# Compilation of Public Comments
# Bayou Serpent, Mill Creek, Bear Head Creek
# TMDLs for Oxygen-Demand

| Commenter | Date received | Waterbody (ies) | Summary of comments | Summary of LDEQ responses |
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| William B. Richardson, Chancellor LSU AgCenter | 10/2001 | Bayou Serpent, Mill Creek, Bear Head Creek | Primary concern is that the water sampling and stream surveys were conducted during the third year of a prolonged drought and, prolonged low flow conditions were created. The loadings contained in the runoff entering the stream were elevated due to the longer intervals between rain events. These conditions add to the potential of inaccurate and unreliable loading data. | While LDEQ understands and acknowledges the concern expressed at the conditions surrounding the data collection for these TMDLs, we were required to complete the TMDLs according to the court ordered schedule. LDEQ had no choice but to conduct the sampling during 1999 and 2000. The data collected was used to populate the TMDL models, and this instream data produces a more accurate model than estimates and default values would produce. |
| | | Bayou Serpent, Mill Creek, Bear Head Creek | The AgCenter agrees with LDEQ that the attainment of the 5 ppm DO standard was impossible for the warmer months and that an alternate standard of 2.5 to 3 ppm be sought. | LDEQ will continue to pursue revisions to the water quality standards as needed. |
| | | Bayou Serpent | Bayou Serpent was receiving water from rice field drainage and from ground water recharge from rice fields, which improved the water quality parameters in and below these inflows. These positive impacts were replaced with upstream data in the model, removing any consideration of beneficial inputs from agriculture. Stream should be reclassified according to its true primary use. | LDEQ will continue to pursue revisions to the water quality standards as needed. |

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| Dick Myers, Boise Cascade Corporation | 10/2001 | Bayou Serpent, Mill Creek, Bear Head Creek | The waterbodies have considerable natural loadings and were found to be "not supporting" the designated uses only during a period of rather severe drought conditions. Yet these waterbodies were not given any different consideration. | LDEQ believes that the drought impact makes these TMDLs only slightly more conservative. Once these waters are sampled again under normal conditions, we will see the impact the drought had. Historical man-made impacts, as well as natural loadings, will continue to influence the waters for many years after BMP implementation. The 303(d) listed waters must have a TMDL prepared, regardless of the conditions. |
| | | Bayou Serpent, Mill Creek, Bear Head Creek | The TMDLs incorrectly suggest that man-made loadings are a significant contributor to impairment. A review of land uses suggests the potential for significant man-made loadings is small. With the information given, it is difficult to distinguish the total natural loading estimated by the model. Because the extent of natural loads is grossly underestimated, calculated reductions in man-made loads exceeds 100%. | LDEQ has demonstrated in many modeling and TMDL projects that areally distributed sediment fluxes contribute significantly to the nonpoint source loadings throughout the year. Background SOD was estimated using data gathered from reference streams. This data provides the background SOD expected from "unimpacted" conditions. LDEQ has acknowledged in those TMDLs requiring a greater than 100% load reduction, the strong evidence that the DO criterion for those waterbodies needs to be changed. |
| | | Bayou Serpent, Mill Creek, Bear Head Creek | The variability in reference stream conditions needs to be assessed. It is not clear that a strictly steady model can properly account for this variability and be used to reliably predict long-term cause and effect. | LDEQ considers a steady state model adequate presently because these waterbodies have riverine characteristics. Dynamic modeling would be the ideal, but the resources required are beyond LDEQ's capability at this time. However, LDEQ has seen only marginal differences in the outcome of steady state versus dynamic modeling for riverine systems (Bayou Plaquemine Brule). |
| | | Bayou Serpent, Mill Creek, Bear Head Creek | Extrapolation from zero-flow conditions to 7Q10 flow exceeds the capability of the water quality model. An alternative data set should be used when flows are closer to the 7Q10 condition for model calibration. In the absence of such a data set, the TMDL determination should be deferred until the next sampling cycle. | LDEQ would prefer to postpone TMDL data gathering until more normal conditions (non-drought) are present. However, our agreement with EPA calls for preparation of TMDLs according to the federal court-ordered schedule without regard to such conditions. |

