

Missouri  
Department of  
Natural Resources

DRAFT CENTER CREEK AND TURKEY CREEK TMDL  
PUBLIC COMMENTS

Public Notice  
May 5 – June 4, 2006

**Center Creek – WBID #3203**  
**Turkey Creek – WBIDs #3216, 3217**

Jasper County, Mo.

Missouri Department of Natural Resources  
Water Protection Program  
PO Box 176  
Jefferson City, MO 65102-0176  
800-361-4827 / 573-751-1300



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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

MAY 25 2006

Mr. Edward Galbraith, 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. Galbraith:

RE: Comments on Draft TMDLs public noticed on the MDNR website: Center and Turkey Creeks.

The U.S. Environmental Protection Agency (EPA) is providing these comments on the proposed final Total Maximum Daily Loads (TMDLs) public noticed on the Missouri Department of Natural Resources (MDNRs) website; <http://www.dnr.mo.gov/env/wpp/wpcp-pn.htm>.

Center and Turkey Creeks TMDL public notice period May 5, 2006, to June 4, 2006, comments are in the enclosure.

EPA has completed its review of the draft TMDL on public notice. By this letter, EPA is submitting comments concerning the draft TMDL as listed in the enclosure. EPA appreciates the opportunity to comment and the thoughtful effort that MDNR has put into this draft TMDL. EPA will continue to cooperate with and assist, as appropriate, in future efforts by MDNR to develop TMDLs.

If you have any questions or concerns in regards to this matter, please do not hesitate to contact Jack Generaux, TMDL Team Leader, at (913)551-7690, or Tabatha Adkins, TMDL Team, at (913)551-7128.

Sincerely,

John DeLashmit  
Chief  
Water Quality Management Branch

cc: Ann Crawford, TMDL Chief, MO Dept of Natural Resources  
Phil Schroeder, Missouri Department of Natural Resources

## Enclosure

Regarding: Draft TMDL for Center and Turkey Creeks Zinc Impairment.

EPA has reviewed the draft document and has the following comments which need to be addressed in the final TMDL:

### **General comments not specific to either stream**

Comment 1 -- Page 12, section 4.1.1-Only chronic WQS are calculated for Missouri. Targeting chronic criteria as protective of acute criteria would be a margin of safety for acute standards. Mention of how the acute criterion, in Missouri's WQS, is being addressed should be part of the document since this criterion is being exceeded.

Comment 2 - - Page 29, section 10.0 states that EPA examines draft TMDLs prior to public notice. This is not true at this time and is misleading. The statement should be removed.

Comment 3 - - Table 3 and Table 9, pages 18 and 24 -There needs to be an explanation of why calculations of percent reduction are based on the 95th percentile of existing load.

### **Center Creek**

Comment 1 - -Page 10 of the TMDL mistakenly implies that a translator exists between dissolved and total metals. The EPA translator described previously in the TMDL relates to the toxicity data set used in criteria development. No universal relationship exists to relate dissolved to total metals in specific waters and flow conditions. These relationships depend on the amount of unfilterable solids, the mass fraction of the contaminant in the solids, and the partitioning mechanisms between the solid and dissolved phases in the specific situation. The following excerpt from 2001 Update of Ambient Water Quality Criteria for Cadmium (EPA-822-R-01-001 April 2001) may help to explain the concept:

#### ***Conversion Factors***

*“Although past water quality criteria for cadmium (and other metals) have been established upon the loosely defined term of “acid soluble metals,” U.S. EPA made the decision to allow the expression of metal criteria on the basis of dissolved metal (U.S. EPA 1994a), operationally defined as that metal that passes through a 0.45 micron filter. Because most of the data in existing databases are from tests that were either nominal concentrations, or provided only total cadmium measurements, some procedure was required to estimate their dissolved equivalents. The approach taken by U.S. EPA involves the use of conversion factors (CF), that when applied to the total metal concentration, gives a dissolved metal concentration. Thus, the CF corresponds to the percent of the total recoverable metal that is dissolved. These CFs were determined by conducting a number of “simulation tests” using solutions simulating those used in the toxicity tests that were most important in the derivation of aquatic life criteria for each metal (static, flow-through, fed, and unfed conditions that typified standard acute and chronic toxicity tests from which criteria are derived). The intent was to mimic the way criteria would have been derived if dissolved metal had been measured in each of the toxicity tests (Lussier et*

*al. 1995; Stephan 1995; Univ. of Wisconsin- Superior 1995). For certain metals like cadmium, these CFs are hardness dependent. The appropriate CFs were used only when determining the final cadmium criteria values, and are hardness dependent in freshwater.”*

While the use of the translator in this particular TMDL does not introduce a large error, it is a mistaken application of the concept and needs to be corrected. Because the dissolved fraction is always a subset to the total, the TMDL could assume a 1:1 relationship and count the difference as part of the MOS.

Comment 2 - - Page 10 section 2.3, statements no significant relationship between zinc concentration and flow. Supporting figure or statistical results need to be included.

Comment 3 - - Section 4.1 defines sub-watersheds for comparison between impaired and non-impaired segments. The load duration curves show both as impaired.

Comment 4 - -Page 17, section 4.2; estimates of 100 cfs as a base flow is not supported in the TMDL. The methodology needs to be cited.

Comment 5 - - Page 17, section 4.2; the Center Creek WWTP is said to have monitoring for zinc as a permit requirement, this should allow an estimate of point source loading from at least this one point source. WLAs must be calculated.

Comment 6 - - The TMDL is not defined in a manner consistent with the Clean Water Act and Federal Regulation. Specifically, the concept of “seepage” is introduced as something other than a load allocation. Based on the first paragraph on page 17, there seems to be confusion that the Load Allocation (LA) is only related to “runoffs.” EPA does not view LA as only in response to rainfall. To be consistent with EPA guidance, “seepage” should be part of the LA and specific numeric targets should be assigned; the LA is not zero.

Comment 7 - -Page 18, the TMDL should be more explicit that the permit limits for future renewals should include the end-of-pipe criteria concentration limits to avoid a question of whether the facility is causing and contributing to the impairment. Otherwise, specific reasonable assurance language is required to ensure that the WLA limits will achieve WQS. WLAs must be given for permitted facilities. Table 3 will need to be changed to reflect the previous points.

### **Turkey Creek**

Comment 1 - - Page 18, section 5.1; the relationship between flow in Turkey creek and Shoal Creek is a log linear relationship the equation should be  $\ln Y = 0.686 * \ln X - 0.149$ .

Comment 2 - -Page 20, section 5.1; estimates of 121 cfs as a base flow is not supported in the TMDL. The methodology needs to be cited.

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Matt Blunt, Governor • Doyle Childers, Director

www.dnr.mo.gov

September 1, 2006

Mr. John DeLashmit  
U.S. Environmental Protection Agency  
Region VII  
901 North Fifth Street  
Kansas City, KS 66101

RE: Response to Comments on the Center and Turkey Creeks Total Maximum  
Daily Load

Dear Mr. DeLashmit:

This letter responds to comments from the U.S. Environmental Protection Agency (EPA) on the draft Total Maximum Daily Load (TMDL) for Center Creek and two segments of Turkey Creek in Jasper County, Missouri. This letter also indicates where the Department of Natural Resources (department) revised the TMDL document to address EPA's comments.

