TMDL: Lake St. Clair Metropolitan and Memorial Beaches, Macomb County, Michigan

Effective Date: 9/17/07

Decision Document for Approval of
Lake St. Clair Metropolitan and Memorial Beaches 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.

58064.Identification of Water body, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the water body as it appears on the State's/Tribe's 303(d) list. The water body 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 water body 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 water body. 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 water body 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; chlorophyl *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

Comments:

Location/Description/Spatial Extent: Metropolitan Beach is located in Harrison Township in Macomb County, Michigan. Memorial Beach is located in St. Clair Shores Township also in Macomb County, Michigan. Both beaches are located in the Lake St. Clair watershed, which consists of 20 communities surrounding the lake. The Lake St. Clair watershed has a National Hydrologic Data (NHD) Reach Code of 04090002000526 and contains two subwatersheds. The northern half is known as Anchor Bay, and the southern half is designated as L'Anse Creuse Bay. The St. Clair watershed is bisected by the Clinton River, and the Clinton River spillway is located near Metropolitan Beach.

The following table (Table 4 of the TMDL submittal) summarizes the distribution of land for each municipality in the Lake St. Clair TMDL watershed. There are 20 municipalities within the TMDL watershed, the largest of which are Clay Township (17 percent) and Casco Township (13 percent). Harrison Township and St. Clair Shores Township constitute six (6) percent and five (5) percent of the total land area, respectively.

Table 1: Percent of land area in Lake St. Clair watershed (HUC 4090002) located within each municipality.

Name	Percent of the Lake St. Clair Watershed
Clay Township	17%
Casco Township	13%
Chesterfield Township	11%
Cottrellville Township	10%
Lenox Township	9%
Ira Township	7%
Harrison Township	6%
St. Clair Shores	5%
Clinton Township	3%
Roseville	3%
China Township	3%
Eastpointe	2%
New Baltimore	2%
Grosse Pointe Woods	1%
Grosse Pointe Farms	1%
Harper Woods	1%
Grosse Pointe Park	1%
Algonac	1%
Marine City	1%
Macomb Township	1%

Topography and Land Use: As described in the Source Assessment Section of the TMDL submittal, land use in the southern subwatershed of L'Anse Creuse Bay is mainly high and low density residential. Residential use also dominates in the northern subwatershed of Anchor Bay. In 2004, approximately 40% of the Anchor Bay subwatershed remained in agricultural use (TMDL submittal, p. 4). However, this region is experiencing a large population growth and agricultural lands are being converted to residential use at a rapid rate. Some communities in the Anchor Bay subwatershed have seen population growth of 80% from 1990 to 1999, mostly in townships adjacent to the lake (TMDL submittal, p.4).

Pollutant of Concern: This TMDL will address the Metropolitan and Memorial Beaches impairment for pathogens. As stated in the Problem Statement Section of the TMDL submittal, both beaches were placed on the Section 303(d) list due to impairment of recreational uses as indicated by elevated levels of *E. coli* bacteria. Monitoring data collected by MDEQ in 2003 and 2004 documented exceedances of the *E. coli* water quality standard (WQS) during the recreational season (May 1 through October 31) at both Metropolitan and Memorial Beach. The MDEQ WQS during the recreational season is 130 *E. coli* per 100 milliliters (ml), as a 30-day geometric mean based on not less than five (5) sampling events, and 300 *E. coli* per 100 ml as a daily geometric mean based on not less than three samples taken during the same sampling event.

Pollutant sources: There are both point sources and nonpoint sources of *E. coli* in the Lake St. Clair watershed. The nonpoint sources include:

Wildlife
Deer, geese, ducks, raccoons, turkeys, and other animals such as pets may be a source of *E. coli* to the watershed.

Septic systems/illicit connections to storm sewers
Septic systems service many homes in the Lake St. Clair watershed and failing septic systems are a potential source of *E. coli*. The Macomb County Health Department (MCHD) estimated a 16% septic system failure rate in 2005 and Wayne County estimated a 22% failure rate in 2006 (TMDL submittal, p. 5). St. Clair County does not have a septic system failure rate, but does conduct investigations for illicit sewer connections.

