Bear Creek Watershed TMDL

Total Maximum Daily Load (TMDL)
& Water Quality Management Plan (WQMP)

Response to Public Comment

Prepared by:
Oregon Department of Environmental Quality
July 2007

Introduction

This Response to Public Comments document addresses comments and questions received regarding the Draft Bear Creek Watershed TMDL Total Maximum Daily Load (TMDL) and Water Quality Management Plan (WQMP) dated April, 2007.

List of Commentors

The individuals and organizations shown in Table 1 provided comments on the Draft Bear Creek Watershed TMDL/WQMP during the Public Comment Period which was held from January 8 through March 9, 2007. On February 20, 2007 a public meeting was held in Medford, OR. The meeting began with an informational discussion followed by a formal public hearing. All comments received during the public comment period have been reviewed by DEQ and addressed in this document in the order in which they were received. Comments which require modifications to the TMDL or WQMP are noted and the changes are noted. A copy of this responsiveness summary has been submitted to EPA as part of the TMDL-WQMP packet.

Table 1. Commentors for Bear Creek Watershed TMDL

Commentors	Date Comments Received	Format of Comments	Code Used to Identify Commentor
Laurie Lindell, District Hydrologist, BLM Medford, Oregon	02/22/07	Via E-mail	BLM
Bryan Horsburgh, US Bureau of Reclamation, Portland OR.	03/02/07	Via E-mail	REC
Jenny Wu, US-EPA Region 10, Seattle, Washington.	3/06/07	Via E-mail	EPA-1
Bear Creek Watershed Council, PO Box 1548, Medford Or, 97501 Commentors: Craig Harper RVCOG, Greg Stabach RVCOG, Beth Franklin BCWC, John Ward BCWC.	3/09/07	Via Email	BCWC
Chad Woodward, Water Quality Project Manager, National Center for Conservation Science and Policy, Box 729, Ashland, OR 97520	3/09/07	Via Email	NCCSP
Alan Henning US-EPA Region 10, Eugene Oregon	3/09/07	Via E-mail	EPA-2

NOTE: As with any analysis there is uncertainty in the Bear Creek Watershed TMDL analysis. The acknowledgement of such uncertainty should not be used as an excuse to delay the implementation of much needed actions within the watershed. Local, state, and federal agencies responsible for implementing the allocations in the TMDL are required to implement the TMDL with the understanding that they may be required to modify their programs over time as new monitoring information becomes available. An adaptive management approach has been adopted by DEQ as the means to make these modifications while the designated management authorities are moving forward with actions that will improve water quality in the Bear Creek Watershed TMDL.

Bear Creek Watershed TMDL Comments

Comments from: Laurie Lindell, District Hydrologist, BLM Medford, Oregon. Received 02/22/07 via e-mail.

1.1 BLM: Unnumbered map, page 1 and Map 1, page 6. These maps appear to be highlighting the Applegate Subbasin, rather than the Bear Creek Watershed.

DEQ Response: Corrections have been made.

1.2 BLM: Geographic Setting, page 6. Total area for the Bear Creek Watershed is shown as 252,800 acres here, but the cover sheet of the Riparian Shade Report shows a total of 253,440 acres. BLM: Ownership, page 6. I believe that the total acres attributed to the USFS, BLM, or other public agency is incorrect. It appears to use the ownership acres from the cover sheet of the Riparian Shade Report, which shows BLM ownership totaling 40,000 acres. This is not correct, as the BLM ownership is closer to 26,000 acres. I could provide you with a more accurate number if you wish. What is the "other public agency"?

Bear Creek Watershed
Ownership
3/19/2007
Data Source: BLM GIS

Owner	Acres
BLM	26,260
USFS	22,524
BOR	236
State (ODF)	631
Private	181,625
Total	231,276

DEQ Response: The updated BLM data provided has been included in the Bear Creek Overview Table on page 2 of TMDL Appendix D. In the body of the document shade targets are expressed as percent reductions for the length of the stream and are independent of ownership. Readers who request the reach-based SHADOW shade analysis will be advised that there may be errors in ownership along streams. Updates have also been made in Chapter I referencing BLM.

1.3 BLM: DMA: USDI-Bureau of Land Management, page 3. Rather than use names of the agency contacts, maybe it would be better to use the job titles, since the people may change. Should this section reference the federal Water Quality *Restoration* Plan instead of the Water Quality *Management* Plan? Land uses on federal lands are also addressed in the Medford District Resource Management Plan and the Rogue River National Forest Land and Resource Management Plan.

DEQ Response: Corrections have been made to include both the person and position title.

1.4 BLM: Federal Land Management Agencies, page 8. Should responsibilities include implementation of our respective District/Forest management plan (see above)? Please delete the reference to the standards and guidance listed in PACFISH. That does not apply to us.

DEQ Response: PACFISH references have been deleted. Corrections have been made.

1.5 BLM: Figure 3, page 9. Why aren't the federal agencies listed in Figure 3 under DMA development? Now that DEQ has approved the sufficiency analysis for the Forest Plan, does that mean that the USFS and BLM don't need to prepare WQRPs any more?

DEQ Response: Until the sufficiency analysis is accepted at a policy level within DEQ and the federal agencies the requirement for the development of WQRPs still stands. The table has been modified to reflect this.

1.6 BLM: Federal Lands, page 11. The status of the federal WQRP is listed as currently under development. Why isn't the DEQ-approved *West Bear Creek Water Quality Restoration Plan* mentioned in the WQMP?

DEQ Response: As of November 2006, the West Bear Creek Water Quality Restoration Plan has been approved by DEQ and addresses a portion of the Federally managed lands in the Bear Creek watershed. The reference has been included in Chapter II WQMP page 11.

1.7 BLM: Land ownership map, page 5. Why are there BLM lands AND O&C lands? These should all be shown as BLM.

DEQ Response: the Map on page 5 of TMDL Appendix A, Bear Creek Watershed Temperature Assessment has been changed to state that both O&C lands and BLM lands are managed by BLM.

1.8 BLM: Shade Report TMDL Appendix D. Bear Creek Watershed overview, page 2. The acres of BLM ownership are incorrect. Why aren't the state lands shown separately?

DEQ Response: Changes have been as per 1.2 above.

Comments from: Bryan Horsburgh, US Bureau of Reclamation, Portland Oregon. Received 03/02/07 via e-mail.

1.9 REC: Temperature TMDL: Pg 39, Figure 8: Suggest adding axis titles to Figure 8.

DEQ Response: Figure 8 has been changed.

1.10 REC: Temperature TMDL: **Page 41, First Complete Paragraph:** The sentence stating, "No flow targets will be set or changes in water use required as part of the TMDL", is somewhat misleading. Reclamation understands that no explicit changes in flow are *required* as part of the individual allocations. However, the temperature TMDL relies on a key modeling assumption that major irrigation withdrawal, dams, and water transfer into the basin do not exist (page 44). Congress, by the Act of August 20, 1954 (68 Stat. 752, Public Law 83-608), authorized the Secretary of the Interior to construct the Rogue River Basin Project Talent Division, consisting of "two principal reservoirs at the Howard Prairie and Emigrant sites, together with other necessary works for the collection, impounding, diversion, and delivery of water, the generation and transmission of hydroelectric power and operations incidental thereto." The Talent Division was authorized for the purposes of irrigation, flood control, hydroelectric power, and other beneficial purposes. In citing OAR 340-041-0002(39), Reclamation understands ODEQ's statutory rationale for basing the TMDL on the NTP. However, Reclamation believes it is impractical to assume implementation of a NTP TMDL that is technically based on the removal of congressionally authorized irrigation withdrawals, dams, and water transfer into the basin.

DEQ Response: The temperature TMDL sets thermal loads based on the potential impact to the applicable criterion. The applicable criterion is determined by comparing the NTP, which uses natural flows under site potential conditions, to the biologically-based numeric criteria (64.4^{o}F (18.0^{o}C) May 16-October 14, 55.4^{o}F (13^{o}C) October 15-May 15). Generally, the warmer of the two criteria apply to the waterbody provided that the HUA is not exceeded. In the Bear Creek TMDL waste load allocations are based on current flows, not on NTP flows (7Q10s in the case of NPDES permitted facilities). The natural thermal potential model is then used to demonstrate that the human use allowance (HUA) for the source is being met after complete mixing and at the point of maximum impact (OAR 340-041-0028 (12)(b)(B).

1.11 REC: Temperature TMDL: **Page 44, Paragraph 4:** Reclamation does not agree with the modeling assumption of using natural flow conditions to determine the NTP (no dams, irrigation withdrawals, point sources, or imported waters into the watershed).

DEQ Response: The term natural thermal potential is defined in OAR 340-041-0002(39) as: the determination of the thermal profile of a water body using the best available methods of analysis and the best available information on the site potential riparian vegetation, stream geomorphology, stream flows and other measures to reflect natural conditions. The term natural conditions is defined in OAR 340-041-0002(38) as: conditions or circumstances affecting the physical, chemical, or biological integrity of a water of the state that are not influenced by past or present anthropogenic activities. Disturbances from wildfire, floods, earthquakes, volcanic or geothermal activity, wind, insect infestation, and diseased vegetation are considered natural conditions.