***General comments not specific to either stream***

*Comment 1 -- Page 12, section 4.1.1-Only chronic Water Quality Standards (WQS) are calculated for Missouri. Targeting chronic criteria as protective of acute criteria would be a margin of safety for acute standards. Mention of how the acute criterion in Missouri's WQS is being addressed should be part of the document since this criterion is being exceeded.*

**Response to Comment 1:**

Acute dissolved zinc criteria are 1.095 times greater than the corresponding chronic criteria for the same hardness. Consequently, protecting aquatic life at the chronic level will certainly protect them at the acute level. The revised TMDL will include the relationship between acute and chronic.

*Comment 2 - - Page 29, section 10.0 states that EPA examines draft TMDLs prior to public notice. This is not true at this time and is misleading. The statement should be removed.*

**Response to Comment 2:**

The statement is no longer true and will be removed.

*Comment 3 - - Table 3 and Table 9, pages 18 and 24 -There needs to be an explanation of why calculations of percent reduction are based on the 95th percentile of existing load.*

**Response to Comment 3:**

An explanation and rationale for using the 95th percentile of observed data within a probability flow will be added to the TMDL document (section 3.1).

***Comments specific to Center Creek***

*Comment 4 - - Page 10 of the TMDL mistakenly implies that a translator exists between dissolved and total metals. The EPA translator described previously in the TMDL relates to the toxicity data set used in criteria development. No universal relationship exists to relate dissolved to total metals in specific waters and flow conditions. These relationships depend on the amount of unfilterable solids, the mass fraction of the contaminant in the solids, and the partitioning mechanisms between the solid and dissolved phases in the specific situation. The following excerpt from 2001 Update of Ambient Water Quality Criteria for Cadmium (EPA-822-R-01-001 April 2001) may help to explain the concept:*

*"Conversion Factors*

*Although past water quality criteria for cadmium (and other metals) have been established upon the loosely defined term of "acid soluble metals," U.S. EPA made the decision to allow the expression of metal criteria on the basis of dissolved metal (U.S. EPA 1994a), operationally defined as that metal that passes through a 0.45 micron filter. Because most of the data in existing databases are from tests that were either nominal concentrations, or provided only total cadmium measurements, some procedure was required to estimate their dissolved equivalents. The approach taken by U.S. EPA involves the use of conversion factors (CF), that when applied to the total metal concentration, gives a dissolved metal concentration. Thus, the CF corresponds to the percent of the total recoverable metal that is dissolved. These CFs were determined by conducting a number of "simulation tests" using solutions simulating those used in the toxicity tests that were most important in the derivation of aquatic life criteria for each metal (static, flow-through, fed, and unfed conditions that typified standard acute and chronic toxicity tests from which criteria are derived). The intent was to mimic the way criteria would have been derived if dissolved metal had been measured in each of the toxicity tests (Lussier et al. 1995; Stephan 1995; Univ. of Wisconsin- Superior 1995). For certain metals like cadmium, these CFs are hardness dependent. The appropriate CFs were used only when determining the final cadmium criteria values, and are hardness dependent in freshwater."*

*While the use of the translator in this particular TMDL does not introduce a large error, it is a mistaken application of the concept and needs to be corrected. Because the dissolved fraction is always a subset to the total, the TMDL could assume a 1:1 relationship and count the difference as part of the Margin of Safety.*

**Response to Comment 4:**

The chronic dissolved zinc target was calculated using a formula in Missouri's Water Quality Standards which factors in the appropriate hardness. Similarly, the acute/chronic total zinc target is determined from a formula administered by the State of Kansas which also factors in the same hardness value. The targets were not estimated from observed data collected in Spring River watershed in any one form (dissolved or total) then translated to the other form (section 2.3).

*Comment 5 - - Page 10, section 2.3, statements no significant relationship between zinc concentration and flow. Supporting figure or statistical results need to be included.*

**Response to Comment 5:**

The revised document will include supporting information that dissolved zinc concentration is not significantly correlated to flow level. The flow and dissolved zinc concentration have a correlation coefficient of  $-0.099$  (section 2.3).

Mr. John DeLashmit  
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*Comment 6 - - Section 4.1 defines sub-watersheds for comparison between impaired and non-impaired segments. The load duration curves show both as impaired.*

Response to Comment 6:

The watershed that drains to U.S. Geological Survey 07186400 gauging station near Carterville (Carterville watershed) is upstream of the impaired and 303(d) listed segment of Turkey Creek. Therefore, based on 1998 listing methodology and the pre-2005 metal criteria, this watershed is not impaired. However, observed loads exceeded the load duration curve which was based on the new zinc criteria.

*Comment 7 - -Page 17, section 4.2; estimates of 100 cfs as a base flow is not supported in the TMDL. The methodology needs to be cited.*

Response to Comment 7:

The base flow was estimated using the method developed by Arnold, J.G, P. M. Allen, R.. Muttiah, and G. Bernhart. 1995. Automated base flow separation and recession analysis techniques. Ground Water 33(6):1010-1018. This reference is added as a footnote to section 4.1 in the TMDL document.

*Comment 8 - - Page 17, section 4.2; the Center Creek Wastewater Treatment Facility (WWTF) is said to have monitoring for zinc as a permit requirement, this should allow an estimate of point source loading from at least this one point source. Waste Load Allocation(WLA) must be calculated.*

Response to Comment 8:

The WLA for all permitted facilities in this watershed has been computed and is presented in Table 2, Section 4.2.

*Comment 9 - - The TMDL is not defined in a manner consistent with the Clean Water Act and Federal Regulation. Specifically, the concept of "seepage" is introduced as something other than a load allocation. Based on the first paragraph on page 17, there seems to be confusion that the Load Allocation (LA) is only related to "runoffs." EPA does not view LA as only in response to rainfall. To be consistent with EPA guidance, "seepage" should be part of the LA and specific numeric targets should be assigned; the LA is not zero.*

Response to Comment 9:

The department defines LA as that portion of the load capacity that is not attributable to point sources. The LA may come from runoff and/or seepage or other non-point source. In the context of this TMDL seepage is any LA at or below base flow.

Mr. John DeLashmit  
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*Comment 10 - -Page 18, the TMDL should be more explicit that the permit limits for future renewals should include the end-of-pipe criteria concentration limits to avoid a question of whether the facility is causing and contributing to the impairment. Otherwise, specific reasonable assurance language is required to ensure that the WLA limits will achieve WQS. WLAs must be given for permitted facilities. Table 3 will need to be changed to reflect the previous points.*

Response to Comment 10:

The WLA is determined using the design flow of the facility and the target zinc concentration and corresponds to the maximum load deliverable to the stream. In practice, the facility rarely operates at full capacity; thus its long-term average flow (and load) is less than design flow. However, the permit writer calculates the effluent limits considering the flow of the facility, stream 7Q10 flow for any available dilution, and the calculated WLA. Because of seepage from old mineshafts at or below baseflow (as demonstrated in the document) it was not possible to separate actual loading generated by point sources from that of non-point sources. Center Creek WWTF permit (MO0040185) was renewed with a maximum total recoverable zinc limit of 0.215 mg/L.

