APPENDIX K
RESPONSE TO PUBLIC COMMENTS

As described in **Section 12.0**, the formal public comment period for the Upper and North Fork Big Hole River TMDLs extended from February 16th, 2009 and extended through March 20th, 2009. Three individuals/organizations submitted formal written comments during the public comment period. Excerpts of the comments have been organized by primary topics in this section. Responses prepared by DEQ follow each of the individual comments. The original comment letters are located in the project files at DEQ and may be reviewed upon request.

1. General TMDL Process and Considerations

Comment 1.1: A significant omission in the draft TMDL plan is that DEQ does not address nutrient impairment of several streams on both the 1996 *and* 2006 303 (d) lists. On page 22, DEQ states that certain pollutants were not addressed "due to project budget and time constraints." Also, on page 193 DEQ lists several nutrient impaired streams, including Fishtrap, Gold, Charcoal, Sawlog, and Wickiup creeks, and states that these watersheds were not sampled due to the "timeframe of the listings and this project." DEQ dismisses the development of these TMDLs by stating that they will be addressed by future efforts.

Response 1.1: Section 1.2 was edited to reflect that the project budget did not impose limitations on pursuing impairment listings for this TPA. The Integrated Report listing process is ongoing, and not a stagnant process between reports. Because of this, a portion of the nutrient listings in the TPA which appear on the 2006 list did not become evident in time for inclusion into this project, while other 2006 nutrient listings were evident at project initiation. Fishtrap, Gold, Charcoal, Sawlog, and Wickiup creeks were listed after the nutrient portion of this TMDL project was initiated. After a certain timeframe during each TMDL project, DEQ can not easily incorporate TMDLs for new pollutant/water body listings.

A TMDL was not completed for a 1996 nutrient listing for the Big Hole River because there was not sufficient information to indicate if a TMDL is needed, new numeric standards may apply in the near future, and it was not identified for potential nutrient impairment on the current impaired waters list at project initiation. Alternatively, this project did monitor nutrient conditions in the Big Hole River for use in future impairment listing assessment activities and possible nutrient TMDL development.

Comment 1.2: DEQ similarly postpones the development of TMDLs for sediment in Twelvemile and Wickiup creeks. Although an adaptive management approach such as in section 10 is to be commended, the indefinite postponement of TMDLs for pollutants addressed on the 303 (d) lists is not justified. We are concerned about open ended delays for TMDL development for pollutants because of a lack of resources. Certainly, a large portion of our membership works for state and federal agencies, and we understand limited budgets and time constraints. Still, the indefinite delays present a concern.

Response 1.2: Section 5.2 was edited to indicate that the impairment listing timeframe for these pollutant/water body combinations was later than the TMDL project initiation timeframe. After a certain timeframe during each TMDL project, DEQ can not easily incorporate TMDLs for new pollutant/water body listings. The sediment listings for Twelvemile and Wickiup Creek are not addressed within this document and will be addressed during future TMDL development.

2. Water Quantity and Temperature

Comment 2.1: First, I am pleased about the emphasis on river temperature and the effect of water withdrawal on water temperatures in the lower reaches of the river. I believe that the lower river from the Notch Bottom to the confluence has great potential for fisheries improvement, but for that to happen there will have to be improvements in water quantity and water quality. In 2009 Fish Wildlife, and Parks will begin monitoring the fish population in this area of the river to establish a baseline of fisheries information. With the cooperation of local water users, the Big Hole Watershed Group is involved in current projects aimed at improving water quality and quantity in the lower river. It is our hope that, through cooperative efforts between water users, the watershed group and government agencies, water quantity and quality can be improved in the lower river, resulting in improvements to aquatic habitat and recreational fisheries.

> **Response 2.1:** DEQ hopes local interests pursue restoration of water quality issues in the Big Hole River Watershed. DEQ promotes coordinated efforts to address water quality restoration. As stated, temperature impacts are related to water quantity in the Big Hole River above Wisdom and downstream of Notch Bottom. The nonpoint source program at DEQ is designed to assist local objectives which will result in water quality restoration.

Comment 2.2: One aspect of flow improvement that I feel was omitted from the document is the importance of tributary stream inputs to the main river to moderate flows and temperature. Most of the tributaries that enter the Big Hole from Pintlar Creek downstream flow from high mountain peaks through heavily forested areas. Because of this, stream temperatures are often less than those that may be present in the mainstem Big Hole River. Several substantial tributary streams from the Pintlar Creek to the mouth are dewatered. If improvements to irrigation systems and infrastructure could be made to maintain flows in these streams, substantial improvements in flows and temperature are possible in the Big Hole River. Streams that may fit into this category could include Mudd Creek, Seymor Creek, Wise River, Divide Creek, Moose Creek, Camp Creek, Rock Creek, Willow Creek, and Birch Creek. This is not a comprehensive list and it is not clear what, if anything, could be done to improve stream flows; however, opportunities likely exist to improve water quality and quantity in the Big Hole River through tributary inputs. Improvements in flow in these tributary streams will also likely benefit fisheries by maintaining connectivity between spawning and rearing streams and the main river. Improvements could also benefit other native aquatic species like the pearlshell mussel.