In this case the term "Natural Conditions" refers to pre-impoundment conditions where no anthropogenic sources of heat were present.

1.12 REC: Temperature TMDL: **Page 52, Paragraph 2:** The temperature load allocations applied to Emigrant Dam are not clear. The paragraph says the allocations are "equivalent to natural background loads", but no further information is provided. The paragraph also suggests there are multiple allocations. Please explain these items further.

DEQ Response: The term "equivalent to natural background loads" refers to the thermal load at the base of emigrant dam under natural thermal potential conditions. Since the data required to determine natural thermal potential for the area above Emigrant Lake is not available at this time a more conservative approach is applied allowing no assimilative capacity or human use allowance to the dam therefore the terminology of "equivalent to natural background loads" is used. There will be multiple allocations based on the time of year and the specific criteria that apply.

1.13 REC: **Page 53 (Temperature Management Plans):** The NTP used to develop the temperature allocations is based on achieving natural flow conditions in the river. Natural flow conditions assume an elimination of major irrigation withdrawal, dams, and water transfer into the watershed (page 44). It does not seem feasible to develop meaningful temperature management plans with current infrastructure (e.g. dams and diversion) and water management practices in place if the temperature targets are based on the non-existence of said infrastructure. Furthermore, it is not practical to expect DMAs to use their land management authority to make temperature improving changes equivalent to the non-existence of major irrigation withdrawal, dams, and water transfer into the watershed.

DEQ Response: Temperature implementation plans are required of all DMAs. These plans are to specify what actions will be undertaken and when in order to address a DMAs impact on water quality. It is not, however, required that infrastructure be removed as part of TMDL implementation. After implementation plans are submitted and approved by DEQ, effectiveness monitoring over time will determine if load allocations will be met and if changes to plans will be needed.

DEQ recognizes that it may take some period of time - from several years to several decades - after full implementation before management practices identified in an implementation plan will become fully effective in reducing and controlling pollution. DEQ also recognizes that the technology for controlling nonpoint source pollution is, in many cases, in the development stages and will likely take one or more iterations to develop effective techniques to meet TMDL derived allocations. In addition TMDLs are bases on models and techniques which are simplifications of complex processes and as such, are unlikely to produce an exact prediction of how streams and other waterbodies will respond to the application of various management measures. It is for this reason that the TMDL has been established with a margin of safety.

1.14 REC: **Bacteria TMDL, Page 18, Paragraph 1:** The bacteria TMDL appropriately uses a flow-based loading curve to determine the loading capacity and allocations. The flow duration intervals are based on flows from the Medford gage under current Reclamation and irrigation district operations. Why are flows under current operations appropriate for the bacteria TMDL, but not the temperature TMDL? Reclamation suggests ODEQ consider using flows under current operations for the temperature load allocations as well.

DEQ Response: In the temperature TMDL, thermal waste load allocations for point sources are based on impacts under current flow conditions. Natural thermal potential simulations are only used to determine the appropriate criterion that applies.

1.15 REC: **TMDL Appendix A, Temperature Modeling Appendix Page 23, Paragraph 2 Bullets:** Achievement of the allocations presented in the TMDL is linked to the flow profile resulting from the bulleted changes (Figure 22). Reclamation disagrees with establishing a closer-to-natural flow profile assuming using these changes. Furthermore, the model results will be questionable as a result of using the "closer-to-natural" hydrograph. This is because the model relies upon stream widths and depths generated under current hydrologic operations (pages 9 and 10). The widths and depths under current operations are notably different that would occur under a closer-to-natural flow profile

ODEQ Response: The condition picked for modeling the natural thermal potential condition was chosen as the condition being closest to meeting the Natural Thermal Potential Definition OAR 340-041-0002(39). Some conservative simplifying assumptions were made in the TMDL to ensure a robust margin of safety. In the future other conditions can be chosen to better resolve individual load allocations. Follow-up modeling during the implementation stage of the Bear Creek TMDL should explore many of the questions brought forth in the previous paragraph. The Heat Source model is capable of exploring more complex scenarios involving channel changes and hyporheic interactions.

1.16 REC: **TMDL Appendix A, Temperature Modeling Appendix : Page 26, Paragraph 2:** Reclamation suggests that future monitoring also focus on gaining a better understanding of the effects of Emigrant Reservoir on temperatures in Bear Creek.

DEQ Response: DEQ agrees that future monitoring should focus on gaining a better understanding of the effects of Emigrant Reservoir on temperatures in Bear Creek. As indicated in the temperature modeling appendix, changes in the boundary condition temperature had a large effect on Bear Creek mainstem temperatures (Figure 25, TMDL Appendix A). This analysis indicates that the system is very sensitive to boundary condition temperatures and that future monitoring should focus on gaining better data on the natural conditions temperatures of the tributaries that feed Emigrant Reservoir.

Comments from: Jennifer Wu US-EPA TMDL Project Manager, Region 10, Seattle Washington. Received 03/06/07 via e-mail.

1.17 EPA-1 1. p. 1, TMDL counting. Because of new guidance from EPA Headquarters, EPA now counts a single TMDL approval by waterbody segment per pollutant. EPA believes that all the listings submitted in the Draft Bear Creek TMDL are being addressed. However, the numbers submitted by ODEQ (40 TMDLs) is different from the number of TMDLs that EPA considers addressed (32 TMDLs). EPA-1. EPA counts impairment of a waterbody once for a pollutant; in other words, if a TMDL addresses one waterbody and one pollutant, it is counted as one TMDL, even if it is listed multiple times on the 303(d) list because of seasonal impairments or impairments based on different criteria. As a specific example, Ashland Creek (RM 0 to 2.8) is listed as being impaired in fall/winter/spring for fecal coliform, and in summer for fecal coliform. EPA considers there to be one bacteria TMDL for this waterbody. In any other situation where the State has multiple listings for a pollutant, whether seasonal or criteria, EPA counts the multiple listings as "one TMDL." This difference in approach explains the difference between the number of segments the state identifies as having completed TMDLs and the number of TMDLs EPA considers complete.

DEQ Response: As per EPA guidance shown in Table 1 below, the following text has been inserted on Page 1 in the Executive Summary and elsewhere in the document.

Listed Parameters

This TMDL document addresses all listings on the 2004/2006 303(d) list for the Bear Creek Watershed (31 TMDLs, covering 311.7 stream miles).

- **Temperature:** Rearing (May 16-Oct. 14), Spawning (Oct. 15-May 15). Total 138.7 miles, **19 TMDLs**.
- **Bacteria:** Fecal Coliform: 5 summer, 6 fall/winter/spring, 5 year-round. Total 120.4 miles**,** E. coli: 1 summer listing, 1 fall/winter/spring. Total 52.6 miles, **11 TMDLs**
- **Sedimentation:** 1 year-round listing. **1 TMDL**.

Please note that although the introduction and text of the Bear Creek TMDL uses the EPA method for calculating the total number of TMDLs, ODEQ does not agree with this method and uses a different approach. ODEQ tracks completed TMDLs using the method established for the Consent Decree between the US Environmental Protection Agency (EPA) and Northwest Environmental Defense Center (NEDC), John R. Churchill, and Northwest Environmental Advocates (NWEA) (October 17, 2000). The Consent Decree lists the cumulative number of TMDLs to be established through 2010. As per the Consent Decree, the Bear Creek TMDL represents the completion of 40 TMDLs (Table 2). The TMDL counting discrepancy is noted in the executive summary in the TMDL.

Table 1. 2004/2006 303(d) Listings Addressed in the Bear Creek Watershed TMDL via EPA 3/06/07

TEMPERATURE

Record ID	Waterbody Name	River Mile	Parameter	Season	TMDL Count
	*Ashland Creek		Temperature	Year-Round	Not Listed
3940	Bear Creek	0 to 26.3	Temperature	Summer	1

3942	Butler Creek	0 to 5.2	Temperature	Summer	1
4423	Carter Creek	0 to 4.8	Temperature	Summer	1
3944	Coleman Creek	0 to 6.9	Temperature	Summer	1
3946	Emigrant Creek	0 to 3.6	Temperature	Summer	1
4422	Emigrant Creek	5.6 to 15.4	Temperature	Summer	1
8149	Gaerky Creek	0 to 4.6	Temperature	Summer	1
4425	Hobart Creek	0 to 1	Temperature	Summer	1
3953 8016	Jackson Creek Jackson Creek	0 to 12.6 0 to 12.6	Temperature Temperature	Summer 10/1- 5/31	1
3954	Larson Creek	0 to 6.7	Temperature	Summer	1
8022	Lazy Creek	0 to 4.5	Temperature	Summer	1
3955	Lone Pine Creek	0 to 5	Temperature	Summer	1
3957	Meyer Creek	0 to 5.3	Temperature	Summer	1
8026 3958	Neil Creek Neil Creek	0 to 4.8 0 to 4.8	Temperature Temperature	10/1 - 5/31 Summer	1
8031	Payne Creek	0 to 2.1	Temperature	Summer	1
4424	Tyler Creek	0 to 4	Temperature	Summer	1
4326	Wagner Creek	0 to 6	Temperature	Summer	1
3967	Wagner Creek	6 to 7.4	Temperature	Summer	1
8036	Walker Creek	0 to 6.7	Temperature	10/1 - 5/31	1
TOTAL TMDL COUNT FOR TEMPERATURE					**19**

* Ashland Creek was not included on the 2004/2006 303(d) List but is impaired. Allocations were developed for this impaired waterbody segment.

