



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII  
901 NORTH 5TH STREET  
KANSAS CITY, KANSAS 66101

**RECEIVED**

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**WPCP**

Scott Totten, Director  
Division of Environmental Quality  
Missouri Department of Natural Resources  
P.O. Box 176  
Jefferson City, MO 65102

Dear Mr. Totten:

Re: Approval of the Muddy Creek and Brushy Creek TMDLs submitted by Missouri

Thank you for the submission dated December 27, 2001 requesting approval of the Brushy Creek and Muddy Creek total maximum daily loads (TMDLs) under §303(d) of the Clean Water Act. The document submitted contains four TMDLs. The impairments in Brushy Creek are due to biological oxygen demand, ammonia, and non-filterable residue. The impairment in Muddy Creek is due to biological oxygen demand. The impairments in both creeks were a result of the discharge from one wastewater treatment facility. We have completed our review of these TMDLs with supporting documentation and information, as submitted by your office and in accordance with §303(d) of the Clean Water Act (33 U.S.C. 1251 et seq.), we approve all aspects of these TMDLs.

Enclosed is an EPA Region 7 Review Form which summarizes the rationale for EPA's approval of these TMDLs. The EPA believes the separate elements of the TMDLs described in the enclosed form adequately address the pollutants of concern, taking into consideration seasonal variation and a margin of safety.

EPA is currently in consultation under Section 7 of the Endangered Species Act with the U.S. Fish and Wildlife Service (USFWS) regarding these TMDLs. While EPA is approving these TMDLs at the present time, EPA may decide that changes to the TMDLs are warranted based upon the results of the consultation when it is completed. However, because the phased approach is used in these TMDLs, USFWS will also have future opportunities to review any revisions to the TMDLs based on phase 2 recommendations.

EPA appreciates the partnering effort that Missouri has put forth in the development of these TMDLs and will continue to cooperate with and assist, as appropriate, in future efforts by Missouri to develop the remaining TMDLs on the current Missouri §303(d) list of impaired water bodies.

Sincerely,

A handwritten signature in black ink, appearing to read "U. Gale Hutton". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

U. Gale Hutton  
Director  
Water, Wetlands, and Pesticides Division

Enclosure

cc: Sharon Clifford, Mo Dept of Natural Resources TMDL Coordinator, Jefferson City, MO  
Mark Wilson, Field Supervisor, USFWS, Columbia, MO



The allowable seasonable loads of BOD that will meet the in-stream DO, ammonia and NFR water quality criterion are identified and were calculated using the QUAL2E water quality model.

#### **Numeric Target(s)**

*Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.*

The beneficial uses of Davis Creek are described, as well as the WQS for those beneficial uses. The DO criterion is translated into a CBOD5 numeric target, and the CBOD5 is allocated at levels that will assure the DO criterion is attained. The ammonia numeric seasonal targets are taken directly from the temperature and pH dependent water quality criteria found in the Missouri WQS using site specific temperature and pH data. The target for NFR is 35 mg/L. This number is based on the Sedalia WWTP's permit limit for NFR. The facility recently upgraded. At the time of the last facility inspection no objectionable bottom deposits were noted below the facility. The facility is in compliance with their permit for NFR.

#### **Link Between Numeric Target(s) and Pollutant(s) of concern**

*An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.*

For the point source contributions of CBOD5 and ammonia, the QUAL2E water quality model establishes the link between CBOD and the DO water quality criterion, and establishes the link between ammonia loadings and the in-stream ammonia concentrations. The non-point sources are not believed to be contributing to the impairment. The WQS for NFR is a narrative free-from objectionable bottom deposits. Upon the latest site visit, no objectionable bottom deposits were observed. The facility is in compliance with their permit limit of 35 mg/L NFR.

#### **Source Analysis**

*Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.*

The land use is mostly urban and industrial in the upper reaches of Brushy Creek watershed. The lower reaches of Brushy Creek and Muddy Creek are dominated by row crop, pasture and timber. Non-point sources are not believed to contributing to the impairment. There are 24 permitted facilities in the watershed. The Sedalia WWTP is the only source of impairment in the watershed. Whiteman Air Force Base and La Monte SE are not believed to be sources of impairment because of their proximity to the impaired reach.

**Allocation**

*Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.*

Allocations were made using the QUAL2E model. The Load Capacity (LC) for CBOD5 is 148.6 pounds/day for summer and 1360 pounds per day for winter. Using QUAL2E it was determined the WQS of 5 mg/L DO would be met at these levels of BOD. The LC for ammonia is 26.2 pounds/day in the summer and 41.9 pounds/day for the winter. These numbers are based on the states WQS at site-specific pH and Temperature. The LC of NFR is 732 pounds/day. This is based on the target of 35 mg/L.

**WLA Comment**

The WLA for CBOD5 is 133.7 pounds/day in the summer and 1224 pounds/day in the winter. The WLA for Ammonia is 23.6 pound/day in the summer and 37.7 pounds/day in the winter. The WLA for NFR is 732 pounds/day.

**LA Comment**

The LA for BOD, Ammonia and NFR is zero.

**Margin of Safety**

*Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.*

The MOS is 10% of the LC for ammonia and CBOD5 and is implicit for NFR based on the conservative assumptions of an effluent dominated stream tightly regulated through permit limits and the significant plant upgrade that has occurred since the 1998 303d list.

**Seasonal Variation and Critical Conditions**

*Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).*

Season variation is incorporated into the WLA and MOS by the use of seasonal criteria, and by using site-specific information.

**Public Participation**

*Submittal describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).*

The TMDL was public noticed and interested parties were sent notices. The TMDL was modified to reflect public comments.

**Monitoring Plan for TMDL(s) Under Phased Approach**

*The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).*

The Sedalia WWTP facility has additional monitoring requirements in their permit.

**Reasonable assurance**

*Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.*

The LA is zero, therefore there is no reasonable assurance required.

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