

Missouri
Department of
Natural Resources

DRAFT JACKS FORK RIVER TMDL
PUBLIC COMMENTS

Public Notice
Oct. 24 – Nov. 23, 2003

Jacks Fork River
WBID # 2681

Shannon 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 Department of the Interior

NATIONAL PARK SERVICE
Ozark National Scenic Riverways
404 Watercress Drive
P.O. Box 490
Van Buren, Missouri 63965

RECEIVED

NOV 25 2003

WPCP

IN REPLY REFER TO:
N3617

NOV 20 2003

Department of Natural Resources
WPCP - Water Quality Section
P.O. Box 176
Jefferson City, MO 65102-0176

RE: Draft Jacks Fork River TMDL

Dear Sir/Madam:

We appreciate the opportunity to comment on the Draft Total Maximum Daily Load (TMDL) document for the Jacks Fork River, which addresses impairment within a 7-mile river segment to whole body contact use (swimming) due to elevated levels of fecal coliform.

Thirty-four miles of the Jacks Fork River lie within the Ozark National Scenic Riverways (ONSR), a unit of the National Park Service (NPS), including approximately four miles of the impaired segment. Established in 1964, ONSR is the first nationally designated river, and serves to protect park resources and provide for a quality visitor experience. The high quality of water found within the Jacks Fork constitutes an "outstanding national resource" (ONRW), and is one of only 3 Missouri rivers so designated.

We have both general and specific comments regarding the draft TMDL.

GENERAL

We very much appreciate the Missouri Department of Natural Resources (DNR) efforts to address impairment to the Jacks Fork from fecal coliform, as it has the potential to negatively affect the values for which ONSR was established. These values include scenic quality, natural and cultural resources, and appropriate outdoor recreational use, including swimming.

As we read the language of the TMDL, however, we are concerned that it actually conflicts with the antidegradation policy for ONRWs (10 (CSR) 20-7.031(2)), and may in fact provide a lower standard of protection for the Jacks Fork. Missouri regulations state "For all waters of the state, if existing water quality is better than applicable water quality criteria established in these rules, that existing quality shall be fully maintained and protected" and that "There shall be no lowered water quality in outstanding national resource waters..." The background value of fecal coliform in the Jacks Fork derived through the TMDL development process is 25 colonies/100 ml. Using the antidegradation language of 10 (CSR) 20-7.031(2), this standard should apply under all conditions. Despite this, the Jacks Fork TMDL statement uses the less stringent statewide standard of 200 colonies/100ml, as well as an "average" (geometric mean) value as success measures.

Since appropriate controls seem to be applied to known point sources (WWTPs), the loading seems to be from non-point sources, specifically "sources that act like point sources" (page 14 of the TMDL document). The goal of the TMDL should be to reduce loading from major sources. Where needed, TMDL documents may describe additional information needs such as monitoring, modeling, and data analysis to effectively establish and implement the TMDL. However, the document does not provide an adequate analysis of the scope and mechanisms of these sources in order to assign load allocations limits, as required. Development of this analysis is critical to producing an adequate TMDL document, as well as implementing the recommendations most efficiently. As the results of USGS rep-PCR analysis become available, they will be forwarded for incorporation into the TMDL implementation process. We expect final results to be available in November 2004. Verbal reports indicate that horses and cattle are dominant contributors with very few isolates identified as human or septic tanks.

Finally, we note that the monitoring required to implement the TMDL is not sufficiently assigned as the responsibility of the DNR within the document. For many years, the NPS has worked to find outside funding opportunities to research the fecal coliform problem on the Jacks Fork, in support of DNR activities to correct this problem. But without active DNR participation in the continued monitoring of the 303(d) segment and transfer of this information in the implementation of the TMDL, actual correction of this long-term problem may languish. This significantly impacts the NPS' ability to achieve the mandate to provide high-quality, safe, outdoor recreation within ONSR.

SPECIFIC

Page 1: Contains a nice summary of most of the pertinent facts. However, since the ONRW designation plays such an important part in determining the endpoint for the TMDL, it would be appropriate to change the current "Beneficial Uses" to "Governing Water Quality Standards" and then include beneficial uses and include a brief statement summarizing the Jacks Fork River antidegradation classification as an Outstanding National Resource Water.

Pg. 2, Land Use and Soils, para.1: Ozark National Scenic Riverways (ONSR) does not include the Eleven Point River. Also add that ONSR is a unit of the National Park Service (NPS), to explain the reference to the NPS in the rest of the document.

Pg. 4, Table 1: Facilities LA4103793 and MOG821022 are not included in the published list of state operating permits.

Pg. 5, WWTP discharges: It should be clarified that typically a low number of samples (1 or 2) per month are required in WWTP permits, so the term "monthly average" may not be necessarily representative of the period. Significant out of compliance events (e.g. catastrophic waste spill from the Mt. View WWTP in 2001) should be mentioned to present a complete picture.

Pg. 5, Figure 2.: The text referring to Figure 2 attributes "increased numbers of colonies during the summer months" at the Eminence WWTP to increased loading during recreational/tourist season. Figure 2, however, shows that the highest fecal coliform values actually occur in the spring, in April and May, before the high visitor use period.

Pg. 6, Nonpoint Sources, Failing on-site septic systems: NPS weekend fecal coliform data at two sites during high recreational use periods do not appear to support this as a significant contributor. No trail ride occurred this week. Further investigation of the contribution of this non-point source is needed.

Pg. 7, Trail rides: Does land applied manure from the Cross Country Trail Ride operation contribute sufficient levels of animal manure to require State Permits? How much is contributed? What is the contribution from human waste operations?

Pg. 7, Nonpoint Sources, Recreational Use: Again, NPS weekend fecal coliform data at two sites during high recreational use periods (though non-trail ride) do not appear to support this as a

significant contributor. Fecal coliform levels remained low during high canoe use periods.

The recreational use figures cited in the document apply to the entire park, not just the Jacks Fork River. The 1999 NPS visitor use statistics for the Jacks Fork show the following:

- 241997 total recreation visits
- 212644 total recreation visits during recreational use season (April 1-Oct 31)
- 31144 total canoes during recreational use season (April 1-Oct 31)
- 1295 total tubes during recreational season (April 1-Oct 31)
- 758 total boats observed during recreational season (April 1-Oct 31)

The vessels permitted to concessioners on the Jacks Fork are 700 canoes, 21 kayaks, and 250 tubes.

Pg. 9, Selection of TMDL Endpoint, para. 1: This paragraph reiterates the application of Tier III antidegradation standards at all times (including high flow conditions).

Pg. 9, Selection of TMDL Endpoint, para. 5: "Missouri chooses to use an average of bacteria colonies to determine the endpoint for the Jacks Fork TMDL". The Antidegradation standard lists no degradation under any conditions.

Page 9, Selection of TMDL Endpoint: We are concerned that the TMDL as proposed seems to minimize or eliminate the influence of low values as is indicated on page 9 in the 4th paragraph "All non-zero bacteria data collected in the Upper and Middle Jacks sub-watersheds (target area) were combined." This statement can be interpreted to mean that all of the "0" colony observations in the dataset were removed prior to the calculation of the geometric mean. If this is true, a sound justification as to why must be stated. The initial answer to this question may be that mathematically you cannot calculate the log of 0 which is an essential step for calculating the geometric mean. This is not a justification for throwing the data out, however, especially if we have some faith that the analytical result of 0 colonies is in fact an accurate piece of data. It is not clear from the TMDL how many 0 observations in the dataset were not used. But even if they comprise a very small percentage the total observations, then discarding them may unduly bias the geometric mean against the pristine nature of the watersheds. There are other alternatives to discarding the "0 colony" observations. For example, they can be converted to a "1", for which the log is 0 which then can be incorporated into the calculation of the geometric mean. The results of this type of analysis, as well as others should be calculated, reviewed, and discussed before the final TMDL is

established. Adopting this criteria should not preclude selecting a lower number during future triennial reviews.

Page 9, Selection of TMDL Endpoint, Para 5: We also have similar concerns about the discarding of the bacterial results for flows above 1380 cfs. A much clearer justification is necessary for this method of handling the data.

Pg. 10, Selection of TMDL Endpoint, last paragraph: The value 25 col/100 ml should be used instead of 200 col/100 ml. Also, due to the episodic character of high fecal coliform values from the Jacks Fork, event based monitoring (particularly during trail rides) should be added to the equally spaced measurements.

Pg. 10, Figure 1, para 1: September fecal coliform values are listed as highest for the recreational use season. Since visitation drops off as school starts in late Aug/early Sept, high recreation use would not appear to be the cause. The large values (4200, 1300, 2400) on one date (9/6/94) skew the average. The discharge of the Jacks Fork doubled on that sample date, although it was far less than the TMDL cutoff discharge of 1,380 cubic feet/sec. This would account for the elevated numbers. Stratification of data by rising or falling hydrograph may better address the variability of factors.

Pg. 12, WLA calculation: The WLA for WWTPs must account for the maximum load allowed under the NPDES permit, not the average. Using the average would underestimate the potential contribution from the point source to the overall load allocation, should contributions to the WWTP increase in the future.

Pg. 12, para. 4 (center): The background fecal coliform levels for the receiving water body has been assigned at 25 colonies/100 ml. Here, the statement is made that "...all point sources should discharge no more than 200col/100 mL maximum per day." WWTP permits presently allow 400 col/100ml monthly average and 1000 max, instead of the 200 colonies maximum mentioned here, or the 25 colonies given as background. These inconsistencies should be clarified.

Pg. 13, Monitoring Plans: The statement "Monitoring is very important" is repeated several times but no actual monitoring plan is described. The DNR does not state how it will fund its monitoring.

Pg. 14. Implementation: How will the formula given here be applied to implement load reductions? Given earlier discussions, 25 colonies/100 mL would seem to be the appropriate target, not 200 colonies/100 mL.

Pg. 15, Implementation, para. 7: The NPS has restroom facilities at Shawnee Creek, located between the gap and the Current River.

Adequately identifying and addressing the factors causing fecal coliform levels to be at unacceptable levels on the Jacks Fork is the goal of this TMDL. We continue to use NPS capabilities to support the DNR in carrying out their responsibilities, and we look forward to the successful removal of the Jacks Fork from the 303(d) list.

If you have any questions about the comments please call Russ Runge at 573-323-4236 extension 256.

Sincerely,

A handwritten signature in black ink, appearing to read "Noel R. Poe". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

Noel R. Poe
Superintendent

Enclosure

Cc: G. Rosenlieb, WRD
C. Crisler, EPA, Region 7

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

December 30, 2003

Mr. Noel R. Poe
National Park Service
Ozark National Scenic Riverways
4004 Watercress Drive
P.O. Box 490
Van Buren, MO 63965

Dear Mr. Poe:

Thank you for the comment letter dated November 21, 2003, regarding the Total Maximum Daily Load (TMDL) document for the Jacks Fork River.

Your comments were organized into two categories, General and Specific. The responses here follow that same format.

GENERAL

The Jacks Fork was listed as impaired in 1998 based on the state's water quality standard for fecal coliform of 200 colonies/100 mL. To ensure that Tier III anti-degradation requirements are met, the TMDL calculation relied on background fecal coliform data taken during the recreation season using data collected since 1993. The 25 colonies/100 mL is the upper 75th confidence interval of all monthly geometric means. This value was not developed as a single-sample maximum and should not be interpreted as such. Also, while I certainly understand your conclusion that the 200 colonies/100 mL used in the TMDL document is the statewide standard, in this case the 200 colonies/100 mL is actually a calculated background value for a single sample. It is unfortunate that the value happened to equal the statewide standard since it is easily confused. It is the opinion of my staff and I that both of these numbers are appropriately protective.