BACTERIA

Record ID	Waterbody Name	River Mile	Parameter	Season	TMDL Count
4085 4357	Ashland Creek Ashland Creek	0 to 2.8 0 to 2.8	Fecal Coliform Fecal Coliform	Fall/Winter//Spring Summer	1
4360 4086 16882 16883	Bear Creek Bear Creek Bear Creek Bear Creek	0 to 26.3 0 to 26.3 0 to 26.3 0 to 26.3	Fecal Coliform Fecal Coliform E. coli E. coli	Summer Fall/Winter/Spring Fall/Winter/Spring Summer	1
4088	Butler Creek	0 to 5.2	Fecal Coliform	Fall/Winter/Spring	1
4089	Coleman Creek	0 to 6.9	Fecal Coliform	Year Around	1
4090 4404	Crooked Creek Crooked Creek	0 to 4.3 0 to 4.3	Fecal Coliform Fecal Coliform	Summer Fall/Winter/Spring	1
4093 4405	Griffin Creek Griffin Creek	0 to 14.4 0 to 14.4	Fecal Coliform Fecal Coliform	Summer Fall/Winter/Spring	1
4095	Jackson Creek	0 to 12.6	Fecal Coliform	Year Around	1
4096	Larson Creek	0 to 6.7	Fecal Coliform	Year Around	1
4097	Lazy Creek	0 to 4.5	Fecal Coliform	Year Around	1
4098 4406	Meyer Creek Meyer Creek	0 to 5.3 0 to 5.3	Fecal Coliform Fecal Coliform	Summer Fall/Winter/Spring	1
4100	Payne Creek	0 to 2.1	Fecal Coliform	Year Around	1

TOTAL TMDL COUNT FOR BACTERIA	11

SEDIMENTATION

Record ID	Waterbody Name	River Mile	Parameter	Season	TMDL Count
4280	Reeder Reservoir/ Ashland Creek	4.9 to 5.4	Sedimentation	Year Around	1
TOTAL TMDL COUNT FOR SEDIMENTATION					**1**

Table 2. Bear Creek TMDL Listings: Consent Decree Method

Temperature: 18 rearing (May 16-Oct. 14), 3 spawning (Oct. 15-May 15). Total 138.7 miles	**21 TMDL**
Bacteria: Fecal Coliform: 5 summer, 6 fall/winter/spring, 5 year-round. Total 120.4 miles	**16 TMDL**
Bacteria: E. coli: 1 summer listing, 1 fall/winter/spring. Total 52.6 miles	**2 TMDL**
Sedimentation: 1 year-round listing	**1 TMDL**

1.18 EPA-1. 2. p. 16, Listing Issues. There are three listings on the 2004/2006 303(d) List that are not included in Table 2 on pages 16-18 as being addressed by the TMDL. They are also not included in the note on page 16 as listings that will be addressed in the Rogue Basin TMDL. They are as follows:

- Evans Creek, River Miles 0 to 19.1, Fecal coliform, Summer
- Evans Creek, River Miles 0 to 19.1, Fecal coliform, Fall/Winter/Spring
- Galls Creek, River Miles 0 to 4.5, Temperature, Summer

Please explain whether they are being addressed in the Bear Creek TMDL or will be addressed in the Rogue Basin TMDL. Ashland Creek is identified as being impaired, but was not included on the 2004/2006 List. Why was this not included on the new list?

DEQ Response: The above listed streams are not in the Bear Creek Watershed and will be addressed in the Rogue TMDL. Ashland Creek was not included in the 2004/2006 303(d) list but will be included in the 2008 list. Page 16 has been modified as follows:

Note also that on the DEQ website (http://www.oregon.gov/DEQ) the Bear Creek watershed 303(d) listings are included in the Middle Rogue section. The remainder of the Middle Rogue 303(d) listings including: Battle Creek, Birdseye Creek, Cold Creek, East Fork Evans, Evans Creek, Galls Creek, Pleasant Creek, Ramsey Canyon, Rock Creek, Salt Creek, Savage Creek, and West Fork Evans Creek will be addressed in the Rogue TMDL scheduled for completion in 2007.

1.19 EPA-1. 3. p. 25, Discrepancy in text and Table 3. Page 25 states that there are 4 segments that exceed salmonid spawning criteria on the 2004/2006 303(d) List, but Table 3 only lists three. Is this an error?

DEQ Response: Typographical error – there are 3 segments listed.

1.20 EPA-1. 4. p. 49, Ashland WWTF wasteload allocation. Ashland is allowed 100% of the waters for mixing. In some other TMDLs, 25% of the water is allowed for mixing. More information on why 100% of the water is allowed would be helpful.

DEQ Response: Mixing zone requirements are defined in OAR 340-041-0028(12)(b): (A) Prior to the completion of a temperature TMDL or other cumulative effects analysis, no single NPDES point source that discharges into a temperature water quality limited water may cause the temperature of the water body to increase more than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after mixing with either twenty five (25) percent of the stream flow, or the temperature mixing zone, whichever is more restrictive; or

(B) Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.

1.21 EPA-1. 5. Reeder Reservoir/Hosler Dam. No modeling was done for Reeder Reservoir/Hosler Dam. In the future, it would be helpful to complete modeling to better refine their impacts on temperature, rather than to rely on numeric criteria, particularly if it found that impairments occur during the spawning season. Information on the Temperature Management Plan for Reeder Reservoir/Hosler Dam included in previous versions would be helpful to include in the TMDL to outline some of the implementations that are planned to evaluate and address the possible temperature impacts downstream on Ashland Creek.

DEQ Response: DEQ did not HeatSource model Ashland Creek as a part of this TMDL because the creek was not on the 303(d) list at the time of data collection. Load allocations and waste load allocations were developed for the creek as a part of this TMDL. Carrollo Engineers is currently under contract with the city of Ashland to determine approaches to meet the WLA and to develop a HeatSource model for the creek. DEQ has been assisting in this effort. The implementation plan for the city will address all water quality impacts including the management of the reservoir and dam.

1.22 EPA-1. 6. p. 52, 55, Emigrant Dam Allocation and Margin of Safety. Emigrant Dam is allotted a no measurable increase above natural thermal temperatures when the biologically-based numeric criteria are exceeded. It would be helpful to define or clarify "no measurable increase." Additionally, there is an explicit 10% margin of safety for Emigrant Dam, but it is unclear how this would be used since no measurable increase is not assigned a specific numeric value.

DEQ Response: The 10% margin of safety statement has been removed from the MOS section. The load allocation that the applies to the dam is “No increase in natural thermal potential temperatures when the biologically-based numeric criteria are exceeded.” As way of clarification this implies a load allocation of 0.0. In past TMDLs

the terminology “no measurable increases in surface water temperature” has been used where “no measurable increases” is defined as no more than 0.25°F.

1.23 EPA-1. Bacteria p. 19, Table 7 Load allocations and Percent Reduction Targets. For high flows and high medium range flows, the current load is less than the loading capacity, but there are reductions needed. Additionally, when I calculate the percent reduction for low flows, it equals 16.7%. Please explain.

DEQ Response: there were several typographical errors that have been corrected in Table 7. Corrected table shown below. Note below the table has been expanded to explain why table values cannot be used directly to calculate the percent reduction values.

Table 7. Bear Creek at Medford: Load Allocations and Percent Reduction Targets (Fecal Coliform)

	Range of Bear Creek Flow				
Allocations	**High Flow** (Above 266 cfs)	**High Medium** (71 to 256 cfs)	**Mid-Range** (39 to 70 cfs)	**Low Medium** (12 to 38 cfs)	**Low Flow** (Below 12 cfs)
Allowable Loading Capacity (Fecal Coliform Standard)	8.51×10^{13}	5.56×10^{13}	1.41×10^{13}	7.82×10^{12}	5.38×10^{10}
Current Load (Fecal Coliform Org./day)	2.15×10^{14}	2.62×10^{14}	9.17×10^{13}	2.26×10^{13}	6.46×10^{10}
Percent Reduction (Fecal Coliform) [1]	60.5%	78.8%	84.6%	65.4%	20.0%

[1] An explicate 10% margin of safety was incorporated into these TMDL percent reduction targets since human contact recreation has the potential to occur under most flow conditions. Percent reductions shown are averages of percent variance from the standard at each data point and therefore cannot be directly compared to the allowable and current loads shown in the table.

1.24 EPA-1. Bacteria p. 20-21, Point Source Wasteload Allocations. This section was well-explained and clearly lays out the permittees' responsibilities and point source wasteload allocations, particularly in the stormwater portion.

DEQ Response: Thank you for the comment. It is important to note that the stormwater program interfaces directly with the TMDL as it addresses many of the wet-weather issues faced in the urban areas.

Comments from: Bear Creek Watershed Council, PO Box 1548, Medford Or, 97501 Commentors include: Craig Harper RVCOG, Greg Stabach RVCOG, Beth Franklin BCWC, John Ward BCWC. Comments received 03/09/07 via e-mail.