Agricultural Inputs
There are no Confined Concentrated Animal Feeding Operations (CAFOs) in the TMDL Watershed. Since the majority of the land use in the area is residential, it is unlikely that agricultural inputs are a significant source of *E. coli* in this watershed.

River and Drain Inputs
The Clinton River watershed, which bisects the Lake St. Clair Watershed north of Metropolitan Beach, is another likely source of *E. coli*. Concentrations as high as 15,521 *E. coli* per 100 ml have been found in the Clinton River spillway (TMDL submittal, p. 5). Sample data collected from other drainages including Salt River, Milk River, Crapeau Creek, Irwin Branch Relief Drain, and Marsac Drain indicate that all of these drainages are also potential sources of *E. coli*. In addition, Macomb County monitored 80 enclosed drains in the Lake St. Clair watershed in 2002 and found many to contain high concentrations of *E. coli* (TMDL submittal, p.6).

Both Metropolitan and Memorial Beach are located southwest of the Clinton River mainstem. Hydrodynamic simulations found that particles released from the Clinton River and other near-shore drains tend to travel southwest along the shoreline past both beaches. Based on the high *E. coli* concentrations and the likelihood the bacteria is moving along shore, these drainages are likely contributing to the elevated *E. coli* levels at both beaches (TMDL submittal, p.6).

Point sources include:

National Pollutant Discharge Elimination System (NPDES) Permitted Dischargers
There are 145 National Pollutant Discharge Elimination System permits in the watershed, including 13 individual permits, 113 Certificates of Coverage (COCs) under six (6) general permits, and 19 Notices of Coverage (NOCs) under one (1) permit-by-rule. There are 22 Municipal Storm Sewer (MS4) permits. See Table 2 (Table 5 of the TMDL submittal) for a full list of these permits. Since fecal coliform concentrations are much higher than *E. coli* concentrations in sewage, sanitary dischargers are considered in compliance with MDEQ's WQS of 130 *E. coli* per 100 ml if their NPDES permit limit of 200 fecal coliform per 100 ml as a monthly average is met (TMDL submital, p.2).

Table 2. Individual permits, General Permits, and Notices of Coverage under permit-by-rule in the TMDL reach watershed. Source: MDEQ, Water Bureau's NPDES Permit Management System.

