



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

WATER MANAGEMENT
IDEM

JUL 21 2004

REPLY TO THE ATTENTION OF:

WW-16J

JUL 21 2004

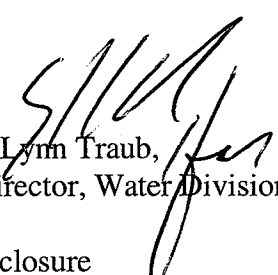
Martha Clark Mettler, Chief
Watershed Branch
IDEM
100 North Senate Ave.
P.O. Box 6015
Indianapolis, Indiana 46206-6015

Dear Ms. Mettler:

The United States Environmental Protection Agency (U.S. EPA) has conducted a complete review of the final Total Maximum Daily Load (TMDL) submittal for E. coli in the St. Joseph River (Waterbody ID #36), which is located in Elkhart and St. Joseph Counties, Indiana, including supporting documentation and information. Based on this review, U.S. EPA has determined that Indiana's TMDL for one pollutant (E. coli) for this waterbody segment meets the requirements of Section 303(d) of the Clean Water Act (CWA) and U.S. EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, by this letter, U.S. EPA hereby approves 1 TMDL, for the St. Joseph River. The statutory and regulatory requirements, and U.S. EPA's review of Indiana's compliance with each requirement, are described in the enclosed decision document.

We appreciate your hard work in this area and the submittal of the TMDL as required. If you have any questions, please contact Mr. Kevin Pierard, Chief of the Watersheds and Wetlands Branch at 312-886-4448.

Sincerely yours,


Jo Lynn Traub,
Director, Water Division

Enclosure

TMDL: St. Joseph River, Indiana
Date: 21 JUN 2004

Decision Document for the St. Joseph River, Indiana TMDL

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable. These TMDL review guidelines are not themselves regulations. They are an attempt to summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any differences between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations themselves.

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset (NHD), and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the NPDES permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

- (1) the spatial extent of the watershed in which the impaired waterbody is located;
- (2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
- (3) population characteristics, wildlife resources, and other relevant information affecting

- the characterization of the pollutant of concern and its allocation to sources;
- (4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and
- (5) an explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

Comment:

The St. Joseph River (Waterbody ID #36) is located in Elkhart and St. Joseph Counties, Indiana. The St. Joseph River is listed on Indiana's 1998 and 2002 303(d) lists for pathogens, Fish Consumption Advisory (FCA) for PCBS, and FCA-mercury. This TMDL will address pathogens, while FCA-PCBs and FCA-mercury will be addressed at a later date by a different TMDL. The impaired segment was listed originally to address the St. Joseph River in Elkhart and St. Joseph Counties, but during the development of the TMDL, Indian Department of Environmental Management (IDEM) determined that the segment is more appropriately described as approximately 27 miles of the St. Joseph River in Indiana from the City of Elkhart in Elkhart County to the Michigan-Indiana state line in St. Joseph County (Page 1 of the final TMDL submittal). This section of the St. Joseph River was placed on the 303(d) list due to impairments of recreational uses as indicated by the elevated levels of *E. coli* bacteria. The Pokagon Band of Potowatomi owns fee-simple property in the St. Joseph River TMDL Watershed but this land is not currently held in federal trust. Therefore, State of Indiana water quality standards currently apply to this land. At such time as the fee-simple land owned by the Pokagon Band is placed into federal trust, State water quality standards will no longer apply, and the TMDL will be amended as appropriate. This TMDL approval does not apply to Indian country.

Historical data collected by the Indiana Department of Environmental Management (IDEM) and the Interagency *E. coli* Task Force showed elevated levels of *E. coli* for St. Joseph River in 1997 (Page 1 and 2 of the final TMDL submittal). In 2000, IDEM performed two intensive surveys and data showed violations of the single-day standard for *E. coli* from samples collected at fifteen of the nineteen sites that were sampled during Indiana's recreation season of April 1st-October 31st. Of the fifteen sites that violated the single-day standard, eight of these sites violated the geometric mean standard. Sampling between the years 2000-2003 in St. Joseph River during the recreational and non-recreational seasons by the cities of Elkhart, Mishawaka, and South Bend ("the Three Cities") documented violations of Indiana's single-day standard at twelve sites of the eighteen sites sampled during the recreational season. Of these twelve sites, ten sites violated the geometric mean standard (Page 1 and 2 of the final TMDL submittal).

