



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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

2005 JAN 13 10:00

13 JAN 2005

Mr. Jim Hull, Director
Water Pollution Control Program
Water Protection and Soil Conservation Division
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

Dear Mr. Hull:

Re: Approval of Turkey Creek TMDL

This letter responds to the submission from the Missouri Department of Natural Resources (MDNR) dated December 23, 2004, of the Turkey Creek Total Maximum Daily Load (TMDL) document which contains TMDLs for low dissolved oxygen and volatile suspended solids. Turkey Creek was identified on the 1998 and 2002 Missouri §303(d) lists as impaired as a result of the Bonne Terre Wastewater Treatment Plant (WWTP). Biological oxygen demand and volatile suspended solids are allocated in the TMDL document to address these impairments. The concentration based waste load allocations identified in the TMDL will be implemented with the reissuance of Bonne Terre's WWTP National Pollutant Discharge Elimination System permit which expires on January 13, 2005. The specific impairments (water body segment and pollutant) are:

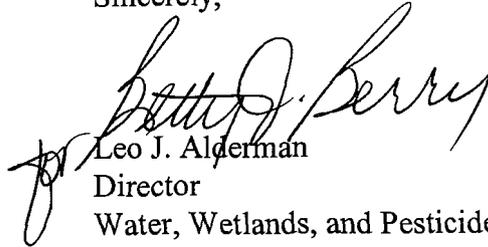
Water Body Name	WBID	Listed pollutant	TMDL pollutant
Turkey Creek	3282	BOD and VSS	BOD and VSS

The Environmental Protection Agency (EPA) has completed its review of these TMDLs with supporting documentation and information. By this letter, EPA approves the submitted TMDLs for Turkey Creek. Enclosed with this letter is a Region 7 TMDL Review Form which summarizes the rationale for EPA's approval of the TMDLs. 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 regarding this TMDL. 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.

EPA appreciates the thoughtful effort that MDNR has put into these TMDLs. EPA will continue to cooperate with and assist, as appropriate, in future efforts by MDNR to develop the remaining TMDLs.

Sincerely,


Leo J. Alderman
Director
Water, Wetlands, and Pesticides Division

Enclosure

cc: Ann Crawford
MO Department of Natural Resources

Phil Schroeder
MO Department of Natural Resources

Scott Dye
Sierra Club

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.

All WQS, criteria, and beneficial uses have been described. BOD is the parameter used to determine the impact that the wastewater will cause on DO levels in Turkey Creek. The VSS criteria is narrative, therefore in this TMDL, the target value used was derived using all of the instream data and selecting the 25th percentile value.

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.

The numeric link between DO and BOD was generated by the water quality model QUAL2E. The instream data analysis for VSS resulted in a value of 2.499 mg/L, the standard notation for non-detection where the lowest detectable concentration is 5 mg/L. The target value of 5 mg/L VSS was set at the junction of the effluent tributary and Turkey Creek.

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.

Land use and soils are described, as well as the history of the area. The sole source of the impairment is the Bonne Terre WWTP, NPDES permit number MO-0100706. Bypassing of raw sewage by a lift station located next to Turkey Creek is noted to have been a chronic problem. All significant sources have been considered.

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.

The QUAL2E model was calibrated to bring the simulation of flow, velocity, BOD, DO, organic nitrogen, ammonia nitrogen, nitrate and nitrite nitrogen, total phosphorus, and VSS within the range of measured data for these parameters. The WLAs for BOD and VSS were derived from adjusting the plant discharge in the model to full design flow of 0.95 cfs, and the instream flow to 0.1 cfs. An additional test was done with the model with the application of winter conditions. No mixing zone in the main stream was considered. The WLA concentrations are identified and will be incorporated into Bonne Terre's WWTP NPDES permit in the next permit reissuance which is scheduled for January 14th, 2005.

WLA Comment

The WLAs for Bonne Terre WWTP are 10 mg/L BOD, 10 mg/L TSS, 1.2 mg/L NH₃-N May through October, and 3 mg/L NH₃-N November through April.

LA Comment

The load allocation 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 target value for BOD was set to maintain the DO criterion plus an explicit MOS for a minimum of 5.5 mg/L of DO throughout the stream.

Seasonal Variation and Critical Conditions

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

Seasonal variation and critical conditions are accounted for by using the critical low flow in the modeling efforts and implementing seasonal ammonia limits.

Public Participation

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

This TMDL was on public notice from November 19th to December 19th, 2004. Groups receiving the public notice included the Missouri Clean Water Commission, Bonne Terre Northwest WWTP, the Water Quality Coordinating Committee, the TMDL advisory Committee, Stream Team volunteers in the watershed, 3 legislators and others that routinely receive public notice of NPDES permits. Comments received were responded to by MDNR.

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).

Monitoring plans include completing a low flow study, a sediment study in 2005, and special studies in 2006 and 2007. Monthly instream monitoring below the plant is currently required, and will be incorporated as a requirement in the reissued NPDES permit.

Reasonable assurance

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

Missouri has the authority to write and enforce NPDES permits. Inclusion of effluent limits for BOD, TSS, NH₃-N, and other parameters as necessary, and quarterly monitoring of the effluent reporting, in addition to instream monitoring, should provide reasonable assurance that WQS will be achieved.