Permit Descriptions				
Permit No	Facility Name	Township Name	Latitude	Longitude
MI0000000- Individual Permits				
MI0023680	New Baltimore WWTP	Chesterfield	42.67833	-82.74972
MI0023906	Richmond WWTP	Lenox	42.79556	-82.75861
MI0025453	Martin RTB	Roseville	42.48528	-82.89139
MI0025500	Milk River CSO RTB	Grosse Pointe	42.44944	-82.88972
MI0025585	Chapaton RTB	Roseville	42.46500	-82.88028
MI0026077	Grosse Pointe Farms CSO	Grosse Pointe	42.40444	-82.88750
MI0026085	Grosse Pointe Shores CSO	Grosse Pointe	42.42639	-82.87861
MI0027073	Americana Estates of Casco MHP	Casco	42.73806	-82.73056
MI0055816	Millstone Pond MHP	Lenox	42.72722	-82.73917
MI0055948	US Army Tank Comm-R & D	Harrison	42.61000	-82.81167
MI0056472	Northampton Community MHP	Chesterfield	42.71060	-82.77095
MI0057364	MDOT- Statewide MS4	various	na	na
MI0057369	Mt Clemens WFP	Harrison	42.56528	-82.83750
MIG580000 - Wastewater Stabilization Lagoons				
MIG580026	MDOT-EB/NB Rest Area	Casco	42.79472	-82.66556
MIG580027	MDOT I-94 WB/SB RA	Casco	42.74472	-82.71833
MIG580328	Anchor Bay Schools-Casco	Casco	42.74583	-82.71250
MIG610000 - Municipal Separate Storm Sewer Systems (MS4)				
MIG610040	Wayne Co MS4	various	na	na
MIG610052	Macomb Co MS4	various	na	na
MIG610253	Ira Twp MS4-St Clair	various	na	na
MIG610255	Algonac MS4-St Clair	various	na	na
MIG610258	Cottrellville Twp MS4-St Clair	various	na	na
MIG610259	Casco Twp MS4-St Clair	various	na	na
MIG610260	St. Clair Twp MS4	various	na	na
MIG610296	Lakeview PS MS4-Macomb	various	na	na
MIG610297	Roseville MS4-Macomb	various	na	na
MIG610298	St. Clair Shores MS4	various	na	na
MIG610299	Clinton Twp MS4-Macomb	various	na	na
MIG610301	Lenox Twp MS4-Macomb	various	na	na
MIG610302	New Haven MS4-Macomb	various	na	na
MIG610303	New Baltimore MS4-Macomb	various	na	na
MIG610308	Fraser MS4-Macomb	various	na	na
MIG610310	Chesterfield Twp MS4-Macomb	various	na	na
MIG610313	Harrison Twp MS4-Macomb	various	na	na
MIG610316	Grosse Pointe MS4-Wayne	various	na	na
MIG610317	Grosse Pointe Farms MS4-Wayne	various	na	na
MIG610318	Grosse Pointe Shores MS4-Wayne	various	na	na
MIG610319	Grosse Pointe Park MS4-Wayne	various	na	na
MIG610320	Eastpointe MS4-Wayne	various	na	na
MIG640000 - Municipal Potable Water Supply Discharge				
MIG640240	US Army Tank Comm-R & D	Harrison	42.61000	-82.81167
MIS110000, MIS41000 and MIS51000 - Industrial Storm Water				
MIS110789	John Carlo-Rex Model S 926	Clinton	42.62722	-82.92444
MIS111120	Rite Machine Products	Clinton	42.62778	-82.91306
MIS410169	Sassy Marine-Algonac	Clay	42.62917	-82.61250
MIS410201	Algonac Harbour Club	Clay	42.62500	-82.58333
MIS410409	Monnier-Algonac	Clay	42.62500	-82.54167
MIS510010	Schaller Corp-Plant #3	Chesterfield	42.68330	-82.83750
MIS510082	Uni-Bond Extrusions LLC	Chesterfield	42.66670	-82.85000
MIS510087	Russell Breckenridge Company	Harrison	42.60861	-82.85500
MIS510096	Sun-Up Marina	Chesterfield	42.65833	-82.78333
MIS510097	EMP Manufacturing-Chesterfield	Chesterfield	42.67080	-82.83330
MIS510104	RSE-New Baltimore	Chesterfield	42.67920	-82.75000
MIS510105	Auburn Engineering	Chesterfield	42.66670	-82.84140

