



**U.S. Environmental Protection
Agency Region 7**

**East Fork Tebo Creek
Henry County, Missouri**

Total Maximum Daily Load

July, 2006

Approved by:

_____/s/_____
William A. Spratlin
Director
Water, Wetlands, and Pesticides Division

__7/24/6__
Date

**Total Maximum Daily Load (TMDL)
For East Fork Tebo Creek
Pollutant: pH**

Name: East Fork Tebo Creek

Location: Near Windsor in Henry County, Missouri

Hydrologic Unit Code (HUC): 10290108-190003

Water Body Identification (WBID): 1282

Missouri Stream Classification: C¹

Beneficial Uses²:

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

Size of Impaired Segment: 1.0 mile

Location of Impaired Segment: From (upstream) Section 2, T43N, R24W to (downstream) NW ¼, Section 35, T44N, R24W

Pollutant Source: Triple Tipple abandoned coal mining area

Pollutant: pH

TMDL Priority Ranking: High



1. Introduction

This East Fork Tebo Creek Total Maximum Daily Load (TMDL) for pH³ is being established in accordance with Section 303(d) of the Clean Water Act, because the State of Missouri (State or Missouri) determined on the 1998 303(d) list of impaired waters that water quality standards (WQS) for East Fork Tebo Creek were exceeded due to pH. The Missouri Department of Natural Resources' (MDNR) Water Protection Program developed and public noticed documentation that East Fork Tebo Creek is meeting WQS using the same data and analysis that is used in this TMDL. To meet the milestones of the 2001 Consent Decree,

¹ Class C streams may cease to flow in dry periods but maintain permanent pools that support aquatic life. See Missouri Water Quality Standards (WQS) 10 Code of State Regulations 20-7.031(1)(F). The WQS can be found at the following uniform resource locator (URL): <http://www.dnr.mo.gov/env/wpp/rules/index.html#Chap7>

² For Beneficial uses see 10 CSR 20-7.031(1)(C) and Table (H)

³ pH is a measure of the activity of hydrogen ions (H⁺) in a solution and, therefore, its acidity or alkalinity.

American Canoe Association, et al. v. EPA, No. 98-1195-CV-W in consolidation with No. 98-4282-CV-W, February 27, 2001, EPA is establishing this TMDL.

The purpose of a TMDL is to determine the pollutant loading a waterbody can assimilate without exceeding the WQS. The TMDL also establishes the pollutant load allocation necessary to meet the water quality standard established for each waterbody based on the relationship between pollutant sources and in-stream water quality conditions. The TMDL consists of a wasteload allocation (WLA), a load allocation (LA), and margin of safety (MOS). The WLA is the fraction of the total pollutant load apportioned to point sources. The LA is the fraction of the total pollutant load apportioned to nonpoint sources. The MOS is a percentage of the TMDL that accounts for the uncertainty associated with the model assumption and data inadequacies.

2. Background and Water Quality Problems

2.1 Physical Characteristics of Basin

Henry County is located in west central Missouri and is an upland prairie area with gently sloping to steep topography. Streams generally flow from the higher relief in the northwestern part of the county to the lower relief in the southeastern part. Tebo Creek and its tributaries drain into the Osage River, which is now impounded by Truman Dam in neighboring Benton County. Rainfall averages about 39 inches with much of the precipitation occurring during the growing season. The impacted area is extensive due to the disruption of the watershed as a result of strip-mining activity, and it is impossible at this point to determine what exact soil types are represented. The Henry County Soil Survey designates the mined areas on their soils maps as “mine pits and dumps.” The survey continues that the mines and dumps are “...steep, irregularly shaped dumps [which] are a mixture of shale, sandstone, and the original mantle of soil stripped from the coal beds.” It concludes that these areas’ “response to management is poor.”⁴ Use of these areas is restricted to grazing, woodland or wildlife habitat.

2.2 Land Use Information in Basin

Uplands in the Tebo Creeks basin are primarily of the Hartwell-Deepwater soil association. These are deep, nearly level to moderately sloping soils. They range from poorly drained to well drained soils formed in thin loess with the underlying minerals derived from acidic shale. Native vegetation is tall grasses; however, these soils are also suited to row crop agriculture and hay production.

