River Basin Water Group
- Placer County, Nevada County, And Sierra County
- Town of Truckee
- Tahoe-Truckee Sanitation Agency
- Local Rafting Interests
- Local Fishery Interests
- Local Water Supply Interests
- Local Recreation Interests
- State of California agencies, including the Departments of Fish and Game, Parks and Recreation, and Water Resources, and the State Water Resources Control Board and Lahontan Regional Water Quality Control Board
- Federal Agencies, including the U.S. Fish and Wildlife Service, U.S. Forest Service, and the U.S. Bureau of Reclamation
- Pyramid Lake Paiute Indian Tribe

Coordinating Municipal and Industrial Storage Objectives with California Guidelines

California M&I Credit Water may be established in Lake Tahoe and other Truckee River Reservoirs as specified in TROA. If and when this occurs, the instream flow and recreation objectives in these Guidelines may be coordinated with M&I storage objectives for this water.

Table 1 - Specific Proposals for Voluntary Operations to Improve Instream Flows and Recreation Pools - 2002

Problem Statement and Proposed Change to March 2002 USBR Forecast	Consultation	Proposed Action to Implement Proposed Change to Forecast																																				
<p>Stampede releases are low in July-Oct while Prosser Releases are high; and Prosser releases are low in June and Nov when Stampede releases are high.</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">Prosser</td> <td></td> <td style="text-align: center;">Stampede</td> </tr> <tr> <td></td> <td style="text-align: center;">Forecast/Proposed</td> <td></td> <td style="text-align: center;">Forecast/Proposed</td> </tr> <tr> <td>June</td> <td style="text-align: center;">12/42 cfs</td> <td></td> <td style="text-align: center;">227/197 cfs</td> </tr> <tr> <td>July</td> <td style="text-align: center;">91/66 cfs</td> <td></td> <td style="text-align: center;">29/69 cfs</td> </tr> <tr> <td>Aug</td> <td style="text-align: center;">98/73 cfs</td> <td></td> <td style="text-align: center;">29/69 cfs</td> </tr> <tr> <td>Sept</td> <td style="text-align: center;">72/87 cfs</td> <td></td> <td style="text-align: center;">30/45 cfs.</td> </tr> <tr> <td>Oct</td> <td style="text-align: center;">83/88 cfs</td> <td></td> <td style="text-align: center;">35/45 cfs</td> </tr> <tr> <td>Nov</td> <td style="text-align: center;">22/22 cfs</td> <td></td> <td style="text-align: center;">115/45 cfs</td> </tr> <tr> <td>Dec</td> <td style="text-align: center;">30/30 cfs</td> <td></td> <td style="text-align: center;">57/52 cfs</td> </tr> </table>		Prosser		Stampede		Forecast/Proposed		Forecast/Proposed	June	12/42 cfs		227/197 cfs	July	91/66 cfs		29/69 cfs	Aug	98/73 cfs		29/69 cfs	Sept	72/87 cfs		30/45 cfs.	Oct	83/88 cfs		35/45 cfs	Nov	22/22 cfs		115/45 cfs	Dec	30/30 cfs		57/52 cfs	<p>Check with USFWS/Tribe & Water Master.</p>	
		Prosser		Stampede																																		
		Forecast/Proposed		Forecast/Proposed																																		
	June	12/42 cfs		227/197 cfs																																		
	July	91/66 cfs		29/69 cfs																																		
Aug	98/73 cfs		29/69 cfs																																			
Sept	72/87 cfs		30/45 cfs.																																			
Oct	83/88 cfs		35/45 cfs																																			
Nov	22/22 cfs		115/45 cfs																																			
Dec	30/30 cfs		57/52 cfs																																			
<p>If the Prosser releases are primarily Uncommitted Water that could be released at a different schedule in coordination with Stampede releases and still meet needs in Nevada.</p>	<p>Request USFWS/Tribe alternate releases between Prosser and Stampede as proposed, also releasing and re-storing some of this water in Boca, where it can be released to meet downstream needs in Nov and Dec.</p>																																					
<p>If the Prosser releases are primarily Uncommitted Water that can only be released at specific times to meet needs in Nevada.</p>	<p>Request USFWS/Tribe alternate releases between Prosser and Stampede toward proposed flows to the extent acceptable, also releasing and re-storing some of this water in Boca, where it can be released to meet their needs in Nov and Dec.</p>																																					
<p>If the Prosser releases are primarily T-P-Exchange Water that may be blended with Tahoe and Boca releases on a different schedule.</p>	<p>Request the Water Master blend T-P-Exchange Water with other Floriston Rate releases toward proposed flows to the extent acceptable. Request USFWS/Tribe and others exchange Credit Water from Stampede to Prosser to assist in otherwise meeting proposed flows to the extent their needs are still met.</p>																																					
<p>If the Prosser releases are primarily T-P-Exchange Water that must be released as per the current release schedule.</p>	<p>Request USFWS/Tribe and others exchange Credit Water from Stampede to Prosser toward the proposed flows to the extent their needs are still met.</p>																																					

Table 1 (continued) - Specific Proposals for Voluntary Operations to Improve Instream Flows and Recreation Pools - 2002

Problem Statement and Proposed Change to March 2002 USBR Forecast	Consultation	Proposed Action to Implement Proposed Change to Forecast												
<p>Very high release from Independence Lake in Sept (monthly average)</p> <p style="text-align: center;">Forecast/Proposed</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 15%;">July</td> <td style="width: 15%;">11/19 cfs</td> </tr> <tr> <td>Aug</td> <td>5/13 cfs</td> </tr> <tr> <td>Sept</td> <td>29/13 cfs</td> </tr> <tr> <td>Oct</td> <td>8/8 cfs</td> </tr> <tr> <td>Nov</td> <td>5/5 cfs</td> </tr> </table>	July	11/19 cfs	Aug	5/13 cfs	Sept	29/13 cfs	Oct	8/8 cfs	Nov	5/5 cfs	<p>Check with TMWA.</p> <p>If the Sept release from Independence is needed as an exchange to another reservoir or to meet downstream needs in Nevada.</p> <p>If the Sept release from Independence is scheduled for some other reason.</p>	<p>Request TMWA exchange 960 acre-feet more from Independence Lake at a constant rate in July-Aug to another reservoir (Stampede?) where it can still be used; reducing the release from Independence accordingly in Sept.</p> <p>Request TMWA exchange their water, as stated in the row above, to the extent acceptable.</p>		
July	11/19 cfs													
Aug	5/13 cfs													
Sept	29/13 cfs													
Oct	8/8 cfs													
Nov	5/5 cfs													
<p>Donner Lake release (monthly average) is below the minimum (8 cfs) in July-Aug and above the maximum in Sept.</p> <p style="text-align: center;">Forecast/Proposed</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 15%;">June</td> <td style="width: 15%;">35/35 cfs</td> </tr> <tr> <td>July</td> <td>3/7 cfs</td> </tr> <tr> <td>Aug</td> <td>3/7 cfs</td> </tr> <tr> <td>Sept</td> <td>27/23 cfs</td> </tr> <tr> <td>Oct</td> <td>48/44 cfs</td> </tr> <tr> <td>Nov</td> <td>33 /33 cfs</td> </tr> </table>	June	35/35 cfs	July	3/7 cfs	Aug	3/7 cfs	Sept	27/23 cfs	Oct	48/44 cfs	Nov	33 /33 cfs	<p>Check with TMWA/TCID (and Donner Lake recreation interests).</p> <p>If the Sept-Oct releases from Donner are needed as an exchange to another reservoir or to meet downstream needs in Nevada.</p> <p>If the Sept-Oct releases from Donner are scheduled for some other reason.</p>	<p>Request TMWA/TCID exchange 480 acre-feet (or some lesser amount that does not allow the lake to drop below an acceptable end-of-Aug recreation target - assumed to be 8,000 acre-feet here) more from Donner Lake at a constant rate in July-Aug to another reservoir where it can still be used, reducing the Donner release accordingly in Sept-Oct.</p> <p>Request TMWA/TCID exchange their water, as stated in the row above, to the extent acceptable.</p>
June	35/35 cfs													
July	3/7 cfs													
Aug	3/7 cfs													
Sept	27/23 cfs													
Oct	48/44 cfs													
Nov	33 /33 cfs													

Table 2 – USBR Forecast* and Proposed Reservoir Storage and Instream Flows to Meet Current-year Objectives with Voluntary Changes to Operations

	Lake Tahoe Elev (FEET)	Truckee River at Tahoe City (CFS)		Donner Lake Storage (TAF)		Donner Lake Release (CFS)		Prosser Reservoir Storage (TAF)		Prosser Reservoir Release (CFS)	
		Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed
Jan-02	6224.3	62 <	NC <	3.6	NC	27	NC	8.3	NC	42 ☺	NC ☺
Feb-02	6224.3	94 ☺	NC ☺	3.8	NC	20	NC	8.8	NC	33 ☺	NC ☺
Mar-02	6224.5	54 <	NC <	4.0	NC	35	NC	9.8	NC	56 ☺	NC ☺
Apr-02	6224.7	71 <	NC <	6.0	NC	56 ☺	NC ☺	11.9	NC	154 >	NC >
May-02	6225.2	68 <	NC <	9.5	NC	69 ☺	NC ☺	18.9	NC	126 ☺	NC ☺
Jun-02	6225.4	72 <	NC <	9.5 ☺	NC ☺	35 ☺	NC ☺	26.8 ☺	25.0 ☺	12 ☺	42 ☺
Jul-02	6225.1	261 ☺	NC ☺	9.2 ☺	8.9 ☺	3 <	7 <	23.5 ☺	23.2 ☺	91 ☺	66 ☺
Aug-02	6224.5	375 ☺	NC ☺	8.6 ☺	8.2 ☺	3 <	7 <	18.0 <	19.2 ☺	98 >	73 >
Sep-02	6224.0	236 ☺	NC ☺	6.9	6.7	27 >	23 >	14.0	14.3	72 >	87 >
Oct-02	6223.7	101 ☺	NC ☺	4.5	NC	48 ☺	44 ☺	9.8	NC	83 ☺	88 ☺
Nov-02	6223.6	52 <	NC <	3.2	NC	33 ☺	NC ☺	9.8	NC	22 <	NC <
Dec-02	6223.6	49 <	NC <	3.2	NC	16	NC	9.8	NC	30 ☺	NC ☺

KEY: > Instream fish flows that exceed maximums
 ☺ Instream fish flows and reservoir storages that are within objective ranges
 < Instream fish flows that are below minimum flows and reservoir storages that are below preferred minimum storages
 NC No Changes Recommended

* The 50 Percent Streamflow and Reservoir Storage Forecast is the “Most Probable” forecast and is generally considered to be the best estimate of anticipated monthly average streamflow and end of the month reservoir storage based upon the outcome of similar situations in the past. There is a 50 percent chance that actual streamflow volume and reservoir storage amounts will be less than this forecast value and a 50 percent chance that it will exceed this value.

