APPENDIX E: RESPONSE TO PUBLIC COMMENTS

Response to Comments

As described in Section 6.0, the formal public comment period extended from November 19, 2004 to December 20, 2004 for the draft "Water Quality Assessment and TMDLs for the Dearborn River Planning Area". Four individuals submitted formal written comments and one individual met with EPA in person to present comments verbally. Their comments have been summarized/paraphrased and organized by topic below. The original comment letters are located in the project files at DEQ and may be reviewed upon request.

Responses prepared by EPA and DEQ follow. Where specific modifications to the document have been made in response to comments, they are noted in the responses. Notable modifications between the draft and final versions of this document include:

- The introduction (i.e., Section 1.0) has been modified to include a description of the technical approach used in the Dearborn TPA.
- Section 6.0 (entitled "Proposed Monitoring Strategy for the Dearborn River" in the draft document) has been revised and is now entitled "Proposed Future Studies and Adaptive Management Strategy". The revised section presents proposed future studies to address identified data gaps and/or uncertainties. A conceptual adaptive management strategy is also included in this section.
- A "Public Involvement" section (i.e., Section 7.0) has been added to the final document.
- A supplemental evaluation of the macroinvertebrate data collected in the mainstem Dearborn River, focusing on use of a Fine Sediment Index (Relyea, 2005), was conducted and is now included in Section 3.8.1. The results of this supplemental analysis are similar to the results from the previous analysis and, in general do not suggest fine sediment impairments in the mainstem Dearborn River.
- The analysis of temperature conditions in the Dearborn River was updated to include continuous (every 15-minute) data available for the period 1995 to 2004. These data did not add significantly to the temperature analysis that was reported in the draft document because they do not provide additional insight as to natural temperatures in the Dearborn River.

A. Temperature and Flow Issues

A1. **Comment:** The analysis regarding temperature pollution in the Dearborn River was inadequate and needs to be reevaluated.

Response: First, as stated in the draft document, we agree that the temperature analysis is inadequate and that further study is necessary. The question that needs to be answered is this: Is Montana's temperature standard violated in the Dearborn River? Montana's temperature standards were originally developed to address situations associated with point source discharges, making them somewhat awkward to apply when dealing with primarily nonpoint source issues, such as with the Dearborn River. For waters classified as B-1 (i.e., the Dearborn River), the maximum allowable increase over naturally occurring temperature (if the naturally occurring temperature is less than 67º Fahrenheit) is 1° (F) and the rate of change cannot exceed 2°F per hour. If the naturally occurring temperature is greater than 67º F, the maximum allowable increase is 0.5º F (ARM 17.30.623(e)). In practical terms, the temperature standards address a maximum allowable increase above "naturally occurring" temperatures to protect the existing temperature regime for fish and aquatic life. So, it is not possible to directly apply Montana's temperature standard to the Dearborn River without knowing what the "naturally occurring"

temperature regime is in the Dearborn River. Since temperature data were not collected in the Dearborn River before it was impacted by human's actions, it will never be possible to know definitively what the "naturally occurring" temperature regime is for the Dearborn River.

We began the process by compiling all available temperature and flow data for the Dearborn River and tributaries and we also installed three continuous temperature recorders in the Dearborn River. We then sought similar data from streams that may be considered suitable reference streams for the Dearborn River (i.e., minimally impacted streams with similar hydrologic/geomorphic characteristics in similar settings). Streams that meet these characteristics would generally need to be along the Front Range and may include the Sun River, Teton River, Dupuyer Creek, Cut Bank Creek, Little Prickly Pear Creek and possibly others. Unfortunately, we were unable to locate a suitable reference stream that was not already significantly impacted by human activity and/or with sufficient data for comparison purposes. That left us with the modeling option that is articulated in Section 3.8.1.

We are well aware of the fact that there is a great deal of uncertainty associated with this approach. The results suggested a 1.2 °F increase in temperature associated with irrigation withdrawals. The model error was plus or minus 2.1 degrees. These results do not allow us to confidently answer the question: Is Montana's temperature standard violated in the Dearborn River? Therefore, we not only agree with the comment that *the analysis regarding temperature pollution in the Dearborn River was inadequate and needs to be reevaluated*, but we proposed additional study in Section 6.0 of the document to develop a better understanding of the potential temperature issues. Note that Section 6.0 of the document has been modified in response to public comment and DEQ/EPA have committed to a supplemental temperature study.

A2. **Comment:** This analysis did not consider all of the available temperature data. For example, FWP has spring through fall temperature data (recorded every half hour) from 1997 through 2004 near the Hwy 287 Bridge and the USGS collected data every 15 minutes through the period of record, and hourly readings (or better) are available through the USGS data archives (Steve Lynn, USGS, personal communications, 12/17/04). These data should be analyzed and reconsidered in regard to the TMDL for temperature.

Response: We were not aware of these additional temperature data. The FWP data were not mentioned during our conversation with Mr. Travis Horton (FWP) on June 24, 2004. In response to this comment, we contacted Mr. Horton and obtained the FWP temperature data. Temperature data were requested from USGS on April 7, 2004 and the only 15-minute data that were provided were for the period October 1, 2001 to June 16, 2003. These 15-minute temperature data are presented in Figure 3-10 of the public review draft report and were used during the analysis. In response to this comment, we contacted Steve Lynn on January 7, 2005 and obtained all of the available temperature data (which cover the period October 1, 1995 to September 30, 2004). These data were added to the final report but did not added significantly to the temperature analysis that was reported in the draft document because they do not provide additional insight as to natural temperatures in the Dearborn River. The data will be utilized in the proposed supplemental temperature study presented in Section 6.0 of the final document.