East Fork Tebo Creek is a west central Missouri tributary of Tebo Creek. The stream begins northwest of the City of Windsor in Henry County. East Fork Tebo Creek then flows southwest into Tebo Creek east of Calhoun, Missouri. The total watershed is about 14 square miles.

East Fork Tebo Creek was listed on the 1998 303(d) list for pH impairment from the Triple Tipple Abandoned Mine Land (AML) area. When the 2002 303(d) list was

⁴ Soil Survey of Henry County, United States Department of Agriculture Soil Conservation Service, 1976, page 40.

produced, with its associated timelines for usable data, 14 pH observations had been recorded at site E2 (see map in Appendix A) within the impaired segment. Two of these measurements were less than the 6.5 standard units required by WQS. This data indicated that East Fork Tebo Creek was not meeting the pH standard 14 percent of the time. Since then, MDNR has obtained five additional years of water quality data on East Fork Tebo Creek. Twenty two pH observations have been recorded since the initial draft of the 2002 303(d) list was submitted to the EPA. Those observations have noted two samples (June 10, 2003, pH = 6.4 and December 5, 2005, pH= 3.9 standard units) lower than the WQS. The December 2005 data point was thrown out of the calculation because the data collected from that site, on that day, were non-typical outliers. This brought into question whether this data set was valid. The dataset indicates that East Fork Tebo Creek is meeting the pH WQS more than 97 percent of the time. In an effort to ensure that WQS are being maintained and protected in East Fork Tebo Creek, MDNR is continuing water quality monitoring (see East Fork Tebo Creek data in Appendix B).

3. Description of the Applicable WQS and Numeric Water Quality Targets

Beneficial Uses:

The designated uses of East Fork Tebo Creek, WBID 1282, are listed on page 1. The designated uses and stream classifications may be found at 10 CSR 20-7.031(1)(C) and (F) and in Table H.

Use that is impaired:

Protection of Warm Water Aquatic Life

Anti-degradation Policy:

Missouri's WQS include the U.S. Environmental Protection Agency's (EPA) "three-tiered" approach to anti-degradation, and may be found at 10 CSR 20-7.031(2).

Tier 1 – Protects existing uses and provides the absolute floor of water quality for all waters of the United States. Existing instream water uses are those uses that were attained on or after November 29, 1975, the date of EPA's first WQS Regulation, or uses for which existing water quality is suitable unless prevented by physical problems such as substrate or flow.

Tier 2 – Protects the level of water quality necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water in waters that are currently of higher quality than required to support these uses. Before water quality in Tier 2 waters can be lowered, there must be an antidegradation review consisting of: (1) a finding that it is necessary to accommodate important economical or social development in the area where the waters are located; (2) full satisfaction of all intergovernmental coordination and public participation provisions; and (3) assurance that the highest statutory and regulatory requirements for point sources and best management practices for nonpoint sources are achieved. Furthermore, water quality may not be lowered to less than the level necessary to fully protect the "fishable/swimmable" uses and other existing uses.

Tier 3 – Protects the quality of outstanding national resources, such as waters of national and state parks, wildlife refuges and waters of exceptional recreational or ecological significance. There may be no new or increased discharges to these waters and no new or increased discharges to tributaries of these waters that would result in lower water quality (with the exception of some limited activities that result in temporary and short-term changes in water quality).

Specific Criteria:

The impairment of this waterbody is based on exceedence of the specific criteria contained in Missouri’s WQS, 10 CSR 20-7.031(4)(E). There it states that water contaminants shall not cause pH to be outside of the range of 6.5-9.0 standard units (SU).