Given the data available to calculate the TMDL, no loads could be assigned to nonpoint sources. Enough is known, however, to target the possible sources which include horses, cattle and human sewage. We look forward to receiving the additional information based on rep-PCR analysis and will review that data in conjunction with other data when it becomes available.

Integrity and excellence in all we do



Mr. Noel R. Poe
Page 2

Although your observation that horses and cattle are the major source of bacteria may prove to be correct, the largest measure of protection will be provided by addressing all potential sources of the pollutant now and into the future.

I appreciate your concerns regarding the department's funding of future monitoring efforts. We, too, have sought outside funding to support monitoring efforts not only in the Jacks Fork River, but in the many other areas across the state that bear study. Currently, the department provides funds to USGS to perform annual monitoring upstream of the mouth of the Jacks Fork River. Sampling is done six times per year for a variety of parameters, including fecal coliform, fecal streptococci and *E. coli*. This is a long-term monitoring site and mention of this contract will be included in the TMDL. Due to the monitoring needs throughout the state, the department will continue to rely on data collected by other reputable sources, such as the NPS and USGS. However, the department will also continue to seek funds to support additional monitoring.

SPECIFIC

Page 1: Standards

The department has used a set format for TMDL documents since the inception of the program. Continuity in format makes the documents easier for the public to read and understand. However, since the Jacks Fork River's anti-degradation designation is a crucial part of this TMDL document, we added a brief statement about it in the first segment of the document.

Page 2: ONSR

The reference on this page should read Outstanding National Resource Water (ONRW), not Ozark National Scenic Riverways (ONSR). This will be corrected in the document. The National Park Service (NPS) is mentioned as managing the ONSR in Section 2, Recreational Use.

Page 4: Inclusion of all permits

The permits you mention are not considered state operating permits that represent a direct discharge to the receiving water. MOG821022 is a stormwater permit and LA4103793 is a letter of approval for a small animal feeding operation. Any contribution to the impairment from either source would be considered part of the nonpoint source load, as opposed to a direct discharge, which is part of the point source load.

Page 5: Wastewater treatment plant discharges

The term "monthly average" could be misleading. We included the following in the TMDL: "The term "monthly average" is language used in a permit. The number of samples per month is based on the size of the facility (10 CSR 20-7.015 (3)(C))." The answer to the second part of your comment is that, yes, out-of-compliance events can occur, but the model does not take them into account.

Mr. Noel R. Poe
Page 3

Page 5: Figure 2

In response to your comment regarding the apparent conflict between the text referring to Figure 2 and the figure itself, the sentence in question, "Increased loading during the recreational/tourist season is likely responsible for the increased numbers of colonies observed during the summer months," was deleted.

Page 6: Failing on-site septic systems

While NPS data does not indicate that on-site septic systems are a significant source of bacteria, the Shannon County Health Department has stated that about half of the present systems in the county are failing. In addition, local stakeholders have reported "straight pipe" discharges in the watershed. The watershed committee is evaluating this issue and one of their first efforts will involve educational information regarding on-site septic system function and maintenance. We consider it prudent and appropriate to address potential sources of bacteria to prevent future impairment.

Page 7: Trail rides

Currently, the rate of land application of horse manure by Cross Country Trail Rides (CCTR) does not require a state permit. In addressing land application of manure, the pollutant of concern is typically nutrients rather than bacteria. Land application of manure is being evaluated and addressed in the context of the stormwater management plan for this facility. We would expect there would be no contribution from human waste from this source using the method that CCTR has used to manage this material since 1979. Currently, as the TMDL document states, CCTR is in the process of connecting directly to the Eminence WWTP to treat this material.

Page 7: Nonpoint Sources, Recreational Use

You are correct that the data does not indicate recreational use is a significant source of fecal coliform at this point in time. It is, however, a potential source of pollutants and should be considered when trying to protect the Jacks Fork from degradation. I believe the TMDL document accurately characterizes this issue.

Recreational use figures were adjusted according to the 1999 statistics for the Jacks Fork that were provided in your comment letter.

Page 9: all paragraphs

Missouri Water Quality Standards currently contain an exemption for the bacteria standard during high flow events. Periods of very high flow have often been labeled "flows that exceed reasonable management" on TMDL Load Duration Curves used by many states in establishing TMDLs. As is stated in the document "...fecal coliform data can be highly variable and there are uncertainties inherent in sample collection and analysis." Based on this variability, the zero values were considered suspect due to the abundant wildlife present in the Jacks Fork watershed.

It is the opinion of my staff that setting dual values, one derived from a geometric mean and the other a single sample maximum value, is more representative of the background than any single standard. The anti-degradation provision is violated only when the defined background conditions (geomean of 25 and a single sample of 200 colonies/100 mL) are not achieved.

Within the period of April 1 to October 31 (recreation season), there were eight samples associated with high flows and seven samples with a fecal coliform count of zero. Both high flow samples and zero-count samples are considered outliers and not representative of the background condition of the watershed. If they were included in the target calculation, however, the result would be similar to the target value currently established (see enclosed table). EPA has reviewed the calculations that were used and has agreed that this is an appropriate manner in which to set the TMDL endpoint.

Page 10: Selection of TMDL Endpoint, last paragraph

As previously stated, dual targets are considered more protective of water quality. The following is an example where the geomean is within 25, but one out of four samples is greater than 2,000. In this instance, having both targets in place provides a higher level of protection.

Geomean of $2325 + 7 + 8 + 3 = 24.99$

Page 10: Figure 1, paragraph 1

High recreational use was not specifically identified as the cause of the high bacteria concentrations observed. Your information, however, would explain the high levels observed during September, when visitation to the area is actually declining. One of the advantages of using a load duration curve is that the variability of flow is built into the calculation and the target.

Page 12: Waste Load Allocation (WLA) calculation

The WLA is based on the assimilative capacity of the receiving stream. It is first determined as a maximum load (total number of bacteria per day), then expressed in concentration (colonies/100 mL). The permit should have a concentration limit for their specific design flow. If the facility requests an increase in their design flow, it must stay within the assigned load. In this case the facility would be expected to have a permit limit with a lower concentration, but the bacteria load would remain constant.

Page 12: paragraph 4 (center)

The sentence in question was removed as it conflicted with the permit limits. The effluent limits are as stated in your comment letter.

Page 13: Monitoring Plans

See page 2, first paragraph, of this letter.

Mr. Noel R. Poe
Page 5

Page 14: Implementation

In response to your comment, staff here reviewed this issue and found that the percent reduction formula was not useful since there is a numeric target. In place of this formula we included a discussion of how the load duration curve is informative in directing implementation efforts. The dual target has been explained in other parts of this document.

Page 15: Implementation, paragraph 7

Thank you for the information related to the facility at Shawnee Creek. The TMDL document mentions that there are two facilities in the downstream portion of the park's property. This is where Shawnee Creek joins the Jacks Fork.

Again, thank you for commenting, and also for your continued hard work to protect water quality. The National Park Service's 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 Anne Peery of the Water Quality Section at (573) 526-1426 or at Missouri Department of Natural Resources, Water Pollution Control Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER POLLUTION CONTROL PROGRAM



Becky L. Shannon, Chief
Water Quality Section

BLS:apd

Enclosures

With zeros and no high flow				No zeros and with high flow		
Month	av(ln(fc))	GM	Count	Month	GM	Count
1	1.087564078	2.967038	9			
2	0.958968104	2.609003	19			
3	2.061710516	7.859402	5			
4	2.768412333	15.93332	20			
5	3.006062152	20.20767	94	Apr	11	13
6	3.024848932	20.59089	115	May	21	93
7	3.220385989	25.03778	97	Jun	21	113
8	3.266877243	26.2293	156	Jul	26	96
9	3.612749547	37.06783	29	Aug	28	153
10	2.874457429	17.71581	34	Sep	31	28
11	2.224727351	9.25096	11	Oct	18	34
12	2.436670034	11.4349	6			
Year		12.74687	595			
April- Oct	Overall Mean Std.Dev 75%	22.4332 23.25466 7.112108 3.092282	545	Overall Mean Std.Dev 75%	21.27157025 22 6.725927091 2.924373848	530
Target	Upper	26.34694		Upper	24.92437385	



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
U.S. Geological Survey
Water Resources Division
1400 Independence Road
Mail Stop 100
Rolla, Missouri 65401

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November 20, 2003

Anne Peery
TMDL Developer
Missouri Department of Natural Resources
Water Pollution Control Program
P.O. Box 176
Jefferson City, Missouri 65102-0176

Dear Ms. Peery:

Thank you for the opportunity to review the draft of the Total Maximum Daily Loads (TMDLs) document for the Jacks Fork River. My technical and editorial comments follow:

p. 1, footnote — “droughts” should be “drought”

p. 2 — Allgood and Persinger (1979) is cited but was not included in the “References” on p. 20. The reference is in the footnote on p. 3, but I think it more appropriately belongs in the “References” list. Also, since you cite a reference for the soil associations, you don’t need to put quotation marks around the descriptions.

P. 3 — I suggest that you include something about the whole-body-contact standard in the “Defining the Problem” section, since the occasional violation of this standard is the reason that the Jacks Fork got listed. I realize that you discuss the standard in detail on p.8, but I think a brief mention of the standard should occur earlier in the document.

p. 3, paragraph 3, line 9 — The sentence “the upstream segments of the river and the higher bacteria counts were not be attributed to natural causes” should be “the upstream segments of the river, and the higher bacteria counts were not attributed to natural causes”.

p. 3, paragraph 3 — The bacteria source tracking data were not statistically analyzed for the Phase II report. The percentages of *Escherichia coli* isolates in water or streambed-sediment samples assigned to various sources were simply reported. Also, the bacteria source tracking data that were collected as part of the USGS study are possible indications of what the major sources of bacteria are; the results are not definitive. The wording of the sentence indicates that the results are definitive. I suggest rewording the sentence as follows: “Analysis of bacteria source tracking information indicates that horses, sewage, and cattle were possible sources of the bacteria.” Note that I have removed the word “human” as a modifier of sewage; I suggest removing this word in the next sentence also. Although humans are probably the main source of bacteria in sewage, they may not be the only source. The patterns for humans and sewage are similar but not exactly alike.

p. 3, footnote — At the time of the Phase II report (which included the period November 1999 through December 2000), the USGS was using ribotyping, not rep-PCR, for bacterial source tracking. Since August 2001, the USGS has used rep-PCR.

p. 5, paragraph 1, line 10 — The sentence “data from 1/1998 to 3/2003 has been analyzed” should be “data from 1/1998 to 3/2003 have been analyzed”. Also, you list the average monthly bacteria counts for the Mountain View and Eminence WWTF, but you do not give the units of the counts. I assume the counts are in units of colonies per 100 milliliters of sample.

p. 5, figure 2 — Sources is misspelled at the top of the figure.

p. 5, paragraph 1, last line and p. 6, Figure 3 — I’m not sure what you mean by “yearly average fecal coliform outputs”. Is this an average of the monthly averages?

p. 7, paragraph 4, lines 4 and 10 — I would round 2,991 to 2,990. I’m not sure that I would include “canoeists” when discussing stirring up streambed sediments. I think the potential for a person to stir up streambed sediments when walking in the river is an order of magnitude less than a horse. I suggest saying “streambed sediment” instead of “sediment”.

p. 7, paragraph 5, line 5 — 2371 and 1775 should be 2,371 and 1,775.

p. 9, paragraph 1 — I realize that the whole-body-contact standard does not apply in the case of the Jacks Fork because it is a Tier III water. However, if there isn’t a stormwater runoff exemption of some type for the Jacks Fork, the standard will never be met when runoff conditions exist. If there is stormwater runoff, the bacteria counts will be high.

