



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SEP 20 2010

REPLY TO THE ATTENTION OF:

WW-16J

Marylou Renshaw, Branch Chief
Office of Water Quality/Watershed Management Planning
100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015

Dear Ms. Renshaw:

The U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Loads (TMDLs) for the Galena River watershed, including support documentation and follow up information. The Galena River watershed is located in northern Indiana in La Porte and St. Joseph Counties. The TMDLs address the Aquatic Recreation Use impairment due to excessive *E. coli*.

EPA has determined that the Galena River watershed TMDLs meet the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations set forth at 40 C.F.R. Part 130. Therefore, EPA approves Indiana's eight TMDLs, addressing excess *E. coli*. The statutory and regulatory requirements, and EPA's review of Indiana's compliance with each requirement, are described in the enclosed decision document.

We wish to acknowledge Indiana's efforts in submitting this TMDL and look forward to future TMDL submissions by the State of Indiana. If you have any questions, please contact Mr. Peter Swenson, Chief of the Watersheds and Wetlands Branch, at 312-886-0236.

Sincerely,

A handwritten signature in black ink, appearing to read "Tinka G. Hyde", with a long horizontal line extending to the right.

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Andrew Pelloso, IDEM
Selena Medrano, IDEM

TMDL: Galena River Watershed TMDL, La Porte and St. Joseph Counties, IN

Date: September 17, 2010

DECISION DOCUMENT FOR THE GALENA RIVER WATERSHED, INDIANA *E. COLI* 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:

Location Description/Spatial Extent:

The Galena River watershed (approximately 46 square miles) is located in northwestern Indiana adjacent to the Indiana and Michigan state border, in La Porte (approx. 94% of the watershed area) and St. Joseph counties (approx. 6% of the watershed area). The Galena River watershed is a part of the larger Little Calumet-Galien watershed basin (HUC 04040001). Waters in the Galena River flow northward toward the Michigan state line. At the state line Galena River changes names from the Galena River to the Galien River on the Michigan side of the border. The Galena River TMDL addresses approximately 77-miles of impaired streams for *E. coli*.

Land Use:

Land use information was compiled by the Indiana Department of Environmental Management (IDEM) from the USGS Gap Analysis Program (GAP). The data source for the land use information was a 1992 GAP data set that identified and mapped different land use categories. In 1992, the Galena River watershed was composed of 40% agriculture, 40% forest, 14% wetland, 1% water, 1% urban, and 3% as other land use. The 1992 GAP land use data set was compared by IDEM to a land use assessment from the 1970s. The agricultural land use in the Galena River watershed decreased from the 1970s measurement (66%) to the 1992 measurement (40%), forest land use increased from the 1970s measurement (32%) to the 1992 measurement (40%), and wetlands land use increased from the 1970s measurement (< 1%) to the 1992 measurement (14%). IDEM reported that the Galena River watershed was still primarily of agricultural and forested land uses on their visits to the watershed for the 2008 sampling efforts.

Problem Identification:

IDEM completed a water quality sampling event in the Galena River watershed in 2000 (page 1 of the TMDL). In 2002, a segment of the Galena River near Warrick Ditch was added to the 303(d) list for an *E. coli* exceedance. In 2008, IDEM completed additional sampling in the Galena River watershed and found *E. coli* water quality standard violations at 8 of 9 sampling sites (page 2 of the TMDL). The 2008 IDEM sampling efforts identified additional segments of the Galena River watershed that exceeded the water quality standards for *E. coli*. The *E. coli* water quality standards are discussed in greater depth on pages 5 and 6 of this decision document.

Segment INC01A5_T1071 was listed on the 2008 303(d) list. This segment was reassessed in 2009 and IDEM determined that INC01A5_T1071 was representative of more than one AUID, and therefore associated this segment with more than one AUID in Table 1. The 8 segments from the 2008 water quality monitoring efforts add approximately 77 miles of impaired streams,

including segments of Spring Creek, and unnamed tributaries to the Galena River to the Galena River watershed TMDL. The 303(d) listed segments from the 2008 water quality monitoring efforts, which are impaired by elevated levels of *E. coli* during the recreational season, are identified in Table 1 below.