4. Calculation of Load Capacity

The Loading Capacity (LC) is the greatest amount of pollutant loading that a stream can assimilate without becoming impaired. It is equal to the sum of the Load Allocation (LA), the Wasteload Allocation (WLA) and the Margin of Safety (MOS) and can be expressed as an equation:

$$LC = LA + WLA + MOS$$

Dry weather design flow from the Tebo Creeks AML can not be accurately determined because surface flow and seepage rates from this area are variable. The Tebo Creeks are Class C streams which cease to flow in dry periods but maintain permanent pools that support aquatic life. Dry weather design flow is therefore 0.1 cubic feet per second (cfs) or less. Since there can be minimal upstream dilution during dry weather conditions, the flow of water coming from the Tebo Creeks AML areas will have to meet in-stream WQS for pH (6.5-9.0 SU) and an alkalinity of 35.0 mg/L or more. The pH and alkalinity concentrations used as the TMDL endpoints can not be summed as Load Allocations (LAs) + Wasteload Allocations (WLA) + Margin of Safety (MOS). The standard Load Capacity equation shown above is not applicable when calculating concentration based endpoints.

pH

For pH as expressed as the concentration in the abandoned mine drainage, the concentration equivalent load capacity is a pH of 6.5-9.0 SU (the state WQS) and a total alkalinity of 35 mg/L or more. To ensure that the pH WQS is met and maintained in East Fork Tebo Creek, the alkalinity target is set at 35.0 mg/L or greater year round.

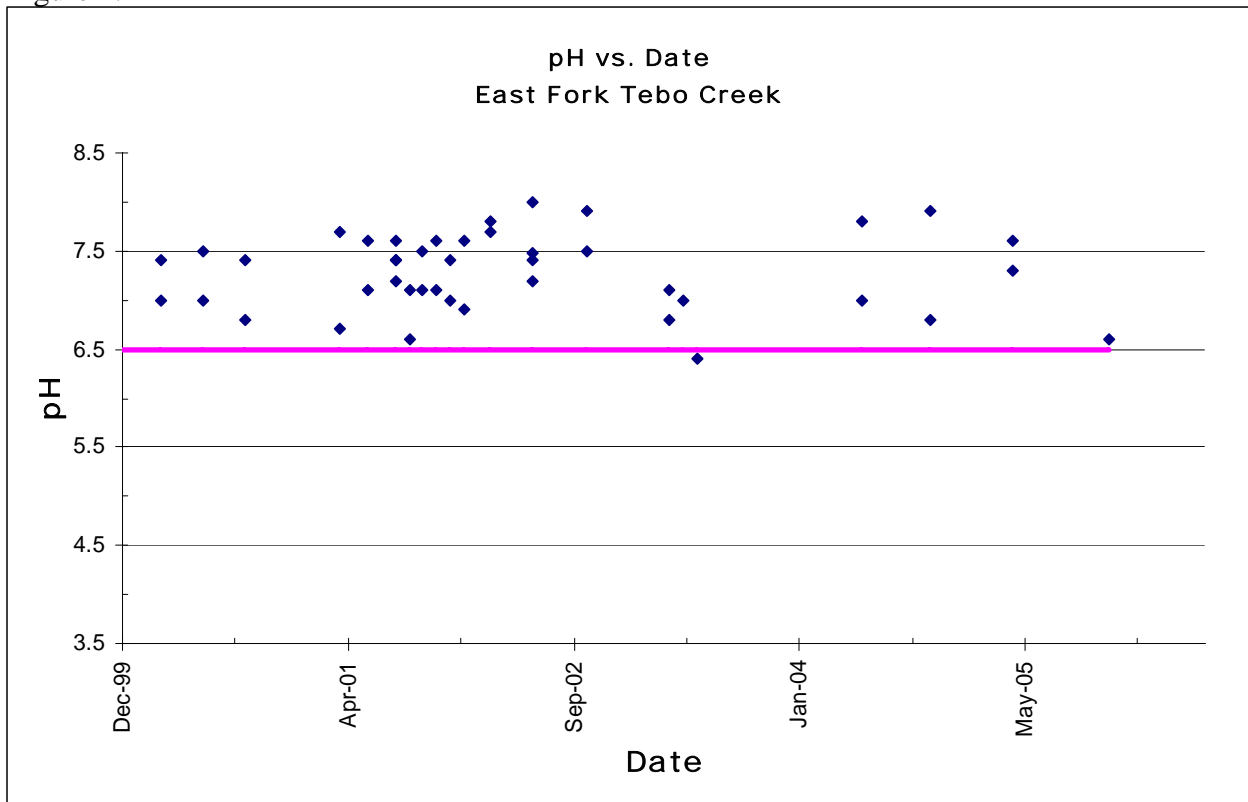
5. Load Allocation (Nonpoint Source Loads)

