

## CHAPTER FIVE

# RESPONSE TO COMMENTS

### ***INTRODUCTION***

This chapter describes the 45-day public comment process, documents the substantive comments received on the DEIS and provides the Forest Service's response to those comments, documents public involvement that occurred after the comment period ended, and includes the list of individuals to whom copies of the FEIS were sent. (Chapter 4 includes State and Federal agencies that received the FEIS).

### **RESPONSE TO COMMENTS**

The 45-day Public Comment period for the Diamond Lake Restoration Project Draft Environmental Impact Statement (DEIS) opened on April 2, 2004 and closed on May 17, 2004. The public was asked to give comment on Alternative 3 of the DEIS. Seventy-six timely comments letters were received. Two additional letters (Letters 76 and 77) were provided by ODFW and ODEQ, the Cooperating Agencies, at the request of the Forest Service after the comment period closed. These two letters are reproduced in their entirety at the end of Appendix AA and are incorporated by reference into the body of the document and are not included in Table 63 below. Copies of the FEIS were sent to all of the individuals who commented on the DEIS and to the required State and Federal agencies documented in Chapter 4.

In April 2004, the Forest Service and members of the Diamond Lake Work Group produced a project update for broad distribution to the public. The update described project alternatives, solicited public comments on the DEIS and documented the Agency's willingness and availability to meet with members of the public regarding the project. Approximately 30,000 copies of the project update were distributed via publication in area newspapers, postal mailings, or direct distribution from state, federal, and private offices. In addition, in late April 2004, phone or email contact was made with thirty-eight representatives of area interest groups/organizations that had expressed interest in the project during previous scoping. Comments were received from the following persons:

1. Karl Staubach
2. Clayton Fraser
3. Willis E. Albin
4. Stub Stewart
5. Darlene Kline-Dolby
6. Steve Langdon
7. Ron and Kristy Martin
8. Mychal Loomis

9. Sarah Loomis
10. Richard B. Hoffman
11. David Mildrexler
12. Karen Mihaljevich
13. Marie and Dennis Sinatra
14. Arnold M. Depner and Family
15. Jack Snyder
16. Lois A. Smith
17. Myron Sumich
18. Beverly Snyder
19. Paul Henman
20. Linda G. Sumner
21. Stanley G. Sumich
22. Donald G. Gassi
23. Gary and Barbara Burke
24. Perry and Vicki Murray
25. Jeri and Berdine Burke
26. Donn Snyder
27. Ladonna Snyder
28. Robert D. Hoedel
29. Ken Tedder
30. David Lowry
31. Lennia Machen
32. Frank Massingale
33. Alice M. Massingale
34. Stephen McReynolds
35. Ross and Suzanne Roberts
36. Douglas County Board of Commissioners
37. Bernie and Ruby Kosola
38. David S. Erickson
39. Diana Wales, Umpqua Valley Audubon Society
40. Robert and Jean Pollock
41. Ken and Marcia Hendrick
42. John Blackledge, Trout Unlimited-Middle Rogue Steelheaders

43. Ken Ferguson
44. United States Fish and Wildlife Service
45. Meredith Jones
46. Karen Beesley
47. Adelle Sherwin
48. Patrick Wingard
49. Dennis M. Fisher
50. Kris Bennett
51. Catherine Koehn
52. Ron Bolt
53. Francis Eatherington, Umpqua Watersheds, Inc.
54. Leonard J. Schussel
55. Thomas Sr., Dolores, and Thomas Jr. Marier
56. Kristian Staubach
57. Doug Heiken, Oregon Natural Resources Council
58. Joe Ferguson, Steamboaters
59. Gerald and Joan Griffeth
60. Byron and Carol Mikkelson
61. Bert C. and Ann E. Henderson
62. Christopher F. Knud-Hansen, SolarBee/Pump Systems, Inc.
63. Janice Green, Oregon Anglers
64. Lawrence G. Phillips, Umpqua Fishermen’s Association
65. Nancy Stern
66. Oregon Department of Fish and Wildlife, Umpqua Watershed District Office
67. Richard Sommer
68. U.S. Environmental Protection Agency Region 10
69. Larry Doyle
70. Joanne and Bruce Gordon
71. Sarah Williams
72. Pollyanna Lind, Northwest Coalition for Alternatives to Pesticides and Cascadia Wildlands Project
73. Richard F. Sohn (Lone Rock Timber Company)
74. Jim Chapman
75. Stan Vejtasa
76. Ray Temple

77. Oregon Department of Fish and Wildlife
78. Oregon Department of Environmental Quality
79. Joe Eilers, MaxDepth Aquatics, Inc.

All substantive comments submitted must be considered and addressed. A substantive comment is defined (CFR §215.2) as:

Comments that are within the scope of the proposed action, are specific to the proposed action, have a direct relationship to the proposed action and include supporting reasons for the Responsible Official to consider.

Examples of substantive comments are those which:

- provide new information pertaining to the preferred alternative or an alternative in the analysis;
- identify a new issue or expand upon an existing issue;
- identify a different (alternative) way to meet the purpose and need of the project;
- provide an opinion regarding one or more alternatives, including the basis or rationale for that opinion;
- point out a specific flaw in the analysis, or;
- identify a different source of credible research, which if used in the analysis could result in different effects.

It should be noted that all comments received are valuable. Alternative preferences, values and feelings also contribute to increased understanding and were carefully read and considered. The following narrative contains the comments, grouped by subject matter and paraphrased where appropriate, followed by the Forest Service's response.

Table 63. Comments received on the DEIS, by subject of concern, and the Forest Service’s Response.

Letter Number	Subject of Concern	Comment	Forest Service Response
53	1954 Rotenone Treatment	<p>The Forest Service should not claim the past rotenone treatment was “successful” unless the claim can be substantiated and “success” is defined. On page one the DEIS makes a claim that the lake had a “successful rotenone treatment” in 1954. On page 197 is another “successful” claim. In the newspaper insert sent out to thousands of people the claim is made “the lake was successfully treated”. However, after it was treated there was only a few brief years the lake succeeded in feeding 100,000 angler days. In less than 40 years, the tui chub were back and now Diamond Lake is in as bad a condition as ever.</p> <p>How can this short time period be considered successful? Without a definition, claims of “success” severely bias the DEIS in favor of another short-term, rotenone solution.</p> <p>The DEIS admits that the 1954 rotenone treatment was severely degrading to some plant species like <i>water bulrush</i> and <i>lesser bladderwort</i>, which have never fully recovered. There could have been other plants or wildlife present pre-1954 that were completely wiped out by the treatment that we are not aware of. Is this included in a definition of “success”? Please address this issue in the FSEIS.</p>	<p>The definition of a “successful” 1954 rotenone treatment was clarified in our project scoping summary which is incorporated by reference in the DEIS. Success of the first rotenone treatment is defined as eradication of tui chub from Diamond Lake for a period of several decades. For clarity, this definition is now included in the FEIS.</p> <p>The DEIS (pg. 237) and FEIS disclose that the drawdown associated with the 1954 rotenone treatment likely had negative impacts to water bulrush, and lesser bladderwort populations. Both species have persisted in the area; however, in the absence of quantitative pre 1954 baseline data, it is not possible to conclude whether or not the populations “fully recovered” or not. Negative impacts to these wetland species are considered to be unavoidable consequences of the drawdown and rotenone treatment rather than a component of success.</p>
44	Additional References	<p><u>Page 89, Chapter 3. Water Quality, Affected Environment, Phosphorus, first full paragraph:</u> This paragraph refers to the contributions fish make towards phosphorus concentrations in lakes. This paragraph seems to present the entire premise for linking tui chub and water quality in Diamond Lake. The FEIS should include references and research supporting the assumptions for the linkage between tui chub and water quality.</p>	<p>As explained in the DEIS/FEIS, fish do have a role in nutrient redistribution and recycling including bottom feeding behavior and zooplankton predation followed by excretion of nutrients into the water column (DEIS pg. 89). As explained in the phytoplankton section of the DEIS/FEIS, zooplankton have a primary role in regulating the total phytoplankton biomass but at the same time excretions of zooplankton encourage phytoplankton growth through phosphorus recycling (DEIS pg. 146). The concept of “biomanipulation” is discussed (DEIS pg. 145) as a management tool to alter predator/prey relationships at the top trophic levels to influence lake productivity including reducing undesirable algae blooms and associated water quality parameters. In addition to the references cited in the</p>

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			<p>DEIS, the TMDL Modeling and Analysis by Eilers et al. (2003) provides historical monitoring data and modeling scenarios for the lake that demonstrate the link between a high tui chub population and poor water quality; this information has been added to the FEIS for further clarity.</p>
11	Additional Research Needed	<p>Tui Chub are in virtually every lake in Oregon so it is a much bigger problem than just in Diamond Lake. This calls for deeper understanding of the biology of the Tui Chub populations and managing in such a way that reduces their populations while preserving the natural integrity of the lake ecosystem. The Tui Chub does not take-over other lakes for various reasons, including stocking lakes with varieties of fish species that can compete. The Forest Service should stay involved in the research. Longer studies involving more varieties of fish must be completed before we poison the lake again. The greater research community needs to be involved in decision making, evaluation, and monitoring of Diamond Lake. Furthermore, discovering the interactions between these fish will better our understanding for generations to come. Be patient, the lake and the fish are not going anywhere. If the anglers complain for a few years, that's all right. They'll be back in full force when the opportunity is there. Additionally, poisoning the lake must be unattractive to some anglers as well.</p>	<p>We acknowledge that additional data and knowledge are generally desirable, however, following our review and analysis of relevant data in the context of completing this DEIS, the Forest Service and other partners on the Diamond Lake Work Group do not think it is responsible to defer restoration activities while additional data on tui chub biology is collected. The Forest Service and partners have conducted a number of activities designed to enhance our knowledge and scientific credibility in this process including, but not limited to: extensive literature review by project biologists including an exploration of other lakes with similar problems; consultation with numerous fisheries experts; ongoing experimental fish stocking by ODFW; consultation, review, and critique of DEIS by Portland State University experts from the Center for Lakes and Reservoirs; consideration of numerous fish species for stocking; and collection and analysis of historic patterns associated with the presence of tui chub in Diamond Lake.</p> <p>Appendix BB of the DEIS includes a multi-agency monitoring plan that would be implemented as a component of Alternative 5. The Forest Service would participate in several monitoring activities and Forest Service limnologists and fisheries biologists would likely be involved in working cooperatively with researchers from academia in long-term studies at Diamond Lake.</p>
57	Adverse Effects to Non-Target Species	<p>Alternative 4 is superior to Alternative 3 because the preferred alternative will kill all gill breathing organisms, from dragon-fly larvae to rainbow trout, in the lake and several tributaries and have serious ecological repercussions up and down the food chain.</p>	<p>Chapter 3 of the DEIS and FEIS disclose that a rotenone treatment would be expected to kill all gill breathing organisms in Diamond Lake at the time of application and that there are anticipated negative impacts to the aquatic and terrestrial food chain as a consequence of implementing Alternative 3. Chapter 3</p>

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			<p>also describes anticipated positive impacts to the ecological health of the lake and its food chain under Alternative 3 implementation.</p> <p>Positive, negative, short-term and long-term impacts to the aquatic and terrestrial food chains are also described for Alternatives 1, 2, 4, and 5.</p>
57	Adverse Effects to Wetlands	Alternative 4 is superior to Alternative 3 because the preferred alternative will dry out wetlands around the lake causing adverse effects to rare species of plant, fungi, bryophytes, etc.	Chapter 3 of the DEIS and FEIS disclose the anticipated negative impacts to wetland and wetland species associated with a lake drawdown. The Responsible Official identified Alternative 3 as the preferred alternative in the DEIS and Alternative 5 as the preferred alternative in the FEIS because he believes the long-term benefits to the ecology of Diamond Lake outweigh these negative impacts.
53	Alt 2 & Angler Day Goals	Alternative 2 is similar to the stocking strategy goals that fell apart under tui chub pressures, twice in the past -- a goal of 100,000 angler days. This strategy was developed "from data collected during the peak of Diamond Lake's angling success, 1963 to 1978." As we have stated many times, this is an unrealistically high goal to ask of Diamond Lake. The FEIS should have addressed all the scoping and DEIS comments about reducing this goal.	<p>The Forest Service clearly responded to this issue raised by Umpqua Watersheds and other concerned citizens as evidenced by the following:</p> <p>Scoping comments regarding the fish stocking strategy under Alternative 2 are documented in the scoping summary for the project and are summarized on page 15 of the DEIS, including the concern that ODFW's 1990 management plan sets unrealistically high angler day goals. Fish stocking was identified as a significant issue in the DEIS (pg 16) and different fish stocking strategies were developed and incorporated into Alternatives 3 and 4 to respond to this issue.</p>
53	Alt 2 & Angler Day Goals	Why is the goal of Alternative 2 derived only from <i>peak</i> years. Isn't using <i>average</i> years more realistic? From 1963 to 1992, the angler trips at Diamond Lake fell by almost 50% -- before the tui chub were found reintroduced. The DEIS explains that "angler use decreased during [the 1980's] in part due to increased fuel prices and the state of the economy in general", not by the presence of tui chub or poor water quality. Today gas prices are even higher than the 80's and the state of the economy worse. If ODFW couldn't attain 100,000 angler days in the 80's without tui chub, perhaps they won't attain it any time soon after rotenone. The FEIS should note that the overall average of angler trips	<p>ODFW did not define specific angler day goals for any of the action alternatives. However, in the October 27, 2003, ODFW memo, "Predicted Fishery Effort and Catch at Diamond Lake under possible DEIS Alternatives" (DEIS Appendix D), ODFW does predict that 100,000 angler trips would be expected in 2009 under this fish stocking strategy. This information is also described in Table 48 (DEIS pg. 341).</p> <p>According to Dave Loomis (ODFW), the 100,000 angler trips goal is the <u>average</u> from 1963-1978. This time</p>

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		<p>during the 35 years that data was collected is about 67,000.</p>	<p>period represents a fingerling trout based fishery when tui chub were not present and overall water quality was good. The ODFW management plan used this range of years also during the state’s public process to adopt Diamond Lake’s fisheries goals.</p> <p>Raw data on annual angler trips to Diamond Lake is documented in Table 46 of the DEIS (pg.336) and the Forest Service has provided what we believe is the most plausible interpretation of that data on DEIS pages 336 &amp; 337. In general, angler days, <i>increased</i> from 1963 to 1978. In 1989, the only year during the 1980’s that data was collected, the recreational fishery supported 82,400 angler trips. By 1994, two years after tui chub presence was confirmed, angler trips had declined by almost a third. It is considered likely that tui chub were present in the lake in the mid-to-late 80’s and had reached sufficient numbers by the time they were detected to begin having a negative influence on the recreational fishery.</p> <p>The FEIS notes that the overall average of angler trips during the 35 years of data collection is about 67,000.</p>
53	Alt 2 & Angler Day Goals	<p>The DEIS says “Appropriate numeric goals for annual fish stocking and harvest, post project, would be determined by ODFW” via existing knowledge and monitoring. Since there is already a wealth of existing knowledge, the “appropriate numeric goals” should have been estimated for the public in the DEIS, either right in the description of alternative 2, or a reference from the description of alternative 2. If it’s 100,000 angler days, as we see mentioned several times in chapter 3, that number should have been in the description of Alternative 2 in chapter 2.</p>	<p>For Alternative 2, the DEIS states that appropriate numeric goals for annual fish stocking and harvest, post-project, would be determined by ODFW using existing data and knowledge, ecological indices of lake health (i.e., zooplankton and benthic invertebrate populations), annual fish monitoring data and applicable nutrient loading allocations provided in ODEQ’s pending TMDL publication.</p> <p>As mentioned above, ODFW did not define specific angler day goals for any of the action alternatives. Rather they described the general fish stocking strategy and adaptive management process that would be utilized under each alternative. Per the Forest Service’s request, ODFW made predictions about the future recreational fishery under each alternative to facilitate alternative comparisons relative to recreation and</p>

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			economics. These predictions are documented in the October 27, 2003, ODFW memo, “Predicted Fishery Effort and Catch at Diamond Lake under possible DEIS Alternatives” (DEIS Appendix D) and are repeated where relevant throughout the analysis in Chapter 3.
53	Alt 4 Tui Chub Contingency Plan	Why doesn't Alternative 4 have a contingency plan? If alternatives 2 and 3 don't work, there is a contingency plan. Alternative 4 would be more viable if it also had a contingency plan to use rotenone if it doesn't work.	<p>A rotenone treatment was not proposed as a tui chub contingency plan for Alternative 4 because with the addition of a chemical component, the alternative would no longer respond to public concerns (significant issues) associated with a chemical treatment and there would be little meaningful difference between the action alternatives.</p> <p>Alternative 4 incorporates all of the mechanical and biological tools and techniques that the IDT and Diamond Lake Work Group partners considered acceptable and potentially effective. Although not specifically identified as a contingency plan, the DEIS documents that under Alternative 4, it is expected that annual commercial fishing operations proposed under this alternative would be needed to effectively limit tui chub recruitment in Diamond Lake over time.</p> <p>In response to your comment a contingency plan has been added to Alternative 4 in the FEIS.</p>
53	Alt 4 & “Commercial” Fishing	The DEIS explains that “The high costs of Alternative 4 are explained both by expensive fish stocking and labor of tui chub removal.” But elsewhere in the EIS, the tui chub removal is described as a “commercial” operation. Has the income from the commercial operation contract been subtracted from the costs?	There would be no anticipated income to the Forest Service or other Diamond Lake Work Group partners from the mechanical harvest of tui chub under any alternative. In the DEIS, references to a “commercial fishing operation” means that a professional commercial fisherman would be hired and paid to remove tui chub.
53	Alt 4 Long- term Management	If Alternative 4 is the only hope for long-term management success at Diamond Lake, it should be tried, with a contingency plan of rotenone if it fails. We had asked in scoping for an alternative that considered the long-term management of the lake, without continued rotenoning every generation. We are disappointed the DEIS did not address this as an issue. Alternative 4 should have been considered for this possibility, and if it is impossible to attain under Alternative 4, the DEIS	The project Scoping Summary (pg. 9) incorporated by reference into the DEIS, clearly documents and responds to your recommendation that a long-term management plan is needed for Diamond Lake. As described in the Scoping Summary, development of a long range management plan is outside the scope of this EIS, as long range management planning occurs during the Forest Planning process. The Umpqua

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		<p>should have said so.</p>	<p>National Forest LRMP is expected to begin revision in 2008.</p> <p>The Forest Service's rationale for not including a rotenone treatment as a contingency plan for Alternative 4 is documented in a previous response in this table.</p> <p>In the FEIS, all of the action alternatives describe activities that would occur over a seven year project lifetime and all alternatives have an associated contingency plan.</p>
53	Alt 4 Potential to Benefit Zooplankton	<p>Another example of the prejudice against Alternative 4 is in the description of environmental effects on phytoplankton and zooplankton. Here, the DEIS says that under Alternatives 2 and 3, the mechanical removal of tui chub before the rotenone treatment will result in immediate increases of zooplankton and "a corresponding increase in water clarity and reduced epilimnetic pH values; this represents a positive indirect effect." (Too bad the rotenone will then kill the healthier zooplankton population.) But under Alternative 4, the DEIS can find virtually nothing good about the mechanical removal of tui chub after the first year, even though far more tui chub will be removed: "Under Alternative 4, zooplankton populations would be influenced primarily by the remaining portion of the tui chub population... This improvement would be slow at first due to the continued presence of millions of younger tui chub..." Why does the mechanical removal of tui chub benefit zooplankton under Alternatives 2 and 3, but does nothing for the zooplankton under Alternative 4? The FEIS should correct this inconsistency.</p>	<p>The DEIS documents potential impacts to phytoplankton and zooplankton in an equitable and consistent manner as evidenced by the following:</p> <p>The paragraph that immediately follows the first one quoted in your comment concerning indirect effects of Alternative 2 and 3 states: "Under Alternatives 2 and 3, a short time after rotenone application, there would be a severe reduction or elimination of the zooplankton population in Diamond Lake (see Zooplankton section). As is common following rotenone application, an algae bloom would be expected to occur and the bloom would most likely be dominated by blue-green algae and/or diatoms...." (DEIS, pg. 149).</p> <p>In the same section under indirect effects, "Because Alternative 4 would be implemented over a six year period, the effects on phytoplankton would occur over an extended time period. Following the initiation of mechanical fish removal, predation pressure on zooplankton would be reduced resulting in increased grazing on phytoplankton over the summer. <i>Similar to Alternatives 2 and 3, the degree to which the zooplankton would be able to reduce phytoplankton densities would depend on the extent mechanical fish removal significantly lowers predation on zooplankton by fish.</i> No toxicants would be used under this alternative and as a result the zooplankton population</p>

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			<p>would not be killed. Consequently, zooplankton grazing pressure on phytoplankton would be maintained and expected to gradually increase over several years as the tui chub population is reduced....” (DEIS, pg. 149)</p> <p>The following full paragraph from the DEIS documents the anticipated benefits to zooplankton associated with Alternative 4 (pg. 166-167) :</p> <p>“Under Alternative 4, zooplankton populations would be influenced primarily by the remaining portion of the tui chub population, and to a lesser extent, the larger salmonids that would be stocked. The effect on zooplankton populations is highly dependent upon the proportion of the existing tui chub population removed in each of the successive years of mechanical chub harvest. Assuming mechanical harvest is successful in reducing the numbers of reproductive age chub by 85-95% annually, it is likely that zooplankton populations would respond positively, with a gradual increase in the relative proportion of cladocerans and an increase in the average size of individual zooplankton. This improvement would be slow at first, due to the continued presence of millions of younger tui chub in the 0, 1, and 2 year age classes that would not be initially impacted by the mechanical removal methods. Over a 4 to 6 year period, as these young fish grow to the sizes targeted for removal, and overall reproduction rates (and juvenile fish numbers) are reduced as a result of these continued mechanical removal efforts, their predation impact on zooplankton is likely to lessen accordingly”.</p> <p>Potential direct, indirect, and cumulative effects of all alternatives on the zooplankton population in Diamond Lake are documented in detail in the DEIS (pgs. 165-168) and when reviewed in their entirety provide a comprehensive and equitable basis for alternative comparison.</p>

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53	Alt 4 Potential to Control Tui Chub	<p>The DEIS failed to discuss or analyze the potential of Alternative 4 to maintain tui chub at sustainable numbers over the long-term. This should be added to the FEIS.</p> <p>The FEIS should also document how much reduction will likely happen in the tui chub populations after 6 years of removing 95% of the population each year. The DEIS gives us conflicting information on how much of an impact there would be, after each year and after the total of 6 years. The FEIS should clear this up.</p>	<p>The goal of Alternative 4 is not to “maintain tui chub at sustainable numbers over the long term”. The sustainability of the tui chub has never been in question. The goal of Alternative 4 is to reduce the tui chub population as much as is physically possible using mechanical removal methods over the long-term. The success or failure of this alternative is based heavily upon the assumption that it is possible to remove 90% of the reproductive-age tui chub each year, indefinitely.</p> <p>Based on the tui chub life history, and population modeling, it was deemed necessary to remove over 90% of the reproductive-age fish every year in order to achieve significant population reductions over time. This removal would need to occur every year as a preventative maintenance effort to ensure that chub populations were not allowed to reach the point where exponential population growth begins to occur.</p> <p>Tui chub population modeling was conducted in an effort to compare chub population reductions under various treatment scenarios (ODFW, 2004). Based on a model run using the most aggressive chub removals deemed possible and a relatively small starting population, a 90% removal of reproductive-age chub from a starting population of 7.6 million reproductive-age chub would result in a tui chub population of 20,949 reproductive-age fish after 6 years. When fish either too small or too large (&lt;1 year old or ≥6 years old) to capture in the gill nets are added, the total chub population is estimated to be approximately 46,744 fish.</p> <p>While modeling predicts that significant chub reductions are possible, it also illustrates the need to continue mechanical removal actions indefinitely in order to prevent a quick resurgence of tui chub populations. Even at the greatly reduced population of 20,949 reproductive fish (as listed above), these fish would have the potential to produce 3,122,964 eggs in one year. If mechanical removal of tui chub was</p>

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			<p>discontinued, it would take approximately 2 to 3 years for chub populations to rebound to their current levels.</p> <p>As mentioned on page 167 of the DEIS, intensive annual mechanical removal of tui chub in Lava Lake, a 368 acre lake in the Cascades near Sunriver, Oregon, has been occurring for the last several years. This lake is substantially different from Diamond Lake in that only 5% of the lake’s area supports aquatic macrophytes suitable for tui chub spawning. As a result, fish managers are able to intensively target chub populations as they prepare to spawn in this small area. Even with the ability to concentrate on a condensed population in a very small area, these efforts have not been considered successful at removing enough tui chub to restore water quality (Ted Fies, Personal Communication, 2003).</p>
53	Alt 4 Potential to Control Tui Chub	<p>In some places the DEIS claims there will be no effect of the removal of tui chub for 6 years, until year 6 – that in years 3, 4 or 5 there will be no improvement under alternative 4. For instance, the effects on algae blooms states “Alternative 4 is expected to take about six years to affect tui chub populations. Won’t there be some affect in year 1 or 2? Or at least in year 3? Another example: “Water quality is not predicted to improve until 2009 or 2010 and even that improvement may be minimal. Really? Elsewhere in the DEIS it was determined that water quality will start to improve immediately, not after 6 or 7 years. The FEIS must correct these inconsistencies and biases against alternative 4.</p>	<p>A comprehensive analysis of each alternative’s potential direct, indirect, and cumulative effects on the water quality at Diamond Lake were documented in detail by Al Johnson, project hydrologist/limnologist, in the following sections of the DEIS: “Environmental Effects on Water Chemistry” (pgs. 96-101); “Environmental Effects on Light and Transparency” (pgs. 104- 106); and “Environmental Effects on Phytoplankton and Primary Production” (pgs. 148- 151). Table 3, Chapter 2 provides a comparison of the alternatives at meeting the water quality element of the purpose and need (DEIS, pg. 43).</p> <p>In general, the DEIS and FEIS document that mechanical removal of tui chub under Alternative 4 would likely result in some immediate (although likely immeasurable) improvements in some aspects of water quality (i.e. phytoplankton production). However, meaningful or noticeable improvements in water quality would not be anticipated until approximately 6 years after treatment. Individual resource specialists on the IDT reviewed these conclusions and then applied them in a meaningful way to their area of expertise as follows:</p>

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			<p>The first DEIS quotation referenced in your comment is an excerpt from the human health section (DEIS pg.317); it states that Alternative 4 is expected to result in direct short-term public health hazards associated with exposure to toxic algae and that this is because Alternative 4 is expected to take about six years to affect tui chub populations, the primary driver of toxic algae blooms. This conclusion is consistent with Al Johnson’s conclusions that under Alternative 4, blue-green algae production and the severity of algae blooms would not be expected to be reduced until near the end of 6 years of treatment. Although incremental improvements may occur earlier in the implementation period, they would not be meaningful in the context of the public health risk. The FEIS includes minor changes in text to provide additional clarification.</p> <p>Similarly, the second DEIS quotation referenced in your comment is an excerpt from the economics section (DEIS pg.358); it states that under Alternative 4, “...Water quality is not expected to improve until 2009 or 2010 and even that improvement may be minimal. In the meantime, water quality issues may continue to raise concerns by recreational visitors who may choose to go to other areas to recreate, reducing revenues at the Diamond Lake developed facilities”. Again, although there may be incremental improvements in some aspects of water quality over the six years of Alternative 4 implementation, it is not expected to be noticeable or meaningful in this context until near the end of the implementation period. Thus, this conclusion is also consistent with the earlier statements regarding water quality. The FEIS includes minor changes in text to provide additional clarification.</p> <p>When all of the DEIS quotations referenced in your comments are reviewed in the context of associated text and analysis, the Forest Service believes that the DEIS provided consistent conclusions and an unbiased</p>

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			<p>comparison of the alternatives. The FEIS includes minor changes in language to provide additional clarification.</p> <p>A contingency plan has been added to Alternative 4 in the FEIS, and effects analyses have been revised to consider implementation of this contingency plan.</p>
53	Alt 4 Potential to Improve Ph	<p>The DEIS gives another conflicting statement about Alternative 4: “there would be a degree of nutrient loss immediately as fish removal begins and additional losses extending over the entire 6 year fish removal period. It also says that Alternative 4 would result in a beneficial effect to the peak phytoplankton, reducing the primary production during the summer season. This conflicts with table 16, which says that with Alternative 4, “for 6 years pH would remain high.” Which is it: Beneficial effects or not even incremental improvements over the 6 years span of time?</p>	<p>Table 16 (DEIS pg. 101) provides an accurate summary of the expected changes in summer pH in Diamond Lake under all action alternatives and these conclusions are not in conflict with the information provided in the preceding text regarding this topic. For Alternative 4, beneficial effects (DEIS, pg. 99) and incremental declines in pH over the implementation period would be expected (DEIS, pg. 100). However, summer pH would still be expected to remain “high”, (greater than the 8.5 water quality parameter established by ODEQ) until near the end of the six/seven year implementation period.</p>
53	Alt 4 Viability	<p>At one of the public meetings, the team leader made a point of saying that every alternative in the DEIS is a “viable” alternative, even Alternative 4. But the DEIS treats alternative 4 as a non-viable alternative. For instance, it says: “the likely cumulative impact of Alternative 4 would be similar to that of Alternative 1... the high fecundity of tui chub virtually ensures their rapid future population expansion in Diamond Lake.” If Alternative 4 is not viable, why is it considered as an alternative? If Alternative 4 is not viable, the contingency plans are not viable and Diamond Lake will be rotenoned again in the future. The DEIS failed to make this clear.</p> <p>The FEIS should have considered an alternative where lake management could be sustainable over the long term. But wait, how can the DEIS claim on page 168 that Alternative 4 is sure to fail, when back on page 197 the DEIS says, “The extent and effectiveness of chub predation by [predatory salmonids] fish is unknown.” Which is it, a sure failure or unknown?</p>	<p>Assuming that mechanical harvest techniques can be refined to achieve the goal of removing 90-95% of reproductive age tui chub annually for six consecutive years, Alternative 4 is a viable alternative for meeting the purpose and need for improvement of Diamond Lake’s water quality and recreational fishery for some period of time. However, as referenced in your comment, analysis of this alternative in the DEIS disclosed its anticipated limitations at maintaining tui chub populations at low levels without ongoing annual removal. An assumption that funding would be available to support repeated annual mechanical harvest techniques of this scale into perpetuity in order to control tui chub was considered speculative.</p> <p>The DEIS did not assume that Diamond Lake would remain free of tui chub under Alternatives 2 and 3 and do not speculate on whether or not tui chub contingency plans associated with these alternatives would be effective at controlling tui chub populations if the species returns to the lake. Additionally, similar to the rationale documented above for Alternative 4, it would</p>

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			<p>be speculative to assume that funding would be available under Alternatives 2, 3, and 5, to accomplish future rotenone treatments and that a rotenone treatment would be the management tool of choice if tui chub again became an issue at Diamond Lake.</p> <p>As described in other responses in this table, long-term management planning is beyond the scope of this EIS.</p> <p>The effectiveness of predatory fish in controlling chub populations in Diamond Lake was deemed to be unknown, due to the continued experimental stocking that is currently ongoing. Preliminary results from these efforts have been relatively unsuccessful in finding a fish that effectively preys on tui chub. Additional strains and sizes of trout continue to be evaluated at this time.</p> <p>In addition, as pointed out on pages 187 and 199 of the DEIS, there was a relatively large population of brown trout present in Diamond Lake near the time when tui chub were introduced in the 1940's. Based on the explosion of the chub population in the 1950's, brown trout, a highly piscivorous fish, were not able to keep the chub population in check. Therefore, the ability of other piscivorous salmonids to control chub populations is still largely unknown. Disclosure of uncertainty is consistent with the intent and regulations of the NEPA process.</p> <p>In the FEIS, in response to your comments, the Forest Service has incorporated your recommendations for improving Alternative 4 and for all alternatives disclosed potential effects of implementing contingency plans for an additional 5 years beyond the lifetime of the project based on an assumption of tui chub presence.</p>
53	Alt 4 Wildlife Mitigation	Another problem with the Alternative 4 analysis: In the wildlife section, it was continually stated that wildlife could be entangled in the gill net during mechanical removal of tui chub. But no	The FEIS includes a mitigation for Alternative 4 requiring that to the greatest extent practical, non-target birds and mammals that become entangled in gill nets

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		mitigation was offered for this. For instance, if a Bufflehead is caught, can't it be freed? Instead of demoting Alternative 4, a mitigation should have been offered, or an explanation of why there is no mitigation for this negative impact.	would be freed. However, this mitigation does not ensure that wildlife would not be harmed and does not change the effects/impacts determinations documented in the DEIS.
5, 6, 10,	Alternative Preferences (Rotenone Treatment)	Fully supportive of a plan to use rotenone at Diamond Lake.	Thank you for your comment and your interest in Diamond Lake. Alternatives 2, 3, and 5 respond to this comment.
7	Alternative Preferences (Rotenone Treatment)	I would like to see the rotenone treatment done and then restock the lake with various sized trout from fingerlings to the trophy sized fish that has been planted over the last few years.	Thank you for your comment and your interest in Diamond Lake. Alternatives 2 and 5 respond to this comment.
23	Alternative Preferences (Rotenone Treatment)	We feel like the best thing to do is rotenone the lake in the fall. We have had a cabin at this lake for 20 years, and it is so sad to see the lake in such a mess each summer, when it used to be such a beautiful lake. I know a lot of people that do not go there because of this. Not to mention what it does to the fishing and the owners of the lodge have a hard time making it. They used to do so much out of pocket for the area, and are limited because of the lost revenues.	Thank you for your comment and your interest in Diamond Lake. The Forest Service and Diamond Lake Work Group members also recognize and regret the negative impacts the existing condition of Diamond Lake has on recreational opportunity, the Diamond Lake Resort, and the local economy.
8	Alternative Preferences (Alt 2)	After following Diamond Lake for years and reviewing the proposed alternatives, it is clear to me that Alternative 2 is the correct way to go. Alternative 3 just does not provide the guarantee that it will work and is very expensive (3 million over 6 years), where Alternative 2 would provide a much cheaper solution. Water quality I can tell is a big issue to environmentalists and there is nothing that proves Alternative 3 would secure better water quality over Alternative 2. I feel these two choices (Alternatives 2 and 3) are the best proposed solutions but Alternative 2 stands out much more as being effective, efficient, and economically sufficient.	Thank you for your comment and your interest in Diamond Lake. Chapter 3 of the DEIS and FEIS provide a comparison of the expected costs of each alternative and their anticipated impacts on water quality. The Responsible Official identified Alternative 3 as the preferred alternative in the DEIS because he believes this alternative minimizes the potential impacts of a recreational fishery on the water quality in Diamond Lake.
9	Alternative Preferences (Alt 2)	<p>I strongly believe Alternative 2 will be the most effective.</p> <p>Alternative 3 is not as cost effective for the overall economy of the region, soley due to the additional costs of stocking 3 million dollars worth of trout over the 6 year period.</p> <p>In this document, the ODFW has demonstrated that it will provide adequate monitoring to support the future stocking</p>	<p>Thank you for your comment and your interest in Diamond Lake.</p> <p>The DEIS and FEIS analyze economics for all alternatives.</p> <p>We agree, under all alternatives, as disclosed in the DEIS and FEIS, ecological indices and nutrient loading</p>

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		levels without harm to the long-term water quality of the lake.	allocations identified in ODEQ’s pending TMDL publication will be utilized by ODFW to determine appropriate fish stocking levels that would not compromise water quality.
11	Alternative Preferences (Alt 4)	<p>I support the mechanical/biological treatment of the lake (alternative 4) that would keep the public engaged and educated, prevent poison problems for the ecosystem and tone down the aggressive fisheries goal for a lake that was naturally fishless. This is the long-term management plan that Diamond Lake needs. Alternative 4, through education and a strategy that is based on actions that do not kill and poison the environment, helps pave the way for a future base on long-term solutions that can be accepted by society.</p> <p>Alternative 4 is sustainable and focuses on long-range management that uses a variety of non-poisonous approaches while recognizing that the Tui Chub will never be permanently eradicated.</p>	<p>Thank you for your comment and your interest in Diamond Lake.</p> <p>All of the action alternatives include an educational component designed to inform and actively engage the public in the restoration of Diamond Lake. All of the action alternatives describe activities that would occur over the seven-year lifetime of the EIS. Development of a long range management plan is outside the scope of this EIS as long range management planning occurs during the Forest Planning process. The Umpqua National Forest LRMP is expected to begin revision in 2008.</p> <p>All of the alternatives acknowledge that tui chub may return to Diamond Lake at some point in the future.</p>
12,13	Alternative Preferences (Alt 3)	Commenter supports Alternative 3.	Thank you for your comment and your interest in Diamond Lake.
14	Alternative Preferences (Alt 3)	We wish to state that we are in favor of Alternative 3. It is by far the most practical solution with Alternative 2 as our secondary choice. We urge you to proceed with the restoration of Diamond Lake.	Thank you for your comment and your interest in Diamond Lake.
13, 15, 16, 17, 18, 19, 20, 21, 22, 26, 27,	Alternative Preferences (Alt 3)	I enthusiastically pray that alternative 3 will become a reality soon!	Thank you for your comment and your interest in Diamond Lake. The Forest Service and our partners on the Diamond Lake Work Group understand there is an urgent need to begin restoration of Diamond Lake as soon as possible and we are making every effort to do so.
25	Alternative Preferences (Alt 3)	We support Alternative 3 as the preferred alternative. We were at Diamond Lake when rotenone was used in the 1950’s for the same purpose being considered now and there was no noticeable adverse impact on the lake then. So, we support a tried and effective method, Alternative 3.	Thank you for your comment and your interest in Diamond Lake.

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30	Alternative Preferences (Alt 3)	I strongly endorse Alternative 3 of the DEIS. Our family has had its cabin at Diamond Lake for over 50 years. We believe that Diamond Lake is an important recreational asset for Southern Oregon and people throughout the US. The Lake will continue to be wasted and present a hazard to public health unless there is an effective elimination of chub fish from the Lake.	Thank you for your comment and your interest in Diamond Lake.
24	Alternative Preferences (Alt 3)	My wife and I attended some of the public meetings held to discuss the remedies to return Diamond Lake water quality to it's former non toxic state. During this process we learned what we believe we needed to know to make an informed decision. We agree with the Forest Service decision and Supports Alternative 3 as our first choice of remedy.	Thank you for your comment and your interest in Diamond Lake.
28	Alternative Preferences (Alt 3)	As a lease holder of cabin 80 at Diamond Lake, I fully back your decision to endorse alternative 3 for the clearing of tui chub and the restoration of Diamond Lake.	Thank you for your comment and your interest in Diamond Lake.
29	Alternative Preferences (Alt 3)	I am TOTALLY in favor of Alternative 3 and beginning treatment of the lake AS SOON AS POSSIBLE	Thank you for your comment and your interest in Diamond Lake. The Forest Service and our partners on the Diamond Lake Work Group understand there is an urgent need to begin restoration of Diamond Lake as soon as possible and we are making every effort to do so.
31	Alternative Preferences (Alt 3)	I have an interest in the restoration of Diamond Lake to return the lake to it's former condition of being one of Oregon's premiere fishing lakes. Considering the proposed alternatives, I would like to encourage the action needed to implement alternative 3.	Thank you for your comment and your interest in Diamond Lake.
32	Alternative Preferences (Alt 3)	I am very much in favor of Alternative 3. I feel that rotenone is the only way to totally destroy the chub. No one chub should survive. If someone in the future gets caught using live chubs for bait, they should have their hunting and fishing privileges taken away for life. They should be fined \$100,000 and spend 20 years in prison with <u>no</u> parole. This can't happen again. The lake should have been treated in '99. We could be fishing again.	Thank you for your comment and your interest in Diamond Lake. The Forest Service and our partners on the Diamond Lake Work Group understand there is an urgent need to begin restoration of Diamond Lake as soon as possible and we are making every effort to do so.
33	Alternative Preferences (Alt 3)	I am writing in support of Diamond Lake Restoration favoring alternative # 3 with Alternative 2 as a secondary solution.	Thank you for your comment and your interest in Diamond Lake.
34	Alternative Preferences	My family and I have used Diamond Lake's recreation facilities for more than 55 years. We and many others appreciate the fact	Thank you for your comment and your interest in Diamond Lake.