Additionally, twelve sites were sampled by the Three Cities during Indiana's non-recreational season, November 1st-March 31st. Eight of these twelve sites indicated elevated *E. coli* levels, however these elevated levels did not violate Indiana's WQS because Indiana does not have a non-recreational season WQS. Michigan, however, has a non-recreational season WQS,

therefore IDEM is responsible for ensuring that non-recreational season flows from Indiana to Michigan will not exceed Michigan's WQS for E. coli in the St. Joseph River.

The final TMDL submittal states that probable sources of E. coli to the impaired segment include Combined Sewer Overflows (CSOs), point source discharges, unregulated storm water discharges, agricultural inputs, and to a smaller extent, illicit connections. Christina Creek, Elkhart River, Baugo Creek, Eller Ditch, Willow Creek, and Juday Creek are tributaries to the St. Joseph River, and are also considered contributing sources of E. coli. Although separate TMDLs were not developed for the tributaries, IDEM has planned them for the future (2005) (Page 13 of the final TMDL submittal), and the implementation activities for the St. Joseph's River will address reductions in loads in these waterbodies (See #10 below). To date, IDEM has identified 41 permitted point sources to the St. Joseph River Watershed in Indiana (See #5 below). The TMDL was prioritized for development between the years 2010-2015, but IDEM decided to develop this TMDL in cooperation with the Michigan Department of Environmental Quality (MDEQ) TMDL being developed for the Michigan portion of the St. Joseph River, and therefore the TMDL was first submitted to the EPA on February 23, 2004. IDEM requested that the TMDL decision be delayed on March 30, 2004, and subsequently submitted a revised TMDL on June 14, 2004 (See #12 below).

The land use is varied in the watershed, although it is generally dominated by urban and agricultural uses (Page 4 and Figure 3 of the final TMDL submittal). Loads in the watershed are a mixture of both point and non-point land use, and from rural and urban land uses. Because this TMDL uses the phased approach, the TMDL may be amended as new information on the watershed is developed, to better account for contributing sources of the pollutant and to determine where load reductions in the watershed are most appropriate.

EPA finds the State's approach acceptable and it meets the requirements of this section.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy. (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of

the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

Comment:

The TMDL for Indiana's portion of the St. Joseph River protects the designated use for total body contact recreation from April 1st to October 31st. As defined in the IDEM water quality standards 327 IAC 2-1.5-8(e)(2), Microorganisms: "E. coli bacteria, using membrane filter (MF) count, shall not exceed one hundred twenty-five (125) per one hundred (100) milliliters as a geometric mean based on not less than five (5) samples equally spaced over a thirty (30) day period nor exceed two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period."

Because this TMDL was developed in conjunction with the Michigan Department of Environmental Quality (MDEQ), the Michigan WQS was considered during the review of this TMDL. As defined in the Michigan Department of Environmental Quality water quality standards (R.323.1062) Rule 62(1), Microorganisms: "All waters of the state protected for total body contact recreation shall not contain more than 130 Escherichia coli (E. coli) per 100 milliliters (ml.), as a 30 -day geometric mean. Compliance shall be based on the geometric mean of all individual samples taken during 5 or more sample events representatively spread over a 30-day period. Each sampling event shall consist of 3 or more samples taken at representative locations within a defined sampling area. At no time shall the waters of the state protected for total body contact recreation contain more than a maximum of 300 E. coli per 100 ml. Compliance shall be based on the geometric mean of 3 or more samples taken during the same sampling event at representative locations within a defined sampling area." R 323.1062 states that: "All waters of the state protected for partial body contact recreation shall not contain more than a maximum of 1,000 E. coli per 100 milliliters . Compliance shall be based on the geometric mean of 3 or more samples, taken during the same sampling event, at representative locations within a defined sampling area."

Although Michigan's and Indiana's WQS slightly differ due to the rounding of significant figures, both are based on 8 illnesses per 1000 people. While each State has different numeric WQS for E. coli, both are based on the same illness rate. Therefore, each State may use its respective WQS target for the St. Joseph River TMDL. Furthermore, since Indiana is the upstream State and has the more stringent WQS of 125 E. coli/100 ml, Indiana could not violate Michigan's WQS of 130 E. coli/100 ml during the recreational season.