***Comments specific to Turkey Creek***

*Comment 11 - - Page 18, section 5.1; the relationship between flow in Turkey Creek and Shoal Creek is a log linear relationship the equation should be  $\ln Y = 0.686 * \ln X - 0.149$ .*

Response to Comment 11:  
The error was corrected.

*Comment 12 - -Page 20, section 5.1; estimates of 121 cfs as a base flow is not supported in the TMDL. The methodology needs to be cited.*

Response to Comment 12:

Baseflow separation methodology is now cited in the TMDL document as a footnote to Section 5.1.

Thank you for your comments and for EPA's support in the TMDL process. If you have other questions or wish to discuss this further, please contact Mr. Mohsen Dkhili at (573) 522-2552 or by mail at the Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102.

Sincerely,

WATER PROTECTION PROGRAM



Philip A. Schroeder, Chief  
Water Quality Monitoring and Assessment Section

PS:mdl



May 30, 2006

Missouri Department of Natural Resources  
Water Protection Program  
Water Quality Monitoring and Assessment Section  
PO Box 176  
Jefferson City, MO 65102-0176

**Subject: Comments on Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri  
NPDES Permit No. MO-0002411  
Former Vickers Facility  
Joplin, Missouri  
Missouri Hazardous Waste Management Facility Permit No: MOD007155781**

The purpose of this letter is to provide the Missouri Department of Natural Resources (MDNR), Water Protection Program (WPP), with comments on the Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri during the public comment period extending from May 5 – June 4, 2006. This letter will provide MDNR – WPP with actual analytical data from Vickers Incorporated (Vickers) which is referenced in the Turkey Creek TMDL evaluation.

Section 5 of the Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri provides for an evaluation of the dissolved and total zinc conditions in Turkey Creek. This letter addresses primarily the data used by MDNR in this section for the TMDL evaluation, as well as providing support for re-locating the outfall location for Vickers in the Turkey Creek watershed, as provided in the Re-Location Application for Outfall 003 and Outfall 001 Sampling Points, NPDES Permit No. MO-0002411, Former Vickers Facility, Joplin, Missouri, Missouri Hazardous Waste Management Facility Permit No: MOD007155781 (Unisys, May 9, 2006).

In Table 6 of the Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri the footnote states that all design flows are rainfall dependant, except for the Joplin Turkey Creek WWTF. Vickers has two outfall structures which discharge to the Turkey Creek watershed:

- Outfall 001 collects primarily rainfall runoff from the roof and parking lots at the adjacent Able Manufacturing property which discharges to Leadville Hollow, a tributary of Turkey Creek. Outfall 001 is the headwaters of Leadville Hollow.
- Outfall 003 discharges the treated wastewater to Leadville Hollow, just downgradient of the Outfall 001 Parshall flume. In the context of data within Table 6, Outfall 003 would be considered a WWTF.

The design flow rate for these outfalls are as follows:

Outfall 001 = 0.46 ft<sup>3</sup>/sec

Outfall 003 = 0.93 ft<sup>3</sup>/sec

Design Flow to Turkey Creek = 1.39 ft<sup>3</sup>/sec

At Vickers, there is an additional outfall structure (Outfall 002) that discharges to Short Creek watershed, a tributary to the Spring River. In estimating the load for Vickers discharge to Turkey Creek for dissolved zinc in Table 6 of the Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri, the dissolved zinc load would equal 3.31 lbs/day.

Because Vickers maintains historic flow and analytical data (Table 1, enclosed with this letter), dating back to March 1980, Table 7 and Table 8 from the Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri can accurately portray the actual load and wasteload allocation (WLA) regarding Vickers. As provided in Table 1, the highest concentration of zinc detected in Vickers discharge is 16.2 mg/l, not 25.8 mg/l as presented on Table 7 in the Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri. The single detection of 16.2 mg/l total zinc is an outlier concentration, and as shown on the date presented in Table 1, is almost 10 times the next highest concentration of 1.7 mg/l. The detection of 16.2 mg/l total zinc occurred at Outfall 001, which comes from stormwater runoff from an adjacent manufacturing facility (Able Manufacturing, LLC).

In response to the footnote at the end of Table 7 of the Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri, the actual historical and recent daily flow rates are summarized in the table below.

**Vickers Discharge to Turkey Creek watershed**

	<b>Outfall 001</b>	<b>Outfall 003</b>
<b>Design Flow Rate (ft<sup>3</sup>/s)</b>	0.46	0.93
<b>Historical Median Flow Rate (ft<sup>3</sup>/s)</b>	0.08	0.41
<b>Historical Average Flow Rate (ft<sup>3</sup>/s)</b>	0.09	0.41
<b>2000-2006 Median Flow Rate (ft<sup>3</sup>/s)</b>	0.08	0.61
<b>2000-2006 Average Flow Rate (ft<sup>3</sup>/s)</b>	0.07	0.56

Utilizing the actual Vickers flow rates from the table above, actual loading rates can be determined. As calculated in the table above, the daily design flow rate is 1.39 ft<sup>3</sup>/s, however, the actual historic daily median flow rate is 0.49 ft<sup>3</sup>/s (0.08 ft<sup>3</sup>/s for Outfall 001 and 0.41 ft<sup>3</sup>/s for Outfall 003), and the actual historic daily average flow rate is 0.50 ft<sup>3</sup>/s (0.09 ft<sup>3</sup>/s for Outfall 001 and 0.41 ft<sup>3</sup>/s for Outfall 003). Because Outfall 003 at Vickers represents a WWTF, and the operation of this changed in August 2000, the median and average daily flow rates were calculated based on recent data which represents the realistic scenario for the discharge from Outfall 003. Based on this data the actual daily median flow rate between 2000 and 2006 is 0.69 ft<sup>3</sup>/s (0.08 ft<sup>3</sup>/s for Outfall 001 and 0.61 ft<sup>3</sup>/s for Outfall 003), and the actual daily average flow rate between 2000 and 2006 is 0.63 ft<sup>3</sup>/s (0.07 ft<sup>3</sup>/s for Outfall 001 and 0.56 ft<sup>3</sup>/s for Outfall 003).

The actual daily load based on Design Flow, and median and average flow rates and median and average concentrations can be determined, and are provided in the tables below.

**Summary Table from Historical Vickers Zinc Concentrations (from Table 1)**

Outfall 001			Outfall 003	
	total Zinc (mg/l)	dissolved Zinc (mg/l)	total Zinc (mg/l)	dissolved Zinc (mg/l)
<b>Maximum Conc.</b>	16.2	1.0	1.7	1.0
<b>Median Conc.</b>	0.2	0.3	0.2	0.1
<b>Average Conc.</b>	0.4	0.3	0.5	0.2
<b>Median 2000-2006</b>	0.3	0.4	0.5	0.2
<b>Average 2000-2006</b>	0.4	0.4	0.7	0.3

As stated earlier, the highest concentration of zinc detected in Vickers discharge is 16.2 mg/l. This occurred at Outfall 001 and the source of zinc in this stormwater is not controlled by Vickers. The highest zinc concentration in Outfall 003 discharge was 1.7 mg/l. However, using these concentrations and the Design Flow Rate, the Theoretical Loading for total zinc would be 49.1 lbs/day (40.6 lbs/day from Outfall 001, and 8.5 lbs/day from Outfall 003), and the Theoretical Loading for dissolved zinc would be 7.5 lbs/day (2.5 lbs/day from Outfall 001, and 5.0 lbs/day from Outfall 003). This Theoretical Loading rate differs from Table 7 of the *Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri* which estimated the load for Vickers for dissolved zinc and total zinc loading at 5 lbs/day and 195 lbs/day, respectively.