A3. **Comment:** The cumulative influence of riparian alterations in the basin (tributaries and mainstem) and their effect on water temperature throughout the basin should be evaluated.

Response: We agree and this is addressed in Section 6.0 of the final document.

A4. **Comment:** The narrative on page 13 of the draft document regarding the use of the head gate at the Flat Creek diversion is in error. The head gate is used on an as needed basis.

Response: Comment noted. The final document has been modified to address this comment.

B. Fish

B1. The following two comments suggested that the draft document did not adequately describe or consider the cold-water fishery. They also pointed out a potential relationship between temperature, nutrients, sediment and whirling disease. A single response is provided for these two similar comments.

B1a. **Comment:** The description of the cold-water fishery in the Dearborn River was not accurate. The Dearborn River is the main spawning and rearing tributary to the Blue Ribbon trout fishery in the Missouri River. Rainbow trout ascend the Dearborn River annually from March through May, spawn, and then return to the Missouri River. After hatching most rainbow trout rear for one winter in the Dearborn River basin before migrating to the Missouri River during spring runoff. Therefore, habitat and environmental conditions in the Dearborn River Basin set year class strengths for the rainbow trout population in the Missouri River. FWP has over 20 years of data relating to the production of trout in the Dearborn River, and impacts from low flows and high water temperatures are evident in these data. In addition, FWP has 5 years of data estimating the annual numbers of emigrating rainbow and brown trout.

B1b. **Comment:** The TMDL is thoroughly inadequate in how it describes the fishery of the Dearborn watershed. The description of connectedness with the Missouri River fishery is especially poor. For example, the agencies should have more rigorously reviewed - and consulted with FWP on - data used for estimating populations by age-class in the river. This includes correlating juvenile abundance (especially yearling fish) in the Missouri and the data on young of the year from screw trap capture in the Dearborn. These data can help determine how water years, temperature and possibly sediment transport affect annual production of Missouri River trout spawned in the Dearborn. We note that the Middle and South Forks, as well as Flat Creek, have populations of resident trout. There are very little data on these populations, so it's difficult to determine with any certainty whether the targets and threshold values in the TMDL are protective enough... Finally, there is no accounting in the TMDL for the relationship between temperature, nutrients and sediment to spore densities for whirling disease. Infection levels of whirling disease in fish in the middle and south forks are alarming, averaging a 4.9 in 2003 samples. A 4.9 is extremely hot, meaning there is essentially no recruitment in the sample population. Whirling disease occurrence is directly related to habitat conditions and temperature. It may be that the sediment targets, thresholds and supplemental indicators used for this TMDL are wholly inadequate for maintaining "increasing or stable" trends for coldwater fish populations.

Response: We have added a discussion of the Dearborn River fishery in Section 2.0 to enhance the description of the fishery provided in the final document.

Relative to whirling disease, it should be noted that this document focused on water quality standards compliance associated with discharges of pollutants (i.e., fine sediment and temperature). Montana's water quality standards for both sediment and temperature address allowable increases over "naturally occurring" levels. In general, if sediment and temperature levels are similar to "natural", including a consideration of all "reasonable land, soil, and water conservation practices" (ARM 17.30.602(21)), it is assumed that the water quality standards have

been met. At this point in time, neither the Montana Water Quality Act nor the federal Clean Water Act provide for more protection relative to the potential relationship between these two pollutants and whirling disease.

Finally, based on the available data, the Middle Fork Dearborn River, South Fork Dearborn River, and Flat Creek are considered impaired by fine sediment. Sediment load reductions have been proposed (Sections 5.1.1, 5.2.1, and 5.3.1), targets have been established (Section 5.4), and a phased conceptual restoration strategy has been proposed beginning with supplemental monitoring activities (Section 5.5 and 5.6). Implementation of this plan should result in reduced fine sediment levels. Therefore, to the extent that whirling disease is linked to fine sediment levels in these tributaries, whirling disease should also be addressed.

At this point in time, limited information is available on the relationship between whirling disease, temperature, fine sediments, and other habitat conditions. We are not aware of any studies, research, or literature that specifically correlate whirling disease with in-stream fine sediment levels in any measurable way. If future studies result in the establishment of such a correlation, TMDL targets can be modified if deemed appropriate, and in compliance with the State's water quality standards, at that time.

C. Fine Sediment/Pebble Counts

C1. **Comment:** At several points throughout the public review draft (e.g., p 79) statements were made concluding that excessive fine sediments were not impacting aquatic life or were not a significant impact to aquatic life. These statements are not supported by field data since not all types of aquatic life were investigated. Investigations on aquatic life were limited to algae and macroinvertebrates, and did not consider the various life-history stages of the many fish species. For example, fine sediments have been shown to cause suffocation of salmonid eggs in redds, or to prevent emergence of newly hatched fish. Increased nutrients, fine sediments, and organic materials may increase whirling disease infection levels in rainbow trout by creating more habitat for tubifex worms. Whirling disease has recently become a problem in the Dearborn River basin. Infection rates in the South Fork and the Middle Fork of the Dearborn are among the highest infection rates observed in Montana.