Based on data collected by the Three Cities, Indiana has been in violation of Michigan's non-recreational season WQS, because Indiana NPDES dischargers are not currently required to disinfect their effluent during their non-recreational season. Per CFR 122.4(d), no permit shall be issued "when the imposition of condition can not ensure compliance with the applicable water quality standards of all affected states." IDEM will be proposing permit conditions to address this situation in the near future (Page 11-13 of the final TMDL submittal).

EPA finds the State's approach acceptable and it meets the requirements of this section.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account *critical conditions* for stream flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable *critical conditions* and describe their approach to estimating both point and nonpoint source loadings under such *critical conditions*. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

Comment:

For most pollutants, TMDLs are expressed on a mass loading basis (e.g., pounds per day). For E. coli, however, mass is not necessarily an appropriate measure, and EPA allows pathogen TMDLs to be expressed in terms of organism counts (or resulting concentration). This pathogen TMDL is concentration based consistent with Indiana water quality standard 327 IAC 2-1.5-8(e)(2), and the loading capacity is equal to the water quality standard of 125 E. coli per 100 ml.

Testing results in the St. Joseph's River watershed indicated WQS exceedences for E. coli in both states. As discussed under "Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking" section of this document, Indiana documented WQS exceedences for E. coli as a thirty-day geometric mean or single-day standard at most of the stations sampled. Historical data collected by IDEM and the Interagency E. coli Task Force showed elevated levels of E. coli for St. Joseph River in 1997. In 2000, IDEM performed two intensive surveys and data showed violations of the single-day standard for E. coli from samples collected at fifteen of the nineteen sites that were sampled during Indiana's recreation season of April 1st-October 31st. Of the fifteen sites that violated the single-day standard, eight of these sites violated the geometric

mean standard. Sampling between the years 2000-2003 in St. Joseph River during the recreational and non-recreational seasons at the Three Cities documented violations of Indiana's single-day standard at twelve sites of the eighteen sites sampled during the recreational season. Of these twelve sites, ten sites violated the geometric mean standard.

Additionally, twelve sites were sampled during Indiana's non-recreational season, November 1st-March 31st. Eight of these twelve sites indicated elevated E. coli levels, however these levels did not violate Indiana's WQS because Indiana does not have a non-recreational season WQS. Michigan, however, has a non-recreational season WQS, therefore IDEM is responsible for ensuring that non-recreational season flows from Indiana to Michigan will not exceed Michigan's WQS for E. coli in the St. Joseph River.

IDEM's pathogen TMDL approach is based upon the premise that all discharges (point and non-point) must meet the WQS when entering the waterbody. If all sources are meeting the WQS at discharge, then the waterbody will by definition meet the WQS and the designated uses (upstream loads will be addressed by separate TMDLs for the upstream segments, if needed). IDEM also performed a load derivative curve analysis on the St. Joseph River to further investigate potential sources (Linkage Analysis and E. coli Load Derivative Curves: Page 6 of the TMDL). A load derivative curve uses cumulative flow data plotted against water quality data (in this case, E. coli) at the various sampling points in the watershed (Attachment C of the TMDL). The plots show under what flow conditions the water quality exceedences occur. Those exceedences at the right side of the graph occur during low flow conditions (such as septic systems and illicit sewer hook-ups) and exceedences on the left side of the graphs occur during higher flow events (CSOs, agricultural run-off). IDEM has reviewed these graphs, and believes that they indicate that the sources are from both wet-weather and dry weather sources. The EPA agrees with this review. Using the load derivative curve approach allows IDEM to determine which implementation practices will result in the most effective load reductions, and target the proper flow regime. For example, if loads are significant during storm events, implementation efforts can be targets at those BMPs that will most effectively reduce storm water run-off. This allows for a more efficient implementation effort. This TMDL is concentration-based, and ties directly into Indiana's water quality standard for E. coli. The target for this TMDL is the water quality standard, and therefore meeting this loading capacity will result in water quality standards being attained.

This cost-effective approach that IDEM has developed is an alternative to the need for modeling of the watershed, while still addressing the reductions necessary to meet WQS for E. coli bacteria. An additional strength of the TMDL analysis is the shared responsibility for E. coli reductions among various municipalities in the TMDL reach, which encourages implementation efforts within the watershed. In addition, the TMDL approach IDEM has developed allowed the incorporation of very recent data (2003 and very early 2003) to be used during the development of this TMDL, giving a better account of current E. coli exceedences in the watershed to determine where load reductions are most appropriate now, based upon the information available.