Table 1: Impaired Assessment Units in the Galena River Watershed, Indiana

Assessment Unit Name	AUID	Pollutant	Miles	12-Digit HUC	Sample Site #
Spring Creek - Unnamed Tributary	INC0124_T1002**	<i>E. coli</i>	0.92	040400010204	9
Spring Creek	INC0124_T1004**	<i>E. coli</i>	7.07	040400010204	8
Galena River	INC0125_01** (#)	<i>E. coli</i>	1.70	040400010205	1,2,3
Galena River	INC0125_02** (#)	<i>E. coli</i>	3.27	040400010205	3,4
Galena River	INC0125_03**	<i>E. coli</i>	0.76	040400010205	7
Galena River Tributary	INC0125_T1001**	<i>E. coli</i>	1.88	040400010205	1
Galena River - Unnamed Tributary	INC0125_T1002**	<i>E. coli</i>	0.75	040400010205	2
Galena River - Unnamed Tributary	INC0125_T1008**	<i>E. coli</i>	1.97	040400010205	5

Note: Sample Site # 6 did not violate the *E. coli* water quality standard

(#) - Formerly INC01A5_T1071 on IDEM's 2008 303(d) List

** - Newly Identified Impaired Segments

Priority Ranking:

The Galena River watershed TMDL was prioritized to be completed at this time based on IDEM's basin rotation water quality monitoring schedule. IDEM utilizes a basin rotation water quality monitoring schedule unless there is a significant reason to deviate from the schedule. Deviations can lead to water bodies being upgraded or downgraded in priority depending on: the specified designated use and whether water quality standards are being met, the magnitude of the impairment, deviations to allow an appropriate amount of time for implementation practices to take hold, and instances where there is no water quality guidance available or guidance is currently being developed.

Pollutant of Concern:

In this TMDL, IDEM identified 8 segments of the Galena River watershed for violations of *E. coli* water quality standards.

Source Identification (point and nonpoint sources):

Point Source Identification: The potential point sources to the Galena River watershed are:

National Pollutant Discharge Elimination System (NPDES) permits - IDEM identified three NPDES permit holders (the ITRCC Travel Plaza 3 WWTP, the La Lumiere School, and the Woodberry Park LLC, Mobile Home Park) in the Galena River watershed (see Table 2 below). All three NPDES permitted facilities have *E. coli* limits and *E. coli* monitoring plans included in their current permits.

Table 2: NPDES Permits in the Galena River Watershed

Permit Number	Facility Name	Receiving Waters
IN0020931	ITRCC Travel Plaza 3 WWTP (ITR Concession Company)	Hog Lake
IN0039535	Woodberry Park, LLC (Pioneer Village MHP)	Galena River
IN0036803	La Lumiere School, Inc	Galena River via unnamed tributary
INR04107	La Porte County	Various
IN0R0041	St. Joseph County	Various

Municipal Separate Storm Sewer Systems (MS4) – There are two MS4 communities in the Galena River watershed, the La Porte County MS4 community (INR04107) and the St. Joseph County MS4 community (IN0R0041). Both of these MS4 systems are permitted by the state of Indiana but their MS4 permits have not been implemented. IDEM stated that once the illicit discharge surveys for each MS4 community are completed, the MS4 permits for each community will be implemented.

Combined Sewer Overflow (CSO) - There are no CSO communities in the Galena River watershed.

Concentration Animal Feeding Operations (CAFO) – There are no CAFO facilities in the Galena River watershed.

Nonpoint Source Identification: The potential nonpoint sources to the Galena River watershed are:

Wildlife - Deer, geese, ducks, raccoons, turkeys, and other animals can contribute *E. coli* loads to the Galena River watershed.

Septic systems - Septic systems do not discharge directly into a waterbody, but their effluents can leach into groundwater or pond at the surface where they can be washed into surface waters via stormwater runoff events. Failing septic systems are a potential source of *E. coli* in the watershed (page 4 of the TMDL). Both La Porte and St. Joseph Counties have septic system permitting programs in place.