1.25 BCWC. Introduction. Page 3 *Sedimentation* might make clear the Ashland Creek Analytical Watershed is the same boundary as the HUC-6 boundary.

DEQ Response: Changes have been made to clarify that the Ashland Creek Analytical Watershed is the same as the HUC-6.

1.26 BCWC. Introduction. Page 9 Figure 1 extends to BC River Mile 31 but on page 34 the narrative states Bear Creek only extends from "the mouth to RM 27.6".

DEQ Response: Figure 1 has been clarified to state that the x-axis represents the miles from the mouth of Bear Creek to the base Emigrant Dam a distance of approximately 31 miles.

1.27 BCWC. Temperature. Page 34 Last sentence on page states Bear Creek mainstem extends "(from the mouth to RM 27.6 confluence of Walker Creek and Emigrant Creek)" which is consistent with my understanding. Others say Bear Creek extends from the mouth to the confluence of Neil Creek and Emigrant Creek. Please clarify the upper extent of Bear Creek.

DEQ Response: For the purposes of the TMDL, Bear Creek begins at the confluence of Walker and Emigrant Creeks a distance of 27.5 river miles from the Rogue River.

1.28 BCWC. Temperature. Where is the point of Maximum Impact?

DEQ Response: Points of maximum impact are locations determined through HeatSource modeling where the greatest thermal change due to a source or multiple sources is observed in a stream. It may include impacts at the point of discharge as well as downstream where the cumulative impacts are the greatest. For the Bear Creek TMDL with a single point source, the point of maximum impact for the summer critical period was determined to be at the treatment plant outfall. It is important to note that the point of maximum impact may vary spatially and temporally.

1.29 BCWC. Temperature. Page 30 New permits are covered in the human use allowance. How are these tracked verses other potential new sources? Basically how does one know when the reserve allocation is gone?

DEQ Response: There is an explicit allocation for reserve capacity throughout the mainstem Bear Creek and its tributaries. It is 0.1°C or 1/3rd of the total human use allowance. Reserve capacity is available for use by either nonpoint or point sources to accommodate future growth as well as to provide an allocation to any existing source that may not have been identified during the development of this TMDL. There are currently questions centering on when the reserve capacity will be available for use There are uncertainties as to when significant reductions in thermal load will occur. This coupled with the uncertainties over the impact of dams and irrigation, have resulted in a recommendation to distribute the reserve capacity only after it is demonstrated that a significant reduction in thermal loads will be achieved within a specified timeframe. The issues relating to when the reserve capacity will become available are currently under discussion and will be determined at a later date.

1.30 BCWC. Temperature. How Long do the DMAs have to meet their thermal potential targets and specifically the percent shade increases. The tables were broken down by DMA. Each DMA had a roughly 60% increase to achieve.

DEQ Response: DMAs have 18 months from the date that the TMDL is signed into rule to develop implementation plans. These plans will describe what steps will be taken by the DMA to meet the load allocations defined in the TMDL. As stated in Chapter II under adaptive management, DEQ recognizes that it may take some period of time - from

several years to several decades - after full implementation before management practices identified in an IP to become fully effective in reducing and controlling pollution. In addition, DEQ recognizes that technology for controlling nonpoint source pollution is, in many cases, in the development stages and will likely take one or more iterations to develop effective techniques. It is possible that after application of all reasonable best management practices, some TMDLs or their associated surrogates cannot be achieved as originally established. If DEQ determines that all appropriate measures are being taken by the DMAs and that water quality standards will still not be met, DEQ may require a revision to the IP or may reopen the TMDL.

1.31 BCWC. Temperature. Page 46. Definition of loading capacity of a little confusing since in the previous section the loading capacity was calculated based on point source only.

DEQ Response: Page 46 has been clarified to state; "Allowable heat loads are divided among the potential sources and are termed Waste Load Allocations (WLA) for point sources and Load Allocations (LA) for nonpoint sources. The loading capacity as defined previously can be split into the sum of natural background heat load plus WLA plus LA plus a reserve capacity."

1.32 BCWC. Temperature. Page 52. It appears from data presented earlier in this document that the irrigation districts impacts are significant. Could they participate in thermal unit trading and provide some possible mitigation in the Bear Creek watershed?

DEQ Response: Thermal trading may assist the districts in meeting their load allocation and will be a topic under investigation as part of the implementation plan development process.

1.33 BCWC. Temperature. Page 35 Figure 6 Site Potential-Effective Shade (blue line) is said in Table 8 to have an average current percent effective shade of 54% but visual estimation of the average in Figure 6 looks like the actual average is well above 70 %. Please explain the difference.

DEQ Response: Figure 6 represents the longitudinal shading of the Bear Creek mainstem as calculated by the HeatSource model. Table 8 below represents the same reaches calculated using a slightly different method and as such the results from the two methods are not necessarily comparable. HeatSource measures shade within the wetted width while the method in Table 8 reflects that of TMDL Appendix D, measuring shade within the zone of disturbance. Figure 6 has been annotated to explain this.

1.34 BCWC. Temperature. Page 35 Table 8 reports average current percent effective shade in Bear Creek mainstem as 15% which seems very low. Bear Creek Watershed Council (Riparian Canopy Assessment, June 2005) reported 26,078 feet of Bear Creek mainstem with canopy above 70%; 66,936 feet of Bear Creek mainstem with canopy between 40 and 70%, and 53,205 feet of Bear Creek mainstem with canopy less than 40%. There seems no way the average could be 15% for the entire mainstem. Canopy data for the other tributary streams listed in Table 8 is also detailed in the June 2005 study.

DEQ Response: The percent effective shade values for Table 8 and TMDL Appendix D may be low as compared to the Riparian Canopy Assessment due to the fact that the

methods used in TMDL Appendix D measured shade within the zone of disturbance which is not analogous to measuring shade on the water's surface. It would seem that the Riparian Canopy Assessment, June 2005 values are more in line with the values derived using HeatSource and shown in Figure 6. Thermal loads and loading capacity were derived using the modeled data shown in Figure 6.

1.35 BCWC. Temperature. Page 45 Figure 12 appears to show a dramatic 2.0 to 2.5 degree F decrease at RM 27 where Neil Creek mixes with Bear Creek; possibly this beneficial cooling effect persists through the Bear Creek system. But if I understand correctly (Figure 11), this cooler water only offsets the adverse thermal impact upstream due to Emigrant Dam management practices by BOR and TID. Table 11 appears to indicate solar heating above Emigrant Dam is "natural" and therefore has zero load allocation. How can an artificial manmade structure be considered "natural". Why should management practices at the dam be overlooked as a tool in maintaining stream temperature? The *Temperature Management Plan- irrigation districts* detailed on page 53 does not seem to offer adequate assurance that proper steps to eliminate the temperature effect of dam operation.

DEQ Response: In Figure 12 the impact of Neil Creek to Bear Creek at natural thermal potential is to ***increase*** the temperature approximately 4 degrees F. This is because the temperature of Neil Creek at natural thermal potential is assumed to be 64.4 degrees F where it enters Bear Creek. Neil Creek has such a large impact on Bear Creek at this point because Bear Creek has a very low flow under natural conditions this high in the watershed. The Load Allocation that applies to Emigrant Dam is "No increase in natural thermal potential temperatures when the biologically-based numeric criteria are exceeded". This does not assume that dam impacts are natural but requires additional data and that the USBOR and TID develop an implementation plan and further quantify the impact of the dam. The section that outlines implementation plan elements and requirement as related to Emigrant Dam is shown on Page 52 of the document.

Section 1 Bacteria

1.36 BCWC. Page 9 *Natural background Sources*, if I understand correctly, regards bacterial contribution of cattle, horses, and other domestic livestock fed or grazed winter long along the Ashland Lateral to be "natural background" of bacteria in the Bear Creek watershed. The same may be occurring along the East Side Lateral and other irrigation waterways within the watershed. How can this arbitrary decision transfer the bacterial compliance burden to other livestock owners at other locations and seasons?

DEQ Response: As per Page 9, Natural background sources of fecal bacteria include those sources associated with wildlife. This includes animals such as deer, rats, raccoons, ducks, geese and others that live or graze near or in surface waters. For the purposes of this plan these bacterial sources are considered natural and are part of the natural background of bacteria in the Bear Creek.

1.37 BCWC. Page 15 Graph is of monitored sources but what if the contributions of other tributaries? How will there be managed as a part of the TMDL implementation programs?

DEQ Response: Figure 2 on page 15 shows only those tributaries for which DEQ has loading data. DEQ has developed percent reduction targets for these primary tributaries (Table 8), however the TMDL applies to all surface waters within the Bear Creek

Watershed and it is DEQs expectation that implementation plans will address all surface waters as well.

1.38 BCWC. Page 14 Figure 1 and Table 5 suggest irrigation district water movement and tailwater recovery increase bacterial loads with successive reuse. It is also possible this increases wider distribution of bacteria from the "Natural background Sources" related to wintering practices along irrigation laterals and ditches.

DEQ Response: It is probable that the irrigation districts are also transporting bacteria from those natural sources as discussed on page 9 as well as bacteria from other potential sources.