LA is the allowable amount of the pollutant that can be assigned to nonpoint sources.

pH

East Fork Tebo Creek—Since the load capacity for East Fork Tebo Creek is concentration based, discharges to the stream will be required to meet the 35 mg/L alkalinity target. With current alkalinity levels at an average of 122 mg/L, there appears to be sufficient buffering in the system to maintain a pH of 6.5 or better. This target will allow the standard of 6.5 to 9.0 SU to be met. No net reduction in the current condition is required. Figure 1 below shows the relationship of samples to water quality. The relationship shows that the data rarely exceeds WQS (rarely below 6.5 and never above 9). Sufficient margin of safety (MOS) ensures TMDL will meet pH WQS. The LA is no net reduction for the TMDL.

Figure 1.



6. Waste Load Allocation (Point Source Loads)

WLA is the allowable amount of the pollutant that can be assigned to point sources. There are no major point sources of pollution in the East Fork Tebo Creek watershed. Any future discharges would be required by the Missouri State Operating Permit (per the EPA NPDES permit) to protect the instream from excursions outside of the pH in the range of 6.5 – 9.0 SU and a secondary requirement for a total alkalinity of 35 mg/L. The town of Windsor has one small municipal wastewater treatment facility (WWTF) that discharges treated effluent to East Fork Tebo Creek. This discharge is small and located between the E3 and E4 sampling sites (Appendix A). Sampling sites E3 and E4 are meeting WQS so the WWTF does not substantially

impact East Fork Tebo Creek and therefore does not contribute. No net reduction in the current condition is required. The WLA is no net reduction for this TMDL.

7. Margin of Safety

A Margin of Safety (MOS) is usually added to a TMDL, if a TMDL is necessary, to account for the uncertainties inherent in the calculations and data gathering. The MOS is intended to account for such uncertainties in a conservative manner. Based on EPA guidance, the MOS can be achieved through one of two approaches:

(1) Explicit – Reserve a numeric portion of the loading capacity as a separate term in the TMDL.

(2) Implicit – Incorporate the MOS as part of the critical conditions for the waste load allocation and the load allocation calculations by making conservative assumptions in the analysis.

The MOS in this case is implicit because WQS are being met with the present load.

pH

The pH criterion alone does not provide sufficient assurance that the proper pH range will be maintained in East Fork Tebo Creek due to possible latent acidity. Net alkalinity would be the preferred secondary water quality target, but the lack of sufficient acidity data makes this analysis difficult. As a result, in-stream alkalinity will be used as the secondary water quality target. Alkalinity is a measurable characteristic in East Fork Tebo Creek and can be linked to the pH water quality criterion. Alkalinity has units of mg/L as CaCO₃ (calcium carbonate) as discussed in Standard Methods for the Examination of Water and Wastewater.⁵

An Ordinary Least Squares (OLS) approach was used to calculate a regression line and associated statistics for East Fork Tebo Creek pH and alkalinity values found in Appendix B. Alkalinity standard residuals were computed and plotted. Residuals were also tested for normality and found to adhere to a normal distribution. Non-parametric regression was also run on this analysis with similar findings. In previous MDNR TMDLs, (Middle & West Fork Tebo Creek, and Tributary to Barker Creek), the predicted alkalinity of 35 mg/L provided sufficient buffer capacity to ensure adequate buffering to prevent instream pH values from dropping below 6.5.

8. Seasonal Variation

The water quality data collected to this point represents all seasons. The primary processes involved in the formation of acid is not significantly affected by differences in air and water temperatures associated with seasonal change. Missouri standards do not distinguish between summer and winter for pH.

⁵ *Standard Methods For The Examination Of Water And Wastewater* [electronic resource], 20th ed., American Public Health Association: American Water Works Association: Water Environment Federation, New York, 1999.

9. Monitoring Plans for East Fork Tebo Creek

As listed in the MDNR public noticed document (January - February 12, 2006) on page 4, MDNR's Kansas City Regional Office staff will be doing the following monitoring on East Fork Tebo Creek.

