

**DRAFT Total Maximum Daily Loads for Walker Lake, November 2004**  
**Responses to Comments from National Wildlife Federation, December 30, 2004**

Prepared by Nevada Division of Environmental Protection  
February 2005

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We respectfully submit that the Draft TMDL fails to adequately address a number of issues vital to developing satisfactory and appropriate “water-based solutions” or “an organized framework to develop...solutions” to alleviate high TDS levels in Walker Lake. Moreover, we respectfully submit that the Draft TMDL fails to provide any action or implementation plan to address rapidly rising TDS levels in Walker Lake that threaten the survival of fish and bird populations, recreation activities, and tribal interests.

**Comment:** The Draft TMDL states that “if the lake holds at its current water level... its TDS level of 15,000 mg/l would increase to about 16,000 mg/l in 50 years and about 17,000 mg/l in 100 years.” The authors of the Draft TMDL presumably make this argument based on June 2004 data. However, by the time the Draft TMDL was released in late November 2004, TDS levels in Walker Lake were already near 16,000 mg/l. Moreover, a TDS level of 16,000 mg/l has been proven to cause 100 percent mortality among fingerling and yearling Lahontan cutthroat trout (classified as threatened under the Endangered Species Act). Scientific studies have also shown that Lahontan cutthroat trout (LCT) exposed to TDS levels of 16,140 mg/l died within 48 hours and TDS levels of 15,500 mg/l killed LCT within 96 hours.

**Response:** The latest available data indicates an average TDS of 15,900 mg/l (12/6/2004), lake water elevation of 3934.51 (11/26/2004) and lake volume of 1,759,900 AF (11/26/2004). The TMDL document will be updated with these data.

**Comment:** The Draft TMDL states that only 20% of acclimated LCT and 0% of non-acclimated LCT area surviving at current TDS levels of over 15,000 mg/l. For the Draft TMDL, the State of Nevada has selected 12,000 mg/l as the “long-term average TDS target...to provide a sufficient level of support for beneficial use.” However, the Draft TMDL states that LCT “experience high mortality levels” at TDS levels of 12,000-13,000 mg/l and a TDS target of 12,000 mg/l will only provide “a moderate level of support” for fish survival. Furthermore, the Draft TMDL states that TDS levels as low as 5,000 mg/l makes “kidney damage more prevalent” among LCT populations.

Thus, a TDS level of 6,000 to 8,000 mg/l would render Walker Lake a more viable habitat for LCT, tui chub and other fish and bird species. According to the Draft TMDL, TDS levels from 9,000-10,000 mg/l generated LCT “survival rates ranging from 80% to 100%.” Considering that a TDS as low as 5,000 mg/l causes damage to LCT, a TDS level of 8,000 mg/l could be a comprise TDS target. For fish to survive naturally – without expensive and laborious acclimation procedures – a TDS level of 8,000 mg/l is most appropriate. A TDS level of 8,000 mg/l is attainable and would provide a good possibility for LCT survival.

**Response:** At TDS levels of 12,000 to 13,000 mg/l, the acclimated LCT experience mortality levels ranging from 3% to 33%. The text will be revised to include this range

in place of the subjective term “high mortality levels”. While studies have shown kidney degeneration to be more common for LCT in waters with TDS levels over 5,000 mg/l, none have characterized TDS impacts on life span. In one study, LCT were sampled from Walker Lake at a point in time when TDS was about 12,000 mg/l. While kidney degeneration was found in the Walker Lake LCT, all appeared healthy and showed excellent growth rates.

Around 12,000 mg/l, the mortality rate for acclimated LCT drops to nearly zero. While a TDS level of 12,000 mg/l would not eliminate the need for acclimation procedures, it does provide a level of protection for the Lake’s beneficial uses.

**Comment:** The Draft TMDL provides ample discussion of the threats of rising TDS levels to LCT and other fish species. However, the Draft TMDL makes no mention of migratory birds or bird habitat. Walker Lake has historically supported flourishing populations of common loons and American pelicans, which are listed as sensitive species by the U.S. Fish and Wildlife Service. Other rare birds, such as snowy plovers, long billed curlews, double crested cormorants, white faced ibis, and twenty six species of gulls, herons, terns, grebes, and avocets have frequented Walker Lake. Bird habitat is degrading and fewer and fewer birds are appearing at Walker Lake. Like LCT, loons and other birds depend on tui chub. According to the Draft TMDL, TDS levels of 12,379 mg/l kill 80% of tui chub eggs and a TDS level of 15,532 mg/l killed 100%. More alarmingly, the Draft TMDL discloses that even lower TDS levels of between 8,759 and 9,342 mg/l hamper the embryonic development of tui chub. Because of the increasing TDS levels, tui chub are no longer reproducing. The declining bird populations are directly related to the declining number of tui chub and increasing TDS levels.

The Draft TMDL also fails to address the impact of rising TDS levels in Walker Lake on human communities. A viable Walker Lake fish and wildlife habitat provides many benefits to people. In particular, many of the local communities are dependent on tourism income generated from boating, bird watching, fishing, camping and hiking on and near Walker Lake. With extremely high TDS levels in Walker Lake, and thus without fish and wildlife, these communities will suffer serious economic declines.