Weaknesses of the TMDL analysis are that NPS load allocations were not assigned to specific sources within the watershed, and that the identified sources of E. coli were assumed based on data collected in the watershed, rather than more precisely determined based upon a detailed monitoring and sampling effort. Additionally, specific reductions were not quantified. However, EPA believes the weaknesses discussed in this TMDL are outweighed by the strengths of the TMDL approach and is appropriate based upon the information available. Because this TMDL uses the phased approach, the TMDL may be amended as new information on the watershed is developed, to better account for contributing sources of the pollutant and to determine where load reductions in the watershed are most appropriate.

For this TMDL, the critical period for total body contact recreation in St Joseph River is April 1st -October 31st. E. coli sources to the St. Joseph River arise from a mixture of wet and dry weather-driven conditions, and there is no single critical condition that is protective for all other conditions. Loadings occur from both dry weather sources (such as illicit connections, conventional point sources) and wet weather sources (such as CSOs, agricultural run-off, storm water), and therefore the TMDL was not developed for any particular loading condition. There is no critical condition for flow, because the E. coli limit must be met under all flow conditions in this TMDL. More importantly, since this TMDL is based on Indiana's concentration-based water quality standard 327 IAC 2-1.5-8(e)(2) of 125 E. coli per 100 ml, water quality standards will be met regardless of flow conditions during the recreational season.

EPA agrees with the concentration-based approach for pathogen TMDLs, and the overall approach is consistent with EPA's *Protocol for Developing Pathogen TMDLs* (EPA 841-R-00-002). The approach used by Indiana for the St. Joseph's River meets the requirements of 40 CFR 130.2(1): "TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures."

EPA finds the State's approach acceptable and it meets the requirements of this section.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

Comment:

Because the TMDL is concentration based, the load allocation is equal to 125 E. coli per 100 ml, which is the water quality standard. IDEM has identified unregulated storm water discharges and illicit sewer connections as possible sources of E. coli, and established a load allocation of 125 E. coli per 100 milliliters, which applies to all nonpoint sources. IDEM assigns the same LA to all source categories - 125 E. coli per 100 ml. As discussed above, if all sources meet the 125 E. coli per 100 ml allocation, then the waterbody will meet the WQS of 125 E. coli per 100 ml.

IDEM has determined that the best way to achieve the WQS is to apportion relative responsibility among the various units of government based upon their respective jurisdiction over lands. The government entities with the largest percent land area are Penn Township (12.3%), City of South Bend (9.4%), Harrison Township (8.5%), City of Granger (6.9%), and Clinton Township (6.2%) (Table 2 and Figures 4 and 6 of the TMDL). The remaining percentage is shared among 28 townships, cities, and villages. In addition to these areas, a small portion of the watershed is comprised of land in Indiana that directly drains into Michigan. Indiana is accounting for the contributions made by this direct drainage in this TMDL submittal for the Indiana portion of the St. Joseph River.

Each of these entities will use a variety of tools to achieve reductions. This includes both regulatory requirements (Phase II storm water permits) as well as non-regulatory voluntary efforts described in Sect. 8 and 10 below. By assigning responsibility to each entity to meet the same loading capacity (125 E. coli per 100 ml), all communities/government entities are required to meet the same water quality target. IDEM's approach to look at loading capacity on a watershed scale incorporates all potential E. coli sources into the reduction effort and fosters the implementation efforts described below. The EPA believes these allocations are appropriate given the amount of data for the watershed.

EPA finds the State's approach acceptable and it meets the requirements of this section.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permittees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

Comment:

IDEM has determined that the waste load allocation is 125 E. coli per 100 ml, which is the WQS for E. coli. The sanitary waste discharge limit for point sources is also set by IDEM rule to be the WQS (327 IAC 2-1.5-8(e)(2)). For each point source, IDEM is assigning a WLA of 125 E. coli per 100 ml.

There are a total of 41 permitted point source dischargers in the listed reach (Table 1 and Page 5 of the final TMDL submittal). Of these 41, 16 are not permitted to discharge sanitary waste (i.e., non-contact cooling water, etc.) and therefore no WLA is needed. 4 of the remaining 25 are for the land application of sludge. Land application permits issued by IDEM only allow application where the sludge will not cause or contribute to a violation of WQS. Therefore, IDEM does not believe these permits to be a significant source of E. coli to the St. Joseph River. 3 of the remaining 21 are storm water only dischargers, and the TMDL submittal explains why none of the three are considered significant sources of E. coli to the St. Joseph River.