Permit Descriptions

Permit No	Facility Name	Township Name	Latitude	Longitude
MIS110000 - Industrial Storm Water				
MIS510110	International Casting Corp	Chesterfield	42.75420	-82.72920
MIS510117	Shoreline Steel-New Haven	Lenox	42.72867	-82.79873
MIS510128	Schaller Corp-Plant #1	Chesterfield	42.66250	-82.84330
MIS510361	Mackie Marina-Algonac	Clay	42.62060	-82.56670
MIS510365	Mayea Boat Works-Fair Haven	Ira	42.68060	-82.66000
MIS510367	Algonac Cast Products	Clay	42.62920	-82.54170
MIS510427	AMP Industries-Harrison Twp	Harrison	42.60420	-82.85420
MIS510428	Auto Farm Inc-Ira	Ira	42.68750	-82.68750
MIS510430	IPEX USA-New Baltimore	Chesterfield	42.70000	-82.72920
MIS510435	Anchor Bay Marina-New Balt	Chesterfield	42.65000	-82.78330
MIS510436	Dajaco Industries Inc	Chesterfield	42.66610	-82.84360
MIS510437	H & B Auto Electric-New Haven	Lenox	42.73440	-82.78420
MIS510438	Temp-Rite Steel Treating	Clinton	42.60860	-82.85000
MIS510439	MacLean Maynard-Chesterfield	Chesterfield	42.66670	-82.83330
MIS510456	Michigan Marine Salvage	Harrison	42.59360	-82.78140
MIS510457	Mich Harbor Inc-Macomb	Roseville	42.47500	-82.89170
MIS510461	US Concrete Mich Region	Chesterfield	42.67500	-82.82920
MIS510462	Continental Plastics Company	Chesterfield	42.63330	-82.83330
MIS510464	Roura Iron Works-Clinton Twp	Clinton	42.55000	-82.86670
MIS510465	Pine Tree Acres-Lenox	Lenox	42.76390	-82.74899
MIS510466	Theut Products-Chesterfield	Chesterfield	42.64580	-82.85420
MIS510469	C & S Auto Parts-Lenox	Lenox	42.78333	-82.73333
MIS510471	Buds Garage & Auto Mortuary	Clay	42.62500	-82.55000
MIS510472	Bundy-Chesterfield	Chesterfield	42.66220	-82.84280
MIS510480	Selfridge Tech-Chesterfield	Shelby	42.50420	-82.79580
MIS510486	K-O-Fab & Machine	Chesterfield	42.66670	-82.84190
MIS510490	Blue Water Marine Inc	Harrison	42.59611	-82.81306
MIS510493	Emhart Automotive-Chesterfield	Chesterfield	42.66280	-82.85030
MIS510502	Jefferson Beach Marina	Roseville	42.47080	-82.88750
MIS510504	Sundog Marina-Harrison Twp	Harrison	42.59333	-82.79194
MIS510505	Miller Marina Incorporated	Roseville	42.47500	-82.89167
MIS510506	Heritage Mfg-Chesterfield Twp	Chesterfield	42.66670	-82.84170
MIS510508	TI Automotive-New Baltimore	Chesterfield	42.70940	-82.80610
MIS510511	Emerald City Harbor	Roseville	42.47083	-82.88750
MIS510512	Harry Major Machine & Tool	Clinton	42.62500	-82.85830
MIS510521	Kent Tool & Die-Chesterfield	Chesterfield	42.67110	-82.84940
MIS510522	Fisher Kellering-Chesterfield	Chesterfield	42.70920	-82.80610
MIS510523	Fabricating Engineers Company	Chesterfield	42.67080	-82.84170
MIS510527	Lionel LLC-Chesterfield	Chesterfield	42.67110	-82.84940
MIS510530	VCST Powertrain Components	Chesterfield	42.67360	-82.84330
MIS510538	Advanced Boring & Tool	Chesterfield	42.67500	-82.85420
MIS510539	Mich Metal Technologies	Chesterfield	42.66330	-82.85000
MIS510551	Smart-Clinton Twp	Clinton	42.55420	-82.88330
MIS510562	Island Harbor-St Clair Shores	Roseville	42.46670	-82.88610
MIS510566	National Precast Inc-Roseville	Roseville	42.51667	-82.90833
MIS510567	Plastech-St Clair Shores	Roseville	42.53810	-82.88390
MIS510570	Interstate Door Co	Chesterfield	42.66056	-82.85167
MIS510586	Drake Enterprises-Clinton Twp	Clinton	42.62330	-82.85830
MIS510587	Eagle Assemblies	Clinton	42.54080	-82.93360
MIS510589	Dunright Trailer Mfg-Clinton	Clinton	42.55472	-82.88583
MIS510592	Island Machine & Engineering	Cottrellville	42.72560	-82.50190
MIS510605	Fisher Dynmcs-St Clair Shores	Roseville	42.53800	-82.88700
MIS510612	Mich Metal Technologies Plt 2	Chesterfield	42.66540	-82.85030
MIS510621	US Army Garrison Michigan	Clinton	42.63170	-82.82440
MIS510624	Decker Gear Inc-Algonac	Clay	42.61830	-82.53140

