Comments on October 7, 2004 Request
for Information from TCID

November 16, 2004

To: Tom Scott
From: Rod Hall

The following provides a discussion of model values that are calculated and provided as output by the Truckee operation model. This discussion is organized according to the items in the October 7, 2004, request from Lyman McConnell, Project Manager, TCID.

1. Monthly values for each year for period 1901 through 2000 for the following:

- Truckee Canal diversions from the Truckee River
  These values are provided in the output file and can be extracted from the "negreslts" file line #19, column #6

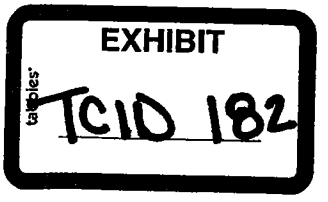
- Truckee Canal diversions to Truckee Division (Newlands Project, Fernley and WQSA water)
  The monthly supply to the Truckee Division of the Newlands Project from the Newlands Project values are provided in the output file and can be extracted from the "negreslts" file line # 19, column #7. The monthly supply of M&I Water to Fernley (does not include any water put into Fernley M&I Credit storage) can be extracted from the "negreslts" file line # 31 column #11. The Fernley monthly supply is also provided by the output file "Fernley.Out". Monthly supply of water quality water obtained using water rights acquired from the Truckee Division is not available from the model ouput.

- Truckee Division shortages
  Monthly Truckee Division shortages are provided in the output file.

- Truckee Canal deliveries to Lahontan Reservoir
  Monthly deliveries to Lahontan Reservoir are provided in the output file and can be extracted from the "negreslts" file line #19 column #9.

- Diversions to Carson Division
  Monthly total supplies to Carson Division are provided in the output file and can be extracted from the "negreslts" file line #16 column #10. These amounts include all water that is available (total release and spill from Lahontan Resrvoir) and during periods of Lahontan spill will include spill which may or may not be used in the Carson Division.

- Carson Division Shortages
  Monthly shortages in Carson Division supply are provided in the output file.



2. Monthly values for each year for period 1901 through 2000 for the following:

- Truckee River above Derby Dam
  These monthly flows are provided in the output file and can be extracted from the "negreslts" file line #19 column #5.

- Truckee River below Derby Dam
  These monthly flows are provided in the output file and can be extracted from the "negreslts" file line #20 column #1.

- Truckee at Farad
  These monthly flows are provided in the output file and can be extracted from the "negreslts" file line #21 column #1.

- Storage and Release of PLPT unappropriated water.
  These amounts are not available from the model output.

- Storage and Release of new water included in California water rights applications.
  I presume this is referring to those water right changes that are discussed in Section 7.A.4 of TROA. If so, the only amounts of such water provided by the model are related to Section 7.A.4(b)(6). The California M&I storage amounts can be obtained from file "califreslt" and the California Stampede information can be extracted from the "negreslts" file line #32, column #8 for storage and column #9 for release. Also, storage and release of California M&I credit from all reservoirs is provided by a file "califreslt" that can be calculated using program "calresl2". The reservoir storage and release of California M&I water does not reflect the full utilization of their water right. The full M&I diversion is provided on page 3 of each set of sheets in "outptabls" and from "negreslts" line #28, column #2.

- Storage and Release of TCID portion of Donner Lake.
  This information is not available from the operation model output.

3. Monthly values for each year for period 1901 through 2000 quantifying the establishment of credit water under each category of credit water and further delineated by which method (e.g. exchange of Fish Water, reduction in Floriston Rates, waiver of single purpose hydroelectric releases, utilization of changed diversion rights, privately owned stored water, etc.) the credit water is established including but not limited to: (Each category of credit water is listed in the request)

   The only items that are provided as output from the operation model are as noted in this paragraph and are: (1) The use of Donner and Independence POSW to establish M&I Credit and to provide Fish Credit as a result of the April transfer. The Donner and Independence amounts are provided by the "outputabl" file. (2) Also, in file "negreslts", line #21 provides Donner TMWA water released and

exchanged into Tahoe in column #6, into Prosser in column #7 and into Boca in column #8. (3) For Independence file "negreslts", line #26 provides Independence TWMA water released and exchanged into Tahoe in column #5, into Stampede in column #6, and into Boca in column #7. (4) The transfer from TMWA M&I Credit to Fish Credit on or about April first is available as line #25, column #9.

4. Monthly values for each year showing the utilization, exchange, reclassification, carryover, and use of credit water under each category of credit water listed above.

Release of Fish Credit Water and Release of M&I Credit Water is available as a total amount each month in the output file and by reservoir in file "negreslts". Fish Credit monthly release is in line #24, columns #1 through #7. TMWA's M&I Credit release is in line #25, columns #1 through #7. (For each of these, Lake Tahoe release is in column #1, Prosser release is in column #3, Stampede release is in column #6, and Boca release is in column#7.) Monthly release of Newlands Project Credit Water is shown on lines #35 (Lake Tahoe and Prosser) and #36 (Stampede and Boca). For each of these, Lake Tahoe release of Newlands Project Credit is in column #2, of Water Quality Credit is in column #4, Fernley M&I Credit is in column #5, Joint Program Fish Credit is in column #6. Prosser release of Newlands Project Credit is in column #8, of Water Quality Credit is in column #10, Fernley M&I Credit is in column #11, Joint Program Fish Credit is in column #12. Stampede release of Newlands Project Credit is in column #2, of Water Quality Credit is in column #4, Fernley M&I Credit is in column #5, Joint Program Fish Credit is in column #6. Boca release of Newlands Project Credit is in column #8, of Water Quality Credit is in column #10, Fernley M&I Credit is in column #11, Joint Program Fish Credit is in column #12. The April 1 transfer from TMWA M&I Credit to Fish Credit is available as indicated in the response to item #3.

