

0304

December 15, 2004

Ken Koch
Water Quality Program
WA Department of Ecology
POB 47600
Olympia, WA 98504

Dear Mr. Koch:

I am submitting comments regarding the recent listing of Moses Lake (WRIA 41) as both a Category 2 and 5 waterbody. As Vice-Chair of the Moses Lake TMDL Citizens Advisory Committee I believe that DOE has accomplished little for either our community or the lake, and in fact has achieved a great disservice.

First of all, the "responsiveness" to initial public comments on the proposed 303(d) listing of Moses Lake by DOE has to set a record for evasion. Many people spent countless hours researching data and reviewing the process utilized by DOE to initially list Moses Lake as both Category 2 & 5, and all of this analysis was submitted. To date, no one has received any satisfactory review of his or her comments. In fact, in a glaring dismissal of all of our efforts, DOE simply decided to ignore the information received and instead apply a grid system to the lake, using only 1998 data for analysis, and continue with its recommendation that at least part of Moses Lake requires a TMDL. For many reasons, this analysis is faulty at best, and perhaps illegal in the worst case.

I attach my original letter, which was submitted through Troutlodge's attorney, as an Appendix to this comment letter. The same points apply now as then:

- Estimates of phosphorus concentration (due to QA/QC problems) cannot be used in 303(d) analysis;
- Apparent errors in data reporting used in the analysis remain unexplained;
- Data from DOE/2001 that was not utilized must be included in the 303(d) analysis;
- Data collected by the Environmental Monitoring and Trends Section must also be used in 303(d) analysis.

As discussed in the original comment letter, with any or all of the above considered, Moses Lake can only be listed as a Category 2 waterbody, regardless of whether or not it is broken into parts. We simply must demand that DOE adequately address the above points.

DOE proposes to split Moses Lake into 4 (four) separate areas for purposes of 303(d) assessment. Is there any credible scientific data to justify this? Is there data that suggests these areas are different? What is it? If 8 Moses Lake sampling stations have been reported in DOE documents, why are only 4 segments considered for 303(d) analysis?

In further analysis of the proposed listing, it appears that DOE is only considering data from 1998 in the South end of Parker Horn (the only Category 5 segment). Examination of the original table, used to explain the listing process for Moses Lake, shows that considerable data was collected in 1993, 1998, 2000, and 2001 for this area of the lake. All of this data met DOE QA/QC standards (with the exception of one data point in 1998, the aforementioned "estimate") and therefore, under DOE Guidance in WQP Policy 1-11, it must be considered.

Summing up all data collected for this area (ML 4) we find that 14 data points were reported over the 10 year period, and of those only 3 are over the 50 ug/l total phosphorus level. In the same WQP Policy 1-11 document, DOE states that there must be a minimum of 4 exceedances to place a water body on the 303(d) list when the sample size is 12 – 18. This is clearly not the case, requiring that even South Parker Horn not be considered as Category 5.

As citizens that use Moses Lake for recreation, enjoyment, a water resource for industry, and as a central part of our community we look at DOE's attempt to find some way to list at least a portion of our lake as needing a TMDL as an infringement, especially when recent data suggests that just the opposite is true. Our community's efforts at cleaning the lake are working. It appears to at least some of us that DOE is attempting to rewrite policy in order to gain control of this water body, that in our opinion (backed by credible scientific data) needs no interference from the Department of Ecology. Moses Lake must remain a Category 2 water body.

Sincerely,

James E. Parsons

James E. Parsons
Vice-Chair/ Moses Lake TMDL Citizen's Advisory Committee
Vice President/Technical Services
Troutlodge, Inc.

cc Linda Hoffman, Interim Director, Department of Ecology.

Comments Regarding the Proposed Listing of Moses Lake as a Category 5 Impaired Water on the State of Washington 303(d) List

FOR REASONS STATED BELOW, THE ONLY PROPER LISTING FOR MOSES LAKE IS IN CATEGORY 2 (WATER OF CONCERN).

On January 15, 2004 the Washington Department of Ecology (DOE) listed Moses Lake as both a Category 2 (Water of Concern) and Category 5 (needing a TMDL) in its proposed water quality assessment list for 2002/2004. The data and other evidence does not support the Category 5 listing.

In a letter dated July 10, 2003 Mr. James Bellatty of the DOE (Section Manager, Water Quality Program) discussed the issues surrounding the data used to place Moses Lake on the 303(d) list as a Category 5 water body. Quoting from that document:

To meet water quality standards and avoid listing, no more than ten percent of measured data should be above 50 µg/L for the May to September period. As shown in Table 2 and Figure 2, more than ten percent of the data are above 50 µg/L for the period May to September; therefore Moses Lake will be proposed to be listed on the 2002 303(d) list for total phosphorus.

The "Table 2" referred to in this letter is reproduced as **Table 1** in this document. This document represents the only data that the Moses Lake Citizens Advisory Committee or Troutlodge, Inc. has ever received as justification regarding the placement of Moses Lake onto the Category 5 list of the 303(d) assessment.