1.39 BCWC. Page 16 Figure 3 suggests that Jackson and Griffin Creek, representing nearly two-thirds of NPS bacteria, should be given priority in addressing bacterial issues, but may it also be noted that the Jackson County Water Park at Emigrant Lake has high use for water contact recreation that seems omitted in the narrative.

DEQ Response: The data presented in Figure 3 indicates that a disproportionate amount of bacterial loading is attributed to Jackson and Griffin Creeks making them a high priority for action. Emigrant lake is not assigned a specific load however the TMDL applies to all surface waters within the Bear Creek Watershed and it is DEQs expectation that implementation plans will address all surface waters as well..

1.40 BCWC. Page 19-20 Table 8 identifies a 55% Reduction Target for fecal coliform in Neil Creek and a 38% reduction in Ashland Creek. It seems hard to find the data and narrative associated with these targets, and the high summer long prevalence of water contact recreation in Ashland Creek would seem to focus attention on health related concerns in Lithia Park.

DEQ Response: TMDL Appendix B details bacterial data collection and analysis. The percent reduction targets as presented in Table 8 do not emphasize one creek over another based on the potential for contact recreation to occur. The table represents the percent reduction needed to meet the standard. It should be noted however that the percent reduction targets do incorporate a 10% margin of safety to further protect public health.

1.41 BCWC. Page 32. Can you get some good photos?? This is an important piece of information for the public to note how fragile and highly erosive this watershed is. Not many people are aware of erosion in the upper portion of the watersheds along the Siskiyou Crest or what it looks like.

DEQ Response: Photographic documentation is available through the USFS Rogue Siskiyou National forest.

1.42 BCWC. Section 2, IV, or 4? The cover page for this document, the header on page 26, and the chapter heading on page 26 make the reader wonder where they are.

DEQ Response: Errors in the section numbers have been corrected.

1.43 BCWC. Page 31 *Sedimentation History* seems to suggest listing Reeder Reservoir for sediment was associated with sluicing practices that have been discontinued. Do I correctly understand that the 303d listing will be continued even though sluicing will not recur?

DEQ Response: Reeder reservoir is 303(d) listed because of the negative biological impacts associated with excess sedimentation. Sluicing as a method of sediment removal results in additional negative impacts downstream. The 303(d) listing will continue until the TMDL is competed at which time the reservoir will be placed on the integrated reports under Category 4A: "Water quality limited, TMDL approved".

1.44 BCWC. Page 35 The narrative paragraph immediately above Table 4 is about transient snow zone road mileage but neither the text not Table 4 seem to have TSN data for support.

DEQ Response: The number of miles of road in the transient snow zone is an important consideration when looking at potential sources of erosive materials. However, only the total number of miles of road per sub-watershed was available. The document specifically references USFS 1999, draft CWA Water Quality Management Plan. April 1999.

1.45 BCWC. Page 45 Table 3 indicates a possible pattern for agricultural related decrease in dissolved oxygen but data for Jackson Creek are not included. Can a reference be provided to data showing Jackson Creek had acceptable dissolved oxygen during the same year(s) studies showing other creeks were impaired for dissolved oxygen?

DEQ Response: Jackson Creek was added to the 303(d) list in 2004 for dissolved oxygen however it is classified as Category 3: meaning that there is currently insufficient data to justify a listing. The reader is referred to the DEQ website for more information: http://www.deq.state.or.us/wq/assessment/rpt0406/results.asp

1.46 BCWC. Page 50. Can you clarify this discussion?? Are these impairments still monitored by DEQ?? I'm still not clear if these stream impairments are included in the 2006 TMDL . It appears that they were listed in 1992, but are now "approved" what does this mean? If they are not 303 (d) listed anymore then what is their status???

DEQ Response: The DEQ 303(d) list can be viewed on the DEQ website in the 2004/2006 integrated report by selecting the waterbody, parameter, and listing status (in this case select Water Quality Limited TMDL needed - 303(d)). Waterbodies are classified as **Category 5**: Water is water quality limited and a TMDL is needed, Section 303(d) list." Until such time as a TMDL is completed and the classification changes to **Category 4A**: "Water quality limited, TMDL approved".

Comments from: Chad Woodward, Water Quality Project Manager, National Center for Conservation Science and Policy, Box 729, Ashland, OR 97520. Received 03/09/07 via e-mail.

1.47 NCCSP: There is inconsistency regarding the low and high periods begin and end. Sometimes the low flow period ends on November 15th (p. 59 of 1992 Review TMDL) or sometimes it ends on October 31 (p. 60 of 1992 Review TMDL). In this case both references are for the same parameter. In other situations the low flow season extends until November 30th (p. 47 of 1992 TMDL review). This inconsistency creates a lack of clarity. When do the

flow seasons end and begin? This matters because parameter limits often change depending on low or high flow periods. If there is a rationale for having different dates for the flow periods, then that should be explained, otherwise the most protective flow season should be used. Although these flow periods are based roughly on precipitation they are an approximation. In the case of the Bear Creek TMDL a November 30th date for the end of low flow season seems appropriate. Based on averages of at least 14 years from recent United States Geological Survey flow data from the Ashland and Medford sites, December is when high flow generally begins. Creating a uniform date would be more consistent and create clearer parameters.

DEQ Response: The designation of high and low flow season is a somewhat arbitrary designation based on seasonal creek flows. The language on page 59 has been clarified to remove the "low flow", "high flow" designation and provide only the dates for which specific instream criteria apply. The actual permitted WLA allocations for the City of Ashland provide an increased level of resolution by setting the allocations for May 1- August 31, September 1 – October 31, November 1- November 30, December 1- April 30.

1.48 NCCSP: Two different types of collaboration can aid the process of restoring our water quality to levels that support beneficial uses. First, each DMA should address all of the TMDLs as a group of intertwined issues and manage them in this way. The intertwined nature of the TMDLs is explained below in Section 5: Review of the 1992 TMDL. This explanation demonstrates how it may be necessary to look at all of the TMDLs in order to attain water quality standards. In addition, looking at all of the TMDLs cumulatively may create greater efficiency in time and expenditures than looking at each individually. A potential benefit may be that some parameters will be lowered more than necessitated by the TMDL without additional cost. Second, it seems important that the various DMA's work together when possible on reducing TMDL pollutants because redundancy can be avoided and projects combined to create greater efficiency in reducing pollutant loading.

DEQ Response: DEQ agrees with the benefits of collaboration and addressing multiple parameters. However the DMAs have the discretion to address their load allocations to meet the TMDL in the method of their choice.

1.49 NCCSP: Although safety margins have been incorporated into the TMDLs, these may not be enough to account for the 58% increase in population that is expected to occur between 2005 and 2040 according to a March, 7 2007 Mail Tribune article. Being aggressive with management plans and conservative with the margin of safety is the prudent course of action due to this predicted population change and already less than ideal conditions. We cannot afford to use any of our margins of safety and allowing detrimental or questionable actions is doing just that.

DEQ Response: DEQ agrees with the uncertainty associated with meeting water quality standards in the face of rapid population growth. As such the TMDL has been developed with a margin of safety and DEQ does not intend to allocate the reserve capacity to any source or sources.

Section 1: Background

1.50 NCCSP: The most critical (lowest) flow should be the baseline against which all discharges are measured in order to ensure they are not damaging water quality. This flow will not always be at the same place in Bear Creek as noted on page 9 of Section 1: Background,

when it shows in Figure 1 that during irrigation season the low flow would be near the mouth of the creek, but during non-irrigation season low flow would be at the upper end of the creek.

DEQ Response: Waste Load Allocations were determined under 7Q10 flow conditions determined at the discharge point where 7Q10 refers to the streamflow that occurs over 7 consecutive days and has a 10-year recurrence interval period, or a 1 in 10 chance of occurring in any one year. Daily streamflows in the 7Q10 range are general indicators of drought or lowflow conditions. 7Q10 values are also frequently used to regulate water withdrawals and discharges into streams. The 7Q10 low flow conditions were used because these conservative flows are the lowest conditions to which the temperature criteria apply. Exceedance of the criteria under less than 7Q10 flow conditions is not considered a permit violation 340-041-0028 (12)(b)(D)(d). .

Section 2: Temperature

Water Quantity:

1.51 NCCSP: Page 41 states that "the management of water withdrawals falls under the jurisdiction of the Oregon Water Resources Department and as such DEQ has no authority in this area." This may be true, however the issue of water withdrawals and flows still deserves serious attention. As stated on the very first page in the executive summary, this document is supposed to "provide a thorough analysis of pollutant sources … in the Bear Creek Watershed." Examining the thermal impact that water withdrawals have on Bear Creek not only should be done but, according to page 41, is readily accessible with use of DEQ's HeatSource 6.0 model. Running variable flows through the model would give a better understanding of the thermal loading problem and perhaps provide further direction on how to improve the situation. In TMDL Appendix D (the Bear Creek Watershed Riparian Shade Assessment) on page 14 it is DEQ's stated recovery goal to actively restore temperature stream flow by purchase or lease of water rights and to "work with the Watermaster to identify and stop illegal diversions." It is this type of persistence and collaboration that will help to solve the problem of thermal loading in Bear Creek. Water quantity is part of the water quality equation and should be incorporated in this process sooner rather than later. Hopefully, discussions like those in the early 1990s mentioned on page 40 will resume and flow will become part of the equation. A comprehensive flow analysis would be a good place to start.