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| | | Bayou Serpent, Mill Creek, Bear Head Creek | SOD measurements, and related measurements quantifying resuspended BOD, need to be made on these waterbodies because these inputs so greatly affect the resulting TMDL. If LDEQ does not have the resources to gather such data, EPA Region 6 should initiate a SOD measurement program such as that provided by EPA Region 4. | LDEQ agrees that it would be best to measure SOD but the resources required for such a task have not been available in the past. LDEQ is in the process of establishing a project to measure SODs at several locations in the state in the very near future. Based on the few historical measurements made in Louisiana and the naturally dystrophic condition of many of our waters, the SODs derived by calibration during the modeling process are in line with expectations. A review of EPA's TMDL website shows that SOD is not generally a consideration in free-flowing waters in other states. |
| | | Bayou Serpent, Mill Creek, Bear Head Creek | The TMDL reports do not provide sufficient description of modeling procedures used. Even for individuals with water quality modeling backgrounds, deciphering the material provided in the appendices is very difficult—particularly the load equivalent spreadsheet. | LDEQ will be happy to answer any specific questions concerning these models. The modeling was conducted in accordance with the Louisiana Total Maximum Daily Load Technical Procedures (LTP) which is available on the LDEQ website. A more detailed description of the load equivalent spreadsheet has been prepared and will be incorporated to future TMDL reports. |
| | | Mill Creek | The model is not well calibrated. Text on pages 5-7 of the report indicate there are several model inputs which were achieved through calibration. | Based on time constraints and the type of survey performed these parameters were not available. Best professional judgment was used during the process of calibration. Calibration is routinely achieved in a hierarchy by LDEQ modelers. While multiple parameters must be determined in calibration, they are determined independently of each other. |
| | | Mill Creek | The minimum flow used is extremely low. The LTP specifies a minimum flow of 0.1 cfs for summer conditions. Calibration was apparently performed at a minimum flow of 0.00353 cfs. The sensitivity analysis (Table 7) indicates 30% increase in headwater flow results in a 5.9% increase in predicted minimum DO. | The survey was preformed during drought conditions, and at the time there was no flow in the tributaries and headwaters. A minimum flow was added in the calibration model to account for this condition and still allow the model to run. The LTP guidance on minimum flows is only for seasonal projection modeling and not for the calibration model. |

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| | | Mill Creek | The predicted DO indicates a reduction in DO of 3.5 mg/l over a distance of roughly 1 km. The occurrence of such a drop in natural waters is extremely improbable in the absence of a specific condition or a dramatic change in the characteristics of the waterbody. The fact that the projected DOs predict such a reduction is indicative of an improperly calibrated model. | The second reach was set up to note the beginning of a swamp. The water quality changes dramatically in a swamp environment. A note will be added to the report to reflect this. |
| | | Mill Creek | Headwater loadings in projection runs appear to be very high. Assuming a 7Q10 flow of 4.01 and 4.62 cfs for the summer and winter projections, the headwater loads presented are equivalent to BOD concentrations of 5.1 and 11.8 mg/L. These numbers seem unrealistic if the assumption is made that the upstream segment is meeting its designated uses. | The TMDL loads are the totals of each of the loading types from the entire watershed. Some of the tributaries were modeled as wasteloads, but the TMDL recognizes that those constitute headwaters in reality. |
| | | Bear Head Creek | The model is not well calibrated based on several indications in the calibration procedure of unconstrained parameters in the model. | The calibrations were performed following LDEQ's modeling procedures. They were reviewed, and the results were found to be satisfactory. |
| | | Bear Head Creek | Available water quality data are inadequate. The model relies heavily on 3 dissolved oxygen data points collected on a single date. More data need to be collected to characterize variability over space and time as dissolved oxygen can vary greatly. | All available data was used in the preparation of the TMDL. LDEQ would certainly like to have more data but is limited by resources and scheduling factors to the data that can be collected during a single intensive survey. |
| | | Bear Head Creek | Modeled CBOD profiles are improbable and developed with unconstrained values of model inputs. | Based on time constraints and the type of survey performed, certain parameters were not available. Best professional judgment was used during the process of calibration. Calibration is routinely achieved in a hierarchy by LDEQ modelers. Because of your comments, the Bear Head Creek TMDL calibrations were reviewed. Following this review of the data, the modeler added dispersion to the calibration runs. |

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| | | Bear Head Creek | Modeling this system as a steady state condition under the assumed low flow is unrealistic. The total travel time under calibration conditions is 550 days, and 7Q10 conditions and accumulation of UCBOD and oxygen deficit cannot occur for that amount of time. | The issue here is not the residence time of the stream but the time required for the stream or any part of the stream to reach the equilibrium conditions simulated by a steady state model. A dynamic model can simulate the response of a stream system to changes in temperature and flow. The time required for each location in Bear Head Creek to respond to and reach equilibrium with that low flow event cannot be determined by a steady state model, but it has nothing to do with the residence time of the stream in this case. |
| | | Bear Head Creek | Dissolved oxygen can be impacted by algae growth, but it does not seem that chlorophyll-a was measured. Any oxygen depletion or increase due to algae seems to be represented by calibrated SOD in the model. | Conditions in Bear Head Creek were not conducive to algal growth. When algal growth is suspected to be a problem, we measure chlorophyll-a and model the impact of algae on dissolved oxygen without actually simulating the nutrient-algae cycle. |
| | | Bear Head Creek | The re-aeration equation chosen is unusual and no justification is given for its use. This equation predicts a higher re-aeration rate than other more standard equations. Any over-prediction of re-aeration will cause too much oxygen to be present in the model. This is an example of a model that is sacrificing accuracy to be fit to a very few measured points, including BOD. Modeling small streams under very low flow conditions is difficult, but SOD should be measured directly. | LDEQ has found that measured BOD decay rates are very reliable since we have changed to the proposed Standard Method for 60-day BOD determinations. Re-aeration at low and zero stream velocity is estimated by our models as 0.7 divided by the average stream depth in meters in accordance with the LTP. The benthic loading and SOD calculated during model calibration are in line with values typically reached in modeling Louisiana waters. |
| | | Bayou Serpent | A UAA is clearly needed for Bayou Serpent, given that the present modeling analysis concludes the DO water quality standard would not be met with the elimination of all man-made loads. | The TMDL recommends a UAA for Bayou Serpent; however, this will not eliminate the need for a reduction in man-made nonpoint sources. |