Note: Reservoir storage is in thousand acre-feet at the end of the month and releases are in cubic feet per second as a monthly average

Table 2 (Continued)– USBR Forecast* and Proposed Reservoir Storage and Instream Flows to meet Current-year Objectives with Voluntary Changes to Operations

	Independence Lake Storage (TAF)		Independence Creek below Independence Lake (CFS)		Stampede Reservoir Storage (TAF)		Stampede Reservoir Release (CFS)		Boca Reservoir Storage (TAF)		Boca Reservoir Release (CFS)	
	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed	Forecast	Proposed
Jan-02	15.4	NC	5 <	NC <	169.1	NC	54 ☺	NC ☺	8.0	NC	38	NC
Feb-02	15.7	NC	4 ☺	NC ☺	168.8	NC	65 ☺	NC ☺	8.6	NC	67	NC
Mar-02	16.3	NC	5 ☺	NC ☺	166.4	NC	140 ☺	NC ☺	16.4	NC	43	NC
Apr-02	16.4	NC	34 ☺	NC ☺	161.9	NC	346 >	NC >	33.1	NC	76	NC
May-02	17.2	NC	56 >	NC >	179.0	NC	112 ☺	NC ☺	40.2	NC	0	NC
Jun-02	17.1	NC	50 >	NC >	176.3☺	178.1☺	227 ☺	197 ☺	40.1☺	NC ☺	227	197
Jul-02	16.8	16.3	11 ☺	19 ☺	174.8☺	174.7☺	29 <	69 ☺	34.9 ☺	35.8 ☺	106	127
Aug-02	16.4	15.4	5 ☺	13 ☺	172.5☺	170.4☺	29 <	69 ☺	32.7 <	34.5 ☺	56	77
Sep-02	14.7	NC	29 >	13 ☺	172.0	168.1	30 <	45 ☺	24.5	28.1	162	151
Oct-02	14.4	NC	8 ☺	NC ☺	172.0	167.5	35 <	45 ☺	15.5	19.9	187	186
Nov-02	14.3	NC	5 <	NC <	167.2	166.9	115 ☺	45 ☺	10.5	10.8	197	NC
Dec-02	14.2	NC	9 ☺	NC ☺	167.2	NC	57 ☺	52 ☺	5.3 <	NC <	141	NC

KEY: > Instream fish flows that exceed maximums
 ☺ Instream fish flows and reservoir storages that are within objective ranges
 < Instream fish flows that are below minimum flows and reservoir storages that are below preferred minimum storages
 NC No Changes Recommended

* The 50 Percent Streamflow and Reservoir Storage Forecast is the “Most Probable” forecast and is generally considered to be the best estimate of anticipated monthly average streamflow and end of the month reservoir storage based upon the outcome of similar situations in the past. There is a 50 percent chance that actual streamflow volume and reservoir storage amounts will be less than this forecast value and a 50 percent chance that it will exceed this value.

Note: Reservoir storage is in thousand acre-feet at the end of the month and releases are in cubic feet per second as a monthly average

Table 3. Proposed Average Monthly Release Schedule for JPFCW and FCW*

	Truckee River at Tahoe City (CFS)	Donner Lake Release (CFS)	Prosser Reservoir Release (CFS)	Indep Lake Release (CFS)	Stampede Reservoir Release (CFS)	Boca Reservoir Release (CFS)	
Jan-02							Jan-02
Feb-02							Feb-02
Mar-02							Mar-02
Apr-02	30.0		(30.0)				Apr-02
May-02	35.0		(20.0)		25.0	(15.0)	May-02
Jun-02	35.0		30.0		(55.0)	15	Jun-02
Jul-02			10.0	(5.0)	5.0	(10.0)	Jul-02
Aug-02			10.0			(10.0)	Aug-02
Sep-02		(5.0)			10.0	(5.0)	Sep-02
Oct-02		5.0			10.0	(15.0)	Oct-02
Nov-02				5.0	10.0	(15.0)	Nov-02
Dec-02					5.0	(5.0)	Dec-02

Negative releases (in parenthesis) indicate an exchange or re-storage of water into that reservoir

*Releases of Fish Credit Water are per Memorandum of Understanding with the U.S. and the Pyramid Lake Paiute Indian Tribe

Table 4 - Proposed Reservoir Storage and Instream Flows to meet Current-Year Objectives with Voluntary Changes to Operations and Releases of JPFCW and FCW

	Lake Tahoe Elev (FEET)	Truckee River at Tahoe City (CFS)	Donner Lake Storage (TAF)	Donner Lake Release (CFS)	Prosser Reservoir Storage (TAF)	Prosser Reservoir Release (CFS)	Indep. Lake Storage (TAF)	Indep. Creek Below Indep. (CFS)	Stampede Res Storage (TAF)	Stampede Res Release (CFS)	Boca Res Storage (TAF)	Boca Res Release (CFS)
Jan-02	6224.3	62 <	3.6	27	8.3	42 ☺	15.4	5 <	169.1	54 ☺	8.0	38
Feb-02	6224.3	94 ☺	3.8	20	8.8	33 ☺	15.7	4 ☺	168.8	65 ☺	8.6	67
Mar-02	6224.5	54 <	4.0	35	9.8	56 ☺	16.3	5 ☺	166.4	140 ☺	16.4	43
Apr-02	6224.7	101 ☺	6.0	56 ☺	13.7	124 ☺	16.4	34 ☺	161.9	346 >	33.1	76
May-02	6225.2	103 ☺	9.5	69 ☺	22.0	106 ☺	17.2	56 >	177.5	137 ☺	41.1	10
Jun-02	6225.3	107 ☺	9.5 ☺	35 ☺	26.2 ☺	72 ☺	17.1	50 >	179.9 ☺	142 ☺	40.1 ☺	157
Jul-02	6225.0	261 ☺	8.9 ☺	7 <	23.8 ☺	76 ☺	16.6	14 ☺	176.2 ☺	69 ☺	36.4 ☺	117
Aug-02	6224.4	375 ☺	8.2 ☺	7 <	19.2 ☺	83 >	15.7	13 ☺	171.9 ☺	69 ☺	35.8 ☺	67
Sep-02	6224.0	236 ☺	7.0	18 ☺	14.3	87 >	15.0	13 ☺	169.0	55 ☺	29.6	156
Oct-02	6223.6	101 ☺	4.5	49 ☺	9.8	88 ☺	14.7	8 ☺	167.8	55 ☺	22.3	181
Nov-02	6223.6	52 <	3.2	33 ☺	9.8	22 <	14.3	10 ☺	166.6	60 ☺	14.2	197
Dec-02	6223.6	49 <	3.2	16	9.8	30 ☺	14.2	9 ☺	166.6	57 ☺	9.0 <	141

KEY: > Instream fish flows that exceed maximums

☺ Instream fish flows and reservoir storages that are within objective ranges

< Instream fish flows that are below minimum flows and reservoir storages that are below preferred minimum storages

Note: Reservoir storage is in thousand acre-feet at the end of the month and releases are in cubic feet per second as a monthly average

Table 5 - Instream Flow General Objectives (in cubic feet per second)*

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>
Minimum flow out of Lake Tahoe	75	75	75	75	75	75	75	75	75	75	75	75
Preferred flow out of Lake Tahoe	300	300	300	300	250	250	300	300	300	300	250	250
Maximum flow out of Lake Tahoe	600	600	600	600	500	500	600	600	600	600	500	500
Min. flow, Truckee R. below Donner Ck.	100	100	100	100	100	100	100	100	100	100	100	100
Pref. flow, Truckee R. below Donner Ck.	300	300	300	300	250	250	300	300	300	300	250	250
Max. flow, Truckee R. below Donner Ck.	600	600	600	600	500	500	600	600	600	600	500	500
Minimum flow, TruckeeR. below Boca	150	150	150	150	150	150	150	150	150	150	150	150
Preferred flow, Truckee R. below Boca	300	300	300	300	250	250	300	300	300	300	250	250
Maximum flow, Truckee R. below Boca	600	600	600	600	500	500	600	600	600	600	500	500
Minimum flow out of Donner Lake	8	8 ¹	not appl ¹	not appl ¹	not appl ¹	not appl ¹	8 ^{1,2}	8 ²	8 ²	8 ²	8 ²	8
Preferred flow out of Donner Lake ³	50	50	not appl ¹	not appl ¹	not appl ¹	not appl ¹	50	50	50	50	10	10
Maximum flow out of Donner Lake	100	100	not appl ¹	not appl ¹	not appl ¹	not appl ¹	100	100	100	100	20	20
Minimum flow out of Prosser ⁴	25	25	25	25	25	12	12	12	12	12	12	25
Preferred flow out of Prosser	50	50	50	50	35	35	75	75	75	75	30	30
Maximum flow out of Prosser	100	100	100	100	70	70	150	150	150	150	60	60
Minimum flow out of Independence ⁵	7	7	7	7	4	4	8	8	8	8	4	4
Preferred flow out of Independence	20	20	20	20	10	10	20	20	20	20	10	10
Maximum flow out of Independence	40	40	40	40	20	20	40	40	40	40	20	20
Preferred flow into Stampede	90	90	90	90	50	50	90	90	90	90	30	30
Minimum flow out of Stampede	45	45	45	45	45	45	45	45	45	45	45	45
Preferred flow out of Stampede	125	125	125	125	100	100	125	125	125	125	100	100
Maximum flow out of Stampede	250	250	250	250	200	200	250	250	250	250	200	200

1. California Dam Safety Requirements preclude storing water in Donner Lake from November 15 to April 15, which preclude the possibility of controlling releases.
2. The minimum-flow objective for Donner Lake during April through August is reduced to 5 cfs or natural inflow, whichever is less, when the lake is projected to have less than 8,000 acre-feet of storage on Labor Day. Exchanges to meet TROA Enhanced Minimum Flows would be reduced similarly to the extent California is able to obtain a waiver for this under TROA Section 9.C.1(c).
3. As stated in TROA Section 9.F.1(a), preferred instream flows out of Donner during a Dry Season may not be specified; consequently, the flows shown here do not apply during a Dry Season.
4. Since physical constraints prevent releases between 12 cfs and 25 cfs, this is the minimum flow until the dam is modified to allow a minimum flow of 16 cfs throughout the year.
5. These releases from Independence Lake are required to the extent specified in TROA Section 9.C.6(a).