Of the remaining 18 permits, 8 have total residual chlorine limits in their permits. IDEM explained that these dischargers potentially have sanitary connections in their discharges, since they are smaller dischargers, and are therefore required to treat their discharges with chlorine. IDEM has assumed that as long as the chlorine levels were high enough, the pathogens would be deactivated and the discharge would be in compliance with the WQS. However, this was based upon the old WQS of fecal coliform, not E. coli. IDEM will be proposing new permits with E. coli requirements when the permits come up for renewal (Page 11 of the final TMDL submittal).

The remaining 10 facilities have E. coli limits in their permits (Figure 5 of the TMDL). 5 of these permits also address CSO discharges (Page 6 and Table 1 of the TMDL). Under 327 IAC 3-4-3, all permits must not allow a discharge that will cause or contribute to a violation of a WQS. The WLA for all permitted facilities potentially discharging E. coli (both individual and general permits) is the water quality standard of 125 E. coli per 100 ml. No permit reductions are needed for these facilities, as the individual permit dischargers are already meeting the WLAs. The WLA is the WQS of 125 E. coli/100ml for the CSO discharges, as well. In the June 9, 2004 revised TMDL submitted by IDEM, IDEM stated that the TMDL may be modified if new information is submitted, or the designated use of the St. Joseph River is revised in accordance with the applicable requirements of state and federal law.

The load derivative curves show that the WQS exceedences occur not only during the recreational season of April 1 to October 1, but during the non-recreational season as well. Although Indiana does not have a WQS for E. coli for the non-recreational season, Michigan does have a WQS for the non-recreational season of 1000 E. coli per 100 ml (R. 323.1062). Because Michigan is the downstream state, the discharge from Indiana cannot cause or contribute to a water quality exceedence in Michigan (40 CFR 122.4). Therefore, IDEM will be seeking to propose year-round E. coli limits and a monitoring component in the NPDES permits in accordance with 327 IAC 5-2-11.3(a) when the permits are renewed (Page 9 of the final TMDL submittal).

EPA finds the State's approach acceptable and it meets the requirements of this section.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety (MOS) to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). EPA's 1991 TMDL Guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

Comment:

Margins of safety can be either implicit (i.e., incorporated into the TMDL analysis through conservative assumptions), or explicit (i.e., expressed in the TMDL as a portion of the loadings). The St. Joseph River TMDL for pathogens contains an implicit margin of safety because no rate of decay was used. Since pathogenic organisms have a more limited capability of surviving outside their hosts, a rate of decay would normally be used. However, it was determined by the State that it is more conservative to use the water quality standard of 125 E. coli per 100 ml, and not to apply a rate of decay which could result in a discharge limit greater than the water quality standard. The above assumption regarding not using a rate of decay is a conservative assumption that accounts for an implicit margin of safety.

As stated in *EPA's Protocol for Developing Pathogen TMDLs* (EPA 841-R-00-002), many different factors affect the survival of pathogens, including the physical condition of the water. These factors include, but are not limited to sunlight, temperature, salinity, and nutrient deficiencies. These factors vary depending on the environmental condition/circumstances of the water, and therefore it would be difficult to assert that the rate of decay caused by any given combination and degree of these environmental variables were sufficient enough to meet the WQS of 125 E. coli per 100 ml. This is why it is more conservative to apply the State's water quality standard of 125 E. coli per 100 ml as the margin of safety, because this standard must be met at all times under all environmental conditions.

EPA finds the State's approach acceptable and it meets the requirements of this section.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

Comment:

The TMDL addresses the seasonal variation by setting load allocations for the months of April through October to protect for total body contact as set out in Indiana Rule 327 IAC 2-1.5-

8(e)(2). There is no total body contact during the remainder of the year primarily due to cold weather. Although the TMDL specifically applies to the recreational season of April to October, the implementation efforts will likely result in load reductions year-round. Permits will be issued to ensure that the Indiana discharges meet the Michigan non-recreational season WQS for E. coli (Page 9 of the final TMDL submittal). Since this is a concentration based TMDL the water quality standard of 125 E. coli per 100 ml must be met at all river flows during the applicable seasons.