Moreover, the Draft TDML fails to discuss the impact of fish and wildlife habitat loss on the human community most directly connected with Walker Lake, the Walker River Paiute. Native Americans have lived in the Walker River basin for 11,000 years. Paiute oral history and archeological evidence reveals that Native people subsisted on fish and waterfowl from Walker River and Lake. The Walker River Paiute’s native name, *Agai Dicutta* (trout-eaters). Indicates this reliance. The Walker River Paiute continue to have important economic, subsistence, cultural, and recreational ties to Walker Lake.

**Response:** Some additional text has been provided which discusses the connection of the aquatic health with other beneficial uses. However, the focus is still on the most sensitive beneficial use, being aquatic life. A TMDL is to focus on discussing a waterbody/pollutant combination and how attainment of beneficial use standards can be addressed through load allocations and/or waste load allocations. A TMDL is not meant

to be a surrogate for National Environmental Policy Act process, Environmental Assessment or Environmental Impact Statement documents.

Regarding tui chub impacts, it must be noted that NDOW had documented tui chub recruitment in Walker Lake when the overall TDS was as high as 14,150 mg/l. This suggests that tui chub recruitment maybe occurring at higher levels than the 12,379 mg/l level.

**Comment:** In order to reach a TDS level of 8,000 mg/l, more Walker River flow must reach Walker Lake. To maintain current TDS levels in Walker Lake would require annual inflows of approximately 100,000 acre-feet (af). To start reducing TDS levels would require annual inflows of 130,000 af to 150,000 af.

In several places, the Draft TMDL mentions that “additional river inflow” is a “possible element of a restoration strategy.” In addition, the Draft TMDL admits that the “decline [of Walker Lake] over the last century can be attributed largely to upstream diversions for agriculture and other uses.” However, the Draft TMDL offers few or no solutions or plans for reducing irrigation consumption and meeting the 12,000 mg/l TDS target for Walker Lake.

The Draft TMDL states that federal regulations does not require a plan for TMDL implementation. The Draft TMDL goes on to argue that, “In Nevada, TMDLs are implemented through NPDES [National Pollutant Discharge Elimination System] permits for point sources and through Nevada’s voluntary Nonpoint Source Program for nonpoints sources of impairment.” A TMDL submittal, such as the one designed by the State of Nevada for Walker Lake, has little or no validity or applicability without a means of reaching stated TMDL goals. The over-allocation of Walker River water for irrigation is de facto non-point source pollution because it is directly related to evaporation losses in Walker Lake and the resultant increase in TDS levels. The Draft TMDL provides no components or suggested guidelines for a voluntary program of reducing TDS levels in Walker Lake. Clearly, a voluntary program to lower TDS levels would include the reduction of water consumption for irrigated agriculture, thereby ensuring that an adequate amount of water reaches Walker Lake.

**Response:** It is agreed that the Draft TDML provides little guidance in solving Walker Lake’s TDS and water balance problems. While it is recognized that increased flow to the Lake would contribute significantly toward reversing the elevated TDS levels, current laws and regulations do not grant NDEP the authority to regulate flow allocations or to even set them in a TMDL document. As discussed in the TMDL document, TMDLs are set for pollutants not flows, and the Clean Water Act does not grant NDEP any authority to regulate the allocation of flows for Walker Lake. It can be asserted that the TMDL pollutant analysis is not the most appropriate mechanism for identifying and discussing a broad range of impacts which threaten Walker Lake. NDEP developed this TMDL to provide necessary pollutant carrying capacity load assignment to contributing sources and comply with the time frame established in the November 22, 2002 Consent Decree. As discussed in the TMDL document, the State (not just NDEP) is involved in the ongoing mediation which is seeking solutions to the Walker Lake issues. Mediation agreement is

the more appropriate mechanism chosen by affected parties for identifying and implementing the appropriate solutions. This TMDL may be used by the parties as input toward solutions and agreement development.

Neither the Clean Water Act nor Nevada laws and regulations require a separate implementation plan for each individual TMDL. A collection of activities (NPDES permits, NPS activities and projects) and documents (Continuing Planning Process (NDEP, 2004); Nonpoint Source Management Program (NDEP, 1999)) serve as Nevada's "implementation plan" for all TMDLs.

**Comment:** The State of Nevada has regulatory authority over the quantity and quality of state waters. According to the Draft TMDL, Nevada Administrative Code (NAC) 445A.118-225 defines "water quality goals for a waterbody by: 1) designating beneficial uses of the water; and 2) setting criteria necessary to protect the beneficial uses." Moreover, the Draft TMDL argues that beneficial uses include "irrigation, recreation, aquatic life, fisheries and drinking water." NAC 445A.1693 defines the beneficial use of Walker Lake as "recreation involving contact with water; recreation not involving contact with water; propagation of wildlife; propagation of aquatic life and, more specifically, the species of major concern are the tui chub, Tahoe sucker, and adult and juvenile Lahontan cutthroat trout." The Draft TMDL's target TDS level of 12,000 mg/l would not adequately allow for the propagation of viable tui chub, Tahoe sucker, or Lahontan cutthroat trout populations. Moreover, by not supplying an implementation plan to meet the 12,000 mg/l TDS target, the Draft TMDL does not meet the directives of NAC 445A.1693.