Response: Montana's 303(d) list addresses "aquatic life" and "cold-water fish" as two separate beneficial uses that must be supported. When we refer to aquatic life in the document, we are not referring to or including fish. We are well aware of the fact that fine sediments can affect the various life-history stages of many fish species. All of the targets and supplemental indicators presented in Table 3-4 have either a direct or indirect link to support of both the "aquatic life" and "cold-water fish" beneficial uses.

C2. The following four comments all pertain to the use of pebble count data and, therefore, are addressed together. Combined, the comments suggested that:

- Too much reliance was placed on the use of the pebble count data
- The pebble count data may or may not be spatially or temporally representative
- No discussion of statistical certainty was provided.

C2a. **Comment:** Reliance on pebble count data without any discussion of data quality objectives associated with these measures is not in accordance with EPA's guidance on data quality objectives. Pebble counts are a biased measure, particularly in estimating the finer

gradations. In addition, this is most commonly used as a geomorphic measure. Studies applying this method to evaluate fine sediment stress typically train field observers to avoid the larger particle bias. There was no mention of training to reduce this type of bias. In addition, the document contains no discussion of the precision, accuracy, or representativeness of substrate conditions along the length of the Dearborn River.

C2b. Comment: The only nominally valid data related to sediment we found are from Wolman pebble counts. However, pebble counts are inherently biased towards the larger fractions in sediment. It is unclear whether the agencies reviewed whether bias occurred because the TMDL does not include a Quality Assurance Plan addressing precision, accuracy and representativeness in the data. We note that even if the quality of the pebble counts meets standards, too few were done in too few places to provide a statistically valid representation of substrate conditions in the Dearborn River and its main tributaries. Basically, the agencies have taken limited data and stretched it to make sweeping conclusions about long reaches of stream.

C2c. Comment: The EPA reports the results of five pebble counts for the entire river without addressing the representativeness of this sampling scheme. Do these few sampling sites adequately describe substrate composition for the entire Dearborn?

C2d. Comment: Statistical certainty is another technical aspect of natural resource planning that is left out of this TMDL document. The pebble count data are an example of this; the EPA removes siltation as a pollutant largely based on data without determining whether pebble counts reflected the "real" substrate composition in the river. It is not scientifically credible to make these decisions without replicating samples and performing statistics.

Response: Since Montana's water quality standards for sediment are narrative; there is no single parameter that can be applied alone to provide a direct measure of beneficial use impairment associated with sediment. The weight of evidence approach described in Section 3.3 of the document is predicated upon this fact. The surface fines target (using pebble count data) was selected specifically to provide <u>one</u> measure of potential sediment impairment associated with the aquatic life and cold-water fisheries beneficial use. Pebble counts were developed and have been regularly used by state and federal agencies to ascertain the amount of surface fines affecting streams (CDPHE 2002, EPA TMDL Sediment Guidance Year 1999). Furthermore, as stated in Section 3.4.1, "*Recent work completed in the Boise National Forest in Idaho show a strong correlation between the health of macroinvetebrate communities and percent surface fines….*" The information provided by pebble counts were used in combination with the information provided by <u>all</u> of the other targets and supplemental indicators to reach conclusions about water quality impairment.

It should further be recognized that the highest observed percentile for fine sediment (<2mm) was 11 percent at the most downstream station in the watershed. This value was well below the proposed target of 20 percent. The remaining fine sediment values ranged from 4.9 to 6.5 percent in the upstream reaches. Despite the small sample size in the Dearborn mainstem, we feel that the statistical likelihood of a substantial number of observations approaching or exceeding the 20 percent fine sediment threshold is low.

The following QAPP was used to guide all data collection activities in the Dearborn River and several other Montana watersheds during the 2003 field season:

Tetra Tech, Inc. 2003. *Data Collection for Physical, Chemical, and Biological Characterizations of the Montana TMDL Planning Areas (TPAs)*. Prepared for the U.S. Environmental Protection Agency. June 23, 2003.

This QAPP addresses the issues of methods, precision, accuracy, and representativeness. Furthermore, the personnel who conducted the pebble count analysis were trained individuals with extensive field experience who understood how the data were to be used and the importance of collecting unbiased results.

C3. **Comment:** Do these pebble counts reflect substrate composition in trout spawning areas?

Response: Pebble counts were not intended to reflect substrate conditions in spawning areas. The pebble counts were designed to reflect substrate condition where the biological samples (i.e., macroinvertebrates) were collected. Pebble count data, when used in combination with macroinvertebrate data, are thought to provide insight into overall watershed health relative to sediment. Thus, while substrate conditions in trout spawning habitat were not specifically measured, it is felt that the methods employed herein, provided a watershed scale perspective regarding potential fine sediment impairments.

C4. **Comment:** The pebble count data also ignore the important issue of seasonality. Pebble count data were collected at various times; however, the authors do not attempt to evaluate substrate composition in critical periods. The Dearborn River is an important spawning area for the Missouri River fishery, yet there are no data to evaluate substrate characteristics during spawning and incubation of either spring or fall spawning fishes. Pebble counts performed after spring runoff will miss conditions present during spring spawning and will also reflect the effect of scouring during high flows. Addressing seasonality will greatly strengthen determinations associated with siltation as a pollutant of concern.