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| | | Bayou Serpent | It is difficult to understand what total benthic loadings were used for the No Load case since resuspended UCBOD and UNBOD are entered as mass loadings (kg/day) in data type 19 whereas the SOD is entered in units of gm $O_2/m^2$/day in data type 12. SOD inputs vary from reach to reach, and for some is equal to that used in the calibration run. It seems that natural loadings would be fairly consistent and lower than calibration conditions. | The resuspended NPS UCBOD and resuspended NPS UNBOD were converted from gm-$O_2/m^2$/day to kg/day based on the width and length of each reach. A detailed description of the load equivalent spreadsheet has been prepared and added to the TMDL report. Variability in both man-made and natural loadings is to be expected in Bayou Serpent because of the presence of weirs and other hydrologic modifications. It is not uncommon to find stream reaches with calibration loading values less than the average reference stream values, especially hydrologically modified waterbodies. |
| Cynthia Goldberg, Gulf Restoration Network | 10/2001 | Mill Creek | The permit limits and percent reduction from the point source dischargers (Oak Hill High School and Town of Elizabeth) were not included in this TMDL. Only the wasteload allocation is provided in Tables 5 and 6, so it is difficult to determine if point source reduction was required. | Both point source dischargers that discharge directly into Mill Creek were thoroughly evaluated, including permit information and discharge monitoring reports. The analysis indicated that it is unlikely that Oak Hill High School will have an impact on the targeted waterbody due to the small load, but effluent limitations according to the state policy and regulations that govern permit limitations will continue to be given. The other facility, the Town of Elizabeth, was included in this model. No reduction in point source loads was necessary because the model runs showed no improvement in stream quality by reducing the loads. The report will be revised to include a discussion of these results. |

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| | | Mill Creek | According to EPA guidance, this TMDL can only rely on nonpoint source reductions if reasonable assurances that the nonpoint source load allocations will be achieved are provided. There are no reasonable assurances in this TMDL. The state's nonpoint source program and BMPs have not been effective in the past, and the TMDL does not provide alternative methods of achieving improved water quality. GRN requests that pollution from point sources be reduced to aid in improving water quality in Mill Creek. | LDEQ intends to implement the approved TMDLs through the LPDES permitting program and the nonpoint source management program. The reasonable assurances that LDEQ can provide are that EPA has awarded 319 grant funds to Louisiana for the implementation of BMPs and has approved the work plans submitted for BMP implementation and demonstration projects in the Calcasieu River Basin. LDEQ has recently revised its Nonpoint Source Management Plan (Section 319 Plan), and EPA has approved it. |
| | | Mill Creek | The appendices for this TMDL were not included in the report on the web page. A complete and comprehensive review of this TMDL cannot occur if the appendices are not included in the internet version of this report. | LDEQ will continue to work toward improving the clarity of its TMDL reports. We are currently working to place reports in their entirety, including appendices, on the web site. |
| | | Mill Creek | No biological monitoring has been done on this waterbody. Without biological monitoring, it is difficult to ascertain the effects of low oxygen levels on the plant and animal communities in the stream ecosystem. The proposal to lower the DO limit to 2.5 mg/L during the summer months should not be approved. | LDEQ will conduct biological sampling as part of any use attainability analysis that is done to support a change in the DO standard. TMDL surveys do not include biological sampling because only those parameters needed to populate the model are collected. Biological sampling will be conducted prior to any change in the DO standard. |
| | | Mill Creek | The implementation plan is not included. According to EPA guidance, waters impaired primarily by nonpoint sources require a description of its plan for reducing load allocations. | Currently, an implementation plan is not a mandatory component of a TMDL. All TMDLs developed by LDEQ are done so in accordance with the regulatory requirements of Section 303(d) of the Clean Water Act and its applicable regulations, 40 CFR 130.7. LDEQ considers EPA's guidance in TMDL development and follows guidance to the extent that is feasible and applicable to Louisiana's circumstances. States are not required through regulation to comply with any EPA guidance. |