p. 9, paragraph 4 — I’m not sure why bacteria counts of zero were not included in the calculation of the target number. If a zero could not be used in the calculation because of logarithms, then I would have substituted a “1” whenever there was a zero count. It would seem that there is a potential to skew the target number by excluding zero values. Also, I question the exclusion of only the defined extreme high flow samples (extreme high flow occurrences were considered to have a probability of less than 0.05). As I stated in the previous remark, if there is stormwater runoff, the bacteria counts will be high. This is naturally occurring and cannot be prevented in the Jacks Fork or any other watershed. I realize that a geometric mean was used to determine the target number, but I still think that including bacteria counts that occur during runoff conditions and only excluding bacteria counts that occur during extreme high flows may skew the results. In line 2, it says that the resulting data set contained 580 fecal coliform records; table 1 in Appendix D shows a total of 530 records. In the last sentence of the paragraph, the sentence “data used to derive bacteria target” should be “data used to derive the bacteria target”.

p. 10, paragraph 1 — The sentence “This data was collected” should be “These data were collected”.

p. 10, paragraph 2 — The endpoint statement says that “nor shall any single sample exceed 200 col/100 mL, which is the statewide standard”. Does this 200 col/100 mL apply even when there is runoff? Again, if this applies when there is runoff, there will be a violation every time there are runoff conditions.

p. 11, paragraph 4 — I assume that the long-term average flow value at the mouth of the Jacks Fork ($521 \text{ ft}^3/\text{s}$) was the number derived by using data from the Eminence station as described in paragraph 2 on p. 11? If so, you may want to mention in paragraph 2 that $521 \text{ ft}^3/\text{s}$ was the value that was determined.

p. 12, paragraph 5 — This paragraph states that no more than 200 col/100 mL fecal coliform bacteria maximum per day should be discharged from any point source. I assume you mean that 200 col/100 mL should be the maximum count in any one sample collected during a day. This is a bit confusing when compared to the WLA of $1.10\text{E}+9$ colonies per day. Also, I talked with Mike Hollis (Eminence WWTF operator) about the Eminence WWTF, and he said the daily permit limit for the plant was 1,000 col/100 mL for a daily sample with a monthly average of 400 col./100 mL. Does this permit limit still apply, or did I get the numbers wrong? Is 200 col/100 mL the correct single sample number?

p. 13, paragraph 2, line 4 — Flows are generally lowest from June to October, but not always. I would say that “this is when the flow generally is at its lowest”.

p. 13, last paragraph, line 4 — The sentence “it will continue indefinitely as long funding is available” should be “Phase III will continue indefinitely as long as funding is available”.

p. 14, paragraph 2 — The streambed-sediment study also includes collecting bacteria samples from the water column. Although there is no sediment to sample at the Eminence WWTF, we have continued to collect a water sample from the WWTF for bacteria analysis during every sampling trip.

p. 14, paragraph 3 — Again, is the effluent fecal coliform limit 200 col/100 mL?

p.16, paragraph 5 — The USGS has been funded to do additional rep-PCR work during the 2004 recreational season. The statement says there is a potential for a new study in 2004.

p. 18, paragraph 4, line 2 — The sentence “on public notice for October 24, 2003 to November 23, 2003” should be “on public notice from October 24, 2003 to November 23, 2003”.

p. 27, Table 3, Appendix D — Most of the fecal coliform counts listed in this table do not have an associated flow value. How was it determined whether to keep the value in the target calculation, since inclusion in the calculation was based on the value being associated with flows that were below the defined extreme flow value?

I really enjoyed reading and reviewing the Jacks Fork TMDL document. You and the DNR staff are to be commended for doing an excellent job of analyzing the data and writing the document. I hope you find my review comments and suggestions helpful. If you have any questions, give me a call at (573)308-3829. I have enjoyed being part of this TMDL process. It has been a real learning experience for me to see how data (USGS and other data) are used to determine the target numbers and do the TMDL calculations. Hopefully, the USGS will be able to be involved during the Jacks Fork TMDL implementation process.

Sincerely,



Jerri V. Davis
Hydrologist

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

December 30, 2003

Ms. Jerri Davis
U. S. Geological Survey
Water Resources Division
1400 Independence Road
Mail Stop 100
Rolla, MO 65401

Dear Ms. Davis: *Jerri*

Thank you for the comment letter dated November 20, 2003, regarding the Jacks Fork River Total Maximum Daily Load. The responses below correspond in order to comments offered.

- p. 1 - The "s" in droughts was deleted from the footnote.
- p. 2 - Citation for Allgood and Persinger was moved to "References" and the quotation marks around the soil descriptions were removed.
- p. 3 - Acting on your suggestion, the following sentence was included in the "Defining the Problem" section: "This violates the Missouri standard for Whole Body Contact Recreation of 200 colonies per 100 milliliters (col/100 mL) of fecal coliform."
- p. 3, paragraph 3 - The wayward "be" noted in your comment was deleted.
- p. 3, paragraph 3 - The sentences were modified per your suggestion.
- p. 3, footnote - Thank you for the clarification on methodology for source tracking. The correction has been made.
- p. 5, paragraph 1 - Grammatical error corrected and units added.
- p. 5, figure 2 - The spelling of sources was corrected.
- p. 5, paragraph 1 and p. 6, Figure 3 - The correct meaning is that all individual samples collected in that year were averaged. Wording was included to clarify this point.

Integrity and excellence in all we do



Ms. Jerri Davis

Page 2

p. 7, paragraph 4 – We rounded the number 2,991 to 2,990, per your suggestion. The “canoeists” were included to be equitable in dealing with all possible sources of the impairment. Your suggestion regarding use of “streambed sediment” instead of “sediment” has been incorporated into the TMDL.

p. 7, paragraph 5 – These numbers were changed to 700 and 250 respectively to reflect figures provided in the National Park Services’ comments for the Jacks Fork in 1999.

p. 9, paragraph 1 –I appreciate your comment and have made note of your concern regarding the dilemma posed during periods of high runoff. No change was made to the TMDL document.

p. 9, paragraph 4 — As you noted, the logarithm of zero is undefined. Rather than replacing the zero count with one, the method we used was to eliminate the fecal coliform counts during high flows and the zero counts. The sum of these counts is 25 (10 hi-flow + 15 zeros) which only represent a small fraction of the total number during the recreation season (0.04). In our opinion, these are not representative of actual water quality conditions of concern. We believe this approach provides an appropriate and protective target. Paragraph 5 on this page contains information regarding how the number of fecal coliform records number was changed from 580 to 530 records. The reference to the appendix was moved to a more appropriate place in the document to help clarify this issue. In the last sentence of the paragraph, “the” was added to “data used to derive bacteria target.”

p. 10, paragraph 1 - Grammar was corrected from “This data was collected” to “These data were collected.”

p. 10, paragraph 2 – Missouri’s standards contain a high flow exemption from the bacteria standard and consequently, the 200 colonies/100 ml does not apply under those conditions.

p. 11, paragraph 4 — As per your suggestion, paragraph 2 now states that 521 ft³/s was the calculated value.

p. 12, paragraph 5 — This sentence was removed because it caused confusion. Eminence does have a limit of 1000 col/100 mL as a daily maximum. The 200 col/100 mL is the *instream* standard.

p. 13, paragraph 2 - The word “generally” was added.

p. 13, last paragraph - The wording was changed to, “Phase III will continue...”

p. 14, paragraph 2 – The wording in the TMDL document was changed to include the information in your comment.

Ms. Jerri Davis
Page 3

p. 14, paragraph 3 — Again, the effluent fecal coliform limit is 1000 col/100 mL. This sentence was also deleted.

p. 16, paragraph 5 — I am pleased that USGS has received funding to conduct rep-PCR analysis during 2004. The TMDL document was revised to reflect this work.

p. 18, paragraph 4, line 2 — The dates for the public notice were corrected.

p. 27, Table 3, Appendix D — This table includes the raw data only. The “missing” flow data for each fecal coliform value were estimated from other known gauging stations in the watershed. The calculation of the missing flows was based on the size of the drainage areas and verified by some instantaneous discharge measurements. These data are available in the administrative file for the Jacks Fork. The TMDL document was revised to reflect this.

Again, thank you for commenting and for your valuable assistance in the development of this document. The Geological Survey’s 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 Anne Peery of the Water Quality Section at (573) 526-1426 or at Missouri Department of Natural Resources, Water Pollution Control Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER POLLUTION CONTROL PROGRAM



Becky L. Shannon, Chief
Water Quality Section

BLS:apd

Enclosures

» Re: JACK'S FORK DRAFT TMDL - Anne Peery/WPCP/DEQ/MODNR



Sharon Clifford

10/29/2003 05:37 PM

To: "Carolyn Dyer" <jasmith@socket.net>
cc: Anne Peery/WPCP/DEQ/MODNR@MODNR
Subject: Re: JACK'S FORK DRAFT TMDL

Carolyn-

We need some time before I can give you specifics, but wanted to say I greatly appreciate your comments. And if you have others, as you have more time to look at the document, please share them with us. Anne Peery and I both worked on this and we will take your concerns seriously and try to reword the verbiage in the TMDL. We did receive feedback from EPA that they wanted more info about equine issues than we included in our original draft. That does NOT mean the verbiage can't be changed to hopefully eliminate any bias that might be implied or negative perceptions of trail riders in general. I understand your logic on the proposed sampling. I can't guarantee it will happen, but your point IS valid. We will respond to your comments through a formal letter in the near future.

And Carolyn, I can't tell you how glad I am that you feel free to send us your thoughts like this. That is how we learn to produce better TMDLs that are sensitive to our stakeholders. We have had circumstances before where citizens were upset about info contained in a TMDL and we did find a way to change the document to accomodate their concerns. We write these things as best we can to make sense and sometimes aren't totally aware of how it could be perceived by the public. I might also try to reword some of the info regarding the CCTR efforts to make it clear that you are taking steps to address the issues and in the future we assume it will be a non-issue. I attended a watershed group's meeting in the Elk River last night. I talked about the efforts Tyson is making at their processing plant. Those changes are part of a consent agreement with DNR, but the group didn't care and they applauded and thanked the Tyson guys for their efforts. That is the way I would like things perceived and it doesn't matter how or why things came about. Fact is, folks like you are spending money to address the issues and that is what matters. I can't make any promises right now, but what I can guarantee is I and the rest of the staff will look at your concerns very closely and accomodate them as best we can.

Sharon Clifford
TMDL Coordinator
DNR, WPCP
573-751-7298
nrclifs@mail.dnr.state.mo.us
"Carolyn Dyer" <jasmith@socket.net>



"Carolyn Dyer"
<jasmith@socket.net>

10/29/2003 03:04 PM

To: "Sharon Clifford" <nrclifs@mail.dnr.state.mo.us>
cc:
Subject: JACK'S FORK DRAFT TMDL

Sharon,

I printed the draft TMDL Friday and have been reading through it Monday and Tuesday. I am quite upset by a paragraph on page 14 under the section "Monitoring Plans Under the Phased Approach." The piece of the paragraph I am referring to reads as follows, "The current Phase III and streambed sediment sampling being conducted by USGS continues to

characterize the fecal coliform problem. As in Phase II, USGS is finding that elevated fecal coliform bacteria densities occur during trail rides, but do not occur during other periods of high recreational use." I have been under the impression from past conversations with you that the DNR was going to be unbiased in their representation of whatever problem exists. This does not appear to be unbiased to me. I have pictures which were taken during the October trail ride 2003 of the USGS taking unbiased samples. I have attached these pictures for your file. As you can see the samplers are taking their water samples directly below a main horse crossing while horses are in the process of crossing the stream. My question is this, are they also taking samples directly in the midst of 20 or 30 swimmers in the water stirring up the sediment? You mention in the TMDL that samples were specifically taken during 2 different trail rides, August and October. However, why did they take samples on only 1 "busy camping/canoe weekend"? And which weekend was the sampling done? Are they sure that it was just as busy on this weekend as it was during the August and October trail ride? Are they really being unbiased in their sampling or are they targeting specific individuals **again**?