*Developed from Instream Flow Requirements, Truckee River Basin, Lake Tahoe to Nevada (California Department of Fish and Game, 1996)

Table 6 - Reservoir Storage Objectives (in thousands of acre-feet)

Reservoir Storage for Recreation Purposes

- Minimum storage is an absolute minimum in the sense that recreation opportunities do not exist when storage is lower.
- June through August storage's are inclusive of the Memorial Day and Labor Day holiday weekends.

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>
Minimum Storage in Donner Lake ¹	--	--	--	--	--	--	--	--	6.3	6.3	6.3	--
Preferred Min. Storage in Donner Lake	--	--	--	--	--	--	--	--	8	8	8	--
Minimum Storage in Prosser Creek Res.	--	--	--	--	--	--	--	--	11	11	11	--
Preferred Min. Storage in Prosser Creek Res.	--	--	--	--	--	--	--	--	19	19	19	--
Minimum Storage in Stampede Res.	--	--	--	--	--	--	--	--	62	62	62	--
Preferred Min. Storage in Stampede Res.	--	--	--	--	--	--	--	--	127	127	127	--
Minimum Storage in Boca Res.	--	--	--	--	--	--	--	--	22	22	22	--
Preferred Min. Storage in Boca Res.	--	--	--	--	--	--	--	--	33.5	33.5	33.5	--

Reservoir Storage Levels to Protect Reservoir Fisheries

Minimum Fish Storage - Prosser Creek Res.	5	5	5	5	5	5	5	5	5	5	5	5
Minimum Fish Storage - Stampede Res.	15	15	15	15	15	15	15	15	15	15	15	15
Minimum Fish Storage - Boca Res.	10	10	10	10	10	10	10	10	10	10	10	10
Min. Fish Storage in Independence Lake ²	--	--	--	--	--	--	7.5	7.5	7.5	7.5	--	--

Other Reservoir Storage Objectives

Exchanges out of Lake Tahoe may be recommended at appropriate times to help reduce the potential for wave-induced erosion, to increase the available habitat for the Tahoe Yellow Cress, and to help meet water quality objectives for the Truckee River.

¹ Minimum storage specified in the Donner Lake Indenture Agreement (May 3, 1943), below which releases are not permitted

² Minimum storage for spawning access to upper Independence Creek for the Independence Lake and Independence Creek population of Lahontan Cutthroat Trout

Attachment G – Alternatives

Part 1 – Alternatives Considered and Rejected

*Part 2 – TROA Components Considered and
Rejected During Negotiations*

*Part 3 – Computer Analysis of Stream Flow and
Recreational Pool Elements Considered for TROA*

Attachment G

Part 1—ALTERNATIVES CONSIDERED AND REJECTED

To assist the negotiators in developing an operating agreement, numerous potential alternatives were evaluated. In one instance, the *Report to the Negotiators*, which is incorporated by reference and summarized below, was prepared to consider the possible effects of five alternatives against a no action alternative. In other studies, an extensive computer simulation effort was completed, which tested the capacity of a variety of stream flow and recreation pool elements to accomplish their intended purposes without infringing on the water rights of others. The results of this computer analysis are summarized at the end of this section.

The alternatives analyzed in the *Report to the Negotiators* were rejected by the negotiators for numerous reasons, but primarily because each alternative would have compromised Orr Ditch Decree water rights, and in many cases, would have been inconsistent with P.L. 101-618. A list of components rejected from further consideration in a draft TROA is given in part 2 of this attachment. As formulated, each alternative included mandatory flow or storage requirements and assumed water would be taken to fulfill those requirements without the permission of rightful water rights owners. For example, computer modeling showed the Stream Flow Alternative was likely to provide the least amount of water for Truckee Meadows agricultural and M&I water users because the alternative required the release of waters from storage when it was not usually needed for irrigation or M&I and, when released, those waters could not be diverted for other beneficial uses. In another instance, the Recreational Pools Alternative resulted in benefits accruing to uses without water rights (in the form of higher water levels in reservoirs) at the expense of existing, water-righted, downstream demands. A comparison of simulated shortages in water supplies under each of the action alternatives and no action illustrates the potential adverse impacts on M&I and agricultural water rights (Table 1).

Such actions were contradictory to P.L. 101-618, including section 205(a)(2), which requires water to be stored and released from Truckee River reservoirs to satisfy the exercise of water rights in conformance with both the Orr Ditch and the Truckee River General Electric decrees, except for those rights that are voluntarily relinquished. In addition, the possible adverse effects to water resources under each preliminary alternative were unacceptable to one or more of the negotiating parties.

Recognizing that an agreement was not likely to be concluded if mandatory restrictions interfered with the exercise of existing water rights, the negotiators discarded components of the preliminary alternatives when one or more parties determined that water rights would likely be adversely affected. For example, when an alternative to achieve stream flows requested by California Department of Fish and Game (CDFG) was evaluated, and

Table 1: Computer model results showing number of years (out of 97 years) when water supplies were insufficient to meet M&I or agricultural demand under each of the alternatives (abstracted from tables 4.13 – 4.17 of the *Report to the Negotiators*).

	No Action	Basic TROA	Stream Flow	Recreational Pools	Threatened & Endangered Species	California Assured Storage
Truckee Meadows M&I	13	14	17	14	15	16
Truckee Meadows Agricultural California M&I	7	10	14	11	14	10
Newlands Carson Div.	11	6	28	4	11	11
Newlands Truckee Div.	6	6	8	7	7	7
	7	8	12	11	9	8

modeling showed that requested flows could only be achieved by releasing stored water adverse to M&I and agricultural water rights in Nevada, the negotiators realized they would have to examine different flows and explore new ways to make water available for this purpose. This, in turn, led to negotiations on such topics as exchange procedures, priorities for exchanges, accounting, and procedures for mandatory exchanges.

The negotiators did, however, retain aspects of the preliminary alternatives believed to be desirable and that were acceptable to the affected parties. For example, stream flow and recreational pool targets have been incorporated into draft TROA. Additionally, the negotiators incorporated a component of the preliminary California Assured Storage Alternative and agreed that California could store a portion of its unused surface water allocation in Truckee River reservoirs for M&I purposes. These and numerous other features of the preliminary alternatives identified in the *Report to the Negotiators* have been incorporated into the draft agreement.

A. REPORT

In January 1996, the *Report to the Negotiators* was completed and circulated to all parties participating in TROA negotiations. The document was originally expected to serve as the basis for a draft EIS/EIR for the negotiated settlement. However, during review of the draft document, the TROA EIS/EIR Management Team concluded that numerous issues, whose environmental effects were still indeterminate, were still being negotiated, and it was premature to prepare a draft EIS/EIR. Consequently, the title of the document was modified, and it was distributed only to the negotiating parties. The purpose of completing the *Report to the Negotiators* was threefold - to provide analytical information requested by the negotiators; to emphasize issues raised during public scoping; and to provide the negotiators with additional information on potential impacts of proposals that were being considered.

The *Report to the Negotiators* included a NEPA-style analysis of five potential project alternatives. Even though numerous issues had yet to be resolved through negotiations at the time the *Report to the Negotiators* was completed, an alternative was created to represent some of the basic components of what was at the time thought to represent a TROA. Further, four additional alternatives were created to consider the predominant issues identified during the public scoping process - stream flow, recreational pools, threatened and endangered species, and storage of California water.

In reviewing the potential alternatives identified in the *Report to the Negotiators*, the negotiators recognized a number of important issues. Foremost among these was that water rights were adversely affected by each of the alternatives: frequently M&I water supplies recognized in the Orr Ditch decree. As formulated in the *Report to the Negotiators*, the alternatives would have taken water without the consent of the water right holder and precluded the storage and release of water by operations proposed in the alternatives. The potential Basic TROA Alternative had the least adverse impact on water rights, but it, too, created conditions that were adverse to water rights, and in some cases, did not comply with existing law. Recognizing the need to continue negotiations, the alternatives evaluated in the *Report to the Negotiators* were rejected.

The potential environmental impacts of the possible project alternatives were also evaluated using standard EIS/EIR techniques. Environmental resources in the study area were characterized under current conditions and also as projected to occur in the future without a TROA in place (the No Action Alternative). Future resources were also characterized as they might occur if each of the potential alternatives were in place. The results of these efforts were then compared to determine possible environmental impacts attributable to the alternatives. Potential impacts to water supply in the study area were given special attention through an extensive modeling effort to determine possible differences between the alternatives. A description of each alternative and a brief summary of some of the potential environmental impacts identified in the *Report to the Negotiators* are included below.