Response: We acknowledge that seasonality in pebble count data may exist to some extent. However, we feel that the existing data indicate that fine sediment (<2mm) is unlikely to exceed the target of 20 percent regardless of season (see response in C2d above). Given pragmatic sampling considerations during elevated spring run-off, Wolman pebble counts were designed to be conducted during baseflow periods. Baseflow periods represent low stream power conditions and potentially the maximum accumulation of fine sediment. Pebble counts taken during elevated flow conditions would likely result in similar or lower fine sediment results. Additionally, sampling during baseflow reduces year-to-year variability because the observations are made during the same timeframe.

D. Aerial Survey

D1. The following two comments suggested that too much reliance was placed on the results of the aerial survey and field verification should have been conducted. A single response for both comments is provided.

D1a. **Comment:** The document over extends the appropriate use of the aerial photo analysis. Similar to other types of information used in this report, there is no discussion of data quality objectives. In other watersheds, assessments of aerial imagery are treated appropriately as a coarse screen that guides field sampling. It is simply not credible to use aerial photo analyses without validating the results on the ground. Detecting eroding banks from aerial photos is easier

when observing lateral bank migration, and much of the Dearborn is laterally confined; thus, this type of methodology would underestimate bank erosion.

D1b. Comment: In our opinion, the EPA overextends the aerial photo survey in this TMDL plan. The proper role of an aerial survey is an initial investigation to guide further studies. In other words, it is an initial screen, not an end in itself. The EPA uses this aerial survey without conducting a field assessment to verify results. Field verification is especially important when addressing sediment loading from eroding banks. Many eroding banks may not be visible from aerial photos. Moreover, the use of lateral channel migration as an indication of eroding banks may not work in a laterally confined system like the Dearborn River. Without field verification, we have serious concerns about applying the results of the aerial survey effort to decisions regarding sediment loading and riparian function. We encourage the EPA to conduct the necessary field assessments to resolve this deficiency.

Response: The basis for our technical approach is described in Section 1.1 of the final document. This project relied on the results of the aerial photo analysis because (1) historical photos were available from 1955, 1964, and 1995 to assess trends and the impacts of the 1964 flood, (2) the low-level (4500 feet) survey conducted in 2003 provided source assessment information on the entire watershed, and (3) limited access across private property precluded the collection of watershed-scale data via any other means. Private lands comprise 71 percent of the watershed and total approximately 390 square miles.

The results of the aerial photo analysis generally matched observations made on the ground. For example, on-the-ground Bank Erodibility Hazard Index (BEHI) surveys were conducted at two sites on Flat Creek during the summer of 2003 and generally matched the findings of the aerial assessment report. Visual assessments made during sampling also were consistent with the findings of the aerial assessment report. Also, for the Middle and South Forks, private and/or public roads parallel the streams for much of their length. Field crews drove or walked much of these watersheds conducting visual surveys with the intent of verifying observations made from the air. Finally, EPA and DEQ floated the reach of the Dearborn River from Highway 287 downstream to the confluence with the Missouri River in 2002.

D2. Comment: Riparian measures consisted entirely of qualitative evaluations during the aerial photo assessments and a qualitative questionnaire with very low spatial coverage. As with other data presented in this document, there is no discussion of data quality objectives for these data. Qualitative questionnaires have high interobserver bias, and thus may not be reliable when eliminating probable causes of impairment.

Response: Data quality objectives are discussed in the QAPP. Data regarding riparian condition (i.e. coverage, presence/absence, large scale modifications) was used only in the context of the supplemental indicators. As described in Section 3.3, the supplemental indicators were not considered sufficiently reliable to be used alone as a measure of impairment. "Riparian Condition", and all of the supplemental indicators were only used when one or more of the target threshold values were exceeded to provide supporting and/or collaborative information when used in context with all of the other available data.

Three individuals familiar with the Dearborn Watershed worked collaboratively to assess and review riparian assessments made from aerial photos. All staff recognized the inherent limitations of a remote sensing method to draw any detailed conclusions about riparian health. However, it should be recognized that extremes in riparian coverage and function (e.g. wide,

extensive riparian corridor versus total riparian removal) can be reliably evaluated from aerial photos. This "screening level" of analysis was considered appropriate to identify potential major impacts.

D3. The following two comments suggested that ground-truthing should have been completed to verify the result of the aerial surveys. A single response is provided below.

D3a. Comment: The aerial evaluation of riparian health and channel stability is fine for a coarse filter review. However, few conclusions can be made from this sort of examination without validating conditions on the ground. The agencies should have tested conclusions made from the aerial reviews with fieldwork, perhaps using vegetative transects, channel transects, or even at least a Pfankuch type evaluation. We note that the consultant's report is riddled with expressions like "appeared to", "did not appear to", etc. Therefore it's clear even the consultants are unsure about making firm conclusions from their reviews of two sets of aerial imagery and last year's over flight. Without a description of the quality assurance expected from these qualitative "data", the conclusions are highly suspect. For instance, we note that it can sometimes be difficult to make any conclusions of eroding banks from the air, especially in confined channel types, which is the case of the Dearborn on much of its length. We also note that evaluating riparian health from the air can be tricky without an on-the-ground perspective. For example, it appears the aerial evaluations were made from inspections during dry years or seasons when bank saturation - a condition that can trigger instability - wasn't present.

