7052.0200 TOTAL MAXIMUM DAILY LOADS.

Subpart 1. **Applicability.** The provisions in this subpart apply to establishing total maximum daily loads (TMDLs) for all Great Lakes Initiative (GLI) pollutants and pollutant parameters in surface waters of the state in the Lake Superior Basin, with the exception of whole effluent toxicity (WET), which is addressed in part 7052.0240.

A. TMDLs must be established in accordance with the listing and priority-setting process provided by section 303(d) of the Clean Water Act, United States Code, title 33, section 1313(d) and Code of Federal Regulations, title 40, section 130.7. Where water quality standards are not immediately attainable, TMDLs must assure that water quality standards will be attained in a reasonable period of time. Some TMDLs may be based on attaining water quality standards over a period of time, with specific controls on individual sources being implemented in stages. Determining the reasonable period of time in which water quality standards will be met is a case-specific determination based on the following factors:

(1) receiving water characteristics;

(2) persistence, behavior, and ubiquity of GLI pollutants of concern;

(3) type of remediation activities necessary;

(4) available regulatory and nonregulatory controls;

(5) individual agency requirements for attainment of water quality standards; and

(6) technical and economic feasibility of attainment.

B. TMDLs must include the following elements, the sum of which must not exceed the loading capacity of the water for the GLI pollutants addressed by the TMDLs:

(1) waste load allocations (WLAs) for point sources;

(2) load allocations (LAs) for nonpoint sources including natural background sources; and

(3) a margin of safety (MOS), which includes a portion reserved for future growth.

C. If the agency develops an assessment and remediation plan that meets the provisions of this part, meets the public participation provisions of subpart 6, and has been approved by the EPA as meeting the requirements under Code of Federal Regulations, title

40, section 130.6, then the assessment and remediation plan may be used in lieu of a TMDL if one of the following conditions is met:

(1) the agency determines that the assessment and remediation plan will result in attainment of water quality standards in a reasonable period of time as defined in item A;

(2) concurrent pollutant reductions will result from an assessment and remediation plan used in lieu of a TMDL; or

(3) implementation costs will be reduced if an assessment and remediation plan is used in lieu of a TMDL.

Assessment and remediation plans include lakewide management plans, remedial action plans, and state water quality management plans.

Any part of an assessment and remediation plan that also satisfies one or more requirements in section 303(d) of the Clean Water Act, United States Code, title 33, section 1313(d), or implementing regulations may be incorporated by reference into a TMDL as appropriate. Assessment and remediation plans must be tailored to the level of detail and magnitude appropriate for the watershed and GLI pollutant being assessed.

Subp. 2. **Determination of TMDL allocations.** The agency must determine TMDL allocations as described in this subpart.

A. The sum of the WLAs for point sources is the portion of the loading capacity not assigned to nonpoint sources, including background, or to a MOS. Methods to apportion WLAs are identified in Table 4-1 of the EPA Technical Support Document for Water Quality-Based Toxics Control (EPA-505-2-90-001, March 1991), which is adopted and incorporated by reference in part 7052.0015, item E.

B. LAs for nonpoint sources, including natural background, must be based on:

(1) existing GLI pollutant loadings if changes in loadings are not anticipated to occur;

(2) increases in GLI pollutant loadings that are anticipated to occur; or

(3) decreases in GLI pollutant loadings if such decreased loadings are technically feasible and are anticipated to occur within a reasonable time period as a result of implementation of best management practices or other load reduction measures, considering the technical and institutional factors involved.

C. The MOS must account for technical uncertainties in establishing the TMDL and must describe the manner in which the MOS is determined and incorporated into the TMDL. The MOS may be provided by leaving a portion of the loading capacity unallocated or by using conservative modeling assumptions to establish WLAs and LAs.

If a portion of the loading is left unallocated to provide a MOS, the amount left unallocated must be described. If conservative modeling assumptions are relied on to provide a MOS, the specific assumptions providing the MOS must be identified.