I am **extremely** upset by this particular paragraph and feel that it needs to be rewritten so as not to target a specific individual. Cross Country Trail Ride is the only business within the Jack's Fork watershed that is named specifically. You might be interested to know that there are at least 2 other businesses in the same industry as Cross Country Trail Ride within the watershed. Their names are not mentioned and I'm not going to mention them either. I don't want to place blame on any one individual or industry as I, personally, feel that the whole problem is invented in Jeff City. But, I would like to point out that by mentioning the name of only one business the reader of this document is led to believe that the source of the problem is this individual. If you read this document having no other information available to you where would you think that the blame lies?

I would like to suggest that a backup test be done in a manner as to determine the validity of the USGS findings about increased fecal coliform during trail rides. I would suggest that you do a specific sample in the following manner. At the sample site above Lick Log Hollow stage a test

when there is no trail ride being held. I will be glad to provide 4 horses and riders to cross the stream and allow the samplers to retrieve their sample. Then wait a few hours or an appropriate amount of time sufficient to let the sediment completely settle down and then I will also provide 4 people who will wade across the river on foot in the same location and allow the samplers to take their samples below the crossing again. Compare the 2 samples and at the very least we will determine whether or not it makes a difference if a horse or a human crossing the stream is increasing the fecal coliform count or if you get the same results regardless of who crosses the stream.

It seems to me that if any one of the local members of the canoe/camping industry were being specifically targeted as Cross Country Trail Ride is in this document that you would get a number of letters with the same complaints. I'm sure that you are aware of the political pressure that has been placed on the DNR in the past and that is still there to a degree. We are trying to work with the DNR in every way possible. To date, we have done everything that the DNR has asked us to do in order to try to stay in compliance. At one time, a few years back, my Dad possessed 4 different permits for treating the human waste we accumulate in a week. Each permit was valid, but not one of these permits was in accordance with your regulations, even though the DNR issued each permit. Every time an anonymous call is received we have to change the manner in which we are operating in some way. We have willingly agreed in order to stay in compliance, but our patience is now wearing thin after 15 years of this crap!! To date we have spent \$32,504.33 in engineering fees, \$32,432.71 in attorney fees, and over the winter will be spending approximately \$80,000 to \$100,000 to build what the engineer designed and the DNR approved. The worst part is that this is just a drop in the bucket to what we will have to spend over the next 5 to 10 years in order to satisfy a supposed problem that we are being blamed for and for which, to date, there has been no source found. I and my family are fed up with being the fall guy to keep the DNR out of a lawsuit!!! I respectfully request that you reword the paragraph I mentioned earlier so that it reflects what is found on a specific date/dates without specifying particular businesses. This can be very detrimental to our business in the future if this is published

with the blame placed on the "damned old trail ride" again!

I appreciate your consideration of this request and would like a response from you to my suggestion about a specific test of horse/human impact on the river crossing above Lick Log Hollow. Thank you for your time.

Respectfully,
Carolyn A. Dyer
Eminence, MO



- WaterSampler1.jpg

Timothy W. Dyer
Carolyn A. Dyer
P.O. Box 534
Eminence, MO 65466
573-226-3339

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NOV 24 2003

WPCP

November 21, 2003

Department of Natural Resources
WPCP
Water Quality Section
PO Box 176
Jefferson City, MO 65102-0176

RE: Comments on draft TMDL for Jack's Fork River

Dear Sirs,

I would like to give you my comments about the draft TMDL for the Jack's Fork River. I have read through the document several times over the past month and visited with several different people about the document as well. I am very uncomfortable with a paragraph on page 14 under the section "Monitoring Plans under the Phased Approach." The specific piece of the paragraph I am referring to reads as follows, "*The current Phase III and streambed sediment sampling being conducted by the USGS continues to characterize the fecal coliform problem. As in Phase II, USGS is finding that elevated fecal coliform bacteria densities occur during trail rides, but do not occur during other periods of high recreational use.*" I have been under the impression from past conversations with MDNR staff that your department was going to be unbiased in their representation of whatever problem exists. This does not appear to be unbiased to me. It would appear to an uneducated reader of this document that the problem has been found and all that needs be done is get rid of the trail ride and there will be no more problems.

I am unconvinced that the procedure used by USGS to collect their sample data at specific sample sites is completely unbiased and not meant to target a specific source. I am in possession of photos of these samplers taking samples during a trail ride in October. The samples are being taken directly below a main horse crossing while horses are in the process of crossing the stream. My question is this, are samples also being taken directly in the midst of or below an area where 20 or 30 swimmers are in the water stirring up sediment? The TMDL mentions that samples were specifically taken during 2 different trail ride weeks, August and October. However, why was only a single "busy canoe/camping weekend" targeted? And which on which weekend was the sampling done? Did USGS contact any local businesses or residents to find out which weekend would have the largest group of floaters/campers? Was this single weekend as active as the 2 full weeks that they obtained samples during a trail ride? Is the USGS and MDNR

Timothy W. Dyer
Carolyn A. Dyer
P.O. Box 534
Eminence, MO 65466
573-226-3339

really being objective in obtaining their sampling data or are they targeting specific individuals *again?*

I am *extremely* upset by this particular paragraph and feel that it needs to be rewritten so as not to target a specific individual. Cross Country Trail Ride is the only business within the Jack's Fork watershed that is named specifically in this document. You might be interested to know that there are at least 2 other businesses in the same industry as Cross Country Trail Ride within the watershed. Their names are not mentioned as potential sources and I'm not going to point fingers either. I don't want to place blame on any one individual or business as I, personally, feel that the whole problem is invented in Jefferson City. But, I would like to point out that by mentioning the name of only one business the reader of this document can draw only one conclusion. The source of the problem is the only business that they are told about! If you read this document having no other information available to you where would you think that the blame lies? I'm certain that you wouldn't want this blame laid at your door when you're trying in every way possible to comply with every suggestions made by MDNR and spending thousands of dollars to boot!!

I would like to make a suggestion to confirm the validity of the USGS findings about increased coliform levels and the times that these increases occur. I would suggest that you do a specific sample in the following manner. At the sample site above Lick Log Hollow, where the increased levels have occurred, stage a test when there is no trail ride being held and in the off-season for floating. Take a sample after 4 horses have crossed. Allow the sediment to settle and take a sample after 4 people have waded across the same crossing. Compare the 2 samples and at the very least you will have determined if it makes a difference whether humans or animals disturbing the sediment causes an increased coliform level. My guess is the samples will be close to the same level.

It seems to me that if any one of the local members of the canoe/camping industry were being singled out as is Cross Country Trail Ride that you would get a number of letters with the same complaints. I'm sure that you are aware of the political pressure that has been placed on your department in the past and that is still there to a degree. Cross Country Trail Ride is trying to work with MDNR in every way possible. To date, they have done everything that MDNR has asked in order to try to stay in compliance. Every time an anonymous call is placed to the regional office in Poplar Bluff CCTR has to change the manner in which they are operating in some way. Mr. Smith has willingly agreed in order to stay in compliance and try to keep people happy, however this is wearing a little thin! To date CCTR has spent \$32, 504.33 in engineering fees, \$32,432.71 in attorney fees, and over the winter of 2003 will be spending approximately \$80,000 to \$100,000 to build what the engineer designed and the MDNR approved. The worst part is that this is just a drop in the bucket to what they will have to spend over the next 5 to 10 years in order to eliminate a supposed problem for which they have been blamed and no source has been pinpointed.

Timothy W. Dyer
Carolyn A. Dyer
P.O. Box 534
Eminence, MO 65466
573-226-3339

I respectfully request that the document be rewritten so that no individual or business is named specifically. This could be very detrimental to Cross Country Trail Ride and any other business in this area if this document is published with the blame placed on a specific business. I appreciate your consideration of these comments and hope that you seriously consider the wording of this document that has the potential to affect the livelihood of so many people in this area.

Sincerely,

A handwritten signature in black ink that reads "Carolyn A. Dyer". The signature is written in a cursive, flowing style.

Carolyn A. Dyer

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

December 17, 2003

Ms. Carolyn A. Dyer
P.O. Box 534
Eminence, Missouri 65466

Dear Ms. Dyer:

Thank you for your comment letter dated November 21, 2003, regarding the Jacks Fork River Total Maximum Daily Load (TMDL) document.

After considering concerns raised by you and others regarding the identification of Cross Country Trail Rides (CCTR) in the TMDL document, we revised the document to remove the reference to CCTR from the discussion of trail rides as a nonpoint source of fecal coliform. However, we left in place the reference to CCTR in relation to the Settlement Agreement in the Implementation section. This information is important to include, as it provides "Reasonable Assurance" that progress is being made toward resolving the problem. Reasonable Assurance is one area the Environmental Protection Agency (EPA) reviews prior to giving final approval for the TMDL. The efforts of CCTR represent a major step in restoring water quality in the Jacks Fork River.

We have forwarded your comments regarding the Jacks Fork River study design to U.S. Geologic Survey (USGS), including your suggestion for "side-by-side" sampling. The National Park Service and USGS are funding this study and will determine the final sampling plan. The answers to your questions regarding the data may be contained in the report itself or you may obtain the information by speaking directly with USGS personnel. To assure impartiality, they follow approved Quality Assurance/Quality Control plans in their data collection and adhere to stringent sampling protocols. Their job is to collect the highest quality data possible. The USGS currently does data collection across the nation for many state and federal agencies. They do not have any authority to use the information affect change or regulate permitted entities. That authority resides with the State of Missouri. This fact helps to ensure that the data collection agency has no vested interest in the results and therefore helps to ensure the collection of accurate information.

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Ms. Carolyn A. Dyer
Page 2

In your comment letter, you quoted and expressed concern about a specific sentence in the Monitoring Section. In response to your comment, the information has been changed to reflect the more global goals of the Continuous Monitoring Plan. I would like to assure you that the statements in the TMDL document regarding the impact of equine recreation are based on conclusions that have been drawn independently by several different agencies. Based on the available data, we conclude that trail rides do have an impact on the bacteria levels in the Jacks Fork River. The discussion of the findings is not intended to imply that trail rides are the only source of bacteria, and we were careful to identify other potential sources in the TMDL document.

Again, thank you for commenting. Your comments will be part of the permanent record for the Jacks Fork River TMDL and will be sent to EPA with the final draft when it is submitted for EPA approval. Your participation in the TMDL process and concern for the health of Missouri's water resources is truly appreciated. If you have other questions or wish to discuss this further, please contact Anne Peery of the Water Quality Section at (573) 526-1426 or at Missouri Department of Natural Resources, Water Pollution Control Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER POLLUTION CONTROL PROGRAM



Becky L. Shannon, Chief
Water Quality Section

BLS:apd

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

December 19, 2003

Ms. Carolyn A. Dyer
P.O. Box 534
Eminence, Missouri 65466

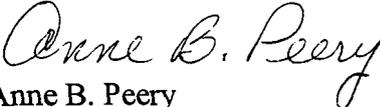
Dear Ms. Dyer:

The U.S. Geological Survey sent me their response to your concerns regarding their study of the Jacks Fork River. Please find their letter enclosed.