Small livestock operations - Smaller animal facilities may add *E. coli* to surface waters via wastewater from the facilities, near-stream pastures, manure spreading onto fields, and livestock with access to stream environments. Mid-sized animal facilities are regulated by IDEM as Confined Feeding Operations (CFO), which are required to have no discharge to waters of the State.

Agricultural Runoff – Run-off from agricultural lands can contain significant amounts of *E. coli*. Manure spreading on fields is often a source, and can be exacerbated by tile drainage lines, which channelize the flow and reduce the time available for bacteria to die-off.

Urban runoff – Urban stormwater can contain *E. coli*, often from wildlife or pet waste washing into the systems.

Future Growth:

IDEM did not provide information regarding future growth in the Galena River watershed. Therefore, IDEM did not assign any portion of the loading capacity for *E. coli* allocations for future growth in the watershed.

The U.S. EPA finds that the TMDL document submitted by IDEM satisfies the requirements of the first criterion.

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:

Designated Uses:

The designated uses for the waterbodies in the Galena River watershed are for total body contact recreation use during the recreational season, April 1st through October 31st of the calendar year, pursuant to 327 IAC 2-1.5-8(e) (3) (page 3 of the TMDL).

Standards:

The total body contact recreational use *E. coli* water quality standard (WQS) for all waters in the Great Lakes system are as follows:

(3) For full body contact recreational uses, *E. coli* bacteria shall not exceed the following:

(A) 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.

(B) Two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period, except that in cases where there are at least ten (10) samples at a given site, up to ten percent (10%) of the samples may exceed two hundred thirty-five (235) cfu or MPN per one hundred (100) milliliters where:

(i) the *E. coli* exceedances are incidental and attributable solely to *E. coli* resulting from the discharge of treated wastewater from a wastewater treatment plant as defined at IC 13-11-2-258; and

(ii) the criterion in clause (A) is met. However, a single sample shall be used for making beach notification and closure decisions.

(Indiana Administrative Code 327 IAC 2-1.5-8(e)(3))

Target:

The Galena River Watershed TMDL *E. coli* target is: from April 1st through October 31st *E. coli* shall not exceed **125 cfu/100 mL** as a geometric mean based on not less than 5 samples equally spaced over a 30-day period.

The Galena River and related tributaries flow into Michigan, where the river is renamed the Galien River. Under the Clean Water Act, states are required to ensure that discharges do not impair downstream waters. Michigan has a non-recreational season WQS for *E. coli*, therefore IDEM is responsible for ensuring that the non-recreational seasonal flows from Indiana to Michigan will not exceed Michigan's WQS for *E. coli* in the Galien River.

The U.S. EPA finds that the TMDL document submitted by IDEM satisfies the requirements of the second criterion.

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:

IDEM has determined that the loading capacity (page 8 of the TMDL) for *E. coli* for the impaired waterbodies in the Galena River watershed is the *E. coli* water quality standard of **125 cfu/100 ml** (geometric mean of 5 samples equally spaced over a 30 day period). IDEM believes the geometric mean portion of the WQS provides the best overall characterization of the status of the watershed. The U.S. EPA agrees with this, as stated in the preamble of “The Water Quality Standards for Coastal and Great Lakes Recreation Waters Final Rule” (69 FR 67218-67243, November 16, 2004) on page 67224 “...the geometric mean is the more relevant value for ensuring that appropriate actions are taken to protect and improve water quality because it is a more reliable measure, being less subject to random variation, and more directly linked to the underlying studies on which the 1986 bacteria criteria were based.” IDEM will be relying on the geometric mean portion of the WQS to track implementation activity and results.

Typically loading capacities are expressed as a mass per time (e.g. pounds per day). For *E. coli*, however, mass is not always an appropriate measure because *E. coli* is expressed in terms of organism counts. IDEM is using a concentration as the target. This approach is consistent with the U.S. EPA’s regulations which define “load” as “an amount of matter that is introduced into a receiving water” (40 CFR §130.2). To establish the loading capacities for the Galena River watershed, IDEM used Indiana’s water quality standards for *E. coli* (125 cfu/100 mL). Thus, the loading capacity is expressed as a concentration, i.e. the amount of bacteria colonies per volume of water. A loading capacity is, “the greatest amount of loading that a water can receive without violating water quality standards.” (40 CFR §130.2). Therefore, a loading capacity set at the WQS will assure that the water does not violate WQS.