> **Response 2.2:** DEQ agrees that water management in the tributaries may affect stream flow and thermal conditions in the Big Hole River. **Tables 8-10 and 8-11** were amended to include tributary irrigation water management into the TMDL allocations for the Big Hole

River. Tributary irrigation water management was also added to the restoration and adaptive management sections (8.7 and 9.4.4) of the document.

Comment 2.3: Similar to the TMDL developed for the upper Big Hole River, this TMDL acknowledges the relationship between dewatering and temperature, and the MCAFS applauds DEQ for addressing dewatering as a cause of thermal loading. Nonetheless, by not addressing temperature in the many dewatered tributaries, this plan is limited in its ability to protect cold water fisheries. Dewatered tributaries act as point sources of thermal loading to the main stem, and the load allocation portion of the TMDL should have reflected these inputs. DEQ uses this approach in identifying watershed scale contributions of sediment, and the same principles apply. Moreover, in the Big Hole River, Arctic grayling, and presumably other fishes, seek thermal refuge in tributaries during summer months, and limiting the analysis of temperature to the main stem and a single tributary ignores seasonal habitat use. Identifying dewatered tributaries with potential to maintain greater flow through cooperative agreements with irrigators would have provided a pragmatic approach to improving water quality, and protecting sensitive species. This sort of analysis could have an important nexus to the restoration and conservation efforts currently underway in the watershed lead by Montana Fish Wildlife and Parks and the Big Hole Watershed Committee, among others.

Response 2.3: See response to comment 2.2. The comment is correct in that tributaries do act as thermal sources to the Big Hole River. Allocation tables were updated to reflect this source of potential heating. The adaptive management and monitoring sections of the document were also updated to include follow up monitoring of tributary irrigation water management practices and tributary influences on the Big Hole River.

Comment 2.4: The draft TMDL and water quality restoration plan for the middle and lower Big Hole River is an improvement over recent plans because it addresses the link between temperature and dewatering. Nonetheless, to address thermal loading effectively, DEQ should have taken a watershed scale approach, as occurs with basin-wide sediment load modeling.

Response 2.4: Montana DEQ addresses stream flow and irrigation water management for temperature TMDLs where it appears to be an influencing factor upon thermal conditions. In some of Montana's TMDL Planning areas where TMDLs have been completed, irrigation management did not appear to influence stream temperatures considerably, and therefore it was not necessary to address flow within the context of TMDL development and meeting Montana water quality standards. See responses to comment 2.2 and 2.3 for response to the watershed approach to thermal modeling.

3. Sediment

Comment 3.1: There are a few specific areas of concern that currently impact fisheries in the area covered by the lower Big Hole TMDL. First is the area near upper California Creek. This area has been severely impacted by the Anaconda smelter operations. Fallout from the smelter has destroyed the vegetation on the hill slopes resulting in chronic erosion and fine sediment inputs into California Creek and later into French and Deep creeks. Reclamation of similar areas on the Pacific side of the Continental Divide are underway using settlement funds; however,

funding from this source is not currently available for areas on the Atlantic side of the Continental Divide. Chronic fine sediment loads from California Creek are likely resulting in significant impacts to fisheries and other aquatic organism. Pearlshell mussels are particularly sensitive to high amounts of fine sediment and there is a population of these mussels in Deep Creek, downstream of California and French creeks. It is unknown whether mussels are present in either California or French creeks, but it is likely that they were present historically. Reclamation of this area should be a high priority to improve water quality in the drainage.

> **Response 3.1**: The TMDL identifies sediment issues derived from vegetation suppression due to smelter fallout in Section 9.4.1 Table 9-1. Also, Table 5-68 was updated to reflect smelter fallout as a source addressed by the sediment TMDL allocation. DEQ contacted Montana NRDP during the TMDL project to express smelter fallout concerns in the Big Hole Watershed and the fact that NRDP boundaries are set to the west of the continental divide near this area of concern.