1. Report - Basic TROA Alternative¹

a. Description.—This alternative emphasized implementing the requirements of the PSA; i.e., to provide drought relief for Truckee Meadows and enhance spawning flows for endangered and threatened fish of Pyramid Lake. As part of this alternative, the portion of California's surface water allocation not needed to satisfy projected future water rights would remain in the Truckee River to serve downstream water rights. Existing mandatory minimum stream flows would be supplied according to existing procedures, and credit water stored pursuant to PSA could be exchanged to increase the potential for maintaining stream flows. Preferred stream flows were identified as being desirable but not mandatory for fish resources, and so were merely identified as targets for the Administrator. In addition, storage and releases of credit water could be

¹ The Basic TROA Alternative represented draft TROA as negotiated as of 1995, and is substantially different from the TROA Alternative evaluated in the revised DEIS/EIR.

exchanged between reservoirs to achieve non-mandatory recreational pool storage targets.

b. Environmental Impact Summary.—The Basic TROA Alternative was expected to increase the average volume of water stored in Lake Tahoe, as well as Prosser Creek, Stampede, and Boca Reservoirs. In addition, average flow in the Truckee River during the cui-ui spawning period was higher than conditions without a TROA in place. Although none of the alternatives improved water quality conditions in the Truckee River substantially, overall water quality was best under the Basic TROA and the Threatened and Endangered Species Alternative.

Water supply for M&I use in the Truckee Meadows was lower under this alternative than it was under the No Action Alternative. In contrast, California M&I water supplies were higher than under the No Action Alternative. Agricultural water supplies available to the Truckee Meadows and Carson Division were reduced under the Basic TROA Alternative. Truckee Division agricultural water supplies were the same as under the No Action Alternative.

The Basic TROA Alternative was anticipated to result in little change to conditions affecting biological resources in the study area from those projected for the No Action Alternative. In comparison to the other alternatives, the Basic TROA Alternative created the least favorable conditions the coldwater fish of Pyramid Lake.

Further, this alternative would reduce fall spawning by fish species found in Donner Creek, Independence Creek, Little Truckee River downstream from Stampede Reservoir, and the Truckee River because preferred and minimum stream flows would be met less often during fall months. In contrast, preferred and minimum stream flows were projected to be met much more frequently during the spring months, and spring-spawning fish species in all the streams and tributaries would benefit as a consequence. Riparian habitat in the study area would be inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on the associated biological resources.

The Basic TROA Alternative created more favorable conditions for cui-ui, bald eagles, osprey, and white pelicans than were anticipated under the No Action Alternative, but it appeared to restrict access of spawning LCT to Independence Creek during drought conditions.

The Basic TROA Alternative produced negligible impacts to recreational activities, recreational expenditures, agricultural activities, and cultural resources. Employment and personal income increased slightly in the study area, but no changes to population or air quality conditions in the study area occurred beyond those projected for the No Action Alternative.

2. Report-Stream Flow Alternative

a. Description.—The Stream Flow Alternative established mandatory minimum and preferred stream flows as identified by CDFG. The mandatory minimum flows were higher than existing minimum flows. By emphasizing stream flows, this alternative

responded to issues raised during scoping regarding general well-being of fish and wildlife, stream-based recreation, and water quality in the Truckee River. The alternative also responded to certain endangered species concerns by making spawning flows available for cui-ui.

The reservoirs would be operated to provide those mandatory stream flows by releasing all categories of water (pooled, fish, credit, and privately owned water). No storage credit would be provided to compensate for pooled water released. California's excess surface water—the portion of California's 10,000-acre-foot allocation not used to satisfy existing water rights—would be stored as Secondary Stored Water (referred to as Other Credit Water in TROA) and released to help maintain mandatory stream flows.

b. *Environmental Impact Summary.*—Model results showed the Stream Flow Alternative increased flows in the Truckee River, particularly during the summer months when flows are usually lowest. To sustain higher Truckee River flows, less water was stored in the upstream reservoirs. Average storage volumes for Lake Tahoe, Donner Lake, Independence Lake, Prosser Creek Reservoir, Stampede Reservoir, and Boca Reservoir were lower for this alternative than for any other alternative. In comparison to the other alternatives, environmental analysis indicated that the Stream Flow Alternative produced the best water quality conditions for Pyramid Lake.

California M&I water supplies and water supply for M&I use in the Truckee Meadows were lower under this alternative than under the No Action Alternative. Agricultural water supplies available to the Truckee Meadows, Carson Division, and Truckee Division were also reduced in the Stream Flow Alternative.

Since this alternative maintained less water in upstream lakes and reservoirs, it provided the least favorable conditions for biological resources at all the lakes and reservoirs except Pyramid Lake. Higher inflows to Pyramid Lake were expected to produce a greater quality and higher quantity of habitat for the coldwater fishery in the lake. At the other lakes and reservoirs, lower water levels were expected to reduce fish spawning success and survival and adversely affect waterfowl access to foraging habitat.

Populations of fall-spawning fish species in Donner Creek and the Truckee River were expected to be reduced because preferred and minimum stream flows were met less often during fall months in those tributaries. Conversely, fall-spawning fish populations in Independence Creek, Little Truckee River, and Prosser Creek were projected to increase because preferred and minimum stream flows were met more frequently.

The Stream Flow Alternative created the best stream flow conditions for spring-spawning fish species in the upstream tributaries and the Truckee River, and populations of those species were expected to increase. Riparian habitat in the study area would be inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on the associated biological resources.

Due to its high potential to maintain or recover the cottonwood riparian forest downstream from Derby Diversion Dam, the Stream Flow Alternative would provide benefits to a number of endangered, threatened, or sensitive bird species. It did not

improve conditions for cui-ui as well as the No Action Alternative, and it appeared to create the least favorable conditions at upstream lakes and reservoirs for eagles and osprey.

The Stream Flow Alternative was projected to have some minor adverse impacts on recreational expenditures due to lower water levels in the lakes and reservoirs. Impacts to agricultural activities, employment, and personal income in the study area were minor, and cultural resources, population, and air quality conditions were similar to those for the No Action Alternative.

3. Report-Recreational Pools Alternative

a. Description.—The Recreational Pools Alternative was formulated to respond to the issue of lake- and reservoir-based recreation. It created mandatory storage targets for the Truckee River reservoirs from May through August with the intent of enhancing recreational opportunities during the recreation season. To achieve the mandatory reservoir storage targets, the alternative would limit all releases from storage or natural inflow any time storage was less than or equal to the established target.

b. Environmental Impact Summary.—This alternative was expected to create higher water elevation in Stampede, Boca, and Prosser Reservoirs throughout the year, particularly during the summer recreation season. Correspondingly, the volume of water stored in Lake Tahoe, Donner Lake, and Independence Lake was reduced compared to other alternatives. Truckee River flows were higher in the spring months during cui-ui spawning but lower during the other seasons.

Water supply for M&I use in the Truckee Meadows was lower under this alternative than under the No Action Alternative. By contrast, California M&I water supplies were higher. Agricultural water supplies available to the Truckee Meadows, Carson Division, and Truckee Division were also reduced in the Stream Flow Alternative.

The Recreational Pools Alternative was expected to provide benefits to most biological resources, particularly during the summer months when water elevations were higher to serve recreational interests. In comparison to the No Action Alternative, this alternative provided more favorable conditions for algae, aquatic invertebrates, fish, and waterfowl resources at most lakes and reservoirs in the study area.

Populations of fall-spawning fish species were expected to increase in Independence Creek, the Little Truckee River, and Prosser Creek because preferred and minimum stream flows would be met more frequently during fall months in those tributaries. However, populations of those same fish species were expected to be reduced in Donner Creek and the Truckee River because preferred and minimum stream flows were not anticipated to be met as frequently.

Preferred and minimum stream flows were projected to be met much more frequently during the spring months, and populations of spring-spawning fish species in all the streams and tributaries would benefit as a consequence. Riparian habitat in the study area

would be inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on associated biological resources.

The Recreational Pools Alternative created less favorable conditions for cui-ui than the No Action Alternative, restricted access to Independence Creek for spawning LCT during drought conditions, and created the least favorable conditions for the white pelican. Of all the alternatives, this alternative created the most favorable conditions for bald eagles and osprey at Stampede and Boca Reservoirs.

The Recreational Pools Alternative was expected to produce negligible impacts to recreational activities, recreational expenditures, agricultural activities, and cultural resources. Employment and personal income increased slightly in the study area, but population and air quality conditions in the study area were similar to those for the No Action Alternative.

4. Report-Threatened and Endangered Species Alternative

a. Description.—This alternative was designed to respond primarily to the issue of endangered and threatened fish species of Pyramid Lake. It established mandatory minimum stream flow requirements that were greater than existing minimum stream flow requirements in order to provide higher flows in the lower Truckee River during the spawning season. To achieve the desired flow targets, all categories of water could be released and exchanged irrespective of whether they could be re-stored or protected from depletion.

b. Environmental Impact Summary.—Model results indicated that flow in the Truckee River during the spring months for the Threatened and Endangered Species Alternative was substantially higher than for other alternatives. Average storage at Stampede, Boca, and Prosser Reservoirs was greater, while average storage at Donner and Independence Lakes was lower. Storage at Lake Tahoe was higher in the fall and winter months, but lower in the spring and summer. As noted earlier, the Basic TROA and Threatened and Endangered Species Alternatives appear to produce the best overall water quality conditions.

Water supply for M&I use in the Truckee Meadows was lower under this alternative than under the No Action Alternative. California M&I water supplies were similar to those of the No Action Alternative. Agricultural water supplies available to the Truckee Meadows and Carson Division were also reduced in the Stream Flow Alternative. Truckee Division agricultural water supplies were similar to those of the No Action Alternative.

This alternative was expected to produce higher flows in the lower Truckee River to respond to the requirements of listed fish species of Pyramid Lake, to the general benefit of biological resources in the lake. In addition, higher water elevations in several lakes and reservoirs would increase the aquatic food base and fish reproductive success compared to the No Action Alternative. Draw downs at these reservoirs were anticipated to occur less frequently than under the No Action Alternative, providing much better foraging and habitat conditions for aquatic resources.

Populations of fall-spawning fish species would be reduced in Donner Creek, Independence Creek, and the Truckee River because preferred and minimum stream flows were projected to be met less often during the fall months in these streams. Populations of these same fish species in Prosser Creek were expected to increase because preferred and minimum stream flows would be met in the creek during fall months.

Preferred and minimum stream flows were met much more frequently during the spring months, and populations of spring-spawning fish species in all the streams and tributaries would increase as a consequence. Riparian habitat in the study area was projected to be inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on the associated biological resources.