IDEM’s *E. coli* 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 meet the WQS at discharge, then the waterbody should meet the WQS and the designated use.

IDEM uses the load duration curve (LDC) approach to help analyze loadings in selected sites in the watershed. IDEM includes an explanation for their approach on pages 6-7 in the “Linkage Analysis and *E. coli* Load Duration Curves” section. A summary of their efforts is provided below.

Continuous flow data was collected from a nearby USGS gage at the Little Calumet River at Porter, Indiana (USGS 04094000). The target load curve was created using water quality measurements collected by IDEM between September 16, 2008 and October 14, 2008. Nine sites were sampled 5 times over a 30-day period. All sites were within the Galena River watershed. The TMDL submittal presents 9 LDCs for the 2008 sampling efforts and 1 LDC for the historic water quality data set from 2000.

IDEM believes that LDCs generated for sites 7, 8 & 9 are the best representation of the loads and sources in the Galena River watershed (page 7 and Attachment B of the TMDL). The plots show under what flow conditions the water quality exceedances occur. Exceedances at the right side of the LDC plots occur during low flow conditions, suspected to be septic systems malfunctions and illicit sewer connections. Exceedances on the left side of the LDC plots occur during higher flow events, such as storm runoff.

LDCs link the geographic locations of load reductions needed to the flow conditions under which the exceedances occur. All but one of the LDCs in Attachment B present evidence that exceedances occur during the wet weather events. IDEM believes that dry weather sources are present in the watershed (failing septic, livestock in the waterbodies, etc.), but data is lacking for the lower flow regimes.

The additional load duration curve analysis allows IDEM to determine which implementation practices may be most effective for reducing *E. coli* loads based on flow magnitude. For example, if loads are significant during storm events, implementation efforts can target those best management practices (BMPs) that will most effectively reduce storm water runoff. This allows for a more efficient implementation effort. This TMDL is concentration-based, and ties directly into Indiana's numeric water quality standard for *E. coli*. The target for this TMDL is the water quality standard, and therefore meeting this loading capacity should result in attainment of water quality standards.

IDEM has determined that there is no single critical condition for this TMDL that will assure attainment of WQSs (pages 6-7 of the TMDL). The critical condition for pollutant loadings is mainly under wet conditions, which would generally be in the spring months and during storm events. Under these conditions, the *E. coli* impairments are due to run-off events from farm fields, tile drainage, and near-stream pasturing. However, there is not enough data to determine if exceedances are occurring during the lower flow regimes, and IDEM believes it is very likely that exceedances are also occurring during dry conditions, due to septic discharge, wildlife, and domestic animals in the streams, all of which are not related to run-off.

The U.S. EPA finds that the TMDL document submitted by IDEM satisfies the requirements of the third criterion.

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:

The load allocation (LA) section is found on page 9 of the final TMDL document. These reductions are presented in Table 3 below.

Table 3. Estimated Reductions in *E. coli* for the Galena River Watershed

Sampling Site #	AUID	Stream Reach Name	Geometric Mean	Percent Reduction Necessary
1	INC0125_01 & INC0125_T1001	Galena River Tributary	613	79.61%
2	INC0125_01 & INC0125_T1002	Galena River East	144	13.19%
3	INC0125_01 & INC0125_02	Galena River	379	67.02%
4	INC0125_02	Galena River	288	56.60%
5	INC0125_T1008	Unnamed Tributary East to Galena River	287	56.45%
6	**	Main Tributary East to Galena River	116	N/A*
7	INC0125_03	Galena River	297	57.91%
8	INC0124_T1004	Spring Creek	383	67.36%
9	INC0124_T1002	Unnamed Tributary to Spring Creek	424	70.52%

*N/A - A reduction is not applicable for Site # 6 as it is not impaired.