Comment 3.2: Another important area that is being impacted by fine sediment inputs is upper Trapper Creek. Trapper Creek is home to native westslope cutthroat trout. Fine sediment from existing roads and from past mining sites likely negatively affect fisheries habitat and fish populations in the drainage. Many sections of the main Trapper Creek road upstream of Sappington Creek to the top of the drainage suffer from chronic fine sediment erosion. Fine sediment originating from roads is entering stream networks and likely having substantial impacts on aquatic habitats. Brook trout are also present in Trapper Creek and compete with the native cutthroats. High fine sediment loads tend to favor the non-native brook trout, which have less stringent spawning requirements than westslope cutthroat trout. Addressing the issues of fine sediment loading from roads and mining areas should also be a priority of future restoration activities.

> **Response 3.2:** Unpaved roads are identified as a source of sediment in the Trapper Creek Watershed and provided a sediment allocation on a percent reduction basis. Section 5.6.25 and Table 9.1 were amended to provide a larger focus on sediment reductions from unpaved roads. Additional language was added which explains that roads may be a localized source and may affect uses in specific areas of the watershed even though loads appear to be small compared to other sources in the watershed.

4. Metals

Comment 4.1: One last area of concern that does not appear to have been monitored for water quality, particularly as it relates to potential mining impacts, is the upper reaches of Moose Creek. Fisheries surveys in the area indicate that there may be mining related water quality impacts in the North Fork Moose Creek. This may be a location to perform additional water quality measurements to determine if historic mining activities are having an impact on water quality.

> **Response 4.1**: Table 10.2 was updated to incorporate this comment into guidance for future monitoring activities.

5. Water Quality Restoration

Comment 5.1: In regard to water quantity, I believe this plan did not address the potential to increase flows through vegetative manipulation. I am generally concerned about timber harvest and the positive impacts it has on the water budget. Using BMP's and improved logging methods would mitigate many of the negative impacts associated with logging. Increasing instream flows has a positive impact on most of the water quality issues. It has been my experience in dealing with resource and wildlife issues in the last 20 years, that objective science is lacking on both sides. Many of these scientific studies are designed toward a predetermined outcome and are used west wide rather than on a site specific basis. The ability of a forested canopy to intercept and evapo-transpire precipitation is huge and needs to be considered in addressing water quantity. This needs to be considered in this exercise.

> **Response 5.1:** There exists considerable debate about both the extent and nature of human-caused changes in the forest landscape, and the need and means to address those changes. Though not explicitly addressed within the TMDL and allocations section of this document, Section 9.4.5 (restoration section) was amended to address this comment by including a discussion of forest management, conifer density and water yield.

Comment 5.2: Not much is known in the basin about underground storage capacities and the eventual return flows. There have been a few site specific studies that shed some light; we need to know more. Underground storage is most efficient, returns water to the stream at a later date and at a lower temperature in the summer and a higher temperature in the winter. An effort to identify areas in the basin that have the capacity to store water under ground during high flow with resulting delayed return flows is a way to address instream flows and water temperature. This needs to be addressed at least as a tool in this TMDL.

> **Response 5.2:** The irrigation system in the Big Hole River Watershed likely acts as a groundwater storage system from early season irrigation while at the same time providing stream dewatering at potentially critical low flows. Future studies should investigate irrigation water return flow timeframes from specific areas along the Big Hole River and tributaries. A portion of spring and early summer flood irrigation water likely returns as cool groundwater to the River during the heat of the summer. These critical areas could be identified so that they can be preserved as flood irrigation areas, with water use improvement practices for irrigation during periods of low flow and elevated temperatures. Other irrigated areas which do not contribute to summer groundwater returns to the river should be identified as areas were irrigation efficiencies are beneficial to preserving flow in the River during hot summer timeframes. The quantity of winter baseflow should also be considered during these investigations. Section 9.5.4.1, Irrigation and Stream Flow Restoration Recommendations, was amended to address this comment.

Comment 5.3: The health of the riparian area as it relates to shade and cooler water temperatures is important. In the lower Big Hole between Melrose and below the Notch Bottom, the beaver is doing significant damage to the cottonwood stands along the river. We have fenced the entire river along our land above Glen to enhance the riparian character of the bank to naturally armor the bank against erosion. This practice also increases brush, trees and results in

more shade. The beaver caused riparian damage and their control certainly should be addressed in this document.

Response 5.3: Though not explicitly addressed within the TMDL and allocations section of this document, Table 9.3 in the Restoration Section was amended to include beaver and wildlife management. The following language was added to the table:

> "Monitor and manage beaver populations to trap sediment and slow runoff in some areas of tributaries. If appropriate, manage beaver populations on Big Hole River to reduce riparian tree mortality. "

Thank you for your stewardship of the riparian area.