The validity of the data used to produce this table is disputed for based on lack of quality assurance and misleading and false data representation:

At a meeting of the Moses Lake Citizens Advisory Committee Jim Carroll, a scientist for DOE, admitted that the quality assurance and quality control procedures (QA/QC) for data obtained from for the Water Quality Monitoring Study (Bain) did not meet the DOE guidelines as set forth in their Water Quality Program Policy (WQP) 1-11. Therefore all data points from this study should be deleted from the analysis. DOE acknowledged that point in its recent listing when it refers to only 8 exceedances of the total phosphorus (TP) criteria noted out of 46 samples of the near surface (epilimnion) instead of the 15 exceedances out of a total of 54 samples as shown in the Table. Under the statistical sampling plan outlined in the WQP Policy 1-11 (Table 2 in the Policy), this number of exceedances (8 of 46) is just enough to list a water body under category 5 designation (for example, if the result had been 7 exceedances out a 46 samples, or 7 out of 45, it would have been insufficient to list the waterbody under category 5).

However, further examination of Table 1 presented below results in the identification of several other problems related to data QA/QC:

"Estimates" June 17, 1998 samples may not be used. The data point for June 17, 1998 at the South end of Parker Horn in the 1998 DOE Lake Database study is footnoted by a

Table 1. DOE Table explaining listing process for Moses Lake. See text for explanation.

Table 2. Epilimnetic (near-surface) total phosphorus (TP) data for Moses Lake from September 1993 through September 2003, summer season only (May through September), and assessment of exceedences over the proposed 50 ug/L TP criterion.

Data Source	South End of Parker Horn		Rocky Ford Arm		Pelican Horn		South Lake		Lake Total
	Date	TP (ug/L)	Date	TP (ug/L)	Date	TP (ug/L)	Date	TP (ug/L)	
Dept of Ecology Lake Database (contact Dave Hallock or Maggie Bell-McKinnon)	06/02/93	50							
	08/25/93	48							
Water Quality Monitoring Report by Richard C Bain, Jr. for the Moses Lake Irrigation and Rehabilitation District	06/05/97	100	06/05/97	140	06/05/97	150	06/05/97	90	
	08/13/97	60	08/13/97	120	08/13/97	90	08/13/97	50	
Dept of Ecology Lake Database (contact Dave Hallock or Maggie Bell-McKinnon)	06/17/98	96.4 J	06/17/98	57.5	06/17/98	45.1			
	07/15/98	111	07/15/98	67.2	07/15/98	48.1			
	08/12/98	38.5	08/12/98	41.3	08/12/98	48.5			
	09/16/98	69	09/16/98	46	09/16/98	53			
Dept of Ecology Lake Database (contact Dave Hallock or Maggie Bell-McKinnon)	06/28/00	23	06/28/00	26			06/28/00	28	
	07/19/00	32	07/19/00	35			07/19/00	25.5	
(TP measurements for South Lake are composite (average) of 0.5 and 3 meter depth samples)	08/30/00	54	08/30/00	66			08/30/00	50	
	09/27/00	46	09/27/00	47			09/27/00	39.5	
Dept of Ecology TMDL Assessment (TP measurements are composite (average) of 0.5 and 3 meter depth samples)	05/30/01	18	05/30/01	22	05/30/01	18	05/30/01	32	
	07/02/01	13.5	07/02/01	15.5	07/02/01	13.5	07/02/01	12.5	
	08/01/01	24	08/01/01	31.75	08/01/01	24	08/01/01	15.75 U	
	08/29/01	13.25 U	08/29/01	19.1	08/29/01	13.25 U	08/29/01	13.8 U	
	09/26/01	15.25 UJ	09/26/01	19.5 UJ	09/26/01	15.25 UJ	09/26/01	25.75 UJ	
Sample size		17		15		11		11	54
Actual number of exceedences		6		5		3		1	15
					Minimum # exceedences needed to list				9
					List?				Yes
All samples taken from 0.5 m depth unless otherwise noted.									
Data qualifiers: (J = estimate; U = not detected at or above detection limit; UJ = not estimated or detected at or above estimated detection limit); reported detection limit used in composite calculation									
Minimum # exceedences required to place a waterbody on the 303(d) list, using binomial distribution, with a 90% confidence that the true exceedence percentage in the waterbody is greater than or equal to 10%.									

letter "J". Explanation of this footnote in the Table is that the value presented is an estimate. DOE's WQP Policy 1-11 states (Section 7: Quality Assurance) that: "*Quality assurance requirements must be met by all data used for this assessment*"; (assessment referring to determining the placement of a water body on the 303(d) list). It is impossible for an "estimate" to meet the criteria imposed by this statement. Furthermore, direct examination of the study as published on the DOE website (http://www.ecy.wa.gov/programs/eap/fw_lakes/spmosgr1.pdf) remarkably shows that not only is the one data point from the South end of Parker Horn on 6/17/1998 an estimate, but all phosphorus values recorded for that date are "estimates". Examination of the "General Chemistry Quality Assurance Memo" from DOE's Manchester laboratory (laboratory responsible for conducting the analysis) states (regarding the 6/17/1998 samples): "Total phosphorus samples are qualified as estimates, according to Manchester Laboratory protocol, due to the calibration check standard being outside of its control limits." Even if we must assume that the failure to note the "estimated" nature of the remainder of this data is simply an oversight by DOE personnel in development of this Table, there is no justifiable option but to delete those data points from consideration.