**Response:** It is agreed that the State of Nevada has regulatory authority over the quantity and quality of waters in the state. However the authority for quantity and the authority for quality rest with two different entities within state government with 2 different sets of laws and regulations. The water quality laws and regulations do not authorize TMDLs for flow.

NDEP believes that a target of 12,000 mg/l would provide a sufficient level of protection for the aquatic species of concern. Please note that NAC 445A.1693 does not include LCT propagation as a beneficial use. Only the adult and juvenile LCT are addressed.

NAC 445A.1693 is not a directive but is a set of water quality goals established by the beneficial use. NDEP works toward meeting these goals through the issuance of NPDES permits and through voluntary nonpoint source projects. Standards are set through the NDEP and State Environmental Commission administrative process with EPA involved in a review/approval capacity. These standards are used as a measure of goal achievement and assessment of water quality.

**Comment:** The Draft TMDL further states that, although the State of Nevada has the authority to set water quality standards for Walker River and its main forks, the State of "Nevada has no authority to set and enforce water quality standards for the Walker River Indian Reservation. Nonetheless, the State of Nevada has full knowledge that the Walker River Paiutes are a party to

the Walker Lake/Walker River mediation and that the Paiute have formally (i.e. by tribal resolution) and informally expressed their desire to improve the water quality of Walker Lake (by lowering TDS levels) for the “propagation of wildlife”, the “propagation of aquatic life,” and for recreation, subsistence and cultural purposes.

**Response:** Agree. The TMDL document is merely making the point that NDEP has no regulatory authority over water quality within the Walker River Indian Reservation.

**Comment:** The Draft TDML closes with an ambiguous and insufficient recommendation for “continued monitoring of river and lake TDS levels and flows, and review of this TMDL every 5 years or as necessary to account for any changes in TDS controls or river flows to the lake.” If the only solution is monitoring, there is no means of meeting the 12,000 mg/l TDS target.

**Response:** See above responses regarding applicability of TMDL for addressing a flow related problem.

**Comment:** The Draft Total Maximum Daily Load for Walker Lake does not offer an adequate and viable approach to reducing TDS levels in Walker Lake and for ensuring the survival of Lahontan cutthroat trout, tui chub, and other fish and wildlife species. Several steps must be taken to ensure the survival of Walker Lake and its fish and wildlife species.

- The target TDS level must be revised downward from 12,000 mg/l to 8,000 mg/l to ensure the natural survival and reproduction of LCT and other fish species.
- An implementation plan must be developed that reduces the consumption of Walker River water for irrigation and allows adequate inflow to Walker Lake.
- Reducing TDS levels to acceptable levels requires that the implementation plan designate annual inflow targets to Walker Lake of at least 130,000 to 150,000 acre-feet.
- The federal government, via appropriations for the Environmental Protection Agency and other federal agencies, supplies funding to mitigate point-source and non-point source pollution. The State of Nevada, congressional representatives, and interested parties must advocate for and obtain federal appropriations to buy or lease water rights to secure adequate river flows into Walker Lake.

**Response:** See previous responses.

**DRAFT Total Maximum Daily Loads for Walker Lake, November 2004**  
**Responses to Comments from Kurt Unger, December 30, 2004**

Prepared by Nevada Division of Environmental Protection  
February 2005

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**Comment:** The TDS limit of 12,000 mg/L is far too high. There is quite a lot of evidence that indicates fish are harmed at much lower TDS levels. Further, expected swings over 12,000 mg/L to 14,000 mg/L or higher (as your draft stipulates) would be far too toxic for fish to be considered viable. I would recommend a TDS level of 6,000 mg/L or lower, as even swings to 8,000 mg/L have been proven harmful to fish. While I would suggest 6,000 mg/L to minimize harm to wildlife, I recognize the difficulty of getting that much more water into the lake, thus, I compromise and recommend 8,000 mg/L.

**Response:** NDEP understands that the 12,000 mg/l target would only support a marginal fishery. Once parties involved in the current mediation can agree on an appropriate level, a new target could be chosen for the TMDL.

**Comments:** The draft makes no mention of the effect of high levels of TDS on migratory birds. As you likely know, Walker Lake is a key stopover point for migratory birds. Failure to address TDS immediately will have a direct effect of killing off most of the fish, and that in turn will directly affect migratory birds, as fish are a valuable food source for them. There are treaties regarding migratory birds. Failure to take active steps to avoid harming migratory birds could put the State in yet another lawsuit regarding Walker Lake.

**Response:** Some additional text has been provided which discusses the connection of the aquatic health with other beneficial uses. However, the focus is still on the most sensitive beneficial use, being aquatic life. A TMDL is to focus on discussing a waterbody/pollutant combination and how attainment of beneficial use standards can be addressed through load allocations and/or waste load allocations. A TMDL is not meant to be a surrogate for National Environmental Policy Act process, Environmental Assessment or Environmental Impact Statement documents.