** - Site # 6 does not have an AUID because it is not impaired

IDEM identifies several nonpoint *E. coli* sources in this TMDL report. These nonpoint sources include: wildlife (deer, geese, ducks, raccoons, turkeys and other animals), run-off from non-regulated small-scale livestock operations, livestock with access to stream areas, and agricultural runoff (via manure spreading and tile drains). IDEM did not determine a load allocation value for each of these nonpoint source considerations; however, they did acknowledge that they were considered as nonpoint *E. coli* inputs to the Galena River watershed. IDEM explains that there are efforts underway by the La Porte County Soil and Water Conservation District (SWCD) to develop a watershed management plan for the Galena River watershed. This management plan would be helpful in identifying nonpoint source inputs and determining appropriate mitigation strategies for these inputs.

The U.S. EPA finds that the TMDL document submitted by IDEM satisfies the requirements of the fourth criterion.

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:

The wasteload allocations (WLA) section is found on page 9 of the TMDL document. IDEM identifies five NPDES permit holders in the Galena River watershed, three individual permits and 2 stormwater permits (see Table 2 above). The La Lumiere School and Woodberry Park LLC locations are just to the east of 2008 water quality sampling locations 1 & 2 and upstream of 2008 sampling locations 3, 4 & 7. The ITRCC Travel Plaza 3 location (also referred to as the Rolling Prairie Service Area) is upstream of 2008 water quality sampling locations 5, 6 & 7. All 3 NPDES individually permitted facilities have *E. coli* limits and *E. coli* monitoring plans included in their current permits. The WLA for each of these facilities is 125 cfu/100 mL for *E. coli*.

There are two Municipal Separate Storm Sewer Systems (MS4) communities in the Galena River watershed, La Porte County (INR04107) and St. Joseph County (IN0R0041). Both of these MS4 systems are permitted by the state of Indiana but their MS4 permits have not been implemented. IDEM stated that once the illicit discharge surveys for each MS4 community are completed the MS4 permits for each community will be implemented. The WLA for each of these facilities is 125 cfu/100 mL for *E. coli*.

There are no CSO communities in the Galena River watershed, therefore the WLA for CSO inputs was set at zero (WLA = 0 per 100 mL). Additionally, there are no CAFO facilities in the Galena River watershed. The WLA for CAFO facilities was set at zero (WLA = 0 per 100 mL). Illicitly connected onsite systems (i.e. straight pipe dischargers) were also set to zero (WLA = 0 per 100 mL).

The U.S. EPA finds that the TMDL document submitted by IDEM satisfies the requirements of the fifth criterion.

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:

The "Margin of Safety" section (pages 9-10 of the TMDL submittal) outlines how the margin of safety (MOS) was determined. The Galena River watershed TMDL utilizes an implicit MOS due to the consideration of conservative assumptions in the development of the TMDL. The conservative assumption made in this TMDL was that no rate of decay for *E. coli* was applied in the development of the TMDL.

Since *E. coli* have a more limited capability of surviving outside their hosts, a rate of decay would normally be used. Applying a rate of decay into a TMDL calculation could result in a discharge limit greater than the water quality standard. 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 conditions of the water, and therefore it would be difficult to assert that the rate of decay caused by any given combination of these environmental variables was sufficient enough to meet the WQS of 125 cfu/100 ml and 235 cfu/100ml. Thus, it is more conservative to apply the State's water quality standard as the margin of safety, because this standard must be met at all times under all environmental conditions.

The U.S. EPA finds that the TMDL document submitted by IDEM contains an appropriate MOS satisfying the requirements of the sixth criterion.

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:

Seasonal variation was considered in this TMDL as described in the "Seasonality" section (page 10). The seasonal variation in the Galena River watershed TMDL was addressed by calculating the TMDL using the *E. coli* water quality standard for total body contact during the recreation season (April 1 through October 31). In the state of Indiana there is no applicable full body contact *E. coli* water quality standard for the remainder of the calendar year (November 1

through March 31). The Galena River watershed TMDL was developed as an *E. coli* concentration based TMDL, which requires water quality standards to be met regardless of flow condition and season. The Indiana state bacteriological water quality standards are defined by IAC 2-1.5-8(e) (2).

The U.S. EPA finds that the TMDL document submitted by IDEM satisfies the requirements of the seventh criterion.

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 Galena River watershed TMDL outlines reasonable assurance activities on pages 10-12 in the TMDL document. A summary of these activities is provided below.