**Summary Calculations for Actual WLA from Historic Vickers Data**

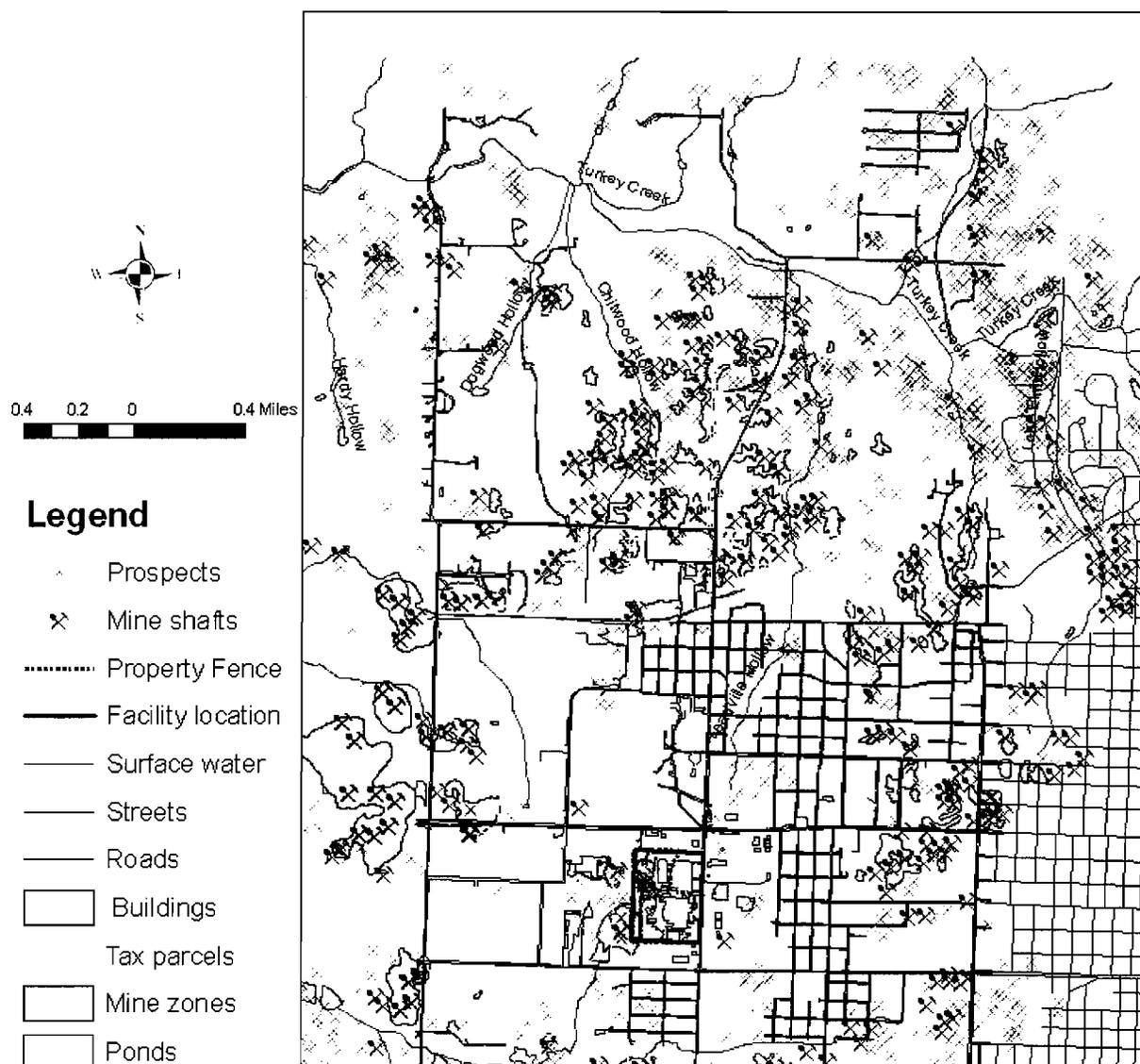
Outfall 001			Outfall 003	
	total Zinc (lbs/day)	dissolved Zinc (lbs/day)	total Zinc (lbs/day)	dissolved Zinc (lbs/day)
<b>Design Maximum</b>	40.6	2.5	8.5	5.0
<b>Median (historic)</b>	0.1	0.1	0.5	0.2
<b>Average (historic)</b>	0.2	0.1	1.1	0.4
<b>Median 2000-2006</b>	0.1	0.1	1.5	0.8
<b>Average 2000-2006</b>	1.0	0.1	2.1	0.8

Based on median and average total zinc concentrations measured in Vickers discharge since March 1982, based on the median zinc concentrations the actual daily WLA for total zinc would be 0.6 lbs/day (0.1 lbs/day from Outfall 001, and 0.5 lbs/day from Outfall 003), based on the average zinc concentrations the actual daily WLA for total zinc would be 1.3 lbs/day (0.2 lbs/day from Outfall 001, and 1.1 lbs/day from Outfall 003). Based on median and average dissolved zinc concentrations measured in Vickers discharge since 2000, the calculated median zinc concentrations for the actual daily WLA for total zinc would be 1.6 lbs/day (0.1 lbs/day from Outfall 001, and 1.5 lbs/day from Outfall 003), based on actual data since 2000 the actual daily WLA for total zinc would be 3.1 lbs/day (1.0 lbs/day from Outfall 001, and 2.1 lbs/day from Outfall 003).

As MDNR proposes in Table 8 of the *Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri* the daily dissolved zinc WLA for Vickers would be 1.5 lbs/day, and the daily total zinc WLA for Vickers would be 1.6 lbs/day. From the table above,

based on the median zinc concentrations, Outfall 003 would meet the WLA. Since Vickers does not control the source water for Outfall 001, there is no need to adjust the permit limits for NPDES Permit MO-0002411 for Outfall 003.

Based on our sampling, Vickers does not contribute significantly to the dissolved zinc concentrations in Leadville Hollow (Table 2, enclosed with this letter). Vickers sampling since 1990 in Leadville Hollow at Turkey Creek, are provided in Table 2, which correlate well with the Leadville Hollow sampling conducted by MDNR and U.S. EPA provided in Appendix D of the *Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri*. Vickers sampling indicates groundwater seepage to Leadville Hollow contains zinc which controls the zinc levels. Vickers sampling of Leadville Hollow at Turkey Creek resulted in 1.57 mg/l and 1.36 mg/l, total and dissolved zinc respectively (Table 2).



As the data in Table 1 (summarized below) shows, the lack of dissolved zinc in Outfall 003 is the result of a sequestering agent (sodium hexametaphosphate) added to the WWTF to keep the zinc in solution. The addition of the sequestering agent began in mid-2005, and therefore, proposed efforts to affect the dissolved zinc concentrations by regulating the total zinc concentrations (Section 5.1 - Draft Total Maximum Daily Loads (TMDLs) for Center and Turkey Creeks, Jasper County, Missouri) will have little effect on the Vickers WLA.