Permit Descriptions				
Permit No	Facility Name	Township Name	Latitude	Longitude
MIS110000 - Industrial Storm Water				
MIS510587	Eagle Assemblies	Clinton	42.54080	-82.93360
MIS510589	Dunright Trailer Mfg-Clinton	Clinton	42.55472	-82.88583
MIS510592	Island Machine & Engineering	Cottrellville	42.72560	-82.50190
MIS510605	Fisher Dynmcs-St Clair Shores	Roseville	42.53800	-82.88700
MIS510612	Mich Metal Technologies Plt 2	Chesterfield	42.66540	-82.85030
MIS510621	US Army Garrison Michigan	Clinton	42.63170	-82.82440
MIS510624	Decker Gear Inc-Algonac	Clay	42.61830	-82.53140
MIS510625	Decker Gear Inc-Fruit Rd	Clay	42.62390	-82.54500
MIS510626	Ajax Materials Corp-Plant 1	Lenox	42.72120	-82.80350
MIS510633	Beacon Marine-Harrison Twp	Harrison	42.56580	-82.84280
MIS510636	Beacon Cove Marina Inc	Harrison	42.56530	-82.84310
MIS510640	G & T Auto & Truck Parts	Chesterfield	42.65780	-82.84640
MIS510641	Four Seasons Concrete Prod	Roseville	42.50808	-82.92576
MIS510643	Compass Pointe Marina	Ira	42.67722	-82.64333
MIS510650	Belle Maer Harbor	Harrison	42.61500	-82.79167
MIS510654	Sunsation Products Inc	Clay	42.62139	-82.57083
MIS510659	Precision Boring Company	Clinton	42.62783	-82.86273
MIS510664	Hideaway Harbor	Harrison	42.56472	-82.84389
MIS510681	Global Advanced Products LLC	Chesterfield	42.70992	-82.80135
MIS510689	Burtek Inc	Chesterfield	42.67312	-82.84083
MIR100000 - Notice of Coverage				
MIR106118	WLC-Willow Ridge Farms	Clinton Township	na	na
MIR106132	Bluffs of Beaufait Farms	Clinton Township	na	na
MIR106229	Ahepa 371 Addition	Harrison Township	na	na
MIR106399	Mt Elliot-New Mansoleum	Clinton Township	na	na
MIR106408	Seville-Whispering Pines #2	Clinton Township	na	na
MIR106492	DAlasandro-Brookside Villas	Clinton Township	na	na
MIR106616	Weber-Bluffs of Beaufait 2	Clinton Township	na	na
MIR106674	Webber Dev-Parcel B	Clinton Township	na	na
MIR106784	St Isidore Catholic Church	Detroit	na	na
MIR106833	Mlm-Lia Industrial	Clinton Township	na	na
MIR106917	Trinity Territory	Clinton Township	na	na
MIR106939	Ag-B&A Steel Parcel A	Clinton Township	na	na
MIR107022	Orchards Golf-Estate	Detroit	na	na
MIR107299	Mitigation Solutions-33 North	Grosse Pointe Park	na	na
MIR107300	Mitigation Solutions-33/30	Grosse Pointe Park	na	na
MIR107386	Lanse Cruese-Atwood Elem	Harrison Township	na	na
MIR107394	Catenacci-Siena Gardens Sub	Clinton Township	na	na
MIR107421	R & D-King of The Wld Frms	Clinton Township	na	na
MIR107526	Bozek-Lot Fill	Hamtramck	na	na
MIR107550	GTR Bldrs-Parkview Estates	Clinton Township	na	na
MIR107581	Ventimiglia-Gloede Park Subdiv	Warren	na	na
MIR107939	Severstal N Amer-Coke Plt Demo	Detroit	na	na
MIR108129	Icon Building-Stratford Plaza	Clinton Township	na	na
MIR108426	JMDH Real Est-Restaurant Depot	Detroit	na	na
MIR109493	Harper Woods School	Harper Woods	na	na
MIR109597	MDOT-I-75 and I-96	Detroit	na	na
MIR109778	MDOT-M-10/Jefferson Ave	Detroit	na	na
MIR110106	DIBC Pump Station & SW Outfall	Detroit	na	na

Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs)