National Pollutant Discharge Elimination System (NPDES) Permitted Dischargers:

The three NPDES permit holders (the ITRCC Travel Plaza 3 WWTP, the La Lumiere School, and the Woodberry Park LLC, Mobile Home Park) in the Galena River watershed have *E. coli* limits and *E. coli* monitoring efforts included in their current permits. The La Lumiere School and the Woodberry Park LLC permits also include total residual chlorine limits.

Stormwater General Permit Rule 13:

There are two Municipal Separate Storm Sewer Systems (MS4) communities in the Galena River watershed, La Porte County (INR04107) and St. Joseph County (IN0R0041). Both of these MS4 systems are permitted by the state of Indiana but their MS4 permits have not been implemented.

IDEM stated that once the illicit discharge surveys for each MS4 community have been completed, the MS4 permits for each community will be implemented. The guidelines for MS4 permitting in the state of Indiana are outlined in Indiana's Municipal Separate Storm Sewer System (MS4) Rule 13 (327 IAC 15-13-10 and 327 IAC 15-13-11) (page 10 of the TMDL).

Watershed Management Plan Development:

The La Porte County Soil and Water Conservation District (SWCD) is developing a watershed management plan for the Galena River watershed utilizing grant money from the state of Indiana's Department of Natural Resources (IN-DNR) under the Lakes and River Enhancement program (LARE). This watershed management plan will be designed to protect the water resources of the Galena River watershed. Across the state boundary, in Michigan, the Southwest Regional Planning Commission (SWRPC) completed a watershed management plan for the Galien River watershed in July 2003. Watershed management plans work with local stakeholders to reduce *E. coli* inputs through the implementation of Best Management Practices (BMP). Examples of BMPs which could be employed in the watershed are: improved riparian management (i.e. vegetated filter strips), erosion control efforts on agricultural land and new construction sites, septic system management and improvements to failing systems, and public education campaigns to inform the public on stormwater mitigation practices and stormwater pollution issues.

The U.S. EPA finds that this criterion has been adequately addressed.

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:

The "Monitoring" section (page 10 of the TDML) outlines the planned water monitoring efforts by IDEM. IDEM will monitor the Galena River watershed on a five year rotating basin schedule and/or once Best Management Practices (BMP) implementation efforts are incorporated in the watershed. The IDEM monitoring efforts are designed to assess water quality improvements with respect to *E. coli*, to test the efficiency of *E. coli* reduction strategies, and to determine the appropriate monitoring cycle within the watershed. The monitoring cycle will be adjusted as needed to improve *E. coli* source identification efforts. IDEM will closely monitor whether *E. coli* targets are being met and adjust its BMP strategy accordingly to meet these targets.

The U.S. EPA finds that the TMDL document submitted by IDEM satisfies the requirements of the ninth criterion.

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:

Implementation strategies are outlined in the “Reasonable Assurance Activities” section (pages 10-12) in the final Galena River watershed TMDL. Various *E. coli* mitigation strategies are discussed in the final TMDL. The La Porte County SWCD is developing a watershed management plan for the Galena River watershed utilizing grant money from the IN-DNR under the LARE program. This watershed management plan will be designed to protect the water resources of the Galena River watershed. Across the state boundary, in Michigan, the SWRPC completed a watershed management plan for the Galien River watershed in July 2003.

IDEM suggested several BMP strategies to reduce *E. coli* inputs to the Galena River watershed. Some the recommendations from IDEM include:

Riparian Area Management Practices: Protection of stream and river banks within the watershed through planting of vegetated/buffer areas with grasses, legumes, shrubs or trees. These areas will filter stormwater and runoff before the runoff enters the main stem or tributaries of the Galena River watershed.

Manure Collection and Storage Practices: Manure has been identified as a source of nutrients and bacteria. Nutrients and bacteria can be transported to surface water bodies via stormwater and runoff, they can also leach into groundwater resources. Improved strategies in the collection, storage and management of manure can ensure that minimal impacts of nutrients and bacteria enter the surface and groundwater system.