The Endangered and Threatened Species Alternative created favorable conditions for cui-ui second only to those expected under the California Assured Storage Alternative. However, it created less favorable conditions for LCT, bald eagles and osprey at Independence Lake, and the white pelican.

The Endangered and Threatened Species Alternative was expected to produce negligible impacts to recreational activities, recreational expenditures, agricultural activities, and cultural resources. Employment and personal income in the study area increased slightly, but population and air quality conditions in the study area were similar to the No Action Alternative.

5. Report-California Assured Storage Alternative

a. Description.—The California Assured Storage Alternative was the State's preliminary proposal to maintain 50,000 acre-feet of carryover storage to serve beneficial uses in California. The State could store as much as 8,800 acre-feet each year in Prosser Creek and Stampede Reservoirs, and any unused portion of that storage could carry over from year to year. Total maximum carryover was set at 50,000 acre-feet.

b. Environmental Impact Summary.—Based on model results, average storage at Lake Tahoe and Stampede, Prosser Creek, and Boca Reservoirs was higher, and average storage in Donner and Independence Lakes was projected to be lower compared to the No Action Alternative. Spring flows in the Truckee River were higher than any of the other alternatives considered in the *Report to the Negotiators*.

Water supply for M&I use in the Truckee Meadows was lower under this alternative than under the No Action Alternative. In contrast, California M&I water supplies were higher. Agricultural water supplies available to the Truckee Meadows, Carson Division, and Truckee Division were also reduced in the Stream Flow Alternative.

With more water projected in most of the lakes and reservoirs in the study area, conditions affecting biological resources at the lakes and reservoirs were enhanced - the aquatic food base, reproductive success for fish, and foraging habitat for waterfowl were improved compared to the No Action Alternative.

Populations of fall-spawning fish species in Donner Creek, Independence Creek, the Little Truckee River, and the Truckee River were reduced because preferred and minimum stream flows were met less often in these streams during the fall months. Only in Prosser Creek were populations of these same fish species increased, as preferred and minimum stream flows were anticipated to be met in the creek during the fall months.

Preferred and minimum stream flows were met much more frequently during the spring months, and populations of spring-spawning fish species in all the streams and tributaries were expected to increase. Riparian habitat in the study area was inundated more frequently, resulting in a healthier riparian ecosystem and a beneficial effect on the associated biological resources.

The California Assured Storage Alternative created the most favorable conditions for cui-ui of all the alternatives considered in the *Report to the Negotiators*. It also created better conditions for a number of sensitive bird species than under the No Action Alternative.

The California Assured Storage Alternative was expected to produce negligible impacts to recreational activities, recreational expenditures, agricultural activities, and cultural resources. Employment and personal income in the study area increased slightly, but population and air quality conditions were similar to those for the No Action Alternative.

B. OTHER STUDIES

Following distribution and review of the *Report to the Negotiators*, a number of potential elements were identified that warranted consideration for inclusion into the TROA. These elements focused on maintaining minimum stream flows that were higher than existing minimum flows and maintaining minimum recreation pools in the Truckee River reservoirs. To gain an understanding of how these elements and their variations might affect the exercise of water rights, a technical team completed an extensive computer simulation and analysis effort. The team divided this effort into three tasks:

Develop a list of elements that could enhance stream flows or recreational pools.

Review the list of flow- and pool-exchanging elements and dismiss those that would obviously violate the requirements of Section 205(a)(2) of P.L. 101-618.

Evaluate those elements not dismissed.

More than 100 computer simulations were produced. Results of the simulations were provided to the negotiators for consideration and incorporation into the proposed TROA as they determined appropriate.

The technical team concluded that simply setting higher minimum stream flows, as in the *Report to the Negotiators*, would not achieve the desired results because: (1) water rights would be adversely affected and (2) higher minimum flows would cause too much water to be released during dry periods in some reaches, which would occasionally drop flows

to zero as reservoir storage was exhausted. Through analyses of computer simulations, the technical team determined that creating and storing Joint Program Fish Credit Water and exchanging TROA water categories (e.g., Fish Credit Water and Non-Firm M&I Credit Water) among reservoirs could provide substantial benefits for stream- and reservoir-dependent resources by increasing the frequency at which minimum stream flows and recreation pools would be achieved. This led to the development of two sets (tiers) of minimum stream flows that promoted higher minimum stream flows than those that currently exist during wet and normal water years and conservation of M&I water during droughts. The two-tier flow system would be implemented by exchanging or restoring TROA waters among the reservoirs to supply, to the extent possible, the difference between the higher minimum flows and those that currently exist when those higher flows were not already being achieved. In addition, Sierra Pacific and the United States would voluntarily relinquish their rights to restore some of their water to meet the higher minimums under certain conditions. These exchanges and re-storage also increased the frequency of maintaining minimum recreational pools in Prosser Creek, Boca, and Stampede Reservoirs. A detailed description of the computer analysis is provided in part 3 of this attachment.

Attachment G

Part 2—TROA COMPONENTS CONSIDERED AND REJECTED DURING NEGOTIATIONS

The following potential components of a TROA were considered by the negotiators and were rejected as being adverse to water rights or non-negotiable by one or more of the negotiating parties:

- Operate Truckee River reservoirs solely for maintaining stream flows
 - Maintaining minimum stream flows that are higher than those that currently exist, including between hydroelectric diversion and return points, for recreation, fish and wildlife resources, water quality, or aesthetics
 - Maintain constant flows (greater than current minimum stream flows) in the Truckee River Basin for lengthy time periods
 - Maintain optimum flows during average or greater water years
 - Meet spawning flow requirements for cui-ui
- Remove institutional constraints, such as the 1935 Truckee River Agreement
- Restrict the rate at which reservoir releases could be changed (increased or decreased)
 - Establish maximum release rates for Truckee River reservoirs
 - Establish maximum rates at which reservoir releases may be changed
- Release Credit, Other Credit Water, Private Water, Floriston Rate Water or Project Water solely for maintaining optimum stream flows, whether or not such releases could be exchanged for a similar release from another reservoir or re-stored downstream

- Restrict reservoir releases so that they do not cause stream flows to be greater than double the optimum stream flow
- Maximize the storage of Fish Credit Water in Stampede Reservoir by reducing the storage of Sierra Pacific M&I Credit Water
- Maintain access for Lahontan cutthroat trout to spawning habitat in Independence Creek by substituting storage release from Lake Tahoe for releases from Independence Lake to prevent water storage in Independence Lake from dropping below 7,500 acre-feet from May through July
- Distribute storage of PSA waters proportionally among the reservoirs to increase recreational opportunities at Truckee River reservoirs
- When water level in Independence Lake would be below the dam's release outlet, maintain minimum stream flows in Independence Creek by pumping water from storage
- Maintain the recreational value of Truckee River reservoirs by prohibiting releases below a certain level during the summer months
- Maintain the recreational value of Prosser Creek Reservoir by not releasing Prosser Project Water until after Labor Day
- Increase the M&I drought relief supply for Reno/Sparks by:
 - Establishing release schedules and exchange criteria for other waters
 - Maximizing M&I Credit Water storage in Stampede Reservoir
- Store California's surface water allocation (in excess of direct diversions) adverse to the storage of PSA waters and Floriston Rate Water

The following potential components of a TROA were considered by the negotiators and were rejected as being beyond the purpose and scope of TROA as directed by P.L. 101-618:

- Acquire water rights to maintain stream flows during drought conditions

- Use Orr Ditch Decree Claim Numbers 1 and 2 (agricultural irrigation claims) for cui-ui spawning
- Use Newlands Project water rights acquired for the maintenance of wetlands at Stillwater National Wildlife Refuge for the conservation of cui-ui
- Supplement fish populations in the Truckee River Basin with hatchery-reared fish
- Restore fish habitat in the Truckee River Basin degraded by constructing dams
- Maintain greater Donner Creek flows in the reach between Donner Lake dam and the confluence with Cold Creek by measuring flow immediately downstream from the dam
- Increase reservoir storage for recreation and fish and wildlife resources by increasing the storage conservation pools in Truckee River reservoirs
- Improve water quality in the Truckee River by decreasing the contaminant load and concentration of sewage treatment plant discharge
- Improve water quality in the Truckee River by applying sewage treatment plant effluent to land
- Use artificial means to improve dissolved oxygen levels in the Truckee River
- Increase the M&I drought relief supply for Reno/Sparks by:
 - Dedicating more water from the Truckee River to M&I use
 - Constructing Dog Valley Reservoir or other new reservoirs
 - Increasing water conservation beyond that required by PSA (Water Conservation Plan)
 - Eliminating mandatory minimum stream flows in Truckee River Basin tributaries
 - Pumping Lake Tahoe or Independence Lake
 - Removing all restrictions in the use of Private Water

- Importing water from other drainages
- Imposing greater conservation measures on agricultural activities
- Pumping groundwater from gravel pits near the Truckee River
- Restricting growth in the Reno/Sparks area
- Transporting water from Alaska by pipeline or tow ice bergs to nearby pumping areas
- Eliminating water deliveries to the Newlands Project
- Increase the water supply for threatened and endangered fishes of Pyramid Lake by:
 - Modifying Operating Criteria and Procedures for the Newlands Project
 - Lining water delivery canals in the Newlands Project
 - Allowing conjunctive use of surface and groundwater
- Modify Lake Tahoe storage and release operations as the channel configuration of the Truckee River changes
- Use Truckee River water recouped from amounts previously over diverted to the Newlands Project to improve and maintain stream flow conditions throughout the Truckee River Basin
- Re-draft the contract governing the use of Donner Lake storage to make more water available for stream flow maintenance
- Modify Lake Tahoe's storage limits to allow for more water to be available for stream maintenance

The following potential component of a TROA was considered by the negotiators and rejected as not allowing flexible reservoir management and conjunctive use of water:

- Use Prosser Project Water in Prosser Creek Reservoir for cui-ui before using water from Stampede Reservoir

The following potential components of a TROA were considered by the negotiators and rejected because the negotiators could not reach agreement:

- Increase stream flows to enhance recreation, fish and wildlife resources, and water quality by storing some of the water scheduled for late summer delivery to the Newlands Project in Truckee River reservoirs
- Use Lake Tahoe “federal water” described in the 1935 Truckee River Agreement for the benefit of threatened and endangered fishes in Pyramid Lake

Attachment G

Part 3—COMPUTER ANALYSIS OF STREAM FLOW AND RECREATIONAL POOL ELEMENTS CONSIDERED FOR TROA

To assist TROA negotiators in developing the operating agreement identified in Section 205(a) of P.L. 101-618, a technical team tested the capacity of potential elements of a TROA to accomplish intended purposes without interfering with the exercise of water rights (unless voluntarily relinquished) and implementation of the Preliminary Settlement Agreement. One of the team's primary tasks was to explore ways to maximize the frequency of achieving minimum stream flow for fish and wildlife that California Department of Fish and Game (CDFG) recently recommended (greater than the minimum stream flows requirements that currently exist) and minimum recreational pools in the Truckee River reservoirs (includes federal reservoirs along with Donner Lake and Independence Lake). The team divided the task into three actions: 1) develop a list of elements that could enhance stream flows and recreational pools; 2) review the list and dismiss elements that would obviously violate their requirements of Section 205(a)(2) of P. L. 101-618; and 3) use computer simulations to evaluate those elements not dismissed above. The team then provided its analyses to the negotiators for discussion and incorporation into the proposed operating agreement as they determined appropriate. The following is an overview of the results provided to the negotiators.