DEQ Response: DEQ agrees with the need to further examine the impact of flows on temperature and with the need to pursue additional instream rights in the Bear Creek system. The DEQ HeatSource model of Bear Creek is capable of estimating the impact of changes in flow on Bear Creek temperature if such flows become available.

1.52 NCCSP: When is it likely that DEQ, the USBOR and the Talent Irrigation District will develop a temperature management plan? Similar to the other WQMPs, is this temperature plan also due 18 months after EPA approval of the TMDL? Does DEQ plan on determining natural thermal potential and therefore the load allocation for Emigrant Dam and if so when?

DEQ Response: USBOR and TID are designated as DMAs and as such are subject to the schedule shown on page 9, Figure 3 of the WQMP which outlines an 18 month requirement for submittal of implementation plans. The 18 month timeline begins when the TMDL is signed by DEQs director. The determination of natural thermal potential for the system above the dam will require additional data. How that data is to be collected and analyzed should be outlined in the implementation plan and will be the subject of future discussions between UDBOR, TID and DEQ.

1.53 NCCSP: While it may be impossible to quantify the thermal impact of irrigation withdrawals and returns to Bear Creek, there are numerous improvements being undertaken. This approach of relying on anecdotal evidence and working to correct the problem before quantification be accomplished must be applauded. Determining solutions for likely problems is the proper approach and should be applied wherever there is strong evidence that a situation is contributing to the problem.

DEQ Response: The irrigation districts have been undertaking numerous activities to improve operations and increase delivery efficiencies over the past 10 years. Great progress has been made and the districts should be congratulated for their progress, however additional work and funding is still needed to minimize the impact of the districts on water quality.

1.54 NCCSP: The majority of this appendix deals with shade and shade calculations. Shade improvements are obviously judged to be very important by their dominance in the appendix and therefore should be of primary importance in the various DMA's WQMPs.

DEQ Response: DEQ agrees with the need for additional shade along Bear Creek and its tributaries.

1.55 NCCSP: Bacteria - Based on an overall reading of this section and TMDL Appendix B it appears that the reason(s) for high summer concentrations have not been concretely determined. The lack of certainty warrants further monitoring and analysis to allow for the bacteria pollution problem to be solved. As noted below there are logical first steps to go along with additional monitoring and analysis.

DEQ Response: DEQ agrees that additional monitoring is needed as well as action to decrease bacteria loads in the Bear Creek watershed.

1.56 NCCSP: Bacteria - The hypothesis on page 16 suggests that high irrigation levels may be the reason for such high bacteria loading during the summer months and during a spring spike. This hypothesis appears to be a good starting point. It states that excess summer irrigation, after flowing over agricultural land, may return to the tributaries as inflow and carry with it fecal material. This hypothesis, coupled with the conclusion's suggestion of keeping manure and water separate, both seem to be good starting points for dealing with bacteria loading. The WQMPs should aim to reduce bacteria laden water entering the watershed. A starting point may be creating educational and pilot programs regarding when and how much irrigation to use. Another possible solution may be to reduce irrigation runoff by utilizing more efficient irrigation techniques, which would create less inflow.

DEQ Response: DEQ agrees that education and changes in irrigation practices may help to greatly decrease the input of bacteria into the irrigation system.

1.57 NCCSP: Bacteria. On page 9, the monthly loading chart in Ashland shows a huge discrepancy between August and all other months. Is there any theory behind this anomaly yet? This does not appear to fit the above hypothesis because the next closest month is December, which is clearly not part of the irrigation season.

DEQ Response: On page 9 of TMDL Appendix B, Figure 5a and 5b shows loading by month in Ashland and Medford. Due to the highly variable nature bacteria sampling the

box and whisker plot show quite a bit of overlap in the 75th percentile, however an examination of the median loading values indicates that the months of June, July and August have the highest loads.

1.58 NCCSP: Bacteria. There seems to be contradictory evidence in this TMDL appendix. On page 7 the last sentence says it is unwise to construct a relative percentage of bacteria loading from figure 4 (read the last two paragraphs of the page). Then on page 17 the third paragraph says "Figure 4 shows that, in aggregate, the Bear Creek mainstem bacteria loading at the Medford gage site is generally more than 50% higher than that seen at the Ashland gage site." I may not have read page 7 correctly and would appreciate a correction if that is the case, but currently I read this as a complete contradiction. In general this makes it difficult to determine what information is reliable.

DEQ Response: Clarifications have been made in the text on page 7 and 17 to focus on the median values of the data sets not on a point by point comparison. Text has been modified to state, "Because the bacterial samples taken at these two locations were not collected at the same time, a relative percent loading calculation, as per Figure 2, cannot be made . However, more general observations related to the data are valid. The median load observed at the Medford gage is over 50% higher than the median load calculated for the Ashland gage."

1.59 NCCSP: Sedimentation. The loading standard for sediment on page 27 "is set at the amount of sediment Reeder Reservoir would receive under natural conditions. No significant delivery of sediment to Reeder Reservoir above that which would occur naturally is permitted." The major threats to the sediment problem are natural disaster (in the form of floods, landslides, or wildfires) and from construction. To control these threats low intensity prescribed fires can help along with minimal to no construction in the watershed above Reeder Reservoir. Not only should construction threats be avoided, but they are clearly impermissible if they would add significant delivery of sediment to Reeder Reservoir. One potential construction project is Mt Ashland's proposed expansion. DEQ states on page 40 that with "mitigation measures in place, sediment rates would decrease, eventually resulting in near background rates." Eventually resulting in near background rates means it is above background rates that currently exist. How can allowing background rates to be raised be the proper course of action for managing a water quality limited body of water? Any contribution above natural background rates should be by definition significant and unallowable.

DEQ Response: The TMDL has been revised to include an actual erosion loading target for the Upper Watershed. In the revised section, soil erosion is used as the surrogate for sedimentation with volumes expressed as a total load per day of soil for the watershed. It should be acknowledged however that erosion and resulting sedimentation is typically episodic in nature with the majority of movement occurring in a short period of time (Bestcha, 1978 reference added). For implementation, ODEQ believes it is more practical to assess the impact of load reductions on an annual or even 10 year basis (ODEQ, 2007 Tenmile Lakes TMDL).

For the Ashland watershed, considerable research has been undertaken over the last 30 years to determine natural erosion rates and there continues to be considerable debate over the accuracy of this work (Ashland & Montgomery 1980, USFS 2004). The TMDL uses the most recent estimates, the *Water Erosion Prediction Project* (WEPP) model developed as part of the Mt Ashland Ski Area Expansion FEIS July 2004 (USFS, 2004), to determine background erosion rates under natural conditions. The model is the most

recent iteration in a long evolution of erosion models and is the best model currently available to describe conditions found in mountainous terrain (page 18, USFS ROD, 2004). The model takes into account both the soil erodibility and slope stability indices to determine natural background rates. Using the model output as per TMDL Appendix C of the FEIS it is determined that the soil erodibility index is 2, an estimated 0.041 – 0.55 cubic yards per decade and the slope stability index is 2 at an estimated 1.0 and 2.0 cubic yards per acre per decade (USFS, 2004). Given the size of the Upper Ashland Creek watershed (12,698 acres) and using the lower estimate in each range as a margin of safety the annual load is 1320 cubic yards or 3.62 cubic yards total per day for the watershed.

Although taking place on federal lands and subject to the National Environmental Policies Act (NEPA), the Mount Ashland expansion project will be required to obtain a 1200-C construction erosion control permit to ensure that erosion control practices are implemented and that the potential impacts from construction are kept to an absolute minimum.

1.60 NCCSP: Factor in that the 1964 construction caused severe erosion (page 30) and that the East Fork is a "unique resource" (page 34) and that both the East and West Forks have excellent habitat and "may serve as reference sites for the region" (page 26) and you must come to the conclusion that we should do what we can to preserve an already water quality limited area. Protecting water resources includes cleaning up the sediment issues on City property mentioned at the bottom of page 35. Additionally we must not allow construction that will for years create a worse situation than we currently have. Finally, the margin of safety that is built in should be maintained to help offset uncontrollable natural disasters.

DEQ Response: Macroinvertebrate data has indicated that the East and West Forks of Ashland Creek above Reeder Reservoir currently provides habitat in excellent condition. The survey recommends that the sites may serve as reference sites for the region, and more specifically, for granitic watersheds in the area (Wisseman 1997). DEQ requires that both the USFS and City of Ashland submit implementation plans as defined in OAR 340-042-0080(3) that details when and how sediment impacts will be addressed and how the TMDL will be met. Restoration activities that will result in net benefits to the watershed over time may be exempt from this requirement depending on the proposed action as per OAR 340-041-004(5)(a-c). DEQ uses a margin of safety to address the uncertainty associated with the analysis and to ensure that standards will be met. DEQ does not intend to allocate or change the MOS in this TMDL.