D3b. Comment: On-the-ground bank stability surveys should have been used to verify conclusions made about bank stability from aerial photographs.

Response: On-the-ground Bank Erodibility Hazard Index (BEHI) surveys were conducted at two sites on Flat Creek during the summer of 2003 and generally matched the findings of the aerial assessment report. Visual assessments made during sampling also were consistent with the findings of the aerial assessment report. Also, for the Middle and South Forks, private and/or public roads parallel the streams for much of their length. Field crews drove or walked much of these watersheds conducting visual surveys with the intent of verifying observations made from the air. Finally, EPA and DEQ floated the reach of the Dearborn River from Highway 287 downstream to the confluence with the Missouri River in 2002.

D4. Comment: Criteria used to classify sediment sources as "natural" or human caused in the aerial survey were not apparent.

Response: The aerial survey relied upon fixed wing aerial reconnaissance, and review of historic aerial photos. The primary human activity potentially influencing sediment sources is related to agricultural land use in the watershed. Sediment sources were classified as "human caused" primarily based on the extent of riparian vegetation removal and apparent impacts on channel stability associated with riparian alterations. Adjacent stream reaches with intact or greater riparian coverage provided a basis for comparison and interpretation of potentially impacted reaches. Another human cause for sediment source specific to Flat Creek is channel enlargement and eroding banks related to irrigation flow augmentation. Sediment sources within Flat Creek were generally attributed to human cause due to this flow alteration. Natural sediment sources were considered to be those areas not clearly associated with riparian modification or intensive agricultural land uses. Eroding landscape features such as terraces/hillsides were included in the natural sources category.

This approach provided a qualitative, screening level method of identifying potential human caused sediment sources. We agree that not all potentially human caused erosion or sediment sources would be identified using this approach. For example, intense grazing within riparian areas may result in channel modifications or localized erosion that might not be identified unless visible channel instability resulted. Potential sources within confined channels were also difficult to assess using this approach.

E. Habitat/Riparian Condition

E1. The following two comments suggested that anthropogenic impacts can exacerbate the effects of naturally occurring disturbances. A single response is provided below.

E1a. **Comment:** Some habitat degradation due primarily to naturally occurring disturbances (the 1964 flood and forest fires) in the Dearborn River basin were discounted as not being influenced by human activity; however, there was and is an anthropogenic effect both before and after such events that must be considered (e.g., land use activities in the Dearborn River basin may have exacerbated the effect of the 1964 flood).

E1b. Comment: Although we agree that naturally occurring events (floods, forest fire, etc) have an impact on the form and function of lotic systems, we believe that anthropogenic impacts exacerbate the effects of these events. The anthropogenic influences can include more destructive fires (due to years of fire suppression and build up of fuels), less stable riverbanks due to land management activities, etc. Inferring that the events were natural and their damage unpreventable discounts the anthropogenic influences. Finally, we propose that many of the habitat survey results could have been influenced by the long-term drought in the Dearborn River basin, and suggest some discussion on these potential influences.

Response: We agree that the effects of naturally occurring disturbances might have been exacerbated by anthropogenic activities. This may be especially relevant in unconfined channel types where riparian vegetation plays an important role in stable channel morphology. However, quantifying the extent to which this might have occurred in the Dearborn River is very difficult. The decision that anthropogenic activities were not, in general, a significant factor is due in part to the fact that the vast majority of the watershed is relatively undisturbed. For example, the available land use data suggest that anthropogenic land uses (i.e., pasture/hay, small grains, commercial/industrial, fallow, row crops, and low intensity residential) account for less than 4 percent of the total watershed area. Furthermore, some anthropogenic activities fall within the definition of "natural conditions" per the provisions of 75-5-306 MCA (i.e., Natural refers to "*conditions or materials present in the runoff or percolation over which man has no control or from developed land where all reasonable land, soil and water conservation practices have been employed*."

E2. **Comment:** The cumulative habitat degradation impacts in the tributaries (increased sediment, decreased flow, increased temperature, etc) should be evaluated on the mainstem Dearborn River. In other words, the habitat impacts in tributaries are causing habitat problems in the mainstem river.

Response: There is no indication based on the available data that that habitat degradation in the tributaries is currently causing problems associated with sediment in the mainstem Dearborn River. The Dearborn has percent fine sediment values well below threshold target values.

However, we do agree that habitat alterations may have an affect on downstream water temperatures. This has been addressed in the final document in Section 6.0.

E3. **Comment:** It is unclear why the NRCS habitat survey was only conducted in the lower reach of the Flat Creek drainage. We argue that this area is not representative of habitat conditions in the upstream reach. If more sites cannot be inventoried in the upper basin, the results from the one reach downstream should not be considered as part of the analyses.

Response: Habitat surveys were conducted at two additional sites along Flat Creek (including one farther upstream) but were mistakenly left out of the draft report. In addition, the reported score for the site below Birdtail Road was wrong. The corrected scores appear in the final report and suggest that habitat is at risk below Birdtail Road and at Milford and sustainable at the mouth.