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	(Alt 3)	that Diamond Lake and environs provide a wide variety of activities to suit a wide variety of users. Excellent fishing was once one of these activities and should continue to be so. I wish to endorse Alternative 3, the preferred alternative.	
35	Alternative Preferences (Alt 3)	Alternative # 3 is the best of the alternatives offered.	Thank you for your comment and your interest in Diamond Lake.
37	Alternative Preferences (Alt 3)	While I support the project and am very much in support of your preferred alternative, however, I have some concerns with your Fall/Winter lake draw down.	Thank you for your comment and your interest in Diamond Lake. Your concerns with the drawdown are discussed in detail in another section of this table.
36	Alternative Preferences (Alt 2)	After reviewing the alternatives discussed in the DEIS, we support Alternative 2. While alternatives 2 and 3 are similar, we are supporting Alternative 2 in that it allows more management discretion as to what species, numbers, and size level of fish to restocked. At this time it does not appear appropriate from either a fisheries management or economic perspective to lock in a specific size of fish.	On July 2, 2004, subsequent to the publication of the DEIS, ODFW issued a letter to the Forest Service, documenting the fish stocking strategy that they would use following a rotenone treatment at Diamond Lake. This letter is reproduced in its entirety in the FEIS and Alternative 5, the preferred alternative in the FEIS includes this strategy. As documented throughout the DEIS and FEIS, ODFW will use ecological indices, their public input process and adaptive management to refine fish stocking strategies in Diamond Lake over time.
38	Alternative Preferences (Alt 3)	<p>The No Action alternative is not a viable alternative. I think the sooner you can implement Alternative #3 and treat the lake, the sooner Diamond Lake will regain its prominence as one of Oregon's top destination recreation areas. I prefer Alternative 3 to Alternative 2 because I favor stocking with immediately catchable fish.</p> <p>My hope is that the lake is treated and the fishery restored in two years, not ten years.</p>	Thank you for your comment and your interest in Diamond Lake. The Forest Service and our partners on the Diamond Lake Work Group understand there is an urgent need to begin restoration of Diamond Lake as soon as possible and we are making every effort to do so.
39	Alternative Preferences (Alt 4)	Regardless of how the current situation is managed, the Oregon Department of Fish and Wildlife (ODFW) management goal for Diamond Lake must change. For that reason, among others, <b>Umpqua Valley Audubon Society (UVAS) opposes Alternative 2</b> , the proposed action. The failure of ODFW to formally change its management goal for Diamond Lake in the last six years, despite clear and convincing evidence that the current management strategy is a part of the problem, is a serious concern.	Thank you for your comment and your interest in Diamond Lake. Your comments and recommendations regarding fish stocking are addressed in other sections of this table.

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		<p>As you know, UVAS has been a long-standing opponent to chemical treatment of the lake. For that reason, we support <b>Alternative 4</b>. However, recognizing the crisis that now exists, we would also support <b>Alternative 3</b>, the preferred alternative, with following modifications to fish stocking.</p>	
41	Alternative Preferences (Alt 2)	<p>The state and federal agencies involved in the management of Diamond Lake have an obligation to restore the lake to a fishable and swimmable condition. We believe this can only occur through the eradication of the tui chub.</p> <p>The No Action Alternative doesn't deserve consideration and Alternative 4 will only prolong a very serious problem.</p> <p>We support Alternative 2 as a carefully planned use of rotenone to eliminate the chub and a cost effective means of reestablishing the trout fishery. ODFW can and should later evaluate the proposed stocking plan and make changes as funding allows.</p>	<p>All of the agencies in the Diamond Lake Work Group recognize that they have a responsibility to address the serious problems Diamond Lake is experiencing and the group is working towards that end.</p> <p>Analysis of the "No Action Alternative" is required under the National Environmental Policy Act.</p>
42	Alternative Preferences (Alt 2)	<p>We support Alternative 2 – rotenone treatment with fish fingerling stocking. The choice appears to be straight forward.</p> <p>There is no question that corrective action needs to be taken to bring back the quality experience for angling that predominated the 60's and 70's. Not to take action (Alternative 1), would be irresponsible considering the increasing demand for recreational opportunities with our growing population in Southwest Oregon and the rest of the state.</p> <p>Alternative 4 does not promise the level of angling opportunity Diamond Lake can provide and is also too costly.</p> <p>Alternatives 2 and 3 both use rotenone treatment, however alternative 2 is the best choice for three reasons:</p> <ol style="list-style-type: none"> <li>1.) The opportunity for a more robust fishery, 25% greater catch per year.</li> <li>2.) Increased recreation use of the resource, 25% greater angler days per year.</li> <li>3.) Lowest cost, less than 5% of the cost in the first five years.</li> </ol>	<p>Thank you for your comment and your interest in Diamond Lake.</p>

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44	Alternative Preferences (Alt 3)	The Department recognizes both Alternatives 2 and 3 have the greatest potential for long-term beneficial effects to water quality and fisheries of Diamond Lake. The Department believes, based on the information provided in the DEIS, that Alternative 3 is the most beneficial alternative. Also, we believe drawdown and treatment of the lake will result in short-term degradation of water quality and aquatic habitat, and that both treatment alternatives will deliver nutrient-rich waters to sensitive ecosystems downstream. However, the timing and mitigation of this discharge, and the short-term nature of anticipated degradation, is off-set by the long-term benefits of Diamond Lake to the ecosystem.	Thank you for your comment and for your participation on the Diamond Lake Work Group.
45	Alternative Preferences (Alt 4)	Having spent the last 8 years monitoring the bird life at Diamond Lake for the USFS, I am concerned about the restoration of the lake. Large populations of coots and western grebes rely on the lake as a stopover during their migrations. Mechanical removal of the tui chub may well affect this, but not to the degree that draining down the lake would. Considering costs, habitat destruction and the impact on migratory waterfowl, long range management of the tui chub as proposed in Alternative 4 would be the best choice at this time. If this approach does not manage the tui chub and water quality of Diamond Lake does not improve, Alternative 3 could be chosen at a later date. Though the economic considerations for the Inn and tourism/fishing are important, we must also weigh the destruction of flora and fauna. The greatest good with the least impact is to be preferred.	In the analysis of effects to waterbirds, the DEIS (pg. 299) discloses potential impacts associated with all alternatives. Conclusion statements acknowledge that Alternative 3 has greater potential short-term impacts to waterbirds than Alternative 4 and higher potential for long-term habitat improvement through improved water quality and prey base.
46	Alternative Preferences (Alt 4)	I understand there are four plans to choose from for dealing with the invasive fish from Klamath region. Do choose alternative four. Please look ahead into the future. Stop poisoning yourself and other humans. I would rather we spend more \$\$, than die early from cancer and toxins and without wildlife. Do not choose the other alternatives which would effectively have those results. Please act responsibly for human health and wildlife health. Please see beyond the \$\$ bill.	Thank you for your comment and your interest in Diamond Lake. The DEIS and FEIS disclose and compare the potential impacts of all alternatives on wildlife, human health, and economics.
47	Alternative Preferences (Alt 4)	Whatever can you be thinking to continue to treat that beautiful lake with rotenone, killing wetland species and with the draining of the lake, degrading the wetlands. Why don't you go with the more mild plan and introduce a species that will eat the tui	An alternative was considered that would stock Diamond Lake with predacious fish as the primary means of controlling the tui chub population (DEIS pg. 49). This alternative was eliminated from detailed study

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		<p>chub? Are the fishing fees so important to you that you have to keep killing off everything and introducing trout every few years?</p> <p>Using a more benign way of dealing with the environment is far better; go with Alternative 4. If we are lucky, the lake will survive long after you and I are gone. Let's hope so.</p>	<p>because it would not meet the project purpose and need. Due to the extremely large existing tui chub population and the chub's high reproductive capacity, it is unreasonable to assume that predacious fish would be able to effectively limit the chub's population size. ODFW is continuing an experimental fish stocking program that explores the potential effectiveness of different fish species as predators on the tui chub. Stocking with predacious fish is a component of all action alternatives.</p> <p>Economics are one of many factors that the Responsible Official considers when selecting a preferred alternative.</p>
48	Alternative Preferences (Alt 4)	<p>The Diamond Lake Forest Service needs a long-term management plan – not another short-term fix. Please select Alternative 4, to try something different before rotenone is used again.</p>	<p>Thank you for your comments and interest in Diamond Lake. All of the action alternatives describe activities that would occur over the seven-year lifetime of the FEIS. Development of a long range management plan is outside the scope of this EIS, as long range management planning occurs during the Forest Planning process. The Umpqua National Forest LRMP is expected to begin revision in 2007.</p>
49	Alternative Preferences (Alt 4)	<p>Please consider Alternative 4 in the DEIS. It would allow for sparing the endangered species and affiliated species that might die as a result of poisoning and would provide for an approach that would last beyond the traditional 30 year period before having to once again "poison the lake" for fun and profit. I understand the appeal of luring fishermen to Diamond Lake to fish for rainbow trout, but it wouldn't be a long term solution, as we see from history. Planting other forms of fish that would clean up the chubs makes a lot more sense, both in terms of preserving the environment, and in making lasting change.</p>	<p>Thank you for your comment. See the previous response to comments on long-term planning.</p>
50	Alternative Preferences (Alt 4)	<p>I am writing to encourage you to use Alternative # 4 in your management plan for Diamond Lake. The large scale use of rotenone is unacceptable. It is time to put the wildlife of the Diamond Lake area first and find a solution that absolutely will not adversely affect them. I find it disgusting that such wide scale use of a poison that will damage well water and potentially kill wildlife is even a consideration. Personally, I object to any</p>	<p>Thank you for your comments and interest in Diamond Lake.</p> <p>As described in the DEIS and FEIS, there are potential adverse affects to wildlife and water quality associated with all alternatives.</p>

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		federal funds being used to facilitate fishing and recreation, however, I understand that this "subsidizing" will take place in some form. Therefore, please do what's best for the entire natural population and use Alternative #4.	Diamond Lake is identified in the Umpqua National Forest Land and Resource Management Plan as a special management area (MA-2). As such, the lake is to be managed for concentrated developed recreation, favoring activities such as resort use, camping, picnicking, visitor information services, boating, fishing, interpretation and developed and dispersed winter sports (LRMP 1990, pg. 110, 153).
51	Alternative Preferences (Alt 4)	<p>I just heard about this chance to comment. So please include my comments in the public record. You should choose Alternative 4, before you use drastic moves like those included in 2 &amp; 3.</p> <p>You should really have a LONG TERM plan about how you are going to correct the many problems humans (i.e. ODFW) have caused the lake. You could destabilize the shoreline with improper methods.</p> <p>CHEMICAL ARE BAD, AND SHOULD BE THE LAST ALTERNATIVE.</p> <p>Thank you for including my comments. The lake is a valuable resource that all Oregonians want to be able to enjoy, please don't do any more harm!</p>	<p>Thank you for your comments and interest in Diamond Lake.</p> <p>Development of a long range management plan is outside the scope of this EIS, as long range management planning occurs during the Forest Planning process. The Umpqua National Forest LRMP is expected to begin revision in 2007.</p>
52	Alternative Preferences (Alt 4)	I encourage the selection of Alternative 4 to restore Diamond Lake. It could work without all the accompanying damage of Alternatives 2 and 3.	Thank you for your comments and interest in Diamond Lake.
53	Alternative Preferences (Alt 4)	Umpqua Watersheds appreciates the efforts of the government agencies to restore clean water to Diamond Lake, and we hope these efforts will result in a long-term, sustainable and fun recreational fishery. We are in favor of Alternative 4 because we would like to accomplish these goals without repeated use of Rotenone. We are especially concerned about the impacts on the wetland ecosystems on the south shore when the lake is drained for a chemical treatment. If a non-Rotenone treatment cannot be found now, it will condemn Diamond Lake's ecosystems to repeated treatments in the future, with each one taking a little more of the wild sparkle out	<p>Thank you for your comments and interest in Diamond Lake and for your active participation in this project. Your concerns regarding impacts to wetlands under Alternatives 2, 3, and 5 are addressed in other responses in this table.</p> <p>The Forest Service considers it speculative to assume that successive future rotenone treatments would be supported or funded at Diamond Lake. Thus, successive treatments are not addressed in the EIS.</p>

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		of the lake. We prefer a long-term management plan and solution that is sustainable through multiple generations.	All of the action alternatives describe activities that would occur over the seven-year lifetime of the FEIS. Potential effects of implementing contingency plans for an additional 5 years are also included in the FEIS. Development of a long range management plan is outside the scope of this EIS, as long range management planning occurs during the Forest Planning process. The Umpqua National Forest LRMP is expected to begin revision in 2007.
54	Alternative Preferences (Rotenone Treatment)	The approach to environmental management should be from the ground up, with decisions made to increase the value of the resource. The alternatives proposed for Diamond Lake have taken the available science and assessed the situation well. Rotenone is a very damaging chemical for amphibians and macro-invertebrates and should be applied judiciously to the level necessary to eradicate the tui chub, with a safe buffer for success.	Thank you for your comment and your interest in Diamond Lake. Potential effects of a rotenone treatment on amphibians, macroinvertebrates, and other species are documented in detail in the DEIS/FEIS.
55	Alternative Preferences (Alt 3)	I oppose Alternatives 1 and 4 completely. Alternative #2 also seems foolish as the length of time needed for 4" fish to grow into catchable, edible fish is extended needlessly.  I support Alternative #3 as being in the best interest of all users of the lake.	Thank you for your comment and your interest in Diamond Lake.
63	Alternative Preferences (Alt 2 or 3)	Of course, as a representative of the fishing public, I prefer either Option 2 or Option 3, no question about that.	Thank you for your comment and your interest in Diamond Lake.
67	Alternative Preferences (Alt 1)	I choose the NO ACTION alternative as the preferred one for the following reasons:  The major users or players are not represented or poorly so with the present set up or structure of the ID team. The major users are: Diamond lake home sites -\$9.7 million dollars Diamond Lake Improvement Company -\$6.3 million dollars USFS campgrounds and facilities estimate -\$10 million dollars  Campground users are really part of the picture and they aren't represented on the IDT at all.	Thank you for your comment and your interest in Diamond Lake.  ID team members whose job it is to complete the federal requirements of the National Environmental Policy Act (NEPA) are Forest Service employees rather than members of the general public. However, the "players" you reference, the Diamond Lake summer home owners, Diamond Lake Resort owners, and the camping public have been extensively involved in the Diamond Lake Restoration project and their views and concerns have been incorporated into the issues, alternatives, effects analysis, and mitigation and

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			monitoring sections of the DEIS and FEIS. Please refer to the DEIS (pg. 381) for more information on the public involvement process for this project.
67	Alternative Preferences (Alt 1)	My recommendation is to leave things be. I think the lake has obtained an ecological balance.	Thank you for your comment and your interest in Diamond Lake. As documented in the purpose and need section of the DEIS/FEIS, we believe that restorative actions are necessary at Diamond Lake.
61	Alternative Preferences (Alt 2)	<p>We strongly support implementation of Alternative 2 or 3, with a preference for Alternative 2 due to its goal of returning Diamond Lake to being an “excellent” fishery, as compared with Alternative 3 with its goal of a “good” fishery. However, either Alternative 2 or 3 is infinitely superior to Alternatives 1 and 4.</p> <p>Given these non compliant conditions, (Diamond Lake no longer meets water quality standards or State fishery management objectives), we believe that remedial corrective action must be implemented immediately to expeditiously return the quality of water and fishery to normal, and maintain it thusly without the built in need for continued mechanical maintenance. Of the alternatives offered (no action, rotenone, and mechanical removal), only rotenone provides a solution that is cost-effective, proven, one-time, and whose results can realistically be expected within a few years.</p> <p>Alternative 1, no action, is self evidently unacceptable, given the previous years of toxic algae blooms, and subsequent closure of the lake to human and even animal contact. Similarly, Alternative 4 is unacceptable given that the short-term prognosis is a seven-year period of treatment before improvement in water quality can be expected, and that the long-term prognosis expects “declines in water quality ... as the tui chub population rebounds”. Further, continued mechanical maintenance is subject to the vicissitudes of changing political and budget realities, and thus not an assured solution.</p> <p>For Alternatives 2 and 3, the DEIS report gives a realistic and well thought out plan and procedure for administering the rotenone, for ensuring water quality to nearby water sheds, and for contingency activities to obviate recurrence of the tui chub problem and the associated degradation to water quality and</p>	Thank you for your comment and your interest in Diamond Lake. The Forest Service and our partners on the Diamond Lake Work Group agree that restorative actions are necessary and should be implemented as soon as possible.

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		fishery. We strongly support the implementation of either Alternative 2 or 3.	
64	Alternative Preferences (Alt 2)	The Umpqua Fisherman’s Association, whose goal is to protect the salmon-trout species in Oregon, definitely favor Alternative 2, which uses rotenone and put-grow-take.	Thank you for your comment and your interest in Diamond Lake.
73	Alternative Preferences (Alt 2)	<p>I support Alternative 2 (the proposed action) to restore water quality and the recreational fishery at Diamond Lake. The deteriorating water quality and increasing threat to human health is cause for action in its own right. The loss of a \$3 million fishery from a resource serving five rural southern Oregon counties adds to the justification for action. Taking no action will not restore quality nor have a positive economic impact.</p> <p>The methods of treatment in Alternative 2, examples of intensive fish and water quality management and intervention, are necessary in order to achieve desired results. In order for water quality to improve, removal of <u>all</u> tui chub is necessary. If after any treatment to the lake, as far as two tui chub still reside, another population explosion is possible. To ensure complete eradication of this species from Diamond Lake, the DEIS makes it clear the fish toxicant rotenone, is the most effective mechanism. Ample evidence is presented supporting that the use of rotenone will be effective with little to no residual impact on Diamond Lake or Lake Creek. I support this method of treatment.</p>	Thank you for your comment and your interest in Diamond Lake.
59	Alternative Preferences (Alt 3)	<p>As a Diamond Lake Summer Home owner for over 40 years, I have never seen this beautiful lake in such a sad situation ---- that we have had to put up with in the past 10 years. Anyone with any common sense would have used Alternative # 3 (Rotenone Treatment) at least 5 years ago, and we would have a beautiful recreational and fish producing lake right now!!!!</p> <p>I witnessed the restoration of Diamond Lake in 1954 when they used this Rotenone Treatment and it was very successful---- within 2 years, we had a viable fishing lake, once again.</p> <p>ENOUGH of the red tape and all of the meetings, surveys, etc. Let's get on with it and bring Diamond Lake back as our Emerald</p>	Thank you for your comment and your interest in Diamond Lake. The Forest Service and our partners on the Diamond Lake Work Group understand there is an urgent need to begin restoration of Diamond Lake as soon as possible and we are making every effort to do so.

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		<p>of The Cascades!!!!                      USE ALTERNATIVE # 3 IMMEDIATELY!!</p>	
60	Alternative Preferences (Alt 3)	<p>My husband and I have both enjoyed vacationing at Diamond Lake. Byron has been going there since 1938 and I have been going since the late 40's or early 50's with my family. I was there the summer of the rotenone treatment in the mid-50's and know that was the correct treatment. I do not understand what has taken sooo long for everyone to finally decide that something needed to be done. By now, the damage is horrendous, both to the fish, water quality, home owners and most of all, the resort.</p> <p>We have had the pleasure of having a summer cabin up there-- first using my parents' and sister's, #** , and then going into ownership with my sister and husband, Joan and Jerry Griffeth. We do not want to wait any longer for this matter to be cleared up and treated. Please use alternative #3 NOW and get on with making this area the beautiful recreation site it has been and can be again.</p>	<p>The Forest Service and our partners on the Diamond Lake Work Group understand there is an urgent need to begin restoration of Diamond Lake as soon as possible and we are making every effort to do so.</p> <p>Although the many agencies with some jurisdictional authority over Diamond Lake have been aware of and concerned about the condition of the lake for many years, earlier restoration efforts were not successful due to the unanticipated high costs and complexity of completing this type of project within the context of current laws, regulations, and requirements.</p>
69	Alternative Preferences (Alt 3)	<p>As a cabin owner at Diamond Lake for nearly 50 years, I have watched the lake through "Feast and Famine". The last several years have been particularly disappointing as the bureaucracy fiddled while the problem got worse and worse. I support the proposal selected as a reasonable approach with due consideration for all of the complex issues associated with the cure. Let's get on with it!</p>	See response above.
74	Alternative Preferences (Alt 3)	<p>I agree that option 3 is the best alternative to dealing with the current problems at Diamond Lake. It uses much of what was used before (1950's), is the most reasonable, and will take care of existing problems. I especially like the idea of leaving the lake down for an entire year to ensure success of the poisoning.</p> <p>I have been a summer home owner at Diamond Lake for over 50 years and was around when this process was done before. It worked! No one died, the eagles are still around and all the fish down stream didn't die. The environmental impact study has already been done—in real life 50 years ago.</p>	Thank you for your comment and your interest in Diamond Lake.
75	Alternative Preferences	The DEIS is clearly a document that took a great deal of effort to prepare. Unfortunately, I feel there really are not any satisfactory	Thank you for your comment. Based on past experience and current analysis, the Forest Service and partners

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	(Alt 3)	options for the restoration of Diamond Lake that meet the long term (conflicting) goals of good water quality and a good fishery. However, assuming any attempt will be made to reach these goals, I support Alternative 3, with several additions.	on the Diamond Lake Work Group believe that the dual objectives of improved water quality and an improved recreational fishery can be met at Diamond Lake.  Your suggested additions for alternative 3 are addressed in a different section of this table.
57	Alternative Preferences (Alt 4)	ONRC recognizes the water quality problem in Diamond Lake, but poisoning the lake pursuant to the preferred alternative in the DEIS is a cure worse than the disease. ONRC supports alternative 4 which will move the situation in the right direction (albeit slowly) without causing serious adverse “side-effects” from the poison pill the doctor has prescribed.  ONRC supports the Tui chub contingency plan. Better late than never.	Thank you for your comment and your interest in Diamond Lake.
57	Alternative Preferences (Alt 4)	Alternative 4, imperfect as it may be, is far superior to poisoning the lake due to three primary adverse effect of the preferred alternative.	Thank you for your comment and your interest in Diamond Lake. A response to your comments concerning the three primary adverse effects of the preferred alternative are addressed in different sections of this table.
65	Alternative Preferences (Alt 4)	I support Alternative 4 of the DEIS. Using the rotenone treatment suggested in the other Alternatives is perpetuating an expensive and ecologically damaging cycle: these treatments knock back the tui chub population but do nothing to address the long-term problems of probable chub re-infestation and a lack of biological controls for the fish. The ecological “price” of rotenone treatments is also unacceptable. I do not want to see the inevitable damage done to non-target species (fish-eating birds, turtles, reptiles, wetland plant species etc.) along with physical damage to the inlet and outlet creeks.  Modern thinking supports a less heavy-handed approach, along the lines of integrated pest management principles. Mechanical tui chub removal, followed by stocking the lake with a variety of predacious fish, offers a less-damaging approach.  Its time to move beyond obsolete thinking—the rotenone approach dates form the 1950’s—and to try a new approach. Alternative 4 offers the best possibilities and avoids the collateral damage to the ecosystem inherent in Alternatives 2 and 3.	Thank you for your comment and your interest in Diamond Lake.  The DEIS and FEIS acknowledge that under all alternatives tui chub persistence and/or reintroduction into Diamond Lake represent a potential future management problem. We also acknowledge that to date, no effective predators have been identified, which are capable of serving as a “biological control” for the tui chub and are considered acceptable for stocking in the lake. However, the DEIS/FEIS explore a full range of alternatives for addressing the tui chub and water quality problem and incorporate all known feasible options as components of tui chub contingency plans.  The DEIS and FEIS disclose the anticipated ecological impacts associated with all alternatives.

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70	Alternative Preferences (Alt 4)	Doing the same thing over & over but expecting different results is a symptom of insanity. Please choose alternative 4 which does not poison Diamond Lake; endanger Osprey, etc.; poison wells; or dry up surrounding creeks & wetlands.	Thank you for your comment and your interest in Diamond Lake.
71	Alternative Preferences (Alt 4)	I ask that the Forest Service choose Alternative 4 in the DEIS. I feel Alternative 2 & 3 are drastic with the use of Rotenone. What's needed is to look more than 6 years into the future for considering environmental impact of Rotenone. Human residents as well as wildlife would be effected. A long-term management plan is needed not just a short-term fix. We need to take responsibility in planning future generations so they can enjoy the wonderful area and beauty that we now have.	Thank you for your comments. All of the action alternatives describe activities that would occur over the seven-year lifetime of the EIS. Development of a long range management plan is outside the scope of this EIS as long range management planning occurs during the Forest Planning process. The Umpqua National Forest LRMP is expected to begin revision in 2007.
72	Alternative Preferences (Alt 4)	<p>We recommend selection of Alternative 4. It offers a sustainable management plan with the least potential of further degrading the ecology of the lake system as well as eliminates the risk of human exposure to rotenone and its by-products. As such, this alternative is the most responsible and solution based option. Diamond Lake has been degraded to its current state twice in the last one-hundred years. We are interested in a long range plan that minimizes impact to the ecosystem and restores water quality for multipurpose uses (wildlife, swimming, sustainable fishing, over-all health of the Umpqua basin, recharge source to the wetlands and headwaters of the Umpqua River). It is our responsibility to plan for the long-term future of the lake so we can protect its incredible beauty for the next generation.</p> <p>In contrast, the other alternatives offered in the DEIS have potential to negatively impact human health and/or the environment. Alternatives 2 and 3 are structured around the application of an aquatically very toxic pesticide and assumptions on how those impacts will be contained or mitigated through extensive management activities.</p>	<p>Thank you for your comments and for your active participation in this project. The DEIS/FEIS document the potential risks of human exposure to rotenone under Alternatives 2, 3, and 5 and incorporate numerous mitigations recommended by your organization (Northwest Coalition for Alternatives to Pesticides). Potential human health risks associated with Alternatives 1 and 4 are also documented in detail in the EIS.</p> <p>All of the action alternatives describe activities that would occur over the seven-year lifetime of the EIS. Potential effects of implementing contingency plans for an additional 5 years are also included in the FEIS. Development of a long range management plan is outside the scope of this EIS as long range management planning occurs during the Forest Planning process. The Umpqua National Forest LRMP is expected to begin revision in 2007.</p>
53	Alts 2 & 3 Tui Chub Contingency Plans	Both Alternative 2 and 3 have contingency plans for when the tui chub returns after this rotenone treatment. What is unclear is whether these contingency plans will be implemented even after 6 years, the life of the EIS. For that matter, will the monitoring required in the EIS (to determine stocking strategy and when to implement contingency plans) last past 6 years? Table 11 implies that Fishery Monitoring will stop at year 2006, and not	Language has been added to the FEIS to clarify that implementation of the tui chub contingency plan would extend well beyond the seven-year lifetime of this project and is primarily the responsibility of the ODFW. The Forest Service agrees that monitoring for tui chub should continue in order for a tui chub contingency plan to be effective and implemented in a timely manner.

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		<p>even continue to 2009. Will the contingency plans only be considered until 2006? The FEIS should clear this up. Discussions on when the tui chub will return seem to agree on about 30 years. If the contingency plans are for the return of tui chub, aren't they useless if monitoring ends before that?</p>	<p>As described in the DEIS (pg. 28), many monitoring activities including fish monitoring would occur for a minimum of five years post project, but it is anticipated that monitoring would occur well beyond five years. Table 11 in the FEIS has been updated to clarify monitoring timeframes. A site-specific monitoring plan for the project has also been completed and is included as Appendix BB to the FEIS.</p>
53	Analysis Time Frame	<p>NEPA requires that the EIS analyze the project over the life of the project. For instance, the effects analysis cannot stop after only 6 years when monitoring and fish stocking, a connected action, will continue for several more decades. Also, there was no NEPA analysis for the contingency plans (see reason 4 for more on contingency plans). The contingency plans are a lot like Alternative 4. How can the EIS condemn Alternative 4 (see reason 3) but ignore the effects of the contingency plans? The unreasonably short span of time of the Diamond Lake EIS NEPA analysis severely biases the effects analysis to only consider continued tui chub presence under Alternative 4.</p>	<p>A six year analysis time frame was selected because it is expected to take approximately six years of implementing Alternative 4 to achieve measurable results. This timeframe allowed resource specialists to make reasonable and supportable estimates and facilitated alternative comparison. An established time frame was particularly important for economic and recreation resource analysis and alternative comparison. Where relevant and supportable, anticipated long-term effects beyond the six-year project implementation time frame are documented throughout Chapter 3. Projections concerning when and/if contingency plans would fail, and potential impacts of monitoring and fish stocking in future decades is considered too speculative and unsupported for inclusion in the EIS. However, in response to your concern that the timeframe creates an inherent bias against Alternative 4, throughout the FEIS Chapter 3 effects analysis, language has been added which acknowledges that under Alternatives 2, 3, &amp; 5, at some point in the future, if tui chub remain or are reintroduced, and contingency plans fail, tui chub populations would be expected to rebound and associated negative impacts to the recreational fishery and water quality to recur. Also in response to your comments, Alternative 4 has been revised to include a seven-year project lifetime and all alternatives disclose potential effects of implementing contingency plans for an additional 5 years based on an assumption of tui</p>

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			chub presence .
57	Aquatic Conservation Strategy	The DEIS fails to adequately disclose how the ACS objectives will be met. The preferred alternative will clearly violate the ACS in the following ways: building the canal to drain the lake will modify the beds of a waterway; causing an artificial 8-month flood to flow down Lake Creek will clearly not maintain the natural hydrograph or sediment regime; lowering the lake will dewater wetlands along the margin of the lake and clearly not maintain proper wetland inundation; etc. The EIS includes only conclusory statements asserting that effects will be "short-term, temporary, or local." But the ACS does not clearly permit such effects even if they are limited. How about some real analysis?	<p>The DEIS analyzes and discloses the direct, indirect, and cumulative impacts to the aquatic ecosystem expected under all alternatives and meets Aquatic Conservation Strategy documentation requirements of the 1994 Record of Decision for the Northwest Forest Plan, as amended.</p> <p>On March 22, 2004, after the DEIS went to press, the Secretaries of Interior and Agriculture signed a Record of Decision for the Northwest Forest Plan amending the 1994 document with a decision to clarify provisions relating to the Aquatic Conservation Strategy (ACS ROD).</p> <p>Relevant to your comment, under the new ACS ROD, findings of consistency with ACS objectives are not required at the project level. The ACS ROD clarifies that ACS objectives apply only at fifth-field watershed and larger scales, that achieving ACS objectives at these large scales will take decades or longer, and that the effectiveness of the Strategy can only be assessed over that amount of time.</p> <p>The ACS ROD also establishes new procedures that must be followed in order to comply with Riparian Reserve Standards and Guidelines that reference ACS objectives. These procedures are documented in tables on pages 8-10 of the ACS ROD. Language contained in this section of the decision clarifies that projects designed to contribute to maintaining or restoring the fifth-field watershed over the long term are consistent with Riparian Reserve standards and guidelines, regarding ACS, even if short-term effects may be adverse.</p> <p>Changes in requirements regarding ACS are summarized in the FEIS and the FEIS complies with all requirements.</p>

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35	Aquatic Macrophytes	<p>Reference to DEIS pg. 89: Lauer et al (1979) reported large mats of the macrophytes, Elodea and Potamogeton, washed up on the shore of Diamond Lake during storms and concluded that decay of these plants could contribute to nutrients in the water column.</p> <p>It should be noted that the mats of Elodea usually occurred after the middle of September when waterfowl migrated south. The Mud Hens and Ducks (large rafts of them) pulled up so much of the Elodea that it was impossible to troll or cast a fly. We had hay stack piles of it on the shore line that we pulled from our slips. <u>After the introduction of the Tui Chub</u> the Elodea had almost completely disappeared by 1995, and the number of Water Fowl had decreased accordingly. We also believe that the Elodea provided the primary habitat for Snails and Turbines in the lake as well as habitat for Benthic organisms.</p> <p>A 1996 letter from Conn P. McAuliffe to the Oregon Fish Commission referred to the heavy bank of weeds that had always flourished about one hundred fifty (150) yards from shore, and that it had been drastically reduced between 1994 and 1996. We believe he was referring to Elodea.</p>	<p>Anecdotal information from a number of sources suggests that changes to the aquatic macrophyte flora in Diamond Lake have occurred periodically. The monitoring plan (Appendix BB) calls for establishing a repeatable sampling protocol for tracking changes to aquatic macrophytes over time. Ecological relationships within lakes can be complex, but with quantitative data we will be able to better infer causal relationships such as those in your comments.</p>
53	Artificially High Water Levels	<p>Also, is there a NEPA document that considers the effects of ODFW maintaining Diamond Lake at artificially high levels during the summer? If not, there should be.</p>	<p>All water rights, including ODFW's, are documented in the cumulative effects tables in Chapter 3 of the DEIS and FEIS. Potential contributions to cumulative effects associated with artificially elevated water levels are discussed in relevant environmental effects sections of the DEIS/FEIS, i.e. in cumulative effects analysis throughout the Terrestrial Vegetation section of Chapter 3.</p>
54	Basin-wide Strategy	<p>The federal government needs a collective strategy for dealing with the Umpqua Basin eco-system, not a piecemeal collections of various agency projects. The Forest Service is a major player that can help restore vibrancy to our economic affairs, through generation of a local forest plan.</p>	<p>Consideration of an Umpqua Basin Ecosystem strategy is beyond the scope of this EIS. However, a landscape scale analysis was completed and documented in the 1998 Diamond Lake/Lemolo Lake Watershed Analysis. Long range, Forest-wide management planning that addresses the Forest's contribution to the local economy at a broad scale occurs during the Forest Planning process. The Umpqua National Forest LRMP is expected to begin revision in 2008.</p>

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53	Boat Inspections	<p>We believe education is important and should be fully implemented as described in the DEIS. However, the DEIS failed to describe the “Boat inspections” that would be performed as part of the educational component. Who would do the boat inspections (Forest Service or ODFW), and who would pay for the inspections? Would 100% of the boats be inspected, or a smaller percentage? How will this aspect of the project be monitored for effectiveness?</p>	<p>Appendix BB to the FEIS includes additional details about boat inspections and other activities designed to reduce the potential for reintroduction of tui chub in Diamond Lake. Post-project activities are separated into required and desired optional actions and responsible agencies are identified for all actions. Although 100% boat inspection would be the goal, even if a legal requirement for inspection is established it is not reasonable to assume that 100% of the public would comply. The overall goal would be to find the most effective methods to reach the lowest level of risk of reintroduction of chub or other invasive species given the specific location and activities in the Diamond Lake area.</p> <p>There is no proposed monitoring to evaluate the effectiveness of boat inspections and educational activities at reducing the likelihood of tui chub reintroduction at Diamond Lake. It is assumed that these activities would reduce the likelihood of human-caused introductions, but effectiveness monitoring in this situation is considered impractical.</p>
53	Bufflehead Starvation	<p>The DEIS expects the Buffleheads to be displaced to the Klamath Basin. But the DEIS never analyzed if there was room for them in the Klamath Basin, especially with the water problems they are having. If this analysis were done, it could determine that some Buffleheads could starve to death.</p>	<p>The recent comprehensive reference guide, Birds of Oregon (Marshall 2003), makes no mention of any habitat overcrowding or habitat limitations associated with the Klamath Basin during the fall/spring seasons. Additionally, other suitable habitat in proximity to Diamond Lake (Maidu Lake and Toketee Reservoir) with known use by this common fall migrant would also be available for use by displaced buffleheads. Based on a review of recent literature, and discussions with local birding experts (R. Maertz &amp; K. Sands), it is considered possible, although not likely that buffleheads would starve to death as a result of implementation of Alternative 2, 3, or 5. However, even if some deaths did occur, due to the prevalence of this species, the effects determination would remain the same as documented in the DEIS/FEIS - “may impact individuals or habitat, but are not likely to contribute to a trend toward federal</p>

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			listing or a loss of viability of the species”.
53	Conflicting Purpose & Need	<p>Chapter 1, Purpose and Need, state that the post-project goal of the DEIS is that: “Tui chub are absent from Diamond Lake or if illegally reintroduced are present in numbers believed small enough to control using limited mechanical methods (nets, seines, disruption of breeding, etc.) or stocking with predacious fish.”</p> <p>We agree with the DEIS that if Tui chub numbers are small enough, they could be controlled using mechanical methods and stocking with predacious fish. But the affects analysis never again mentions controlling small populations of tui chub under alternatives 2 and 3. If this is the GOAL of this DEIS, it should be discussed under the alternatives 2 and 3 effects analysis. Instead, chapter 3 simply assumes an opposite goal – that Diamond Lake is kept tui chub free forever (see reason 2 for more on this).</p>	<p>Under Alternatives 2, 3, and 5, the goal of a rotenone treatment would be to kill 100% of the tui chub population in Diamond Lake. However, the DEIS acknowledges throughout the document that the reintroduction of tui chub into Diamond Lake at some point in the future is likely. Chapter 3, page 206 states that based on history and the cumulative activities listed in Tables 9-11, such as future recreational fishing and boating, it is reasonably foreseeable to predict that tui chub may be reintroduced (accidentally or intentionally) at some point in the future. Also, “if tui chub remain or are reintroduced, it is reasonable to assume that negative impacts to the recreational fishery would again occur”.</p> <p>In response to multiple public comments, the following quotation from the Diamond Lake/Lemolo Lake Watershed Analysis (1998) has been removed from the DEIS: “given that two introductions of tui chub have occurred, and that one introduction occurred approximately 30 years after the original trout stocking in 1910 and the other approximately 30 years after rotenone treatment in 1954, it seems reasonable to assume that this is an appropriate timeframe until the next reintroduction of a nuisance fish will once again require a major management intervention.” The FEIS does not speculate on when in the future tui chub or other nuisance species may again become a problem in Diamond Lake, nor attempt to predict if or when the tui chub contingency plan may fail. However, in response to your comment, throughout the FEIS, Chapter 3 effects analysis, language has been added which acknowledges that under Alternatives 2, 3, &amp; 5, at some point in the future, if tui chub remain or are reintroduced, and contingency plans fail, tui chub populations would be expected to rebound and associated negative impacts to the recreational fishery and water quality to recur.</p>

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53	Conflicting Purpose & Need	After the goal to keep small numbers of reintroduced tui chub controlled, the next goal is that “Trout growth rates and condition factors return to levels approaching those observed prior to the introduction of tui chub.” This goal could never happen at the same time as the goal to keep Tui Chub number in check. The DEIS erred by claiming it will try to attain both goals simultaneously.	We disagree. It is very likely that tui chub existed in Diamond Lake in low numbers in the late 1980’s prior to their discovery in 1992. During the 1980’s, trout growth rates and condition were very good; a small tui chub population did not seem to adversely affect trout (pers. com. D. Loomis). Although no tui chub in Diamond Lake is the ultimate goal, based on past experience it is reasonable to assume that a very small tui chub population could coexist with trout without substantially reducing trout growth rate and condition. However, in Diamond Lake, this statement is predicated on the fact that suitable biological or mechanical controls would be necessary to prevent the rapid expansion of the chub population.
53	Conflicting Purpose & Need	If the DEIS had looked ahead more than six years, it could have considered what the long-term sustainable stocking level for Diamond Lake should be. The DEIS claims that “The desired condition for Diamond Lake is an ecologically sustainable recreational fishery that meets State management objectives and Forest Plan goals.” This is impossible. The State management objectives of 100,000 angler days can never result in “an ecologically sustainable” fishery.	<p>ODFW is a Cooperating Agency on this project and has been actively involved in all phases of EIS preparation. Throughout the NEPA process and as documented in the DEIS/FEIS and in two letters to the Forest Service (May 17, 2004 and July 2, 2004) reproduced in the FEIS, ODFW has stated their full commitment under the agency’s statutory authority and related policies and plans to design and implement an ecologically sound fish stocking strategy for Diamond Lake.</p> <p>Under all alternatives, as documented in the DEIS/FEIS and validated in the 11-14-2003, Memorandum of Understanding between the Forest Service, ODEQ, and ODFW, ODFW indicates their intention to utilize both ecological indices of lake health and applicable nutrient loading applications provided in ODEQ’s pending TMDL publication to determine appropriate numeric goals for annual fish stocking and harvest post-project. ODFW financed preparation of the following document by a private aquatics resources firm - “An Ecologically-Based Index for Guiding Salmonid-Stocking Decisions in Diamond Lake, Oregon” (Eilers 2003) and began training staff to gather data under this guide in the summer of 2004.</p> <p>Based on the above, the Forest Service concludes that</p>

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			<p>ODFW through the Oregon Fish and Wildlife Commission and the appropriate public process, would implement fish stocking strategies that are consistent with both ODEQ and Forest Plan goals and would continue to implement an ecologically sound fish stocking strategy beyond the seven-year lifetime of the project.</p>
35	Crayfish	<p>Reference to DEIS pg. 173: Multiple paragraphs discussing the crayfish population in Diamond Lake.</p> <p>Crayfish are omnivorous and feed on just about anything. It seems possible to us that the explosion of Tui Chub in 1993 could be related to the Crayfish increase or that some shoreline plant could be involved.</p>	<p>The relatively recent discovery of a large population of emigrating crayfish may have been a natural occurrence at Diamond Lake for decades. We found no literature indicating that crayfish could be a causal mechanism in rapid population expansions of chub or other minnows. In all likelihood, the perceived expansion of the omnivorous crayfish population may be linked to the increase in overall lake productivity. This productivity increase was triggered, in part, by the introduction of fish, and further exacerbated by the rapid expansion of tui chub populations.</p>
54	DEIS Comment Process	<p>Another concern that I wish to address is the need to make comment on every DEIS in order to retain ‘status’. This is absurd and unfair. To make a valid comment, I read the entire document and keep up on the issues, trying to make my comment pertinent. This month, both Baked Apple and Diamond Lake have comment windows.</p> <p>I work for a living, and do not get paid to read and comment on this material. I should have enough status through my association with the Umpqua Basin Watershed Council and the Oregon Natural Resources Research Institute that I should have recognized status to participate in all forest related discussions. To be jumping through the comment period hoops to keep abreast of the process is time consuming and wasteful of my energy.</p> <p>Public servants work for the people; I submit that the government recognize the sovereignty of we the people and repair the system so that the comments can be used for effective refinement of the chosen alternative. The final decisions should be made on the Umpqua, by foresters,</p>	<p>Requirements to provide comments on DEIS’s only apply if individuals or organizations wish to be eligible to appeal the Responsible Official’s decision on the project (36 CFR Part 215.6). Revision of this regulation is beyond the scope of this EIS.</p> <p>We recognize that providing comments is a time consuming effort and we sincerely appreciate your interest and input into the management of public lands. Interested members of the public are invited to participate in discussions of projects and activities occurring on the Umpqua National Forest, regardless of whether or not they chose to submit official comments. For this project, the Forest Service and Diamond Lake Work Group have provided multiple opportunities for public involvement and emphasized citizen participation in all phases of the project (See Diamond Lake Restoration Public Involvement Process in Chapter 4 of DEIS/FEIS).</p> <p>Public comments on the DEIS were incorporated into</p>