A. ELEMENTS DISMISSED

After a general review of the elements list, the technical team eliminated the following from further consideration because they would have violated existing water rights if implemented or were deemed non-negotiable by the TROA negotiators:

1. Operating Truckee River Reservoirs only for maintaining stream flows
2. Removing institutional constraints, such as the 1935 Truckee River Agreement
3. Restricting the rate at which reservoir releases could be changed (increased or decreased)
4. Releasing Credit Water, Private Water, Pooled, or Project Waters solely for maintaining optimum stream flows for fish and wildlife, whether or not such releases could be exchanged for a similar release from another reservoir or re-stored downstream
5. Restricting reservoir releases when downstream flows exceed twice the optimum stream flows for fish and wildlife

1. Approach

More than 100 computer simulations were generated in these analyses using the same hydrological model and 1901-95 hydrologic data base as in Chapters 3 and 4 of the Draft Environmental Impact Statement/Environmental Impact Report for the Truckee River Operating Agreement, February 1998. Each simulation included monthly flows at eight sites (primarily reservoir releases), water storage in six reservoirs, and the amount of water available in nine water categories. Since the Nevada Public Service Commission requires Sierra Pacific Power Company (Sierra) to have sufficient M&I water reserves to supply the Truckee Meadows service area during an extended drought, impacts to its water supply were simulated with 1901-94 hydrologic data followed by a repeat of the 1987 and 1988 water years, the first years of the recent eight-year drought (hereafter referred to as the 96-year period). The last year of the 96-year period was used as an “indicator year” for the worst case situation for M&I storage.

While these analyses characterized the No Action Alternative the same as in Chapter 3 (DEIS/EIR, February 1998), they varied those elements (storage, release, and exchange) of the TROA Alternative in Chapters 3 and 4 (DEIS/EIR, February 1998) for using different water categories, including Joint Program Fish Credit Water, to achieve various minimum stream flows regimes and minimum recreational pools. These minimum stream flow regimes, minimum recreation pools, and variations in exchanging and restoring Power Company M&I Credit, Fish Credit Water, Joint Program Fish Credit Water, Floriston Rate Water, Fish Water, Private Water, and Other Credit Water were evaluated in various combinations to identify impacts to stream flows, Sierra’s M&I water, and irrigation water available to the Carson Division of the Newlands Project.

The various water categories were evaluated for their capacity to support the following purposes:

- Maintaining current minimum stream flows, even if such releases cannot be exchanged or re-stored
- Maintaining minimum stream flows greater than those that currently exist, even if such releases cannot be exchanged or re-stored
- Maintaining the difference between current minimum stream flows and those that are larger, but only if such releases can be exchanged or re-stored
- Maintaining the difference between current minimum stream flows and those that are larger, whether or not they can be exchanged or re-stored
- Used as the last water category for maintaining minimum stream flows

- Maintaining preferred stream flows only
- Maintaining minimum recreational pools for Truckee River Reservoirs

CDFG's preferred stream flow regime, as used in Chapters 3 and 4 (DEIS\EIR, February 1998), was also used in these analyses. It is a set of continuous flows considered optimum for selected reaches of the Truckee River and its tributaries. Since it is usually not possible to achieve these stream flows without adversely affecting water rights, the computer simulations maintained the flow nearest the CDFG preferred flow regime (must be greater than mandatory minimum flow) that could be maintained for several months by adjusting scheduled releases (usually by extending the release period) and exchanging water among reservoirs without interfering with water rights.

A number of minimum stream flow regimes were tested in these analyses by comparing the frequency that stream flows recently recommended by CDFG were achieved or exceeded (tables 1 and 2). The current minimum flow regime contains mandatory reservoir releases currently required for certain reservoirs. Since these releases are usually not adequate for supporting self-sustaining fish populations in selected stream reaches, CDFG recently recommended a new set of minimum stream flows (hereafter referred to as CDFG minimum flow regime) that are greater than those that currently exist. The technical team developed a two-tier set of minimum stream flows (two-tier minimum flow regime) to provide greater flexibility for water management and to reduce adverse effects to water rights. This regime is comprised of two sets of minimum stream flows: During "non-dry water years" CDFG minimum flow regime is implemented, while during "dry water years", stream flow targets in CDFG minimum flow regime are reduced by half. The two-tier minimum flow regime was modified further (variations A and B) to allow greater flexibility in reservoir operations.

These analyses tested two sets of minimum recreational pool requirements for Donner Lake, and Prosser Creek, Boca, and Stampede Reservoirs from June through August. The first set only used the minimums associated with priority 1 given in table 3; these were targets, not mandatory limits. The second set used the minimums associated with all three priorities and established criteria for applying them. It emphasized maintaining priority 1 minimums for all four reservoirs. If these levels could not be maintained, storage was released from Stampede in lieu of releases from Prosser or Boca so that minimum pools could be maintained at priority 2 levels. If Stampede storage declined to 65,000 acre-feet, releases were made from Prosser and Boca until priority 3 levels were reached. Priority 3 minimums could not be violated unless releases were required to achieve minimum stream flows.

Use of water categories to support these minimum pools through exchanges and re-storage were evaluated by comparing computer simulations of frequency of achieving or exceeding minimum pools, Sierra's M&I shortage at the end of the 96-year period of analysis, and average annual shortage to the Carson Division of the Newlands Project.

Table 1.—Instream flow regimes (cfs)

	CDFG preferred	Current minimum	CDFG minimum	Two-tier	
				CDFG minimum	50% of CDFG minimum
Truckee River Tahoe to Donner	250	50-70	75	75	37.5
Truckee River Donner to Little Truckee River	300	0	100	100	50
Truckee River Little Truckee River to Stateline	200	0	150	150	75
Donner Lake release ¹	10-50	2-3	² 8	8	4
Prosser Creek Reservoir release	30-75	5	16	16	8
Independence Lake release	10-20	2	4-8	4-8	2-4
Stampede Reservoir release	100-125	30	45	45	23

¹ From November 15 through April 15, the gates of the dam are held open; therefore, inflow to the lake determines the outflow at the dam, and there is no required flow.

² Minimum release from Donner Lake from April through August becomes 5 cfs if the lake is forecasted to contain less than 8,000 acre-feet of water on September 1.

Two sets of comparisons were made: (1) using Joint Program Fish Credit Water as the last water to be used for minimum stream flows versus using such water to maintain minimum recreational pools and readily moving it among the reservoirs as necessary; and (2) using different combinations of the water categories to maintain minimum recreational pools and readily moving it among the reservoirs as necessary (as long as minimum stream flows were maintained and CDFG preferred flow regime was not exceeded) (table 4). Each simulation used variation B of the two-tier minimum flow regime.

2. Results of Streamflow Analysis

a. Minimum Streamflows.—Use of the current minimum flow regime with the No Action Alternative yielded varied results for reservoir releases achieving/exceeding CDFG's minimum stream flow recommendations (as shown in CDFG minimum flow regime) during the period of analysis (table 5). Releases from Prosser Creek Reservoir achieved or exceeded the recommendation at least 75 percent of the time, while releases from Lake Tahoe, Donner Lake, Independence Lake, and Stampede Reservoir achieved or exceeded the standard about 60-70 percent of the time. The frequency of achievement increased somewhat when the current minimum flow regime was used with TROA. CDFG recommended minimum stream flows were achieved or exceeded more frequently downstream from Donner Lake and Independence Lake. Achievement of flows was greatest when the

Table 2.—Variations of two-tier minimum instream flow regime

	A	B
Truckee River Lake Tahoe to Donner Creek confluence	<ul style="list-style-type: none"> – Normal year: CDFG minimum flows – Dry year: 50% CDFG minimum flows – TROA waters provide amount not achieved with Pooled Water, but must be exchanged 	<ul style="list-style-type: none"> – Normal year: CDFG minimum flows – Dry year: 50% CDFG minimum flows – Pooled Water used in accord with Tahoe/Prosser Exchange Agreement (up to 50-70 cfs) – TROA waters provide amount not achieved with Pooled Water, but must be exchanged
Donner Lake release	<ul style="list-style-type: none"> – Normal year: CDFG minimum flows – Dry year: 50% CDFG minimum flows – POSW provide different between current minimum and CDFG or 50% CDFG minimums if storage criteria and recreational objectives are not violated and releases are exchanged 	<ul style="list-style-type: none"> – Normal year: CDFG minimum flows – Dry year: 50% CDFG minimum flows – POSW provide different between current minimum and CDFG or 50% CDFG minimums if storage criteria and recreational objectives are not violated and releases are exchanged
Prosser Creek Reservoir release	<ul style="list-style-type: none"> – Current minimum provided by release of Pooled and Uncommitted Waters – TROA waters provide difference between current minimum and CDFG or 50% CDFG minimums if releases are exchanged 	<ul style="list-style-type: none"> – Current minimum provided by release of Pooled and Uncommitted Waters –If exchange possible: initially, 3 cfs of Uncommitted Water added during dry years and 5cfs during normal years, afterwards, TROA waters provide difference for a total of 8 cfs during dry years and add 6 cfs during normal years
Stampede Reservoir release	<ul style="list-style-type: none"> – Pooled Waters and Fish Water provide for current minimum – Normal years: TROA Waters provide difference between current and CDFG minimums –Dry years: TROA Waters used for 22.5 cfs if exchange possible 	<ul style="list-style-type: none"> – Fish Water provides for current minimum – Normal years: Fish and TROA Waters proportionally provide difference between current and CDFG minimums –Dry years: If no Fish Water, TROA Waters used for 22.5 cfs if exchange possible
Independence Lake release	<ul style="list-style-type: none"> – POSW provides for current minimum – POSW provides for difference between current and CDFG or 50% CDFG minimums if restored after release – Minimum flow is 2 cfs when storage below 7,500 af 	<ul style="list-style-type: none"> – POSW used to meet CDFG or 50% CDFG minimums – not necessary to restore – Minimum flow is 2 cfs when storage below 7,500 af
Boca Reservoir release	<ul style="list-style-type: none"> – No mandatory minimum instream flows 	<ul style="list-style-type: none"> – No mandatory minimum instream flows
Truckee River Donner Creek to Stateline	<ul style="list-style-type: none"> – No mandatory minimum instream flows 	<ul style="list-style-type: none"> – No mandatory minimum instream flows