We agree that the habitat in the lower reach of Flat Creek is not representative of conditions upstream. However, the aerial survey we conducted allowed us to view and assess (at least at the "coarse" level) habitat conditions along the entirety of Flat Creek. Further, collecting additional field data upstream (where conditions are poorer) would not have resulted in a different conclusion regarding impairment status (i.e., Flat Creek would still be considered impaired and a sediment TMDL would be deemed necessary).

E4. The following two comments questioned the methods for sample site selection and suggested that the results of the riparian surveys were averaged across major ecotones. A single response is provided below.

E4a. **Comment:** It was not clear how sites were selected for habitat monitoring throughout the planning area. In the tributaries, the results from surveys were averaged across major ecotones. Had the results been considered excluding the headwater forested areas of the Middle and South Fork the conclusions may have been different.

E4b. **Comment:** Conclusions on riparian health seem to have been averaged across eco-types. This misrepresents conditions on the ground. For instance, we note that when looking at the South Fork of the Dearborn, the agencies combine the more stable channel conditions from forested uplands on public land with those found on the heavily damaged pasture sites on private land. Averaging them together, it's easier to conclude the South Fork is in decent shape. However, by bracketing the evaluations by shorter stream reaches and by eco-type and channel type, the conclusions will be different. We note that data seems to be used selectively. For example, the agencies make conclusions about Flat Creek's stability based on an NRCS cross-section located where the channel is naturally confined. This is misleading. There should also be corresponding data upstream or downstream in meandering meadow reaches.

Response: Sampling locations were selected to represent upstream, downstream, and transitional reaches of the subject streams. Sites were chosen based on the presence of historic sampling locations, changes in land use or landform, and the confluence with tributaries.

The location of the sampling sites was taken into consideration during the analysis and conclusions were not made based on averaging the values. For example, the impairment summary for the Middle Fork (page 82) states: *"When averaged, the targets are all met and do not indicate water quality impairment associated with sediment. However, examination of the results from some of the individual samples suggests potential localized areas of minor sediment*

related impairments." We disagree that the conclusions might have been different if we had bracketed the evaluations by eco-type, channel-type, etc. We still think the conclusion would have been that the Middle Fork, South Fork, and Flat Creek are impaired and that sediment TMDLs are necessary.

E5. **Comment:** My family has lived in the Flat Creek drainage since the late 1800's. Historically, there were never willows along Flat Creek.

Response: We recognize that willow and other shrub communities can be quite variable and reflect a combination of site characteristics (geology, soils, hydrology, etc), climate, land use, and other factors. Flow in Flat Creek is enhanced due to irrigation diversion, which may also alter willow establishment and survival. Other potential factors include historical grazing (pre-settlement bison, post-settlement sheep, etc). The relative impact of these influences is difficult to quantify. Flat Creek does currently support a variable coverage of willows and other riparian species. We would agree that willow coverage was potentially different at the turn of the century than the present day.

F. Methods

F1. The following three comments suggested that EPA and DEQ should have developed a QAPP and SAP. A single response is provided below.

F1a. **Comment:** The development of this TMDL document did not follow the typical pattern and method used on past TMDLs developed in Montana. In the past cases, a logical, orderly approach was employed where an initial, phase 1 assessment involved compilation and synthesis of available data, identification of data gaps, and development of quality assurance project plan (QAPP). The lack of the QAPP sets the stage for a technically poor plan that over extends the use of low-quality data. Field investigations directly related to the Dearborn River TMDL plan were negligible and apparently not guided by a QAPP or sampling and analysis plan (SAP), both of which are EPA requirements.

F1b. **Comment:** It appears the agencies did not attempt to fill data gaps with new information. Instead, it appears the available data--most of vague quality--were made to fit into pre-determined conclusions about watershed health, water quality and pollutant allocation.

F1c. **Comment:** Nowhere in the document did we find a methodical description of all available data that were reviewed. Nor did we find a description of data gaps, or the Quality Assurance Plan DEQ/EPA employed when both agencies apparently agreed the limited data used were valid. The result has been a hodge podge description of data reviewed. Moreover, it is difficult to determine whether any of the data used meets EPA's quality assurance quality control requirements.

Response: The development of the Dearborn River TMDL did in fact follow the pattern described in this comment. Available data were first compiled and analyzed, data gaps were identified, a Sampling and Analysis Plan was prepared, a quality assurance project plan (QAPP) was prepared, and additional data were collected. The field sampling that occurred in summer 2003 and the low-level aerial survey were both intended to fill identified data gaps. A description of all of the data that were reviewed appears throughout Section 3.0 of the document and raw data are available in Appendix B.

The following QAPP was used to guide data collection activities in the Dearborn River and several other Montana watersheds during the 2003 field season:

Tetra Tech, Inc. 2003. *Data Collection for Physical, Chemical, and Biological Characterizations of the Montana TMDL Planning Areas (TPAs).* Prepared for the U.S. Environmental Protection Agency. June 23, 2003.

The SAP and QAPP are both available for public review (the QAPP document is 439 pages long) upon request.