**2005 Total and Dissolved Zinc Results for Vickers Outfall 003**

<b>OUTFALL 003</b>		
<b>Date</b>	<b>total Zinc (mg/l)</b>	<b>dissolved Zinc (mg/l)</b>
1/13/2005	0.144	0.0688
2/14/2005	0.0625	0.0476
3/14/2005	1.37	0.167
4/11/2005	1.36	0.152
5/2/2005	1.25	0.2
6/13/2005	0.166	0.0576
7/5/2005	1.39	0.0301
7/11/2005	1.2	0.59
7/25/2005	1.4	0.0385
7/25/2005	1.64	--
8/1/2005	1.3	<0.02
8/8/2005	1.41	0.00503
9/7/2005	1.34	<0.02
10/10/2005	1.49	<0.02
11/7/2005	1.33	<0.02
12/13/2005	1.27	<0.02
1/9/2006	1.3	<0.020
2/6/2006	1.4	<0.020
3/6/2006	1.3	<0.020
4/3/2006	1.7	<0.020

Vickers currently has a plan under review at MDNR-WPP which would re-locate Outfall 003 discharge to the Short Creek watershed, as provided in the Re-Location Application for Outfall 003 and Outfall 001 Sampling Points, NPDES Permit No. MO-0002411, Former Vickers Facility, Joplin, Missouri, Missouri Hazardous Waste Management Facility Permit No: MOD007155781 (Unisys, May 9, 2006). In effect, the on-site WWTF (Outfall 003) pumps treated groundwater from the Short Creek watershed via force main into the Turkey Creek watershed to Outfall 003 (see Figure 1, enclosed with this letter). Discharge from Outfall 003 comprises the majority of stormwater from Vickers and re-locating Outfall 003 would have a positive effect on the WLA for Turkey Creek, if granted. Since Vickers does not control the source area zinc which contributes to Outfall 001, permit modifications or organizational changes or sampling conditions may be necessary to have a positive affect on the WLA for Turkey Creek.

If you have further questions or comments please call me at (651) 687-3279.

Sincerely,



Keith B. Rapp  
UNISYS  
Corporate Environmental Affairs  
Program Manager



Enclosures – Table 1 - Outfall 001 and Outfall 003 Total & Dissolved Zinc Concentrations  
Table 2 - Leadville Hollow - Total & Dissolved Zinc Concentrations  
Figure 1 – Vickers Watershed Boundaries

cc: David Noble, Esq. -Unisys\Blue Bell  
Lisa Sutton, Esq. -Eaton\Cleveland  
Terry Satterlee, Esq. -Lathrop & Gage\Kansas City  
Bill Anthony -Unisys\Joplin  
Cindy Davies -MDNR\Springfield  
Donald Dicks -MDNR\Jefferson City

**Table 1**  
**Outfall 001 and Outfall 003 Total Dissolved Zinc Concentrations**  
**Former Vickers Facility**  
**Joplin, Missouri**  
**NPDES Permit MO-0002411**

OUTFALL 001			OUTFALL 003		
DATE	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)	DATE	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)
3/16/1982	0.1	--	2/7/1990	0.05	0.02
7/21/1982	<0.05	--	2/8/1990	0.02	0.018
8/16/1982	0.1	--	3/30/1990	0.046	0.05
9/21/1982	<0.01	--	4/12/1990	0.124	0.101
10/19/1982	0.29	--	4/20/1990	0.028	0.032
11/23/1982	0.125	--	5/25/1990	0.055	0.067
12/14/1982	0.1	--	6/21/1990	0.047	0.05
1/19/1983	0.084	--	7/19/1990	0.076	0.062
2/22/1983	<0.01	--	8/2/1990	0.033	0.018
3/22/1983	0.1	--	9/12/1990	0.121	0.058
4/18/1983	0.03	--	10/2/1990	0.391	0.314
5/17/1983	0.05	--	11/8/1990	0.378	0.373
6/14/1983	0.104	--	12/6/1990	0.334	0.157
7/19/1983	0.075	--	1/3/1991	0.708	0.631
8/10/1983	0.0003	--	2/7/1991	0.736	0.476
9/27/1983	0.081	--	3/7/1991	0.482	0.482
10/19/1983	0.008	--	4/4/1991	0.366	0.355
11/15/1983	<0.005	--	5/1/1991	0.372	0.419
12/19/1983	0.15	--	6/5/1991	1.19	0.235
1/24/1984	0.17	--	7/1/1991	0.403	0.0004
2/21/1984	0.13	--	8/7/1991	0.852	0.734
3/20/1984	0.06	--	7/29/1992	0.058	--
4/18/1984	0.199	--	8/5/1992	0.027	0.045
5/16/1984	0.11	--	9/23/1992	0.068	0.034
6/20/1984	0.035	--	10/7/1992	0.06	0.037
7/25/1984	0.02	--	12/10/1992	0.00003	0.021
8/15/1984	0.026	--	2/17/1993	0.041	0.04
9/18/1984	0.03	--	3/23/1993	0.145	0.125
10/24/1984	0.15	--	4/7/1993	<0.020	<0.020
11/27/1984	0.44	--	5/13/1993	--	0.031
12/18/1984	0.19	--	6/2/1993	0.133	0.103
1/23/1985	0.31	--	7/28/1993	0.281	0.259
2/19/1985	0.28	--	8/4/1993	<0.020	0.143
3/27/1985	0.11	--	9/1/1993	0.136	0.127
4/16/1985	<0.318	--	9/4/1993	--	0.127
5/15/1985	0.189	--	12/8/1993	0.046	0.055
6/18/1985	0.457	--	1/5/1994	0.196	0.205
7/23/1985	0.285	--	2/2/1994	0.191	0.258
8/14/1985	0.182	--	3/2/1994	0.104	0.101
9/17/1985	0.532	--	4/6/1994	0.105	0.095
10/8/1985	0.279	--	6/7/1994	0.221	0.212
11/19/1985	0.188	--	7/5/1994	0.176	0.128
12/20/1985	0.205	--	8/3/1994	0.117	0.1
1/15/1986	0.13	--	9/7/1994	0.103	0.085
2/19/1986	0.28	--	10/5/1994	0.112	0.099
3/18/1986	0.19	--	11/2/1994	0.113	0.126
4/23/1986	0.146	--	12/7/1994	0.196	0.166
5/27/1986	0.054	--	12/8/1994	--	0.055
7/15/1986	0.037	--	1/15/1997	0.038	0.037
8/26/1986	0.123	--	2/5/1997	0.057	0.053
9/16/1986	0.145	--	3/4/1997	0.628	<0.005
10/22/1986	0.12	--	4/2/1997	0.336	0.028
11/11/1986	0.19	--	4/16/1997	0.056	0.027
12/16/1986	0.346	--	5/7/1997	0.077	0.044
1/14/1987	0.09	--	6/10/1997	0.027	0.025
2/19/1987	0.11	--	7/2/1997	0.1	0.098
3/19/1987	0.23	--	8/6/1997	0.038	0.0275
4/15/1987	0.276	--	9/3/1997	0.079	0.055
5/20/1987	0.3	--	10/1/1997	0.059	0.045