Organization	Monitoring Type	Site Location	Fld	MI	Comments
MDNR	Ambient	E. Tebo Cr. @ Hwy Y, E14,43N,24W	*	*	Chloride, Sulfate, Alkalinity/acidity, Flow
MDNR	Ambient	E. Tebo Cr. @ Hwy 2-Henry Co.	*	*	Chloride, Sulfate, Alkalinity/acidity, Flow
MDNR	Ambient	E. Tebo Cr. @ NENW35,44N,24W	*	*	Chloride, Sulfate, Alkalinity/acidity, Flow

* Quarterly monitoring.

Fld – Field Measurements. These include measurements made in the field and include water temperature, pH and specific conductance. For some waters, dissolved oxygen is also measured.

MI -- Major ions and allied measurements. These include chemical analysis for calcium, magnesium, sulfate, chloride and bicarbonate and determination of alkalinity/acidity.

10. Public Participation

EPA regulations, 40 CFR 130.7, require that TMDLs be subject to public review. EPA is providing public notice of this TMDL for East Fork Tebo Creek on the EPA, Region 7, TMDL website: <http://www.epa.gov/region07/water/tmdl.htm>. The response to comments and final TMDL will be available at: <http://www.epa.gov/region07/water/apprtmdl.htm#Missouri>.

This water quality limited segment of East Fork Tebo Creek is included on the approved 1998 and 2002 303(d) lists for Missouri. The Missouri Department of Natural Resources' Water Protection Program developed and public noticed documentation that East Fork Tebo Creek in Henry County, Missouri, is meeting WQS using much of the same data and analysis that is used in this TMDL. This TMDL is being produced by EPA to meet the requirements of the 2001 Consent Decree, *American Canoe Association, et al. v. EPA*, No. 98-1195-CV-W in consolidation with No. 98-4282-CV-W, February 27, 2001. EPA is developing this TMDL in cooperation with the State of Missouri, and EPA is establishing this TMDL at this time to meet the milestones of the *American Canoe* consent decree obligations. Missouri may submit and EPA may approve another TMDL for this water at a later time.

MDNR's public notice period was from January 13, 2006, to February 12, 2006. A presentation on the Tebo Creeks TMDL was given April 4, 2002⁶ to the Henry County Soil

⁶ Mistakenly reported as April 7, 2002, in the Tebos TMDL.

Conservation District Board. In this meeting general facts about the Clean Water Act, the TMDL component of the Act, and the purpose of the Tebo Creeks TMDL were explained. As part of the public notice process, EPA and MDNR maintained an email mailing list of interested persons to provide notification of issues relating to the East Fork Tebo Creek TMDL. Groups that received the public notice announcement included the Missouri Clean Water Commission, Henry County Soil and Water Conservation District, the Water Quality Coordinating Committee, Stream Team volunteers in the county (11) and the legislators representing Henry County (2). No comments were received to the MDNR public notice. The EPA public noticed this TMDL from May 30, 2006, to July 3, 2006, and the Summary of Response to Comment(s) is posted on the EPA website: <http://www.epa.gov/region07/water/apprtmdl.htm#Missouri>.

11. Appendices

Appendices:

Appendix A – Topographic map of the Tebo Creeks, impaired segment and sampling sites