**Comment:** The draft mentions no path for achieving the desired goal. The path is obvious: more water in Walker Lake via more water in Walker River. The draft states it does not have to speak to implementation. While this may theoretically be true, what then is the purpose behind TMDLs in the first place? While it may not be written down specifically, it is inherently obvious that the purpose of the TMDL program is not simply to state a total maximum daily load, it is to state a total maximum daily load and achieve it. The State needs to stop dragging its feet and address implementation. One obvious way to implement the TMDL would be to identify funding mechanisms to keep specific amounts of instream flow in Walker River, which could vary with annual precipitation, so that a plan is in place to eventually raise the level of the lake, and in turn, lower the TDS level.

**Response:** To clarify, neither the Clean Water Act nor Nevada laws and regulations require a separate implementation plan for each individual TMDL. However a collection

of activities (NPDES permits, NPS activities and projects) and documents (Continuing Planning Process (NDEP, 2004); Nonpoint Source Management Program (NDEP, 1999)) serve as Nevada's "implementation plan" for all TMDLs. Nevada pursues voluntary nonpoint source projects (through education and grants) in attempts to address nonpoint source problems.

While it is recognized that increased flow to the Lake would contribute significantly toward reversing the elevated TDS levels, current laws and regulations do not grant NDEP the authority to regulate flow allocations or to even set them in a TMDL document. As discussed in the TMDL document, TMDLs are set for pollutants not flows, and the Clean Water Act does not grant NDEP any authority to regulate the allocation of flows for Walker Lake. It can be asserted that the TMDL pollutant analysis is not the most appropriate mechanism for identifying and discussing a broad range of impacts which threaten Walker Lake. NDEP developed this TMDL to provide necessary pollutant carrying capacity load assignment to contributing sources and comply with the time frame established in the November 22, 2002 Consent Decree. As discussed in the TMDL document, the State (not just NDEP) is involved in the ongoing mediation which is seeking solutions to the Walker Lake issues. Mediation agreements is the more appropriate mechanism chosen by affected parties for identifying and implementing the appropriate solutions. This TMDL may be used by the parties as input toward solutions and agreement development.

**DRAFT Total Maximum Daily Loads for Walker Lake, November 2004**  
**Responses to Comments from Scott Brown, UNR Hydrology Graduate Student, January 3, 2004**

Prepared by Nevada Division of Environmental Protection  
February 2005

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**Comment:** Because the measure of 500 mg/L has been selected for Walker River TMDL and this TMDL is essentially the only parameter residents of the watershed and the state have control over. Please include a discussion about how river flow affects the load in the Lake.

**Response:** While it is recognized that TDS levels and loads in the river vary with flow, average annual loading has more value for a terminal lake assessment. The document already discusses the average annual loads to the lake and the possibility that increased river inflow to the Lake could increase the average annual loading rate.

**Comment:** The document states that changing flows would help meet the target TMDL, but it does propose how that will be done, or what is a “minimum” flow. Further, it seems to me that mitigation of TDS could also involve river restoration, reservoir management, livestock management, water rights, and agricultural practices.

**Response:** While it is recognized that increased flow to the Lake would contribute significantly toward reversing the elevated TDS levels, current laws and regulations do not grant NDEP the authority to regulate flow allocations. As discussed in the report, federal regulations require TMDLs be developed which address pollutants (such as TDS). Flow or flow alteration are not considered pollutants (Clean Water Act, Section 502). A TMDL which sets some target inflow amount would not be approvable by EPA. As discussed in the report, TDS loading sources include the groundwater and river sources. The other load sources are lake sediment and lake water mass. Varying the practices as suggested would not provide a significant net change to the loadings attributed to the lake system.

**Comment:** I would think that a healthy Walker Lake would benefit more than just the fish. Extending the discussion of *beneficial use* to fishing, recreation, interstate and international migratory birds, hunting of waterfowl, etc would help decision makers have a more complete picture of how a healthy Lake can benefit more than just fish and ultimately offset the potential loss of farming and cattle interests upstream.

**Response:** Agree. Additional text will be provided which discusses the connection of the aquatic health with other beneficial uses.

**Comment:** Finally, as I understand it TMDLs are not an end to themselves, but rather the health of fish population or some other beneficial use that is the ultimate measure of success. This document indicates that Lahontan Cutthroat Trout (LCT) are the most vulnerable to an inadequate TDS policy. As a result, shouldn't population or population growth rate of LCT be the ultimate measure of regulatory success? Also, shouldn't that success be monitored more

frequently than every 5 years? At the current rate of TDS increase and LCT mortality, they could be locally extinct within 5 years.

**Response:** The text may have been misleading. It is recommending that ongoing monitoring efforts continue every year, which includes quarterly water quality sampling every year. Only the TMDL would be reviewed every 5 years.

**Comment:** It is clear that management of Walker Lake is politically difficult. The quality of the document indicates the authors are knowledgeable and concerned for the Lake. However, despite the extensive historical background discussion in this draft document, there is no plan for action or implementation. The death of Walker Lake would be an unfortunate and shortsighted event. The state should take the lead and set the example to ensure the Lake's viability. As it is currently written, this document appears to sidestep some of the more creative, but controversial issues (e.g., flow management, watershed management, water rights, etc.). The state may be waiting for another study or a better opportunity to present a more comprehensive plan.