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		<p>scientists, and community leaders, not in a federal courtroom by urban judiciary.</p>	<p>the FEIS, used to refine alternatives, and considered by the Responsible Official in his decision-making process.</p>
68	Dewatering Lake Creek	<p>Implementation of the preferred alternative would result in the bypassed portion of Lake Creek being dewatered for 12 to 18 months and the stretch of Lake Creek between the end of the canal and Sheep Creek (nearly 5.5 miles) would be dewatered for 2 months. It would appear that a variance from Oregon water quality standards (WQS) would be required to implement the project as proposed. As presently written, the EIS does not present information related to the dewatering of Lake Creek and its relationship to compliance with WQS or needed approvals/authorizations to dewater the creek. We recommend that the EIS include a discussion of how compliance with WQS would be achieved related to dewatering the creek or whether a variance from WQS would be sought and granted as part of the project approval process.</p>	<p>Alternatives 2, 3, and 5 would dewater 5.5 miles of Lake Creek for 2 months while rotenone-treated water is held in Diamond Lake. When water is safe for release, as the lake is naturally refilling, a low flow (10cfs minimum) would be released to limit the duration of habitat and downstream impacts associated with dewatering. Approximately 467 yards of Lake Creek would be dewatered for the full time frame of the project. As documented by the project hydrologists in the DEIS, dewatering is a short-term impact not expected to impair the long-term integrity of the stream. Project implementation under these alternatives is expected to result in long term improvements in water quality in both the lake and Lake Creek</p> <p>The short term degradation of Lake Creek would be addressed as a component of ODEQ’s 401 Water Quality Certification for the project; no additional variance for temporary dewatering would be required. There may be supplemental mitigation measures for dewatering that would be required as conditions of the Corp of Engineers and Department of State Lands permits and ODEQ’s 401 Water Quality Certification. These conditions would be identified during the permitting process (Pers comm. John Blanchard, ODEQ).</p>
44	Downstream Impacts	<p><u>Page 139, Chapter 3, Channel Morphology and Fluvial Erosion, Aquatic Conservation Strategy:</u> The DEIS did not include any information quantifying possible bank erosion or the impacts on downstream aquatic resources. Short-term impacts to resources will continue to degrade water quality-limited habitat and contributes to long-term ecological risk. The FEIS should include a discussion of these impacts.</p>	<p>A comprehensive evaluation of Lake Creek identified site-specific channel erosion sites. Review of low elevation scale (1:4000) aerial photos; site visits by Forest geologist Larry Broeker and project hydrologist Steve Hofford; review of fishery survey reports; and review of discussions documented in the 1998 Watershed Analysis (WA) by resource team members from their field reviews, provided background information for conclusions documented in the DEIS.</p>

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			<p>Potential effects associated with all alternatives are documented in the Channel Morphology Fluvial Erosion section of the DEIS (pgs.134-140) and in the Forest geologist’s report (Geology and Geomorphology Diamond Lake Project Planning Area) in Appendix C. In addition, the magnitude of bankfull flow in Lake Creek is typical of High Cascades streams having less stream power than streams in older geology to potentially impact bank erosion. Bankfull flow and related stream energy are discussed in the Streamflow Regime – Streams and Streamflow sections in the DEIS (pgs 108-110). Indirect effects on downstream aquatic resources are summarized in the DEIS (p 137). The Forest geologist’s technical report provides a comprehensive indirect effect discussion. Water quality limited conditions and effects on Lake Creek are discussed in section Water Quality – Stream Temperature (pgs 119-121) in the DEIS. Additional technical analysis on these subjects is documented in Appendix D in Hofford’s technical report. Bank erosion will be monitored at specified critical sites along Lake Creek, as outlined in the Monitoring Plan in Appendix BB of the FEIS. These include landslide sites 3, 4, and 6, and a segment of Lake Creek that is slowly encroaching towards Pit Lake No. 1 borrow pit.</p>
68	Downstream Nutrient Loading	<p>Lemolo Lake has been identified as being water quality limited by the State of Oregon for pH and nuisance algae. The North Umpqua River is also water quality limited for pH and as well as temperature, total dissolved gas and arsenic. Page 204 of the draft EIS indicates that Alternatives 2 and 3 would likely result in a reduction in nutrient-rich waters entering Lemolo Lake. This characterization appears to be describing impacts that would be expected well after Diamond Lake has “recovered” from the proposed treatment. Since an unknown amount of tui chub carcasses would remain in the lake after the rotenone treatment and carcass removal activities, it would appear that water leaving Diamond Lake and ultimately entering Lemolo Lake after treatment would be high in phosphorus and nitrogen because of decaying fish carcasses. Consequently, the addition of these nutrients could potentially compound the current water quality</p>	<p>In the FEIS, additional language has been added to page 204 of the DEIS to describe the anticipated nutrient pulse that would follow a rotenone treatment. However, this section of the DEIS focuses on fish and fish habitat and only addresses water quality in a broad brush approach in the context of impacts to fish.</p> <p>For Alternative 2 and 3, the DEIS acknowledges that unrecovered fish carcasses would result in a nutrient pulse that would be transferred downstream. Potential impacts of all alternatives on water quality (nutrients, dissolved oxygen, and pH) in Lake Creek, Lemolo Lake and the North Umpqua River are discussed in detail on pages 123 -134 of the DEIS. In the FEIS, additional language has been added to increase clarity.</p>

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		<p>problems in Lemolo Lake. We recommend that the final EIS include an assessment of these nutrient impacts to water quality in Lemolo Lake and the North Umpqua River and identify mitigation measures available to avoid exacerbating existing water quality problems.</p>	<p>Potential impacts to downstream water quality were identified as a concern early in the project planning process. Multiple project design features are incorporated into Alternatives 2, 3, and 5 to minimize downstream impacts. These features are summarized as follows:</p> <ol style="list-style-type: none"> <li>1. Timing: The draw down was designed such that nutrient rich water from Diamond Lake would be moved through the system in the fall, winter, and early spring rather than during the summer when potential adverse effects to Lemolo Lake and the North Umpqua River would be greatest.</li> <li>2. Removal of Fish Biomass: Commercial harvest of fish biomass both prior to and following a rotenone treatment is designed to reduce nutrient levels that would be transported downstream. This type of activity is not a routine part of large rotenone treatments. These activities were designed as a project-specific mitigation measure.</li> <li>3. Cooperation: PacifiCorp's integral role in continuing to move nutrient rich water out of Lemolo Lake and through the North Umpqua River system during the non-summer season was recognized early in the project planning process. PacifiCorp representatives have worked cooperatively with the Diamond Lake Work Group, assisted in the design of project alternatives, and reviewed the DEIS.</li> </ol> <p>For Alternatives 2, 3, and 5, no additional mitigation measures for downstream water quality were identified in your comments, in public comments, by cooperating and partner agencies (including the Oregon Department of Environmental Quality and US Environmental Protection Agency), or by members of the Interdisciplinary Team. Thus, no additional mitigations were added to the FEIS.</p>

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44	Downstream Water Quality	<p><u>Page 134, Chapter 3. Water Quality, Aquatic Conservation Strategy:</u> Given the considerable short-term adverse impacts to water quality through nutrient recycling, and the potential for irreversible adverse effects to aquatic habitats downstream from Diamond Lake, a more rigorous discussion of those impacts should be included in the FEIS.</p>	<p>A comprehensive analysis of each alternative’s potential direct, indirect, and cumulative effects on the water quality at Diamond Lake relevant to nutrients was documented in detail by Al Johnson, project limnologist, in the following sections of the DEIS: “Environmental Effects on Water Chemistry” (pgs. 96-101) and “Environmental Effects on Phytoplankton and Primary Production” (pgs. 148- 151). Potential effects on downstream water quality with regard to nutrients were documented by project hydrologist Steve Hofford and are included for all alternatives in the following sections of the DEIS: “Nutrients and Algal Toxins - Environmental Effects (pgs.123-127) and pH – Environmental Effects (pgs. 129-132). Additional technical analysis on this subject is documented in Appendix D in Hofford’s and Johnson’s technical reports.</p> <p>Unavoidable adverse impacts and irreversible and irretrievable commitments of resources associated with all alternatives are documented in the DEIS/FEIS. There are no anticipated irreversible adverse effects to aquatic habitats downstream from Diamond Lake.</p>
44	Downstream Water Quality	<p><u>Page 137, Chapter 3. Channel Morphology and Fluvial Erosion, Indirect Effects:</u> The Indirect Effects section on page 137 identifies no impacts to Lemolo Lake or the North Umpqua River as a result of implementation of Alternative 2 or 3. Yet the WA identifies concerns for adverse effects on water quality and nutrient conditions in Lemolo Lake from suspended bedload, sediments, nutrients, and erosion moving into Lemolo Lake as a result of the post-treatment discharge from Diamond Lake (p. 106). The DEIS did not appear to include a discussion of impacts of nutrient-rich, post-treatment waters or the sediment loads that would settle or be flushed into Lemolo Lake and the North Umpqua River. The FEIS should include a discussion of these impacts, specifically their impact upon fisheries and water quality, and proposed mitigation measures.</p>	<p>Potential direct, indirect, and cumulative effects of all alternatives on downstream water quality – including sediments, nutrients, and erosion; and the fisheries are documented in multiple sections of Chapter 3 in the DEIS/FEIS. However, the potential adverse effects described in this EIS related to downstream water quality are of considerably lower magnitude than those described in the WA (1998) due to the multiple project design features that have been incorporated into the proposed drawdown as mitigation for potential effects (See previous responses under the subject topic length of draw down).</p> <p>The nutrient and sediment discussion from the WA (1998) considered a draw down that differed in several aspects from the one proposed under Alternatives 2, 3, and 5 in this EIS. The WA considered a draw down of</p>

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			<p>shorter duration with higher flows during the critical period of summer, when algal activity would potentially utilize nutrients in the surface waters. The draw down described in the DEIS/FEIS has much lower flows and would occur in the fall through early spring when addition of nutrients has a much lower potential to contribute to nuisance algal growth downstream.</p> <p>Additionally, unlike Alternatives 2, 3, and 5, the former draw down proposal at the time of the WA, also included pumping, which influenced the amount and timing of water drainage. Under the previous proposal, potential stream flow and velocity (power) and its associated potential influence on the channel would be greater than under Alternatives 2, 3, and 5. See DEIS (pgs 108-110) and FEIS sections on Streamflow Regime – Streams and Streamflow. The former WA proposal would be more likely to increase the potential risk of channel erosion than the drawdown proposed under this project. As described and displayed in the DEIS (pgs 109-110) and FEIS (Streamflow Regime; Affected Environment– Streams and Streamflow;), bankfull flow has historically averaged as long as two weeks compared to a higher and less frequent flow considered at the time of the WA.</p> <p>Nutrient indirect effects are discussed in the DEIS/FEIS in the Water Quality section (DEIS pg 22) and are summarized in Table 1 (DEIS pg 28 &amp; 29). Unlike the draw down considered in the WA, the proposed drawdown under this project would not occur during the critical period of the year when algal activity is high and elevates pH.</p>
44	Downstream Water Quality	<p>Page 204, Chapter 3. Fish and Fish Habitat, Lemolo Lake: Paragraph three states that implementation of either Alternative 2 or 3 “would likely result in a dramatic reduction of nutrient enriched waters entering Lemolo Lake.” One intuitively would expect the post-treatment water of Diamond Lake to be extremely high in nitrogen and phosphorus due to decaying fish carcasses. This water ultimately will be discharged down Lake</p>	<p>Under DEIS/FEIS Alternatives 2 and 3 and FEIS Alternative 5, following treatment, water would not be released from the lake until about November (DEIS pg. 27). This corresponds to a time of year when stream flows are high, water temperatures are low, and sunlight is low both in intensity and length of time per day. These factors combine to reduce the potential for any</p>

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		<p>Creek and into Lemolo Lake causing the short-term enrichment rather than a “dramatic reduction” of nutrients in Lemolo Lake. Additionally, the WA states that the lowering and treatment of Diamond Lake could have short-term adverse effects on nutrient conditions in Lemolo Lake due to the potential for significant input of solids from erosion of Lake Creek and from additional nutrients from Diamond Lake (p. 106). Given that Lemolo Lake is water quality limited and on the ODEQ 303(d) list for pH and nuisance algae, and nutrient additions are likely to exacerbate these problems, the FEIS should elaborate on the ability of Lemolo Lake to manage nutrient enriched waters from Diamond Lake and ways to manage, mitigate or eliminate these water quality impacts.</p>	<p>increases in nutrients from Diamond Lake to result in an adverse impact to Lemolo Lake or other downstream waters from increases in nutrients that could contribute to the growth of nuisance algae (DEIS pg. 123, 125). The DEIS/FEIS includes a discussion of nutrient sources and losses in Diamond Lake including the potential effects of alternatives on nutrients (DEIS pg. 86-92, 96-101). A large portion of the phosphorus in Diamond Lake is retained in the lake including a significant portion deposited into the sediments (DEIS pg.87-88). As explained in the DEIS/FEIS (DEIS pg. 97), rotenoned fish carcasses generally will not greatly increase the release of phosphorus from sediments and the release of phosphorus from carcasses may have only a small effect on increasing nutrient availability. As can be seen in DEIS Figure 14, the outflow of Diamond Lake is high in organic nitrogen due to the high phytoplankton biomass (DEIS pg. 92). The waters downstream of Diamond Lake in the greater North Umpqua River Sub-Basin are generally considered to be nitrogen limited (DEIS pg. 121-122). As the phytoplankton biomass is reduced through implementation of any of the action alternatives, there would be a corresponding reduction in the outflow of organic nitrogen from Diamond Lake. This would result in a beneficial effect on the water quality of Lemolo Lake and other downstream waters compared to the No Action Alternative.</p>
44	Downstream Water Quality During Draw Down	<p><u>Page 124 and 125, Chapter 3. Water Quality, Direct and Indirect Effects:</u> Nutrient loads will be passed through with drawdown of Diamond Lake. Pass-through flows will carry nutrient rich waters into waterways below the project area after 70-80 percent of all aquatic organisms are killed by rotenone treatment. However, the DEIS assumes the “existing nutrient process would be generally unchanged.” No discussion of impacts associated with nutrient discharges is provided. Given that the North Umpqua River has been listed by the Oregon Department of Environmental Quality (ODEQ) on the 303(d) list for water quality violations pertaining to pH, temperature, and total dissolved gas, additional discussion concerning the</p>	<p>The pass-through phase of the project refers to the point in implementation after the draw down and prior to the rotenone treatment, when rainfall and snow melt waters are allowed to flow out of the lake and down stream. During this phase, the project hydrologist assumes the existing nutrient processes would be generally unchanged.</p> <p>As noted in your comment, potential downstream impacts associated with nutrient discharges from the lake would be greatest following a rotenone treatment. These potential impacts are described in the DEIS in</p>

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		analysis of effects to water quality and proposed mitigation of these impacts should be included in the FEIS.	<p>the first paragraph on page 126. Potential downstream impacts of all alternatives relative to temperature, pH, and dissolved oxygen are documented in the DEIS on pages 120-121, 129-132, and 132-134 respectively.</p> <p>Project features designed to minimize potential downstream impacts associated with Alternatives 2, 3, and 5 are described in a prior response to Letter 68, under “Downstream Nutrient Loading”.</p>
58	Downstream Water Quality During Draw Down	<p>There is significant discussion of pH, Dissolved Oxygen, and nutrient loading impacts on the downstream system during the lake drawdown period, and of channel morphology/erosion in Lake Creek, but very little discussion of potential turbidity.</p> <p>Increased flow from the drawdown would be approximately 85 cfs; this could constitute 12-15% of the late summer/early fall flow in the North Umpqua River. This amount of potentially turbid water could impact several of the Outstandingly Remarkable Values in the Wild &amp; Scenic section of the River: The Fishery, Water Quality, and Recreation. September and October constitute the prime fishing season for summer steelhead, and the beauty and clarity of the River are integral to the fishing experience. This is also the spawning period for Chinook salmon.</p> <p>The discussion of Indirect Effects on Page 137 states that “Under Alternatives 2 and 3, no indirect effects are expected to occur downstream of Lake Creek in Lemolo Lake or in the North Umpqua River.” Also, “...delivery of sediments into the North Umpqua River below Lemolo Lake is not expected. This is because any suspended sediment that may enter Lemolo as a result of fluvial erosion in Lake Creek during the draw down would settle out in the reservoir..” The Sediment and Turbidity discussion on Page 212 notes that “...the majority of the sediments are of volcanic origin, and do not stay in solution for long periods of time.”</p> <p>Additional analysis of water velocity and soil type should be included to support these conclusions, particularly in the areas of identified bank instability. There is significant turbidity during even moderate fall/winter flows, so the potential clearly exists for</p>	<p>Turbidity is discussed in the DEIS under the section Fish and Fish Habitat – Water Quality (p212). In the FEIS, in response to your comments, the potential effects of the drawdown on turbidity are discussed in more detail by recognizing the role of stream velocity on channel erosion as well as the type of soil particles that may be directly delivered into the aquatic environment.</p> <p>Finer soil particles such as clay and silt have a tendency to remain suspended in water, creating turbidity, whereas larger sand and gravel particles settle out more rapidly and therefore produce negligible amounts of turbidity. The three critical streamside landslide sites (3, 4, and 6) and the segment of Lake Creek that is slowly encroaching towards Pit Lake No. 1 borrow pit are hosted in Mazama ash-flow and glacial till deposits that consist predominantly of sand and larger particle sizes.</p> <p>Per your comment on anticipated erosion in the canal, during the first couple days of draw-down through the reconstructed section of canal an initial flush of sediment can be anticipated to pass into Lake Creek. The bottom of the canal was originally constructed in bedrock. Directly overlying the bedrock are deposits of glacial drift and a thin veneer of Mazama ash. Over the past 50 years of canal non-use the aforementioned loose (unconsolidated) materials have gradually ravelled from the cut banks to the bottom of the canal. The majority of the sediment flux residing in the bottom of the canal is coarse textured, as the glacial deposits</p>

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		<p>impacts from this project. In addition, there is no discussion of anticipated erosion in the canal, which will be recently re-excavated and expose unvegetated and unarmored soils to erosion. These concerns are magnified by the intent to pass runoff from storms through the system on top of the 110 cfs bankfull flow, approximating winter-time storm event flows which are typically more turbid.</p> <p>The BMPs on Page 34 do not adequately address this issue. This issue needs more investigation, and the identification of preventive measures before commencing with the activities, rather than a strategy of monitoring and taking some unspecified corrective measures after the problem appears.</p>	<p>and ash cap are predominantly composed of sand size grains that contains a smaller component of gravel and rock fragments. Since clay and silt are not present in appreciable amounts in the glacial till or Mazama ash, turbidity should not be a significant factor in degrading water quality. Much of the sediment flux should settle out in the gentle-gradient reach of Lake Creek located about one-half mile below the outlet. During the time of year that drawdown is expected to pass through the reconstructed section of the canal surface water flow entering into Diamond Lake via streams will likely have some degree of cloudiness and therefore be somewhat turbid. It may be difficult to discern what degree of turbidity is attributable to natural background conditions versus sediment that has been flushed from the reconstructed section of canal.</p> <p>The lower velocity of Lake Creek at bankfull flow (High Cascades geology) in contrast to streams in the older geology (Western Cascades) is noticeably different. Lake Creek bankfull flow velocity is about 2 feet per second (fps) compared to about 6 fps for a similar size area that is influenced by Western Cascades geology. This lower velocity has lower potential stream power to erode the channel and cause turbidity.</p> <p>The DEIS discussed the amount of flow that is associated with bankfull and how it compares to the more erosive flow of watersheds in the older geology (see Streamflow Regime – Streams and Streamflow; pgs. 108-110). The degree of landscape dissection (steepness of the landscape) is what controls stream flow velocity. Landscape dissection and steepness is a function of the younger geology bedrock and unconsolidated (surficial) deposits and associated geomorphic processes (regional uplift, fluvial and mass-wasting erosion, etc.) that affect the development of geomorphic landforms. The relative recentness (youthfulness) of various landforms (volcanic deposits) in the High Cascades has not allowed sufficient time to</p>

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			<p>elapse for landscape dissection to take hold, therefore much of the terrain in the project area is gently sloping and stream velocities are lower when compared with much higher stream velocities in the moderately to highly dissected steep-gradient landscapes in the older Western Cascades volcanic terrain. [Refer To Geology Specialist Report – Section Under Characterization – Subheading Of Geologic Setting – Third Paragraph].</p> <p>The draw down flow would initiate in the existing stream channel with ODFW pulling the storage boards to drain approximately 5,800 acre-feet of stored water according to their water right. This would take about five to six weeks to drain the stored water at bankfull flow (average monthly flow for September and October: 35 cubic feet per second plus additional flow of 75 cubic feet per second to equal bankfull flow). The canal would then be opened when late fall flows would be naturally increasing and flushing the connecting stream network, mimicking natural fall turbidity.</p> <p>The greatest difference between historic flow and bankfull flow would occur during the initiation of the draw down. Lake Creek bankfull flow would possibly represent as much as 18-21% of the mean monthly flow during September and October draining to Lemolo Reservoir (based on data from the gaging station immediately downstream of Lemolo Reservoir). However, this additional flow represents only about 10% of the total flow in the upper extent of the Wild &amp; Scenic section of the North Umpqua River about 26 miles downstream from Lake Creek’s mouth. There are also three in-river storage structures (Lemolo Reservoir, Toketee Reservoir, and Soda Springs Reservoir) below Lake Creek that modify the timing and extent of delivery of turbid waters into Wild and Scenic section. Flow measurements for the North Umpqua River gaging stations below Lemolo and in the upper Wild &amp; Scenic section are ±10% of the true value for 95% of the daily flows, thus the additional drawdown flows probably</p>

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			<p>would not be detected. In conclusion, the proposed drawdown is not expected to result in turbidity that would compromise spawning, fishing, or any of the other ORV's of the Wild &amp; Scenic section of the North Umpqua River. Additionally, timing of the drawdown and passage of these flows on through the North Umpqua River system are the project design features that we believe constitute a proactive approach to limiting potential downstream impacts associated with Alternatives 2, 3, and 5.</p>
58	Downstream Water Quality During Draw Down	<p>Recommendation: Recognize the importance of water clarity on the North Umpqua River during the late summer and early fall. Conduct additional analysis of soil types and velocities in the canal and in the unstable areas identified on Lake Creek, and identify measures that will prevent any turbidity during the drawdown period in the North Umpqua River. The current proposal is reactive; it should be proactive in preventing deterioration of the River's Outstandingly Remarkable Values.</p>	<p>The timing of the draw down phase was determined after considerable evaluation during the DEIS process with DL Work Group partners to best avoid potential water quality impacts downstream of Diamond Lake. See previous response regarding soil, stream velocity, and downstream impacts especially in the Wild &amp; Scenic section of the North Umpqua River.</p>
53	Eagle Feeding Program	<p>The DEIS failed to describe the "supplemental feeding program" for osprey and bald eagles. What feed will be used and where will it be put? What other wildlife will eat it? Page 266 says this program was described in chapter two, but we couldn't find it, except for a mention on page 38. There it only says reproductive success will be monitored during the two year program. Chapter 3 never analyzed any environmental impacts from artificial feeding. For instance, if wildlife learn that fish come from humans, will they be hampered from hunting in the wild when the program ends?</p>	<p>The first bullet on page 38 of the DEIS contains a management requirement to "Implement a supplemental bald eagle and osprey feeding program during the time period when the fish population in Diamond Lake is non-existent or limited (a detailed plan would be developed jointly by the USFWS, ODFW, and the USFS). No further description of the program is included in the DEIS.</p> <p>Site-specific details of the supplemental feeding program will be developed as follows, per the terms and conditions included in the USFWS Biological Opinion # 1-15-04-F-0240: "Within 6 months of the date of signing the Diamond Lake Restoration EIS Record of Decision, the Forest shall conduct joint meetings between Forest biological staff, the Oregon Department of Fish and Wildlife and this Office pursuant to development and adoption of a supplemental feeding program for the bald eagle pairs expected to nest at Diamond Lake during</p>

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			<p>the entire period the fish prey base is depressed. The Forest shall ensure this feeding plan is finalized and its implementation fully funded prior to the use of rotenone in Diamond Lake. Adequate supplemental feeding must be conducted in a manner to maintain the current bald eagle population for as long as the prey base is depressed.”</p> <p>The FEIS includes additional analysis of the potential impacts of a supplemental feeding program on wildlife. The program may incorporate a variety of techniques to reduce the potential association of food with humans including: placing fish carcasses during the early morning hours, preferably before daylight; moving feeding sites regularly to simulate a natural food searching behavior by eagles; and locating feeding sites at some distance from campgrounds etc. Regardless, based on information provided in other supplemental feeding projects, eagles are expected to return to normal feeding behavior when an adequate prey base is available in the lake.</p> <p>Previous studies associated with supplemental feeding programs in Oregon (Popp and Isaacs 1989, Marr 1988), report use of feeding stations by primarily diurnal avian scavengers – gulls, ravens, and turkey vultures, No mammals were observed using the stations.</p> <p>Multiple techniques were used during a supplemental feeding program at Hyatt Lake to limit scavenging by other wildlife including: placing food items just before daylight to minimize loss of supplemental feed to nocturnal scavengers; utilizing large intact fish carcasses to reduce use of supplemental feed by non-target avian predators (ravens, crows, gulls, and turkey vultures); and removal of unconsumed carcass parts from the feeding station the day after feeding. Ravens and gulls were the only scavengers documented during this effort (Kaiser 2004). It is possible that at Diamond Lake mammalian scavengers such as coyotes and</p>

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			raccoons would also utilize supplemental food sources on occasion.
35	Economics	<p>Financially, the slow restoration process for Diamond Lake has resulted in the loss of millions of dollars to the Forest Service, the State of Oregon, the Lodge/Resort and to the Local Communities. It has been difficult to understand when the State is in dire need of funds that this research/study has been allowed to go on for so long.</p> <p>Economically, the longer it takes to restore the lake, the greater the impact on the facilities provided by the Diamond Lake Lodge, and the greater the impact to the Forest Service and to the State.</p> <p>The potential for having the Lake draw down eight (8) feet for a full summer as proposed by the Umpqua National Forest and the Diamond Lake Restoration Group will certainly make the health and the financial situations much worse. It will also continue to exacerbate the damage to the food chain that is so essential and imperative for the restoration of the fisheries of the Lake.</p>	<p>The Forest Service and DL Work Group partners recognize that the existing condition of Diamond Lake represents an economic hardship for the owners of the Diamond Lake Resort and others. Although we have been aware of and concerned about the condition of the lake for many years, earlier restoration efforts were not successful due to the unanticipated high costs and complexity of completing this type of project within the context of current laws, regulations, and requirements. We have now gathered the data necessary to support a scientifically credible EIS for this project and are committed to moving toward implementation as soon as possible.</p> <p>We acknowledge that under Alternatives 2, 3 and 5, maintaining an 8 foot draw down for a full summer would have economic impacts. Economic and ecological impacts of all alternatives are disclosed the DEIS/FEIS. However, the Responsible Official feels the ecological benefits of the early and extended drawdown outweigh the additional economic impacts. See responses to letters 35 and 37 under the topic of “Length of Drawdown” for additional information on the rationale of the drawdown schedule.</p>
36	Economics	The anticipated cost of Alternative 2 would be substantially less: \$177,000 as compared to \$3,176,000 for Alternative 3.	Thank you for your comment and your interest in Diamond Lake.
41	Economics	Water quality differences between Alternatives 2 and 3 are expected to be insignificant and yet Alternative 2 is expected to be half as expensive and over time, provide an opportunity to catch trophy trout.	Thank you for your comment and your interest in Diamond Lake.
72	Economics	The estimated economic costs of alternatives 2 and 3 in the DEIS do not reflect the additional necessary mechanical actions needed to suppress chub populations and thus misrepresents the actual costs of these alternatives over time.	Economic estimates for all alternatives are based on a seven-year implementation time period to insure an accurate estimate and facilitate an equitable economic comparison. Under Alternatives 2, 3 and 5, forecasting when tui chub could again become a problem in

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			Diamond Lake and what the cost of future mechanical actions might be is unreasonably speculative. Similarly, the DEIS/FEIS did not speculate on costs of future mechanical removal of tui chub under Alternative 4, beyond the seven-year time frame.
54	Education	A secondary goal has to be education, to avoid using Rotenone on tui chub for a third time. The data collection should involve local schools, and ONRRI will be pleased to work with the Forest Service through RAC Science Zone grants to provide enthusiastic participation of high school and college youth.	Education is a component of all alternatives. We welcome the opportunity to work with ONRRI and area youth.
72	Education	It is critical that the Diamond Lake Restoration Project emphasize education. The signage and materials must communicate the actual costs of managing a natural fishless lake as a fishery. These costs must also be reflected in permitting fees and regulatory violation fines. This will assist the public, lake residents, lake businesses, and area recreational users in understanding these costs and the burden these activities put on the ecosystem. Aspects that must be included in education and fees when establishing a management dependent system include: posting & signage; fees for activities that degrade the system (fishing, latrines, septic systems, landscape runoff, etc.); serious fines for violating recreational usage rules; required fee based boat cleaning station and; clearly understandable messages about how the lake is managed, what the user can and cannot do, and why those actions are important.	<p>We agree that education is a critical component of this project and educational activities would occur under all alternatives. Signage, brochures, establishment of boat cleaning stations, and management of human-caused nutrient inputs (i.e. septic, fish, etc.) are all proposed activities associated with project alternatives in this EIS. Increased fees for the illegal transport or possession of tui chub is a desired activity that could occur in the future, but would require state legislative action to accomplish (See Appendix BB for desired activities that require additional funding or non-Forest Service actions to accomplish).</p> <p>Fines for Code of Federal Regulation (CFR) violations, the regulations that are within the jurisdiction of the Forest Service, are set by the U.S. Attorneys Office and require completion of a rigorous petition process to modify. Petitioning for increased fines is an action that could be completed in the future if necessary, but at this point, it is not considered to be a required or desired activity associated with this project.</p>
72	Endangered Species Act	Implementation of Alternative 2 or 3 will put the agency at risk of violating the Endangered Species Act.	Consultation with the US Fish and Wildlife Service and NOAA Fisheries has been completed for this project. None of the alternatives violate the Endangered Species Act.
68	EPA General Remarks	EPA is pleased that the project has been developed with the dual purposes of improving water quality and improving the recreational fishery of Diamond Lake. As a consequence, project success should be measured by a functioning system	Responses to your specific comments concerning follow-up actions to the rotenone treatment (i.e. the monitoring plan, fish stocking plan, tui chub contingency plan, plan for preventing tui chub reintroduction) are

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		<p>that meets water quality standards and supports a sports fishery that is in balance with the carrying capacity of the lake. Even in the absence of tui chub, the introduction of salmonids to support the sports fishery can potentially result in unintended negative effects to water quality and the biological integrity of the lake. For this reason, we recommend that a “go slow” approach to the lake stocking program be taken and that the stocking program be accompanied by a sufficiently robust monitoring and evaluation program to ensure that project objectives are met.</p> <p>We believe that the draft EIS presents sufficient information to demonstrate that the application of rotenone to Diamond Lake represents a necessary first step in a strategy for improving the water quality and the recreational fishery of the lake. We understand that eradicating the tui chub population is necessary to break the current nutrient cycle of the lake which has led to significant degradation of water quality and the recreational fishery. Our primary concern with the project, as described and analyzed in the draft EIS, is the lack of specificity of the adaptive management strategy that would be employed following rotenone treatment of the lake. Specifically, we believe that information defining the follow-up actions to the rotenone treatment (such as a monitoring plan, fish stocking plan, tui chub contingency plan, plan for preventing tui chub reintroduction) need to be more completely developed and presented in the EIS. We believe these actions are equally as important as eradicating the tui chub population from the lake since they relate to the long term success of the project and the health of the lake and waters downstream. This information will provide the public and the decision maker with an understanding of the actions that need to be taken to ensure that the project would ultimately meet applicable water quality standards and support a healthy recreational fishery. These topics are discussed in greater detail below.</p>	<p>described in detail in other sections of this table.</p>
56	Explosives Alternative	<p>The use of explosives is considered, by the experts that were consulted for the statement, to be infeasible. One of the reasons stated for that alternative's infeasibility was that it would take approximately 574 miles of detonation cord to create the desired magnitude of explosion for fish kill...but why, exactly, would detonation cord be used</p>	<p>As described in the DEIS/FIES, to be successful, a lake-wide simultaneous explosion would be required; although detonation cord is the primary explosive that has been used in fishery management, any type of explosives would require connections (shock tubes) between individual charges to achieve a simultaneous</p>

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		<p>at all? It is a very low-powered explosive, and it is no surprise that such a large amount would have to be used. That's like saying the use of firecrackers would be infeasible because you'd have to dump 4 million of them into the lake after simultaneously lighting their 4 million tiny fuses. And although I am not familiar with "shock tubes" or why they would be used with other types of explosives, or why that in itself would be infeasible, I do feel that the explosives alternative may not have been examined too thoroughly.</p> <p>Were depth-charges, dynamite or TNT considered? Could any number of these explosives not be detonated from shore, electronically, or otherwise? I'm sure you know that water does not compress, and that several hundred-or-so tons of high powered explosives detonating simultaneously (or almost simultaneously) would surely set up a shock wave that would kill every fish in the lake without disturbing one grain of sand on the shore.</p> <p>Even if this alternative presents unique obstacles, it would have a negligible impact on non-target wildlife (eagles, otter, newts, snakes et. al.) and, compared to any proposal involving lake draw-down and/or poisoning the explosives alternative would have virtually no deleterious effect on the Diamond Lake ecosystem ( no heavy equipment, poison, dredging, etc.)...and, dynamite is CHEAP! I am aware that funding is an issue for this project, and maybe it would be worth a try.</p> <p>I think that this simplest of all alternatives deserves one more look before a final decision is made. Please blow up Diamond Lake.</p>	<p>blast, thus all explosive options are considered logistically infeasible.</p> <p>An explosives alternative was thoroughly examined and given serious consideration during the NEPA process. Explosives were not eliminated as a potentially viable alternative until late September 2003. Five experts were contacted to discuss the feasibility of utilizing explosives (including depth-charges, dynamite, TNT, detonation cord, and others) to eliminate tui chub from Diamond Lake. A thorough literature review was completed on the utilization of explosives in fisheries management. Relevant literature is on file at the North Umpqua Ranger District and is available to the public.</p> <p>Although there could be numerous potential impacts to wildlife and water quality associated with the use of explosives in Diamond Lake, the reason an explosives alternative was eliminated was that: it was determined to be technologically infeasible and its results speculative.</p>
44	Failure to Address Complications of Winter Conditions	<p><u>Page 202, Chapter 3. Fish and Fish Habitat, Lake Creek, Direct Effects, second paragraph:</u> In the second paragraph the DEIS states “the section of Lake Creek located between the Lake and the canal outlet (1200 ft) would dry up due to a lack of surface flow.” Figure 19 (p. 112) identifies 250 yards. The FEIS should be consistent with distances and units. Also, the FEIS should</p>	<p>The section of Lake Creek described on page 202 is approximately 1,400 ft. The FEIS corrects errors and discrepancies between estimated distances.</p> <p>The FEIS includes a discussion of the effects of winter conditions on carcass decomposition, canal discharge,</p>

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		<p>include a discussion of the effects of winter conditions and icing on carcass decomposition, canal discharge, operation of the canal and headgates, and impacts to Lake Creek and associated wetlands.</p>	<p>operation of the canal and headgates, and impacts to Lake Creek and associated wetlands. Impacts to Lake Creek and associated wetlands are discussed in the DEIS without reference to season because the effects will span across several seasons. The impacts to Lake Creek and associated wetlands during the winter may in fact be less severe to vegetation due to dormancy.</p>
53	<p>Failure to Track Effects of Repeated Chemical Treatments</p>	<p>Since the tui chub will return after a rotenone treatment, the DEIS should have considered the long term cumulative effects of continued rotenone treatments on the lake if Alternatives 2 or 3 are chosen now. For instance, could continual rotenone treatment eliminate native species like water bulrush? The DEIS estimates that the 1954 treatment “caused some decline in species diversity and may have changed some of the composition of the south shore wetland complex... Sustained drying in wetlands can, and has in other cases, led to lower species richness.” The draw down needed for rotenone could even “result in permanent changes to the wetland environment on the south shore of Diamond Lake.”</p> <p>In just this treatment alone, the wetlands could incur permanent changes, potentially changing the rare plant communities that are adapted to them. What will happen after the third treatment? Although the DEIS says the risk is minimal this time, does the risk escalate with each successive treatment? The DEIS finds that “The combined effects of the previous rotenone treatment and other past actions along with the proposed actions from either Alternative 2 or 3 would lead to an overall negative effect through drying, desiccation and simplification of species richness.” The question is, if we can't find a non-rotenone treatment now, what are the cumulative effects of the NEXT treatment in just a few decades, including the cumulative effects to Short Creek and Lake Creek of cyclical treatments. The shortsighted, six-year analysis in the DEIS does not comply with NEPA.</p>	<p>As documented in the DEIS/FEIS, the Forest Service considers it likely that tui chub or other nuisance species may again be introduced to Diamond Lake at some point in the future. The FEIS acknowledges that under all action alternatives if tui chub populations remain or recur, exponential population growth and associated adverse impacts to both water quality and the recreational fishery similar to those experienced in the past would be expected occur. However, the Forest Service does not consider successive rotenone treatments at unknown points in the future to be reasonably foreseeable actions subject to analysis in this document. Although it is possible, it would be highly speculative to assume that responsible parties and members of the public in future decades would chose to fund and implement lake draw downs and rotenone treatments at Diamond Lake. Innovations in technology and increased scientific knowledge may provide future generations with numerous options not currently available to managers.</p> <p>The Council on Environmental Quality's CFR-40 Implementing Regulations for the National Environmental Policy Act does not define reasonably foreseeable actions or otherwise describe appropriate temporal scales for cumulative effects analysis. The DEIS/FEIS includes a comprehensive table of actions considered to be reasonably foreseeable (Table 11) and cumulative effects analysis are documented throughout Chapter 3. A six year analysis time frame was selected because it is expected to take approximately six years of implementing Alternative 4 to achieve measurable results. This timeframe allowed resource specialists to</p>

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			<p>make reasonable and supportable estimates and facilitated alternative comparison. An established time frame was particularly important for economic and recreation resource analysis.</p> <p>Where relevant and supportable, anticipated long-term effects beyond the seven-year project implementation time frame are documented throughout Chapter 3. However, regardless of whether specialist’s forecasted out ten, 30, 50, or 100 years, it was not considered reasonable to assume successive draw downs (and associated impacts to wetlands) and rotenone treatments would be implemented by future managers of Diamond Lake.</p> <p>However, in response to your comments, the project lifetime was extended by a year to accommodate an additional year of experimentation under Alternative 4 and potential effects of implementing contingency plans for all action alternatives for an additional 5 years has been incorporated into the FEIS.</p>
53	Failure to Track Effects of Tui Chub Reintroduction	<p>The DEIS promises that “The likelihood of tui chub reintroduction is tracked for all alternatives in this DEIS”. This promise was not kept. In chapter 2 there is a contingency plan if tui chub return after rotenone, but there is no tracking of this issue in chapter 3. Only under Alternative 4 is the continued presence of Tui chub tracked throughout the DEIS. For instance in table 3, comparison of alternatives at meeting water quality, only Alternative 4 has the caveat about future tui chub presence. Other comparisons in tables 4 and 7 also track the continued presence of tui chub only in Alternative 4. The tracking of the tui chub return for Alternatives 2 and 3 is weak. In fact, in table 4, the DEIS forgets it said the tui chub would return and claims that Alternative 2 and 3 will eradicate tui chub from the lake. The FEIS must correct these misleading statements.</p> <p>In another example, the DEIS says: “since tui chub would not be eliminated under Alternative 4, there would be a higher risk of not meeting improved water quality in the long-term”. But in the “long-term” the DEIS expects tui chub to return to the lake under Alternatives 2 and 3. The promise given on page 18 of the DEIS,</p>	<p>The persistence and reintroduction of tui chub are addressed in the DEIS on page 206 under the heading of “Potential Cumulative Effects Common to All Alternatives”.</p> <p>In response to public comments, in the FEIS, the Forest Service does not speculate on when in the future tui chub or other nuisance species might again result in undesirable ecological conditions at Diamond Lake. However, in response to your comment, throughout the FEIS, language has been added to reflect that under Alternatives 2, 3, and 5, if tui chub persist or are reintroduced at some unknown point in the future and contingency plans fail, anticipated exponential population growth would be expected to result in similar adverse impacts to the water quality and recreational fishery as were experienced in the past. Additionally, potential effects of implementing contingency plans for an additional 5 years based on an assumption of continued tui chub presence are also included in the</p>