F2. **Comment:** It appears that in preparing this plan, the EPA was more concerned with administrative outcomes, namely meeting strict time demands. Although we do understand time constraints, the focus should be on producing a technically sound plan that truly restores and protects aquatic resources in the Dearborn River watershed. With a reprieve in the TMDL deadlines, we hope that the EPA shifts priorities to improving water quality and restoring fisheries, rather than solely meeting administrative goals

Response: DEQ and EPA selected the Dearborn TPA as a pilot project to evaluate the feasibility of completion of all necessary TMDLs relying primarily on currently available data, use of remote sensing techniques, and application of modeling techniques. This approach is described in Section 1.1 of the final document. The Dearborn TPA was selected for this approach because, with the exception of the headwaters region, the Dearborn TPA is largely under private ownership with limited access. Also, when this approach was originally conceived in July of 2002, all necessary TMDLs for the Dearborn TPA were scheduled for completion by December 31, 2003. We disagree that the Dearborn analysis was technically insufficient. Qualified technical experts assessed available and newly collected data that met defined data quality objectives and appropriately applied the TMDL regulations to the information. We do agree, however, that data gaps exists, such as the remaining question of temperature impairment on the mainstem of the Dearborn, and that data uncertainty is too high to make a final decision regarding temperature impairment. Therefore, as noted in our response to comment #A1, we have outlined follow-up studies to better support final decision making.

F3. **Comment:** Another concern regarding EPA's approach and lack of technical standards relates to the other watersheds assigned to EPA for TMDL development. This plan does not compare favorably to other TMDLs in terms of technical merit and public involvement. Unless the EPA follows its own guidelines for watershed monitoring and planning, TMDLs developed by the EPA will be less likely to protect and restore our waters. The technical insufficiencies of the Dearborn TMDL also have ramifications for the quality of plans approved by the EPA. The EPA is responsible for approval of TMDLs. Our concern is that if the EPA produces substandard TMDLs, they will likewise approve substandard TMDLs.

Response: EPA and MDEQ have established a joint approach to development of TMDLs/Watershed Restoration Planning in Montana. By standardizing the steps, from assessment of all currently available data, determination of data gaps, following the MDEQ approved Quality Assurance Project Plans for sampling and analysis, consistent use of laboratories, application of defensible analytical tools, confirmation of impairment status, identification of pollutant sources, setting of targets, allocation of loads, forthright presentation of data uncertainty, proposed follow up actions and internal/external peer and public review, both agencies are attempting to meet a level of technical rigor that is scientifically defensible given the

constraints of time and the state of the science. The Dearborn TPA process followed this standardized protocol.

Although EPA and MDEQ have established a consistent approach, each case will dictate a slightly different application based on the unique circumstances within the watershed. As described in our response to Comment F2, the Dearborn TPA is largely under private ownership with limited access. These unique features are the reason DEQ and EPA selected the Dearborn TPA as a pilot project to evaluate the feasibility of completion of all necessary TMDLs relying primarily on currently available data, use of remote sensing techniques, and application of modeling techniques. Based on the results, we feel that this approach was adequate for the tributaries (Middle Fork, South Fork, and Flat Creek) and the siltation listing on the mainstem of the Dearborn River. However, the level of certainty associated with this approach was inadequate regarding the temperature analysis in the mainstem Dearborn River. The document acknowledges the uncertainty associated with the temperature analysis and EPA and DEQ have committed to the completion of a supplemental flow and temperature study in Section 6.0.

G. Public Notice and Document Availability

G1. **Comment:** We have concerns regarding the level of public involvement incorporated in this process. Specifically, it appears that the EPA did not follow the example of other watersheds in Montana, where a local watershed group, local fisheries managers, conservation groups, landowners, and other stakeholders or interested parties were part of the process. The lack of stakeholder participation is a considerable concern in getting landowners to accept and implement plans. Also, failure to include local natural resource professionals results in a document that does not reflect an informed understanding of the river's fisheries. We strongly recommend that the EPA include more stakeholders to produce a TMDL document that incorporates the knowledge of individuals working and living in the watershed.

Response: Due to the lack of a formal, organized watershed stakeholder group in the Dearborn TPA, public involvement was generally limited to the elements required by the Montana Water Quality Act. The Lewis & Clark Conservation District was notified during the initial stages of project development and kept apprised of activities/progress throughout the project. The Conservation District was also partially relied upon to assist in obtaining landowner contact information to gain access for field activities. The Sampling and Analysis Plan prepared to direct field-sampling activities was provided to the Lewis & Clark Conservation District and landowners who provided access for sampling (if they were interested in having a copy) prior to initiation of field activities. Additionally, contacts were made with the Montana Department of Natural Resources, Montana Fish, Wildlife and Parks, U.S. Natural Resource Conservation Service, and USGS to request all available data as well as any information that they may have had regarding local activities.

Further opportunities provided to the public regarding review of the draft document are described in Comment G2 below.

G2. **Comment:** Not providing public notice to organizations such as ours who have long demonstrated an interest in water quality and watershed health. We learned about the impending release the recent spate of draft TMDLs only through a reporter, right before the comment deadline for the Flathead Headwaters TMDL. Thus we couldn't plan appropriately for the type of review we like to do, which includes consultation with additional professionals.

Response: The draft Water Quality Assessment and TMDLs for the Dearborn River Planning Area document was formally released for public review on November 19, 2004. The notice of availability was made through a press release to the following media sources: Cascade Courier, Great Falls Tribune, High Plains Warrior, KEIN-AM/KLFM - FM, Rural Montana, KTVH-TV, KBLL-AM, KFBB-TV, KMTF-TV, KXGF, KMON-AM, KRTV, KTGF- TV, the Helena Independent Record, the Queen City News, and the Associated Press. It was also posted on "Newslinks" which is a subscriber service for all media, and the notice and draft document were posted on DEQ's website. We also made phone contact, and visited, with the Lewis and Clark Conservation District and NRCS to alert them that the document was available for review, provide them with copies of the draft document, and request their assistance in notifying their constituents within the Dearborn River Watershed. Additionally, we made phone contact with all of the landowners within the watershed, that we previously made contact with to obtain permission for sampling, to alert them of the document availability.