Appendix B – Data for East Fork Tebo Creek

Appendix C – Total Maximum Daily Load Information Sheet for East Fork Tebo Creek

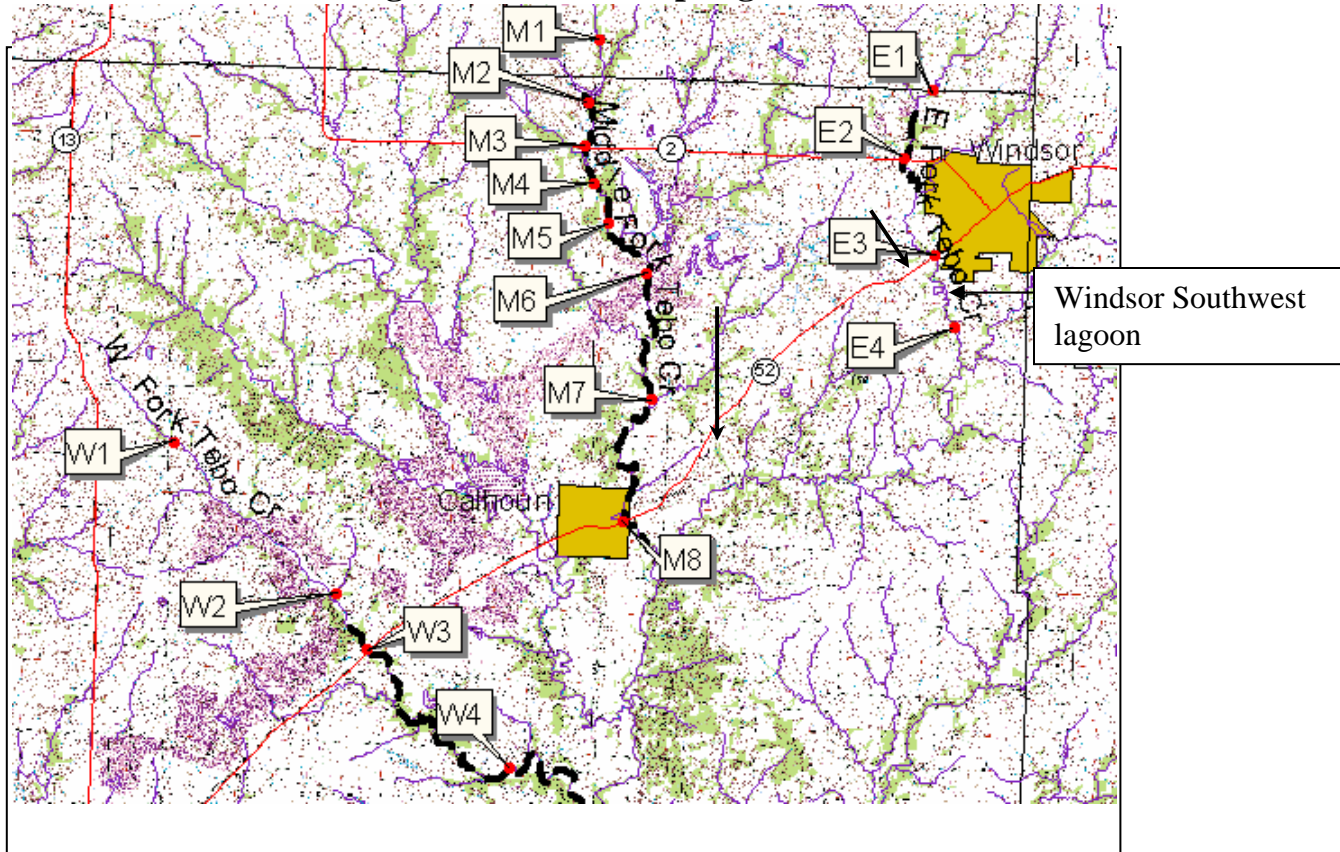
Appendix D – Figure 2 – Alkalinity Residuals Plot, Figure 3 – Normality Plot, Figure 4 – Alkalinity vs pH

Basin Water Quality Studies:

- Evaluation of the Recovery of Fish and Invertebrate Communities Following Reclamation of a Watershed Impacted by an Abandoned Coal Surface Mine. By James F. Fairchild, Barry C. Poulton, Thomas W. May, and Stuart M. Miller, http://toxics.usgs.gov/pubs/wri99-4018/Volume1/sectionD/1501_Fairchild/pdf/1501_Fairchild.pdf
- Office of Surface Mining Annual Evaluation Summary Report for the Regulatory and Abandoned Mined Land Programs Administered by the Land Reclamation Program of Missouri for Evaluation Year 1998 (October 1, 1997 to September 30, 1998) November 1998 <http://www.osmre.gov/missouri98.htm>

Appendix A

Map of Impaired Portion of East, Middle and West Tebo Creeks Showing Location of Sampling Sites