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		<p>to track the tui chub reintroduction and continued presence in the lake for all alternatives was not kept.</p> <p>The continual long-term presence of tui chub under alternatives 2 and 3 was consistently left out of the analysis because the DEIS stops all effects analysis after 6 years, before the noticeable return of the tui chub is expected under Alternatives 2 and 3. This timeline is too short. In comparison, the Snowcat Skiing started from a 1981 NEPA analysis that still covers its impacts 23 years later. Why can't the EIS do at least that time line?</p>	<p>FEIS.</p> <p>An explanation for why a 6 year time frame was selected is included in other responses in this table.</p>
58	Fish Carcasses	<p>If the carcass recovery rate is only anticipated in the 20-30% range, a greater effort needs to be made to remove the fish prior to lake treatment. If the Alternative 4 harvest goal of 90-95% of spawning age fish is realistic, this process should be incorporated into a revised Proposed Alternative prior to treatment of the lake with rotenone. (It was not clear what percentage of the fish biomass is comprised of reproductive-age chub).</p>	<p>Objectives of proposed mechanical fish harvest efforts differ by alternative. The objective of mechanical fish harvest proposed under Alternatives 2, 3, and 5 is to remove as much of the catchable fish biomass as is practical during the time period when the lake is drawn down. Due to uncertainty the IDT did not attempt to predict what percentage of the total fish biomass would be removed prior to the rotenone treatment as a result of these efforts. In contrast under Alternative 4, according to computer models, annual removal for six consecutive years of 90-95% of the biomass of reproductive age tui chub is the required level of effort needed to reduce the population to levels such that water quality and recreational fishery goals could be obtained</p> <p>In response to your comments, the Forest Service investigated the potential benefits of increasing the effort level and/or duration of pretreatment mechanical fish removal under rotenone alternatives. Our conclusion is that although increased effort would not be harmful, it is also not likely to result in improved water quality in the lake and is not the most effective means of reducing a post-rotenone treatment nutrient pulse.</p> <p>For example, we considered an option that would incorporate Alternative 4 methods and effort for two</p>

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			<p>years prior to a rotenone treatment and concluded that compensatory reproductive mechanisms would be expected to eliminate any potential water quality benefits. According to project Fisheries Biologist, Scott Lightcap, based on Eilers et al. (2003), chub younger than 2 years old comprise from 5 to 15% of the biomass and are too small to catch in nets. Within the 2 to 7 year old age classes - the 2 and 3 year olds made up the majority of the biomass - at 38% and 58% respectively. While it would be possible to remove a great number of catchable tui chub, the young of the year and age 1 fish still present in the lake (and not catchable) would effectively fill the void created by removal of the 2 and 3 year fish - resulting in a quick biomass recovery under a 2 year mechanical removal period. That is why Alternative 4 was analyzed for a 6 year time period - to allow time to remove fish over the complete life cycle of the chub, and catch up to the many millions of fish in the 0, 1, and 2 age classes.</p> <p>According to Joe Eilers, Maxdepth Aquatics, the most effective and efficient means of reducing a post-rotenone treatment nutrient pulse would be achieved through strategic application of rotenone such that the majority of fish biomass die in the shallow well-oxygenated areas of the lake.</p> <p>In response to your question, spawning age fish constitute approximately 80% of the total fish biomass in Diamond Lake at this time.</p>
58	Fish Carcasses	Recommendation: Develop a revised alternative which includes removal of a targeted amount of the chub prior to rotenone treatment.	In response to your comment the Responsible Official considered a revised alternative that would include additional mechanical tui chub removal prior to a rotenone treatment. Based on the information detailed in the previous response, he decided not to include this modification in the FEIS.
53	Fish Emulsion Factory	All action alternatives include an on-site (lakeshore) conversion of harvested fish carcasses to a “fish emulsion product”. Chapter 2 failed to adequately describe this and chapter 3 failed to	According to Bryan Charles Brinegar, president of Environmental Recovery Solutions, the onsite conversion process entails prebreaking of carcasses,

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		<p>analyze the environmental effects of this on-site conversion. What does this entail and what are the effects? Will there be an increase in flies or mosquitoes? Will there be refuse of fish parts, and what will be done with them? What chemicals are used in this process, and what is the potential for spill? Will it be bottled on-site? Will it be contaminated with rotenone?</p> <p>Will it be a service contract or a goods for services trade?</p>	<p>blending with an organic enzyme, digestion using ambient heat, screening, and then stabilizing with a 0-53-0 fertilizer. The on site emulsification process consists of reduction and primary containment. Reduced carcasses are initially contained in large polyethylene containers and transported to an off-site facility for chemical “breaking” and final containment or “bottling”. A properly aerated emulsification process using fresh mortalities should not cause an increase in flies and mosquitoes. Environmental Recovery Solution’s process of emulsification uses the entire fish so there is no waste or fish refuse. The emulsification product would not be contaminated with rotenone; the temperature, light, oxygen, and alkalinity of the emulsification processes will rapidly degrade the rotenone and eliminate its toxic effects.</p> <p>Under Alternatives 2, 3, or 5 fish emulsification at Diamond Lake would be accomplished under a service contract. Appropriate actions for preventing spills of all kinds would be incorporated into contract specifications and spill contingency plans for the project. Potential effects of this operation are discussed in Chapter 3 of the FEIS in the Recreation section.</p>
1	Fish Stocking	<p>Some of the fish stories in the Impact Statement must be commercial promotions from the domestic-trout suppliers: there are plenty of varieties which spawn in lakes much colder than Diamond Lake, and in streams colder than Silent Cr., which could supply a squeaky-clean hatchery near its source (by means of a penstock).</p> <p>There are also ‘predatory’ fish, well suited to gobbling up chubs, which are also superb game fish: in this case (weed-shallows) the walleye would be perfect...</p>	<p>Cold water temperatures are not limiting salmonid spawning in Diamond Lake proper. The primary factors limiting salmonid spawning in the lake are a general lack of gravel shoals along the lake margins suitable for successful spawning, and an abundance of sand and silt along the bottom. In Silent Creek, evidence of salmonid spawning was observed. The success of this spawning is believed to be very low due to the highly angular sands and pumice gravels found in this system (refer to page 184 of the DEIS). In both cases (lake and stream), natural salmonid spawning potential is believed to be too low to support and maintain a recreational fishery.</p> <p>Other predatory fish species, such as the walleye, were evaluated for use in Diamond Lake. However, the</p>

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			<p>ODFW Commission reviewed the current fish management plan in 2001 and adopted interim fishery strategies that reflect experimental fish introductions, consistent with the previously adopted management policy for Diamond Lake. This management policy includes a multi-species trout-stocking program intended to provide a two-tiered trout fishery with chubs present in the lake. The adopted policy did not include non-salmonid species such as walleye (Pers. com., Dave Loomis)</p> <p>Appendix 2 of the Scoping Summary (incorporated by reference into the DEIS/FEIS) documents the following reasons why walleye are considered inappropriate for stocking in Diamond Lake: These fish are not currently found in the Umpqua Basin, and would be considered as an exotic species. They are migratory, and could easily establish populations in reservoirs and rivers downstream, thereby impacting local populations (including ESA-listed coho salmon). In addition, they have a tendency to overpopulate certain lake systems, resulting in stunted populations that do not provide a desirable recreational fishery.</p>
36	Fish Stocking	<p>Under Alternative 2, annual stocking of the fingerlings would result in a fish population of diverse size. The rather small number of fingerlings—less than 300,000—would not pose a threat to zooplankton as have the millions tui chub. The trout have no natural spawning areas and only the introduced fingerlings would feed on the zooplankton, which would be monitored to promote good water quality in the lake. Although the planted trout in Alternative 3 would be larger at the time of release, they would only survive a year. This would result in a fishery of 8 inch legal trout with no carryover or trophy size fish.</p>	<p>Thank you for your comment.</p>
38	Fish Stocking	<p>I prefer Alternative 3 over Alternative 2 because I favor stocking the lake with immediately catchable fish. I would like to modify this alternative slightly, to consider additionally stocking the lake with a much smaller number of larger fish each summer so that occasionally a youngster might pull out a big one.</p>	<p>Thank you for your comment. Per a July 2, 2004 letter to the Forest Service reproduced in the FEIS, ODFW documented that fish stocking strategies following a rotenone treatment would include fingerlings, larger-size predacious trout and if sufficient funding is secured a number of put-and-take-size trout.</p>

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39	Fish Stocking	<p>The Forest Service is to be commended for the expanded focus of this draft EIS in comparison with the dismally narrow focus of the 1998 version. Particularly significant is the substantial attention now given to water quality issues and the recognition that the ecological and social issues involved at Diamond Lake are complex. We are disappointed, however, by the continued failure to adequately recognize that many of the ecosystem problems now manifest in the lake are the result of years of mismanagement and ecological abuse directly attributable to efforts to maintain a huge artificial hatchery-based recreational fishery. (See Eilers study reference, DEIS, p. 92, 143)</p>	<p>The DEIS/FEIS consider past, present, and reasonably foreseeable fish stocking activities in cumulative effects analysis throughout the document. Page 160 of the DEIS includes a discussion of the perceived relative influence of the intentional recreational fishery versus the tui chub on zooplankton populations. The Forest Service acknowledges that a large population of fingerling-sized trout can negatively impact ecological conditions in the lake. However, based on multiple studies, including those referenced in your comment and a recent (Eilers et al. 2003) study prepared for the ODEQ, TMDL Modeling and Analysis of Diamond Lake, the Forest Service concludes that most of the changes in the ecology and nutrient cycling of Diamond Lake appear to be a consequence of the large biomass of tui chub.</p>
39	Fish Stocking	<p>In lieu of the proposed Intensive Use Alternative ODFW fish stocking strategy proposed for Alternative 3, we support adoption of a Featured Species or Trophy Fish stocking strategy, as described in Alternative 4. (DEIS, p. 32) As acknowledged in the DEIS, it is rare for a single rotenone treatment to kill all fish. (DEIS, p. 197) It is also not reasonable to assume that reintroduction will be delayed for 30 years. (DEIS, p. 206) Two events 30 years apart are not an adequate basis for statistical analysis. Viewed in the larger historic perspective, say the last thousand years, one could project a reintroduction within the next few months, particularly given the prevalence of tui chub in nearby lakes. The Featured Species or Trophy Fish stocking strategies better address the virtual certainty that tui chub will not be totally eradicated or will be reintroduced sooner rather than later.</p>	<p>Predacious fish stocking is included in all action alternatives as a precautionary measure. The principles behind your recommendations (i.e. stocking with a large number of large predacious fish) were incorporated into the contingency plan for this alternative. The contingency plan documented in Appendix BB, describes ODFW's intention to move to a completely predacious fish stocking strategy and to stock with 50,000 trophy-sized fish (2 lbs) annually upon reoccurrence of tui chub in Diamond Lake.</p> <p>Per a July 2, 2004 letter to the Forest Service reproduced in the FEIS, ODFW documented that fish stocking strategies following a rotenone treatment would include fingerling rainbow trout, larger-size predacious trout and if sufficient funding is secured a number of put-and-take-size trout.</p> <p>In response to public comments, in the FEIS, the Forest Service does not speculate on when in the future tui chub or other nuisance species might again result in undesirable ecological conditions at Diamond Lake. Although in response to subsequent comments by you and other members of the public, potential effects of tui</p>

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			<p>chub reintroduction are described in Chapter 3 of the FEIS for purposes of full disclosure. Appendix BB (Monitoring, Reintroduction Prevention, and Tui Chub Contingency Plans) includes additional details on project features that are designed to lower the likelihood of human-caused reintroduction and affect control on chub population expansion if tui chub persist or recur for all action alternatives.</p>
39	Fish Stocking	<p>Once fish stocking resumes, all fish stocking should be on the basis of the ecologically-based index developed by Eilers. (DEIS, p. 149; fn. 65)</p>	<p>ODFW financed preparation of the referenced document - “An Ecologically-Based Index for Guiding Salmonid-Stocking Decisions in Diamond Lake, Oregon” (Eilers 2003a) and began training staff to gather data under this guide in the summer of 2004.</p> <p>Throughout the NEPA process and as documented in the DEIS/FEIS and in two letters to the Forest Service (May 17, 2004 and July 2, 2004) reproduced in the FEIS, ODFW has stated their full commitment under the agency’s statutory authority and related policies and plans to design and implement an ecologically sound fish stocking strategy for Diamond Lake. Additional information on this topic is addressed elsewhere in this table.</p>
44	Fish Stocking	<p><u>Page 30, Chapter 2. Alternative 3 (Put and Take Fishery)</u>: This section does not reference Alternative 3 as the Preferred Alternative. Alternative 3 does not appear to stand alone as a distinctly separate alternative, given the only difference between it and Alternative 2 is in stocking strategy. The adaptive management stocking strategy, based on ecological indicators in Diamond Lake, should be integral to all alternatives and drive future stocking of the lake. The FEIS should clarify to what extent adaptive management impacts the stocking strategies for Alternative 3.</p> <p><u>Page 45, Chapter 2. Table 5. Comparison of Alternatives at Responding to Fish Stocking</u>: Under the Fish Stocking Management Strategy, Alternative 2 identifies the use of “ecological indices to determine appropriate numbers of fish to stock.” This use of ecological indicators should be the premise for all future stocking regimes and be re-iterated under all three action alternatives in the FEIS.</p>	<p>Page 21 of the DEIS, documents that Alternative 3 was identified as the preferred alternative for the DEIS. The post-rotenone treatment fish stocking strategy is the only difference between Alternatives 2 and 3. Fish stocking was identified as a significant issue during project scoping, thus in compliance with NEPA requirements, the Forest Service considered public input, worked cooperatively with ODFW, and developed a range of fish stocking strategies that were incorporated into alternatives.</p> <p>In Chapter 2, Alternatives Considered in Detail, the FEIS clearly states ODFW’s intention to base fish stocking strategies on ecological indices described in Eilers (2003a) for all action alternatives.</p>

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44	Fish Stocking	<p><u>Page 197, Chapter 3. Fish and Fish Habitat, Diamond Lake, Direct Effects, third and fourth paragraphs:</u> Proposed post-treatment stocking in Diamond Lake includes 150,000 Oak Springs rainbow trout fingerlings under Alternative 2, and 400,000 “domesticated” rainbow trout under Alternative 3. In either case, the high numbers of fish are likely to result in demands upon benthic and zooplankton populations that may still be in recovery. In neither case is there any reference to fish stocking being based upon ecological indicators and adaptive management as prescribed in other areas of the DEIS. The FEIS should reference the method of determining appropriate stocking densities for future stocking decisions at Diamond Lake.</p>	<p>Chapter 2 in the DEIS and FEIS document ODFW’s intention to use a variety of methods to determine appropriate numeric goals for annual fish stocking and harvest, post-project, including: existing data and knowledge, ecological indices of lake health (i.e., zooplankton and benthic invertebrate populations), annual fish monitoring data and applicable nutrient loading allocations provided in ODEQ’s pending TMDL publication.</p> <p>To facilitate disclosure of effects by alternative, in response to scoping comments, and per the request of the Forest Service, ODFW produced preliminary estimates of fish stocking levels and sizes for a six year period for Alternatives 1 – 5. Chapter 3 does not restate ODFW’s intention to utilize ecological indices as a basis of determining appropriate fish stocking densities; however, project Fish Biologist, Scott Lightcap, considered this information when analyzing the effects of all Alternatives on benthic and zooplankton populations.</p> <p>The FEIS documents that ODFW would base fish stocking strategies on ecological indices described in Eilers (2003a) for all action alternatives.</p>
58	Fish Stocking	<p>Recommendation: Utilize the fish-stocking strategy to control another explosion of chubs. Include some lake-adapted piscivorous species in any stocking plan</p>	<p>Stocking strategies for all action alternatives in the DEIS/FEIS include some piscivorous fish species as a component of the alternative.</p> <p>ODFW’s July 2, 2004 memo to the Forest Service (incorporated into Alternative 5 in the FEIS) states that it would include 10,000-25,000 larger-sized predacious rainbow during the first year following a rotenone treatment and 10,000-25,000 larger-sized trout the following year.</p>
64	Fish Stocking	<p>The Umpqua Fisherman’s Association’s is not in favor of stocking with brown trout or spring Chinook. Let’s keep those fish in their current habitat. We feel that Eagle Lake Trout should be stocked instead (as tui chub are their main food choice) thus increasing the possibility of maintaining a trophy trout fishery.</p>	<p>Thank you for your comment. ODFW’s July 2, 2004 memo (Appendix AA – Letter 77) regarding their proposed fish stocking strategy under Alternative 5 of the FEIS does not describe which fish species would be used in the years following a rotenone treatment</p>

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			<p>beyond a reference to “rainbow trout fingerlings” and “predacious rainbow”. However, the letter documents that the Oregon Fish and Wildlife Commission will enter into a public review of the Diamond Lake Management Plan when sufficient information is available regarding the fishery that can be maintained in the long term. According to the memo, this decision process will take into consideration the environmental, biological, economic, and community values of the people of Oregon. Based on this information, there will be additional opportunities for incorporation of public opinion regarding which fish species are appropriate for stocking in Diamond Lake in the future beyond the lifetime of this project.</p>
65	Fish Stocking	<p>Perhaps the previous levels of 100,000 anglers for rainbow trout is unrealistic; as Diamond Lake “ages” and conditions change, so too may the ODFW goals have to evolve to keep step with reality. After all it is not a “given” that previous levels of recreational fishing are viable; in fact, the Diamond Lake fishery is an artificial one, and the limits of the ecosystem have been discovered.</p>	<p>ODFW has made a commitment to use ecological indices and applicable nutrient loading allocations provided in ODEQ’s pending TMDL publication to determine appropriate numeric goals for annual fish stocking and harvest, post-project.</p>
68	Fish Stocking	<p>Work by Eilers and others (see Eilers 2003) indicate that fish introductions to formerly fishless lakes (such as Diamond Lake) result in a number of effects to those lakes including predation of zooplankton, consumption of benthic invertebrates, and nutrient cycling. The draft EIS seems to suggest that eradicating the tui chub population in Diamond Lake will ultimately lead to solving the existing water quality problems in the lake. With the restocking of the lake with salmonids to provide for a recreational fishery, additional biomass will be added to the system that would influence nutrient cycling and water quality. Predation by introduced salmonids can also reduce the population of larger zooplankton, which are effective grazers of the phytoplankton. The potential effects of implementing the proposed fish stocking program should be more fully discussed in the EIS as they have a direct relationship to meeting water quality standards and supporting a healthy recreational fishery. Because there is uncertainty about the number of stocked fish that can be introduced into Diamond Lake while meeting water</p>	<p>For all action alternatives ODFW made a commitment to utilize ecological indices of lake health (i.e., zooplankton and benthic invertebrate populations), annual fish monitoring data and applicable nutrient loading allocations provided in ODEQ’s pending TMDL publication to determine appropriate fish stocking levels.</p> <p>Analysis documented in the DEIS/FEIS, describes the potential for introduced salmonids to affect populations of large-sized zooplankton species and consequently to adversely affect water quality. However, based on ODFW’s written statements of their full commitment to implement an ecologically sound fish stocking strategy, analysis documented in Chapter 3 assumes that under all alternatives, fish stocking levels would be managed such that the recreational fishery would not compromise progress toward water quality goals.</p>

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		<p>quality standards, we recommend that the restocking effort be implemented conservatively. That is, initial stocking rates should be relatively low and increased as information is gathered related to how the lake is responding to the stocking program. Any adjustments to stocking rates should be supported by monitoring information.</p>	<p>In response to your comments and the comments of other members of the public, the Forest Service requested that ODFW provide additional documentation on proposed fish stocking strategies following a rotenone treatment at Diamond Lake. ODFW's July 2, 2004 memo (Appendix AA – Letter 77) responds to this request and is incorporated into Alternative 5 of the FEIS. The memo reiterates ODFW's intention to design and recommend a post-rotenone treatment stocking strategy that best meets the goals of the lake based on the environmental indices described in the DEIS (i.e. Eilers 2003a.), describes relatively low numbers of fingerlings for initial restocking of Diamond Lake, documents their assumption that annual stocking rates and fishery levels would be expected to increase in concert with the recovery of the lake's health.</p>
68	Fish Stocking	<p>The EIS should provide additional discussion of the proposed stocking rates and how they will be determined using "ecological indices." While we are familiar with the ecologically-based stocking index for Diamond Lake presented in Eilers (2003), the EIS is not clear that this index will be employed. The EIS should clearly identify the indices that would be used in determining stocking rates and how the number of fish that would be ultimately be stocked are to be determined using those indices.</p>	<p>The FEIS clearly states ODFW's intention to utilize the indices described in the Eilers (2003a) Ecological-based Index for Guiding Salmonid Stocking Decisions in Diamond Lake, Oregon. According to Dave Loomis, ODFW initiated the collection and protocols for completing the data sets for the ecological indices in 2003. The proposed management direction regarding future fish stocking rates has been reviewed and adopted by ODFW's Region and Fish Division staff. Further review and recommendations for use of these and other indices will be presented during Commission review's of the Diamond Lake Management Plan. The monitoring plan in Appendix BB of the FEIS describes the biological indices that would be used to guide fish stocking and Eilers (2003b), incorporated by reference into the monitoring plan, describes how the indices will be used.</p>
68	Fish Stocking	<p>Given the lack of post-treatment ecological indices on which to base initial stocking rates, it is not clear how the proposed stocking rates of 100,000 to 400,000 large rainbow trout for the preferred alternative were derived. The basis for the proposed stocking rates should be included in the EIS.</p>	<p>According to Dave Loomis, ODFW's stocking plan strategy is designed to be ecologically sound based on the environmental indices described in the DEIS. Under the preferred alternative, annual stocking rates are expected to increase in concert with the recovery of the lake's health post-treatment. The initial stocking rates</p>

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			<p>were designed to be lower than historical rates, conservative immediately after the treatment, and gradually increase while monitoring the ecological conditions in the lake. Historical stocking rates immediately after the 1954 treatment ranged from 300,000 to 1,175,000 annually and resulted in no measurable and serious disruptions in the biological and chemical processes in the lake related to water quality and fisheries. Prior to chub presence in the lake during the last decade, the stocking plan strategy was 350,000 to 400,000 small trout (fingerlings). The proposed large trout releases would be within this range and also result in fewer fish consuming zooplankton and zoobenthos compared to fingerling releases due to the expected lower growth rate, feeding behavior, and much reduced time in the lake. ODFW will manage for both maintenance and experimental fisheries in the interim period post-treatment. The future productivity of the lake will be well documented and provide a basis for the chance of success for stocking various numbers and sizes of trout.</p>
68	Fish Stocking	<p>The EIS should include a comparison of the proposed stocking rate and the conservative stocking rates developed by Eilers et. al. (2003) for the Total Daily Maximum Load (TMDL) being developed for Diamond Lake. Differences (if any) between the rates should be discussed in the EIS.</p>	<p>The draft TMDL is included in Appendix D of the FEIS. A comparison of the possible fish stocking in the draft TMDL to the proposed fish stocking under Alternative 5 is documented in a letter to ODEQ from Joe Eilers, MaxDepth Aquatics; this letter is replicated in Appendix AA, Letter 79 of this FEIS. In general, the “possible” stocking strategy described in the draft TMDL is slightly more conservative than stocking proposed under Alternative 5, but Alternative 5 stocking is still very conservative and well within the range of acceptable stocking levels described in the draft TMDL.</p> <p>Proposed stocking numbers and biomass are very conservative compared to historical numbers of fish in the lake for any post treatment year since 1954. Trout stocking numbers have ranged from as low as 113,000 to as high as 1.175 million. The highest fingerling trout stocking biomass was 9,500 pounds prior to the recent experimental stocking with larger trout. Under</p>

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			<p>Alternative 5, the initial stocking of 50-100,000 fingerlings at 50/lb is 1,000-2,000 pounds of biomass introduction into the lake. By comparison, in 1954, 500,000 fingerlings were stocked in the first year following rotenone treatment and 1 million fingerlings were stocked in the second year. Lake recovery was rapid under these stocking levels.</p> <p>As documented in 09-20-04, meeting notes, incorporated into this FEIS as part of the Project Record, John Blanchard, ODEQ, concludes that after looking at the data and comparing historical stocking rates after the last rotenone treatment it is apparent that the amount of fingerling fish stocking ODFW is proposing under Alternative 5 would not impair water quality recovery and would facilitate achieving another of the beneficial uses of the lake that we are trying to recover- the recreational fishery.</p> <p>According to ODEQ, fish stocking levels/strategies that will be included in the final TMDL for Diamond Lake will be established as an agreement with ODFW based on the scientific data and the recommendations of Eilers and other experts (John Blanchard, Pers. comm.) ODFW's actual stocking levels will be based on nutrient allocations documented in the final TMDL. By law and mutual agreement, there would be no difference between the TMDL allocations and ODFW's fish stocking.</p>
72	Fish Stocking	<p>It is also important that, if Diamond Lake is to be stocked as a recreational fishery, that it done is a fashion that supports long term lake health and diversity. We support a stocking strategy that include native fish species that predate on tui chub. Virtually every lake in Oregon has natural or introduced tui chub, but only in Diamond Lake does ODFW feel a need to do a continual rotenone treatment to maintain a rainbow trout fisheries. This is no longer acceptable.</p>	<p>ODFW has made a commitment to use ecological indices and applicable nutrient loading allocations provided in ODEQ's pending TMDL publication to determine appropriate numeric goals for annual fish stocking and harvest, post-project.</p> <p>ODFW's July 2, 2004 memo (Appendix AA – Letter 77) regarding their proposed fish stocking strategy under Alternative 5 of the FEIS documents their intentions to include larger-sized predacious rainbow during the first</p>

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			year following a rotenone treatment.
76	Fish Stocking	Presumed fish stocking approaches that are not within federal authorities should not be used to differentiate the alternatives. If they are used as presented in the DEIS, Alternative Three is not worthy of consideration. The alternative assumes that the OFWC would select for an inefficient fish stocking program that would return low quality angling at high cost to the license-buying angler. If there was a basis to do so, that is, beneficial outcomes to another resource or stakeholder interest, such an approach could possibly be justifiable. Neither science nor a transfer of benefits appears to support a decision to forego return to an inexpensive and productive fingerling trout stocking program whose ecological effects are completely manageable through increase or reduction in stocking rates. The use of large, expensive, and not very desirable hatchery trout will draw funding resources from other programs while forgoing catch rates and fish quality otherwise achievable. The theoretical ecological advantages of Alternative Three appear to be more a reflection of philosophical differences than of actual levels of ecological risk or uncertainty that might be ascribed to either alternative. This alternative carries large opportunity and fiscal costs with no tangible environmental, social, or fish management benefits.	<p>The Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA require that the Forest Service develop and analyze reasonable alternatives that are not within the jurisdiction of the lead agency (40 CFR § 1502.14 (c) ). Pursuant to this requirement, because fish stocking was identified as a significant issue during public scoping, Alternative 3 was developed in cooperation with ODFW to respond to this issue. Additionally, an alternate fish stocking strategy from the one included in the proposed action was also developed for Alternative 4 in response to the fish stocking issue.</p> <p>Potential environmental, economic, and social impacts of all alternatives are described in detail in the DEIS/FEIS. ODFW's July 2, 2004 memo to the Forest Service (Appendix AA – Letter 77) describes the agency's preferred fish stocking strategy following a rotenone treatment; this strategy has been incorporated into Alternative 5 and analyzed in the FEIS.</p>
53	Fish Stocking & Contingency Plans	Alternative 3 described the stocking strategy of the “tui chub contingency plan” in more detail than alternative 2 by listing the species of predacious fish that would be introduced. But what is confusing about the contingency plan for alternative 3 is that it doesn't wait for tui chub to be rediscovered. Instead, predacious fish would be introduced “as soon as the food base recovered adequately to support them”. But the “Contingency Plan” is “to control tui chub populations” after they return. The FEIS should clear up this confusion. If you wait for tui chub populations to return before implementing the plan, how can you implement it as soon as the food base is recovered?	The FEIS includes language that clearly states under Alternatives 2, 3, and 5, that ODFW would stock Diamond Lake with some level of predacious fish following a rotenone treatment as soon as the food base recovered adequately to support them. The rationale for this action is that some of these fish would be available to serve as a potential biological control on tui chub, if the species survives in low numbers or recurs.
53	Fishing Boat Impacts	The DEIS failed to analyze the impacts to Diamond Lake from the fishing boats. Fish boats are a connected action to fisheries management. The higher the angler-day goal, the greater number of fishing boats. The Diamond Lake watershed analysis says: “A survey of the western shore by the Diamond Lake	Fishing and the actions that are connected with fishing including the use and storage of fishing boats are considered as past, present, and foreseeable future activities (See “Recreational Uses” in Cumulative Effects Tables in DEIS/FEIS) associated with this

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		<p>Ranger District in 1996 identified a large number of slips that have been developed since boats were introduced to the lake and in some cases appear to be expanding the surface of the lake.” The effect of this project on that problem should be addressed in the FEIS.</p>	<p>project and are considered in cumulative effects analysis in Chapter 3 of the DEIS/FEIS. Specifically, shoreline development, including boat slips were considered as part of the cumulative effects of the project on lake morphometry. Although some additional shoreline impacts could occur as fishing improves over time, potential adverse impacts would likely be limited due to oversight and management by the Forest Service.</p> <p>Page 209 of the Diamond Lake Lemolo Lake Watershed Analysis (WA) (1996) summarizes how recreation use influences lake shore erosion and makes the following recommendations related to slips on Diamond Lake: dispersed boat landings should be reduced and replaced by permanent docks; sharing of existing docks should be encouraged, remaining landings should be hardened with coarse gravel, and shoreline trees should be retained. According to Forest Service Recreation Specialist, John Wallig, these recommendations from the WA are being actively implemented at Diamond Lake. Annual inspections are conducted to monitor shoreline impacts, permittees are discouraged from creating slips and encouraged to share existing floating docks. The Forest Service issues permits for installation of all docks; the permits limit the size of docks and the dock policy encourages sharing of existing docks. Thus, although improved fishing opportunities associated with all action alternatives may have minor impacts on shorelines and riparian vegetation, due to ongoing and future oversight and management, these potential impacts would be limited in extent and severity.</p>
62	Flawed Bio-manipulation Hypothesis	<p>The main scientific literature the EIS cited for supporting the proposed biomanipulation is by de Bernardi &amp; Giussani (1990, “Are blue-green algae a suitable food for zooplankton? An overview” <i>Hydrobiologia</i>, 200/201: 29-41). This article identifies toxicity, shape and size of colonies, and poor digestibility as the main reasons why blue-green algae are generally <i>not</i> readily consumed by zooplankton. Referring to zooplankton</p>	<p>As stated in the DEIS/FEIS (DEIS pg. 146), results of studies investigating the suitability of blue-green algae as a food source for zooplankton have produced contradictory results. Although de Bernardi and Giussani (1990) provide information on the reason why blue-green algae in many cases are not consumed by zooplankton grazers, these authors state that under</p>

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		<p>consumption of blue-green algae, the authors conclude that "...the evidences that emerge from the literature are largely contradictory and confusing." ... "The literature consequently presents more of a puzzle than a clarifying picture." (page 39). The authors also state on page 32: "One prerequisite for biomanipulating a lake is the correct evaluation and forecasting of the extent of the changes in the trophic structure, and the direction they will take. In this respect, it is of great importance to understand if zooplankton herbivores can utilize the blue-green as food and, if so, the efficiency of their exploitation."</p> <p>However, the EIS provided only speculative support for the scientific basis for believing that eliminating the tui chub will in turn result in the elimination of <i>Anabaena</i> blooms in Diamond Lake. For this hypothesis to be true, a specific zooplankton species <i>must</i> be identified in Diamond Lake which: 1) is a dominant prey organism for the tui chub, 2) is a dominant predator of <i>Anabaena flos-aqua</i>, and 3) occupies the same ecological niche/habitat as both <i>Anabaena</i> and the tui chub. Unless all these essential characteristics are confirmed empirically in Diamond Lake through gut analyses, bench studies, field observations, etc., then the tui chub-zooplankton-<i>Anabaena</i> ecological control hypothesis is likely wishful thinking.</p> <p>The probability of finding a zooplankton species in Diamond Lake (or anywhere else in the world) that selectively feeds on <i>Anabaena flos-aqua</i> is highly remote at best. <i>Anabaena flos-aquae</i> is among the cyanobacteria species that produce nasty toxins in part as an evolutionary adaptation to avoid predation. Klamath Lake provides a good example, where the dominant, large zooplankton <i>Daphnia</i> consumes most algal species in the lake except the cyanobacteria <i>Aphanizomenon</i> – a species that also produces toxins, is not consumed, and therefore dominates the algal community. If a zooplankton species had co-evolved with <i>Anabaena flos-aquae</i> that then made the zooplankton immune to the toxin when consuming the cyanobacteria, then there is every reason to believe that this hypothetical zooplankton species would also be eliminated along with the tui chub following a rotenone application.</p>	<p>some conditions blue-green algae can be an important complementary food source for zooplankton herbivores. De Bernardi and Giussani (1990, pg. 30) state "A wide range of examples is available confirming a general pattern of blue-green algae reduction after fish removal and the consequent increase in filter feeding zooplankton". In addition, de Bernardi and Giussani conclude "it is important to stress that even if blue-greens cannot represent a completely adequate food for zooplankton herbivores when the condition of their population allows the grazing of planktonic herbivores, this, together with other environmental factors, can result in an efficient control of their density." (de Bernardi and Giussani, pg. 39). Several other published scientific papers are referenced in the DEIS/FEIS regarding the suitability of blue-green algae as a food source for zooplankton or how phytoplankton density, including blue-green algae, can be directly or indirectly reduced as a result of zooplankton grazing (DEIS pg. 146).</p> <p>The DEIS/FEIS does not state that <i>Anabaena</i> blooms will be eliminated in Diamond Lake. Under the action alternatives, the severity of the blooms are expected to decrease (DEIS pg. 43). The DEIS/FEIS references scientific studies that report declines in blue-green algae density and improved water quality following successful biomanipulation techniques (DEIS pg. 145-146). The DEIS/FEIS states that under Alternatives 2 and 3 (DEIS pg. 148) and FEIS Alternative 5 and for a period of time under Alternative 4 (DEIS pg. 150), phytoplankton biomass would likely be reduced with a corresponding increase in water quality. It is expected that under any of the action alternatives, the periods of lower phytoplankton density would also include lower densities of the blue-green algae. The TMDL modeling analysis by Eliers et al. (2003) estimates that removal of tui chub from Diamond Lake would result in a reduction in the average peak biomass of cyanobacteria (average over 8 years) from about</p>

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		<p>Furthermore, if this hypothesis were true, then there should be observable evidence in Diamond Lake. The tui chub inhabits the extensive macrophyte beds for breeding and refuge from predators. If this hypothetical zooplankton species did exist, then it should be absent among the macrophytes but more abundant in the open waters. If this hypothetical zooplankton species does selectively consume <i>Anabaena flos-aquae</i>, then this cyanobacteria should be absent in open water and prevalent in around macrophyte beds (where the tui chub is cropping down the hypothetical zooplankton species). On the other hand, if this zooplankton does not thrive in open waters, then it will not be able to affect <i>Anabaena flos-aquae</i> blooms in most of the lake.</p> <p>It is also important to appreciate that control of nuisance organisms through predator-prey relationships is never complete and rarely effective. Diamond Lake provides a good example of the difficulty. After stocking several strains and sizes of trout, along with chinook and steelhead, the Oregon Department of Fish and Wildlife (ODFW) concluded that no predator mechanisms will succeed in controlling the chub population. Unlike the well established trout-chub predator-prey relationship, the rotenone approach for controlling blue-green algae blooms assumes success across two trophic levels of predator-prey relationships - neither of which have been clearly documented empirically in Diamond Lake. And even if there were a zooplankton species capable of cropping <i>Anabaena flos-aquae</i>, the zooplankton's presence would not prevent blooms because in classic predator-prey relationships, increases in predator populations follow increases in prey populations. Unless this zooplankton species had an extremely rapid reproductive rate, there is no reason to believe its presence (if it survived the rotenone poisoning) would have a significant, long-term effect on an <i>Anabaena flos-aquae</i> bloom even if it could eat the algae.</p> <p>The EIS gives a 3-6 year target date (depending upon which of the four management options is selected) for the hypothetical zooplankton species to return to sufficient numbers to be able to crop reduce <i>Anabaena</i> blooms from their current 200,000 to 600,000 cells/mL summer values to below 15,000 cells/mL (the</p>	<p>20,000 kg to 4,000 kg (Eliers et al. 2003, pg. 67).</p> <p>Your comment that some studies have suggested that <i>Daphnia</i> cannot effectively graze on the blue-green algae <i>Aphanizomenon</i> is correct, however, often the reason has been associated with the fact that members of this genus form large, ungrazeable colonies that mechanically interfere with the filtering process (Lynch and Shapiro 1981). De Bernardi and Giussani (1990, pg. 30) reference studies where <i>Daphnia</i> grazed on single filaments of <i>Aphanizomenon</i>. Monitoring data from Diamond Lake indicates that <i>Aphanizomenon</i> has not been a major component of the phytoplankton assemblage of the lake. Although it is known that species within the genus <i>Aphanizomenon</i> are capable of producing toxins, many strains do not. In the case of Klamath Lake, the strain of <i>Aphanizomenon flos-aquae</i> that forms dense blooms in the summer is harvested as a human food supplement. Problems with blue-green algae toxins have occurred in Klamath Lake due to the development of another species of blue-green algae, <i>Microcystis aeruginosa</i> that produces toxins and is found associated with blooms of <i>Aphanizomenon</i>.</p> <p>The DEIS/FEIS references studies that demonstrate the role of zooplankton in the regulation of phytoplankton biomass (DEIS pg. 146). In addition, case studies are referenced that have shown following food-web manipulations including treatment with rotenone, blue-green algae densities have been reduced and significant improvements in water quality have been observed (DEIS pg. 146). The success of any of the proposed alternatives in reducing blue-green algae density would not be based on finding a zooplankton species that selectively feeds on <i>Anabaena flos-aquae</i>. The DEIS/FEIS points out various factors that affect phytoplankton community structure such as changes in the relatively availability of nutrients (particularly nitrogen and phosphorus) and the abundance and size</p>

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		upper limit for permitting human contact with the lake). If rotenone is applied in September 2005, then the earliest expected date (according to the EIS) for swimmers to use the lake will be in 2008. Based on the analysis and ecological issues raised above, however, this date may be overly optimistic.	<p>of zooplankton herbivores (DEIS pg. 143).</p> <p>The TMDL Modeling and Analysis by Eilers et al. (2003) points to the high biomass of tui chub in Diamond Lake as a primary factor that largely explains the frequency and density of the blue-green algae blooms in the lake. The results of the TMDL modeling analysis indicate that to meet water quality goals, it would be necessary to remove approximately 90 to 100 percent of the tui chub from Diamond Lake (Eilers et al. 2003, pg. 69).</p> <p>Based on the results of numerous scientific investigations, other biomanipulation projects, and lake modeling, we do not believe that the expected dates for improvements in the water quality of Diamond Lake under the action alternatives are overly optimistic.</p>
4	Forest Service Not Appropriate Agency	The Forest Service should not be involved with the issue of Diamond Lake.	Because the lands surrounding Diamond Lake are managed by the Forest Service, Forest Service participation in this project was required.
72	Future Rotenone Treatments	Unacceptable points associated with Alternatives 2 & 3: failure to acknowledge the cumulative effects of continually rotenoning the lake every generation.	The Forest Service considers it inappropriately speculative to assume the occurrence of future rotenone treatments at Diamond Lake. See the detailed response to Letter 53 under “Failure to Track Effects of Repeated Chemical Treatments”.
44	Goblin’s Gold	<u>Page 244, Chapter 3. Terrestrial Vegetation, Survey and Manage, Goblin’s gold:</u> The FEIS should elaborate on proposed monitoring and mitigation of potential impacts to the three sensitive vascular plants and two rare bryophytes found in the project area. It is recommended that all monitoring and mitigation referred to in Chapter 2 be reiterated in pertinent sections of Chapter 3 in the FEIS.	Appendix BB of the FEIS includes a monitoring plan for potentially impacted flora. The required mitigation measure for Goblin’s gold, detailed in Chapter 2, is summarized in Chapter 3 (DEIS pg. 244). In general for Chapter 3, the Forest Service chose to summarize and reference information on monitoring and mitigation detailed in Chapter 2 due to the large volume of the document.
72	Groundwater	Unacceptable points associated with Alternatives 2 & 3: No wells on the north end of lake to test groundwater flow direction have been studied.	<p>Groundwater monitoring wells were installed at appropriate locations at the north end of the lake, groundwater flow patterns have been evaluated, and additional monitoring and evaluation are planned.</p> <p>Monitoring wells were placed only in the unconsolidated materials surrounding the lakeshore (glacial drift,</p>