**Response:** As discussed above, TMDLs are set for pollutants not flows, and the Clean Water Act does not grant NDEP any authority to regulate the allocation of flows for Walker Lake. It can be asserted that the TMDL pollutant analysis is not the most appropriate mechanism for identifying and discussing a broad range of impacts which threaten Walker Lake. NDEP developed this TMDL to provide necessary pollutant carrying capacity load assignment to contributing sources and comply with the time frame established in the November 22, 2002 Consent Decree. As discussed in the TMDL document, the State (not just NDEP) is involved in the ongoing mediation which is seeking solutions to the Walker Lake issues. Mediation agreement is the more appropriate mechanism chosen by affected parties for identifying and implementing the appropriate solutions. This TMDL may be used by the parties as input toward solutions and agreement development.

**Comment:** Page 2, section 2.2, 1<sup>st</sup> paragraph, fourth line. "...(NDOW) began collected more..." should be revised to read "...(NDOW) began collecting more..."

**Response:** Text has been revised.

**Comment:** Page 7, section 2.4, 1<sup>st</sup> paragraph, second to last line. The term "Not Support" should be explained. Does it mean not supporting life? Or "not support" the regulation, or what?

**Response:** Reference to the 305(b) Report has been removed.

**Comment:** Page 13, TMDL Calculation, last line. The TMDL is 30 million tons only for a certain inflow from the Walker River. This flow is not defined in the document. As flow increases, the 500 mg/L target TMDL results in greater load to the lake. But at the same time the volume of the lake should increase as well. Please explain the relationship of flow to the TDS mass in the lake.

**Response:** Incorrect. The 30 million ton limit is for the current Walker Lake water volume of approximately 1,837,000 acre-feet. Equation 1 depicts this relationship. As lake level changes, so will the allowable TDS mass in the lake.

**Comment:** Page 15, section 3.4, second line. “In Nevada, TMDLs is implemented through...”  
Please correct the subject/noun agreement.

**Response:** Text has been revised.

**DRAFT Total Maximum Daily Loads for Walker Lake, November 2004  
Responses to Comments from David Haight, Dynamic Action on Wells Group, Inc.,  
(DAWG), January 3, 2004**

Prepared by Nevada Division of Environmental Protection  
February 2005

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**Note:** DAWG submitted a cover letter and a report by Kleinfelder to serve as comments on the Draft TMDL report. The following separates out the comments into separate sections for the cover letter and the report.

**Cover Letter**

**Comment:** It is DAWG's position that the proposed TMDL standards for Walker Lake are not achievable. In support of these comments please find the January 2005 Kleinfelder evaluation of the Draft TMDL. We therefore concluded that water quality standards for the lake are impossible to attain. The Kleinfelder evaluation is self-explanatory, complete, and validates DAWG's conclusion. DAWG demands that the State of Nevada refrain from setting any water quality standards for Walker Lake. These standards simply cannot be met. The Federal Clean Water Act requires that any standard imposed shall be "attainable" or "reasonably attainable." In addition, NRS 445A.520 requires the State base its water quality standards on criteria which numerically or descriptively define the conditions necessary to maintain the new standard. The State of Nevada has not met the Federal or the State requirements for establishing a TMDL standard in the November 2004 Draft.

**Kleinfelder Report**

**Note:** The Kleinfelder Report is over 30 pages with text, tables and figures and therefore will not be duplicated verbatim in this "Response to Comments." Instead, a summary of the report comments has been provided. The full Kleinfelder Report can be obtained from NDEP upon request.

**Comment:** The proposed TMDL TDS concentration of 12,000 mg/l is not a reasonably attainable goal for the following reasons:

1. The TMDL process cannot be applied to Walker Lake because its water quality impairment is due to mineral concentration by natural alteration of flow; the Clean Water Act explicitly defines flow and alteration of flow as nonpollutants and they are not regulated under it.

**Response:** TMDLs can be applied to any impaired waterbody in which a pollutant of concern (in this case TDS) can be identified as related to the Walker Lake beneficial use of "propagation of aquatic life" (NAC 445A.1693). While we understand that federal regulations require TMDLs for waters included on the 303(d) List, it can be asserted that the TMDL pollutant analysis is not the most appropriate mechanism for identifying and discussing a broad range of impacts which threaten Walker Lake. NDEP developed this TMDL to provide necessary pollutant carrying capacity load assignment to contributing

sources and comply with the time frame established in the November 22, 2002 Consent Decree. As discussed in the TMDL document, the State (not just NDEP) is involved in the ongoing mediation which is seeking solutions to the Walker Lake issues. Mediation agreement is the more appropriate mechanism chosen by affected parties for identifying and implementing the appropriate solutions. This TMDL may be used by the parties as input toward solutions and agreement development.

2. TMDL loading rates as described in the Draft TMDL document will have no effect on the naturally changing Walker Lake TDS concentrations.

**Response:** The mere setting of TMDL loading allocations has no effect on water quality, they are just goals. It is through project implementation (such as desalination) that Lake TDS concentrations can be lowered.

3. TDS mass in Walker Lake is increasing by 56,000 tons per year due to Walker River TDS loading and salt dissolution and transport by local surface and groundwater inflow to the Lake.