**Table 1**  
**Outfall 001 and Outfall 003 Total Dissolved Zinc Concentrations**  
**Former Vickers Facility**  
**Joplin, Missouri**  
**NPDES Permit MO-0002411**

OUTFALL 001			OUTFALL 003		
DATE	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)	DATE	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)
6/26/1987	0.063	--	11/5/1997	0.085	0.039
7/22/1987	<0.05	--	12/3/1997	0.057	0.053
8/24/1987	<0.05	--	1/7/1998	0.062	0.06
9/24/1987	0.11	--	2/17/1998	0.74	--
10/27/1987	0.12	--	3/4/1998	0.064	--
11/23/1987	0.13	--	4/1/1998	1.5	0.32
12/10/1987	0.3	--	5/6/1998	0.072	0.051
3/14/1988	0.19	0.185	6/3/1998	0.088	0.072
5/12/1988	0.15	0.12	6/10/1998	0.062	0.078
8/22/1988	0.11	0.1	7/1/1998	0.14	0.086
11/30/1988	0.16	<0.10	8/5/1998	--	0.036
2/27/1989	<0.10	<0.10	9/2/1998	0.091	0.059
5/18/1989	0.15	<0.10	2/9/1999	0.023	0.04
6/9/1989	0.169	--	3/3/1999	--	0.14
8/16/1989	0.098	0.046	3/9/1999	0.048	--
1/4/1990	0.78	0.701	4/8/1999	0.05	0.16
4/12/1990	0.081	0.052	5/5/1999	0.085	0.1
7/12/1990	0.104	0.072	6/2/1999	0.086	0.072
10/11/1990	0.43	0.244	7/20/1999	0.105	0.071
1/16/1991	0.45	0.301	7/20/1999	0.086	0.089
2/7/1991	0.638	0.523	8/3/1999	0.095	0.11
4/4/1991	0.353	0.23	9/1/1999	--	0.094
7/1/1991	0.301	0.273	9/1/1999	0.075	--
10/28/1991	0.213	0.173	10/13/1999	0.0852	0.079
1/14/1992	0.449	0.45	11/2/1999	0.129	0.121
4/21/1992	<0.020	0.249	12/1/1999	0.0904	0.0854
7/7/1992	0.1	0.075	1/4/2000	0.0826	0.0985
10/14/1992	0.044	<0.020	2/8/2000	0.0603	0.0629
1/4/1993	0.599	0.595	3/1/2000	0.0607	--
1/12/1993	--	0.174	3/1/2000	--	0.0582
1/20/1993	--	0.147	4/11/2000	0.0521	0.0494
4/14/1993	0.251	0.163	5/9/2000	0.105	0.0914
7/22/1993	1.04	0.979	5/31/2000	0.897	0.206
10/18/1993	0.308	0.289	6/6/2000	0.14	0.11
1/26/1994	0.398	0.13	6/29/2000	0.184	0.134
4/11/1994	0.077	0.082	7/10/2000	0.269	0.0977
7/13/1994	0.362	0.4	8/9/2000	0.505	0.0765
10/7/1994	0.22	0.126	8/29/2000	1.36	1
1/19/1995	0.318	0.287	9/5/2000	1.32	0.503
4/11/1995	0.261	0.223	9/12/2000	1.37	0.63
7/25/1995	0.261	0.201	9/18/2000	1.32	0.585
12/11/1995	0.103	0.1	9/26/2000	1.3	0.456
1/4/1996	<0.02	0.076	10/2/2000	1.4	0.508
4/2/1996	0.134	0.12	10/16/2000	1.44	0.509
12/19/1996	0.164	0.111	10/24/2000	1.42	0.511
1/21/1997	16.2	0.193	10/30/2000	1.25	0.348
3/18/1997	0.331	0.26	11/6/2000	1.27	0.376
6/16/1997	0.122	0.092	11/13/2000	1.33	0.387
9/23/1997	0.147	0.107	11/20/2000	1.32	0.444
12/15/1997	0.087	0.066	11/27/2000	1.37	0.348
3/9/1998	0.2	0.178	12/4/2000	1.42	0.412
6/30/1998	0.21	0.2	1/18/2001	0.782	0.519
9/14/1998	0.28	--	1/25/2001	--	0.548
10/15/1998	0.31	--	2/5/2001	0.53	0.297
12/1/1998	--	0.24	3/6/2001	0.444	0.424
12/1/1998	<0.020	--	4/2/2001	0.494	0.237
3/8/1999	0.23	0.19	5/7/2001	1.17	0.581
6/2/1999	0.079	0.051	5/14/2001	--	0.162
9/8/1999	0.42	--	5/31/2001	0.334	0.156

**Table 1**  
**Outfall 001 and Outfall 003 Total Dissolved Zinc Concentrations**  
**Former Vickers Facility**  
**Joplin, Missouri**  
**NPDES Permit MO-0002411**

OUTFALL 001			OUTFALL 003		
DATE	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)	DATE	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)
9/20/1999	0.38	--	6/13/2001	0.477	0.191
9/20/1999	0.39	0.33	6/25/2001	--	0.1
12/3/1999	0.277	0.435	7/2/2001	0.111	0.0992
3/13/2000	0.21	--	8/1/2001	0.157	0.108
3/13/2000	--	0.18	9/19/2001	0.249	0.181
6/12/2000	0.338	0.207	10/17/2001	0.311	0.255
6/29/2000	0.106	0.0502	11/20/2001	0.283	0.253
9/12/2000	0.24	0.261	12/11/2001	--	0.324
12/19/2000	1.12	0.305	1/7/2002	0.315	0.295
3/15/2001	0.232	0.358	2/20/2002	0.313	0.29
6/4/2001	0.142	0.121	3/12/2002	0.383	0.348
9/18/2001	0.196	0.156	4/16/2002	0.273	0.255
12/12/2001	0.385	0.35	5/6/2002	0.253	0.226
3/6/2002	0.449	0.292	6/3/2002	0.213	0.176
6/5/2002	0.758	0.695	7/16/2002	0.685	0.554
6/25/2002	--	0.656	8/12/2002	0.57	0.55
7/11/2002	--	0.322	9/26/2002	0.68	0.67
9/19/2002	0.28	0.28	10/8/2002	0.37	0.36
12/6/2002	0.422	0.385	11/6/2002	0.455	0.351
3/13/2003	0.352	0.354	12/3/2002	0.398	0.352
6/2/2003	0.326	0.354	1/7/2003	0.397	0.343
9/2/2003	0.38	0.364	2/4/2003	0.394	0.368
12/3/2003	0.416	0.307	3/4/2003	0.363	0.342
3/4/2004	0.243	0.179	4/2/2003	0.415	0.389
6/9/2004	0.258	0.256	5/12/2003	0.854	0.363
10/11/2004	0.378	0.38	6/3/2003	1.18	0.658
12/1/2004	0.704	0.629	7/8/2003	0.367	0.365
1/6/2005	--	0.547	8/5/2003	0.335	0.321
1/13/2005	--	0.465	9/16/2003	0.39	0.344
1/31/2005	--	0.72	10/1/2003	--	0.138
3/22/2005	0.414	0.352	10/8/2003	0.134	0.115
6/9/2005	0.339	0.0676	11/10/2003	0.125	0.0487
9/15/2005	0.313	0.255	12/8/2003	0.0675	0.0388
12/27/2005	0.676	0.679	1/7/2004	0.054	0.0356
1/11/2006	0.69	0.68	2/4/2004	--	0.0408
1/29/2006	0.56	0.54	2/11/2004	0.0693	--
3/9/2006	0.32	0.29	3/8/2004	0.0408	0.0326
			4/7/2004	0.0365	0.0354
			5/5/2004	0.0416	0.0535
			6/9/2004	0.0541	0.0679
			7/7/2004	0.0705	0.0666
			8/4/2004	0.0707	0.0479
			9/16/2004	0.107	0.0463
			10/6/2004	0.123	0.043
			10/25/2004	1.65	<0.02
			10/28/2004	1.41	<0.02
			11/1/2004	1.43	<0.02
			11/4/2004	1.4	<0.02
			12/9/2004	0.0818	0.0403
			1/13/2005	0.144	0.0688
			2/14/2005	0.0625	0.0476
			3/14/2005	1.37	0.167
			4/11/2005	1.36	0.152
			5/2/2005	1.25	0.2
			6/13/2005	0.166	0.0576
			7/5/2005	1.39	0.0301
			7/11/2005	1.2	0.59
			7/25/2005	1.4	0.0385
			7/25/2005	1.64	--