The City of Detroit's combined sanitary sewer/storm water system discharges into the Detroit River. As such, inputs of *E. coli* to the TMDL beaches are unlikely. However, the Lake St. Clair TMDL Watershed has two (2) permitted CSOs which discharge into the watershed. Both Grosse Pointe Farms CSO (MI0026077) and Grosse Pointe Shores CSO (MI0026085) have implemented long term control plans and MDEQ does not consider them a likely source of *E. coli*. (TMDL submittal, p.4). There are three (3) retention basins which discharge CSOs directly into Lake St. Clair watershed (Martin Retention Basin, Chapaton Retention Basin, and the Milk River CSO Retention Basin) that are possible sources of *E. coli*. However, all are disinfected prior to discharge and are not considered significant sources of *E. coli* by MDEQ (TMDL submittal, p.4).

The City of New Baltimore has a one (1) WWTP and SSO which discharges approximately 0.4 million gallons of partially treated sewage to Crapeau Creek. The City of Richmond has one (1) wastewater treatment plant (WWTP) and SSO which does not reach surface waters. However, during a rain event in May of 2004, both SSOs discharged into the watershed and MDEQ has required corrective programs for both cities. Richmond is improving their collection system and constructing a storage basin at their WWTP in order to comply with the MDEQ's SSO requirements. New Baltimore will be improving their collection and constructing an upgraded WWTP in order to comply with the MDEQ's SSO requirements (TMDL submittal, p.5). These improvements will lead to improved water quality and reduced *E.coli* in the watershed.

Priority Ranking: Michigan does not include separate priority rankings for its waters in the TMDL. However, it prioritizes waters based on its five-year rotating watershed assessment approach during the listing cycle.

EPA finds that the TMDL document submitted by MDEQ satisfies all requirements of this first element.

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 water body, 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.

Comments:

Designated Use of Waterbody: Lake St. Clair Metropolitan and Memorial Beaches have a total body contact recreational use which runs from May 1st to October 31st.

Water Quality Standard: The applicable WQS is defined in R 323.1062 as all waters of the state shall not contain more than 130 *E. coli* per 100 ml, as a 30-day geometric mean based on not less than five (5) sampling events, and 300 *E. coli* per 100 ml as a daily geometric mean based on not less than three samples taken during the same sampling event. This designated use is applicable between May 1st and October 31st.

Target: The target is the standard as stated above, for both the geometric mean portion and the daily maximum portion, which is applicable from May 1st through October 31st. If the numeric standard is met, the beaches should meet the assigned designated use (R. 323.1062).

EPA finds that the TMDL document submitted by MDEQ satisfies all requirements of this second element.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a water body 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 steam 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.

Comments:

Loading Capacity: MDEQ has determined that the loading capacity for the impaired waterbodies

is the water quality standard for *E coli*; that is, 130 cfu/100 ml (geometric mean of 5 samples equally spaced over a 30 day period) and a daily maximum of 300 cfu/100 ml.

Typically loading capacities are expressed as a mass per time (e.g. pounds per day). For *E. coli*, however, states often use concentration to measure loading capacity rather than mass per time, with concentration being the amount of matter in a given volume. This approach is consistent with 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 Metropolitan and Memorial Beaches, MDEQ used Michigan's WQS for pathogens which has a geometric mean for a 30 day period and a daily geometric mean maximum of an amount of bacteria colonies per 100 milliliters of receiving water. 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.

This pathogen TMDL approach is based upon the premise that all discharges (point and nonpoint) must meet the WQS when entering the water body. If all sources are meeting the WQS at discharge, then the water body will by definition meet the WQS and the designated use.

Critical Condition: There is no single critical condition for this TMDL that will assure attainment of the WQS. Table 1a and Figures 4a, 4b, 5a, and 5b of the TMDL identify when exceedances of the WQS occurred in 2003 and 2004. The exceedances occurred during both wet and dry weather.

EPA finds that the TMDL document submitted by MDEQ satisfies all requirements of this third element.

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 non-point 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 non-point sources.