**Response:** It is agreed that the ongoing loading to the lake is a factor that needs to be considered for any solution to the problem. This in itself supports the argument that some level of TDS mass reduction is ultimately needed.

4. The Draft TMDL document stipulates a negative loading rate of -8,250,000 tons of dissolved solids for the lake body source. The DAWG report states that this can be achieved only through massive capital expenditure and civil engineering for water treatment infrastructure such as: 1) lake partitioning into fresh and saline pools using levees or other flow barriers, similar to the dike works in the Great Salt Lake; 2) saline water extraction from the coldest and saltiest part of the lake (south end at bottom prior to thermal mixing) via pipeline for disposal in a nearby playa in another hydrographic basin; or 3) desalination through reverse osmosis, flash distillation or other means, possibly with the aid of solar or geothermal energy (this approach would require disposal of brine concentrate likely containing heavy metals).

**Response:** The TMDL function is to identify and set load allocations to the various sources contributing to the pollutant's nonattainment in the waterbody. It is agreed that the removal of 8 million tons of TDS mass from the lake would be a large undertaking with large costs. Ultimately, the public will need to decide what is a reasonable approach and what are reasonable costs for solving the Walker Lake problem.

5. Existing Walker River water quality at its mouth with Walker Lake already exceeds the proposed 500 mg/l TDS maximum concentration during low flow conditions (<20 cubic feet per second). During period from 1995 to mid-1999, TDS concentrations at USGS Station 10302025 – Walker River near mouth at Walker Lake – ranged from 150 to 400 mg/l. Then at the beginning of the present drought in late 1999, Walker River TDS rose to between 800 to 900 mg/l for the period 2000 to 2003.

**Response:** It is agreed that the TDS levels in the lower river within the reservation are exceeding the 500 mg/l level during the low flows. However, the total load contribution is no larger than the annual average loading used for TMDL source contribution analysis. The TMDL specifies the loading to be average annual values. At a flow of 20 cfs and TDS level of 1,000 mg/l, the TDS loading to the lake would be about 20,000 tons/day, approximately the same as the 21,000 tons/day long-term average estimated by Thomas.

6. Any proposed action designed to increase flows to Walker Lake will likely assume that the climate during the next 80 years will be similar to that of the past 80 years. However, assumptions of climate stability are not well founded. Precipitation rates in the Walker River basin are not stable on the scale of decades or centuries. Dendrochronology data suggest that the 1860 to 1915 period was one of the wettest periods of the past millennia, and was significantly wetter than the 250 year period preceding it (the Little Ice Age). Since 1915 mean precipitation rates have been slowly declining.

**Response:** It is agreed that the past 80 years of climate is likely not indicative of the next 80 years. However the TMDL focuses in on the reduction of TDS mass in the Lake to achieve the 12,000 mg/l target, and not the flow needed to meet the target. The TMDL also recommends review of the analysis as needed thus allowing for short term adjustments in an adaptive manner.

7. The USGS stream gage on Walker River near Wabuska 45 miles northwest of Walker Lake is the best quality data for lake inflow analysis. The mean and median discharge at Wabuska gage over the past 80 years is 123,000 and 79,100 AF per year, respectively. An annualized probabilistic water budget analysis for Walker Lake indicates that to reduce Lake TDS concentration from 15,000 to 12,000 mg/l over a 30-year planning window would require and additional flow of 66,000 and 109,000 AF for the mean and median Wabuska discharge rates, respectively; this is a total discharge requirement of 188,500 AF at the Wabuska gage. This flow volume is not attainable under current climatic conditions.

**Response:** The TMDL focuses in on the reduction of TDS mass in the Lake to achieve the 12,000 mg/l target, and not the additional flow needed to meet the target.

**DRAFT Total Maximum Daily Loads for Walker Lake, November 2004**  
**Responses to Comments from Walker River Irrigation District, represented by Woodburn and Wedge, Attorneys at Law, January 7, 2005**  
Prepared by Nevada Division of Environmental Protection  
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**Comment:** The District objects to the Draft TMDL selected by NDEP because, as explained below, it purports to establish a TMDL for a water quality standard that does not exist and which in this instance cannot lawfully exist.

In early 2001, the Nevada Environmental Commission (the "Commission") considered and adopted a water quality standard for Walker Lake identical to the Draft TMDL, i.e., a TDS level of 12,000 mg/l. The District raised objections before the Commission because the 12,000 mg/l TDS water quality standard violated certain provisions of the Nevada Water Pollution Control Law the purpose of which is to “maintain the quality of the waters of the state consistent with the public health and enjoyment, the propagation and protection of terrestrial and aquatic life, the operation of existing industries, the pursuit of agriculture, and the economic development of the state.” NRS § 445A.305(2)(A) [Emphasis added]. Furthermore, the Nevada Water Pollution Control Law requires the Commission to “recognize the historical irrigation practices in the respective river basins of this state, the economy thereof and their effects” when adopting regulations and water quality standards. NRS § 445A.425(3). Finally, to the extent that water quality standards are intended to define conditions necessary to support and protect fish and to provide for recreation, they must be “reasonably attainable.” NRS § 445A.520(2).