This now leaves a total of 6 exceedances of the standard for TP out of 43 valid data points, less than the number required for designation as a Category 5 water.

2. Apparent Errors in Data Reporting. Table 1 includes an apparent accidental reproduction of the same data set in two different subareas, South End of Parker Horn and Pelican Horn. The cumulative difference is small, but it raises questions about the quality assurance of the analysis. Upon further checking, it was found that undetectable and/or estimated data codes were not reported in 5 cases from Pelican Horn and South Lake stations. This is not a trivial omission, as undetectable data is not always reported at the detection limit.

3. Omitted Data From 2001 Sampling by DOE Must Be Considered. The Table also summarizes results for the extensive sampling conducted by DOE in 2001. DOE researchers, as part of this extensive and comprehensive TMDL study, chose 6 sites within Moses Lake at which to locate sampling stations. Extensive amounts of data, found in the appendices to the as yet unpublished TMDL study document (found at http://www.ecy.wa.gov/programs/wq/tmdl/watershed/moseslake/appendices_0303006.pdf), demonstrate that data for phosphorus was indeed collected from each of these sites on every sampling date. However, the Table used in the listing process only supplies values for four (4) of these sampling locations. Average TP values, for all dates at all 6 locations, are less than the 50 ug/l standard. The additional 8 data points represented by these excluded samples must be included in the analysis.

4. Omitted EMTS Sampling Must Be Considered. Also published in the data appendices and explained in the draft of the Moses Lake TMDL study is data for phosphorus collected by DOE's Environmental Assessment Program's Environmental Monitoring and Trends Section (EMTS) on dates that differed from those of the DOE TMDL study. These were reported as a separate location in the data appendices (ML 7) as was an undefined location - ML 8. The EMTS data was meant from the start to provide additional data support to the 2001 TMDL study, yet it was excluded from the listing analysis. All values provided from these dates and locations were less than the 50 ug/l TP standard (**Table 2**).

When considering any or all of the considerations that must be made to the data used to assess whether or not Moses Lake belongs on the Category 5 list, we firmly believe that QA/QC and data availability and representation concerns, used either together or alone, quickly demonstrate that Moses Lake is responding well to citizen efforts at clean up.

Site	Date	Total Phosphorus (ug/l)
ML 7	6/25/2001	24
	7/30/2001	22
	8/27/2001	21
ML 8	8/01/2001	34
	8/29/2001	32
	9/26/2001	26

Table 2. Total Phosphorus values reported for Moses Lake sites 7 & 8 in the DOE TMDL Study data appendices.

Even more to the point for these comments, Moses Lake clearly *does not meet assessment criteria for listing as a Category 5* water body. As explained above, after the DOE removed from consideration the samples from the defective Bain study, the remaining exceedances were only the bare minimum needed to trigger a Category 5 listing ($p = 0.08$). However, the other deficiencies with the data used (“Estimates” from 6/17/1998 cannot be used, omitted data from 2001 sampling by DOE must be considered, and omitted EMTS sampling must be considered) result in exceedances being below the necessary threshold to trigger a Category 5 listing.

Indeed, as shown on (Table 3) below, resolution of any of these deficiencies (even if the others are ignored), or correcting any combination of them, results in the exceedances being below the required number to trigger a Category 5 listing

<i>Exclude/Add Data?</i>		Exceedances	Total Data Pts	List as Category 5?
QA/QC	Data Representation			
No	No	8	46	Yes (current)
Yes	No	6	43	NO
No	Yes (ML5, 6)	8	54	NO
Yes	Yes (ML 5, 6)	6	51	NO
No	Yes (ML 7)	8	49	NO
No	Yes (ML 7, 8)	8	52	NO
No	Yes (ML 5, 6, 7)	8	57	NO
No	Yes (ML 5, 6, 7, 8)	8	60	NO
Yes	Yes (ML 7)	6	46	NO
Yes	Yes (ML 7, 8)	6	49	NO
Yes	Yes (ML 5, 6, 7)	6	54	NO
Yes	Yes (ML 5, 6, 7, 8)	6	57	NO

Table 3. Summary of Category 5 assessment results for all combinations of data presented in the text above.

The only justifiable result is to list Moses Lake under Category 2 (Water of Concern).

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