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			<p>lacustrine deposits, and Mazama ash-flow) to monitor seasonal fluctuations in groundwater flow within the shallow aquifer zone. As described in the DEIS/FEIS, the shallow aquifer, not the deep aquifer, has the potential to be affected by project alternatives.</p> <p>There is an andesite lava flow ridge (bedrock) along the northern shore of Diamond Lake that extends from immediately west of the Diamond Lake Lodge (where well MW-A1 is located) all the way to just east of the Lake Creek outlet; this ridge forms the northern lake shore. (See DEIS Figures 32. and 34 and Plate 1 in the Geology Report (DEIS/FEIS – Appendix C). Because groundwater movement through bedrock would be very limited, no impacts to the shallow aquifer are expected and thus, no monitoring wells were needed in this area.</p> <p>A seepage study described in the DEIS/FEIS was conducted on Lake Creek to provide information on groundwater flow patterns north of Diamond Lake. Additionally, monitoring wells designed to provide information on flows from the northern end of the lake were installed west of Lake Creek (MW-H1 and H2 and MW G-1 and G-2) and as described in the DEIS, these wells were dry. ODEQ and the USFS are currently working cooperatively to deepen these wells by an additional 30 feet. If wells remain dry as expected, at these extended depths, it would provide additional scientific evidence for the groundwater specialists conclusions that groundwater is not entering the shallow aquifer at the north end of the lake. If well extensions reach water, monitoring data will be collected (along with data from all wells) and analyzed and groundwater flow patterns reinterpreted prior to project implementation. However, as described in the DEIS (pg. 225) in the conclusions from the seepage study, “even if groundwater was migrating from the lake basin the area of MW-H1 and MW-H2 wells, it is not discharging into Lake Creek within the first six miles of the outlet, and therefore a rotenone treatment would have no</p>

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			deleterious effects on this reach. If groundwater discharged at a location further downstream, given the hydraulic conductivity of the shallow aquifer, the time required for a release to travel that distance, and the propensity for migration of rotenone to be severely retarded due to its strong tendency to attach to sediments, it is very unlikely that rotenone would discharge via the groundwater at a concentration that would negatively affect any receiving body of water”.
66	Human Health	The human health and safety risks under each alternative are well documented in the DEIS and clearly states the potential effects from rotenone treatments compared to algae toxins. ODFW strongly agrees that the current and predicted exposure of the general public to algae toxins as a result of any chub population remaining in the lake is very serious and unacceptable. In comparison, the potential short-term (less than one-month) risk to human health under a well-organized, controlled, and safety-oriented rotenone treatment to eradicate all of the chub is more responsive to the management requirements to meet the purpose and need to restore water quality and a safe environment for the recreational fishery and other uses in the project area.	Thank you for your comment and your participation as a Cooperating Agency on this project.
53	Human Health & Rotenone	The DEIS did not consider the effects of rotenone on the different types of humans that could come into contact with it, especially by washing with well water that could be contaminated. Is the DEIS analysis the same for grown men as it is for small children, pregnant women, or the very old or sick with lowered immune systems? What standard was used for a “non toxic” determination?	<p>No public contact with rotenone is expected. This is because of the strict controls that would be implemented with any rotenone alternative as thoroughly disclosed in the DEIS pages 319-327. Mitigation measures have been incorporated into the alternatives that involve rotenone. Pages 36 and 37 of the DEIS include the following measures: a) notification of the well users prior to any rotenone treatments, b) required use of bottled water that will be provided to all well users, 3) monitoring of well water to determine whether well contamination occurs and to determine when well use could resume, and 4) residents and businesses will be notified in advance and informed about what they can do to minimize pesticide exposure.</p> <p>The standards used for non-toxic determinations were established by the Environmental Protection Agency.</p>

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			<p>When EPA sets safe levels for tap water use, they build in a margin of safety. The margin of safety establishes a level much lower than any level that has been shown to result in a toxic response to long-term exposure studies of lab animals. The margin of safety is used to protect individuals who might be particularly sensitive or allergic to substances. Sensitive individuals are those that might respond to a lower dose than average, which includes women and children. Human susceptibility to toxic substances can vary by two or three orders of magnitude. Factors affecting individual susceptibility include diet, age, heredity, preexisting diseases and lifestyle.</p> <p>The margin of safety approach used by the EPA in establishing safe exposure levels takes into account much of the variation in human response. Since EPA has accounted for such variation by choosing very conservative levels of contamination, then no direct adverse effects to women, children, and other sensitive individuals are expected from any alternative that would apply rotenone following label directions.</p>
53	Human Health & Rotenone	Also of concern is liquid rotenone, which contains trichloroethylene, a known carcinogen. The DEIS brushes off the problem of pouring a carcinogen into Diamond Lake because it is “in the fuel of motor boats and as a result are commonly found in lakes where motorized activities occur.” Does trichloroethylene actually occur in Diamond Lake, or is this a generic excuse? The DEIS says that concentrations of trichloroethylene in Diamond Lake would be below the USEPA maximum contaminant level in drinking water. What size human was this standard set for?	<p>Full disclosure of the risks associated with the inert ingredient trichloroethylene can be found on DEIS pages 312-314 and 326.</p> <p>The concentrations of trichloroethylene are predicted to be below the maximum contaminant level based on monitoring of rotenone and its inert ingredients in nine actual rotenone treatments in California (DEIS page 312-313). These EPA established levels are as discussed above based on a margin of safety (See previous response).</p>
72	Impacts of Canal Construction & Drawdown	Unacceptable points associated with Alternatives 2 & 3: Impact of channel construction and usage to Lake Creek and the areas wetlands	Thank you for your comments. The DEIS/FEIS identify the potential impacts of a lake draw down on Lake Creek and associated wetlands. Following careful consideration of these impacts, the Responsible Official concluded that the potential benefits associated with successful completion of the project under Alternative 5

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			outweighed the negative consequences of the draw down.
44	Impacts of Drawdown	The discussion should address in more detail impacts to Lake Creek, as a result of sustained bankfull and/or flood flows and the subsequent drying of many miles of Lake Creek, and impacts to wetland habitats associated with Diamond Lake, Silent Creek, and Lake Creek. This discussion should also include methods to ameliorate anticipated impacts, and to mitigate and monitor for the unavoidable adverse impacts to plants, animals, riparian areas, wetlands, and aquatic ecosystems impacted by the proposed treatment.	<p>The body of the DEIS/FEIS contains what the Forest Service considered to be sufficient detail for the reader to fully understand the potential impacts associated with all alternatives without creating a document that was unacceptably voluminous. Additional details on potential impacts are documented in specialist’s reports and are included as Appendices to the document.</p> <p>Appendix BB of the FEIS documents proposed monitoring activities. Multiple project design features developed and reviewed by resource specialists in the Diamond Lake Work Group were incorporated into Alternatives 2, 3, and 5 to reduce the potential impacts of the lake draw down on the aquatic ecosystem as follows:</p> <p>Draw down design: timing, duration, and discharge rates documented in detail on Pages 23 and 24 of the DEIS are those considered by specialists to be the least impactful to Lake Creek and downstream ecosystems.</p> <p>Lake refill period: opening headgates to restore flow to Lake Creek as soon as Diamond Lake water is suitable for release is also designed to minimize impacts to Lake Creek.</p> <p>IDT members, DL Work Group specialists, and independent experts (i.e. Portland State University scientists, wildlife and botanical specialists) were consulted on the formulation of mitigation and monitoring activities. Suggested activities have been incorporated into the monitoring plan and Chapter 2 mitigation measures.</p>
44	Impacts of Drawdown	<u>Page 23, Chapter 2. Fall/Winter Lake Draw Down, first paragraph:</u> This paragraph begins a discussion of the drawdown of Diamond Lake to 8 feet from its normal summer levels over a period of time beginning around September 15 and ending around April 1. Maintaining Lake Creek at bankfull flows	The DEIS in the Streamflow Regime – Environmental Effects section (pgs 112-114) discusses the bankfull draw down flow and recognizes the potential of naturally occurring winter and spring runoff flows that would be greater than bankfull flow. The historic streamflow

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		<p>for the entire winter has the potential to produce numerous out-of-bank flood flows associated with seasonal storm events. Though it is difficult to estimate the frequency of these events, some discussion of methods of monitoring, limiting discharge beyond bankfull flows, and mitigation of these impacts is suggested. The DEIS discusses winter lake drawdown, but omits any discussion of impacts of ice and snow on winter operations. The FEIS should include an analysis of the impact of winter conditions on drawdown, and the resulting impacts to the lake ecosystem and species.</p>	<p>record from the Lake Creek gaging station shows that flow greater than bankfull is not uncommon. However, winter or spring runoff flows during the draw down phase would be passed as it naturally occurs and not added to a bankfull flow. If out-of-bank runoff floods occur, it would be the result of a natural occurring runoff flow and not because bankfull flow was added to the runoff flow. When winter or spring runoff is not occurring, flow would be limited to bankfull, which is not an out-of-bank flood flow condition in Lake Creek</p> <p>The FEIS describes that it would be necessary to maintain access to the canal gate during the winter months in order to accomplish lake drawdown and refill. Additionally it is acknowledged that the canal gate must be appropriately designed to operate during winter conditions. Although winter conditions present operational challenges, impacts of snow and ice are not expected to make drawdown or refill infeasible. Throughout the DEIS/FEIS, impacts to the lake ecosystem including flora and fauna are described on a year round basis.</p>
67	Impacts of Rotenone Treatment on Levels of Organic Matter	<p>Commenter is concerned that unharvested fish carcasses (particularly very small tui chub without well developed swim bladders) will contribute more organic matter to the lake and make the water quality situation worse.</p>	<p>The DEIS/FEIS acknowledge that for Alternatives 2, 3, and 5, unharvested fish carcasses would have a limited negative impact on water quality in Diamond Lake in the short-term. However, the Responsible Official identified Alternative 3 as the preferred alternative in the DEIS and Alternative 5 as the preferred alternative in the FEIS because he believes the long-term benefits associated with these Alternatives outweigh the short-term negative impacts.</p>
67	Impacts of Rotenone Treatment on Levels of Organic Matter	<p>One has to go back to botany one with a little physiology and anatomy to understand the ecology of Diamond Lake. One lowers the water level and uses rotenone. Instead of a growing season of 100 days it is lowered to 75 days. In the fall the aquatic plants go dormant and they need oxygen to respire. If not they are dead.</p> <p>It is a natural cycle for the submerged macrophytes to go dormant or die and the rotenone will intensify this action.</p>	<p>Lowering the level of Diamond Lake would have no effect on the length of the growing season. A lower lake level would however reduce the area of suitable habitat for aquatic macrophytes during the draw down period. Under Alternatives 2 and 3 in the DEIS/FEIS and Alternative 5 in the FEIS, plants rooted in the draw down zone could die due to desiccation during the summer and some plants could die due to freezing in the winter (DEIS pg. 157). These factors could</p>

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		<p>The vast majority of the organic matter in the lake both living and dead are plants, the macrophytes and the algae. So using rotenone will only increase organic matter in the lake and make matters worse than they are now.</p>	<p>potentially slow the recovery rate of these types of plants in this area. The DEIS/FEIS (DEIS pg. 97, 155) explains that the rooted submersed species would begin to die back and senesce naturally at about the same time as the lake level would be lowered. Therefore, an increase in decaying organic matter from aquatic macrophytes would be expected to occur naturally during the fall and winter seasons under any alternative including the No Action Alternative. As stated in the DEIS/FEIS (DEIS pg. 155), the proposed application of rotenone under Alternatives 2 and 3 and Alternative 5 in the FEIS would have no discernable affect on the macrophyte flora because the proposed rotenone formulations are not toxic to plants. In addition, the DEIS/FEIS (DEIS pg. 148) states that the majority of algae types found in Diamond Lake would likely have only a small to negligible direct effect from a rotenone treatment. As disclosed in the DEIS/FEIS (DEIS pg. 79), under Alternatives 2 and 3 and Alternative 5 in the FEIS, there would be a temporary increase in the rate and quantity of organic matter deposited into the sediments of Diamond Lake.</p> <p>Information is provided in the DEIS/FEIS (DEIS pg. 97), explaining that although decaying fish carcasses deposited on the lake bottom following a rotenone treatment would temporarily increase the deposition of organic matter, the release of nutrients from this source would be expected to have only a small affect on nutrient availability in the lake.</p>
67	Impacts of Rotenone Treatment on Wildlife	<p>Commenter is concerned that a rotenone treatment will adversely impact crayfish, otter, and beavers.</p>	<p>The DEIS/FEIS acknowledge that for Alternatives 2, 3, and 5, there would be negative impacts on numerous wildlife species including crayfish (benthic community), otter, and beaver. However, the Responsible Official identified Alternative 3 as the preferred alternative in the DEIS and Alternative 5 as the preferred alternative in the FEIS because he believes the long-term benefits associated with these Alternatives outweigh the short-term negative impacts.</p>

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67	Impacts of Rotenone Treatment to Macrophytes	If rotenone is used it would be an ecological disaster. The drawdown may harm the macrophytes found on the west shore waters.	The DEIS/FEIS acknowledges that there is the potential for negative impacts to aquatic macrophytes under all alternatives although the impacts under Alternatives 2, 3, and 5 are largely anticipated to be short-term. The Responsible Official identified Alternative 3 as the preferred alternative in the DEIS and Alternative 5 as the preferred alternative in the FEIS because he believes the long-term benefits associated with these Alternatives outweigh the short-term negative impacts.
72	Impacts to Inlets & Diamond Lake	Unacceptable points associated with Alternatives 2 & 3: Impact to Short Creek, Silent Creek, and Diamond Lake's aquatic biology and its capacity to "recover"	Potential impacts of all alternatives on the ecology of Diamond Lake and associated aquatic systems are disclosed in the DEIS. The Responsible Official, reviewed this analysis and identified Alternative 3 as the preferred alternative in the DEIS and Alternative 5 as the preferred alternative in the FEIS because he believes the long-term benefits associated with these Alternatives outweigh the negative impacts.
57	Inert Ingredients	The rotenone products will include dangerous "inert" ingredients that do not belong in our waterways;	The DEIS/FEIS describe potential effects associated with inert ingredients. Table 15 of the DEIS discloses that none of the inert ingredients are expected to persist in the waters of Diamond Lake for more than 3 weeks nor in the sediments for more than 8 weeks.
41	Lack of Agency Action	We recommend that the Forest Service focus on completing this EIS process and then cooperate with ODFW in preparing the lake for the rotenone treatment. Once the treatment is completed and the lake is healing, there should be an evaluation of why it has taken 8 or 10 years for your agencies to recognize that there is a problem and design a fix. Especially when it appears to us that this is essentially the same fix as was used for a similar tui chub problem in Diamond Lake as recently as 1954.	<p>The Forest Service is proceeding with the completion of the EIS and will cooperate with all Diamond Lake Work Group partners in the implementation of the selected alternative in the FEIS.</p> <p>Although, the many agencies with some jurisdictional authority over Diamond Lake have been aware of and concerned about the condition of the lake for many years, earlier restoration efforts were not successful due to the unanticipated high costs and complexity of completing this type of project within the context of current laws, regulations, and requirements.</p>
44	Lake Creek	Page 34, Chapter 2. Watershed Management, paragraph 6 and 7: The monitoring proposals at paragraphs six and seven will monitor landslides and the potential capture of Pit Lake by Lake Creek. The FEIS should address in more detail these monitoring plans and the contingency planning for eventual	The FEIS in Chapter 2 discusses the coordination of draw down flows during runoff events if channel response near Pit Lake occurs. Lake Creek bankfull flow condition was evaluated on the ground at the Pit Lake site and determined to not likely impact the

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		capture of Pit Lake as well as mitigation measures to aquatic and wetland resources of Lake Creek.	<p>channel because of the small increase in flow and velocity associated with typical bankfull flow in the High Cascades geology (see previous response regarding stream velocity).</p> <p>As described in an earlier response, all feasible project design features or mitigations measures for impacts to Lake Creek and associated wetlands that were identified by resource specialists on the IDT, DL Work Group, or by outside experts have been incorporated into the DEIS/FEIS.</p>
44	Lake Creek Analysis – Inconsistent Information	<p><u>Page 134 - 139, Chapter 3, Channel Morphology and Fluvial Erosion:</u> There appears to be some ambiguity in the assessment of channel morphology of Lake Creek. The DEIS identifies “relatively gentle stream gradients” and an “inherently stable channel” but with a “highly entrenched, very confined inner gorge, with side slopes in excess of 70 percent, and a large number of streamside landslides.” Lake Creek is reported to have on-going slope failures, mass wasting and channel adjustments in isolated reaches. The Forest Service’s Lemolo and Diamond Lakes Watershed Analysis (WA) (1998) refers to the reach above Sheep Creek as characterized by steep gradients, to 8 percent, with very confined channels, slopes in excess of 70 percent, and a “large number of streamside landslides” (p. 94). The WA continues discussing the reach immediately below Sheep Creek saying that data suggest this reach is accumulating sand and gravel from somewhere upstream and is sensitive to flow changes, “particularly with regards to bed and bank mobility.” The WA discusses two annual peak flow periods for Lake Creek. The largest peak flows occur during the November to February winter period, with a second smaller pulse of high water in June. The winter high flow period coincides with proposed draw down and could result in flows substantially higher than the anticipated bankfull flows should a winter storm event overlap draw down. The FEIS should include a more detailed analysis of the impacts to channel morphology from higher than anticipated flows under winter storm conditions.</p>	<p>The following documentation was prepared in response to your comment regarding inconsistencies between the WA and the DEIS. The WA has been updated to include current knowledge:</p> <p>Landslide frequency and potential sediment delivery to Lake Creek were investigated as part of the Diamond Lake Restoration Project EIS. The findings were different than identified in the Diamond Lake – Lemolo Lake Watershed Analysis. The following WA statement is taken from the document of pg. 94...</p> <p><i>"Field inventory identified several reaches of Lake Creek downstream of Diamond Lake and above Highway 138 as unique in terms of geomorphic development and sedimentary processes. The reach above Sheep Creek is characterized by steeper gradients (4-8 percent) and very confined channels that meet the traditional definition of inner gorge, with side slope in excess of 70 percent and a large number of stream side landslides."</i></p> <p>The WA geologist on the team previously informed Larry Broeker, Forest geologist that a chronological landslide inventory for the Diamond Lake - Lemolo Lake Watershed Analysis was not done since it was the professional opinion of the WA geologist that there were very few landslide features to delineate due to the relative flatness and minimal degree of dissection in the</p>

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			<p>landscape. In addition, there does not appear to be any written or graphical documentation that supports any findings or conclusions prepared by anyone that indicates that this confined reach of Lake Creek characterized as valley inner gorge hosts a "large number of stream side landslides".</p> <p>The following points support a different conclusion than was drawn in the WA:</p> <p>(1) Additional information stemming from the Diamond Lake Restoration Project, specifically aerial photo interpretation using low-level (1:4,000-scale) photogrammetry, does not support the existence of a "large number of landslides" within the valley inner gorge reach of Lake Creek above Sheep Creek. Field investigation made by Forest geologist, Larry Broeker, and project hydrologist, Steve Hofford, did not reveal the existence of a large number of landslide features.</p> <p>(2) Aerial photo interpretation and subsequent field investigations resulting from the Diamond Lake Restoration Project indicate that detected landslide features along Lake Creek, including those within the valley inner gorge reach, do not show clear evidence that a significant amount of landslide debris (sediment) has actually been delivered into Lake Creek as a result of the original 1954 draw-down event. Field observations reveal that much of the displaced material contained in these landslides was not directly delivered into Lake Creek as sediment, but rather much of the displaced slide mass was stored lower on the hill slope above the stream channel or deposited onto a terrace above high stream flows.</p> <p>(3) The age of landslide features delineated along Lake Creek, including three landslide features detected within the confined inner valley gorge, likely predate the time of the first draw-down of Diamond Lake; that most of these landslide features are probably not related to</p>

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			<p>management activities, but are the consequence of natural disturbance events in the landscape that occurred many tens, even hundreds of years ago.</p> <p>Therefore, new information from a recent investigation that was a part of the Diamond Lake Restoration Project NEPA work has established that the WA statement that "large number of stream side landslides" is not characteristic of the current situation along Lake Creek, including its confined inner valley gorge reach above Sheep Creek.</p> <p>The DEIS describes the streamflow regime and the low energy flow that is associated with bankfull flow in Lake Creek (see Streamflow Regime – Streams and Streamflow in the DEIS; pgs 108-110). The FEIS further describes low bankfull energy in terms of flow velocity and stream stage. These flow descriptions were previously discussed in response to a similar comment.</p> <p>The DEIS describes the existing Lake Creek erosional response in the Channel Morphology and Fluvial Erosion section (pgs 134-135). The channel Direct and Indirect Effects are discussed in a previous response to a similar comment.</p>
44	Lake Creek Dewatering	<p><u>Page 111 through 119, Chapter 3. Wetlands Hydrology:</u> This section of the DEIS contains numerous inconsistencies regarding the timing and duration of desiccation of Lake Creek and associated wetlands. For example,</p> <p><b>(1)</b> paragraph two (p. 113) states that Lake Creek would remain dewatered for approximately 2 months, from its mouth to the point where the canal enters Lake Creek. Figure 19 (p. 112) identifies this reach as being dewatered for 12-18 months.</p> <p><b>(2)</b> Paragraph three (p. 115) refers to little or no flow in 5.5 miles of Lake Creek. Two sentences later the reference is to an 8-mile <u>reach</u> of Lake Creek that will experience limited to no-flow.</p> <p><b>(3)</b> Paragraph five (p. 116) refers to the “unnaturally dry condition in Lake Creek” lasting about 2 months.</p>	<p>The FEIS will address the description of Lake Creek flow condition and timing for each project phase:</p> <ul style="list-style-type: none"> <li>▪ Draw down phase (about mid-Sept to June) initiates the project and would result in bankfull flow to higher, during runoff events, for the entire length of Lake Creek until the outlet dewateres, then the canal would function as the outlet for the remainder of the draw down;</li> <li>▪ Pass through phase (about June to mid Sept) would result in the natural flow through the canal down Lake Creek to Lemolo;</li> <li>▪ Canal closure phase (about mid-Sept to mid-Nov) would result in no flow from the outlet to Sheep Creek, very low flow (about 1 cfs) from Sheep Creek to Thielsen Creek, and lower than</li> </ul>

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		<p>(4) In the first paragraph on page 117, the last sentence refers to “wetland moisture in the Lake Creek area would not likely recover until well into the refill phase.”</p> <p>(5) Paragraph two on page 118 identifies about 5.5 miles of Lake Creek that “would not have connectivity of flow” and Thielsen Creek would be the “only meaningful contribution to Lake Creek 8 miles downstream.” Figure 19 (p. 112) appears to identify approximately 8 miles of Lake Creek that will have no connectivity of flow for at least 8 months.</p> <p>(6) Additionally, Figure 19 indicates the first 250 yards of Lake Creek will be dewatered for up to 18 months during the treatment of Diamond Lake. The FEIS should include a more consistent rendering of the timing and duration of desiccation of Lake Creek and associated wetlands.</p> <p>(7) This section of the DEIS does not sufficiently clarify impacts to Lake Creek and associated wetland areas from drawdown and subsequent desiccation, nor does it provide for any amelioration or mitigation for short or long-term consequences to resources of Lake Creek. Alternatives 2 and 3 would result in “bankfull flow for about 8 months or more.</p> <p>(8) Since any project that degrades parameters for waters already designated as “water quality limited” is generally not consistent with the Clean Water Act, the FEIS should elaborate on the means to overcome the short-term degradation of waters and wetlands associated with this project.</p>	<p>usual flow from Thielsen Creek to Lemolo;</p> <ul style="list-style-type: none"> <li>▪ Refill phase (about mid-Nov to Mar or Apr) would result in lower than normal flow from the canal to Lemolo with the natural outlet reconnecting with Lake Creek downstream as the final lake elevation is approached.</li> </ul> <p>In response to the specific comments that have been numbered for clarity:</p> <ol style="list-style-type: none"> <li>1. Lake Creek would be potentially dry from the natural outlet to the point where the canal enters this channel (approximately 1,400 feet of natural channel) for about 12-18 months once the lake is lowered 2-3 feet; the canal would operate as the outlet and be dewatered for about 2 months during the canal closure phase. Figure 19 identifies the dewatered condition of the natural channel not the canal.</li> <li>2. Lake Creek from the canal outlet to Sheep Creek (5.5 miles) would likely have “no flow” during canal closure for 2 months; from Sheep Creek to Thielsen Creek (about 2.5 miles and 8 miles downstream from the outlet), Lake Creek would have very low flow (about 1 cfs); the DEIS states that “limited to no flow condition for this 8-mile segment of Lake Creek” referred to the overall flow condition with Sheep Creek to Thielsen Creek considered the “limited” and the canal outlet to Sheep Creek the “no flow” condition.</li> <li>3. DEIS statement refers to the canal closure phase when “no flow” would be expected from the canal outlet to Sheep Creek creating a “dry condition”.</li> <li>4. DEIS statement refers to the refill phase when the lake is refilling and a smaller flow than historic flow is released to Lake Creek which would likely cause a low groundwater table adjacent to the channel and affect the recovery of wetland moisture near the stream. As the</li> </ol>

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			<p>lake approaches a refilled condition, more flow would be released until the natural flow condition is unrestricted and the groundwater and surface water naturally exchange for the spring period.</p> <p>5. DEIS statement that “about 5.5 miles of Lake Creek would not have connectivity of flow” refers to the canal closure phase (about 2 months) when this segment of stream (canal outlet to Sheep Creek) would likely have “no flow”. Figure 19 also identifies “no flow” for this same stream segment during canal closure phase. No other segment is identified with “no flow”. Connectivity of flow is likely to occur beyond Sheep Creek to Lemolo. Figure 19 also identifies connectivity of flow by showing some expected level of flow for the remaining length of Lake Creek to Lemolo.</p> <p>6. Figure 19 correctly displays that Lake Creek from the natural outlet to the point where the canal enters the channel would likely be dewatered for 12-18 months (occurring during draw down, pass through, canal closure, and most of the refill phase). However, Figure 19 does not display that the canal outlet would be dewatered for 2 months during the canal closure phase. This figure does display the canal length from lake to channel.</p> <p>7. Creek physical and chemical impacts are discussed in the DEIS under Streams and Streamflow (pgs 111-118), Water Quality (pgs 120-121, 123-127, 129-133), Channel Morphology and Fluvial Erosion (pgs 136-139) and in the Geology Report (Appendix C) and Stream Ecology Report (Appendix D). Groundwater and wetland drying is discussed under Streams and Streamflow (pg 116) and Groundwater Quantity – Groundwater Discharge and Recharge (pgs 230-232). Wetland biological habitat effects are discussed</p>

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			<p>under Terrestrial Environment – Wetland and under Wildlife – Crater Lake Tightcoil Snail (pg 289). Channel impacts also have been addressed by previous responses.</p> <p>The design features of the project provide mitigation to potential water resource effects. These features include timing of draw down to avoid delivering nutrient rich water to critical downstream locations where primary productivity would be potentially stimulated affecting pH and dissolved oxygen. The pass through phase during the summer would allow control of balancing inflow and outflow to Diamond Lake. The canal closure phase would occur when outflow from Diamond Lake can be stopped to retain the treated lake water until it is safe to be released. Refill phase would occur when seasonal precipitation is most likely to help refill the lake. The Lake Creek design flow for the draw down also recognizes the need to limit stream energy. Short-term water resource effects would be limited or mitigated under the design features and there would not likely be irreversible long-term consequences.</p> <p>8. The project design features include the timing of the draw down to avoid downstream summer water quality adverse impacts from Diamond Lake nutrient rich water. Although Lake Creek is listed for temperature exceedance, the project would not raise stream temperature but would temporarily lower stream temperature during the canal closure phase where Lake Creek flow would occur. Diamond Lake warm surface water would not be released, but the cooler flow from Sheep Creek and Thielsen Creek would probably dominate the reduced flow in Lake Creek downstream of Sheep Creek. The DEIS discusses the Thielsen Creek influence under “Streams and Streamflow” (pg 115) and “Water Quality” (pg 120-121). During</p>

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			<p>the other project phases, Lake Creek temperature would be unchanged from the current situation. Other water quality parameters would not be adversely affected. In the long-term (over 3 years), the downstream water quality is projected to improve at the watershed scale as Diamond Lake shows improvement after treatment.</p>
44	Lake Creek Cumulative Impacts	<p><u>Page 138, Chapter 3. Channel Morphology and Fluvial Erosion, Cumulative Effects:</u> The third paragraph of the Cumulative Effects section (p.138) discusses draw down events that were comparable to a 100-year flood flow. Please identify these flood flows and bankfull flows with actual volumes (cfs). The fourth paragraph of this section states that a “concern exists in that natural channel movements and migration of Lake Creek have been slowly encroaching towards the earthen berm that forms the eastern limit of Pit Lake No. 1. Sustained bank full flow conditions may possibly breach the dike and flow into Pit Lake No.1. However, any sediment delivered from this source would be minor.” The DEIS needs to elaborate on the hydrological consequences of capture of Pit Lake by Lake Creek. Paragraph five in this same section states that “stream flows at flood stage have the potential for triggering streamside slope failures and causing channel adjustments. However, these events are not predictable and when they occur, are expected to be within the range of natural variability.” This paragraph concludes on page 139 with “when combining the minimal effects ...and the lack of significant direct and indirect effects to Lake Creek, no cumulative effects are anticipated to occur.” It appears that these channel adjustments and streamside slope failures will not be within the range of natural variability given that Lake Creek will be at bankfull flow through the entire winter. Any additional runoff event, such as a rain-on-snow, will trigger elevated flood flows that will contribute to mass wasting and streambank failure. These failures would contribute significantly to the sediment budget and the potential degradation of water quality in Lake Creek and downstream. Additionally, substantial cumulative impacts are possible given channel instability identified in the WA. The FEIS should address these potential</p>	<p>The FEIS expands on the explanation of the draw down flow being comparable to a 100-year flood flow. The comparability is relative to the infrequent occurrence of the bankfull flow over months not volume of flow. Just as the 100-year peakflow has a 1 percent exceedance probability of occurring in any year, a bankfull flow occurring 7 to 8 months has a 1 percent or less exceedance probability for this period.</p> <p>The volume of bankfull flow is discussed in the Streamflow Regime – Affected Environment – Streams and Streamflow section in the DEIS (pg 109).</p> <p>The FEIS in Chapter 2 clarifies monitoring the bank condition at Pit Lake. The concern for Lake Creek capture into Pit Lake has been discussed in a previous response to a similar comment.</p> <p>The DEIS discusses the potential response of bank erosion in the Channel Morphology and Fluvial Erosion section (pgs 134-138). The effects discussions are identified under direct and indirect. Cumulative effects were not further discussed because of the limited number of other past, present, and reasonably foreseeable future actions other than the Diamond Lake Restoration Project, which has or would potentially influence the streamflow regime.</p>

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		cumulative impacts and produce measures for mitigating for these events.	
44	Lake Creek Discharge Rates	<u>Page 10, Chapter 1. Proposed Action: Fall/Winter Lake Draw Down:</u> The DEIS refers to a gravity-driven drawdown that would impact Lake Creek and occur at a discharge rate approximating a bankfull flow. The FEIS should refer to this flow in cfs for comparison to previous discharge rates in Lake Creek.	Chapter 1 provides a summary of the components of the proposed action (Alternative 2). A detailed description of the draw down under Alternative 2 is documented in Chapter 2. In Chapter 2 of the DEIS (pg. 23) and the FEIS, the discharge rate approximating bankfull in Lake Creek is described as roughly 110 cfs.
44	Lake Creek Erosion	<u>Page 136, Chapter 3, Channel Morphology and Fluvial Erosion, Direct Effects:</u> The Direct Effects discussion on page 136 dismisses potential effects of prolonged bankfull flow and the cumulative effects of storm flows as not likely to cause any new slope failure, mass movements or “widespread adjustments to stream channel shape, form and function.” The WA states that anecdotal evidence suggested that considerable sediment was mobilized along Lake Creek and likely deposited in Lemolo Lake following the 1954 treatment of Diamond Lake (p. 107). It continues stating that sediment accumulation in Lemolo Lake could increase markedly as a result of draw down of Diamond Lake (p. 107). Given the duration and magnitude of high flows proposed for Lake Creek, adjustments will occur to stream channel shape, form, and function. The FEIS should provide a more detailed discussion on potential channel alterations, mass wasting, and channel scour likely to occur in Lake Creek, and potential effects on Lemolo Lake.	<p>A careful and comprehensive evaluation of Lake Creek’s response to bankfull flow was done in the DEIS by evaluating streamflow and channel morphology (Streamflow Regime – Streams and Streamflow pgs 108-110 and Channel Morphology Fluvial Erosion pgs.134-140). A previous response in this table to a similar comment regarding channel impacts addressed these details.</p> <p>The WA states “that considerable sediment was mobilized along Lake Creek” in response to the draw down flow in 1954. However, the 1954 flow was almost twice the amount, <u>on average</u>, of the bankfull flow described for alternatives in this EIS. Because one of the stream objectives in this project was to avoid adverse channel impacts, the project design recognized the need to limit the flow or energy in the channel and thus the proposal extends the draw down over a long period of time. Bankfull flow is <u>not</u> considered a high flow that would adversely impact channel morphology. The term bankfull identifies the 1.5-year flow or the flow that has a 67% chance of being equaled or exceeded in any one year. The amount of water associated with the 1.5-year flow differs depending on the geology. For High Cascades streams such as Lake Creek, this is considerably lower than older geology as discussed in detail in the DEIS.</p> <p>A previous response to a comment on “Downstream Water Quality” (nutrient and sediment) pages 477-478 in this table, also included a discussion describing the</p>

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			1954 draw down flow in contrast to the bankfull flow described for this project.
57	Lake Creek Erosion	The preferred alternative will require an artificial flood (30-40 cfs above normal high flows, and lasting 8 months instead of 2 weeks, like an average high flow event) in Lake Creek causing nearly continuous erosion at 11 known erosion sites as well as other problems.	This subject has been addressed by previous responses to a similar comment under subject of concern “Downstream Impacts” on pages 474-475 of this table. Channel erosion was discussed in the DEIS in the Channel Morphology and Fluvial Erosion section (pgs 134-138).
39	Lake Recovery & Fish Stocking	<p>The proposal to essentially stock the lake with zooplankton or benthic invertebrates in the event of slow recovery (DEIS, p. 37, 166) is totally unacceptable. In the event monitoring reveals slow recovery, fish stocking should be eliminated until recovery occurs.</p> <p>Fish stocking should not occur the first year after treatment and only after zooplankton populations have recovered entirely, which may be up to 3 years after treatment. This will not only allow for better monitoring of water quality, but will also better allow surveys for, and elimination of, surviving chubs.</p>	<p>The monitoring/mitigation measure described on page 37 of the DEIS, refers to monitoring that would occur following a rotenone treatment and <b>prior to</b> ODFW’s restocking of the lake with fish. The intent of this measure is to facilitate recovery of these populations in the event that natural recovery is not occurring as expected. The FEIS clarifies this language.</p> <p>Throughout the EIS process, as documented in the DEIS/FEIS, ODFW has committed to utilize ecological indices of lake health including zooplankton populations to determine appropriate fish stocking levels for Diamond Lake. ODFW’s July 2, 2004 memo to the Forest Service (Appendix AA – Letter 77) reiterates their intention to implement an ecologically sound fish stocking strategy and describes the agency’s preferred fish stocking strategy following a rotenone treatment; this strategy has been incorporated into Alternative 5 and analyzed in the FEIS.</p> <p>As described in Chapter 2 of the FEIS in the Alternative 5 description, <b>“in compliance with the TMDL’s beneficial uses, appropriate stocking numbers and timing of fingerling size fish releases would not occur post-treatment until zooplankton levels and community composition fall within agreed ranges for supporting water quality recovery and the ecological health of the lake”</b>. Per this language provided to the Forest Service by ODFW and reviewed and approved by ODEQ, zooplankton populations must recover to a level that ODEQ believes would not impair</p>

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			<p>water quality recovery prior to stocking of the lake with fingerling trout. Appendix BB and Eilers (2004) describe proposed monitoring and how biological indices would be used to guide fish stocking in Diamond Lake to accomplish desired outcomes.</p> <p>However, following an analysis of historical data by Joe Eilers, in coordination with ODEQ and ODFW (9-20-04 meeting notes incorporated by reference), it is expected that ODFW would be able to stock the lake with a conservative number of fingerlings (as described in Alternative 5) in the first year following a rotenone treatment. According to John Blanchard, ODEQ, after looking at the data and comparing historical stocking rates after the last rotenone treatment, it is apparent that the amount of fingerling fish stocking ODFW is proposing under Alternative 5 would not impair water quality recovery and would facilitate achieving another of the beneficial uses of the lake that we are trying to recover- the recreational fishery.</p>
40	Lake Recovery & Fish Stocking	We support Alternative 3 with the stipulation that a sufficient period of time (certainly several years) be allowed after the use of Rotenone for the water quality to improve and the zooplankton to become re-established before any fish are reintroduced.	Based on a literature review (documented in the DEIS/FEIS), scientific analysis of historical data for Diamond Lake, and the professional opinion of resource specialists from multiple agencies on the Diamond Lake Work Group, it would not be necessary to delay fish stocking for an extended period of time (several years) in order for zooplankton populations to become reestablished or water quality improvements to occur in the lake following a rotenone treatment. Thus, as described in the DEIS/FEIS, monitoring and ecological indices would be used to ensure that fish stocking does not compromise water quality improvement, however, appropriate fish stocking would occur in a timely manner in order to meet the second objective defined the project purpose and need- an improved recreational fishery.

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43	Lake Recovery & Fish Stocking	Page 177 talks about leaving the lake fishless for a "period of time". It should be fishless for at least two or three years both to monitor water quality and also to have much better conditions under which to look for surviving chubs. Any fish found would not have to be sorted as to chub or trout since it is highly unlikely that any trout will survive the poison, but chubs may for a variety of reasons.	<p>As detailed in previous responses to similar comments, ecological monitoring would occur prior to fish stocking in the year following a rotenone treatment under Alternatives 2, 3, and 5 and would be used to determine appropriate timing and numbers for fish stocking. However, an extended delay in fish stocking is not considered necessary in order to achieve improved water quality and would not be consistent with achieving the objective of an improved recreational fishery</p> <p>As detailed in Appendix BB of the FEIS, ODFW would complete multiple annual monitoring activities in order to provide effective monitoring related to the possible presence of chub in the lake in the years following a rotenone treatment.</p>
53	Lake Recovery & Fish Stocking	If rotenone is used, the lake should be returned to a healthy state before any fish stocking occurs. The ODFW should not restock the lake immediately by "adding species of zooplankton from appropriate sources". Artificial stocking of zooplankton is unacceptable. This does not meet the DEIS need for "improved water quality at Diamond Lake". Native zooplankton should be allowed to recolonize the lake. The DEIS should have at least considered an alternative that allowed a natural recovery of zooplankton to healthy populations. Trying to eek out a recreational fishery "while still allowing for recovery of zooplankton" appears greedy.	<p>The monitoring/mitigation measure described on page 37 of the DEIS was not designed to allow the lake to support fish more quickly. The measure refers to monitoring that would occur following a rotenone treatment and prior to ODFW's restocking of the lake with fish. The intent of this measure is to facilitate recovery of these populations in the event that natural recovery is not occurring as expected. Based on recent information, given the extended period of time that the zooplankton community has been negatively impacted by the tui chub population in Diamond Lake, it is possible that for some desirable large-bodied zooplankton species viable resting stages (eggs) may no longer exist in the sediments of the lake (Pers. comm., Allan Vogel, Zooplankton Specialists, 09-25-04). Thus, active recolonization of some species may be needed irregardless of proposed lake treatments or fish stocking strategies.</p> <p>As described in a previous response, according to ODFW, in compliance with the TMDL's beneficial uses, appropriate stocking numbers and timing of fingerling size fish releases would not occur post-treatment until zooplankton levels and community composition fall</p>

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			within agreed ranges for supporting water quality recovery and the ecological health of the lake. As detailed in the DEIS/FEIS and in previous responses, ODFW has made and reiterated a commitment to utilize ecological indicators to guide salmonid stocking in Diamond Lake.
58	Lake Recovery & Fish Stocking	Water quality in Diamond Lake is dependent on the rapid recovery of the zooplankton population. This recovery can be a natural process, and greatly impacted by the fish management plan. It is acknowledged that the fish stocking plan in Alternative 2 would result in slower recovery of the zooplankton population. Reference is made to “an ecologically-based index for guiding fish stocking decisions” (footnote 29, Page 100) and monitoring the rate of zooplankton recovery with potential augmentation “from appropriate sources” (Page 37). <u>The fish stocking strategy should be dependent on the recovery of the zooplankton and resultant water quality improvements, not vice-versa.</u> Alternatives 2 and 3 offer only a limited range of options; a third fish stocking alternative should be included, which is based on the zooplankton recovery. This could include no stocking at all for a period of time; the use of Alternative 3 strategy for a couple of years if establishment of a sport fishery is that high a concern, followed by a conversion to the Alternative 2 strategy upon complete recovery of the zooplankton.	<p>In response to your comment and similar comments from others, Alternative 5 includes the following language that clearly states ODFW’s intentions:</p> <p>In compliance with the TMDL’s beneficial uses, appropriate stocking numbers and timing of fingerling size fish releases would not occur post-treatment until zooplankton levels and community composition fall within agreed ranges for supporting water quality recovery and the ecological health of the lake.</p>
58	Lake Recovery & Fish Stocking	Recommendation: Develop a revised alternative which clarifies that recovery of the zooplankton population, with the associated water quality benefits, is a primary consideration in the fish-stocking strategy. Utilize augmentation of the zooplankton to jump-start the recovery.	<p>Alternative 5 of the FEIS includes language specific to fish stocking and zooplankton recovery.</p> <p>Alternatives 2, 3, and 5 of the FEIS incorporate a monitoring/mitigation measure to address enhancement of zooplankton recovery prior to fish stocking, if natural recovery is not occurring as expected.</p>
75	Lake Recovery & Fish Stocking	<p>Fish should <u>not</u> be restocked in Diamond Lake after the rotenone treatment <u>until</u> the water quality and zooplankton populations have recovered (or nearly recovered) to levels that existed before the original stocking.</p> <p>I am sure there will be extreme political pressure to quickly restock the lake and result in a lost opportunity for long-term restoration of the lake.</p>	Thank you for comment. See previous responses to similar comments above.