Comments:

Because the TMDL is concentration based, the LA is equal to 130 *E. coli* per 100 ml as a 30-day geometric mean and daily geometric mean of 300 *E. coli* per 100 ml from May 1st to Oct. 31st, which is the water quality standard (Loading Capacity Section of the TMDL submittal). This LA assumes that all land, regardless of use, will be required to meet the WQS. MDEQ has identified existing nonpoint sources in the Source Assessment Section of the TMDL submittal. MDEQ has determined the best way to achieve the WQS is to apportion relative responsibility among the various units of government based on their jurisdiction over their respective lands. Table 1 of this document lists all 20 municipalities that will share the responsibility for meeting the WQS. The beaches are located in Harrison Township and St. Clair Shores Township, and constitute six (6) percent and five (5) percent of the total land area, respectively. By assigning responsibility to each

entity to meet the same loading capacity (130 E. coli per 100 ml as a 30-day geometric mean and daily geometric mean of 300 E. coli per 100 ml), all communities/government entities are required to meet the same water quality target (TMDL submittal, p.7).

EPA finds that the TMDL document submitted by MDEQ satisfies all requirements of this fourth element.

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.

Comments:

There are 145 NPDES permitted point sources that discharge to the TMDL watershed. Table 2 of this document outlines the permitted sources in the watershed. This includes 13 individual permits, 87 storm water COCs, three (3) wastewater lagoon COCs, 22 Municipal Separate Storm Sewer System COCs, 1 Water Supply Discharge COC, and 19 NOCs under one (1) permit-by-rule. The WLA for these permits is equal to 130 *E. coli* per 100 ml as a 30 day geometric mean and 300 *E. coli* per 100 ml as a daily geometric mean as discussed in the WLA section of the TMDL.

There are no concentrated animal feeding lots in the Lake St. Clair watershed.

EPA finds that the TMDL document submitted by MDEQ satisfies all requirements of this fifth element.

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.

Comments:

This TMDL submittal uses an implicit MOS because no pollutant rate of decay was used. Since pathogenic organisms have a more limited capability of surviving outside of their hosts, a rate of decay would normally be used. However, MDEQ determined that it is more conservative to use the WQS of 130 *E. coli* per 100 ml monthly geometric mean and 300 *E. coli* per 100 ml as a daily geometric mean for the WLA and LA, and not to apply a rate of decay which could result in a discharge limit greater than the WQS. The assumption to not use a rate of decay is a conservative assumption that accounts for an implicit margin of safety.

EPA finds that the TMDL document submitted by MDEQ satisfies all requirements of this sixth element.

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)).

Comments:

The TMDL submittal addresses the seasonal variation by using the definition for total body contact recreation season in R 323.1100 of the WQS. The total body contact recreation season is defined as May 1 through October 31. There is no total body contact during the remainder of the year primarily due to cold weather. Since this is a concentration based TMDL, the WQS of 130 *E. coli* per 100 ml based on a 30-day geometric mean and 100 *E. coli* per 300 ml based on a daily maximum average, must be met during all flow conditions in the applicable season.

EPA finds that the TMDL document submitted by MDEQ satisfies all requirements of this seventh element.

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.

Comments:

MDEQ will review discharge monitoring data to ensure that all NPDES permittees maintain compliance with the permit limit of 200 fecal coliform per 100 ml as a monthly average is met (TMDL submital, p.8). Compliance with the fecal coliform WQS should ensure meeting *E. coli* WQS of 130 *E. coli* per 100 ml as well.

In addition, several organizations within the Lake St. Clair watershed are working to improve the water quality in the area.

- The Lake St. Clair Monitoring Project is collecting water quality data at 75 previously unsampled locations to aid in source assessment and will study the impact of land use on water quality (TMDL submittal, p.8).

- The Clinton River Public Advisory Council has received a $32,000 grant from the MDEQ to develop restoration criteria for the Clinton River Area of Concern. The goal of the Remedial Action Plan is to identify environmental problems, establish water use goals, and provide cleanup solutions that will restore the Area of Concern's beneficial uses. The Public Advisory Committee will be setting restoration goals for the beach closing impairment this year (2007). The Clinton River, from the confluence with Lake St. Clair upstream to Yates Dam, is also scheduled for an *E. coli* TMDL in 2010 (TMDL submittal, p.8).