D. The representative background concentration for a GLI pollutant in the specified watershed, waterbody, or water segment must be established on a case-by-case basis as the geometric mean of water column data, water column concentrations estimated through the use of available caged or resident fish tissue data, or water column concentrations estimated through the use of existing or projected GLI pollutant loading data. Commonly accepted statistical techniques must be used to evaluate data sets consisting of values both above and below the detection level. If all of the available data in a data set are below the detection level for a GLI pollutant, then all the data in the data set must be assumed to be zero.

E. Where sufficient data are available to quantify the transport of GLI pollutants to sediments, TMDLs must account for and prevent such accumulations that preclude attainment of specified designated uses.

F. Where sufficient data are available to quantify loadings of GLI pollutants resulting from wet weather events, TMDLs must account for these loadings.

G. The maximum allowable loading consistent with the attainment of each standard or criterion of a given GLI pollutant is determined by multiplying the applicable standard or criterion by the stream design flow at the farthest downstream location in the tributary watershed. The loading is then compared to the loadings at discharge sites within the watershed to assure that standards or criteria for a given GLI pollutant are not exceeded. The lowest load is then selected as the loading capacity.

H. TMDLs and WLAs in the absence of a TMDL must be based on the assumption that a GLI pollutant does not degrade unless both of the following occur:

(1) field studies or other information demonstrate that degradation of the GLI pollutant is expected to occur under the full range of environmental conditions expected to be encountered; and

(2) field studies or other information address other factors that affect the level of GLI pollutants in the water column including sediment resuspension, chemical separation, and biological and chemical transformation.

I. If the agency establishes separate TMDLs for different segments of the same watershed, and if each of these separate TMDLs includes WLAs for the same GLI pollutant for one or more of the same point sources, then water quality-based effluent limits (WQBELs) for the GLI pollutant and point sources must be consistent with the most stringent of those WLAs to assure attainment of all applicable water quality standards and criteria.

Subp. 3. **Waste load allocations for GLI pollutants in the absence of a TMDL.** For purposes of determining WLAs in the absence of a TMDL or for determining the need for WQBELs, calculations must be made using the methods in items A to C.

A. The agency must develop acute and chronic WLAs for streams and rivers for each applicable aquatic life, human health, and wildlife standard and criterion using dynamic models found in chapter 4 of the EPA Technical Support Document for Water Quality-Based Toxics Control (EPA-505-2-90-001, March 1991), which is adopted and incorporated by reference in part 7052.0015, item E, or using the following equation:

$$WLA = \frac{(Qd + Qr)(Cs) - (Qr)(Cb)}{(Qd)}$$

Where:

Cs = Water quality standard or criterion developed for the GLI pollutant in question

Qr = Stream design flows for steady state models, including corresponding acute or chronic mixing zone allowances determined in part 7052.0210

Applicable flows are:

(1) the 1-day, 10-year stream design flow (1Q10) for a maximum standard or criterion;

(2) the 7-day, 10-year stream design flow (7Q10), or the 4-day, 3-year biologically based stream design flow for an aquatic life chronic standard or criterion;

(3) the 90-day, 10-year flow (90Q10) for a wildlife chronic standard or criterion; and

(4) the harmonic mean for the human health chronic standard or criterion.

Where a discharger has an intake upstream of the point of discharge, but downstream of the stream location used to determine Qr, the value of Qr must be reduced by that flow volume.

Qd = Effluent design flow

Cb = Background receiving water concentration of the GLI pollutant calculated according to subpart 2, item D.

B. For lakes, WLAs based on acute aquatic life standards or criteria must not exceed the FAV unless a mixing zone demonstration is conducted and approved under part

7052.0210. The agency must develop chronic WLAs for lakes for each applicable aquatic life, human health, and wildlife standard and criterion using the following equation:

$$WLA = (Cs)(X) - (Cb)(X)$$

Where:

Cs = Water quality standard or criterion developed for the GLI pollutant in question

Cb = Background receiving water concentration of the GLI pollutant calculated according to subpart 2, item D

X = 10, which represents a receiving water volume to effluent volume dilution ratio of 10 to 1, unless an alternative mixing zone demonstration is provided under part 7052.0210, subpart 2, that includes a dilution ratio other than 10 to 1 and results in a mixing zone that is no greater than the area of discharge-induced mixing, in which case X equals the dilution ratio established in the demonstration.