Table 3.—Minimum recreation pools and maintenance priorities

Priority	Reservoir storage (acre-feet)			
	Donner Lake	Prosser Creek	Boca	Stampede
1	8,000	19,000	33,500	127,000
2	8,000	19,000	26,000	65,000
3	6,300	11,000	22,000	62,000

Table 4.—Combinations of water categories tested for maintenance of minimum recreational pools (indicated by "X")

Combinations	Joint program Fish Credit Water	Credit Waters, Secondary Storage Water, and California M&I Water	Fish Water	Pooled Water
1	X			
2	X	X		
3	X	X	X	
4	X	X	X	X

CDFG minimum flow regime was used with TROA. In this case, modification of releases from all five reservoirs had substantial beneficial effects on stream flows. All reservoir releases, except Lake Tahoe, achieved or exceeded the recommendations more than 93 percent of the time during the period of analysis.

Table 5.—Frequency reservoir releases equaled or exceeded CDFG's recommended minimum instream flows

	Lake Tahoe	Donner Lake	Prosser Creek	Independence Lake	Stampede
No Action Alternative	58	70	75	59	64
TROA with current minimum regime	56	82	82	74	59
TROA with CDFG minimum regime	87	94	97	100	100

The creation of Joint Program Fish Credit Water has the potential to enhance stream flows by providing water to supplement the difference between the current and CDFG minimum flow regimes. This was evident in comparing two situations where only the current minimum flow regime was required but Joint Program Fish Credit Water was available to supplement the difference between current and high minimum flows (table 6). There was little difference between reserving Joint Program Fish Credit Water as the last water to be released and reserving it to supplement other releases relative to achievement of preferred stream flows. Both options appeared to substantially increase the frequency reservoir releases achieved or exceeded CDFG minimum stream flow recommendations.

Table 6.—Frequency reservoir releases achieved or exceed CDFG minimum instream flow recommendations with and without Joint Program Fish Credit Water (JPFCW)

	Lake Tahoe	Donner Lake	Prosser Creek	Independence Lake	Stampede
– No JPFCW	56	79	82	74	71
– Current minimum flow regime					
– JPFCW only used for difference between current and CDFG minimum flow regime	68	79	86	74	84
– JPFCW last water released for minimum instream flows	87	94	97	100	100
– CDFG minimum flow regime					
– JPFCW only used for preferred flow regime	87	94	97	100	100
– CDFG minimum flow regime					

Application of the two-tier minimum flow regime and its variations greatly improved reservoir releases for stream maintenance in comparison to using the current minimum flow regime, but improvements were somewhat less than using the CDFG minimum flow regime (tables 5, 6, and 7). Two-tier minimum flow regime variations A and B provided nearly the same results as the two-tier minimum flow regime for Donner Lake, Prosser Creek Reservoir, and Stampede Reservoir, but there was a marked difference in the releases from Lake Tahoe and Independence Lake. Since variation A of the two-tier minimum flow regime would not allow releases greater than those of the current minimum flow regime if they could not be re-stored, releases from Independence Lake achieved or exceeded CDFG recommended minimum flows 13 percent less often than with the two-tier minimum flow regime that required such releases. Variation B of the two-tier minimum flow regime yielded the same frequency as the two-tier minimum flow regime because releases to achieve minimum flows were not required to be re-stored. Variation B, however, modified releases from Lake Tahoe so that the minimum flows were achieved or exceeded 11 percent less often than the two-tier minimum flow regime because it replaced the release requirement of the Tahoe/Prosser Exchange Agreement, thus correcting the adverse impact to Floriston Rate Water caused by two-tier minimum flow regime-variation A.

Table 7.—Frequency reservoir releases achieved or exceeded CDFG minimum flow recommendations with the two-tier minimum instream flow regime and variations A and B

	Lake Tahoe	Donner Lake	Prosser Creek	Independence Lake	Stampede
Two-tier	82	88	91	87	88
Two-tier A	82	87	86	74	88
Two-tier B	73	88	87	86	92

3. Water Rights

A basic issue relative to stream flow maintenance concerned changing reservoir operations to give stream flow maintenance, both preferred and CDFG minimum flow regimes, priority over water rights. This water management strategy was tested by comparing simulations of Truckee River reservoirs operated to maintain stream flows as the top priority with simulations that operated the reservoirs primarily to serve water rights, the current operation. The simulations indicated that during extended droughts (1931-35 and 1988-94) the stream flow priority reduced Carson Division and Sierra's M&I supplies by 7 and 25 percent, respectively, compared to water right priority simulation. Because of adverse impacts to water rights, the question of operating reservoirs primarily for stream flow was eliminated from further consideration. All remaining simulations assumed that Truckee River Reservoirs were operated primarily to serve existing water rights.

Minimum flow regimes listed in tables 1 and 2 had markedly different effects on the Carson Division's irrigation supply and Sierra's M&I supply. Only the CDFG minimum flow regime adversely affected water available for the Carson Division. It reduced the average annual irrigation supply by about 3,000 af during the indicator year (last year of the 96-year period of analysis) as compared to the other three minimum regimes.

As with impacts to the Carson Division, implementation of CDFG minimum flow regime caused the greatest adverse impacts to M&I supply (table 8). By the indicator year of the 96-year period, the CDFG minimum flow regime had eliminated Sierra's storage and caused a shortage where none existed with any of the other flow regimes. This was caused by the release of M&I water to meet the higher flow requirements of the CDFG minimum flow regime. Though the regime required the release of water from all categories in storage, a substantial contribution was required of M&I Credit Water because it was the largest water category located in Stampede Reservoir during an extended drought.

Table 8.—Storage and shortages (acre-feet) in Sierra's M&I water during last year of 96-year period with different instream flow regimes

	Current minimum	CDFG minimum	Two-tier minimum	Two-tier minimum Variation A
Storage	6,920	0	5,690	3,300
Shortage	0	1,380	0	0

Though the two-tier minimum flow regime required greater minimum stream flows during non-dry years than the current minimum flow regime, the reduction in flow requirements during dry years with the two-tier minimum flow regime allowed nearly the same amount of water to remain in storage at the end of a drought as with the current minimum flow regime. This benefit, however, was adverse to Floriston Rate Water because the two-tier minimum flow regime required more to be released than required by

the Tahoe-Prosser Exchange Agreement or to achieve Floriston Rates. This was partly corrected in variation A of the two-tier minimum flow regime by requiring Credit Water to make-up the difference between the current minimum flow regime and the two-tier minimum flow regime-variation A (only if it could be exchanged or re-stored), but at the expensive of Sierra's M&I supplies. Variation A resulted in less M&I storage than with the current and two-tier minimum flow regimes because Credit Water released for minimum flows did not receive sufficient protection from spills and was not always available for its original purpose.

The creation of Joint Program Fish Credit Water caused less Fish Credit Water to be available for maintaining minimum stream flows. As a consequence, more M&I water would have to be released from storage to compensate for the shortfall. The magnitude of this impact on M&I water depended on what Joint Program Fish Credit Water was used for (e.g., preferred or minimum stream flows) and on the minimum stream regime required at the time. For example, at the end of the 96-year period of analysis, 5,220 af of M&I water was in storage when Joint Program Fish Credit Water was not created, but only 3,370 af in storage when Joint Program Fish Credit Water was stored and used for making-up the difference between the current minimum flow regime and the CDFG minimum flow regime. This reserve of M&I water was eliminated and a shortage created when the CDFG minimum flow regime was required and Joint Program Fish Credit Water was reserved as either the last water to be used for maintaining minimum stream flows or for supplementing preferred flows. When reserving Joint Program Fish Credit Water as the last to be used for minimum flows, shortage in M&I water increased 600 percent (9,540 af) over that when Joint Program Fish Credit Water was not created (1,380 af). Reserving Joint Program Fish Credit Water for preferred stream flow maintenance further aggravated M&I shortage by increasing it 700 percent (11,270 af) over that when Joint Program Fish Credit Water was not created.

The two-tier minimum flow regime eliminated the adverse effect of Joint Program Fish Credit Water on M&I storage and shortages. With the two-tier minimum flow regime, M&I storage conditions are nearly the same as those without Joint Program Fish Credit Water and the current minimum flow regime. Variation A of the two-tier minimum flow regime, however, only provided about half the storage because M&I Credit Water is relied on more to contribute to minimum flow maintenance.

Results of Recreation Pool Analysis

Use of the second set of minimum recreational pools that included all three priorities (in addition to mandatory minimum recreational pools) in table 3 was eliminated from extensive analysis because of the large potential to adversely impact water rights, and threatened and endangered fishes of Pyramid Lake. The first set of minimums (priority 1) was evaluated thoroughly because of its potential benefit to maintain minimum pools.