1.61 NCCSP: 1995 TMDL review. Perhaps one reason we have not achieved water quality standards for the 1992 TMDLs is because they are so closely tied to the current TMDLs. The 1992 TMDL regulates for Dissolved Oxygen (DO), pH, and aquatic weeds and algae. The interrelation of these three with temperature standards is clearly stated on page 45. The summary there states that DO deficits and pH violations occur as a condition of algae and weed growth. It also states that higher temperatures are a factor in weed and algae growth and therefore a factor in DO and pH as well. These issues are clearly intertwined and create a vicious cycle making the problem difficult to control unless you control all of the problems. This vicious cycle is summarized in the stream temperature discussion on page 58. Stream temperature increases allow lower amounts of oxygen to be stored in the water

and oxygen consuming processes accelerate with higher temperatures. An additional connection alluded to on page 57 is that agricultural and forestry fertilizers both add nutrients in the form of nitrogen and phosphorous into the watershed, which in turn fosters algae growth and then the above issues come into play. These forestry and agricultural issues are related to two other practices already discussed. Riparian setbacks and native plants would help to offset additions of phosphorus. Additionally, a similar practice to that utilized to limit bacteria in runoff would also likely limit the amount of fertilizer runoff from agricultural fields. All of these connections make two things clear. First, we need to reverse the direction of this vicious cycle to restore our water quality. Second, the TMDLs must be treated as interrelated issues - practices which reduce one pollutant are also likely to reduce many pollutants - and the WQMPs must look for solutions that incorporate numerous TMDLs and DMAs. An approach that looks at each TMDL and DMA as an individual unrelated parcel will not solve the problems as evidenced by the persistence of the parameters in the1992 TMDLs still requiring management.

DEQ Response: The factors that influence 1992 TMDL parameters and the current parameters are complex and interrelated. The actions specified in the anticipated IPs will impact more than one parameter and will serve to improve general water quality in addition to meeting the TMDL specified load allocations.

1.62 NCCSP: 1995 TMDL review. Finally, as part of future reviews an update of progress made and data showing current conditions compared to past conditions would be useful to include.

DEQ Response: A summary of current and past water quality data and trends as related to specific parameters as well as a summary of activities implemented will provide for a meaningful assessment of TMDL progress.

TMDL Appendix C: 1992 TMDL

1.63 NCCSP: TMDL Appendix C. Flow estimates are broken down into irrigation and non-irrigation seasons on page 2 (of 8) during the May 1 to October 31 dry season. This is further divided into river mile flows, which is useful in determining the most critical flow periods. As noted above, the most critical (lowest) flow should be the baseline against which discharges are measured in order to ensure they are not damaging water quality.

DEQ Response: In the current TMDL , the most critical flows are used as the baseline. The load for the point source is based on the receiving water 7Q10 flow as shown on page 50, Table 17 in the Temperature TMDL and page 34-35 in TMDL Appendix A.

1.64 NCCSP: Chapter II, WQMP. On page 8 DEQ "recognizes that where implementation involves significant habitat restoration or reforestation, water quality standards may not be met for decades." These long-term projects should be prioritized as much as possible so that the process can begin immediately expediting the timeline for meeting water quality standards. A related question: Are future pollutants factored into the equation for these areas? As noted above, the 58% population growth from 2005 to 2040 is sure to generate more pollutants and if we do not factor these future needs into the equation now, then pollution may get too much of a head start. As population is part of the problem, it should be part of the solution. Money should be earmarked from development sources to not only offset current projects but also to help us get ahead and restore riparian areas.

DEQ Response: The TMDL as written includes a margin of safety to compensate for the uncertainty in our methods. This is predicated under the assumption that

management efforts will outpace population growth and the impact of each individual on the water quality of the region. If it is seen that current efforts are not sufficient to keep up with the impacts of population growth, the TMDL will be re-opened and implementation plans will need to be upgraded.

1.65 NCCSP: Forest Practices Act. On page 17 the Forest Practices Act requires a no harvest zone of 20 feet within fish bearing streams. While this is a good start, a stronger standard like the one proposed by Jackson County for a 50 foot setback in the Land Ordinance Development would be better. This would help to address all 6 TMDLs through decreased runoff and greater shading.

DEQ Response: FPA revisions are discussed at a policy level. This comment has been forwarded.

1.66 NCCSP: ODOT. On page 39 the ODOT plan states that "the complete attainment of load allocations applicable to ODOT corridors may not be feasible, certainly in the short term, and likely in the long term due to safety concerns and other important factors." If attainment is not possible on riparian areas affected by ODOT, then their loading contributions should be mitigated elsewhere. ODOT funds should be used elsewhere to mitigate their impact when their exact footprint cannot be corrected. For example an I-5 interchange may not be immediately repairable, but riparian reforestation elsewhere could offset the ODOT projects thermal load contribution.

DEQ Response: Some form of trading could be helpful to meeting the TMDL within the watershed.

1.67 NCCSP: DEQ IMD. The tracking matrix advocated by DEQ on page 15 of their IMD is clear and concise. It appears to be a useful tool that will allow for easier reporting, easily reviewable by the public, and provides a uniform framework helpful if DMAs try to work cooperatively on issues.

DEQ Response: DEQs intent is that the matrix provides a clear guide for the DMAs and DEQ to track progress in implementing actions to meet the TMDL.

1.68 NCCSP: Applegate Draft WQIP. Incorporating this document is relevant and logical because Jackson County plans to utilize ideas from this when dealing with subsequent TMDL issues throughout the county. Also, the Bear Creek TMDL and this document were published in close proximity.

DEQ Response: The WQIP also serves as an example to the other DMAs in Bear Creek.

1.69 NCCSP: Applegate Draft WQIP. The temperature action summary on page 4 is a good start, but is tentative in solving the water quality issues we face. Additionally on page 10 the plan states that existing "programs …form the core of the WQIP." This does not sound like a solution because we have existing programs for problems that persist, implying that more needs to be done. If these existing programs are very new then perhaps they can fix the problem, but it should be emphasized that these existing programs are in fact new. Additionally, the anticipated impacts from the existing programs should be estimated and published with the plan. The draft plan lacks pro-active planning or plan development to aggressively offset not only current but future thermal loading of the watershed. A pro-active plan would not only look to coordinate restoration projects and implement setbacks,

but would set funding goals and prioritize actions to mitigate problems. Riparian shading was heavily emphasized in the DEQ appendix on temperature and plans to increase shading should be aggressively sought. As mentioned earlier, this problem is only going to get more difficult to deal in the future with and a good start may make all of the difference.

DEQ Response: The WQIP is organized in such a way to take credit for programs already in place and build upon those efforts with additional steps. One of the strengths of the plan is that it identifies steps to address the weaknesses in current county programs. DEQ will continue to work with Jackson County as the WQIP is further refined.

1.70 NCCSP: Conclusions. I understand that each of the DMA's face a difficult task but the task will only get harder to accomplish if not dealt with in an aggressive and proactive way. The above comments are all directed with this in mind because this region can be a leader in restoring the watershed to an ecologically healthy state. We face expanding population and the related development of our natural areas. We must take responsibility for these actions by creating solutions for the future while we fix today's problems. These comments are not meant to be critical of the difficult job that the DEQ has before them in creating numerous TMDLs over the next few years. I applaud the work that DEQ has done and expect that DEQ's commitment will continue when reviewing any comments they receive regarding their work. Once again thank you for the opportunity to comment on the Bear Creek TMDL and WQMP.

DEQ Response: TMDL implementation will take time, effort and money. The Bear Creek watershed has a strong history of collaboration which will help economize efforts and will serve to increase the region's eligibility for future funding.

Comments from: Alan Henning US-EPA Environmental Protection Specialist, Region 10, 1102 Lincoln Street, Suite 210, Eugene Oregon 97401. Received 03/09/07 via e-mail.

1.71 EPA-2. The main body of the WQMP, pages 1-14, lists the DMAs and a description of activities, programs, legal authorities and other measures that are used as tools to implement the TMDL. This section also provides a general explanation of the DMAs' areas of responsibility and identifies key DMA contacts. The body of the WQMP provides the foundation from which DMAs can establish their implementation programs. Specific comments on this section are: Page 3, DMA - Oregon Department of Forestry: The fourth general category under this DMA identifies "Clearing Forest Land for Non-Forest Uses". Is this the same as "Land Conversions"? If so, it would be extremely beneficial to provide an explanation of the role each agency plays in what typically is a multi-agency process.

DEQ Response: You are correct that Clearing Forest Lands for Non-forest uses is the same as Forestlands Conversion. There is currently a MOA between the Oregon Department of Forestry (ODF), Oregon Department of Agriculture (ODA), Oregon Department of State Lands (DSL), Oregon Department of Land Conservation and Development (DLCD), Oregon Department of Fish and Wildlife (ODFW), Oregon Parks and Recreation Department (OPRD), and Oregon Department of Environmental Quality (DEQ). All agencies have common interests and responsibilities in protecting waters of the state and other natural resources during the conversion of forestland to non-forest uses. A copy of the Forestlands Conversion MAO has been added in WQMP Appendix F.