Again, thank you for commenting on the Jacks Fork River TMDL. If you have other questions or concerns, please don't hesitate to contact me at (573) 526-1426, by mail at Missouri Department of Natural Resources, Water Pollution Control Program, P. O. Box 176, Jefferson City, MO 65102-0176 or by email at anne.peery@dnr.mo.gov.

Sincerely,

WATER POLLUTION CONTROL PROGRAM


Anne B. Peery
TMDL Developer
Water Quality Section

ABP:djs

Enclosure

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United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Water Resources Division
1400 Independence Road
Mail Stop 100
Rolla, Missouri 65401

RECEIVED
DEC 08 2003
WPCP

December 4, 2003

Anne Peery, TMDL Developer
Missouri Department of Natural Resources
Water Pollution Control Program
Post Office Box 176
Jefferson City, Missouri 65102-0176

Ms. Peery:

Attached is the U.S. Geological Survey (USGS) response to your request for documentation of the sampling plan for the collection of samples for indicator bacteria analysis on the Jacks Fork. If you have any questions about the response, please contact Jerri Davis at (573) 308-3829 or jdavis@usgs.gov.

The suggestion was made to stage a test on the Jacks Fork above Lick Log Hollow during the nonrecreational season that involves taking a sample after 4 horses have crossed the river, allowing the sediment to settle, and then taking a sample after 4 people have crossed the river at the same location. It is doubtful that comparing bacteria densities after 4 horses and/or 4 people have crossed the river can mirror the results that the USGS has obtained when there are literally hundreds of horses, canoeists, or swimmers in the river. I suspect there would be little or no difference in the results between the two samples collected in the manner suggested. The USGS is always open to being observed during sample collection. Missouri Department of Natural Resources representatives and/or other interested parties would be welcome to accompany us on an already scheduled sampling trip and to collect samples for comparison purposes.

Sincerely,

Michael E. Slifer
District Chief

*USGS's response
to Carolyn Dyer.
- Forwarded to her
12/19/03*

Site selection methods, sample collection scheduling, and sampling procedures used by the U.S. Geological Survey on the Jacks Fork, May 1999 through October 2003

The U.S. Geological Survey has been sampling on the Jacks Fork since May of 1999 in cooperation with the National Park Service (NPS) and the Missouri Department of Natural Resources (MDNR). Specific objectives of the three-phase study included determining the location and magnitude of microbiological contamination (Phase I); establishing a water-quality sampling network to further document and understand the sources of microbiological contamination (Phase II); and establishing sampling locations for routine long-term water-quality monitoring (Phase III). Samples have been collected mostly during base-flow conditions during a variety of nonrecreational and recreational season river uses, including canoeing, swimming, tubing, camping, and horseback riding. The methods used by the USGS to select sampling sites, the scheduling of sample collection, and the sampling procedures employed have been questioned with regard to whether or not they are unbiased.

Selection of sampling sites — The 42 Phase I sampling sites, which were located on tributaries, spring branches, and on the main stem of the Jacks Fork, were selected by the USGS with assistance from the NPS after a reconnaissance of the Jacks Fork from the Alley Spring Campground to the mouth was done to locate sampling sites and potential sources of microbiological contamination. Thirty one of the sites were located downstream of Eminence because the fecal coliform problem previously had been documented as occurring on this part of the river, which includes the 303(d) reach. The 42 sites were sampled three times from May 1999 through August 1999. Fifteen of the 42 sites (4 upstream of Eminence and 11 downstream of Eminence) were selected for Phase II sampling based on the results from Phase I that showed that fecal indicator bacteria densities increased in the 303(d) reach downstream of Eminence. Phase III sampling has continued at 11 of these sites (3 upstream of Eminence and 8 downstream of Eminence), including the site on the Jacks Fork above Lick Log Hollow.

Timing of sample collection — During Phase II, samples were collected approximately monthly from November 1999 through April 2000 and from September 2000 through December 2000 and twice per month from May 2000 through August 2000. As stated above, samples were collected mostly during base-flow conditions during a variety of nonrecreational and recreational season river uses, including canoeing, swimming, tubing, camping, and horseback riding. During the Phase II sampling period, the whole-body-contact standard (200 col/100 mL fecal coliform)—applicable from April 1 through October 31—was exceeded at one or more sites on four sampling occasions. All three of the sites where exceedences occurred were downstream of Eminence, and the highest fecal coliform densities occurred at one of the sites in question, namely Jacks Fork above Lick Log Hollow. Furthermore, all of the exceedences occurred in samples collected during trail rides.

Phase III sampling continued at 11 sites, with specific recreational activities (canoeing and trail rides) being the primary focus of the sampling efforts. The decision to target these recreational activities was based on the data collected during Phase II and the need of the NPS and MDNR for more detailed information on the fluctuations of fecal coliform bacteria densities that occur during the targeted recreational activities. Regular monthly samples were collected in water years 2001 and 2002 during the nonrecreational season in January, February, March, April, September, and November 2001 and April and May 2002. During the recreational season, regular and event-based sampling (intense sampling that targets a specific recreational event) was done. Event-based sampling involved sampling all 11 sites twice per day for 2 consecutive days either during a busy canoeing/swimming /camping weekend or a trail ride. The weekend dates were selected

based on statistics compiled by the NPS and canoe concessionaires regarding campground use and canoe rentals, with the objective being to sample during the weekends with the heaviest use. The trail ride dates were selected based on the dates that the large, week-long, organized rides were scheduled. In most cases, a regular monthly sample was collected right before the recreational event for comparison purposes. Event sampling was done during water years 2001 and 2002 on the following dates:

Weekend (canoeing, swimming, camping):

May 28-29, 2001 (Memorial Day weekend)

June 28-29, 2002

Trail ride:

August 8-9, 2001

October 10-11, 2001

August 6-7, 2002

October 8-9, 2002

Results obtained during the 2001 and 2002 event sampling supported the results obtained during Phase II. However, the USGS, NPS, and MDNR still felt that additional data were needed to characterize the problem. During the 2003 recreational season, a different approach to event-based sampling was taken. In addition to regular sample collection at the 11 sites, hourly sampling for fecal coliform bacteria was done from 8:00 a.m. to 5:00 p.m. at one site during 2 busy canoeing/swimming/camping weekends and 2 trail rides. The purpose of the hourly sampling was to determine the fluctuation of fecal coliform bacteria densities during a nine-hour period of heavy recreational use. The Jacks Fork above Lick Log Hollow site was chosen because the highest fecal coliform densities have been observed at this site. Again, the weekend dates were selected based on statistics compiled by the NPS and canoe concessionaires regarding campground use and canoe rentals, and the trail ride dates were selected based on the dates that the large, week-long, organized rides were scheduled. During the weekend hourly fecal coliform sample collection, the number of canoes, kayaks, tubes, and boats passing the site per hour was tabulated, and during the trail rides, the number of horses crossing the river at the site per hour was tabulated. Hourly sampling was done during water year 2003 on the following dates:

Weekend (canoeing, swimming, camping):

June 28, 2003

July 26, 2003

Trail ride:

August 6, 2003

October 7, 2003

The results of the hourly weekend sampling on the Jacks Fork above Lick Log Hollow showed that fecal coliform densities did not increase above normal, background levels even during the peak use time around 2:00 p.m. The results of the hourly trail ride sampling showed that fecal coliform densities were elevated above normal, background concentrations, with several of the samples exceeding the whole-body-contact recreation standard of 200 col/100 mL during both trail rides.

Sampling procedures — Standard USGS indicator bacteria sample collection and processing procedures were employed during the duration of this project. Indicator bacteria samples were collected in a sterile 500-mL polypropylene bottle by facing the bottle into the current and dipping quickly into the stream at 3 to 5 equally spaced locations in the stream cross section. The location of the sampling cross section at each site was determined at the beginning of the project

and was picked based on the best location to obtain a representative stream sample. The location of the stream cross section at each site has remained the same throughout the project.

When collecting a sample on the Jacks Fork at Lick Log Hollow, the same stream cross section is used each time. This stream cross section was chosen without any prior knowledge that this location was a major horse crossing during trail rides. The site is sampled when field personnel arrive at the site and have prepared all sampling equipment regardless of what activity is occurring in the stream. If there are swimmers, boaters, and canoeists in the water, the sample is collected. If there are horses in the water, the sample is collected. Likewise, if there is no activity occurring at the site, the sample is collected. During the weekend sampling, samples were collected in the middle of large groups of canoeists and swimmers. Likewise during trail rides, samples were collected at the regular cross section, which often resulted in samples being collected downstream of crossing horses. However, it would be difficult to collect a sample at this site when no horses were in the river because of the large volume of horses that cross the river at this site.

The USGS has determined through more than 4 years of sampling on the Jacks Fork that elevated fecal coliform densities occur during trail rides. However, the sources of the bacteria have not been positively identified. The elevated fecal coliform densities may be related to four factors: (1) leakage of sewage effluent from an unknown source into the river, (2) physical disturbance of streambed sediments causing resuspension of accumulated bacteria, (3) defecation directly into the river, and (4) fecal material carried into the river on the feet of animals.

Jerri V. Davis
December 4, 2003



CROSS COUNTRY TRAIL RIDE, LLC

(573) 226-3492 • Fax: (573) 226-3420

November 21, 2003

RECEIVED

NOV 24 2003

WPCP

Department of Natural Resources
WPCP
Water Quality Section
PO Box 176
Jefferson City, MO 65102-0176

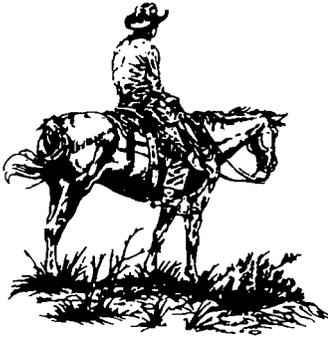
RE: Comments on Draft TMDL for Jack's Fork River

Dear Sirs,

I am writing to provide you with my comments on the draft TMDL for the Jack's Fork River. There were several areas that I felt needed to be clarified in the document. First, the document says that one potential non-point source of coliform is "Failing On-Site Septic Systems" within the watershed. We live in a very rural area and there are many households who use septic systems as a form of sewage waste management. However, there also are known to be private properties in the area where household sewage is discharged directly to the environment without passing through any sort of treatment system. These discharges obviously can have a much greater impact on water quality and should increase the significance of this category of sources in implementing the TMDL.

Secondly, the TMDL discusses the characteristics of the upper and middle basins of the Jack's Fork. In particular, the document discusses the background concentrations of coliform in these areas. Recent data reported by USGS show that fecal coliform concentrations at Story's Creek, which is upstream of Eminence, in the middle basin, are much higher than the background and even higher than comparable data from within the "impaired" portion of the Jack's Fork. I feel that it would not be unreasonable to ask that this data be addressed and considered when determining the level at which the river must be maintained after the implementation of this document. This higher concentration of coliform will have a direct impact on the levels of coliform present downstream.

Third, the implementation section describes the Settlement Agreement between Cross Country Trail Ride and the MDNR. I would like to provide you with an update to add to the final document. A Stormwater Improvement Plan has been prepared and has been approved by the MDNR. Cross Country Trail Ride has been implementing measures,



CROSS COUNTRY TRAIL RIDE, LLC

(573) 226-3492 • Fax: (573) 226-3420

approved by MDNR, since August 1, 2003 that will eliminate contact of storm water with animal manure. Cross Country Trail Ride already has a system in place that captures all sanitary waste and transfers that waste to the City of Eminence treatment facility.