We regret that your organization was not specifically notified, but feel that adequate public notice was, in fact, provided. DEQ is currently in the process of developing an improved TMDL public notification/information program. In the future, we hope to ensure that all interested parties are provided adequate notification.

G3. **Comment:** A final consideration directed primarily at DEQ relates to the timing of releasing TMDLs for public review. This year, the DEQ bombarded the public with plans at the year's end. The number of plans released so close in time presents a hardship to parties interested in more than one watershed. We suggest that DEQ stagger the release of these documents so as not to shortchange the public participation process. Once again the reprieve in the deadline should allow DEQ/EPA more flexibility in planning the release of these plans.

Response: The courts and our constituents have been asking for DEQ and EPA to increase the pace of TMDL development since the program officially began in Montana in the late 1990's. The pace of TMDL development in Montana has increased annually since the year 2000 and is expected to continue to increase. This, inevitably, will result in an increased burden on the public to review more and more TMDL documents on an annual basis.

To date, the timing of the release of public review drafts has largely been driven by a rigorous, court-imposed schedule with annual milestones. Given a court-imposed schedule, Montana's TMDL Program has operated on a calendar year basis since the year 2000, with TMDL documents scheduled for completion by the end of December every year. This has resulted in the release of most of the public review drafts in October, November, or December on an annual basis.

Nonetheless, DEQ appreciates the challenges the public may face when multiple draft documents are published at the same time. DEQ is working to address numerous issues including:

- developing standard procedures for notification of document availability,
- pre-specifying convenient locations for the public to review the drafts (such as local libraries),
- standardizing text viewing software for review of the documents electronically, and
- creating a streamlined process for receiving and recording public comment.

It is also important to note that DEQ is strategizing on ways to better inform the public on upcoming public draft releases so that the public can prepare and schedule appropriately with the timing of the release of each draft document.

Further, although many public review draft TMDL documents will continue to be released in the last three months of the year, some future modifications to the release of TMDL documents are planned. For example, a phased approach will be taken for some of the larger and more complex TMDL Planning Areas, where the required TMDL elements will be presented in a series of "volumes". The first volume for a given TMDL Planning Area may contain the first two sections or chapters of the typical TMDL document (i.e., Watershed Characterization and water quality Impairment Status). The remaining sections of the typical TMDL document (i.e., source assessment, total maximum daily loads, targets, allocations, margin of safety, etc.) will be presented in subsequent volumes, as appropriate based on the scale and complexity of the TMDL Planning Area. In 2005, it is envisioned that the first "volumes" (i.e., Volume I) of several TMDL documents will be released during the first half of the year. Subsequent volumes will then be made available to the public when they are completed. This will provide the public with more time to review DEQ's more complex TMDL documents and will ensure that the entire public review time period is spread out throughout the year, rather than waiting for the last three months of the year.

Additionally, some TMDL documents are scheduled for completion throughout 2005. These will be made available for public review as soon as they are completed, thus avoiding the last three months of the year.

G4. **Comment:** When we examined the Dearborn TMDL on the website last week, we found not all the pages were available. Thinking it could be a problem with our version of Acrobat Reader, we double-checked with several other TMDLs on the DEQ site. We had no problem reading those, leading us to conclude that perhaps the problem was with DEQ. After several hours of investigation, including calls to DEQ, we finally found an administrative staffer at the agency that helped us understand the problem; not all the TMDL documents on DEQ's site were done using the same version of Acrobat, but the agency hadn't bothered to tell the public. Thus, though technically the problem was on our end, DEQ could have facilitated things and saved time for reviewers by simply noting on its website that the public needs different versions of Acrobat Reader for reviewing different TMDLs.

Response: In an effort to produce documents that are easy for the average person to read and understand, we often include large numbers of graphics and photographs. This results in large electronic files that are often difficult to download. In the future, we will ensure that all downloadable document files are small enough for the average person with a "home computer" to download and will also improve our website to make all necessary directions for downloading more obvious.

H. Miscellaneous Topics

H1. **Comment:** I believe that "the fires in 1989" caused the biggest sediment problems in the Dearborn drainage. I observed turbid flows in the Flat Creek diversion for at least a couple of years after the fire. Ice scour during spring floods has caused many of the bank erosion problems.

Response: We agree that the 1989 fires and ice scour have contributed to the current sediment problem in the Dearborn drainage. Table 2-6 of the report indicates that approximately 7 percent

of the watershed (primarily in the headwaters) consists of "standing burnt forest". However, we believe that there are also localized problems caused by human activities, especially in Flat Creek.

H2. **Comment:** This study was conducted during a period of drought that has occurred for at least the last 5 years.

Response: We agree that the current drought conditions have likely biased some of the observed problems and attempted to address this by evaluating the 1955, 1964, and 1995 aerial photographs. Future study of the Dearborn River drainage is recommended once the current drought ends.