

Minnesota Pollution Control Agency
Responses to the draft 2014 Impaired Waters List 30-Day Public Notice Comments
April 1, 2014

The draft 2014 Impaired Waters List 30-day public comment period began on January 2, 2014 and ended on February 18, 2014. Listed below are the comments received and Minnesota Pollution Control Agency (MPCA) responses. These responses, the complete set of comments, the 2014 proposed Impaired Waters List, and the 2014 Guidance Manual are posted online at the MPCA Impaired Waters website (<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/impaired-waters-list.html>).

Comment 1: Commenter requested adding Mallard Marsh and the Kasota Ponds in Ramsey County to the 2014 Impaired Waters List due to chloride impairment.

Sampling has been completed by the Mississippi Watershed Management Organization (MWMO) from 2008 through spring 2013. Sampling included multiple stations per wetland; 4 day averaging was applied in the assessment. Most sampling occurred monthly. Data originally stored in EQulS, the MPCA's database for water quality sampling results, were not associated with the AUID coverage and, therefore, not pulled in for assessment. During the professional judgment group meeting and in a subsequent meeting in the fall of 2013, the MWMO contacted MPCA about why the wetlands were missing from the draft List and at that time steps were initiated to get the data stored correctly and reanalyzed. This assessment yielded the following results.

Review of Mallard Marsh (62-0259-00)

122 chloride samples (54 4-day average values) over 5 years. Minimum concentration of 248 mg/L and maximum of 819 mg/L. All values exceeded the chronic standard. In the most recent 3 year time period (May 2010 - May 2013), 36 4-day average values were available; ranging from 251 to 819 mg/L, the wetland exceeds the chronic standard for chloride toxicity. The wetland will be added to the 2014 Impaired Waters List.

Review of Kasota Pond North (62-0280-00)

54 4-day average values were collected over 5 years. In the most recent 3 year time period (May 2010 to May 2013), 37 4-day averages were available; ranging from 74 mg/L and a maximum of 1823 mg/L. Seven values exceed the acute standard of 860 mg/L and 27 exceedances of the chronic standard were observed. Data from the wetland exceed both the chronic and acute standard and the wetland will be added to the Impaired Waters List.

Review of Kasota Pond West (62-0281-00)

55 4-day average values collected over 5 years. In the most recent 3 year widow (May 2010 to May 2014), 36 4-day average values were available; ranging from 239 mg/L to 558 mg/L. All values exceed the chronic standard; the wetland will be added to the Impaired Waters List.

Comment 2: Commenter requested adding Lake Henry in Le Sueur County to the 2014 Impaired Waters List.

Lake Henry (40-0104-00) is a 360 acre shallow lake with limited water quality data. Data is available from 2 sampling dates, Aug 8, 2003 and July 23, 2007. Between the 2 dates, there are 3 phosphorus values, two chlorophyll-a values, and one Secchi measurement. The minimum data requirements are 8 samples of phosphorus, chlorophyll-a, and Secchi over a minimum of two years. While the total phosphorus and chlorophyll-a concentrations are well above water quality standards for aquatic recreation, there is not enough information was available in order to make an assessment decision for aquatic recreation use.

Comment 2: Commenter is concerned that raw hog manure is being dumped into Henry.

This comment is not directly related to the Impaired Waters List but the following information was sent to the commenter.

In regards to pumping of raw hog manure into Lake Henry the [Citizen Complaint Form](#) should be completed and submitted to the MPCA to document the incident. The form is used to report incidents that may either negatively impact the environment or be in violation of environmental regulations. By completing this form the proper MPCA staff will be assigned to address the complaint. With information documented in the complaint form MPCA staff will be able to contact the involved parties to work on a solution.

If reporting hazardous materials and petroleum spills contact the duty officer, who is available 24 hours per day, seven days per week: (651) 649-5451, 1-800-422-0798.

Comments 2, 5, and 20: Commenters are concerned with use of aquatic herbicides on lakes.

This comment is not directly related to the Impaired Waters List but the following information was sent to the commenter.

For issues and questions regarding aquatic herbicide use, please see the Minnesota Department of Natural Resources' (DNR) [Aquatic Plant Management Program](#) on the DNR's website.