Lastly, I noted in reading this document that Cross Country Trail Ride is the only business that is mentioned specifically by name. I don't think that it is appropriate to single out an individual or business in this manner in light of the fact that you currently cannot pinpoint a source for the raised coliform levels. I would suggest that you change the wording to list trail riding as an industry and not specify Cross Country Trail Ride as this is not the only trail ride located within the Jack's Fork Watershed.

Thank you very much for your time and consideration of my comments. I can be reached at the address or phone number shown.

Sincerely,

James D. Smith
Jane A. Smith

James D. Smith
Jane A. Smith
Owners

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

December 17, 2003

Mr. James D. Smith
Ms. Jane A. Smith
Cross Country Trail Rides
P.O. Pox 15, Highway 19 East
Eminence, MO 65466-0015

Dear Mr. Smith and Ms. Smith:

Thank you for the comment letter dated November 21, 2003, regarding the Jacks Fork River Total Maximum Daily Load (TMDL) document. The responses below correspond to your comments in the order they were given:

1. You point out that improper management of on-site wastewater from homes has an impact on water quality. In response to your comments, we have revised the TMDL document to also refer to inadequate wastewater treatment systems. I understand that the Jacks Fork Watershed Committee hopes to address this matter and has identified some actions to take toward this end. At the state level, the Missouri Department of Health and Senior Services has regulatory authority related to individual on-site wastewater treatment systems. We will provide a copy of your comment letter to that agency. However, we often see that the best solutions come from or at least have the support of local citizens and would encourage you to continue to be involved locally to address this issue.
2. Your observations regarding USGS data on Story Creek are correct. The USGS data collected at Story Creek from 1998 through August 2001 were pooled with the rest of the data from the upper watersheds to determine the target. All samples taken during high flows were eliminated. Because the target is an average, it is smaller than some of the data values used in the calculation to derive the target. But it should not be assumed that all waters in the upper sub-watersheds are in acceptable condition. I appreciate you raising this concern and assure you that the data has been received by my office and will be considered as we assess the conditions of waters of the state.

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Mr. James D. Smith
Ms. Jane A. Smith
Page 2

3. Thank you for the updated information on the Settlement Agreement. The TMDL document has been modified to include this information.
4. In response to your concerns, we have revised the TMDL document to remove the reference to Cross Country Trail Rides except in regard to the Settlement Agreement. Discussion of the Settlement Agreement provides "Reasonable Assurance" to EPA that any concerns related to the Cross Country Trail Rides property are being addressed.

Again, thank you for commenting. 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 Anne Peery of the Water Quality Section at (573) 526-1426, by e-mail at anne.peery@dnr.mo.gov or at Missouri Department of Natural Resources, Water Pollution Control Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER POLLUTION CONTROL PROGRAM



Becky L. Shannon, Chief
Water Quality Section

BLS:apd

c: Missouri Dept. of Health & Senior Services

MISSOURI COALITION FOR THE ENVIRONMENT

6267 Delmar Blvd. 2-E • St. Louis MO 63130 • 314-727-0600 Fax: 314-727-1665 • moenviron@moenviron.org • www.moenviron.org

November 24, 2003

VIA U.S. MAIL AND FAX (573) 526-5797

Department of Natural Resources
Water Pollution Control Program
ATTN: Sharon Clifford
Water Quality Section
P.O. Box 176
Jefferson City, MO 65102-0176

RECEIVED
NOV 25 2003
WPCP

Re: Jacks Fork TMDL

Dear Ms. Clifford:

The Missouri Coalition for the Environment and its affiliated foundation are providing these comments on the draft total maximum daily load or "TMDL" prepared for the impaired segment of the Jacks Fork River. The Coalition has 1,000 members, many of whom regularly use and enjoy the Jacks Fork and other Ozark rivers for canoeing, fishing, swimming and other activities. The Coalition and its members therefore have a great interest in ensuring that the TMDL prepared by MDNR brings about a timely cleanup of the Jacks Fork River.

I. The Jacks Fork River Is A Highly Important Resource.

The Jacks Fork River is one of only three water bodies in our state designated as "Outstanding National Resource Waters" by the Department of Natural Resources. This is the highest form of recognition and protection offered to waters by the state. Streams on this list are those that "have outstanding national recreational and ecological significance" and that "receive special protection against any degradation in quality." 10 C.S.R. § 20-7.031(1)(O).

Equally important is the fact that most of the Jacks Fork River runs through the Ozark National Scenic Riverways, Missouri's largest and most spectacular national park. The Scenic Riverways attract more than 1.3 million visitors annually, most of whom come to enjoy the crystal clear waters of the Jacks Fork and Current Rivers and the spectacular scenery of their two valleys.

The Jacks Fork River has great economic and environmental significance to the state of Missouri. Recreational uses of the River sustain a substantial number of

businesses in the Ozarks, which provide employment for numerous people. The River and its Valley also largely remain an example of the native landscape that existed throughout the Ozarks prior to intensive European settlement. This landscape sustains a wide array of plant and animal life.

II. Recreational Uses of the Lower Jacks Fork Are Threatened By Excessive Levels of Fecal Coliform Bacteria.

For several years, state and federal agencies have identified high levels of fecal coliform bacteria in the lower Jacks Fork River. These levels often significantly exceed the state standard of 200 colonies per 100 milliliters of water. In fact, some samples have contained more than 50 times the allowable number of bacteria. Therefore, a seven mile segment of the Jacks Fork River has been designated as "impaired" pursuant to section 303(d) of the federal Clean Water Act. A stream's designation as "impaired" requires that MDNR develop a TMDL, which is meant to assess the sources of pollution and set forth an implementation plan for cleaning it up.

Fecal coliform bacteria pollution is not something agencies or the public should take lightly, especially on a water body as heavily used for recreation as the Jacks Fork. The U.S. Geological Survey has made the following statement about the dangers of bacteria contamination in surface waters:

High levels of fecal-indicator bacteria in rivers and streams can indicate the possible presence of pathogenic (disease-causing) microorganisms. Cholera, typhoid fever, bacterial dysentery, infectious hepatitis, and cryptosporidiosis are some of the well known waterborne diseases that spread through water contaminated with fecal matter. Eye, ear, nose, and throat infections also can result from contact with contaminated water.

The years of study that the U.S. Geological Survey has put in on the lower Jacks Fork has identified the major source of the problem to be large equestrian trail rides that take place during the summer months. One stable in particular holds trail rides that attract as many as 2,800 horses at a single point in time. These thousands of horses are ridden on nearby public land, and often in the Jacks Fork River itself. Predictably, the horses often defecate directly into the River. Moreover, the numerous barns and thousands of stalls that house the horses are located within a few hundred feet of the River, and the animal waste at the facility is often flushed into the River during periods of rainfall.

As stated in the draft TMDL, other potential sources of fecal coliform bacteria do exist within the Jacks Fork watershed. More than 4,000 homes in the watershed have individual septic systems. The draft TMDL acknowledges that more than half of these systems are failing. This means that raw household sewage is often running directly out onto the landscape or into nearby water bodies. In addition, human uses of the River during the summer may contribute to the bacteria loading. Finally, there are two waste

water treatment facilities that discharge into the watershed, and the effluent from those facilities occasionally exceeds state standards.

III. Comments on Draft Jacks Fork TMDL

A. Setting of the Applicable Standard or “Endpoint”

The draft TMDL recognizes that the Jacks Fork River is an Outstanding National Resource Water, subject to Tier III of the state’s anti-degradation policy, and that it therefore cannot be degraded beyond “natural” conditions.

The MDNR’s method of choosing the natural or background condition, however, was to review a ten year set of sampling conducted by various state and federal agencies in the upper and middle reaches of the River. As such, MDNR did not technically attempt to set a standard based on the natural condition of the river, but rather chose to set a standard based on water quality over the past decade in the upper and middle sections of the River.

Instead of setting a standard based on recent monitoring, which may very well be influenced by other human induced pollution, MDNR should conduct a further study of what true background concentrations of fecal coliform bacteria in Ozark waters actually are. There is likely data from other streams that could be used, as well as models that would predict the impact of natural fecal coliform sources on an Ozark waterbody. The selected method of setting the TMDL endpoint does not ensure that the Jacks Fork will meet the requirements of Tier III of the state’s anti-degradation policy.

MDNR’s method of setting the endpoint also inexplicably excluded certain sampling results from the calculation. The draft TMDL states that only “non-zero” results were used to calculate the endpoint, but does not give any indication of how many samples were actually excluded because they showed no pollution. Why were the results that showed no pollution excluded? MDNR needs to identify how many samples were excluded for this reason and offer further justification for their exclusion.

Finally, MDNR is choosing to use a “geomean” to measure compliance with the chosen endpoint of 25 bacteria colonies per 100 milliliters of water. This means that only a 30 day average of sampling must comply with the endpoint standard of 25 col/100 mL. Any single sample could exceed the applicable endpoint so long as the average of samples is within the limit. We do not feel that the use of this geomean adequately protects recreational users of the Jacks Fork River. Because the Jacks Fork is a Tier III water, its users are entitled to water quality that is as good as those found under natural conditions. The people swimming in the River do not care that the 30 day average is within limits; they only care that it is of a high quality on the day they are actually in the water. We therefore feel it is inappropriate to use the so-called “geomean” to measure compliance, and suggest that the water quality in the Jacks Fork should always be at a level guaranteed by state law.

B. Implementation of the TMDL

The most significant failing of the TMDL is in the implementation plan. A TMDL is only as good as the plan set forth to clean up the impaired water. Without definite commitments by public and private entities to rectify illegal pollution, the document does nothing more than re-identify the problem.

The draft TMDL largely sidesteps the central issue of animal waste from the large trail rides held in the vicinity of Eminence. (We do recognize that problems at the facility itself are being addressed through a settlement with MDNR and a required stormwater implementation plan.) The only implementation measure on this issue that sounds somewhat definite is an agreement by the Missouri Department of Conservation to develop environmentally sound trail systems on their property. This would be a good first step. We have witnessed first hand the extreme degradation of the existing trails on MDC lands, some of which go straight up and down hillsides and are eroded down to bare rock. Any new trails developed should be designed so as to reduce erosion and lead the rides away from the River.

Other methods suggested in the draft TMDL of addressing pollution from the trail rides include educational efforts and potential hardened river crossings for horses. Educational efforts are definitely part of the solution to this problem, but we are concerned that no definite sources of funding or other commitments are made in this regard. MDNR must assign roles and responsibilities to produce these educational materials, and agree to fund them if other sources of funding are not available.

We are adamantly opposed to the suggestion that hardened crossings or bridges be constructed to allow horses to cross the River. As noted above, the Jacks Fork is one of three rivers in the state that are noted for their outstanding ecological and recreational value. Installing concrete crossings in the stream would seriously degrade the recreational experience offered to canoeists floating down the river. Trail rides should avoid the River altogether; MDNR's TMDL should not be used to find ways to encourage riders to cross the river. Moreover, it is unclear how simply hardening a crossing would eliminate the problem of horses defecating directly into the River.

The key to solving the problem of pollution from huge equestrian trail rides is to either reduce their size (i.e. spread this use out over time) or to reduce their concentration (i.e. spread the use over a larger area). The concentration of thousands of animals within a few hundred feet of the River is almost guaranteed to cause water quality problems. Government agencies should be realistic about the actions needed to solve this problem, and should not endorse approaches that will only delay the cleanup and give false hope that the problem is being solved.

We are also concerned about the failure to set forth definite measures to address potential pollution from individual septic systems and from existing waste water treatment facilities. If more than half of the 4,000 septic systems in the watershed are failing, this would seem to be a high priority item to protect water quality. However, the

draft TMDL makes no commitment to further research or solve this problem. MDNR and other agencies need to commit resources to inspecting septic systems and helping homeowners find ways of fixing their systems or connecting to more centralized facilities. The porous nature of the soil and substrate in the Ozark region can easily result in improperly treated household sewage finding its way into groundwater and nearby rivers.