The Fernley monthly water utilization is described in the second bullet response under item #1.

5. Assumptions for Truckee River Operations Model including but not limited to:

- Conversion of Truckee Meadows agricultural use to M&I use ???? Tom, does the EIS/EIR indicate the water rights that are converted from ag to M&I???

- Criteria used to simulate management decisions to establish, utilize exchange, reclassify, carryover, and other uses of credit water under each category of credit water listed above.

(Sierra Hydrotech, whose work provides much of the basic operation model logic, has indicated that) in general and with the exception of TMWA's credit establishment

using Privately Owned Stored Water, credit is established whenever (1) water is available by exercising a water right associated with the credit, (2) such establishment does not conflict with other establishment that has a higher priority (see TROA Section 8.E.2), such establishment does not conflict with the exercise of a more senior water right, such establishment conforms to the limitations of TROA Article Seven and conforms to the instream flow criteria of TROA Article Nine and such establishment conforms to other provisions of TROA.

TMWA's credit establishment using Privately Owned Stored Water, in addition to the limitations in and objectives in TROA, is calculated during normal water supply years during the months of August through October. This seasonal pattern helps maintain recreation pools in Donner and Independence Lakes.

In general, credit water operations are calculated using "forecasts" of future water supplies and demands along with target instream flows during future months and target reservoir storages to provide water management, reservoir releases and reservoir storages that will provide reasonable operation when releases and storages are evaluated by comparison to instream flow and reservoir storage objectives provided in TROA.

Carryover storage criteria are designed to minimize the chance of credit storage being spilled during the upcoming season. Exchanges are also calculated to generally minimize the chance credit will be spilled during the upcoming season.

Exchanges and reclassifications are calculated in conformance with the requirements and objectives spelled out in TROA. When credit is exchanged among reservoirs, the exchange and associated releases are set based upon TROA based objectives for instream flows and reservoir releases while attempting to minimize the chance of spill during an upcoming season. In addition to conducting exchanges that will minimize spill, credit water is exchanged out of Lake Tahoe during periods when there is a chance that the lake will get low and consequently it will not be possible to release credit from Lake Tahoe.

TROA Section 8.S provides criteria under which Lake Tahoe Floriston Rate Water is released from Lake Tahoe to provide inflow to Pyramid Lake in exchange for converting Fish Water and Fish Credit Water in Stampede to Lake Tahoe Floriston Rate Water. This provision may be applied by the operation model during the late spring when, based upon the model's operation forecast, it is "expected" that Lake Tahoe Floriston Water will have to be released later in the same year and when an exchange will permit Stampede release that more closely conforms to the Little Truckee River instream flow objectives. In that way, the amount of such exchange is limited to the "expected" fall release of Lake Tahoe Floriston Rate Water and, by the end of the season, the amounts of storage in Lake Tahoe and in Stampede (of Fish Water and Fish Credit Water) are no different than they would have been if there had been no exchange. The other exchanges called for in Section 8, and elsewhere in TROA, are also incorporated in the model operation.

- Acreages, duty, delivery percentage and conveyance efficiency for various types of land (bench, bottom, pasture, and wetlands) for Carson and Truckee Divisions for determining demands under existing conditions, no action, and alternative scenarios. (*Tom, you can answer this.*)

- Breakdown and logic used for Fernley and Water Quality Settlement Agreement uses of Truckee Division demands for no action and alternative scenarios.

  (*Sierra Hydrotech has indicated that)* under the non-TROA scenarios, Fernley's demands are supplied from the acquired water right without any benefit of storage dedicated specifically to Fernley. That is, the Fernley supply receives the benefit of Tahoe and Boca storage, just as other Orr Ditch rights do, but no more.

  Under TROA, Fernley's demands are supplied from the acquired water right (as noted above) plus Fernley can call upon any Fernley M&I credit water that is in storage. Also under TROA, Fernley can use water provided by their acquired Truckee Division water rights to accumulate Fernley Credit Water storage.

  The ability to use water for water quality purposes is almost the same as for Fernley. The major difference being that water quality can put water into credit storage (but, only in Prosser and Stampede) in the non-TROA alternatives. Also, establishment of water quality credit storage is allowed to take advantage of the reduction in Truckee Canal loss and diversion that results when Truckee Division water rights are transferred to water quality and exercised for water quality purposes during normal or better water supply seasons.

  The criteria for use of water quality and Fernley credit waters is as indicated in the response to the second bullet under Lyman McConnell's item #5.

- Operating criteria for TMWA and TCID accounts in Donner Lake under existing conditions, no action, and alternative scenarios.

  (*Sierra Hydrotech has indicated that)* criteria for these two accounts in Donner Lake are the same for all scenarios. Each entity is assumed to "own" 50% of the storage developed in the lake during each year and by the end of the year that storage is emptied from Donner Lake. TMWA is assumed to use its storage (generally starting in August – see above discussion relative to the second bullet under Lyman McConnell's item #5) to provide water either to supply a TMWA M&I demand or to put water into storage in another reservoir as TMWA M&I credit. TCID is assumed to hold it's water in storage until it must be released to achieve the fall drawdown required by California Division of Safety of Dams.