EPA finds the State's approach acceptable and it meets the requirements of this section.

8. Reasonable Assurances

When a TMDL is developed for waters impaired by point sources only, the issuance of a National Pollutant Discharge Elimination System (NPDES) permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 TMDL Guidance also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

Comment:

The TMDL identifies CSO discharges, point sources discharges, unregulated storm water discharges, agricultural inputs, and to a smaller extent, illicit connections as sources of E. coli in the St. Joseph River. Reasonable assurance for the point source dischargers is demonstrated by the WWTP controls for meeting their current NPDES limits for E. coli, as well as the future changes to those permits currently monitoring residual chlorine, to monitor for E. coli.

Reasonable assurance is demonstrated for the CSO discharges by Long Term Control Plans (LTCPs) required for five municipalities that have CSOs in the St. Joseph Watershed. These plans will be considered final once approved by IDEM and USEPA. By 2006, IDEM anticipates that all LTCPs for the affected cities in the TMDL watershed will be approved. Implementation

of LTCPs will assist in the attainment of WQS during wet-weather conditions for the St. Joseph River. In addition, MS4 permits are being issued for Indiana to address storm water impacts. Once implemented, they will improve the water quality of the St. Joseph River. As stated in the revised TMDL submittal dated June 9, 2004, the LTCPs may provide information that supports a use attainability analysis (UAA). The TMDL and associated allocations may be revised if the UAA results in a change in the designated uses and associated criteria if the applicable requirements of state and federal law are met (Page 11 of the final TMDL submittal).

As discussed above, to assist Indiana in meeting Michigan's non-recreational season E. coli WQS in the St. Joseph River, IDEM proposes that year-round E. coli limits will be applied to dischargers in accordance with 327 IAC 5-2-11.3(a) when the permits are renewed. IDEM also proposes that E. coli limits and a monitoring component is added to those permits that have only total residual chlorine limits when the permits are renewed (Page 11 of the final TMDL submittal).

For non-point load reductions, completed and on-going watershed projects have been performed on the St. Joseph River and its tributaries, including education, cost-sharing, and watershed management plan development to reduce the E. coli impairment. These efforts were led by a variety of groups, including the St. Joseph River Basin Commission, the St. Joseph County Drainage Board, and the Michiana Area Council of Governments (MACOG). The Elkhart County Commissioners sponsored a project for water quality monitoring and engineering, and this information will be used to prioritize watersheds in Elkhart County based on their E. coli levels. A watershed management plan will be developed for the watershed with the highest E. coli levels.

Three watershed projects that affected the entire St. Joseph River Basin include an education project by MACOG that began in 2001 educated builders and developers on non-point source impacts to the watershed, as well as the importance of maintaining on-site sewage disposal. The second project was sponsored by the City of Elkhart and established a watershed protection initiative between Elkhart, Mishawaka, and South Bend (The Three Cities) for the St. Joseph River. Water-quality monitoring and the development of a water-quality model to characterize point-source and non-point sources of E. coli was included. The third project, which started in 2002, is sponsored by Friends of the St. Joe River Association and was awarded by MDEQ. The goal of this Section 319 project is to develop a watershed management plan, list problems in the watershed and develop best management plans (BMPs) that will link the TMDL to corrective actions. Other activities include drainage basin characterization, and the creation of a website to share information.

In addition, TMDLs are scheduled for six tributaries of the St. Joseph River, scheduled to be completed in 2005. The development and implementation of these six TMDLs will allow further identification and reduction of E. coli within these tributaries, which will subsequently improve the water quality of the St. Joseph River.

EPA finds that the state's approach acceptable.

9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 document, *Guidance for Water Quality-Based Decisions: The TMDL Process* (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

Comment:

Monitoring will be performed by both IDEM and MDEQ on the St. Joseph River, and the results shared. Future monitoring will occur as part of the five-year basin monitoring, and/or once the TMDL is implemented. When results indicate that the waterbody may be meeting water quality standards, then sampling will be conducted to determine if the loading capacity is 125 E. coli per 100 ml in Indiana and 130 E. coli/100 ml in Michigan. If results indicate that the WQS has not been achieved, then IDEM will reassess the TMDL to determine more specifically the contributing sources of E. coli to the impaired watershed. Because this TMDL uses the phased approach, IDEM may amend the TMDL plan as new information on the watershed is developed, to better account for contributing sources of the pollutant and to determine where load reductions in the watershed are most appropriate.