The District urged the Commission not to adopt a water quality standard of 12,000 mg/l of TDS because that standard would violate the foregoing provisions of the Nevada Water Pollution Control Law. Nevertheless, the Commission adopted the 12,000 mg/l TDS water quality standard for Walker Lake and the regulation was submitted to the Legislative Counsel in March of 2001.

Shortly thereafter, the District requested that the Legislative Commission review the proposed regulation pursuant to NRS 233B.067. That statute provides that the Legislative Commission may object to a regulation if it does not conform to statutory authority.

TDS levels in Walker Lake are directly related to the quantity of water in and the surface water elevation of Walker Lake. Therefore, the proposed standard of 12,000 mg/l of TDS could not be attained and maintained without significant increases in the volume of inflow to Walker Lake. This would require the curtailment of current water allocations supporting other beneficial uses, including irrigated agriculture. In making its presentation to the Nevada Legislative Commission, the District argued, therefore, that the regulation adopted a water quality standard for Walker Lake that failed to conform to the provisions of the Nevada Water Pollution Control Law as discussed above.

The Nevada Legislative Commission agreed and objected to the water quality standard of 12,000 mg/l of TDS for Walker Lake. As a result, the Nevada Legislature passed Senate Concurrent Resolution No. 40 which stated that the water quality standard embodied in the regulation would not become effective because it failed "to conform to the statutory authority pursuant to which it was adopted." Thus, there is no TDS water quality standard for Walker Lake.

**Response:** It is agreed that there is no numeric TDS water quality standard for Walker Lake. However, there are beneficial uses set for the lake which are a part of the water quality standards. In this case the beneficial use of interest is the "propagation of aquatic life" (NAC 445A.1693).

**Comment:** NDEP has now proposed a Draft TMDL for Walker Lake that is intended for a water quality standard, specifically, the 12,000 mg/l TDS water quality standard which does not exist and which was rejected by the Nevada Legislature in 2001 as contrary to the Nevada Water Pollution Control Law. Simply put, NDEP cannot do indirectly what the Commission was prohibited from doing directly because it violated Nevada law.

The Draft TMDL attempts to distinguish water quality standards from TMDLs by stating that the Draft TMDL "is not a regulatory action" and, therefore, does not need approval by the Commission. However, by definition, "TMDLs are an assessment of the amount of pollutant a water body can receive and not violate water quality standards." Therefore, although the Draft TMDL may not need approval by the Commission, it cannot be based upon a water quality standard which requires but has not received such approval for the same reasons that the water quality standard itself was rejected by the Nevada Legislature.<sup>1</sup>

**Response:** The TMDL is not indirectly establishing a numeric TDS standard of 12,000 mg/l. However, the TMDL is based upon a target TDS level of 12,000 mg/l (as indicated by the most recent data) that is needed to provide a level of protection for the aquatic life. The TMDL function is to identify and set load allocations to the various sources contributing to the pollutants' nonattainment. The TMDL does not rely on flow based alteration to address Walker Lake TDS reduction; therefore does not seek to supersede or abrogate rights to quantities of water which have established by the State and the federal decree.

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<sup>1</sup>The Draft TMDL also does not comply with the Clean Water Act which specifically provides:

It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this Act. It is the further policy of Congress that nothing in this Act shall be construed to supersede or abrogate rights to quantities of water which have been established by any State.

33 U.S.C. 1251(g). While the water rights here have been established by Federal Decree pursuant to state law, as well as by state law itself, this statement of Congressional Policy must still be adhered to.

The mere development of a TMDL does not constitute numeric standards setting, but rather provides a framework to discuss and evaluate a pollutant as its relation to beneficial use attainment for a given waterbody. TMDL development in this context is within the authority granted by the Nevada Water Pollution Control Law.

**Comment:** Establishing a TMDL seeking to attain and maintain a water quality standard of 12,000 mg/l of TDS would necessarily require a significant increase in the volume of inflow to Walker Lake. Again, this increased inflow could only be attained and then sustained by reducing water allocations that support other beneficial uses within the basin, namely, irrigated agriculture. The Draft TMDL itself recognizes this by stating:

*It is recognized that the proposed TMDL and allocations may not provide for the long term protection of Walker Lake if TDS concentrations continue to increase in response to reduced lake volume. Additional flows could partially address this concern by reducing the rate of lake volume reduction or possibly increasing lake volume.*

Establishing a TMDL that cannot be attained or sustained without the curtailment of water allocations for other beneficial uses such as irrigation is not consistent with the operation of existing industries or the pursuit of agriculture. NRS § 445A.305(2)(A). It does not recognize historical irrigation practices in the Walker River Basin or the economies dependent on those practices. NRS § 445A.425(3). Finally, it cannot be reasonably attained or sustained. NRS § 445A.520(2).

**Response:** This TMDL does not seek any increases in flow (as directed by the Clean Water Act policy mentioned in the comment letter). Instead it focuses on the TDS mass in the lake. In this way, the TMDL recognizes historic irrigation practices and does not seek any curtailment of water allocations.

**Comment:** The District objects to NDEP establishing a TMDL for Walker Lake that seeks to implement a water quality standard which does not and cannot lawfully exist. Furthermore, as a practical matter, it is simply not sound policy or appropriate for NDEP to establish a TMDL for Walker Lake that cannot be met and will most certainly be violated at its inception.