- Macomb and St. Clair Counties have been implementing illicit discharge elimination plans (IDEPs). Macomb County estimates that approximately 17 million gallons of wastewater have been excluded from the Clinton River and Lake St. Clair due to their efforts. St. Clair County Health Department began their IDEP in 2002 and has identified 295 failing septic systems within the Anchor Bay and Pine River watersheds over a two-year timeframe. St. Clair County estimates that this effort has removed 6.9 million gallons of wastewater from surface waters annually. Wayne County has been identifying and removing illicit connections since 1987 and between 1987 and 2002 staff discovered 1,433 illicit connections at 370 facilities (TMDL Submittal, p.9).

EPA finds that the TMDL document submitted by MDEQ adequately addresses this eighth

element.

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.

Comments:

The MCHD will continue to sample Memorial and Metropolitan Beaches twice weekly during the total body contact season and to post total body contact recreation warnings when appropriate.

As listed in Table 2 of this document, the permitted facilities with treated human waste discharges are responsible for maintaining compliance with their respective NPDES permit limitations for fecal coliform, and shall continue to monitor their effluent according to their permit requirements. Macomb and St. Clair Counties have been conducting monitoring through their IDEPs. Macomb County produces an annual report on Lake St. Clair water quality and sampled over 400 sites in 2005 and 2006.

The Lake St. Clair Regional Monitoring Project is a joint effort between county governments in southeast Michigan, the MDEQ, and the USGS which expects to issue a final report in September, 2007. In 2004-05, the project has collected water quality data, including *E. coli*, at 75 previously unsampled to aid in source assessment and the improvement of water quality. The project is designed to investigate historic and current water quality in order to determine contaminant loadings to Lake St. Clair.

EPA finds that the TMDL document submitted by MDEQ adequately addresses this ninth element.

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.

Comments:

This TMDL does not contain a formal implementation plan. EPA is not required to and does not

approve TMDL implementation plans.

EPA finds that the TMDL document submitted by MDEQ adequately addresses this tenth element.

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.

Comments:

The availability of the draft TMDL was announced on the MDEQ Calendar on June 21, 2007. The draft TMDL was public noticed from June 25, 2007, to July 25, 2007. Public comments were received from the Macomb County Public Works Office and have been addressed by MDEQ. A stakeholder meeting was held on July 10, 2007, at the Macomb County Health Department in Mt. Clemens, Michigan. Stakeholders were determined by identifying municipalities (i.e., counties, townships, and cities) in the TMDL watershed. Copies of the draft TMDL were available upon request and posted on MDEQ's website. Copies of the draft TMDL were also mailed with the stakeholder meeting invitations and available at the stakeholder meeting.

EPA finds that the TMDL document submitted by MDEQ satisfies all 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 water body, and the pollutant(s) of concern.

Comments:

The transmittal letter was dated August 6, 2007, from Dina Klemans, Chief, Surface Water Assessment Section, MDEQ, to Cheryl Newton, Acting Director, Water Division, Region 5 EPA. The letter stated that this was a final TMDL submittal under Section 303(d) of the CWA. The letter also contains the name of the watershed as it appears on the Michigan 303(d) list, and the pollutant of concern. The letter was received by EPA on August 15, 2007.

EPA finds that the TMDL document submitted by MDEQ satisfies all requirements of this twelfth element.

13.Conclusion

After a full and complete review, EPA finds that the TMDLs for Lake St. Clair Metropolitan and Memorial Beaches, WBID# 061410B and WBID# 061410C respectively, satisfy all of the elements of an approvable TMDL. This approval document is for two (2) water body segments impaired by *E. coli* for a total of two (2) TMDLs addressing one (1) impairment each from the 2006 Michigan 303(d) list. EPA's approval of this document does not extend to those waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. EPA or eligible Indian Tribes as appropriate will retain responsibilities under CWA Section 303(d) for those waters.

Waterbody	HUC (AU)	Pollutant	Impairments
Lake St. Clair Metropolitan Beach WBID# 061410B	4090002	*E. coli*	Pathogens
Lake St. Clair Memorial Beach WBID# 061410C	4090002	*E. coli*	Pathogens