TROA increased the opportunities for maintaining priority 1 and 3 minimum pools, except for Donner Lake, when compared to the No Action Alternative (Table 9). The increases with TROA were due primarily to exchanges and re-storage of waters for

minimum stream flows, and attempts to achieve the minimum recreational pool targets. The low frequency associated with Donner Lake is do to higher minimum stream flow requirement in TROA than in the No Action Alternative.

Table 9.—Frequency priority 1 and 3 minimum recreational pools were achieved or exceeded with TROA (variation A of two-tier minimum flow regime) and the No Action Alternative

Reservoirs	Priority 1 minimum pools (af)	Exceedence frequency (percentage)		Priority 3 minimum pools (af)	Exceedence frequency (percentage)	
		TROA	No Action Alternative		TROA	No Action Alternative
Donner Lake	8,000	60	75	6,300	85	100
Prosser Creek	19,000	12	12	11,000	58	40
Stampede	127,000	68	53	62,000	55	47
Boca	33,500	22	13	22,000	95	71

The use of Joint Program Fish Credit Water for minimum recreational pools did not increase the frequency of maintaining priority 1 minimum pools when compared to reserving such water as the last to be used for maintaining minimum stream flows (Table 10). Using another water category with Joint Program Fish Credit Water slightly increase the frequency, but using more than one additional water category with Joint Program Fish Credit Water did not increase the occurrence.

Table 10.—Frequency priority 1 minimum recreational pools were achieved or exceeded with exchange/re-storage of difference water category combinations (see table 4)

Reservoirs	Priority 1 minimum pools (af)	Exceedence frequency (percentage)				
		Joint Program Fish Credit Water last used for minimum instream flows	Comb. 1	Comb. 2	Comb. 3	Comb. 4
Donner Lake	8,000	60	60	73	73	73
Prosser Creek	19,000	12	15	22	22	29
Stampede	127,000	68	65	63	63	71
Boca	33,500	22	22	29	29	29

Using Joint Program Fish Credit Water for minimum recreational pools, rather than for minimum stream flows, substantially increased (25 percent) Sierra’s M&I storage without markedly increasing (less than one percent) the average annual shortage to the Carson Division (table 11). Dedicating other water categories along with Joint Program Fish Credit Water to minimum recreational pool maintenance noticeably decreased (79-94 percent) Sierra’s M&I storage and increased (1-9 percent) Carson Division average annual shortage.

Table 11.—Comparison of Sierra’s M&I storage and Carson Division shortage with the exchange/re-storage of difference water category combinations

	Sierra storage (af)	Carson Division shortages (af)
Joint Program Fish Credit Water last used for minimum instream flows	3,650	3,760
Combination 1	4,870	3,770
Combination 2	1,020	3,810
Combination 3	180	3,820
Combination 4	990	4,150

4. Summary

Exchanges and re-storage of Credit Waters among the Truckee River reservoirs and the creation of Joint Program Fish Credit Water enhanced the capacity of a TROA to increase the frequency that reservoir releases achieve or exceed CDFG minimum stream recommendations and that minimum recreational pools are maintained. However, adverse impacts to water rights varied appreciably with the different combinations of exchanges, water categories, minimum stream flow regimes, and minimum recreational pools. For example, requiring reservoir releases to be no less than the CDFG minimum flow regime would greatly enhance stream flows, but would be adverse to water rights and recreational pools. Conversely, requiring reservoir releases to be no less than the current minimum flow regime would not substantially enhance stream flows, but would enhance Sierra’s M&I supplies and recreational pools. The best scenario incorporating stream flows, recreational pools, and M&I supplies appears to be the two-tier minimum flow regime-variation B, with Joint Program Fish Credit Water used for maintenance of minimum recreational pools. Implementation of this scenario would require the Department of the Interior and Sierra to voluntarily relinquish rights to re-store some of their waters under certain conditions.

Attachment H

Donner Creek and Lake

ATTACHMENT H

Donner Creek and Lake

The evaluation of the environmental and economic effects of TROA on Donner Creek Lake was based upon several factors. First, a review was conducted of the 1998 draft EIS/EIR and related public comments to determine key issues. Public meetings conducted at that time identified Donner Lake home owner concerns, which combined with input from local area leadership, aided in further defining potential impacts. Local leadership was provided through the Truckee River Basin Water Group. These meetings with home owners, coordination meetings with local leaders, and analytical meetings with representatives from various public agencies, helped to determine evaluation methodologies.

One of the purposes of the activities described above was to clarify the dual objectives of increasing instream flow benefits in Donner Creek and enhancing recreational beneficial uses for both the creek and Donner Lake. Specifically, recreation was evaluated using indicators such as changes in lake levels, aesthetics (the visual effects of lowered water levels), fishing in the lake and creek, visitor days, boat ramp usage and economics. Thresholds values were developed and used in combination with best professional judgment to determine the significance of operational changes at Donner Lake associated with the TROA.

The analytical methods used to evaluate potential changes included mathematical model assessments, statistical comparison, and field surveys, as well as biological, recreation, aesthetic, and economic assessments. The mathematical methods included assessments for operations, economics and visitor days. Key indicators used to compare differences between TROA and the other alternatives specific to hydrologic conditions, included end of month storage, average change in lake and reservoir levels, river and tributary flows, and recreation usage.

In regards to TROA's potential effect on aesthetics when compared to the no action alternative, the model showed that average monthly lake level in Donner Lake was a few inches lower in July, August and October, and was about a foot higher in September. The annual average lake levels will be generally higher with TROA. Generally, significant effects to aesthetic resources would occur if the proposed activity adversely affects a scenic vista or degrades scenic resources. Given that the average differences in lake levels between TROA and the other alternatives are not expected to be discernible, there will be no significant degradation of scenic vistas or resources around the Donner Lake area.

Seasonal recreation visitation and associated expenditures were used as indicators to evaluate the effects of TROA on reservoir recreation at Donner Lake. Variations were evaluated for different hydrologic conditions including wet, dry and median. A recreation model was used to provide input to the economic model to determine differences in visitation and expenditures among alternatives. The analysis showed that for all hydrologic conditions, visitation and expenditures at Donner Lake were, on the average, 0.31% higher with TROA when compared to the no action alternative. When specifically comparing wet and dry periods, visitations and expenditures were .05% to .26% lower, respectively, while visitation and expenditures under TROA were 1.18% higher under median conditions. These variations were considered not to be significant

because the overall differences in average visitation among the alternatives were less than 1.0 percent, and average visitation under TROA, when compared to the other alternatives is expected to be slightly higher.

Another indicator that was used to determine the potential effect of TROA on Donner Lake recreational usage was boat ramp usability during the recreation season. Under TROA, when compared with the no action alternative, boat ramps in Donner Lake will be useable 14% more of the time under median hydrologic conditions and they will be useable 14% less of the time under dry hydrologic conditions. Under wet hydrologic conditions there is no difference among the alternatives. Because of the improvement in boat ramp usability under TROA under median conditions, which represents the majority of the time, TROA will have an overall positive effect on boat ramp usability at Donner Lake and consequently TROA is not expected to have a significant adverse impact on boat ramp usage.

A final indicator that was used to determine the potential effect of TROA on Donner Lake recreational usage was usability of stationary docks at Donner Lake. With TRO would not be significantly affected under any alternative during June, July, or August

An indicator used to evaluate stream-based recreation for Donner Creek was the suitability of flows for fly fishing and spin/lure/bait fishing in the creek during the recreation season. Operations model results showed that flows preferred by fisherman (40-50 cfs) for fly fishing and spin/lure/bait fishing will not be obtained during wet or dry hydrologic conditions either under TROA or the No Action alternative. In median hydrologic years, preferred flows for fly fishing will be obtained 29% of the time under both the TROA and No Action alternative. Because the model results show that there will be no difference in fishing opportunities, between TROA and the No Action alternative, TROA would not be expected to have a significant effect on fishing in Donner Creek.

With TROA, study results shows a significant benefit to meeting preferred flows for brown trout in Donner Creek, where TROA meets preferred flows 33% of fall/winter months, while Current Conditions only meet preferred flows 14% of fall/winter months. TROA will also provide a significant benefit to meeting preferred flows for rainbow trout in Donner Creek, where TROA meets preferred flows 31% of spring/summer months, while Current Conditions meet preferred flows 18% of spring/summer months. Finally, the frequencies of the occurrence of flows low enough during winter months to increase the potential for icing conditions under TROA show a significant beneficial effect when compared to Current Conditions in Donner Creek.

TROA may provide additional benefits not reflected in the model runs used for the above analysis. After TROA is signed and becomes effective, California will annually submit Guidelines for Truckee River Reservoir Operations concerning instream flows in Donner Creek and Donner Lake reservoir levels. These Guidelines will develop specific operational goals and objectives based on the specific hydrology for that year, to help encourage and guide operators in meeting California's objectives, including those for Donner Lake and Donner Creek. During a dry season California will not specify a preferred instream flow in Donner Creek.

Under TROA it is expected that habitat conditions in Donner Creek will improve. Fishery conditions will also be improved by the increased flows made available by TROA. Parties to TROA will provide between \$50,000 and \$100,000 yearly to a Habitat Restoration Fund, which will be distributed to California during the first two years TROA is in effect, and thereafter to Nevada, the Pyramid Tribe, and California will each receive one-third of the funds each decade TROA is in effect. A portion of California's share of the fund could be made available to plan and implement fish habitat restoration or maintenance projects in Donner Creek

California's minimum storage objective in Donner Lake is 6.3 TAF for the period June through August. To preserve higher lake levels, TROA provides that no scheduling party will be required to exchange water out of Donner Lake when the Lake is below 7.5 TAF in June and July, and 6.5 TAF in August. TROA also allows California to arrange required trades of joint program fish credit water for privately owned stored water in Donner Lake, which may maintain water levels in Donner Lake if circumstances result in high summer releases of water to satisfy downstream needs. Finally, TROA allows for a temporary downward adjustment of enhanced minimum instream flows, which could improve lake levels if conditions warrant. These adjustments will require coordination between the California Department of Fish and Game and local interests. The results of this coordination will be the development of an annual plan for implementing an appropriate balance between the maintaining Lake levels and instream flows.