In addition, the Three Cities collect data every year, and IDEM will request the data for each year that IDEM competes additional E. coli monitoring. The Hoosier River Watch also collects data along the St. Joseph River and tributaries. Although this data is fecal coliform data, IDEM believes it serves as useful background information on general watershed loadings. Since this is a joint project with MDEQ, monitoring performed by MDEQ on their portion of the river will be shared with IDEM, and used to determine compliance with the WQS. Given that the implementation efforts will take several years to implement and produce results, the 5-year basin monitoring and other monitoring efforts are reasonable.

EPA finds that the state's approach is acceptable.

10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

Comment:

This TMDL does not contain a formal implementation plan. EPA is not required to and does not approve TMDL implementation plans. However, IDEM did identify some implementation activities that will work toward meeting the water quality standard for pathogens. As discussed under reasonable assurance (#8 above), the NPDES permits will be revised as appropriate to include E coli monitoring and non-recreational season limits, for the CSO communities the LTCPs are expected to be approved by 2006, MS4 permits are being issued, and numerous watershed projects have been completed or are on-going in the St. Joseph River Watershed.

EPA finds that the state's approach is acceptable.

11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

Comment:

IDEM has developed a "TMDL Strategy (Guidelines for TMDL Development)" (IDEM, 2003) to lay out the process for TMDL development. In this document, IDEM explains how stakeholders in a watershed are notified before TMDL development. On February 21, 2003, IDEM sent out a mass mailing to over 1000 stakeholders in the watershed. IDEM and MDEQ held initial joint meetings for stakeholders on March 11, 2003 and March 12, 2003, respectively in Berrien Center, MI, and Mishawaka, Indiana. The purpose of the meetings was to provide an opportunity for public comment and to inform the public regarding the TMDL process. A second round of stakeholder meetings were held in Berrien Center, MI on October 1, 2003 and in Mishawaka, Indiana on October 2, 2003. The TMDL was public noticed from September 22, 2003 to October 22, 2003, and a copy of the public notice and availability of the draft TMDL for review was sent out to the stakeholders on September 5, 2003. Copies of the draft TMDL were distributed at the stakeholder meetings and both IDEM and MDEQ posted the draft TMDL on their respective websites, and their respective State Calendars. IDEM also sent out a media advisory. Comments on the draft TMDL were received from 4 commentors, and copies of the letters were included in the TMDL submittal. IDEM responded to each of these comments and provided a copy of its response to these comments to EPA. EPA has determined that the

comments were adequately addressed by the State.

EPA finds the State's approach acceptable and it meets the requirements of this section.

12. Submittal Letter

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a *technical review* or *final review and approval*. Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

Comment:

The USEPA received the formal Submittal of the final pathogen TMDL for St. Joseph River in Indiana on February 25, 2004, along with a submittal letter from Martha Clark Mettler, Chief of the Watershed Branch, Office of Water Quality, dated February 23, 2004. In the submittal letter, IDEM stated that "The TMDL accompanying this letter is the final TMDL submission for the State of Indiana for the St. Joseph River 303(d) list ID# 36. This TMDL is being submitted per the requirement under Section 303(d) of the Clean Water Act and 40 CFR 130." The submittal letter included the name and location of the waterbody and the pollutant of concern. The letter states that St. Joseph River was identified as an impaired waterbody due to E. coli exceedences of Indiana Water Quality Standards and was listed on Indiana's 303(d) list. Indiana does not include a separate priority ranking, however, it prioritizes and schedules waters based on its five-year rotating watershed assessment approach.

On March 30, 2004, IDEM requested that the EPA briefly delay its review of the St. Joseph River TMDL, while IDEM held further discussions with stakeholders (e-mail from Martha Clark Mettler dated March 30, 2004). On June 14, 2004, EPA received a revised TMDL from IDEM, which stated that this document should supersede the previous submittal (Revised St. Joseph River TMDL from Martha Clark Mettler, dated June 9, 2004). This is the final version of the TMDL which this decision document is based upon.

EPA finds the State's approach acceptable and it meets the requirements of this section.

13. Conclusion:

After a full and complete review, EPA finds that the TMDL for St. Joseph River, Indiana (WB# 36), satisfies all of the elements of an approvable TMDL. This approval is for 1 waterbody segment impaired by E. coli for a total of 1 TMDL addressing 1 impairment.