**Table 1**  
**Outfall 001 and Outfall 003 Total Dissolved Zinc Concentrations**  
**Former Vickers Facility**  
**Joplin, Missouri**  
**NPDES Permit MO-0002411**

OUTFALL 001			OUTFALL 003		
DATE	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)	DATE	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)
			8/1/2005	1.3	<0.02
			8/8/2005	1.41	0.00503
			9/7/2005	1.34	<0.02
			10/10/2005	1.49	<0.02
			11/7/2005	1.33	<0.02
			12/13/2005	1.27	<0.02
			1/9/2006	1.3	<0.020
			2/6/2006	1.4	<0.020
			3/6/2006	1.3	<0.020
			4/3/2006	1.7	<0.020

**Median**    0.21            0.25  
**Average**   0.37            0.29

**Median**    0.20            0.11  
**Average**   0.48            0.20

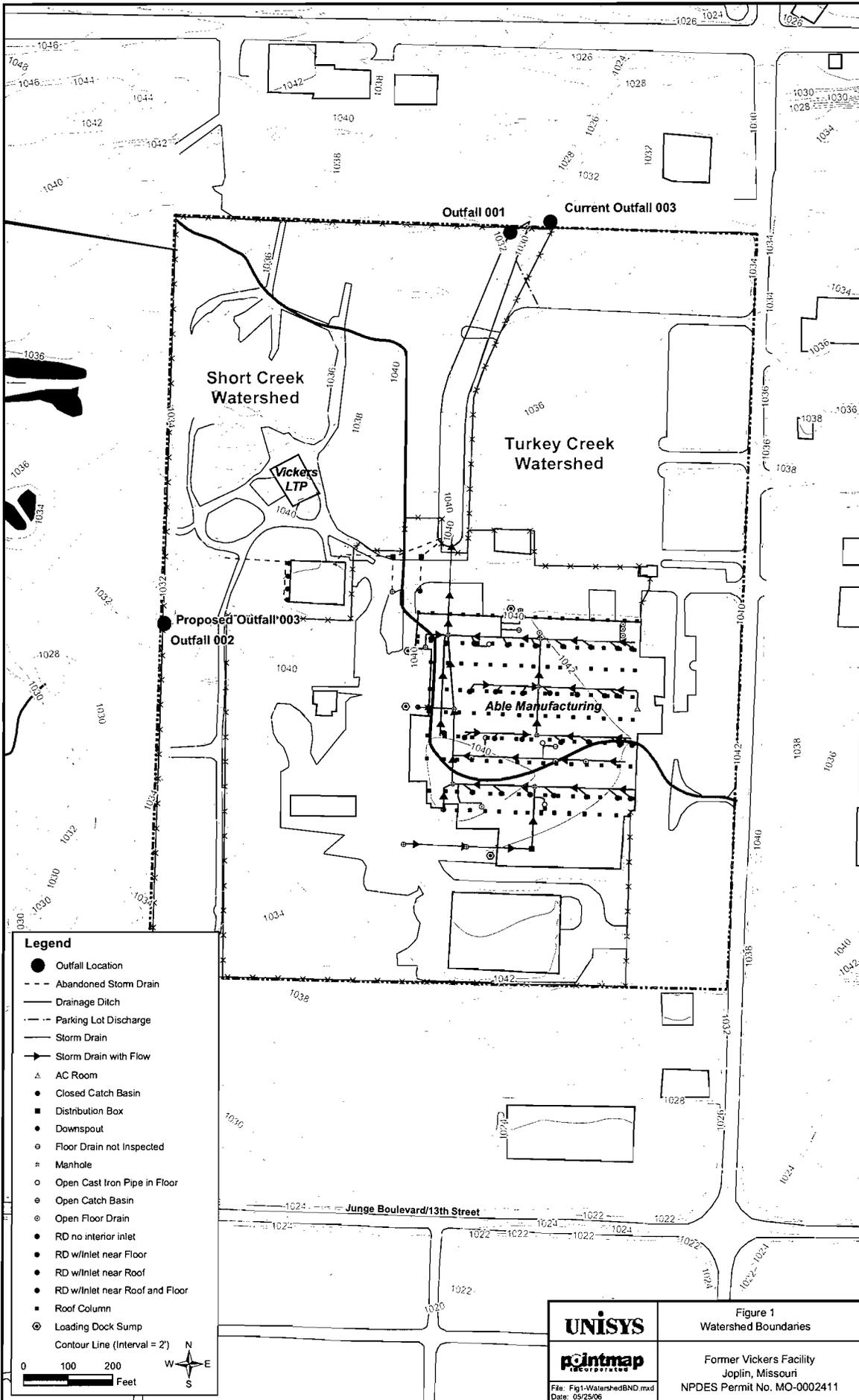
-- = not sampled  
< = less than laboratory MDL

**Table 2**  
**Leadville Hollow at Turkey Creek - Total Dissolved Zinc Concentrations**  
**Former Vickers Facility**  
**Joplin, Missouri**  
**NPDES Permit MO-0002411**