C. Where the background receiving water concentration (Cb) of a GLI pollutant exceeds the most stringent applicable water quality standard listed or referenced for that pollutant in part 7052.0100, or criterion for that pollutant developed under part 7052.0110, the intake credit provisions of part 7052.0220, subpart 5, apply.

Subp. 4. **Translating dissolved metal standards to total recoverable WQBELs for metals.** For purposes of expressing dissolved metals standards and criteria as total recoverable WQBELs, the methods in items A to C must be used.

A. WLAs determined in subpart 3 must be calculated using dissolved metal standards. Dissolved metal standards are determined by multiplying the total metal standards, listed in part 7052.0100, by the corresponding conversion factors listed in part 7050.0360. For metals not listed in part 7050.0360, the conversion factor is 1.0. Subsequent calculation of WQBELs requires the translation of the dissolved metal WLAs to total recoverable metal WLAs as described in items B and C.

B. In the absence of site-specific data, the dissolved metal WLAs are translated to total metal WLAs by dividing the dissolved metal WLAs by the corresponding conversion factors in part 7050.0360.

C. The agency must use a total metal translator based upon the collection of site-specific data if an existing or proposed discharger submits a request to the agency and the request is accompanied by a completed site-specific study conducted in accordance with the EPA guidance "The Metals Translator: Guidance for Calculating a Total Recoverable

Permit Limit From a Dissolved Criterion" (EPA-823-B-96-007, June 1996), which is adopted and incorporated by reference under part 7052.0015, item F.

Upon receiving a study that the agency determines has conformed with the metals translator guidance, the agency must use the site-specific translator to convert the dissolved metal WLA into a total recoverable WLA, if the nondegradation provisions under parts 7052.0300 to 7052.0330 and antibacksliding provisions of section 402(o) of the Clean Water Act, United States Code, title 33, section 1342(o), are complied with. Subsequent WQBELs must be calculated from the total recoverable WLA.

Subp. 5. **Calculating effluent limitations from WLAs.** The agency must determine WLAs, including applicable mixing zone determinations from part 7052.0210, for aquatic life, human health, and wildlife water quality standards and criteria using the methods in subparts 2 and 3. WQBELs are calculated from these WLAs, or by using dynamic models based on methods in chapter 5 of the EPA Technical Support Document for Water Quality-Based Toxics Control (EPA-505-2-90-001, March 1991), which is adopted and incorporated by reference in part 7052.0015, item E. The agency must use the methods in items A to G to calculate WQBELs from the WLAs developed under subparts 2 and 3.

A. Assume the effluent concentrations are lognormally distributed and dominate in-stream concentrations and variability after mixing.

B. Characterize the variability of the effluent data by calculating the coefficient of variation (CV), which is the ratio of the standard deviation divided by the mean, using a 99th percentile probability basis ($z_{99} = 2.326$).

C. Calculate the long-term average (LTA) for each applicable WLA determined under subpart 2 or 3 as follows:

(1) calculate the maximum standard LTA (LTA**ms**) protective of acute aquatic life effects as follows:

$$\text{LTA}\mathbf{ms} = \exp(0.5\sigma^2 - z_{99}\sigma) \bullet \text{WLA}\mathbf{ms}$$

Where:

$\sigma^2 = \ln(CV^2 + 1)$

WLA**ms** = the maximum standard WLA

The WLA**ms** is determined under subpart 2 or 3 and is expressed as a one-day maximum;