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67	Lake Water Level Management	Return the lake to prelevels but not all at once because some of the shallow macrophytes may be rare with a high water level of >50 years. Lower the lake in late summer but before the strong north winds die down. That will make beaches where the dead or floating macrophytes can gather on the pumice beach lakeshore with wind and current depositing them there in windrows. This natural action will get them ashore instead of sloshing back and forth in a full lake with nowhere to go.	As described in the DEIS/FEIS, ODFW has an existing water right to store water above the normal lake surface. The water right allows ODFW to store a maximum of 5,800 acre-feet in Diamond Lake. The stored water is released during the dry season to supplement the flow in the North Umpqua River for downstream diversion and use at the Rock Creek Fish Hatchery. The Forest Service included this past, present, and reasonably foreseeable action in the cumulative effects analysis for this project. However, changing water rights to “return the lake to prelevels” is beyond the scope of this document.
44	Large Wood Mobilization	<u>Page 203, Chapter 3. Fish and Fish Habitat, Lake Creek, Indirect Effects:</u> The DEIS states that Lake Creek is near reference conditions for large wood with abundant amounts of large wood throughout most of the stream. This large quantity of wood results from generally stable stream flows and the streams inability to scour. Paragraph three states that the “large wood amounts and stability would not be expected to change substantially in Lake Creek as a result of lake draw down.” Large quantities of wood were reported to be in Lake Creek in 1954 prior to the earlier treatment of Diamond Lake, however, at that time we had no roads or highways, no culverts, no Lemolo Lake, and no hydropower operations downstream. The FEIS should elaborate on the likelihood that extended bankfull or flood flows may be able to mobilize this wood and the potential impacts to roads and culverts downstream, as well as to the operation of Lemolo Lake by PacifiCorp.	The DEIS/FEIS provide additional analysis related to the mobilization of down wood and potential impacts to downstream roads and culverts in a different section of Chapter 3. DEIS pages 134-139 under the Channel Morphology and Fluvial Erosion, address the issue referenced in your comment. A monitoring/mitigation measure is included in the DEIS/FEIS to address potential culvert plugging. To provide additional clarity, language has been added to the FEIS concerning the potential for down wood mobilization to impact Lemolo Lake and downstream hydropower operations.  As discussed in the DEIS (see Streamflow Regime – Affected Environment – Streams and Streamflow section; pg 109) and expanded on in the FEIS, the bankfull flow in Lake Creek for the High Cascades geology does not have enough stream power to cause adverse large wood movement. Bankfull flow over the draw down phase for this project would range from 0.3 to 1.0 foot above the long-term monthly average stream stage (depth) from September to April (as identified by the streamflow measurements at the gaging station). Only during storm or spring runoff events would the stream level be higher, which would occur as a pass through flow to simulate the natural runoff.
44	Lemolo Lake	<u>Page 169, Chapter 3. Lemolo Lake, first paragraph:</u> The drawdown of Diamond Lake will flush nutrient-rich waters at high flows for 6 months into Lemolo Lake. Subsequent discharge of	The DEIS (pg. 27) and FEIS describe that monitoring of water quality in Lemolo Lake would occur periodically throughout all phases of project implementation and

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		<p>nutrient-rich waters after treatment are also expected to flow into Lemolo Lake and may produce direct and quantifiable effects to Lemolo Lake over the short-term. The Department suggests the incorporation of monitoring proposals into alternatives for the FEIS to quantify these impacts and mitigation for any adverse impacts that may occur.</p>	<p>post-project. Appendix BB of the FEIS includes a supplemental monitoring plan that provides additional detail on monitoring parameters, timing, and phases of implementation when monitoring of Lemolo Lake would occur. Project design features (i.e. timing of the draw down, removal of live and dead fish biomass, cooperation with PacifiCorp) discussed in detail as a response to Letter 68, “Downstream Nutrient Loading”, represent the primary means of reducing potential adverse impacts associated with a draw down and rotenone treatment. No additional mitigations were identified in your comments, by IDT or DL Work Group specialists, or other specialists consulted on the project.</p>
37	Length of Lake Drawdown	<p>Why cant’ we start the draw down in the Spring or early Summer of the same year as the treatment?</p> <p>1) You could coordinate the draw down with the Spring snowmelt. If it’s a high snow pack year start the draw down after the snow melt in June or July. If it’s a low snow pack year start the draw down after the snowmelt in May or June. By coordinating the draw down with the snowmelt all you’re doing is controlling the high water run off to last a little longer than normal.</p> <p>2) As an avid river runner we wait years and years for a high water run-off in the Spring. A high water run-off in the Spring has no negative impact on the river corridor. An expanded high water run-off down Lake Creek and on to the North Umpqua would have a positive long-term impact on the river corridor for years to come. On the Colorado River they recently did a controlled high water run-off because they found out a high water run-off has a positive effect on the corridor.</p> <p>3) Having a shorter draw down period would have less of an impact on Diamond Lake Resort. The Resort has had major set backs because of the decline in fishing and water quality so the shorter the draw down, the less of an impact it would have on the Resort.</p> <p>4) As a Summer homeowner we’re expecting to lose our well, at</p>	<p>The Forest Service and our partners on the DL Work Group recognize that there are both substantial inconveniences and economic impacts associated with having a gradual drawdown over an extended time period. On June 18, 2004, the Forest Service mailed a letter to Diamond Lake Summer Home Owners that included a summary of the potential inconveniences to this group that would likely result from a drawdown and rotenone treatment at Diamond Lake. However, the Responsible Official elected to complete the proposed drawdown for all of the following reasons:</p> <p>1. It was considered unacceptable to discharge additional nutrient rich waters from Diamond Lake during the summer months when they have the greatest potential to negatively impact water quality in downstream waterbodies (Lemolo Lake and North Umpqua River) that are currently on the 303(d) list of water quality limited water bodies.</p> <p>2. Flooding of Lake Creek was considered unacceptable for a variety of reasons. Impacts to cultural resources associated with this type of flood event were identified as a concern in earlier NEPA efforts and during the pre-NEPA public involvement process for this project. Higher flows associated with flooding would increase risks to the Lake Creek stream</p>

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		<p>some point during the draw down. With a well of approximately 50 to 60 feet deep we could be without water for a period of 8 to 12 months. Without a well we will have no drinking water and no toilet facilities. A lot of cabin owners removed their outhouses in previous years as they installed septic systems. Without a well our septic systems are not usable. Yes I understand the Forest Services plans to provide us with drinking water, but what about septic systems? As cabin owners we're prepared to assist and make sacrifices to make this project proceed. However a shorter draw down period would lessen the impact on cabin owners.</p> <p>5) During the treatment and draw down of the lake in 1954, the length of the draw down was less than 60 days. Yes I understand there is a different set of concerns now, but the length of your draw down is excessive.</p>	<p>channel, road crossings, and downstream water resource values; bankfull flows proposed under EIS alternatives minimize these risks.</p> <p>3. Having the lake level reduced during the entire summer prior to a fall rotenone treatment would serve multiple beneficial functions:</p> <ul style="list-style-type: none"> <li>• It would enhance effectiveness of fish biomass removal efforts</li> <li>• It would promote drying of aquatic macrophytes (tui chub habitat)</li> <li>• It would facilitate timely collection of necessary data to accurately design the rotenone treatment prescription: i.e. tui chub bioassays, pH, temperature, volume, etc.</li> <li>• It would ensure adequate time for “construction” of infrastructure to complete application of rotenone</li> <li>• It would allow adequate time for Diamond Lake Resort to complete their proposed “connected actions”.</li> </ul>
35	Length of Lake Drawdown	<p>We <u>strongly</u> disagree with the idea of an eighteen (18) month draw down. The 1954 procedures should be repeated. They were very successful. The shorter period of time as in 1954 would minimize the health hazards and be much kinder to the environment over the long term.</p> <p>The flooding of Lake Creek in a <u>rapid draw down</u> could actually be beneficial. Flooding is a natural phenomenon, and there is evidence that it helps sustain a balance between Aquatic plants and insects in stream ecosystems. There were no reports of damage to the stream in 1954 or 1964.</p> <p>The eight (8) foot draw down of the lake for a full summer would exacerbate the decline in water quality and potentially increase the toxic algae blooms that have forced the lake's closures to protect public health in the summers of 2001, 2002, 2003.</p> <p>It seems to us that with 29% less water in the lake, the water temperature would rise more rapidly and stay warmer longer</p>	<p>Please see the above response for an explanation of why the Forest Service and Diamond Lake Work Group partners believe a gradual extended drawdown is appropriate.</p> <p>While there were no reports of damage to Lake Creek following the drawdown in 1954, no monitoring data regarding conditions in the channel prior to and following the treatment could be found.</p> <p>A lower volume of water in the lake could result in a small increase in temperature of the epilimnetic water during the summer draw down period. This potential effect is disclosed in the FEIS. Although an increase in surface water temperatures could be beneficial to potentially toxic blue-green algae, the development of bloom conditions is the result of multiple factors in addition to temperature (DEIS pg. 143). In the long-term, all of the action alternatives are intended to</p>

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		<p>thus creating a greater health hazard from algae. This past summer (2003) there were more <u>dead Tui Chub</u> in the water along the shore of the lake than we had seen before, thus creating another potential health hazard.</p> <p>The Ecosystems of the Diamond Lake Wetlands would be more severely impacted by a long draw down, and their desiccation would be greatly increased, creating negative conditions that had never existed before.</p>	<p>reduce the severity of blue-green algae blooms resulting in fewer lake closures and a reduced public health hazard.</p> <p>Impacts to wetlands associated with the proposed drawdown are described in detail in the DEIS/FEIS. Although short-term negative effects are expected, the project botanist concluded that there is a moderate to minimal risk that long-term negative cumulative effects would occur (DEIS pg. 254). Flooding of Lake Creek wetlands that would occur under a rapid, high flow scenario could also result in negative impacts to wetland ecosystems.</p>
65	Long-Term Management	Any Management Plan must look further than 6 years, since treatment effects will continue for decades and the return of tui chub is likely, with so many chub sources nearby. I would like the Management Plan to try to establish some kind of competitive balance among fish species and other forms of aquatic life, rather than resorting to the drastic use of rotenone.	<p>Development of a long range management plan is outside the scope of this EIS as long range management planning occurs during the Forest Planning process. The Umpqua National Forest LRMP is expected to begin revision in 2008.</p> <p>All of the action alternatives describe activities that would occur over the seven-year lifetime of the EIS. Reasonably foreseeable future actions that would occur beyond the seven-year time frame are incorporated into cumulative effects analysis for all alternatives. As documented in the DEIS/FEIS, the Forest Service considers it likely that tui chub or other nuisance species may again be introduced to Diamond Lake at some unknown point in the future. However, as documented in previous responses in this table, assuming future rotenone treatments is considered speculative.</p>
72	Long-Term Management	<p>We recognize that Diamond Lake's water quality is degraded to an unacceptable level, resulting in negative impacts to both human health and the ecology of the lake and the connecting Umpqua watershed. We also recognize that these serious water quality issues stem directly from past agency management actions and the impacts of additional human activities.</p> <p>Diamond Lake is naturally a fishless lake that has been</p>	Thank you for your comment. The Forest Service acknowledges that we have a responsibility to work cooperatively with all of our partner agencies to ensure the future ecologic and social health of the Diamond Lake area. However, development of a long range management plan is outside the scope of this EIS as long range management planning occurs during the Forest Planning process. The Umpqua National Forest

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		<p>extensively managed as a recreational fishery of rainbow trout with economic outcomes. It is now a very compromised system whose poor water quality issues are impacting the surrounding ecosystem and economy. As the lead management agency, the U.S. Forest Service has an obligation to evaluate and mitigate this degradation issue to fulfill a variety of regulatory goals for the many “recreational” and ecological uses of this lake. Developing a long-term sustainable management plan that includes improving the lake’s water quality, sustaining a diverse fishery, and educating the visitors and residents of the lake how to maintain both, must be the goal of the Diamond Lake Restoration Project. Another “quick fix” attempt including aquatically toxic chemicals, extensive channel construction, and massive alterations to the normal hydrologic system perpetuates the poor management techniques that got us to where we are today.</p> <p>We ask that you find a long-term management plan for Diamond Lake, where people can fish and swim in clean water and have fun, but where we are not forcing the lake to give us more then it can sustain in perpetuity.</p>	<p>LRMP is expected to begin revision in 2008.</p>
53	Maps	<p>We would appreciate a more detailed map of the project area. The DEIS referenced many places that were not included on any map in the documentation. For instance, maps could show:</p> <ul style="list-style-type: none"> <li>• Areas of rotenone treatment (including Short Creek, not on any map in the DEIS);</li> <li>• How much of the creeks would receive treatment;</li> <li>• The location of Two Bear Creek where work will remove sediment;</li> <li>• Approximate shoreline after the lake is lowered (vs. before the lake is lowered);</li> <li>• The location of the canal, the position of the head gates, the canal from the lakeshore to the outlet into Lake Creek, and from the lakeshore into the lake, as described on page 22 and 23;</li> <li>• The location of the wetland expansion proposal;</li> <li>• The location of the 5-6 foot waterfall described on page 29;</li> <li>• Horse and Teal Lakes where amphibians could be killed, and Long Marsh, Pitt Lakes,</li> </ul>	<p>Additional project area maps are included in Chapter 2 of the FEIS in response to your comments.</p>

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		and Three Lakes where species will be used to restocked Horse and Teal Lakes.	
44	Measures	<u>Page 7, Chapter 1. Measures, paragraph 1:</u> The DEIS identifies Measures without units or thresholds and Post-Project Goals that do not match the referenced measures (specifically pH). The FEIS should adjust post-project goals throughout the document to reflect measures they are quantifying.	The FEIS includes units with measures (where feasible) and identifies “Post Project Goals” as “Thresholds”. Your suggested correction regarding pH has been incorporated into the FEIS.
44	Mitigation and Monitoring	Monitoring and mitigation of some impacts are identified in Chapter 2 under Best Management Practices but are not carried forward into the more detailed discussions of Chapter 3. The FEIS should include monitoring and mitigation for specific actions under discussion in Chapter 3, and reiterate and elaborate on these topics in specific sections.	Thank you for your comment. In general for Chapter 3, the Forest Service chose to summarize and reference information on monitoring and mitigation detailed in Chapter 2 due to the already large volume of the document.
39	Monitoring	Water quality, phytoplankton, zooplankton and benthic invertebrate monitoring of Diamond Lake should continue permanently, not just for the proposed minimum five years.	As documented in footnote 12 on page 28 of the DEIS, a five year minimum monitoring time period for these parameters is referenced in the alternative description because this represents the normal lifetime of an EIS. However, it is anticipated that this monitoring will occur well beyond 5 years.
44	Monitoring	We recommend that details on the monitoring and contingency planning for tui chub re-introduction be incorporated into discussions under action alternatives in Chapter 3.	Appendix BB of the FEIS provides additional details on monitoring and tui chub contingency activities. References to monitoring and tui chub contingency measures are included in Chapter 3 discussions where necessary to facilitate understanding of the concepts.
53	Monitoring	Under alternative 2, the 100,000 angler day goal would only change if monitoring data showed it was not “ecologically appropriate”. We could not find this threshold defined in the DEIS. It should be in the description of alternative 2. The FEIS should also explain why additional monitoring is needed, after almost 100 years of fish stocking. Don’t you know by now what is ecologically appropriate? The EIS should also explain how the monitoring data will be made public and at what intervals.	The DEIS does not say that the 100,000 angler day goal would only change if monitoring data showed it was not “ecologically appropriate”. The DEIS says: “ODFW would utilize monitoring data and adaptive management to determine an ecologically appropriate fish stocking strategy for Diamond Lake for the years following a rotenone treatment. In general, Diamond Lake would be managed for hatchery production under the basic yield alternative of Oregon’s Trout Plan (OAR 635-500-0703 and OAR 635-500-0115). However, appropriate numeric goals for annual fish stocking and harvest, post-project, would be determined by ODFW using existing data and knowledge, ecological indices of lake health (i.e., zooplankton and benthic invertebrate populations), annual fish monitoring data and

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			<p>applicable nutrient loading allocations provided in ODEQ’s pending TMDL publication.”</p> <p>A definition for what the Forest Service considers to be an ecologically appropriate fish stocking strategy is included in Chapter 2 of the FEIS.</p> <p>As mentioned, ODFW has acquired substantial data and knowledge from their past experience with fish stocking. However, post-project monitoring is necessary because Diamond Lake is currently in a state of ecological imbalance, number, size, and species of fish that exist in Diamond Lake have a large potential influence on the health and function of the aquatic ecosystem, and a rotenone treatment represents a major disturbance/disruption in the ecosystem. Under these circumstances, it is very important to monitor and respond to the changes in the recovering ecosystem that may occur with the reintroduction of a predator (trout).</p> <p>Appendix BB to the FEIS includes a detailed monitoring plan with a proposed reporting schedule. The FEIS also notes that monitoring data will be kept on file at ODFW, ODEQ, and USFS offices (Diamond Lake Ranger District) and would be available to the public during normal business hours.</p> <p>Data managed by ODEQ can be obtained as follows:</p> <ul style="list-style-type: none"> <li>• Current and future DEQ Diamond Lake data is stored in DEQ’s LASAR database. It can be accessed through the DEQ website at <a href="http://www.deq.state.or.us/wq/lasar//LasarHome.hm">http://www.deq.state.or.us/wq/lasar//LasarHome.hm</a></li> <li>• Final reports from sampling events can be requested from : Oregon Dept. of Environmental Quality Laboratory-Technical Services Section 1712 SW 11<sup>th</sup> Ave.</li> </ul>

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			<p>Portland, OR 97201 503 229-5983</p> <p>Continuous data cannot be accessed through LASAR but data requests for that information can be e-mailed to Dan Hickman: <a href="mailto:hickman.dan@deq.state.or.us">hickman.dan@deq.state.or.us</a> or Steve Mrazik: <a href="mailto:mrazik.steve@deq.state.or.us">mrazik.steve@deq.state.or.us</a></p> <ul style="list-style-type: none"> <li>Copies of the “Diamond Lake Database, Version 3.2: December 2003” can be requested from David Gilbey at <a href="mailto:gilbey.david@deq.state.or.us">gilbey.david@deq.state.or.us</a></li> </ul>
54	Monitoring	<p>Serious monitoring to document the environmental effects of the treatment are absolutely necessary and protocols need to be established and vetted prior to the chemical use.</p> <p>It appears that the ODFW and other partners will be involved to do the monitoring. This information should be made transparent, with the public involved in interpreting the results and understanding the process.</p>	Appendix BB to the FEIS includes a detailed monitoring plan. The FEIS notes that monitoring data will be kept on file at ODFW, ODEQ, and USFS offices (Diamond Lake Ranger District) and would be available to the public during normal business hours.
68	Monitoring	<p>A critical element in any successful adaptive management strategy is the implementation and interpretation of an effective, well designed monitoring plan. This is particularly true in a case such as the proposed project, where there is some uncertainty associated with the outcome of the proposed activities on Diamond Lake, Lake Creek, Lemolo Lake and the North Umpqua River. We are pleased that the EIS indicates that post-treatment monitoring would be conducted, as we agree that it is needed to determine the success of the project and provide the needed feedback to make any needed changes to management strategies. We are concerned, however, that the draft EIS provides only very general descriptions of monitoring activities that would be undertaken. Discussions on pages 27 through 29 of the draft EIS state that monitoring would be conducted “periodically” or that “extensive” monitoring would be conducted, yet the details of the efforts are not presented. We believe that it is essential that the specific details of the monitoring efforts to be conducted be defined so that consistent and meaningful information is generated to support the adaptive management strategy.</p>	The Forest Service and DL Work Group partners also recognize the importance of monitoring in a project of this scale. Per your comments and those of other members of the public, Appendix BB of the FEIS includes a site-specific monitoring plan.

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68	Monitoring	<p>We understand that a monitoring plan is currently being developed for the project. We recommend that such a plan be completed and included as an appendix to the final EIS (and summarized in the Record of Decision) for the project. We believe that appending the plan to the EIS provides the public with an opportunity to assist in developing and refining the elements of the plan which can potentially result in a better plan. We recommend that the following general components be included in the monitoring plan:</p> <ul style="list-style-type: none"> <li>•<i>Identification of Parameters or Resources to be Monitored</i> – The monitoring plan should specifically identify what is to be measured. For example, if water quality is to be measured, the specific water quality parameters (e.g., pH, dissolved oxygen, etc.) should be identified. Locations where such measurements would be taken should also be identified.</li> <li>•<i>Monitoring Methods to be Used</i> – The monitoring methods we are most familiar with are implemented using Standard Operating Procedures (SOPs) which outline how things are to be done in a consistent, repeatable manner. Without SOPs, monitoring approaches could be applied haphazardly with the concomitant inconsistent reporting of the findings from that monitoring. We recommend that SOPs be contained in the monitoring plan or identified as being available by reference.</li> <li>•<i>Monitoring Frequency, Duration and Reporting of Results</i> – The monitoring plan should specify the frequency of the monitoring efforts and identify the time-frames within which results would be reported. We suggest that the monitoring plan identify the intended recipients of any monitoring reports and how the reports would relate to evaluating the relative successes and failures of project implementation. We also suggest that the plan identify the duration of the monitoring effort. While the draft EIS indicates that some of the proposed monitoring would be conducted for a “minimum of five years,” we recommend that the duration of monitoring efforts be tied to the specific resources or parameters being measured and the reason for measuring them.</li> </ul>	<p>Thank you for your recommendations. Appendix BB includes a monitoring plan that responds to your comments.</p>

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		<p>•<i>Definition of Roles and Responsibilities of Involved Parties</i> – The monitoring plan should identify the parties that would be involved in the monitoring efforts and establish their respective roles (i.e., who will do what). This is particularly important in efforts that involve more than one agency and ensures that roles and expectations are established at the onset of the monitoring program.</p> <p>We note that recent work by Eilers (2003) presents an “ecological status index” that utilizes multiple indicators of ecological conditions that are designed to guide fish stocking practices in Diamond Lake. Included as part of this index is a list of ecological status indicators along with recommendations related to where, when and why they should be measured. We suggest that this approach be considered and integrated (as appropriate) into the monitoring plan for the project.</p>	
73	Monitoring	The goal of restoring water quality and a recreational fishery to Diamond Lake must be viewed as a long-term commitment. Continued monitoring of water quality and fish populations is critical to the long-term health of Diamond Lake. The protocols and methodologies for monitoring must be carried out in accordance to the indices established by ODFW. I would encourage a commitment to monitoring both water quality and fish populations beyond the 5-year EIS time frame. Such a commitment will lead to avoidance of future problems.	The Forest Service and DL Work Group partners acknowledge and agree that long-term monitoring is desirable. As documented in footnote 12 on page 28 of the DEIS, a five year minimum post-project monitoring time period is referenced because this represents the normal lifetime of an EIS. However, it is anticipated that monitoring will occur well beyond 5 years.
53	Monitoring & Contingency Plan Duration	If monitoring continues past 2009 to when the contingency plans are implemented... the DEIS never considered the effects of implementing the contingency plans. Since it is virtually certain the tui chub will return the DEIS should have analyzed the impacts of implementing the contingency plans (such as reduced angler days). This could easily be done by referring to the effects of Alternative 4, which, after removal of most of the tui chub, looks like the equivalent of the contingency plans being implemented.	In response to your comments, the FEIS discloses potential effects of implementing contingency plans for five years beyond a seven-year project lifetime for all action alternatives.
1	Natural Conditions	Plan 4 seems to have been handicapped by arbitrary conditions on what constitutes a ‘natural’ and economically-viable state, which appears to be based on restocking trout to be killed, eaten, or dumped.	All alternatives were analyzed in the context of existing conditions and applicable state and federal regulations and requirements. Diamond Lake is identified in the Umpqua National Forest’s 1990 Land and Resource

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		<p>Why not upgrade the clientele? Ban internal combustion motors, live non-local bait and comestible artificial bait, release the catch; send the grumblers to Detroit Lake.</p> <p>If its 'natural' state is that of the 1920's, then dredge the deepwater channel, pipe the outlet by siphon from considerable depth, keep refilling the undercut shoreline with pumice-sand and replant the banks-all this to halt the conversion of the Lake into a prairie with a few meadows strung out from Silent Cr. to Lake Cr.</p> <p>For clean water, other sources of pollution, besides chubs, will have to be eliminated, and that means changing how people act in, on and around the Lake.</p>	<p>Management Plan (LRMP) as a special management area (MA-2). As such, the lake is to be managed for concentrated developed recreation, favoring activities such as resort use, camping, picnicking, visitor information services, boating, fishing, interpretation and developed and dispersed winter sports (LRMP 1990, pgs. 110, 153). Similarly, State regulations require ODFW to manage Diamond Lake to sustain a recreational fishery. Changes proposed in your comments are beyond the scope of this EIS.</p>
35	Nutrients	<p>Reference to DEIS pg. 92: Eilers (2001b) concluded that the introduction of <u>fish</u> into Diamond Lake has resulted in significant changes to the lake including a shift in nutrient availability and a decline in water quality. We believe this statement is true; however, the <u>FISH</u> should read <u>TUI CHUB</u>.</p>	<p>The DEIS/FEIS document in numerous areas our assumptions (based on available science) that the large tui chub population is the primary negative influence on the ecology of Diamond Lake. The TMDL modeling and analysis report for Diamond Lake (Eilers et al. 2003, pg. 3) suggests that in addition to the tui chub, Diamond Lake would not meet water quality standards at trout stocking densities employed since 1962.</p>
44	Nutrients	<p><u>Page 79, Chapter 3. Environmental Effects on Morphometry and Sediments, first paragraph:</u> Sediment accumulation may not be a minor negative impact on the ecology of the lake, given that 70 to 80 percent of all aquatic organisms are likely to perish as a result of treatment with rotenone, and that a majority of these dead organisms will sink. The rate and amount of sediment accumulation may contribute significantly to the sediment and nutrient loads of Diamond Lake. The FEIS should include a more detailed explanation of actual impacts.</p>	<p>As disclosed in the DEIS/FEIS (DEIS pg. 79), under Alternatives 2 and 3 and Alternative 5 in the FEIS, there would be a temporary increase in the rate and quantity of organic matter deposited into the sediments of Diamond Lake. Further information is provided in the DEIS/FEIS (DEIS pg. 97-98), explaining that although decaying fish carcasses deposited on the lake bottom following a rotenone treatment would temporarily increase the deposition of organic matter, the release of nutrients from this source would be expected to have only a small affect of limited scale and duration on nutrient availability in the lake. The DEIS/FEIS (DEIS pg. 97) states that even if fish were not exposed to a rotenone treatment, the nutrients contained in their carcasses would eventually be released upon their natural death. In addition, as explained in the DEIS/FEIS (DEIS pg. 97), while the fish are alive they</p>

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			continue to contribute to nutrient redistribution and recycling increasing the concentration of nutrients in the water through their excretions. The DEIS/FEIS further links an increase in the sediment accumulation rate in the lake to a small extent to watershed development, however time periods of the greatest increases in the sediment accumulation rate are associated with periods of high tui chub abundance (DEIS pg. 75-76). Therefore even under the No Action Alternative, the sediment deposition rate in the lake is likely to remain high as long as the tui chub population is high.
44	Nutrients	<u>Pages 97 and 98, Chapter 3. Environmental Effects on Water Chemistry, Direct Effects:</u> The discussion of nutrient releases on pages 97 and 98 suggests significant increases in nutrient loads to Diamond Lake from fish carcasses as a result of rotenone treatment. We would expect treatment to increase nutrient loads, however, the DEIS states on page 98, first full paragraph, that the “release of phosphorus from fish carcasses represents a potential impact of limited scale and duration.” Additionally, we would expect a temporary but significant increase in organic nitrogen in the outflow of Diamond Lake. The FEIS should include a discussion addressing water quality impacts to Lake Creek, Lemolo Lake, and the North Umpqua River from nutrient loaded outflows associated with decomposition of aquatic organisms following treatment with rotenone.	A comprehensive analysis of each alternative’s potential direct, indirect, and cumulative effects on the water quality at Diamond Lake relevant to nutrients was documented in detail by Al Johnson, project limnologist, in the following sections of the DEIS: “Environmental Effects on Water Chemistry “ (pgs. 96-101) and “Environmental Effects on Phytoplankton and Primary Production” (pgs. 148- 151). Potential effects on downstream water quality with regard to nutrients were documented by project hydrologist Steve Hofford and are included for all alternatives in the following sections of the DEIS: “Nutrients and Algal Toxins - Environmental Effects (pgs.123-127) and pH – Environmental Effects (pgs. 129-132).
57	Nutrients	Other imperfections of the preferred alternatives include: 70-80 percent of the dead fish will sink and not be recovered thereby adding another nutrient pulse to the lake; the dead fish will increase BOD and cause another phosphorous pulse; rewetting the dried and frozen lakeshore will cause a nutrient pulse;	The DEIS/FEIS disclose this potential impact. The Responsible Official considered all negative and positive impacts of all alternatives and concluded that the long-term benefits associated with the preferred alternatives in the DEIS and FEIS outweigh these negative impacts.
65	Nutrients	Nutrient inputs to the Lake must continue to be monitored and controlled; the 16% nitrogen loading from human sources is one obvious area for attention.	Ongoing water quality monitoring for Diamond Lake and downstream water bodies is planned. As stated in ODEQ’s August 5, 2004 letter to the Forest Service (Appendix AA Letter 78), a TMDL for the Umpqua Basin is expected to be completed near the end of 2004. For the Diamond Lake component of the TMDL, load allocations for nutrient input into the lake would be determined to address water quality concerns.

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			<p>The draft TMDL (included in Appendix D of the FEIS) for the Diamond Lake component has identified septic systems, organic baits, and fish stocking as the main anthropogenic nutrient inputs to the Lake which must be reduced to achieve compliance with water quality standards. Implementation plans that must be completed in response to the TMDL require the responsible party (federal, state, and county agencies) to address their contribution to the water quality issues in the Lake. ODFW will be addressing the fish stocking rates in the Lake as referenced in several other responses to public comment, as well as the organic bait issue as they implement their Diamond Lake Management Plan. Septic System issues will be addressed through ODEQ’s On-Site Sewage Disposal program through permitting of failing system repairs, permitting of upgrades to systems, and educational efforts on maintenance of septic systems (Pers. com. John Blanchard, ODEQ)</p> <p>Water quality monitoring in the lake will be used along with other ecological indices to develop stocking strategies and any control strategy needed for organic baits (See details in Appendix BB).</p>
66	ODFW Sustainability Plan	<p>ODFW adopted a Sustainability Plan (Plan) in January of 2004 that includes the restoration of Diamond Lake as one of fifteen specific actions. The Plan includes the agency mission and state authority, including the Wildlife Policy (ORS.012) that directs the state of Oregon to “prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the citizens of this state.” At the same time, the Plan recognizes the economic importance of fisheries activities and the contribution to Oregon’s quality of life and to the local economic and community sustainability. In 2001, \$733.4 million was spent on angling, which generated \$298.7 million in personal income for Oregonians and \$23.3 million in General Fund tax revenues (ODFW, 2004).</p>	<p>Thank you for your comments and for your participation as a Cooperating Agency on the preparation of this EIS. The ODFW Sustainability Plan has been added to Appendix D of the FEIS.</p>

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		<p>ODFW acknowledges that there are several challenges that exist with any actions under consideration to achieve the Diamond Lake Restoration goals, including the future resource management decisions by all of the participating stakeholders. We are fully committed under our agency’s statutory authority and related policies and plans to design and implement an ecologically sound fish stocking strategy. With the help and guidance of our public partners together we can provide a sustainable fishery and water quality for Diamond Lake.</p>	
39	ODFW/OFWC Decision Prior to ROD for FEIS	<p>All of the action alternatives presume changes in fish stocking strategies for the lake, a matter that is within the jurisdiction of the Oregon Fish and Wildlife Commission (OFWC). Changes in fish stocking require approval by the OFWC through a public process. Since the fish stocking strategy is such an integral part of the proposed federal action, approval by OFWC of the higher priority stocking alternative, either Featured Species or Trophy Fish, <b>must occur prior to</b> the issuance of a decision notice by the Forest Service. (DEIS, p. 33)</p>	<p>The Forest Service agrees that an ecologically sound fish stocking strategy is integral to the restoration and health of Diamond Lake. Although ODFW is a Cooperating Agency in the project and designed proposed fish stocking strategies for all alternatives in the EIS, ODFW and OFWC did not agree at any point in the process to approve a change in the fish stocking strategy for Diamond Lake prior to the issuance of a Record of Decision by the Forest Service for this project. Rather, they elected to continue operation under the current interim management plan (which affords them substantial flexibility) until sufficient monitoring data is available to design an ecologically sound fish stocking strategy that can be maintained in the long term.</p> <p>Due to the severity of water quality problems at Diamond Lake, Jim Caplan, the Responsible Official for the Forest Service on this EIS, chose not to delay implementation of a restoration effort until such time as OFWC approved a new fish stocking strategy for Diamond Lake. However, in response to your comment and other similar comments, Jim Caplan requested that ODFW’s Director provide a letter describing what fish stocking would occur under their interim management plan, if a chemical treatment alternative were selected. ODFW’s July 2, 2004 memo (Appendix AA – Letter 77) responds to this request and this interim strategy is incorporated into Alternative 5 of the FEIS. Alternative 5 has been identified as the preferred alternative in the</p>

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			<p>FEIS. Supplemental documents estimating costs, angler trips, etc. for this proposal have also been provided by ODFW and are included in Appendix D of the FEIS.</p>
43	<p>ODFW/OFWC Decision Prior to ROD for FEIS</p>	<p>Do not issue a final decision until firm MOU's are in place with ODFW whose fish stocking strategies helped create this crisis. While the latest public pressure has come from the Douglas County Commissioners, it is no doubt reflective of ODFW's desire to once again have the highest yield and lowest cost rainbow trout fishery possible. Although much hand-wringing has taken place over water quality that is merely the leverage point used to compel the Forest Service to clean out the pond for the nice fish again. There would be no broad concern about water quality at all had the trout fishery held up.</p>	<p>The multiple partners of the DL Work Group signed a Memorandum of Understanding (MOU) on 12/4/2002 committing to cooperation in achieving the common goal of returning Diamond Lake to a fishable swimmable condition. On 11/14/2003, the USFS, ODEQ, and ODFW signed an MOU which provided the framework for cooperative management activities to facilitate the timely completion of the EIS. This MOU is reproduced in Appendix AA of the FEIS.</p> <p>ODFW's July 2, 2004 memo (Appendix AA – Letter 77) documents the agency's intentions regarding fish stocking following a chemical treatment. These interim stocking strategies have been incorporated into Alternative 5 and analyzed in the FEIS.</p>
58	<p>ODFW/OFWC Decision Prior to ROD for FEIS</p>	<p>It is unclear in the DEIS and in the "Diamond Lake Restoration Project Update" issued by the UNF this month what the relationship is between the NEPA process and the fishery management responsibilities of ODFW. Reference is made to the decisions to be made by the Oregon Fish &amp; Wildlife Commission, but it is not clear to what degree their decisions must be compatible with the findings and decisions made in the NEPA process. If OFWC can make decisions which aren't compatible with the processes and rationales included in the DEIS, how can USFS issue a decision?</p>	<p>The Forest Service does not have the authority to decide what fish stocking strategy will be used to stock Diamond Lake; ODFW has full authority over this decision. However, the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA require that the Forest Service develop and analyze reasonable alternatives that are not within their jurisdiction (40 CFR § 1502.14 (c) ). To address this situation, the two State agencies that have direct management responsibilities at Diamond Lake (ODFW and ODEQ) became Cooperating Agencies and joined the Forest Service (Lead Agency) in the preparation of this EIS.</p> <p>In response to ODFW's comments on the DEIS (Appendix AA – Letter 66) and numerous public comments relating concern and confusion over the timing and compatibility of OFWC's decision regarding fish stocking in Diamond Lake, the Forest Service requested and received a letter from ODFW's Director (Appendix AA – Letter 77) documenting the agency's</p>

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			proposed fish stocking strategy for the lake. This strategy has been incorporated and analyzed as a component of Alternative 5 (identified as the preferred in FEIS) in the FEIS.
58	ODFW/OFWC Decision Prior to ROD for FEIS	Recommendation: Clarify the relationship between the State F&W Commission’s decision-making authority and the goals and decisions made during the NEPA process.	Please see our response to your more detailed comment above.
66	ODFW/OFWC Fish Stocking Strategy	After the USFS makes its final decision regarding federal actions to restore Diamond Lake, ODFW staff will design and recommend a strategy to the Fish and Wildlife Commission (Commission) that best meets the goals of the lake based on the environmental, economic, and community values of the people of Oregon. All of the information and public comments from the DEIS process will be incorporated into the Department’s review and proposed fish stocking strategy presented to the Commission. ODFW will seek approval and funding from the Commission for treatment of the lake, future fish stocking, and monitoring. Alternative 2 (Proposed Action) describes ODFW’s current proposed fish stocking strategy after a rotenone treatment. Larger domesticated rainbow stocking under Alternative 3 (Put and Take Fishery) will be evaluated as a potentially feasible option for Commission consideration, especially related to providing a short-term benefit to the fishery immediately after treatment. Annual stocking rates and fishery levels are expected to increase in concert with the recovery of the lake’s health. In 2004, we will initiate a more extensive ecologically-based index for guiding fish stocking decisions. In past years, benthic sampling in October and fingerling trout survival and growth rates in summer months were used to evaluate the stocking strategies related to lake health and fisheries goals. Biological indices including pH, dissolved oxygen, chlorophyll a, and percent of microscopic plant and animal life will be added to these current monitoring efforts to help determine an appropriate stocking strategy. Fishery effort and catch statistics will be monitored extensively to provide information related to the sustainability of all values of the lake.	Thank you for your comment and your participation as a Cooperating Agency in the preparation of the EIS.
8	ODFW’s Full Authority Over	I believe that along with Alternative 2, it would be essential to allow the state (ODFW) to control the stocking techniques and	Under laws and regulations of the State of Oregon, ODFW has full authority to determine fish stocking

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	Fish Stocking	keep them closely monitored rather than any other outfit. They have been working on Diamond Lake for years now and have an extremely good understanding of the situation.	strategies at Diamond Lake.
8	ODFW's Full Authority Over Fish Stocking	We also believe Alternative 2 is the appropriate choice in that it does not create a federalism issue by intruding on the management of fish and game populations which are left to the respective states' fish and game agencies. In the State of Oregon the management of fish populations has been delegated to the Oregon Department of Fish and Wildlife.	As documented in previous responses, ODFW has full responsibility for fish stocking at Diamond Lake. However, pursuant to the requirements of NEPA, the Forest Service is required to analyze reasonable alternatives not within their jurisdiction. Fish stocking was identified as a significant issue during public scoping for this project. Thus, the Forest Service worked cooperatively with ODFW to develop and analyze a full range of reasonable alternative stocking strategies.
63	ODFW's Full Authority Over Fish Stocking	<p>I feel the draft as it stands now is highly defective in offering Option 2 AND Option 3, when issues of fish stocking methods, approaches, and management, are not the purview of the Forest Service, never have been and never will be. In our state, fisheries are managed by the Oregon Department of Fish and Wildlife; management plan are ultimately the responsibility of the Oregon Fish and Wildlife Commission. To imply otherwise is to do a disservice to the community.</p> <p>It is unwise and unwarranted to imply to the public that the Supervisor will choose a fisheries management option. We all know that the "environmentally concerned" community, through their e-mail networks, can generate thousands (in fact, millions at times) "countable" comments. What you are doing is giving them an opportunity to do their thing and then be outraged when ODFW goes down its proper management path if that path does not agree with their chosen option.</p>	<p>The decision authorities of the Forest Service and ODFW are clearly documented in Chapter 1 and Chapter 2 of the DEIS/FEIS. As detailed in previous responses on this subject, ODFW has full authority over fish stocking, but the Forest Service has a requirement under NEPA to develop and analyze reasonable alternatives that are not within their jurisdiction.</p> <p>The Forest Service and all partners of the DL Work Group have committed to working cooperatively among themselves and with citizens reflecting a variety of value systems to determine the appropriate restoration option for Diamond Lake. Alternative 5, which incorporates ODFW's July 2, 2004 fish stocking strategy, has been identified as the preferred alternative in the FEIS.</p>
63	ODFW's Full Authority Over Fish Stocking	Recommendation: Rewrite the EIS so that there is no question that the Forest Supervisor has no authority over restocking plans, and removing the discrete choice offered by having Option 2 and Option 3. Combine Option 2 and Option 3 with a short discussion of how the State of Oregon develops fishery management plans, with further discussion of the cooperation between the Forest Service and ODFW in the text of the EIS.	Thank you for your comment. Elimination of alternative fish stocking strategies would not comply with the requirements of NEPA.
63	ODFW's Full Authority Over	Please have a little faith that the State of Oregon's fisheries managers know what they are doing without being coached by	ODFW, ODEQ, and the Forest Service all agreed to work cooperatively in the preparation of the EIS for the

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	Fish Stocking	the Forest Service and those whom you evidently seek to mollify. In fact, I am certain that you yourself know that the construction in the draft is incorrect and improper. So don't go there.	Diamond Lake Restoration Project (See Appendix AA – MOU).  Proposal and analysis of a full range of alternatives that respond to the significant issue of fish stocking was proper and required in order to fulfill the requirements of NEPA.
66	ODFW's Full Authority Over Fish Stocking	ODFW has full authority to decide what fish stocking strategy will occur in Diamond Lake under any alternative selected. Fish stocking analyzed in this DEIS is a State action.	The Forest Service agrees and this is acknowledged in multiple sections in the FEIS.
66	ODFW's Full Authority Over Fish Stocking	<p>After consultation with the Oregon Department of Justice, ODFW concludes that the state's subsequent treatment by stocking or some other management strategy does not "federalize" this project. See: <i>Friends of the Earth, Inc. v. Coleman</i> 518 F2d 323,327 (9<sup>th</sup> Cir 1975); <i>Enos v. Marsh</i>, 769 F2d 1363, 1371 (9<sup>th</sup> Cir 1985). Oregon does not agree with the implication in the DEIS that what occurs after the treatment by the federal government is somehow subject to federal authority, or properly within the scope of the federal action analyzed in this DEIS. That action will occur subject to the state's authority and processes.</p> <p>ODFW has full authority to decide what fish stocking strategy will occur in Diamond Lake under any alternative selected. Fish stocking analyzed in this DEIS is a State action. No federal authority or permission is required for this state action, and no federal money will be used for whatever option the state selects. After the USFS makes their final decision regarding federal actions to restore Diamond Lake, ODFW staff will design and recommend a strategy to the Fish and Wildlife Commission (Commission) that best meets the goals of the lake based on the environmental, economic, and community values of the people of Oregon. . These activities are "state actions", however, and so not subject to this process which is intended to review "federal actions."</p>	The Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA require that the Forest Service develop and analyze reasonable alternatives that are not within the jurisdiction of the lead agency (40 CFR § 1502.14 (c) ). Although fish stocking is a state action, in order to meet the above NEPA requirement and provide meaningful disclosure about the potential impacts of proposed activities on the physical, biological, and social environments of Diamond Lake, fish stocking options were analyzed in this EIS.
73	ODFW's Full Authority Over Fish Stocking	While it is important to restore the recreational fishery at Diamond Lake, how this is achieved (numbers, species, etc.) is an ODFW management decision. The Forest Service and other	The Forest Service agrees and ODFW's full authority over fish stocking is documented in the DEIS/FEIS.