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1.72 EPA-2. Page 3, DMA – Talent, Medford, Rogue River Valley Irrigation Districts: Bear Creek and Little Butte Watersheds are currently evaluating their water sources, storage, delivery, uses and re-use systems within the scope of the "WISE" Project (Water for Irrigation, Streams and Economy). The outcome of this effort may drastically change how water is managed in Bear Creek. How will the probable changes in water management in Bear Creek from the WISE effort be addressed in the DMA's implementation plan now and in the future?

DEQ Response: The WISE project can serve as a major component of the irrigation districts' implementation plans. The TMDL identifies many of the potential negative impacts of irrigation district operations on water quality. The WISE project will address much of this through improvements in the water delivery infrastructure. Irrigation waters will be further separated from natural stream flows. Improvements in delivery efficiencies coupled with conservation will result in more water in the streams. There is a wastewater re-use project component as part of the WISE as well. However, the districts are not allowed to wait for the WISE project which is currently awaiting a congressional appropriation. The districts are still required to develop and begin implementing water quality implementation plans within the 18 month timeline as per the WQMP Figure 3 .

1.73 EPA-2. Page 5, the fourth bullet under paragraph four: The bullet states that"… DEQ expects that DMAs will develop benchmarks for attainment of TMDL surrogates". Providing examples of likely surrogates and benchmarks would better define for the DMAs the types of benchmarks and surrogates DEQ would like to see.

DEQ Response: There is a more thorough discussion of benchmarks and milestones in the Internal Management Directive for Implementation Plans in WQMP Appendix D. A reference to WQMP Appendix D has been added to page 5 of the WQMP.

1.74 EPA-2. Page 5, the fifth bullet under paragraph five: The bullet states that where implementation plans are found to be inadequate, DEQ expects management agencies to revise the components of the plans to address the deficiencies. In a watershed with multiple DMAs, how will DEQ determine which DMA(s) will need to revise its (their) plan?

DEQ Response: As stated in the Adaptive Management section on page 4, as the science and technology of nonpoint source control evolves it is the expectation of DEQ that plans will evolve and that strategies, efficiencies, and associated costs will change over time. However, if it is determined that water quality is not progressing adequately to meet standards and that individual load allocations will not be achieved there will be a thorough review of each DMAs implementation plans and activities. Have the DMAs implemented the activities identified in the plan and have plan milestones been met in a timely manner. DMAs that have not met their implementation objectives will be the focus of the Department.

1.75 EPA-2. Page 8, the second bullet under Federal Land Management Agencies: The bullet indicates that the USFS and BLM will follow standards and guidance listed in PACFISH. PACFISH represents standards and guidelines usually applied to the federal forest lands not managed under the Northwest Forest Plan. Since federal lands in the Bear Creek Watershed are managed following the Northwest Forest Plan, it is not clear why PACFISH was listed as a management tool for Bear Creek Watershed. Please explain.

DEQ Response: The PACFISH reference was in error and has been removed.

1.76 EPA-2. Appendix A. The Oregon Forest Practice (OFP) Rules is identified as the TMDL implementation plan for non-federal forest lands in Oregon. EPA is concerned that current Best Management Practices (BMPs) under the OFP Rules do not consistently support the attainment of water quality standards. In past meetings of the Oregon Board of Forestry, EPA representatives have testified that the preponderance of monitoring, assessment, and research efforts demonstrate that Oregon's existing forest practice rules will not adequately protect water quality or recover fisheries. The December 2000 DEQ/ODF Temperature Sufficiency Analysis found that there are water quality impairments due to forest management activities even with Forest Practice Act (FPA) rules and BMPs in place. An October 2002 DEQ/ODF Temperature Sufficiency Analysis indicates that for some medium and small streams current riparian management area prescriptions for western Oregon may result in short-term temperature increases. In addition, data from the DEQ/ODF CWA Section 319 shade study demonstrates that harvest allowed under the FPA in riparian management areas can significantly reduce shade below the levels necessary to achieve temperature TMDL load allocations.

DEQ Response: DEQ is continuing discussions with the Oregon Board of Forestry concerning revisions to the OFP.

1.77 EPA-2. Appendix A. EPA's concerns seem to be reflected on page 23 of Appendix A where DEQ states that Bear Creek Watershed significantly exceeds the water quality standard for temperature, sediment and bacteria, and that the exceedances are partially due to forest practices. DEQ also states that adequate basin specific monitoring needs to be conducted to determine the adequacy of the current FPA before the Department of Forestry could authorize a rule change. DEQ encourages ODF to develop and conduct effectiveness monitoring to better refine loading estimates from the forested landscape. EPA fully supports ODF taking the necessary steps to establish a rule change(s) that will result in BMPs that support water quality standards and are protective of the specific conditions in the Bear Creek Watershed.

DEQ Response: DEQ agrees with the need for continued monitoring.

1.78 EPA-2. Appendix A. Note: The Section under the paragraph heading "The Board of Forestry's response to recommendations", at the bottom of page 24, needs to be updated. The Board of Forestry has acted on items 1-4. It may be appropriate to closely review other sections of the ODF Plan to ensure that all the presented information/data are current.

DEQ Response: DEQ is currently working with the ODF policy manager on revising the FPA TMDL template. This is a formal process that requires administrative input and signature. As of April 2007 the revisions are not yet complete. Appendix A in the WQMP contains the most current template.

1.79 EPA-2. Appendix B. The Bear Creek Agricultural Water Quality Management Area Plan (Ag Plan) will be used as guidance to address pollutant loadings from agricultural sources in the Bear Creek Watershed. Only excerpts from the Ag Plan, version 2004, were presented in Appendix B. DEQ anticipates that ODA will be updating this plan in the near future. EPA fully supports revising the Ag Plan and encourages DEQ to work with ODA to

incorporate appropriate changes to address the agriculturally related pollutant loads specific to the Bear Creek Watershed TMDL.

DEQ Response: As of April 2007, the Bear Creek SB1010 plan is currently in revision.

1.80 EPA-2. Note: ODA contact information provided at the top of page 33 needs to be revised.

DEQ Response: ODA contact information has been updated. For more information or a complete copy of the document contact Eric Nusbaum, Water Quality Specialist, Oregon Department of Agriculture 2446 Madison Street, Eugene, OR 97405 Phone/Fax (541) 302-3043, Mobile (503) 510-8930 enusbaum@oda.state.or.us.

1.81 EPA-2. WQMP Appendix C - ODOT. The Oregon Department of Transportation's Water Quality Management Plan is intended to addresses the requirements of a TMDL for pollutants associated with the ODOT actions. In the past, ODOT worked with DEQ to establish several watershed management plans specific to problems/issues within a geographical area addressed by the TMDL. However, more recently, ODOT presents a single statewide management plan as its approach for addressing TMDL issues. ODOT believes this approach: 1) streamlines the evaluation and approval process for of the plan; 2) provides consistency; and 3) eliminates duplicative paperwork and staff time. While the ODOT plan, which was accepted by DEQ as meeting the requirements of the TMDL Implementation Plan, is a general approach for addressing ODOT related issues contributing to the TMDL pollutant load, it does not specifically define or characterize the ODOT related water quality challenges in the Bear Creek Watershed nor does the plan describe how those specific challenges in Bear Creek will be addressed within the scope of ODOT state-wide plan. Besides the lack of specificity, the state-wide plan may be out dated. On page 39 under "2) Timeline for Implementation", the plan references an MS4 Permit stating the permit "was recently issued and is valid until May 31, 2005". The plan also discusses regional construction permits that are "schedule for renewal in December 2000". Inherently, this is the downfall of using generic state-wide management plans as TMDL implementation plans – they are generic, often not current and are not specific to the scope of the TMDL. The ODOT should use the state-wide management plan as a framework for building an ODOT Bear Creek TMDL implementation plan which includes site specific actions and goals, and implementation and effectiveness monitoring to gauge how its actions are contributing to achieving the goals of the TMDL.

DEQ Response: The current ODOT MS4 permit has expired as of 2005 and discussions are underway between ODEQ and ODOT. In a letter to DEQ dated March 14, 2007, H.A. Gard, ODOT Geo-Environmental Section Manager has stated that "ODOT is currently updating and revising its Plan to add new TMDL programs, BMPs, and activities that ODOT has developed since the Plan was originally written in 2001. ODOT will also modify and rename the Plan "The ODOT TMDL Implementation Plan" to ensure that it better reflects new and expanded DEQ TMDL requirements as outlined in OAR 340-042-0080(3)." The letter goes on to state that the statewide implementation plan will be completed by March 2008 which will meet the 18 month deadline stated in Figure 3 of the Bear Creek WQMP.

1.82 EPA-2. WQMP Appendix D IMD. The Internal Management Directive (IMD) describes DEQ's expectations for agency staff relative to the requirements for developing and implementing sector-specific or source specific TMDL implementation plans. The IMD

covers plans that address non-point sources of pollution not covered under a permit while other programs such as the NPDES Program will be used to implement waste load allocations for point source discharges. The IMD provides guidance and the framework for DMAs in developing their respective TMDL implementation plans. It appears to be a fairly comprehensive tool for addressing DMAs questions as they move to implement their load allocations.

DEQ Response: The IMDs goal is to provide current guidance for IP development while acknowledging changes that will occur in the future as part of the adaptive management process .