Septic System Improvements: Local septic management programs and educational opportunities can aid in the reduction of septic pollution. Educating the public on proper septic maintenance, finding and eliminating illicit discharges and repairing failing systems could lessen the impacts of septic derived *E. coli* inputs in the Galena River watershed.

IDEM also advocated employing: agricultural BMP strategies (i.e. contour row cropping, no-till farming), installation of fencing near stream and river environments to prevent direct access for animals and livestock, and pet clean up public outreach programs in urban areas. These practices would work to reduce the influxes of *E. coli* and improve water quality within the watershed.

The U.S. EPA finds that this criterion has been adequately addressed. The U.S. EPA reviews but does not approve implementation plans.

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 held a stakeholder meeting on July 14, 2009 at the LaLumiere School in LaPorte, Indiana. During this public meeting, IDEM provided an overview of the draft Galena River watershed TMDL and granted members of the audience the opportunity to provide public comment. The draft TMDL was posted online by IDEM at (<http://www.in.gov/idem/4685.htm>). The 30-day public comment period was started on July 13, 2009 and ended on August 14, 2009. IDEM received 4 public comments and adequately addressed each comment. IDEM submitted all of the public comments and responses in the final TMDL submittal packet received by the U.S. EPA on August 25, 2010.

Additionally, IDEM held a kickoff stakeholder meeting on January 21, 2009 at the Spicer Lake Nature Preserve in New Carlisle, Indiana. During the kickoff meeting, IDEM communicated the goals of the TMDL efforts within the Galena River watershed, explained the TMDL development process and solicited contact information from stakeholders in attendance.

The U.S. EPA finds that the TMDL document submitted for the Galena River watershed by IDEM satisfies the requirements of this eleventh element.

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 U.S. EPA received the final Galena River watershed TMDL document, submittal letter, and public meeting documentation from IDEM on August 25, 2010. In the submittal letter, IDEM stated that the accompanying TMDL is the final TMDL submission from the state of Indiana for the Galena River watershed which addresses impaired recreational use due to excessive *E. coli*. The 8 watershed segments addressed in this TMDL are identified as: INC0124_T1002, INC0124_T1004, INC0125_01, INC0125_02, INC0125_03, INC0125_T1001, INC0125_T1002, and INC0125_T1008. This TMDL is being submitted per the requirement under Section 303(d) of the Clean Water Act and 40 CFR 130.

The U.S. EPA is approving TMDLs for *E. coli* in the 7 segments that are not on IDEM's 2008 Section 303(d) list (Table 1 above). While developing the Galena River TMDL project, IDEM determined that these additional segments were impaired by *E. coli*. The segments were clearly identified in the draft TMDL (dated July 2009). The public had the opportunity to comment on these additional impaired segments in the TMDL during the IDEM public comment period. These segments were included in the final TMDL submitted to U.S. EPA. The TMDL report discusses the impairments for all the segments in the subwatersheds, and IDEM determined TMDL allocations and calculations for all segments including the additional 7 segments, as IDEM developed the TMDL on a watershed basis.

The U.S. EPA believes it was reasonable for IDEM to develop TMDLs for the previously unlisted segments in the subwatersheds at the same time it was developing TMDLs for the listed segments. Because the public has had the opportunity to comment on the decision to include these additional segments within the TMDL, as well as the calculations used to establish these TMDLs, and because the transmittal letter of the final TMDL states that the TMDL report is for the Galena River watershed, the U.S. EPA believes it is appropriate to approve the additional 7 TMDLs at this time.

The U.S. EPA finds that the TMDL transmittal letter submitted for the Galena River watershed by IDEM satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the U.S. EPA finds that the 8 *E. coli* TMDLs for the Galena River watershed in La Porte and St. Joseph counties satisfy all of the elements of approvable TMDLs. This approval is for 8 TMDLs addressing 8 waterbodies/impairments identified in Table 1 (page 2) of the TMDL submittal and page 2 of this document, addressing recreational use impairments.

The U.S. EPA's approval of these TMDLs extends to the water bodies which are identified in Table 1 of this decision document (page 2 of this document), with the exception of any portions of the water bodies that are within Indian Country, as defined in 18 U.S.C. Section 1151. The U.S. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. The U.S. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA Section 303(d) for those waters.