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		<p>agencies may recommend strategies, but it is important to note that responsibility for fishery management exclusively resides in ODFW.</p>	
76	ODFW’s Full Authority Over Fish Stocking	<p>All alternatives are flawed by inclusion of stocking strategies, but alternatives two and three are actually identical in the actions within federal purview. Since fish management decisions for Diamond Lake are vested in the Oregon Fish and Wildlife Commission, a federal decision between these alternatives cannot be made on the basis of stocking strategies. A federal decision on the basis of stocking expectations is inappropriate and would potentially place the OFWC in the position of having to make state policy consistent with the selected alternative or appear to break faith with the public process. Alternatives for federal decisions should not presume the outcome of decisions that the Commission will make in the future in hearings with open public participation.</p> <p>I hope the EIS will structure the objectives in a way that clearly reflects outcomes prescribed by federal decision and does not presume to anticipate or constrain state decisions.</p>	<p>The Forest Service agrees that ODFW has the full authority to determine fish stocking strategies for Diamond Lake. As described above, completion of a defensible EIS that meets the intent and letter of NEPA required that the Forest Service analyze all reasonable alternatives, even those that are not within our jurisdiction.</p>
53	OFWC Participation	<p>For alternative 2 and 3, ODFW would “pursue approval” for a change to fish stocking if a change is necessary. Alternative 3 can’t be implemented at all “if” OFWC doesn’t approve. A glaring omission from the DEIS is what happens if approval is not granted? The FEIS should address this uncertainty. Since it is the Oregon Fish and Wildlife Commission that needs to give approval, why wasn’t a representative on the I.D. team? They are not even listed as a regulatory agency that was consulted. The FEIS should document if the ODFW has already begun the process of asking for a change and what has happened so far (i.e. who asked who for what, when did they ask and when is a response expected?).</p>	<p>In response to your comment, ODFW comments, and the comments of other members of the public relating concern and confusion over the timing and compatibility of OFWC’s decision regarding fish stocking in Diamond Lake, the Forest Service requested and received a letter from ODFW’s Director (Appendix AA – Letter 77) documenting the agency’s proposed fish stocking strategy for the lake. This strategy has been incorporated and analyzed as a component of Alternative 5 (identified as the preferred in FEIS) in the FEIS. As described in several previous responses ODFW has full authority over fish stocking. However, the Forest Service has an obligation under NEPA to analyze reasonable alternatives not within their jurisdiction.</p> <p>ODFW officials, Dave Loomis and Steve Denney, have provided briefings to and received guidance from the OFWC throughout the NEPA process. ODFW effectively represents OFWC through their participation</p>

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			<p>on the DL Work Group and as a Cooperating Agency in the preparation of the EIS.</p> <p>Per ODFW's July 2, 2004 memo (Appendix AA-Letter 77), ODFW plans to operate under an existing interim management plan for a period of time and stock as described in their letter and in the FEIS. As stated in their letter, "ODFW is fully committed under our agency's statutory authority and related policies and plans to design and implement an ecologically sound fish stocking strategy. Our Commission will enter into a public review of the Diamond Lake Management Plan when sufficient information is available regarding the fishery that can be maintained in the long term. This decision process will take into consideration the environmental, biological, economic, and community values of the people of Oregon".</p>
3	Opposes Rotenone Treatment	<p>I think the Umpqua is making a big mistake using rotenone to rid Diamond Lake of Tui Chub. First of all it will not solve the problem, the problem being Californian using live bait which means it would only have to be done again in the future. Secondly the cost is too high for the benefit. Thirdly a more natural method should be used such as planting German Brown Trout to eat the Tui Chub. The negative effects down stream have not been adequately addressed and we know there was problems that occurred the last time Diamond Lake was poisoned. What health risks are humans going to be submitted to by eating fish from the lake afterwards and what effects will it have on water quality downstream? I think I would have to side with environmentalist who are against the use of poison.</p>	<p>Thank you for your comments. Chapter 3 of the DEIS/FEIS include an economic analysis and potential downstream effects of all alternatives. Additional details on these subjects are contained in resource specialist reports included as appendices to the document.</p> <p>Stocking with predacious fish (such as brown trout) is incorporated as a component of all alternatives. However, as documented in the DEIS (pg. 49), an alternative was considered that would stock Diamond Lake with predacious fish as the primary means of controlling the tui chub population. This alternative was eliminated from detailed study because it would not meet the purpose and need of the project. Due to the extremely large existing tui chub population and the chub's high reproductive capacity, it is unreasonable to assume that predacious fish would be able to effectively limit the chub's population.</p> <p>Potential human health risks associated with all alternatives are also disclosed in the DEIS/FEIS.</p>

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11	Opposes Rotenone Treatment	<p>The Forest Services preferred alternative (alternative 3), will allow an aggressive draw down of Diamond Lake and a poisonous rotenone treatment. I am opposed to this alternative because I do not feel it meets the needs of the lake, fish and wildlife, the aquatic conservation strategy, and whatever sized recreational fishery that is sustainable. The use of Rotenone to poison all life in the lake sets a bad precedent of exposing the larger ecosystem to poisons in order to solve a specific problem. The issues of chemicals in our environment is a huge reason for concern. We have chemicals in our environment to the point that salmon are developing tumors, and are dimorphic, polar bears have dioxins in their tissues, and every single human being carries many agricultural and industrial chemicals in our bodies. This must stop and it does not matter whether Rotenone breaks down to some harmless chemical or not. We simply cannot continue this management direction. We need real solutions that utilize the natural connects within the ecosystem to achieve goals. A plan that calls for the death of all living things is a short-term solution that will have to be repeated over and over and great expense to the ecosystem.</p>	<p>The DEIS/FEIS document the potential positive and negative impacts of all alternatives. Potential impacts of a drawdown and rotenone treatment on wildlife, human health, and the aquatic ecosystems are described in detail the document and its appendices. The Forest Service worked cooperatively with multiple partners in the DL Work Group and solicited input and recommendations from the scientific community, as well as from the general public. Approximately 30 options for restoration of Diamond Lake were considered. Following this concerted effort and after weighing the potential benefits against the negative impacts of the action, the Responsible Official identified Alternative 5 as the preferred alternative in the FEIS.</p>
53	Potassium Permanganate	<p>Potassium Permanganate is used as a rotenone neutralizer. The DEIS failed to evaluate the impacts of this chemical on the environment in the event it is used. The DEIS said “it has no deleterious effects at the concentrations normally associated with the neutralizing process”. Does this mean just to humans? What are the impacts to plants and wildlife?</p>	<p>Potassium permanganate is generally used in fisheries management to neutralize rotenone in order to protect non-target aquatic species downstream of a rotenone treatment site in cases where rotenone treated waters are not confined (i.e. streams) or in cases of accidental spills into non-target water bodies. With the exception of the human health section, potential effects of potassium permanganate were not described in the DEIS because none of the alternatives propose the use of this neutralizing agent and it is not considered reasonable to assume that it would be used in this project. During the time period when rotenone would be stored and applied at Diamond Lake, headgates would be closed on the canal and Lake Creek, and the first 5.5 miles of Lake Creek would be dry. Rotenone treated waters would be confined within Diamond Lake. There are no foreseeable situations that would warrant neutralizing a spill in the project area because the available waters in proximity to storage sites would be scheduled for rotenone treatment and thus a spill would not present a</p>

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			<p>problem requiring neutralizer. Transport of rotenone to Diamond Lake would be via State Highway 97, not along Highway 138 and the North Umpqua River and thus, it is not reasonable to assume a neutralizer would be used in the North Umpqua River.</p> <p>Practices designed to ensure safe transport of rotenone from its source to the project area would be incorporated into ODFW’s contract with the rotenone provider and into spill contingency plans.</p> <p>In the interest of fully addressing your question/comment, if rotenone products destined for Diamond Lake were spilled into non-target waterbodies anywhere enroute from their likely source in Peru and Sanderville, Georgia and potassium permanganate were used in emergency situations, the following summarizes known relevant information:</p> <p>California Department of Fish and Game (1994) provides a comprehensive analysis of the toxicology and potential impacts of potassium permanganate on fish and amphibians, aquatic invertebrates, and avian and mammalian species. Potential effects on surface and groundwater quality, as well as human health, are also described. Although as stated above there are no anticipated impacts associated with this project from the use of potassium permanganate, in response to your comments, CDFG (1994) is incorporated by reference into the FEIS and is available on request at the North Umpqua Ranger District.</p> <p>Potassium permanganate generally detoxifies rotenone within 15 to 30 minutes after introduction (CDFG 1994 pg. 75). Potassium permanganate is toxic to fish, gill-breathing amphibians, and aquatic invertebrates at the initial concentrations used for detoxification of rotenone. However, as permanganate oxidizes rotenone, it is reduced to manganese oxide which is a biologically inactive compound. Consequently, only aquatic</p>

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			<p>organisms in the 30-minute travel time downstream (usually ¼ to ½ mile) of the detoxification site are generally affected. Potassium permanganate may cause mortality downstream of the 30-minute location when the water is overdosed or the permanganate demand of water is reduced (CDFG 1994 pg. 73).</p> <p>CDFG (1994) document that potassium permanganate acute toxicity to mammals is very low. No anticipated impacts to non-human mammals, birds, or plants were described in this document or in any of the other Environmental Assessments/EIS's reviewed during research for this response. According to expert Brian Finlayson (Pers. com, 9-22-04): toxicity of potassium permanganate to birds and mammals is extremely low, about 1g/kg; and it is used world wide in the treatment of drinking water. The Material Safety Data Sheet for this chemical is available at the North Umpqua Ranger District.</p>
44	Potential Culvert Failure	<p>Page 139, Chapter 3. Channel Morphology and Fluvial Erosion, <u>Conclusions</u>: The first paragraph of the Conclusions section on page 139 suggests that we know from the earlier treatment of Diamond Lake, (1954), that lake draw down did not appear to impact the channel integrity of Lake Creek therefore the proposed discharge rates for Alternatives 2 and 3 would also not impact this channel. The WA reports that parts of Lake Creek are high gradient, with steep slopes, and deeply incised, with sections of highly erodible soils (WA). We also lack any empirical data, have no aerial photos, and lack the necessary background information to state that the previous draw down of Lake Creek had no deleterious effects on the watershed. The second paragraph of the Conclusions section discusses all too briefly the risk of plugging culverts at road crossings and subsequent failure of these culverts with prolonged bankfull flows. The reader is referred to the monitoring and mitigation section in Chapter 2 for details of how a plan to install a temporary trash rack upstream of the 4700-710 road and methodology for removing woody debris from culverts will be developed to alleviate culvert failure. However, the Affected</p>	<p>A comprehensive evaluation of Lake Creek identified site-specific channel erosion sites. Review of low elevation scale (1:4000) aerial photos; site visits by Forest geologist Larry Broeker and project hydrologist Steve Hofford; review of fishery survey reports; and review of discussions documented in the 1998 Watershed Analysis (WA) by resource team members from their field reviews, provided background information for conclusions documented in the DEIS.</p> <p>Potential effects associated with all alternatives are documented in the Channel Morphology Fluvial Erosion section of the DEIS (pgs.134-140) and in the Forest geologist's report (Geology and Geomorphology Diamond Lake Project Planning Area) in Appendix C. In addition, the magnitude of bankfull flow in Lake Creek is typical of High Cascades streams having less stream power than streams in older geology to potentially impact bank erosion. Bankfull flow and related stream energy are discussed in the Streamflow Regime –</p>

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		<p>Environment section of Channel Morphology (paragraphs three, four, and five, p. 136) discusses the double culverts that serve as stream crossings at Roads 4700-710 and Highway 38. The DEIS identifies both crossings as undersized with the 4700-710 road crossing exhibiting “an over-steepened fill slope, fill sloughing, and undercutting of the toe of the fill between the double culverts. This crossing likely experiences annual fill erosion, which indicates a risk of failure.” From the information provided in the DEIS, it appears there is a potential for culvert failure, road slope wash out, and fill failure as a result of bankfull or flood flows associated with draw down. The FEIS should address the monitoring, possible amelioration, and if necessary, mitigation, in more detail, than what is provided for in the Best Management Practices section of Chapter 2.</p>	<p>Streams and Streamflow sections in the DEIS (pgs 108-110).</p> <p>Mitigation and monitoring to ensure that the road 4700-710 crossing of Lake Creek is protected during draw down flows is identified in Chapter 2 of the DEIS under section “Best Management Practices, Management Requirements, Mitigation Measures and Monitoring” and Chapter 3 “Channel Morphology and Fluvial Erosion – Direct Effects” (p 136). Frequent visits to the crossing would occur to monitor the function of the crossing. The number of visits would increase during storm and spring runoff. As part of the monitoring plan, access would be maintained and equipment and manpower would be available for needed removal of wood affecting crossing function and creating a potential risk of failure. Additional details relevant to your comment are included in the FEIS.</p>
39	Previous Scoping Comments	<p>Incorporated herein by reference are scoping comments previously submitted by Umpqua Valley Audubon Society (UVAS) regarding this project dated January 29, 1998, March 26, 1999, September 25, 2002, and May 2, 2003.</p>	<p>Thank you for your comments and your participation in this and previous NEPA efforts for Diamond Lake. The Scoping Summary incorporated by reference into the DEIS (pg. 15) recognizes your previous scoping comments relevant to this NEPA document. Appendix 4 contains our September 12, 2003 response to your September 25, 2002 pre-NEPA scoping comments. Early comments by you and other members of the public were used in the design of the proposed action. Your May 2, 2003 scoping comments were used in the formulation of issues and the development of alternatives to the proposed action.</p>
53	Previous Scoping Comments	<p>In the FEIS, please reconsider our scoping input dated 10/02/02, 4/7/03 and 5/30/03.</p>	<p>Thank you for your comments and your participation in this and previous NEPA efforts for Diamond Lake. The Scoping Summary incorporated by reference into the DEIS (pg. 15) recognizes your previous scoping comments relevant to this NEPA document. Your input and that of other members of the public was used in the design of the proposed action, the formulation of issues and the development of alternatives to the proposed action.</p>

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44	Project Design Criteria	<u>Page 205, Chapter 3. Fish and Fish Habitat, North Umpqua River:</u> The first paragraph of the DEIS states that “numerous project design criteria were developed to specifically eliminate the potential for negative impacts to occur.” The FEIS should include a discussion of these project design criteria.	The FEIS includes additional information describing the project design criteria that were incorporated to reduce negative downstream impacts.
67	Purpose and Need	Pursue a SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT SEIS to address the real needs and purpose. I think the need and purpose is to recognize the historic value of the lodge and homesites, restore its economic value, and gradually try to adjust the fishery, and recognize that Diamond Lake is evolving from a lake with long, big, deep swimming fish to one of big fat rainbow, with a place for the tui chub.	Thank you for your comments. The Forest Service has the authority to determine the specific purpose and need. However, the Forest Service does acknowledge the historic value of the Diamond Lake Resort and the Summerhomes and believes that proposed restoration efforts for Diamond Lake will benefit all parties that are currently negatively impacted economically and otherwise by the existing poor water quality and depressed recreational fishery at the lake.
2	Quality of DEIS	Compliments the high quality of work in the DEIS.	Thank you for your comment.
53	Recreation	The Recreation report is focused on the “average of over 100,000 angler trips annually” facts, and gives other recreation less economic importance. It never tells us that there are 800,000 other recreation days at Diamond Lake, seven times higher than angler trips.	<p>Page 82 of the June 1998 Watershed Analysis states: “Diamond Lake is a high use destination recreation area (approximately 700,000 Recreation Visitor Days [RVD’s] per year). Diamond Lake has traditionally been recognized as a regionally renowned trout fishery with an average of over 100,000 anger days annually.” The FEIS includes a reference to this number in the Affected Environment for Recreation. The 800,000 number referenced in your comment from page 114 of the same document was listed as a “key assumption” under projected future conditions and states: “Recreational use at Diamond Lake will remain high at 800,000 visitor-days/year, although fishing may constitute a smaller percentage of user demand.”</p> <p>The DEIS/FEIS document that Diamond Lake provides a variety of year-round recreational opportunities and includes recent recreation survey data which indicates fishing is no longer the primary reason visitors come to recreate at Diamond Lake (DEIS pgs. 330 and 331).</p>
53	Recreation	The recreation report assumed that the downward trend in campground use after 1992 was due to lost fishing opportunities. However, there is a direct correlation in the decrease of	The DEIS/FEIS correctly state the Forest Service’s conclusion that campground occupancy in the 1990’s declined primarily in response to the diminished

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		<p>campground use with the increase in camping fees? Perhaps this caused the downward trend in campground use.</p>	<p>recreational fishery. However, a more comprehensive assessment that addresses your question is found in the David Evans And Associates (1998) Diamond Lake and Lemolo Lake Watershed Recreation Assessment pages 35-36. The authors state the following concerning fee increases: “The Forest Service implemented an increase in fees in 1997 and this may have caused some of the decrease in use between 1996 and 1997. It was estimated that this increased fee would cause about a 10% decrease the first year it was implemented and that this decrease would be recovered the second year. The camping demand decreased about 14% (11,200 occasions) from 1996 to 1997. It is impossible to determine exactly how much of the decrease was due to the decline in fishing success or the increase in fees. However, campground personnel report that there was little comment from users about the fee increase, which was comparable to campgrounds in other areas.</p>
53	Recreation	<p>The recreation report in the FEIS should remove the bias statements in the DEIS against Alternative 4. For instance, Alternative 4 would reduce “family fishing” because of the change to a trophy fishery. It is an unsubstantiated assumption that families don’t like trophy fishing.</p>	<p>The statements regarding how changes in fish stocking would be expected to impact recreational opportunities under all action alternatives represent professional opinion based on review of recreation related literature and personal communications with recreational fishery specialists.</p> <p>The DEIS statement referenced in your comment is not a bias against Alternative 4. According to the project recreation specialist, there is evidence to suggest that the more specialized the fishery, the more specialized the anglers, and the more specialized the angling equipment (Bryan 1977). Based on this research, the trophy fishery proposed under Alternative 4 is expected to attract a more focused and competitive angler as opposed to attracting the broad spectrum of families and children who are motivated to fish at Diamond Lake.</p> <p>Changes to the proposed recreational fishery under Alternative 4 were made between draft and final EIS.</p>

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			The fishery now provides more catchable-sized, put and take rainbows. Chapter 3 of the FEIS has been modified to reflect these changes.
35	Relevant Reference Materials	Please reread the enclosed copy of Conn P. McAuliffe’s 1996 letter to the Fish Commission.	Thank you for providing us with this reference material. The McAuliffe letter was received during scoping and utilized by the IDT in the preparation of the DEIS. Per your request, we have again reviewed the information contained in the letter and have found that we adequately considered this information in the DEIS.
53	Rock Creek Fish Hatchery	The DEIS failed to describe the impacts to Rock Creek Fish Hatchery under alternatives 2 and 3. It said, “If precipitation was low during [the year of a rotenone treatment] and there was not adequate water available to satisfy water rights for downstream users, the Rock Creek Fish Hatchery could be negatively affected... they would have to turn their fish stock loose early, which would reduce the attraction at the hatchery for visitors an result in less visitation.” But wouldn’t it also result in less fish for stocking? What other fishing areas would not be stocked? There is a real possibility for low precipitation this year, and thus a real possibility that Rock Creek Fish Hatchery would have to let the fish go early.	According to Dave Loomis, under Alternatives 2, 3, and 5, ODFW would not be expected to reduce the number of fish reared at Rock Creek during the year of the proposed rotenone treatment (2006) in response to a potentially low precipitation year. The annual ODFW Fish Production schedule meeting for the 2006-07 releases will occur in September 2005 and a detailed contingency plan would be developed at that time to minimize to the greatest extent possible, potential impacts to the Rock Creek hatchery from a low water year. There are a number of possibilities that would be considered for incorporation into the contingency plan: releasing the fish early; temporarily transferring the presmolts to a different facility and then returning them to the Rock Creek Fish hatchery at a later date when sufficient water is available; increasing fish production in the following years, if early fish releases result in lowered survival rates or if it is determined less fish production in 2006 is desirable; and negotiating for an adequate water supply. ODFW is currently in consultation with PacifiCorp and the USFS through the Lemolo Reservoir Management Plan adopted in March 2004, to discuss feasible options for augmenting flows into the North Umpqua River during the 2006 fall period to ensure minimum stream flows are met so Rock Creek hatchery would have sufficient water to maintain full production.
72	Rotenone & Human Health	Unacceptable points associated with Alternatives 2 & 3: known human health & environmental impacts of the “inert” ingredients (cancer), by-products, and active ingredients in rotenone products.	Potential impacts to human health and the environment are analyzed for all alternatives in the FEIS/DEIS. The Responsible Official identified Alternative 5 as the preferred alternative in the FEIS because he believes

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			the long-term benefits to the ecology of Diamond Lake and to human health and safety in the community outweigh these negative impacts.
62	Rotenone & Toxic Algae Blooms	<p>We agree that rotenone applications may be the only alternative for tui chub control and overall fisheries management in Diamond Lake. However, we do not believe that treating Diamond Lake with rotenone would lead to the eradication of the toxic cyanobacteria blooms that are rendering the lake unusable for summertime recreation. Considering that Diamond Lake has approximately 700,000 recreation visits/year (including approximately 100,000 angler trips/year), achieving this additional goal to eliminate <i>Anabaena flos-aquae</i> blooms is critical.</p> <p>More specifically, we would like to comment on the hypothesis that eliminating the tui chub will cause a shift in the zooplankton community size structure to favor larger species that would otherwise be consumed by the tui chub. According to this theory, larger zooplankton species would be allowed to dominate, and thus consume the toxic blue-green algae <i>Anabaena flos-aqua</i> that has dominated the summer phytoplankton community in recent years. We do not believe that the literature and empirical evidence provide much confidence that this approach to control <i>Anabaena flos-aquae</i> blooms will work. On the other hand, we offer for your consideration a new, ecologically-based approach which has shown to be effective at eliminating blue-green blooms in lakes and reservoirs.</p>	<p>The DEIS/FEIS does not state that toxic cyanobacteria blooms including those composed of <i>Anabaena flos-aquae</i> will be eradicated in Diamond Lake. Under the action alternatives, the severity of the blooms are expected to decrease (DEIS pg. 43). The DEIS/FEIS states that under Alternatives 2 and 3 (DEIS pg. 148) and Alternative 5 in the FEIS and for a period of time under Alternative 4 (DEIS pg. 150), phytoplankton biomass could be reduced to levels below the average values observed over the last decade with a corresponding increase in water quality. It is expected that under any of the action alternatives, lower phytoplankton density following treatment would also include lower densities of blue-green algae. The DEIS/FEIS cites case studies and scientific literature indicating improvements in water quality and reduced blue-green algae density are frequently observed following biomanipulation techniques including treatment with rotenone (DEIS pg. 145-146). These biomanipulation techniques were found to be most successful in those cases where the abundance of large bodied filter feeding zooplankton such as <i>Daphia</i> were increased. De Bernardi and Giussani (1990, pg. 30) state “A wide range of examples is available confirming a general pattern of blue-green algae reduction after fish removal and the consequent increase in filter feeding zooplankton”. In addition to the information provided in the DEIS/FEIS, the TMDL modeling and analysis report by Eilers et al. (2003) states that “The removal of the tui chub is expected to result in a reduction in the average peak biomass of cyanobacteria (average over 8 years) from about 20,000 kg to 4,000 kg” (Eilers et al. 2003, pg. 67).</p>
72	Rotenone - Contaminated	Unacceptable points associated with Alternatives 2 & 3: Without showing a cogent argument, the DEIS claims that no rotenone	The DEIS/FEIS provides a detailed discussion supporting the conclusion that no adverse downstream

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	Groundwater	contaminated groundwater will reach Lake Creek, Lemolo Lake, or other critical aspects of the Umpqua watershed - even though groundwater is a primary source of hydrologic recharge in the area's highly permeable soils.	<p>effects would be expected as a result of rotenone treated water leaving the lake via the groundwater. This conclusion is based on scientific data and the professional opinion of a trained geohydrologist with the Environmental Protection Agency.</p> <p>Monitoring wells installed in the shallow aquifer around the lake indicate that shallow ground water (upper aquifer) discharges to the lake throughout the spring and summer, and partway through the fall, and that the lake recharges the shallow aquifer when the shallow aquifer water levels drop below the level of the lake. As stated in the DEIS/FEIS and the Ground Water Report, the deep aquifer is under artesian conditions, thus the vertical gradient is upward, inhibiting the downward movement of shallow water into the deeper aquifer in the area around the lake. Therefore any discharge of the deep aquifer water to the surface (i.e. further downstream in the Umpqua watershed beyond the six miles distance covered in the Seepage Study) would not contain rotenone contaminated ground water that would come from the lake because the upward vertical gradient disallows contaminated lake water to enter the deep aquifer.</p> <p>The seepage study described in the DEIS/FEIS was conducted on Lake Creek to provide information on whether or not the groundwater from the shallow aquifer was discharging into the first six miles of Lake Creek. The results of that study indicated that there was no accretion of surface flow in that reach due to ground water discharge(See the Ground Water Report)</p> <p>As described in the DEIS (pg. 225) in the conclusions from the seepage study, those results indicate that: "even if groundwater was migrating from the lake basin in the area of MW-H1 and MW-H2 wells, it is not discharging into Lake Creek within the first six miles of the outlet, and therefore a rotenone treatment would have no deleterious effects on this reach. If</p>

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			groundwater discharged at a location further downstream, given the hydraulic conductivity of the shallow aquifer, the time required for a release to travel that distance, and the propensity for migration of rotenone to be severely retarded due to its strong tendency to attach to sediments, it is very unlikely that rotenone would discharge via the groundwater at a concentration that would negatively affect any receiving body of water". As an added measure of caution, Lake Creek will be monitored for the presence of rotenone downstream of the lake outlet to Highway 138 during the entire time rotenone is present in the lake.
67	Septic System Expense	Commenter is concerned that the Forest Service septic system is oversized and too expensive.	Addressing the economic efficiency of the septic system is outside the scope of this document.
67	Sewage Lagoon	Commenter is concerned that the sewage lagoon adjacent to Diamond Lake is leaking effluent into the North Umpqua River aquifer.	The waste water treatment lagoons adjacent to Diamond Lake are discussed in the DEIS/FEIS (DEIS pg. 72). These lagoons are located outside of the lake's watershed and are intended to reduce the potential for human wastes to contribute nutrients to Diamond Lake. This wastewater treatment system has both primary and secondary lagoons. The primary lagoons receive raw wastewater and the bottoms of these lagoons are lined with an impermeable barrier intended to prevent contamination of groundwater. During the winter and spring seasons, some water generally overflows from the primary lagoons to the secondary lagoons. The secondary lagoons function as evaporation and percolation lagoons. As part of the Oregon Department of Environmental Quality (DEQ) waste water treatment permit requirements, observation wells for sampling groundwater were installed in the early 1980's adjacent to the secondary treatment lagoons. Water samples are taken from the wells on a monthly interval during the summer. Water samples are also collected from a natural spring down gradient of the secondary treatment lagoons. These well and spring water samples are analyzed for fecal coliform bacteria and nitrates. Testing the groundwater for these parameters is intended to indicate if sewage is contaminating the

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			<p>groundwater including the possible presence of pathogenic organisms. Results of sample analysis have shown no detectable contamination of groundwater from the lagoons. In addition, during the late 1980's, the potential for contaminated water moving from the lagoons into the groundwater was tested by placing a traceable dye into the lagoons followed by ground water monitoring to determine if the dye could be detected. Results from this test indicated that no detectable amount of dye moved from the lagoons into the adjacent groundwater. Based on this test and ongoing monitoring of groundwater, no evidence exists that indicates effluents from the wastewater lagoons are contributing contaminates to the North Umpqua aquifer.</p>
67	Similar Lakes	Diamond Lake should be compared to other lakes in the Klamath and Mazama Provinces that have tui chub (Davis, Crescent, Odell Lake, and the reservoirs).	<p>The IDT looked at research and data from a variety of lakes both in this area and in other parts of the country and world. Subsequent to the publication of the DEIS, testing for toxic algae species in numerous Cascade Lakes indicated higher than expected blue-green algae counts. Public health warnings have been posted at three Cascade Lakes -Suttle and Lava lakes and Crane Prairie Reservoir. Hydrologist, Joe Eilers, noted a consistent pattern for Diamond Lake and 13 Cascade Lakes that had high blue-green algae counts- all had volcanic soils with high nutrient levels and non-native fish, such as the tui chub.</p> <p>The following Oregon Department of Human Services website contains information on area lakes, including Diamond Lake that have or may experience toxic algae blooms:  <a href="http://www.dhs.state.or.us/publichealth/esc/docs/maadvories.cfm">http://www.dhs.state.or.us/publichealth/esc/docs/maadvories.cfm</a></p>
44	Similarities of Alternatives	The USFWS has some concerns over the similarities of the treatment alternatives.	<p>Alternatives 2 and 3 are identical except for the fish stocking component and Alternative 5 is also very similar. There are several reasons why three similar alternatives are analyzed in this EIS:</p> <p>1. Common components of these alternatives were</p>

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			<p>carefully designed with the input of the public, resource specialists from the DL Work Group, IDT members, and private consultants; according to the collective wisdom of these parties, they represent what the Forest Service considers the most appropriate project design features for inclusion in chemical treatment alternatives for Diamond Lake. Thus, no modifications were made to the non-fish stocking components of Alternative 3 for the DEIS and recommended changes generated from comments on the DEIS were used to refine Alternative 5 for inclusion in the FEIS.</p> <p>2. Fish stocking emerged as a significant issue in the EIS and thus it was necessary to develop alternative fish stocking strategies to respond to this issue.</p> <p>3. Over two dozen other options were investigated as potential alternatives for the EIS. Over time during the process, only the proposed chemical and mechanical alternatives combined with incorporation of predacious fish stocking emerged as viable alternatives that were analyzed in detail in the EIS. Rationale for why other alternatives were eliminated from detailed study is documented in Chapter 2 of the DEIS/FEIS.</p>
1	Soil Compaction	<p>The DEIS did not address the fact that roads and campgrounds have compacted pumice over basalt bedrock and effectively dammed the subterranean flow of snowmelt from nearby peaks, thereby cutting off the local water supply; reducing the flow of cold clear water into the lake offshore and increasing surface runoff of warm silty water.</p> <p>Restoring the subsurface “springs” would mean trenching across the road to install “French” culverts on the basalt. (The road needs more surface culverts as well). This would also reduce the floodwash of rainstorms and snowmelt.</p>	<p>There is no indication that roads and campgrounds in the Diamond Lake area have had the type of impacts described in your comments. According to the project hydrologist, if compaction from management activities had altered water infiltration and delivery to the deep groundwater, then less water would be available to contribute to low flow. An evaluation of accumulative annual precipitation (input) against annual low flow (output) for the 1931-1982 period for the area above the Lemolo Dam does not show an obvious compaction effect when comparing pre-forest management (pre-1950) and forest management periods. The relationship between water input to the watershed and flow output has remained the same over time.</p> <p>According to the project geohydrologist, the Forest</p>

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			<p>Service campgrounds located on the eastern and southern perimeter of the Lake are located on glacial drift, lacustrine, and pumice deposits. The shallow aquifer material in the series B, C, and D groundwater monitoring wells, which are located within or close to the campgrounds, are fairly coarse (see the Ground Water Report Appendix for the Well Logs and Construction Diagrams for these wells). The hydraulic conductivities for these shallow aquifer wells range from 2.0 – 168 ft/day and are considered very conductive, thus ground water will flow through them easily. In addition, the ground water levels in these wells indicate ground water is flowing into the lake from the shallow aquifer, which is recharged from snowmelt in the higher elevations. A detailed discussion of ground water flows in these areas is included in the Ground Water Report in Appendix D of the DEIS/FEIS.</p>
72	Soils Not Conductive to Absorbing Rotenone	Unacceptable points associated with Alternatives 2 & 3: Content of area soil is not conducive to degrading or absorbing rotenone, especially at lower temperatures.	<p>Scientific studies indicate that rotenone is not very mobile once it enters the sediment or soil. For a more in-depth discussion of the migration potential of rotenone and its breakdown products, please refer to the following scientific articles: “Rotenone Persistence in Fresh Water Ponds; Effects of Temperature and Sediment Adsorption” published in the North American Journal of Fisheries Management, 11: 226-231, by V. K. Dawson, W. H. Gingrich, R. A. Davis, and P. A. Gilderhaus, 1991; also a 1994 publication by the California Department of Fish and Game, entitled “Rotenone Use for Fisheries Management – Final Programmatic Environmental Impact Report (SCH 92073015) by the Environmental Services Division.</p>
62	SolarBee Solution	We would like to offer for your consideration a relatively new technology for eliminating blue-green algae blooms that would allow Diamond Lake to be fully recreational by the summer of 2005. This technology is a solar-powered water circulation machine called the SolarBee, and is manufactured by Pump Systems, Inc., Dickinson, ND. Water circulation is achieved by drawing water up from a depth determined by the intake hose, and spreading this water across the lake surface in a near laminar flow. The SB10000 machine can move up to 10,000	<p>Thank you for your comments, your interest in Diamond Lake and for providing us with relevant information about your product. As detailed on pages 51 and 52 of the DEIS, an alternative that would use aeration as a means of reducing toxic algae blooms was considered and explored through field investigations, literature review, and discussions with aeration system suppliers. This alternative was eventually eliminated from detailed study because it would not meet the purpose and need.</p>

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		<p>gpm, and mix up to 50 acres of water down to the thermocline. Data from our own dye studies, as well as data from our clients, consistently and uniformly affirm the SolarBee’s mixing capabilities. An example is the recently completed study by the Ohio EPA examining the effectiveness of the SolarBee SB10000 solar powered circulator at the Rockford, Ohio WWTF (the report can be found at our website: <a href="http://www.solarbee.com">www.solarbee.com</a>).</p> <p>The ability of SolarBees to eliminate blue-green algae blooms through vertical mixing has been consistently demonstrated in the 30+ lakes and reservoirs where SolarBees have been installed for that purpose. Typical is the 110-acre drinking water reservoir in Thornton, Colorado, where 3 SolarBees were installed in April 2003. As the City of Thornton’s data clearly show, the severe blue-green algae blooms typical of July and August did not appear in 2003 – though blue-green algae blooms did occur in the City’s other drinking water reservoirs during the same period. The City of Thornton is very pleased with the results (the report can be found at <a href="http://www.solarbee.com">www.solarbee.com</a>). The City of Englewood (Colorado) has one of the earlier installations (2002), and report that before the SolarBee they had to put in copper sulfate 1-2x/week to control blue-green algae blooms. Since the SolarBee installation, they have not had to put in even an ounce of copper sulfate in the reservoir. Another example is in Palmdale, California, where 7 SolarBees are installed in a 230-acre reservoir with a long history of severe blue-green algae blooms. Again, they have not needed copper sulfate applications since installing the SolarBees. We would be happy to provide contact information for these and other clients to remove any doubts that vertical mixing achieved by the SolarBee is indeed effective at eliminating blue-green algae blooms.</p> <p>As of June 2004, we will be installing a more powerful and energy efficient brushless motor on all SB10000 units. The brushless motor has an expected life of 25 years, and there are no gearboxes to maintain. Because of improved energy efficiency, this new motor will significantly increase the machine’s mixing capabilities by storing excess solar energy to be accessed for nighttime operation. We estimate that about 60</p>	<p>In response to comments on the DEIS, Joel Bleth, President of Pump Systems, Inc. (manufacturer of the SOLARBEE, solar-powered circulator) was invited to attend the 06-14-04 Diamond Lake Work Group meeting and present additional information about the company’s theories and products. Mr. Bleth attended the meeting, provided a presentation, answered questions by IDT and DL Work Group members, and considered responses and theories provided by the group. Following consideration of all the information provided by Mr. Bleth, the Responsible Official chose not to include installation of SolarBee’s into any alternatives in this EIS. However, it is acknowledged that if the desired improvements in the water quality and the recreational fishery do not occur as a result of implementation of the selected alternative, SolarBees are a potential water quality improvement tool that could be considered in the future if deemed necessary.</p>

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		<p>SB10000 machines with the brushless motor should defeat <i>Anabaena flos-aquae</i> blooms in Diamond Lake. If oxygenating the hypolimnion were also a goal, then we would need more machines with longer intake hoses (down to 40+ feet). These new machines can also be equipped with SCADA radio outputs so each machine can be monitored from a hand-held device from shore, or through telemetry from a remote computer to ensure optimal performance and to identify if/when any machine may require servicing. If requested, we will be happy to provide a formal quote based on specific goals and specifications for Diamond Lake.</p> <p>There could be a concern regarding visual offensiveness and boater safety with SolarBees. With approximately 60 Solarbees scattered across 3000 acres (i.e., 50 acre spacing), it would be difficult to see more than about 4 SolarBees from any point. The solar panels sit only a few feet above the water's surface, and the application of such a "green" technology to resolve the serious public health issues manifested by <i>Anabaena</i> blooms should more than balance out any visual issues. Boater safety should also not be a problem. We have 4 SolarBees in a 200-acre lake which has intense water skiing competition, as well as a 1 SolarBee in the middle of a 50 acre residential lake with a regulation competition water skiing course. In the 230-acre lake with 7 SolarBees in Palmdale, California, there are sea planes which land on the lake in addition to intense boating. We equipped the SolarBees in these lakes with state and federally approved buoy marker lights with variable intensities. There have been no accidents reported, and lake users are very happy to have improved water clarity without blue-green algae blooms.</p> <p>Although the concept of using water circulation and surface water turbulence to control cyanobacteria blooms has long been appreciated in the scientific literature, the application of the SolarBee to achieve this goal is relatively recent. Originally designed for wastewater lagoons and small lakes, SolarBee applications for large lake management began with the development of the larger machines in 2002. We are continually updating and refining our knowledge of SolarBee capabilities and limits. We have presented results at professional</p>	

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		<p>conferences with highly favorable responses, and have several manuscripts at different stages of preparation. By the end of the year we plan to have at least two papers submitted to international, peer-reviewed journals: one regarding control of blue-green algae blooms, and a second on aquatic macrophyte control (achieved through intensive oxidation of sediments thus reducing soluble phosphorus availability and reducing the physical integrity of the sediments for macrophyte roots to take hold).</p> <p>There are nearly 600 SolarBees deployed in ponds, lakes, reservoirs, lagoons and water storage tanks all over the continental United States. Each and every installed SolarBee is individually monitored to ensure proper maintenance and performance. Pump Systems, Inc. works closely with every client to make sure that the SolarBees are achieving the results that each client desires. Each water body has unique properties, and for maximum efficiency and performance we tailor SolarBee number, placement, and hose depth to achieve the client's goals.</p> <p>Furthermore, there are no adverse ecological ramifications from SolarBee applications; in fact, the SolarBee simply enhances the benefits of natural lake processes. In the approximately 30 lakes and reservoirs where we have applied SolarBees for blue-green algae control, we consistently see elimination of blooms, increased water clarity, reduced chlorophyll <i>a</i> concentrations, and reduced pH values. If for some reason the anticipated blue-green algae control were not achieved, Diamond Lake's ecology would be essentially unchanged except for improved water quality. However, we are sufficiently confident that SolarBees can eliminate <i>Anabaena</i> blooms from Diamond Lake that we are happy to offer a substantial money-back guarantee if we do not achieve agreed upon goals.</p> <p>To be most effective for the summer of 2005, the SolarBees should be installed by November 2004. Not only should <i>Anabaena flos-aquae</i> blooms be eliminated in 2005 (and in subsequent years as well), the SolarBees would be very effective at mixing the rotenone throughout Diamond Lake</p>	