(2) calculate the chronic standards LTA (LTA**cs**) protective of chronic aquatic life effects as follows:

$$\text{LTA}\mathbf{cs} = \exp(0.5\sigma_4^2 - z_{99}\sigma_4) \bullet \text{WLA}\mathbf{cs}$$

Where:

$\sigma_4^2 = \ln((CV^2/4) + 1)$

WLA**cs** = the chronic standard WLA

The WLA**cs** is determined under subpart 2 or 3 and is expressed as a four-day average; and

(3) calculate the LTA**cs** protective of chronic human health or wildlife effects as follows:

$$LTA\mathbf{cs} = \exp(0.5\sigma_{30}^2 - z_{99}\sigma_{30}) \bullet WLA\mathbf{cs}$$

Where:

$\sigma_{30}^2 = \ln((CV^2/30) + 1)$

The WLA**cs** is determined under subpart 2 or 3 and is expressed as a 30-day average.

D. Calculate the daily maximum and monthly average WQBELs using the lowest determined LTA calculated in item C as follows:

(1) calculate the daily maximum WQBEL as follows:

$$\text{Daily maximum} = \exp(z_{99}\sigma - 0.5\sigma^2) \bullet LTA$$

Where:

$\sigma^2 = \ln(CV^2 + 1)$; and

(2) calculate the monthly average WQBEL as follows:

$$\text{Monthly average} = \exp(z_{95}\sigma_n - 0.5\sigma_n^2) \bullet LTA$$

Where:

$\sigma_n^2 = \ln((CV^2/n) + 1)$

$z_{95} = 1.645$ (95th percentile probability basis)

n = number of samples per month.

E. Establish the most stringent daily maximum WQBEL from item D or the FAV applied under part 7050.0210, subpart 5; 7050.0211, subpart 1; 7050.0212, subpart 6; 7050.0214, subpart 1; 7052.0210, subpart 1; or 7052.0230, subpart 4, as the daily maximum effluent limitation in the permit. When the applicable daily maximum WQBEL determined from item D is established in the permit, the corresponding monthly average WQBEL must also be established in the permit. When the FAV is established in the permit as the daily maximum effluent limitation, no monthly average effluent limitation is established in the permit.

F. For distributions other than lognormal:

(1) apply the most stringent WLA**cs** of those determined under subpart 2 or 3 as the monthly average WQBEL;

(2) apply the more stringent of the WLA**ms** determined under subpart 2 or 3 or the FAV applied under part 7050.0210, subpart 5; 7050.0211, subpart 1; 7050.0212, subpart 6; 7050.0214, subpart 1; 7052.0210, subpart 1; or 7052.0230, subpart 4, as the daily maximum effluent limitation in the permit. When the FAV is as stringent or more stringent than the effluent limitation based on the WLA**cs** determined in subitem (1), no monthly average effluent limitation is established in the permit.

G. Whenever a WQBEL is developed, it must be expressed as both a concentration value and a corresponding mass loading rate. Both mass and concentration limits must be based on the same permit averaging periods, such as daily or monthly averages. The agency must calculate the mass loading rates using effluent flow rates that correspond to those used in establishing the WQBELs expressed in concentration, except if adjustments for wet weather flows have been accommodated in the WLA process on a case-by-case basis. If wet weather flows have been accommodated, the agency must calculate the mass loading rates using the adjusted flows.

Subp. 6. **Solicitation of public input in development of TMDLs.** The agency must provide the following public notification and opportunity for comment during the development and implementation of a TMDL:

A. a public notice and solicitation of comment on the intent of the agency to develop a TMDL for a GLI pollutant where the agency has identified impaired water quality uses;

B. a public notice and solicitation of information and comments regarding preliminary source identification and loadings for a GLI pollutant subject to a TMDL;

C. a public notice and solicitation of comment on proposed source loadings and a proposed TMDL allocation method for a reduction of loadings for a GLI pollutant subject to a TMDL; and

D. a public notice of an effluent limitation in a permit for a GLI pollutant subject to a TMDL, pursuant to the public notice requirements of parts 7001.0100 and 7001.0110.

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