--- Impaired segments → Direction of flow

Sample Site Index

- E1 – East Fork Tebo Creek 0.5 mile above Triple AML**
- E2 – East Fork Tebo Creek 0.5 mile below Triple AML**
- E3 – East Fork Tebo Creek 2 miles below Triple AML**
- E4 – East Fork Tebo Creek 3 miles below Triple AML**
- M1 – Tributary to Middle Fork Tebo Creek 0.1 mile above AML
- M2 – Tributary to Middle Fork Tebo Creek within AML
- M3 – Tributary to Middle Fork Tebo Creek 0.1 mile below AML
- M4 – Tributary to Middle Fork Tebo Creek at Highway 2
- M5 – Tributary to Middle Fork Tebo Creek 1.2 miles below AML
- M6 – Middle Fork Tebo Creek 2 miles below AML
- M7 – Middle Fork Tebo Creek 4 miles below AML
- M8 – Middle Fork Tebo Creek at Highway 52
- W1 – Tributary to West Fork Tebo Creek
- W2 – Tributary to West Fork Tebo Creek
- W3 – West Fork Tebo Creek at Highway 52
- W4 – West Fork Tebo Creek at County Road

Appendix B

Data for East Fork Tebo Creek

Org	Site	Site Name	Year	Month	Day	pH	ALK	SO4	Cl	SO4+Cl
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	1998	4	21	7.1				
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	1998	8	11	7.0	85	297		297
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	1998	9	3	6.8	90	194		194
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	1999	4	7	7.2				
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	1999	7	21	6.8				
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2000	3	21	7.0	54	167	12	179
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2000	6	7	7.0	88	351	14	365
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2000	9	12	6.8	63	416	15	431
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2001	4	26	6.7	92	286	12	298
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2001	6	19	7.1	95	271	12	283
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2001	8	14	7.4	115	460	29	489
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2001	8	16	7.2	112	589	26	615
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2001	9	12	6.6	84	399	22	421
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2001	10	4	7.1	78	471	20	491
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2001	11	27	7.1	96	521	14.7	535.7
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2001	12	5	7.0	123	558	18	576
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2002	1	10	6.9	80	529	18	547
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2002	3	14	7.7	78	268	16	284
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2002	6	6	7.4	84	135	10.3	145.3
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2002	6	20	7.2	90	202	10	212
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2002	10	3	7.5	69	350	24	374
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2003	4	24	6.8	53	50	9	59
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2003	6	10	6.4	140	112	47	159
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2004	6	17	7.0	98	196	13	209
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2004	11	10	6.8	106	225	14	239
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2005	5	26	7.3	146	597	18	615
MDNR	E2	E. Fk. Tebo Cr. 0.5 mi.bl. Triple AML	2005	12	7	3.9	442	6940	44	6988
Mean: 0.5 Miles Downstream of AML						6.92	107	608	19	625
MDNR	E3	E. Fk. Tebo Cr. 2 mi.bl. Triple AML	1998	8	11	7.2	83	163		163
Org	Site	Site Name	Year	Month	Day	pH	ALK	SO4	Cl	SO4+Cl
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	1998	8	11	7.4	141	139		139
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	1998	9	3	7.3	132	124		124
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2000	3	21	7.4	74	111	26	137
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2000	6	7	7.5	172	129	42	171
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2000	9	12	7.4	231	205	42	247
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2001	4	26	7.7	104	179	24	203
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2001	6	19	7.6	117	95	28	123
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2001	8	14	7.6	154	161	40	201
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2001	8	16	7.4	155	225	33	258
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2001	9	12	7.1	184	161	64	225
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2001	10	4	7.5	201	90	56	146

MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2001	11	27	7.6	202	120	58.3	178.3
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2001	12	5	7.4	206	145	58	203
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2002	1	10	7.6	221	176	59	235
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2002	3	14	7.8	116	163	32	195
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2002	6	6	7.5	96	99.4	17.2	116.6
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2002	6	20	8.0	136	120	33	153
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2002	10	3	7.9	198	68	79	147
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2003	4	24	7.1	68	107	17	124
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2003	5	29	7.0	154	158	51	209
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2004	6	17	7.8	112	103	26	129
MDNR	E4	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2004	11	10	7.9	122	142	31	173
MDNR	E2	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2005	5	26	7.6	174	217	48	265
MDNR	E2	E. Fk. Tebo Cr. 3 mi.bl. Triple AML	2005	12	7	6.6	269	134	125	259
Mean: 3 Miles Downstream of AML						7.48	156	140	45	182

Note: The exceedence rate for the pH water quality standard is 2.3 percent. Therefore the stream is not impaired by pH.