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		<p>if/when applied in September 2005. Additionally, the SolarBees could be configured to transport photosynthetically produced oxygen down to the lake’s sediments. This would facilitate the decomposition of the hundreds of tons of dead fish expected to remain on the lake bottom following rotenone application, as well as keep soluble phosphorus released from decomposition immobilized in the sediments.</p> <p>The SolarBee offers a proven approach that can eliminate <i>Anabaena flos-aquae</i> from Diamond Lake without toxic chemicals, without land-based energy requirements, and without adversely disrupting the lake’s ecology. Unlike the proposed biomanipulation to contain a blue-green bloom through predation, the SolarBee actually prevents <i>Anabaena flos-aquae</i> from becoming established through surface water turbulence and physical transport out of the photic zone.</p>	
57	Sources of Water Quality Problem	<p>The DEIS mis-identifies Tui chub as the “source” of the water quality problem. In fact, the source of the problem is more likely to be found in:</p> <ul style="list-style-type: none"> <li>a. natural nutrient pools that are exacerbated by human-induced nutrient pulses from logging, roads, summer homes, boats, snow-mobiles, fish stocking, etc...,</li> <li>b. artificially maintaining the lake at 2 feet above normal high water during the summer;</li> <li>c. human-altered (and never to be restored) community of phytoplankton and zoo-plankton including a shift toward akinete-forming algae species;</li> <li>d. fish stocking itself is adding more nutrients to an already nutrient-rich lake.</li> </ul>	<p>We do not believe that the DEIS/FEIS has mis-identified the primary source of water quality problems in Diamond Lake. The DEIS/FEIS presents information from numerous scientific investigations and summarizes monitoring data from Diamond Lake to establish the linkage of the high tui chub abundance with a change in water quality parameters. Nutrients and their source are addressed in the DEIS/FEIS (DEIS pg. 86-92). In addition, nutrients linked to human sources are specifically addressed in the DEIS/FEIS (DEIS pg. 92).</p> <p>The TMDL Modeling and Analysis by Eilers et al. (2003) points to the high biomass of tui chub in Diamond Lake as a primary factor that largely explains the frequency and density of the blue-green algae blooms in the lake. The modeling analysis employed by Eilers et al. (2003) included estimates of the nutrient contribution of introduced fish (Eilers et al. 2003, pg. 25). The results of the TMDL modeling analysis indicate that elimination of the tui chub in Diamond followed by a carefully planned and executed fish stocking program would lead to an improvement in water quality.</p>
53	Substrate	Alternative 2 and 3 will use the sediments from the canal dredging to expand an existing wetland at the edge of the lake.	According to John Blanchard, ODEQ, all sediments removed from waters of the US must be evaluated. The

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	Contaminates	<p>Additionally, sediment around the resort marina would be removed and used in landscaping. The DEIS failed to examine the possibility of contaminants in the soils to be moved. For instance, could fishing equipment have contributed lead to the soils? Perhaps there could be wood preservatives near the old docks. What about PCBs or other contaminants? If sediments are used in wetlands, could there be contaminants hazardous to wildlife? For the sediments used in landscaping, could humans come into contact with contaminants?</p>	<p>tool that is used in the Northwest is the Dredged Material Evaluation Framework (DMEF). This is a multi-tiered process with Tier 1 evaluating historical and background information to be reviewed by ODEQ, Corp of Engineers, and EPA. Tier 1 is appropriate when there is little or no indication that chemicals of concern would be present in the sediments proposed for removal.</p> <p>A Tier 1 analysis for sediment removal would be completed under Alternatives 2, 3, and 5 by responsible state and federal personnel. Should the Tier 1 analysis indicate there could be chemicals of concern in the sediments, further evaluation under Tier 2 and/or Tier 3 would be automatically triggered. Required actions with regard to the sediment dredging process would be made based on the final DMEF determination. For the Diamond Lake project there is no record of historical dumping, or other anthropogenic actions that would currently indicate a need to progress beyond the Tier 1 analysis.</p> <p>Per your comment on potential lead contamination, previous efforts by ODEQ in other watersheds to assess levels of lead related to fisherman’s sinkers have been inconclusive and did not warrant further action (Siuslaw 1998). Findings for water column samples were at or below method reporting limits for lead and fish tissue samples evaluated by the USFWS also did not warrant further action.</p>
66	Timely FEIS & ROD	<p>We strongly support the draw down and rotenone treatment of Diamond Lake. We respectfully request that the selection of an alternative is made as soon as possible after the public comment period ends. The current recreational fishery is not meeting ODFW management goals, and continued unsafe toxic algae blooms and negative impacts to overall water quality from the existing chub population must be stopped. These are very important issues to Oregon citizens. The prompt issuance of the Record of Decision is very time sensitive to the implementation of appropriate restoration activities supported by an alternative</p>	<p>Thank you for your comments. The Forest Service understands the importance of a timely decision on this project and will continue to work cooperatively with the public and all partners on the Diamond Lake Work Group to complete the NEPA process in a timely manner.</p>

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		that results in total eradication of the chub in Diamond Lake in the immediate foreseeable future.	
53	TMDL	<p>The DEIS says that ODEQ’s pending TMDL “would be used to determine appropriate numeric goals for annual fish stocking and harvest post-project.” But this is conflicting information from the description in alternative 2, where TMDL was not mentioned, and instead, monitoring and existing knowledge would be used. Also, why is it assumed that alternative 2 will be based on 100,000 annual angler days? Have you had a sneak preview of the TMDL? You should have shared it with the public. A final TMDL report will be available in the spring of 2004. The FEIS should include it in the appendices.</p>	<p>The project description for Alternative 2 (DEIS, pg. 28) documents that appropriate numeric goals for annual fish stocking and harvest post-project would be determined using a variety of mechanisms including “applicable nutrient loading allocations provided in ODEQ’s pending TMDL publication”.</p> <p>Per the request of members of the public and in order to complete a meaningful comparison of alternatives with regard to economics and recreation, ODFW was asked to make predictions regarding proposed fish stocking numbers, costs, angler trips, and trout catch by alternative (see ODFW Memos, Appendix D, DEIS). Based on a 2005 proposed rotenone treatment, ODFW assumed that the Alternative 2 fish stocking strategy would result in 100,000 angler trips by 2009. Predictions were made prior to completion of a draft TMDL for Diamond Lake.</p> <p>By law and mutual agreement, under all action alternatives, ODFW’s fish stocking strategy must comply with nutrient load allocations documented in the Diamond Lake component of the final Umpqua Basin TMDL. The final TMDL is expected to be completed in March 2005. Eilers et al. (2003) “TMDL Modeling and Analysis of Diamond Lake, Oregon” represents the most recent draft TMDL and per your comment is included in Appendix D of the FEIS. However, according to John Blanchard, ODEQ, there may be modifications to this draft prior to its release for public comments (Pers. com. 2004).</p>
72	Tui Chub & Lemolo Lake	Unacceptable points associated with Alternatives 2 & 3: High potential for Tui Chubs to get into Lemolo Lake	As described in the DEIS/FEIS tui chub are present in Lemolo Lake today and tui chub can currently move out of Diamond Lake into Lemolo Lake down Lake Creek.

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44	Tui Chub Contingency Plan	Details on the contingency planning for tui chub re-introduction should be incorporated into discussions under action alternatives in Chapter 3.	Appendix BB and CC of the FEIS includes additional details on the contingency plans associated with action alternatives. Chapter 3 of the FEIS includes potential effects associated with implementing contingency plans for five years beyond a seven-year project lifetime.
68	Tui Chub Contingency Plan (Alt 2 or 3)	Project planning seems to be heavily reliant on the assumption that the single treatment of Diamond Lake with rotenone would be 100 percent effective in eradicating the tui chub population, based on the success of the 1954 treatment. The draft EIS does, however, state that some scientific literature indicates that it is rare to kill all fish with a single rotenone treatment. Because there is the potential for the proposed single treatment of the lake to not be 100 percent effective (this likelihood is not quantified or discussed as length in the draft EIS), we believe that a detailed contingency plan related to tui chub should include actions to be taken in the event that treatment does not eradicate the entire tui chub population. While page 29 of the draft EIS presents a very brief description of the contingency plan that would be employed in the event that tui chub are reintroduced into Diamond Lake, there is no discussion of what would be done if tui chub remain in Diamond Lake after the treatment. We recommend that the tui chub contingency plan be expanded to identify actions that would be taken in the event that the single rotenone treatment does not kill all of the tui chub in the lake and tributaries.	In response to your comments and those of other members of the public, an additional alternative was developed and analyzed in the FEIS – Alternative 5. Alternative 5 includes a modified rotenone treatment based on the recommendations of Brian J. Finlayson, a leading expert in the use of rotenone in fisheries management. Changes in the rotenone treatment are designed to increase the likelihood of achieving a 100 percent fish kill.  Also in response to your comments, Appendix BB of the FEIS includes additional details on the tui chub contingency plan.
68	Tui Chub Contingency Plan (Alt 2 or 3)	We recommend that the contingency plan be expanded to elaborate further on the following elements presented on page 29:  <ul style="list-style-type: none"> <li>• Develop a tui chub monitoring plan that describes the methods, frequencies, and time frames that are associated with these activities. In other words, the “extensive” monitoring program described should be defined and presented in the EIS.</li> <li>• Provide additional discussion of the use of predacious fish species to prey upon chub should they be found in the lake, including the likely species to be used. This discussion is important since information presented in the draft EIS suggests that this approach may have limited effectiveness since it</li> </ul>	In response to your comments, Appendix BB and CC of the FEIS include additional details on both monitoring and the tui chub contingency plans.  As with Alternative 4 in the DEIS/FEIS, adaptive management would be used to determine the most effective mechanical treatment tools for use in Diamond Lake. The FEIS does not speculate on whether or not the tui chub contingency plans would succeed or fail, but incorporates a variety of tools that would be used to attempt to control exponential tui chub population growth if/when it becomes necessary in the future. The FEIS also acknowledges that if tui chub are reintroduced and contingency plans fail under

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		<p>appears that few chub are currently being consumed by Eagle Lake rainbow trout. The plan should also discuss whether modifying the stocking strategy to include more predacious fish would align with the current stocking plan (in total numbers of fish) or represent an increase in total numbers to be stocked.</p> <ul style="list-style-type: none"> <li>• Provide additional discussions of the mechanical treatments that would be used, under which circumstances each would be used, and their expected effectiveness in limiting tui chub population growth.</li> </ul> <p>We also suggest that the contingency plan identify other potential measures or approaches that could be employed in the event that the use of predacious fish and mechanical treatment are not effective in eliminating tui chub.</p>	<p>Alternatives 2, 3, and 5, existing water quality and fishery problems would be expected to recur.</p>
53	Tui Chub Contingency Plans & Alternative 4	<p>When monitoring finds that tui chub are back, as predicted, Alternatives 2 and 3 have a “contingency plan” to increase stocking of predacious fish and a mechanical treatment removing tui chub – virtually exactly what is described as Alternative 4. The DEIS claims that the contingency plan for Alternative 2 and 3 are actions “designed to control tui chub populations”. If they will work for Alternative 2 and 3, why won’t they work for Alternative 4? The FEIS should explain this apparent discrepancy.</p>	<p>The DEIS does not speculate on potential success or failure of the tui chub contingency plan under Alternatives 2 and 3, the plan simply incorporates a variety of tools that would be used to attempt to control exponential tui chub population growth if/when it becomes necessary in the future. The FEIS acknowledges that if tui chub are reintroduced (or as for Alternative 4, chub remain) and contingency plans fail under all action alternatives existing water quality and fishery problems would be expected to recur.</p> <p>The DEIS/FEIS indicate that if commercial fishing operations described for Alternative 4 achieve removal of 90-95% of the reproductive age chub annually for 6 years, this alternative would be expected to result in improvement in the water quality and recreational fishery. However, the document also explains that unless this same level of effort is continued on an annual basis, tui chub populations would be expected to quickly rebound.</p> <p>In response to your comments, potential effects of implementing contingency plans for five years beyond the seven-year project lifetime have been included in</p>

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			the FEIS for all action alternatives.
44	Tui Chub Life History	The USFWS has some concerns over the lack of detailed information on tui chub life history in Diamond Lake.	<p>An exhaustive literature search was conducted in an attempt to gather all literature pertinent to tui chub. All available information was used. The time and financial resources necessary to conduct additional research on tui chub in Diamond Lake was simply not available. Information collected and analyzed in other nearby lakes was used as a proxy for information specific to Diamond Lake.</p> <p>Information on specific tui chub life history traits is contained within a 1975 study by Bird, and is incorporated by reference.</p>
44	Tui Chub Link to Water Quality	The USFWS has some concerns about the unclear linkage of tui chub to degrading water quality.	<p>Information is provided in the DEIS/FEIS that explains the role of fish on nutrient redistribution and recycling (DEIS pg. 89) and the effect of high tui chub abundance on zooplankton (DEIS pg. 145, 159). The DEIS/FEIS explains how these factors are linked to water quality including elevated pH (DEIS pg. 93), high algal abundance (DEIS pg. 145), and reduced water clarity (DEIS pg. 103).</p> <p>The TMDL Modeling and Analysis by Eilers et al. (2003) reports that the high biomass of tui chub in Diamond Lake is a primary factor contributing to poor water quality. The results of the TMDL modeling analysis indicate that to meet water quality goals, it would be necessary to remove approximately 90 to 100 percent of the tui chub from Diamond Lake (Eilers et al. 2003, pg. 69). The TMDL modeling analysis indicates that water quality could be maintained after the tui chub population is reduced or eliminated by following a carefully planned and executed fish stocking program (Eilers et al. 2003, pg. 67).</p>
72	Tui Chub Persistence	The DEIS admits that alternative 2 and 3 will not eliminate the Tui Chub. As a result, continued management practices will be necessary and the agency will have put at risk the ecosystems	The DEIS/FEIS disclose that there is a level of uncertainty regarding the ability of rotenone treatments to kill 100% of the tui chub present in the lake at the

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		of Diamond Lake and human health.	time of application. Similarly, the DEIS/FEIS disclose that it is expected that tui chub or other nuisance species will once again become problematic for this lake at some unknown point in the future. The potential risks to the lake ecosystem and human health have been analyzed for all action alternatives. The Responsible Official has evaluated the potential benefits and risks of each alternative, and has identified Alternative 5 as the preferred alternative in the FEIS.
38	Tui Chub Reintroduction	<p>I am concerned about the reintroduction of tui chub into the lake. I don't know how much the DEIS addressed this very real problem, but I think it needs to be addressed. Would it be possible to require that all boats be inspected before launching to check the bait that fishermen have. I realize this would require additional law enforcement people during the summer months, which would not be cheap, but then how many millions of dollars will have been spent on the present process and on ultimate treatment as a comparison.</p> <p>Hopefully, when the rotenone treatment is done, all inlets to the lake will also receive treatment far enough up stream to ensure that no chubs can escape treatment.</p>	<p>Appendix BB of the FEIS includes additional details regarding activities designed to prevent tui chub reintroduction including potential boat inspections and cleaning stations.</p> <p>Rotenone treatments under Alternatives 2, 3, and 5 include application of liquid rotenone to inlet streams (Silent Creek and Short Creek) and installation of fish traps immediately upstream of treatment areas to prevent tui chub escapement.</p>
43	Tui Chub Reintroduction	A "reasonable assumption" of 30 years between chub invasions is projected on page 206. The 30 years is a rose-colored glasses look at it and has no basis as a sound projection of likelihood or statistical probability. This subject deserves a real discussion along with the admission that chubs will likely show up much sooner. Diamond Lake is now surrounded by hydro project impoundments populated by the chub by migrating out of the lake after the last introduction. This wasn't a possibility in '54, as the impoundments weren't operating yet.	In response to your comments and the comments of others, the FEIS does not speculate on when in the future tui chub or other nuisance species may again become problematic in Diamond Lake. The FEIS incorporates a variety of proactive measures to reduce the likelihood of reintroduction and identifies a contingency plan for attempting to control population growth if/when tui chub recur. The FEIS also describes that if tui chub are reintroduced and contingency plans fail, existing water quality and recreational fishery problems would be expected to recur.
44	Tui Chub Reintroduction	The third paragraph on page 206 of the DEIS makes a "reasonable" assumption that since nuisance fish introductions into Diamond Lake have historically occurred approximately 30 years apart, it is likely it will take another 30 years before the next "major management intervention into Diamond Lake" becomes necessary. The FEIS should clarify the basis for this conclusion or provide data supporting the statement.	As described in the response above, this reference from the Diamond Lake/Lemolo Lake Watershed Analysis is not included in the FEIS.

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53	Tui Chub Reintroduction	<p>The DEIS assumes only Alternative 4 will maintain a continued tui chub presence in Diamond Lake. This error biased the DEIS toward the other action alternatives. The effects analysis in chapter 3 never considered the return of tui chub under Alternative 2 and 3, even though there is plenty of documentation that the tui chub will return even if the lake is rotenoned.</p> <p>For instance, the Diamond Lake Watershed Analysis says, “it is virtually a certainty that tui chub or similar opportunistic species will be reintroduced” after a rotenone treatment. The DEIS also admits “there is a high likelihood that the species will be reintroduced at some point in the future....”</p> <p>To have a fair analysis of alternatives, you must change the FEIS to admit that it is virtually impossible to keep Diamond Lake tui chub-free if Alternative 2 or 3 are implemented. It is a huge hole in the analysis to leave out reasonably foreseeable consequences of the actions. If nowhere else, it should be included in Table 11.</p>	<p>As described in your comment the DEIS acknowledges that there is a high likelihood that tui chub will be reintroduced to the lake at some point in the future. The FEIS does not speculate on when in the future tui chub or other nuisance species may again become a problem in Diamond Lake, nor attempt to predict if or when the tui chub contingency plan may fail. However, in response to your comment, throughout the FEIS, Chapter 3 effects analysis, language has been added which acknowledges that under Alternatives 2, 3, &amp; 5, at some point in the future, if tui chub remain or are reintroduced, and contingency plans fail, tui chub populations would be expected to rebound and associated negative impacts to the recreational fishery and water quality to recur.</p> <p>All alternatives in the FEIS disclose potential effects of implementing contingency plans for an additional 5 years based on an assumption of tui chub presence .</p>
53	Tui Chub Reintroduction	<p>The DEIS fails to properly describe the numerous ways for tui chub to be reintroduced. For instance, in chapter 1, Purpose and Need, the DEIS states: “Tui chub are absent from Diamond Lake or if illegally reintroduced....” The FEIS should change this to reintroduced illegally, unintentionally or by wildlife. Alternatives 2 and 3 say several times the contingency plan is for when people accidentally or illegally reintroduce tui chub. The potential reintroduction by wildlife should be added to these statements in chapter 2.</p>	<p>The FEIS includes language recommended in your comment.</p>
68	Tui Chub Reintroduction	<p>The information presented in the EIS makes it abundantly clear that preventing the reintroduction of tui chub into Diamond Lake is critical to the long-term success of the project. Given the importance of this element of the project, we are concerned that the draft EIS contains very little information about the strategy that would be employed to reduce the risks of chub reintroduction. It appears that the education program presented on page 28 of the draft EIS represents the entire strategy for preventing chub reintroduction. Unfortunately, this information is</p>	<p>In response to your comments, Appendix BB of the FEIS includes additional details on the plan to reduce the likelihood of tui chub reintroduction. Required activities that would be implemented as part of the project are differentiated from other potential desired activities that are less certain to occur due to lack of funding.</p>

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		<p>very unclear in defining the measures that would ultimately be used to reduce the likelihood of tui chub being reintroduced into Diamond Lake.</p> <p>We recommend that the EIS be revised to clearly reflect the entire strategy that would be used to reduce the likelihood of tui chub reintroduction. In describing educational measures to be used, we recommend that the EIS be modified to clearly identify those measures that would be used with project implementation. As presently written, the draft EIS is not clear if any or all the “potential” measures would be used.</p>	
68	Tui Chub Reintroduction	<p>We also recommend that the EIS include a discussion of other potential “non-educational” deterrents (e.g., bounty on chubs, creel inspections) that could be employed to reduce the likelihood of reintroducing tui chub into Diamond Lake. The reasons for not including them as part of the preferred alternative should be discussed.</p>	Appendix BB of the FEIS responds to your comment.
43	Tui Chub Surviving Rotenone Treatment	<p>It is also highly likely the rotenone won't be 100% successful and the chub problem will begin to re-build immediately. This likelihood is acknowledged, though very briefly, on page 197.</p>	<p>The rotenone treatment described under Alternative 5 incorporates recommendations of a leading expert, Brian J. Finlayson, in the use of rotenone in fisheries management. Modifications from Alternatives 2 and 3 which are incorporated into Alternative 5 are designed to increase the likelihood of killing 100% of the tui chub present in the lake at the time of application. However, the DEIS/FEIS disclose that regardless of the soundness of the rotenone treatment application design, it is not possible to guarantee a 100% fish kill.</p>
66	Tui Chub Surviving Rotenone Treatment	<p>ODFW shares the concerns that Diamond Lake may never remain tui chub free. If a rotenone treatment alternative (Alternative 2 or 3) is chosen by the USFS, it is prudent that the action must be fully implemented to have the highest chance for success. As a result of not taking appropriate action towards removing the chub for over a decade, the risk of illegal introduction and the presence of other invasive fish species have increased significantly. The current fish monitoring has not confirmed any other species that are listed in the DEIS, but it is a possible likelihood that other unwanted fish species are present. Also, there have been several comments with regards to the uncertainty of eradicating the total chub population under</p>	<p>Alternative 5 of the FEIS incorporates recommendations of rotenone expert Brian Finlayson and subsequent comments provided by ODFW in a July 23, 2004 memo on the subject.</p>

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		<p>these alternatives. Some public comments have suggested that a contingency plan should be included in the final treatment action to further minimize the chances that a few chub would remain after the rotenone treatment. ODFW agrees with these comments and offer the following contingency plan.</p> <p>The DEIS under both treatment alternatives suggests application rates of active rotenone concentration of 0.1 ppm. (2 ppm of the Pro-Noxfish rotenone formulation). This equates to about 238,000 pounds of rotenone to eradicate the chub population. This rate is the “minimum” for removing other species that have the highest tolerance to rotenone, especially in organic ponds (Finlayson et al. 2000). The risk of not achieving <u>total eradication</u> is directly related to fish species, numbers of flowing tributaries, alkalinity, pH, proper application rate and concentrations, and sunlight penetration. Subsequently, additional rotenone is required in waters with high temperature, pH, alkalinity, sunlight, and potential high-tolerant species like bullheads and carp. Organically rich waters with high volumes of suspended solids and algae also require higher concentrations of rotenone (Finlayson et al 2000). The effectiveness of the rotenone formulation can only be determined by bioassays at the scheduled time of the treatment under the “real-time” circumstances.</p> <p>ODFW strongly recommends that there is adequate rotenone available on-site to meet the recommended application rates. This would require up to 476,000 pounds of rotenone for the maximum concentrations of 0.100-0.200 (ppm), which is needed to control the most tolerant fish in organic waters. The liquid rotenone application may also be needed to increase up to two-fold higher application rates based on bioassays and further information collected prior to the treatment. The additional one-time cost for this rotenone, estimated at about \$500,000, is still significantly less expensive than stocking put-and-take trout on an annual basis (\$3,000,000 over 6 years) under alternative #3. We agree with the DEIS that there is very little notable differences from alternative #2 and #3 in environmental effects.</p>	
57	Two Bear	The DEIS mentions that sediment will be removed from the	Cleanup activities proposed by the Diamond Lake

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	Creek	mouth of Two Bear Creek, but I can't find any discussion of the purpose or effects of this proposed action.	Resort if a lake drawdown is implemented are addressed as “connected actions” in multiple sections of the DEIS/FEIS. The DEIS/FEIS provides a detailed description of the connected actions in Chapter 2 (DEIS pg. 29 -30). The effects of the connected actions are documented in the following sections of the DEIS: “Environmental Effects on Lake Morphometry and Sediments” (pg. 77), Environmental Effect on Water Quality (Dissolved Oxygen, Nutrients, Alkalinity, and pH)” (pg. 98, 100), “Environmental Effects on Light and Transparency” (pg. 104, 105), “Environmental Effects on Phytoplankton and Primary Production” (pg. 148), Environment Effects on Zooplankton (pg. 168), Environmental Effects on Benthic Organisms (pg. 178), Environmental Effects on Fish and Fish Habitat (pg. 199), and Environmental Effects on Recreation (pg. 342).
41	Unacceptable Recreation & Economic Impacts	The economic and recreation report portions of the DEIS detail the importance of fishing in the list of recreational opportunities available at Diamond Lake. The Forest Service has made significant recent investments in campgrounds, boating facilities, and a paved road system and bike path around the lake and yet campground occupancy and receipts have decreased even as individual user fees have increased. The operators of Diamond Lake Resort are apparently struggling to survive financially and hiring fewer summer employees and forgoing capital improvements. Toxic algae blooms during each of the last 3 summers have severely impacted recreation opportunities and have caused the lake to be closed for public health reasons for a total of 80 days. This is unacceptable and must be corrected as soon as possible.	Thank you for your comment. The Forest Service and other partners in the Diamond Lake Work Group agree that the ecological, economic, and recreation impacts associated with the existing condition of Diamond Lake are unacceptable and we will implement the selected alternative as soon as possible.
67	Upgrade Summerhome Septic	For the west bank homesites develop formal criteria so one can gradually upgrade all the systems. (However, commenter is not too concerned about septic leakage into the lake).	Thank you for your comment. Changes in the terms of the Special Use Permits for Summerhome owners are beyond the scope of this EIS.
58	Water Quality	Water quality is not expected to improve for three years after rotenone treatment, due in part to the anticipated complete loss of zooplankton population which graze on the algae(discussion pp 94-100), and in part from nutrients from unrecovered fish carcasses (discussion, pp 97-98). Since a primary rationale for	As described in detail under the subject of “Fish Carcasses” earlier in this table, following a careful evaluation, the Responsible Official determined that additional effort toward mechanical fish biomass removal was not warranted and would not be expected

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		this entire process is the improvement of water quality, both of these negative factors can and should be better mitigated. (See Fish Carcasses and Lake Recovery & Fish Stocking)	to result in a more rapid recovery of the water quality in Diamond Lake. A detailed response to your comment on zooplankton is provided below under the subject of “Lake Recovery and Fish Stocking”.
57	Water Rights	The preferred alternative will violate several legally valid water rights during the refilling period. In fact, constructing the canal to drawdown the lake itself probably requires a water right permit that has not been applied for or granted.	<p>Oregon Department of Fish &amp; Wildlife (ODFW) and Oregon Department of Transportation (ODOT) have water rights that are potentially affected by this project. ODFW is a member of the Diamond Lake Work Group and a Cooperating Agency on the EIS. ODFW supports the project purpose and need and recognizes that they would not be able to excise their water right to store water at Diamond Lake for one season under Alternatives 2, 3, and 5.</p> <p>In regard to ODOT’s water right, there would likely be enough flow available to excise their water right under all phases of the project, but there may not be enough depth of flow to operate the existing intake. The intake may need to be lowered during the canal closure phase. ODOT officials have been contacted and have agreed to work cooperatively with the Forest Service on this issue.</p> <p>The project proposals to draw down the lake would require submitting an application for a “limited license” with the Oregon Department of Water Resources. The application process would not be started until after the Responsible Official signs the Record of Decision for the FEIS.</p>
35	Well Contamination	<p>Reference to DEIS pg. 320: The primary concern for public consumption of tainted drinking water is associated with the domestic water users of the Diamond Lake area – primarily the users of shallow wells that service the summer homes on the west shore of the lake.</p> <p>The wells of the front line cabins are approximately one hundred and fifty (150) feet from the lake and those in the second and third tiers are two hundred (200) to three hundred (300) feet from the lake and therefore the wells are located at a higher elevation. It is my understanding that there is no valid evidence</p>	As stated in the DEIS - Ground Water Section; hydrographs developed from the ground water level elevation measurements taken from the monitoring wells along the western shore of the lake in the area of the summer cabins (MW-E1, MW-E2, MW-F1, and MW-F2) during the summer and fall of 2003 indicated that the ground water indeed does flow from the recharge areas at the higher elevations around Mt. Bailey and discharge into the lake from spring through summer. However by late summer to early fall, the ground water levels in the wells closest to the lake, MW-E1 and MW-

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		<p>yet to indicate that there will be a flow of water from the lake to the shallow wells, and that so far this is just a theory to be proven by the monitoring wells. We suspect the wells from most cabins are supplied with water from different aquifers from Mt. Bailey, and it is excellent water. We know of no water from any of the wells that has been tainted by water from the lake.</p>	<p>F1 (near the first tier of cabins) had dropped to slightly below the level of the lake and thus the lake began to recharge the ground water in that area, in other words a ground water flow reversal had begun. At the same time, the ground water levels in the outer wells (farther from the lake, in the areas of the second and third tier of cabins) indicated that the water level in those wells was still above the level of the lake. Due to the depth of snow, additional water level measurements were not taken during the winter, so the drop in water level in the outer wells was predicted from the rate of drop in ground water levels depicted on the hydrographs. During this period of little to no ground water recharge in the higher elevations, it is expected that the ground water levels in the outer wells will drop to below that level of the lake. However, this will occur during the winter months when few, if any people are using the summer cabins. In addition, rotenone is very immobile once it enters the sediment or soil. Therefore, although <i>groundwater</i> would move into the wells, is considered very unlikely that <i>rotenone</i> would ever reach the summerhome wells.</p>
44	Wetland Plants	<p>Page 231, Chapter 3. Groundwater, Environmental Effects: : The DEIS identifies approximately 135 acres of Silent Creek wetlands that would be “temporarily” impacted by the draw down of Diamond Lake. Additionally, wetlands along the northwest shoreline of Diamond Lake, and along Lake Creek would be subject to desiccation and possible exposure to freezing conditions during the winter months. Paragraph four goes on to state “there are no recommended measures for mitigating the dewatering of the wetlands or small lakes.” Information on the duration and seasonality of desiccation are not provided for any of these wetland plant communities. No monitoring of the wetland community, its structure, or composition has been proposed. Monitoring and mitigation need to be an integral part of a wetland mitigation plan designed to alleviate adverse impacts to wetlands. The FEIS should provide a wetland mitigation plan that includes a plant species inventory and assessment to establish baselines for the wetland plant communities and should identify possible reference sites should</p>	<p>Duration and seasonality of desiccation in the wetland plant communities is clarified in the FEIS. The Silent Creek and northwest shoreline wetlands are predominately vegetated with rhizomatous plants that can tolerate periods of drying. Impacts are expected to be temporary. Water levels are normally at their lowest during early winter—the conditions are not different enough to expect impacts to shoreline and Lake Creek wetlands. Botanical monitoring and mitigation is described on page 40 of the DEIS. Additional details about wetland monitoring are outlined in the Monitoring Plan in Appendix BB of the FEIS.</p>

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		<p>revegetation become necessary.</p>	
<p>44</p>	<p>Wetland Plants</p>	<p><u>Page 250, Chapter 3, Wetland Plant Ecology:</u> Adverse impacts to wetlands are expected to occur as a result of the draw down of Diamond Lake, and the flooding and subsequent drying of Lake Creek. Direct and Indirect Effects, on page 251, elaborates on adverse effects of all alternatives on wetlands but does not present any monitoring baseline data that would assist with identification of potential changes to rare plant communities or wetlands as a result of implementation of any alternative. No mitigation has been proposed to alleviate potential impacts. The DEIS acknowledges fen-wetland systems along Lake Creek (p. 252) supported primarily by surface and groundwater flows from Diamond Lake. It identifies a moderate risk of direct negative effects to these habitats but provides no plan to ameliorate, monitor, or mitigate for impacts. The FEIS should elaborate on specific measures to be taken to establish monitoring baselines and mitigation for adverse impacts.</p> <p><u>Page 253, Chapter 3. Wetland Plant Ecology, Cumulative Effects:</u> The text identifies that implementation of either treatment alternative would likely contribute to negative cumulative effects through drying, desiccation and decline in species richness. Although overall negative effects to wetlands in the project area are acknowledged, no monitoring nor mitigation has been proposed. The FEIS should include monitoring and mitigation plan for wetland habitat impacts.</p> <p>Table 32 summarizes effects to wetland plants from the range of alternatives. It is not clear if it refers to impacts to wetlands or to rare plant communities within wetlands. It is also not clear if it summarizes all wetland communities impacted by the range of alternatives. This table should be modified in the FEIS to include a summary of the wetland community impacts at Silent Creek, Diamond Lake, and Lake Creek, and a presentation of the proposed plans for monitoring and mitigation of any short- and long-term negative impacts.</p>	<p>The DEIS/FEIS acknowledges that there is potential for negative impacts to species richness in wetlands under Alternatives 2, 3, and 5. However, any negative impacts are anticipated to be of only short-duration (DEIS pgs. 251-254). Because the wetlands are anticipated to rapidly recover to their pre-drawdown state, no mitigation is recommended other than measures for rare species outlined on page 40. The Responsible Official identified Alternative 3 as the preferred alternative in the DEIS and Alternative 5 as the preferred alternative in the FEIS because he believes the long-term benefits associated with these Alternatives outweigh the short-term negative impacts.</p> <p>Monitoring is acknowledged to be a critical component to validating assumptions in the DEIS/FEIS and adapting to future management challenges. Page 40 describes proposed monitoring and Appendix BB of the FEIS contains a more detailed description of proposed monitoring.</p> <p>Additional language has been added to the FEIS to clarify the contents of Table 32. Mitigations are described in Chapter 2 and monitoring is summarized in Appendix BB.</p>

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1	Wildlife	<p>The DEIS did not highlight the following animals that I have found in or near Diamond Lake: bear, porcupine, skunk, kangaroo mice, silver fox, golden marten, western bluebird, eagles, voles (for gray owls), polliwogs and tadpoles, Leopard frogs, marbled salamander, alligator lizard and blue-tailed skink, green and brown type tree-frogs, ribbon-snake and a pinkish-gray racer (or kingsnake?).</p> <p>What happens to amphibians after a rotenone poisoning? Amphibian stocking?</p>	<p>In compliance with the National Environmental Policy Act and Forest Service regulations, the DEIS/FEIS describe potential impacts of all alternatives on wildlife species listed as proposed, threatened or endangered under the federal Endangered Species Act and species included on the Region 6, Regional Forester’s Sensitive Species list. Additional species or species groups, such as reptiles and amphibians, bats, waterfowl, and “other mammals” are also discussed in this document at the discretion of the wildlife biologist, in the interest of full disclosure. It is not required or practical to discuss every individual species in detail, however, most (not all of the species listed occur in the area) of the species described in your comments are “represented” by species with similar habitats or life histories as those described in the Biological Evaluation.</p> <p>Potential impacts of a rotenone treatment on amphibians are described in detail in the DEIS/FEIS. As documented on page 38 of the DEIS, for alternatives that include a rotenone treatment, the Forest Service would monitor for amphibians in Diamond, Horse, and Teal Lakes. If amphibian populations and species diversity do not recover naturally, individual amphibians from suitable surrounding habitat will be transplanted into these areas to facilitate recovery of the amphibian populations.</p>
44	Wildlife	<p><u>Page 37 and 38, Chapter 2. Wildlife Management:</u> The objectives seem to eliminate some other species from detailed analysis. If impacts are anticipated to other species (ie. otter, beaver or other wildlife species) appropriate monitoring or mitigation needs to be discussed in the FEIS.</p>	<p>Potential impacts of all alternatives are described for a variety of wildlife species that are common and require no special protective measures. Although species such as beaver and otter may be temporarily displaced or otherwise impacted by implementation of action alternatives, none of these impacts are expected to result in loss of viability of the species. General observational monitoring would occur for all fauna during and after project implementation. The FEIS includes all species specific mitigation and monitoring recommended by the project wildlife biologist, reviewing</p>

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			biologists, independent experts, and biologists on the Diamond Lake Work Group.
44	Wildlife	<u>Page 295, Chapter 3. Osprey, Environmental Effects, first paragraph:</u> The DEIS proposes to mitigate impacts to osprey with the same supplemental feeding program described for eagles. The Department is not aware of any definitive feeding program for osprey. Also, it is not likely that osprey will utilize the same prey base as the eagle, whose diet is more easily supplemented with mammal carcasses. The Umpqua National Forest should work with the Service to develop a supplemental feeding plan for osprey.	It is anticipated that the supplemental feeding program will utilize fish versus mammal carcasses. The Forest Service will work cooperatively with the US Fish & Wildlife Service and ODFW to develop and implement a supplemental feeding program for eagles and osprey. The DEIS/FEIS acknowledge that even with a supplemental feeding program it is expected that reproductive success for osprey would be compromised for one or two breeding seasons.
53	Wildlife & Rotenone	The DEIS described what was a “lethal” rotenone dose to wildlife like birds and mammals. But the DEIS never described what dose would simply “sicken” the animal. Just because the animal doesn’t keel over dead from consuming rotenone, doesn’t mean it couldn’t die from increased predation risk because it was sick.	We found no toxicity data that described rotenone levels that would sicken animals. It is possible that at some large, unquantified, sublethal rotenone ingestion level that wildlife of any species could become ill and potentially more vulnerable to predation.
44	Winter Conditions	<u>Page 82, Chapter 3. Water Temperature and Thermal Properties, Affected Environment, third paragraph:</u> The document mentions the icing over of Diamond Lake from December through March in most years. The FEIS should elaborate on impacts to all aspects of the project from ice and freezing conditions.	The DEIS/FEIS considers the effects of all alternatives for the entire year. Although as explained in the DEIS/FEIS (DEIS pg. 84) limited water quality data is available during the period when the lake is typically covered by ice, winter conditions were considered in the DEIS/FEIS including sections: Water Temperatures and Thermal Properties (DEIS pg. 81-84), Water Quality (Dissolved Oxygen, Nutrients, Alkalinity and pH (DEIS pg. 84-101), Streams and Streamflow (DEIS pg. 106-119), Streams and Water Quality (DEIS pg. 119-140), Aquatic Biology – Phytoplankton and Primary Production (DEIS pg. 141-151), Aquatic Biology - Macrophytes (DEIS pg. 151-158), Aquatic Biology – Zooplankton (DEIS pg. 158-168), Fish and Fish Habitat (DEIS pg. 182-217).
65	Zooplankton	I wonder if there aren’t other innovative ways to encourage the survival of beneficial zooplankton.	Diamond Lake’s aquatic food chain has been dramatically altered by the continued presence of a very large tui chub population. Experts from multiple agencies and institutions, as well as members of the public, have been consulted regarding options for

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			restoring the ecological balance of the lake. Alternatives explored, but eliminated from detailed study are documented in Chapter 2. At this time, the five alternatives documented in the FEIS represent what the Forest Service considered to be the most viable options for facilitating the recovery and persistence of large bodied zooplankton species in Diamond Lake.
66	Zooplankton	The goal of ensuring there is no significant loss of zooplankton population would be most likely met, and have a less risk of failure, under the assumption of eradicating all of the chub compared to the possible strategies of different numbers, sizes, and stocks of fish released by ODFW after a rotenone treatment. This is well documented with the scientific information provided in the DEIS with regards to the lake’s water quality and biological health over the past several decades when chub have been illegally introduced into the lake, compared to when only fingerling trout were stocked and present at a base-level.	Potential short and long term impacts on zooplankton populations, including proposed fish stocking strategies are documented in detail in the DEIS/FEIS.

## **PUBLIC INVOLVEMENT FOLLOWING THE DEIS COMMENT PERIOD**

In response to comments on the DEIS by ODFW (Cooperating Agency), members of the public, and the IDT, a fifth alternative was designed for incorporation into the FEIS. This alternative utilizes a modified rotenone treatment and fish stocking strategy. Potential effects of Alternative 5 are very similar to Alternatives 2 and 3 and either of these alternatives could have been modified to include changes proposed under Alternative 5. However, due to the high level of public interest in this project and for purposes of full disclosure, the Forest Service chose to include and analyze Alternative 5 as a separate alternative in the FEIS as authorized by 40 CFR 1503.4(a) and FSH 1909.15(24.1). Information relevant to Alternative 5 was distributed to the public and a public meeting was held at the Douglas County Library on August 10, 2004. On September 20, 2004 the Diamond Lake Work Group and IDT held an additional public meeting to discuss Alternative 5, completion of the FEIS, and concerns of the public regarding delays in the project. On October 12, 2004, the Forest Service received a letter from Umpqua Watersheds, Umpqua Valley Audubon, and the Oregon Natural Resources Council (ONRC) requesting consideration of a sixth alternative for incorporation into the FEIS. Alternative 6 was very similar to the existing Alternative 4. Per the request of these groups, the Forest Service met to discuss their proposal with them on October 20, 2004. A public meeting to discuss Alternative 6 was held on October 25, 2004. At this meeting, Jim Caplan decided to incorporate agreed upon aspects of Alternative 6 into DEIS Alternative 4. On October 28, 2004, the Forest Service and ODFW again met with Alternative 6 proponents to refine and finalize Alternative 4, again as authorized by 40 CFR 1503.4(a) and FSH 1909.15(24.1). ONRC representatives did not attend any of the meetings documented above. During the month of November 2004, the Forest Service has received multiple letters from various members of the public requesting that the Agency expedite and complete the NEPA process.

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