**Response:** , it can be asserted that the TMDL pollutant analysis is not the most appropriate mechanism for identifying and discussing a broad range of impacts which threaten Walker Lake. NDEP developed this TMDL to provide necessary pollutant carrying capacity load assignment to contributing sources and comply with the time frame established in the November 22, 2002 Consent Decree. As discussed in the TMDL document, the State (not just NDEP) is involved in the ongoing mediation which is seeking solutions to the Walker Lake issues. Mediation agreement is the more appropriate mechanism chosen by affected parties for identifying and implementing the

appropriate solutions. This TMDL may be used by the parties as input toward solutions and agreement development.

**DRAFT Total Maximum Daily Loads for Walker Lake, November 2004  
Responses to Comments from Robert Williams, U.S. Fish and Wildlife Service, January 7,  
2005**

Prepared by Nevada Division of Environmental Protection  
February 2005

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**Comment:** The establishment of TMDL for TDS will play an important role in the multi-agency effort to restore and protect the Walker River and Walker Lake. The Walker River basin has been identified as necessary for the recovery of the threatened Lahontan cutthroat trout (LCT) as listed under the Endangered Species Act of 1973, as amended. The attainment of this objective will include the reestablishment of a self-sustaining population of LCT in the Walker River basin, including Walker Lake.

The establishment of a TMDL for TDS in Walker Lake should be based upon maintaining existing beneficial uses of this unique ecosystem. Beneficial uses for Walker Lake include protection and propagation of aquatic life with reference to the species of major concern (tui chub, Tahoe sucker, and adult and juvenile LCT) and were identified through Section 7 consultation between the U.S. Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (USFWS) for Walker Lake water quality standards (File No. 1-5-02-I-298, dated September 25, 2002). The proposed target of 12,000 mg/l for the TDS TMDL in Walker Lake does not provide a moderate level of support for the beneficial uses of Walker Lake.

Dickerson and Vinyard (1999) examined survival and growth of LCT in response to TDS concentrations in Walker Lake in 1995. Dickerson and Vinyard (1999) found high mortality (>25%) of LCT introduced to Walker Lake with salt concentrations exceeding 10,300 mg/l. All fish died within 4 days at concentrations exceeding 15,500 mg/l. Larger juveniles were more tolerant of elevated salts but all surviving fish at all test concentrations ( $\geq 10,300$  mg/l) lost weight over the course of the 7-day experiment. Survival was enhanced when fish were acclimated to elevated salt concentrations prior to introduction to Walker Lake water. Galat et al. (1983) found kidney degeneration in kidney tubules of LCT from Walker Lake. Damage was associated with high sulfate concentrations and abnormal ionic composition of Walker Lake water. The prevalence of kidney degeneration in Walker Lake LCT led these researchers to conclude “because such extensive hyaline degeneration could jeopardize renal function, it may be a life-threatening or life-shortening factor to Lahontan cutthroat trout in these waters.” Beutel and Horne (1997) developed a Habitat Quality Index for LCT based on several water quality parameters. They determined that TDS was the most significant parameter in the index because it affects LCT year-round. Horne et al. (1994) cites 10,000 mg/l as a TDS concentration necessary to maintain a healthy LCT fishery.

Consistent with the Service’s correspondence with your agency (File Nos. EC 31.4.1.5 and 1-5-02-TA-171; dated December 10, 2001 and June 7, 2002 respectively), we recommend the target of 10,000 mg/l be used for the TMDL determination in Walker Lake. At the current lake level and using our recommended TDS target of 10,000 mg/l, the TDS mass in the lake would need to be lowered to 25 million tons instead of the 30 million tons determined under the proposed target of 12,000 mg/l.

**Response:** NDEP recognizes that a TDS target of 10,000 mg/l would provide a higher level of support and result in a healthier aquatic system. However, NDEP feels that the 12,000 mg/l target is sufficient for purposes of this TMDL. As the current mediation progresses, this target could be updated in the future relying on additional research (such as tui chub tolerance, etc.).

**DRAFT Total Maximum Daily Loads for Walker Lake, November 2004**  
**Responses to Comments from Laurie Thom, Walker River Paiute Tribe, February 9, 2005**  
Prepared by Nevada Division of Environmental Protection  
February 2005

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**Comment:** The Tribe commends the Nevada Division of Environmental Protection (NDEP) for announcing and supporting Total Maximum Daily Loads (TMDLs) for Total Dissolved Solids (TDS) to save and restore Walker Lake. Based on the November public notice released by the Bureau of Water Quality Planning and USGS Fact Sheet FS-115-95 the Tribe understands that the TMDL would be based on a concentration value of 500 mg/l for TDS to achieve a threshold of 12,000 mg/l in Walker Lake.

As a point of reference, Tribal water quality data at the Reservation boundary has a mean value of 199 mg/l with a standard deviation of 57 mg/l. Given the information provided within the public notice the Tribe does not object to the proposed 500 mg/l concentration value. Our support of the proposed NDEP 500 mg/l objective for the TDS TMDL should not be construed so as to limit the Tribe's ability to require a more stringent standard in the future.

**Response:** Thank you for your comments. We recognize the Tribe's authority to set a more stringent standard in the future.