Sample Location	Date	Zinc (total) (mg/l)	Zinc (dissolved) (mg/l)
Leadville Hollow at Turkey Creek	8/2/1990	2.12	--
Leadville Hollow at Turkey Creek	9/26/1990	1.33	--
Leadville Hollow at Turkey Creek	12/11/1990	2.22	--
Leadville Hollow at Turkey Creek	2/13/1991	2.18	--
Leadville Hollow at Turkey Creek	5/21/1991	0.948	--
Leadville Hollow at Turkey Creek	11/12/1991	1.27	--
Leadville Hollow at Turkey Creek	3/16/1992	1.6	--
Leadville Hollow at Turkey Creek	6/10/1992	1.3	--
Leadville Hollow at Turkey Creek	9/1/1992	1.18	--
Leadville Hollow at Turkey Creek	12/8/1992	1.61	--
Leadville Hollow at Turkey Creek	3/4/1993	1.48	--
Leadville Hollow at Turkey Creek	4/30/1993	--	1.6
Leadville Hollow at Turkey Creek	8/19/1993	--	1.42
Leadville Hollow at Turkey Creek	12/20/1993	--	1.41
Leadville Hollow at Turkey Creek	3/15/1994	--	1.3
Leadville Hollow at Turkey Creek	6/22/1994	1.2	--
Leadville Hollow at Turkey Creek	9/15/1994	1.34	--
Leadville Hollow at Turkey Creek	11/15/1994	1.8	--
Leadville Hollow at Turkey Creek	3/8/1995	1.6	--
Leadville Hollow at Turkey Creek	5/8/1995	1.5	--
Leadville Hollow at Turkey Creek	8/24/1995	1.8	--
Leadville Hollow at Turkey Creek	10/23/1995	--	2
Leadville Hollow at Turkey Creek	11/22/1996	2.3	--
Leadville Hollow at Turkey Creek	11/25/1997	1.2	--
Leadville Hollow at Turkey Creek	12/9/1998	--	1.7
Leadville Hollow at Turkey Creek	10/13/1999	1.36	--
Leadville Hollow at Turkey Creek	3/27/2000	--	1.11
Leadville Hollow at Turkey Creek	10/31/2000	--	1.11
Leadville Hollow at Turkey Creek	3/13/2001	--	1.72
Leadville Hollow at Turkey Creek	11/1/2001	--	1.12
Leadville Hollow at Turkey Creek	3/27/2002	--	1.35
Leadville Hollow at Turkey Creek	4/2/2003	--	1.24
Leadville Hollow at Turkey Creek	2/26/2004	--	1.01
Leadville Hollow at Turkey Creek	4/5/2005	--	1.2
Leadville Hollow at Turkey Creek	3/13/2006	--	1.1

<b>Median</b>	1.49	1.30
<b>Average</b>	1.57	1.36

-- = not sampled  
< = less than laboratory MDL



STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Matt Blunt, Governor • Doyle Childers, Director

www.dnr.mo.gov

September 18, 2006

Mr. Keith B. Rapp  
UNISYS Corporate Environmental Affairs  
3199 Pilot Knob Road – MS F1805  
Eagan, MN 55121

RE: Response to Comments on the Center and Turkey Creeks Draft Total Maximum Daily Load Concerning the Former Vickers Incorporated Facility Which Discharges into Turkey Creek

Dear Mr. Rapp:

This letter responds to comments from UNISYS on the draft Total Maximum Daily Load (TMDL) for Center Creek and two segments of Turkey Creek in Jasper County, Missouri. It also indicates where the Department of Natural Resources (department) revised the TMDL document to address UNISYS' comments. Since the comments were not presented in a numbered fashion, this letter summarizes the main points and provides a response.

*Comment 1: UNISYS provides actual analytical zinc concentration data for the Vickers Facility. Vickers' data show that maximum Total Zinc concentration is 16.2 mg/L, not 25.8 mg/L.*

Response to Comment 1:

The effluent value of 25.8 mg/L appears in the Discharge Monitoring Data (DMR) data provided to the department by Vickers. DMR data was used to show the magnitude of the facility's overall existing pollutant load. The Waste Load Allocation (WLA) within the TMDL is calculated using the design flow of the facility (1.4 ft<sup>3</sup>/s) and the new zinc criterion (TZn = 0.216 mg/L) which computes to 1.6 lbs./day.

*Comment 2: Vickers has applied for a permit modification to relocate Outfall Numbers 001 and 003. The relocation should result in a reduction in the WLA for Turkey Creek.*

Response to Comment 2:

Although relocating these outfalls might have a positive impact on future loading to Turkey Creek, this cannot be considered by the TMDL until such changes are made. When these changes do occur, the department may reopen the TMDL and modify the WLA to reflect the outfall relocations.

*Comment 3: The footnote to Table 6 in the TMDL states that all design flows are rainfall dependent, except for Joplin's Turkey Creek Wastewater Treatment Facility (WWTF). Vickers Outfall Number 003 discharges the treated wastewater to Leadville Hollow. In the context of Table 6, Outfall Number 003 would be considered a WWTF.*

Response to Comment 3:

Nothing in Table 6 states that non-rainfall dependent outfalls are WWTFs. Furthermore, because Outfall Numbers 001 and 003 were combined in the design flow and Outfall Number 001 is rainfall dependent, Vickers as a whole is rainfall dependent.

*Comment 4: As stated in Comment 1, the highest concentration of zinc detected in Vickers' discharge from Outfall Number 001 is 16.2 mg/L. The highest from Outfall Number 003 is 1.7 mg/L. Theoretical Loading for total zinc would be 49.1 lbs./day (40.6 lbs./day from Outfall Number 001 and 8.5 lbs./day from Outfall Number 003). Loading for dissolved zinc would be 7.5 lbs./day (2.5 lbs./day from Outfall Number 001 and 5.0 lbs./day from Outfall Number 003).*

Response to Comment 4:

The highest concentration from the DMR data is 25.8 mg/L. A reasonable margin of safety may be established in the TMDL by assigning this highest number to the total design flow of the Vickers facility. UNISYS' Theoretical Loading calculates the current maximum observed concentration and design flow for each outfall. This is a reasonable approach, however, it does not provide an adequate margin of safety to account for uncertainties.

*Comment 5: According to the second table on page 3 of UNISYS' comments, Outfall Number 003 would meet the WLA based on the median zinc concentrations.*

Response to Comment 5:

When calculating average total zinc, Outfall Number 003 would not meet the WLA. In order for the department to use other approaches to evaluate the data, we must have an electronic data set to operate the computer software.

*Comment 6: The addition of the sequestering agent (to effluent of Outfall Number 003) began in mid-2005 and, therefore, proposed efforts to affect the dissolved zinc concentrations by regulating the total zinc concentrations will have little effect on the Vickers WLA.*

Mr. Keith B. Rapp  
Page Three

Response to Comment 6:

As you may well know, Turkey Creek runs into the Spring River. The TMDL is based on total zinc because the State of Kansas has already written a TMDL for the Spring River and their standards (and endpoint for the TMDL) are expressed as total [recoverable] zinc. Missouri has to meet that endpoint at the state line. Incidentally, a reduction of total zinc also reduces dissolved zinc.

Once the TMDL becomes final, UNISYS will want to be sure and coordinate with the department's NPDES Permits and Engineering Section in getting their permit renewed. In particular, be aware of any changes to the outfall location that may influence the WLAs.

Thank you for reviewing the TMDL and taking the time to comment. Your participation in the TMDL process and concern for the health of Missouri's water resources is appreciated. If you have other questions or wish to discuss this further, please contact Mr. Mohsen Dkhili of my staff at (573) 522-2552 or by mail at the Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102.

Sincerely,

WATER PROTECTION PROGRAM



Philip A. Schroeder, Chief  
Water Quality Monitoring and Assessment Section

PS:mdl

c: Refaat Mefrakis, NPDES Permits and Engineering Section  
Cindy Davies, Southwest Regional Office