Comment 3: Commenter requested adding School Lake in Hennepin County to the 2014 Impaired Waters List due to nutrient impairment.

Water chemistry data were submitted to the MPCA on time and were available for assessment in 2012; however, the lake was missed during the initial assessment of the watershed. Staff reviewed water chemistry data for School Lake (27-0151-00) on 3/3/14 (P 156/ +-15.2/ 9), (C 88.3/ +-12.6/ 8), (S 0.3/ +-0.0/ 9) and determined that School Lake does not meet North Central Hardwood Forest (NCHF) shallow lake standards. As a result School Lake will be placed on the Impaired Waters List.

Comment 4 and 16: The commenters requested that the MPCA remove the PFOS in fish tissue impairment from all four assessment units that comprise Mississippi River Pool 2. The comments further request that the MPCA not list the fourth most downstream assessment unit in Pool 2 as impaired for PFOS in the water column.

Background

The MPCA divides all lakes and rivers into assessment units based on geographic features, and each unit is given an identification number (AUID). Pool 2 has four AUIDs and the most downstream AUID contains the lower five-mile section of Pool 2. Since 2008, all four AUIDs in Pool 2 of the Mississippi River have been listed as impaired for PFOS in fish tissue because of the average PFOS concentration in bluegill sunfish before 2009 and in freshwater drum since 2009.

Basis for 2014 listing decision AUID 07010206-502

Overall in Pool 2 of the Mississippi River, PFOS concentrations in fish have generally declined since 2009 (based on data collected in 2011 and 2012). However, one part of the pool continues to exhibit higher fish contaminant levels. An extensive MPCA fish and water study designed and conducted in cooperation with 3M, and the Minnesota Departments of Natural Resources and Health in 2009, found that from Spring Lake to the Hastings Dam (river mile 820 to 815.2), four of the five tested fish species had average fish-tissue PFOS concentrations that exceeded 200 ng/g, which

is the numeric interpretation of the narrative standard used to determine support/non-support of the aquatic-consumption beneficial use in waters.

The 2009 study was repeated in 2012, and found that in this same stretch of river, which is part of the fourth (most downstream) of four assessment units comprising Pool 2, the average PFOS concentration was 347 ng/g in freshwater drum and 438 ng/g in carp. Therefore, fish in this portion of the AUID continue to exceed the use-support threshold for PFOS in fish tissue, and thus this AUID does not support the established aquatic-consumption beneficial use of this water.

PFOS concentrations in water collected in 2009, 2011, and 2012 from this AUID, near the 3M Cottage Grove facility, were above the site-specific water quality criterion for Pool 2 (criterion was 7 ng/L based on 2009 results and recalculated to 14 ng/L based on 2012 results). Therefore, this AUID exceeds the use-support threshold for PFOS in water. It is recommended that this AUID be listed for PFOS in the Water Column in addition to the existing listing for PFOS in Fish Tissue. Additional information is available in the 2012 update report: <http://www.pca.state.mn.us/bkzq82b>.

Basis for 2014 delisting decision AUID 07010206-514, -505, and -504

In the three most upstream AUIDs in Pool 2, none of the fish collected in 2009 and 2012 exceeded the fish-tissue benchmark of 200 ng/g PFOS. In addition, PFOS concentrations in water collected from these same three AUIDs in 2009, 2011, and 2012 were below the site-specific water quality criterion for Pool 2. Therefore, based on looking at all of this historical data, the MPCA has recommended that the three most upstream AUIDs be **delisted** for PFOS in fish tissue.

Comment 4: Comments from 3M Company, January 27, 2014 letter from Vice President Jean Sweeney.

Opening Comment: Based on the extensive data generated since 2009, MPCA's decision not to delist the fourth Assessment Unit is arbitrary and capricious, and the failure to delist the entire Pool 2 is inconsistent with the State's guidance and regulations for impairment listings.