Similarly, while the two waste water treatment facilities in the watershed are now disinfecting their effluent, the draft TMDL indicates that they continue to violate applicable limits roughly four percent of the time. On an impaired river, even these occasional violations need to be researched and resolved. Similarly, we question whether the establishment of the waste load allocation (the contribution from point sources) was appropriately calculated. Using past discharge monitoring reports to set the allowable loading only locks in place what these facilities have done in the past, including periods of violation. Could these two facilities further reduce the bacteria in their effluent through upgrading disinfection methods?

With regard to the construction of additional restroom facilities for users of the River, we have similar concerns as those expressed above with regard to hardened horse crossings. Nothing should be done that will degrade the recreational value of this outstanding River. There may be scenarios under which additional toilet facilities could be appropriately installed with minimal impact, but this should not be done if it means impairing the aesthetic value of the river corridor and especially not if it means creating additional roads or access points. The Jacks Fork is a special resource for many reasons, and all of the aspects that make it so special must be safeguarded.

While we feel that changes to the TMDL are necessary based on our comments above, we do recognize the hard work that has already gone into devising a solution to this problem, and are encouraged that a committee of local citizens is taking a strong interest in water quality. We appreciate the opportunity to provide comments on the draft TMDL. Please call me if you have any questions.

Very truly yours,



Edward J. Heisel
Executive Director

Cc: Noel Poe, NPS
John Hoskins, MDC

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

December 30, 2003

Mr. Edward J. Heisel, Executive Director
Missouri Coalition for the Environment
6267 Delmar Boulevard, 2-E
St. Louis, MO 63130

Dear Mr. Heisel:

Thank you for the comment letter dated November 24, 2003, regarding the Jacks Fork River Total Maximum Daily Load (TMDL) document. We agree that the Jacks Fork River is a highly important resource and appreciate the comments pointing out its value. The responses to your comments contained here correspond to the numbers in your comment letter.

III. A. Setting of the Applicable Standard or "Endpoint"

Setting the target – The Department of Natural Resources (the department) used all available water quality data collected since 1993 to develop a numeric criterion for fecal coliform that would be representative of the non-impaired portion of the Jacks Fork watershed. Your suggestion to undertake further study to determine the true natural condition of Ozarks streams is logical and has been considered. Unfortunately, few Ozark streams are more "natural" or pristine than the headwaters of the Jacks Fork. Modeling the type you describe is useful if quality assured data is available to use in the model and if the assumptions made during the modeling process are accurate. Without substantial additional resources, the department is unable to spend the necessary time to investigate this alternative approach. Both EPA and the department agree that the target set using the upper portions of the watershed as the reference condition does provide adequate protection for the beneficial uses of the Jacks Fork River and protects the citizens that recreate on this river.

Non-zero samples – There were a total of 10 samples associated with high flows and 15 zero count samples (8 and 7 respectively during the recreation season). Both high flow samples and zero-count samples are considered outliers and non-representative of the background condition of the watershed. Including these outliers would actually raise the target.

Expressing the target in terms of a geometric mean of no less than four samples equally spaced within a 30-day period provides a means of evaluating the overall condition of the stream. As shown in Table 3 of Appendix D of the Jacks Fork TMDL, there were single fecal coliform

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counts of more than 4,000 colonies/100 ml. This can often be attributed to the inherent variability that exists in bacterial sampling. As an example, a single high number could represent a grab sample collected after wildlife have defecated into the water while a sample at the same location moments later could yield quite different results. The concern regarding variability in bacteria sampling is being addressed nationally by changing state standards and basing compliance on the values derived by use of a geometric mean. Although Missouri's standards do not currently use this approach, it is expected to be proposed in the future for inclusion in Missouri's Water Quality Standards during the revision process. As EPA and the scientific community have approved the use of geometric means, it seemed the most viable way to evaluate compliance with the Jacks Fork TMDL.

III. B. Implementation of the TMDL

The objective of a TMDL is to determine the assimilative capacity of a waterbody and allocate that load to point (Waste Load Allocation or WLA) and nonpoint sources (Load Allocation or LA). To account for inherent uncertainty that results from the huge number of variables that influence watershed health, the TMDL includes a margin of safety. State operating permits for facilities discharging in the watershed will implement the WLA portion of the TMDL through permit actions. All actions aimed at reducing nonpoint source contributions are voluntary. Watershed partnerships, with the help of state and federal agencies, are responsible for identifying these actions and implementing them.

While I respect your comment and opinion that the implementation plan is "the most significant failing" of the TMDL document, I have a much different opinion and disagree with your conclusion. As you may know, there is no legal mandate for implementation plans to be included in a TMDL document. Furthermore, as you know, many of the regulatory authorities that apply to other discharges of pollution do not apply to nonpoint sources. However, the department has held the implementation plan to be a necessary component and considers it essential to address nonpoint source pollution as well as point sources in these implementation plans. To that end, the department instigated and facilitated the formation of a local watershed group. The Jacks Fork Watershed Committee has been organized and is moving quite rapidly toward strategies that will address the fecal coliform impairment of this river. This approach is consistent with the state's Nonpoint Source Management Plan and its TMDL Strategy Document, both of which support the concept of voluntary, locally led watershed protection efforts. In addition, as you note, this particular TMDL document is further strengthened in that an enforceable consent decree addresses what is believed to be a major contributor of the pollutant of concern.

I appreciate your comments regarding hardened crossings and bridges for horses to cross the river. The watershed group has largely ruled out hardened crossings and bridges as a viable alternative. This information was included only to illustrate that many possible solutions have been proposed and considered.

Mr. Edward J. Heisel

Page 3

I appreciate your comments regarding the need to commit resources to addressing nonpoint source concerns such as on-site wastewater treatment systems. While some work has been done using grant funding for educational efforts and studies in the state, the department continues to look for opportunities to address this matter. The existence of a locally led watershed group has facilitated these types of efforts in other areas of the state, and it is my hope that this will be the case in the Jacks Fork River watershed as well.

Regarding your comment that the two wastewater treatment plants exceed the applicable limit roughly four percent of the time, it's my understanding that the department's regional office staff work closely with these facilities to help ensure compliance. Also, the provisions of the TMDL will be taken into account during the renewal of the permits for these facilities and the appropriateness of revising permit provisions will be considered.

As to your comment regarding added restroom facilities, I believe the National Park Service and the local watershed groups share your concerns that nothing should be done that will degrade the recreational value of this river. I see that you forwarded your comments to Mr. Noel Poe of the National Park Service and thereby made him aware of your concerns as well.

Again, thank you for commenting. The Coalition's participation in the TMDL process and concern for the health of Missouri's water resources is truly appreciated. If you have other questions or wish to discuss this further, please contact Anne Peery of the Water Quality Section at (573) 526-1426 or at Missouri Department of Natural Resources, Water Pollution Control Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER POLLUTION CONTROL PROGRAM



Becky L. Shannon, Chief
Water Quality Section

BLS:apd

Enclosures



Anne Peery
12/02/2003 08:17 AM

To: FILE
cc:
Subject: Sierra Club comment on the Jacks Fork



Sharon Clifford
11/26/2003 01:45 PM

To: Anne Peery/WPCP/DEQ/MODNR@MODNR
cc:
Subject: Jacks Fork

A comment from Sierra Club. No need for formal response. Maybe we should ask Carrie if she can provide a statement about SRF funds for septic systems?

Sharon Clifford
TMDL Coordinator
DNR, WPCP
573-751-7298
nrclifs@mail.dnr.state.mo.us

----- Forwarded by Sharon Clifford/WPCP/DEQ/MODNR on 11/26/2003 01:44 PM -----



"Angel Kruzen"
<pansgarden@hotmail.com>
11/26/2003 01:19 PM

To: nrclifs@mail.dnr.state.mo.us
cc:
Subject: Jacks Fork

Sharon,

The TMDL looks good to me. The only thing that should be added is what the Cross country trail ride is doing to help solve the problem. Also there needs to be some way to help with the repair/replacement/insulation of Septic Systems.

installation

Thank you,

Angel Kruzen

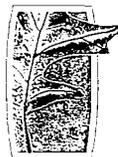
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THE FORRESTER GROUP
INSIGHTFUL ENVIRONMENTAL SOLUTIONS

November 25, 2003

VIA FACSIMILE
HARD COPY TO FOLLOW

Ms. Sharon Clifford
TMDL Coordinator
Missouri Department of Natural Resources
Water Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176

COMMENTS ON DRAFT JACKS FORK RIVER TMDL

Dear Ms. Clifford:

Thank you for the opportunity to comment on the DRAFT document "Total Maximum Daily Loads (TMDLs) for Jacks Fork River," released for public comment on October 24, 2003. We have reviewed this document and respectfully submit the following comments.

NONPOINT SOURCES

Under the heading "*Failing On-Site Septic Systems*" on page 6, the document states, "*on-site sewage treatment systems have the potential to deliver bacteria loads to surface water due to malfunction, failure, or direct pipe discharge.*" It has long been documented that failing septic systems can have serious negative impacts on both surface and groundwater quality. This is particularly problematic in areas of poor soil characteristics, such as in much of the Jacks Fork River watershed. It has also been shown that throughout the U.S. improper maintenance of septic systems is widespread.

Indeed, failure of a system designed to treat wastewater does present a significant threat to surface water quality. We agree that such conditions are likely to be a major contributor of fecal coliform and related contaminants to the Jacks Fork River. However, as stated, this section fails to adequately describe that "direct pipe discharge" greatly magnifies the potential impact of on-site human wastewater systems on the waters of the Jacks Fork River.

The document refers to "direct pipe discharge." However, the brief mention of this potential source in the overall discussion implies that such systems intend to provide some sort of "treatment" and that discharge of bacteria will result due to "failure" of such systems. In fact such systems are designed to provide no treatment of wastewater at all and are designed to deliver bacteria loads to surface water from the outset and on a continuing basis.

Anecdotal evidence suggests that a considerable number of direct pipe discharge sources exist throughout the watershed. These sources include both private residences as well as recreational facilities.

TMDL Comments 031124 jkc.doc

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Springfield, Missouri 65806
p 417.864.6444 f 417.864.6445

5460 Ward Road, Suite 110
Arvada, Colorado 80002
p 303.456.0400 f 303.456.0232

500 Chesterfield Center, Suite 300
Chesterfield, Missouri 63017
p 636.728.1034 f 636.728.1035



Clearly, the intentional and direct discharge of human wastewater to surface water greatly increases the impact of this source. We suggest this discussion in the document be modified to clarify that impact to surface waters from these sources is not limited to “failing on-site septic systems,” but that systems exist in the watershed that continue to discharge wastewater directly to surface water by design, without any form of treatment. Furthermore, the TMDL should have as its highest priority to identify and eliminate these direct pipe discharge sources.

SUB-BASIN CHARACTERISTICS

The TMDL document considers the Jacks Fork River watershed in three sub-basins; the upper, middle, and lower basins. The lower basin; seven miles of the river from Eminence to the confluence with the Current River, has been designated as the “impaired” stream segment. Furthermore, in consideration of “TMDL Endpoint” the department has considered the historic “background” concentration of fecal coliform in the upper and middle basins of the Jacks Fork River. In general we do not disagree with this approach. However, we wish to suggest caution that such designations and evaluations do not improperly limit attention to stream conditions in the “impaired” stream segment and ignore conditions and potential sources that exist throughout the watershed.