Appendix C
Total Maximum Daily Load Information Sheet for East Fork Tebo Creek

This document is provided as a link in electronic copies and will be included as a hard copy appendix in hard copy distributions of this TMDL.

<http://www.dnr.mo.gov/env/wpp/tmdl/info/tebo-ck-info.pdf>

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Appendix D

Figure 2

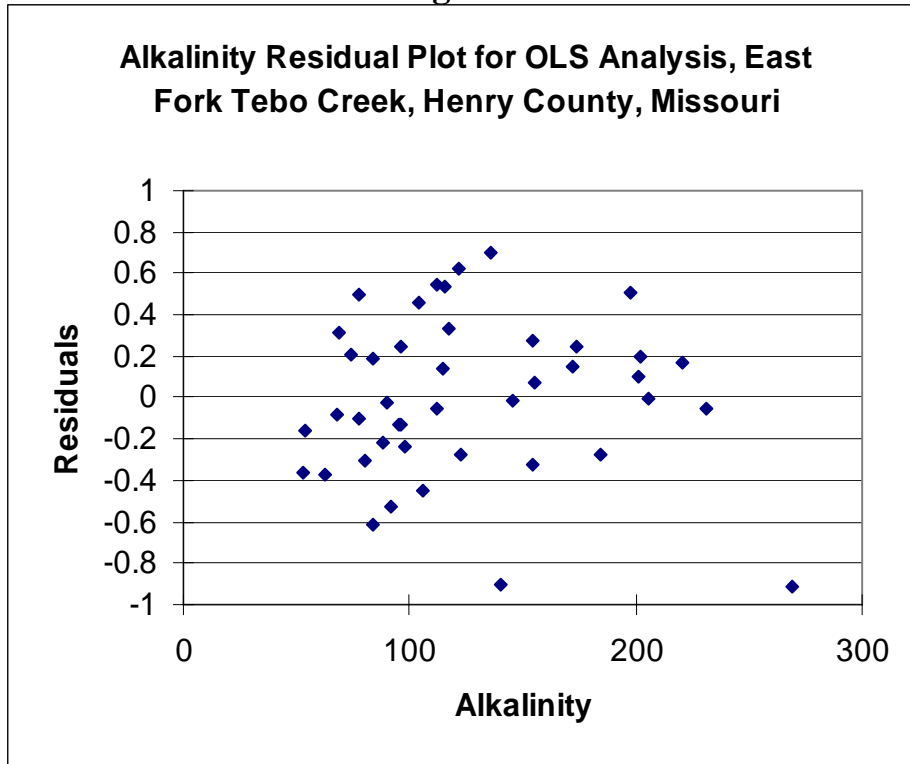


Figure 3

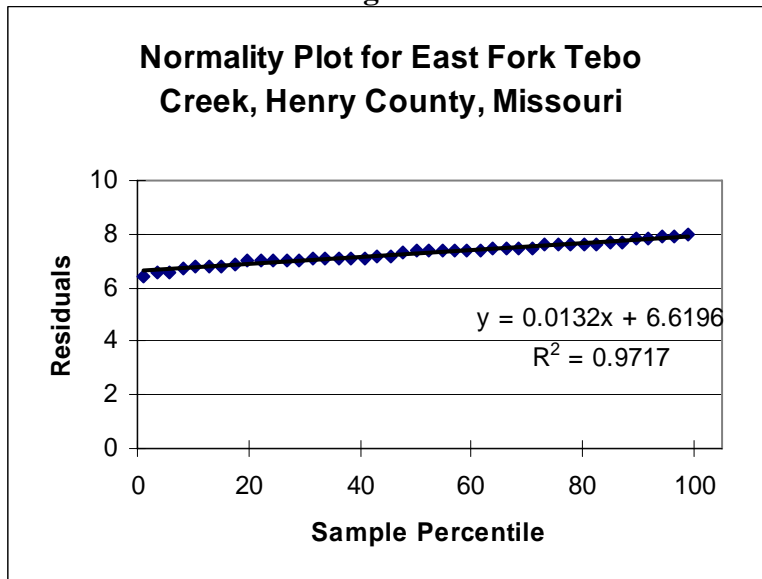


Figure 4