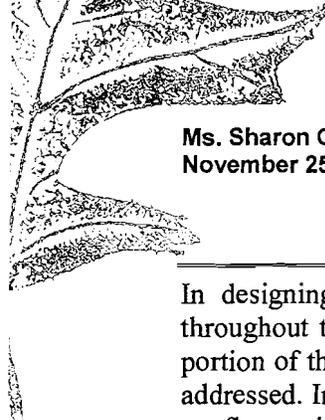
The document states that the historic upper 75th percentile of the mean concentration of fecal coliform bacteria in the upper and middle basins of the Jacks Fork River is 25 col/100ml. We believe this is a valid evaluation and an appropriate target concentration.

However, we suggest that this evaluation should not lead to the assumption that all waters in these two basins are in acceptable condition. In particular, we point to the condition of water at the confluence of Storys Creek with the Jacks Fork River. Storys Creek flows into the Jacks Fork River upstream of Eminence, in the middle basin of the river. According to the study recently published by the U.S. Geological Survey (USGS)*, the upper 75th percentile of fecal coliform concentrations at the Storys Creek confluence is 540 col/100ml. *This is the highest concentration reported in the USGS report, including all points sampled within the “impaired” segment of the Jacks Fork River.* Storys Creek also had the highest median concentration reported.

These data clearly demonstrate that impacts from fecal coliform (and related contaminants) on the Jacks Fork are not limited to the lower basin of the river. This is of particular significance in view of studies that indicate fecal pathogens (including coliform) can be bound to stream sediments† and transported downstream from the source, thus complicating the accurate determination of sources.

* J. Davis, J. Richards, Assessment of Possible Sources of Microbiological Contamination and Water-Quality Characteristics of the Jacks Fork, Ozark National Scenic Riverways, Missouri – Phase II, Water-Resources Investigations Report 02-42-09, USGS, 2002.

† H. Rifai, P. Jensen, Total Maximum Daily Loads for Fecal Pathogens in Buffalo Bayou and Whiteoak Bayou, Contract No. 582-0-80121, Work Order No. 582-0-80121-01, Texas Natural Resource Conservation Commission, 2000.



Ms. Sharon Clifford
November 25, 2003



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In designing and implementing the TMDL, we urge the department to consider data and sources throughout the watershed to achieve the TMDL endpoint. Clearly, limiting attention to the "impaired" portion of the Jacks Fork River would result in obviously significant sources of contamination not being addressed. In particular, we encourage the department to consider the data reported for the Storys Creek confluence in view of our earlier comment regarding the impact of direct pipe discharges.

CROSS COUNTRY TRAIL RIDE

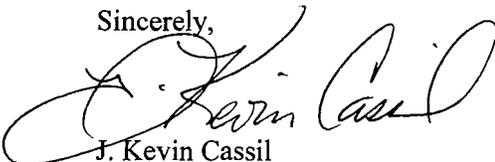
Section 9 of the document, on page 15, it states, "*Cross Country Trail Rides (CCTR) recently entered into a Settlement Agreement with the department ... to develop and implement a Stormwater Improvement Plan.*" It should be noted that CCTR has developed a Stormwater Improvement Plan, which was approved by the department in a letter from Mr. Kevin Mohammadi dated August 29, 2003. CCTR is now in the process of implementing that plan which will manage equine-related waste to prevent its contact with storm water.

In the same paragraph of the document it also states, "*CCTR also agreed to work with the department in setting a reasonable schedule for the facility to connect to the Eminence Waste Water Treatment Facility for treatment of human waste generated by trail ride participants.*" We would like to clarify that since 1979 CCTR has captured and contained all wastewater generated by trail ride participants and that all of the wastewater captured is transported to the Eminence Waste Water Treatment Facility. CCTR is working with MDNR in order to install system upgrades that will allow CCTR to pump this wastewater directly to the City of Eminence facility rather than hauling all of this wastewater. Installation of this upgrade will facilitate transfer of waste to the treatment facility, but since all wastewater is captured and treated under the existing system, no further reduction in the potential contribution of bacteria to the Jacks Fork River is possible.

We wish to note that CCTR has long been an active advocate of protecting the quality of the Jacks Fork River. CCTR is continuing to work cooperatively with the department to implement improvements that will virtually eliminate potential contribution of bacteria from this facility to the waters of the Jacks Fork River.

We appreciate the department's intent to protect the quality of the Jacks Fork River. It truly is an outstanding resource that has been enjoyed by area residents for centuries and is now enjoyed by visitors from throughout the country and around the world. Thank you again for the opportunity to comment on the draft TMDL. If you have questions or comments regarding any of the contents of this letter, please feel free to contact me at (417) 864-6444, extension 13, or at kevin@forrestergroup.com.

Sincerely,



J. Kevin Cassil
Principal

Copy to: Ray K. Forrester

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

December 17, 2003

Mr. J. Kevin Cassil
The Forrester Group
605 North Boonville Avenue
Springfield, MO 65806

Dear Mr. Cassil:

Thank you for the comment letter dated November 25, 2003, regarding the Jacks Fork River Total Maximum Daily Load. The responses below correspond to your comments in the order they were given:

1. In response to your comments regarding the discussion of on-site wastewater treatment systems, the TMDL document has been revised to include reference to inadequate treatment systems rather than just failing systems. The issue of on-site wastewater treatment is often difficult to address. At the state level, the Missouri Department of Health and Senior Services has authority over individual on-site systems. A copy of your comments is being forwarded to that agency. We often find, however, that the best solutions come from or are supported by local citizens. Participation in the Jacks Fork Watershed Committee or other local venues is one way you can ensure your concerns regarding this issue will be addressed.
2. Thank you for your comment that the evaluation and target concentration is appropriate. I also appreciate your cautions regarding assuming that all waters in the two basins are in acceptable condition. The scope of this TMDL document is necessarily limited to the impaired segment of the Jacks Fork River. However, we agree that the entire watershed merits attention. The Department of Natural Resources receives the data generated by USGS on this project and will use that data, including the data on Story Creek, for our assessment of the conditions of the state's waters.
3. Thank you for the updated information on the Settlement Agreement. The TMDL has been modified to include this information.

Integrity and excellence in all we do



Mr. J. Kevin Cassil

Page 2

4. In response to your comment and others regarding the identification of Cross Country Trail Rides specifically in the TMDL document, we have revised the document to remove that reference except in regard to the Settlement Agreement. Discussion of the Settlement Agreement provides "Reasonable Assurance" to EPA that any concerns related to the Cross Country Trail Rides property are being addressed.

Again, thank you for commenting. 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 Anne Peery of the Water Quality Section at (573) 526-1426 or at Missouri Department of Natural Resources, Water Pollution Control Program, P. O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

WATER POLLUTION CONTROL PROGRAM



Becky L. Shannon, Chief
Water Quality Section

BLS:apd

c: Missouri Dept. of Health and Senior Services



MISSOURI DEPARTMENT OF CONSERVATION

Headquarters

2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180

Telephone: 573/751-4115 ▲ Missouri Relay Center: 1-800-735-2966 (TDD)

JOHN D. HOSKINS, Director

*Happy
Holidays*

December 5, 2003

RECEIVED
DEC 08 2003
WPCP

Ms. Becky Shannon
Missouri Department of Natural Resources
Water Pollution Control Program
P.O. Box 176
Jefferson City, Missouri 65102-0176

Dear Ms. Shannon:

RE: Draft Jacks Fork River Total Maximum Daily Load

The Department has completed its review of the draft Jacks Fork River Total Maximum Daily Load (TMDL). We understand the TMDL proposes a limit for fecal coliform, which your agency reports as causing the Jacks Fork River to be impaired for the whole body contact recreation (i.e., swimming) beneficial use. Please find enclosed our comments and recommendations.

We appreciate the opportunity to comment. If you have any questions related to the enclosed comments and recommendations please notify me at 573.522.4115, Extension 3353.

Sincerely,

GENE GARDNER
POLICY COORDINATOR

GG:dcl

Enclosure

c/enc: Don Boos, Missouri Department of Natural Resources

COMMISSION

STEPHEN C. BRADFORD
Cape Girardeau

ANITA B. GORMAN
Kansas City

CYNTHIA METCALFE
St. Louis

LOWELL MOHLER
Jefferson City

COMMENTS FROM MISSOURI DEPARTMENT OF CONSERVATION
PUBLIC NOTICE
DRAFT TOTAL MAXIMUM DAILY LOAD (TMDL)
December 5, 2003

General Comments

The Department supports this proposed action to improve the water quality in the Jacks Fork River and avoid further degradation of the fish and wildlife resources within its waters. Unless otherwise specifically noted below, the Department agrees with all proposed authorization criteria as stated in the Public Notice issued October 24, 2003.

The only additional general comment we have is in reference to a sewage release from the City of Mountain View sewage treatment facility on July 4, 2001. The treatment plant had a significant release of water and sludge into Jam Up Creek in Howell County. Jam Up Creek has been dye traced to the Jacks Fork River and is a losing stream. Therefore, during the spill, sewage discharge was absorbed into the ground water. This event happened during a time when the plant was not being operated properly (reportedly due to the plant operator being hospitalized following a car accident). The Department encourages the Missouri Department of Natural Resources to assist the City of Mountain View with their proposed plans to upgrade their wastewater treatment plant, particularly in light of projected regional growth. Ensuring that Mountain View and Eminence wastewater treatment facilities are upgraded with demand will be crucial to the Jacks Fork River TMDL implementation.

Specific Comments

Page 15, Sanitary Facilities for Recreational Users

This section states that there is a gap, approximately four miles long, with no bathroom facilities between the park and the Current River. The Missouri Department of Conservation (MDC) has been contacted about the possibility of providing another public bathroom on their land in this stretch of the river. There are private campgrounds with facilities in this gap, but they might not be willing to provide toilet facilities for the public.

The Missouri Department of Conservation has briefly discussed the suggestion of positioning additional restroom facilities with the Missouri Department of Natural Resources. The Department requested additional information on the conceptualized positioning of the suggested facilities so we could respond to the "idea." The Department's initial response is that public restroom facilities in remote locations could be a very expensive proposition. There currently is no public road to the reach of river under consideration. In addition, such facilities would have to be located near the

Jacks Fork River in the floodplain. Although flood proof restrooms are available, they are quite costly and there could be some serious environmental impacts associated with the location of such a facility adjacent to the river. In addition to what would be an expensive construction project, a perpetual problem would be service, maintenance, and protection. Despite these initial misgivings, the Department remains open to additional discussions regarding this proposal.

Before the Department would consider committing to construction of such an expensive facility, information would have to be provided that indicated that the increased bacteria levels are coming from human waste, as compared to another source of waste (i.e., animal waste). If there is a need for additional public restroom facilities, the Department feels that development of any additional facilities should occur at the Department's Buttin Rock Access; this location would serve more users than one constructed downstream in a remote situation. Development of a restroom facility at Buttin Rock Access would be contingent on solving a road use dispute with an adjoining landowner and may require acquisition of additional land.

Page 16, Trail Management Practices

This section states that the Department has agreed to develop environmentally sound trail systems on their property. The trail riders established the existing trail system and some are susceptible to erosion.

The Department has developed an approach to address the environmental impacts of the existing trail system on our tract 35 within the Angeline Conservation Area. In addition to locating trails in more suitable and environmentally friendly locations, horse trail bridge sites and horse watering locations are being identified. Initial budget requests will begin the implementation process of trail repair and renovation. Due to the magnitude of the work at hand and the budget dollars required, it is anticipated it will take 3 – 5 years to complete the entire project.

In addition to the planned improvements, a monitoring and evaluation project has been developed to better determine the amount and type of horse use occurring on the area. It will also determine carrying capacity of the trail system, identify actions of cooperating agencies, and identify possible partners in trail construction and maintenance.