Response: The MPCA believes that the weight of scientific evidence supports **delisting** the upper three assessment units of Pool 2 at this time. Based on MPCA field data, and in the MPCA's best professional judgment, substantial concern and uncertainty remain with respect to the fourth assessment unit of Pool 2. Therefore, the MPCA does not support **delisting** the fourth assessment unit of Pool 2 at this time, and its reasoning is more fully explained in the MPCA's explanation above on the basis for its decision. It remains the MPCA's goal to work for full restoration of all beneficial uses of Pool 2 waters, including in the fourth assessment unit of Pool 2.

Comment 1: Fish concentrations are below the threshold for impairment.

Response: The general approach for impairment assessments for fish contaminants in rivers has been to apply the assessment to all connected assessment units between barriers to the movement of fish. This has generally been based on limited available data and on the assumption that fish swim unabated between barriers. Consequently, before 2009, bluegill sunfish collected in only the lower five mile reach of the 33-mile length of Pool 2 of the Mississippi River exceeded the threshold for impairment and that assessment was applied to the entire length of Pool 2, between Lock and Dams 1 and 2. Beginning in 2009, fish collection for PFCs was expanded to the entire length of Pool 2, dividing the collection into four sections. (These four sections covered the entire length of Pool 2, but do not correspond directly to the long-established *assessment units* used to evaluate the river for a variety of pollutants and potential impairments.) Averages for PFOS by species were calculated for each of the four sections. The assessment for impairment used the overall average PFOS concentration for each species, despite the obviously higher PFOS concentrations in the lower section (Section 4), which extended about five miles from Spring Lake to Lock and Dam 2. 3M conducted a differently designed study in 2011, dividing the whole length of Pool 2 into ten sections. MPCA and DNR conducted a fish collection

study in 2012 that followed the same sampling protocol as 2009. The 2011 and 2012 fish collections identified the specific sampling runs where each fish was collected.

Given the unprecedented detail of where fish were collected in Pool 2 during the 2009, 2011, and 2012 collections, it was clear to the MPCA that there were discernible differences in PFOS concentrations in fish within Pool 2, with the highest PFOS concentrations in all fish species occurring in the lowest five-mile section of Pool 2. Therefore, using the best available science and data, it is neither necessary nor appropriate to rely on the assumption that the fish move throughout Pool 2 and to extrapolate from one section to the entire Pool 2.

The MPCA divides all lakes and rivers into assessment units based on geographic features, and each unit is given an identification number (AUID). Pool 2 has four AUIDs and the most downstream AUID contains the lower five-mile section of Pool 2. Since 2008, all four AUIDs in Pool 2 of the Mississippi River have been listed as impaired for PFOS in fish tissue because of the average PFOS concentration in bluegill sunfish before 2009 and in freshwater drum since 2009. In the three most upstream AUIDs in Pool 2, none of the fish collected in 2009 and 2012 exceeded the fish-tissue impairment threshold of 200 ng/g PFOS. In addition, PFOS concentrations in water collected from these same three AUIDs in 2009, 2011, and 2012 were below the site-specific water quality criterion for Pool 2. Therefore, based on looking at all of this historical data, the MPCA has recommended that the most upstream three AUIDs be **delisted** for PFOS in fish tissue.

Within the most downstream AUID—from Spring Lake to the Hastings Dam (river mile 820 to 815.2)—two of the five tested fish species in the 2012 MPCA study had average PFOS concentrations that exceeded the fish-tissue impairment threshold of 200 ng/g. The average PFOS concentration for 2012 was 347 ng/g in freshwater drum and 438 ng/g in carp. Therefore, fish in this portion of the AUID continue to exceed the impairment threshold for PFOS in fish tissue.

The commenter also questioned whether use of arithmetic mean was appropriate in this circumstance. MDH and other states' agencies use arithmetic means of contaminants to determine fish consumption advisories. The arithmetic mean is more appropriate than the geometric mean for assessing long-term exposure to a contaminant, because the arithmetic mean is sensitive to the high concentrations that consumers could be exposed to over their lifetimes.

3M's January 27, 2014 comment letter also included results of another fish survey in Pool 2 conducted by a consultant for 3M in the fall of 2013. The MPCA was not consulted in advance of this study, and as with 3M's 2011 study, there appear to be important design differences between this study and the MPCA's 2009 and 2012 studies that add uncertainty to the results. For example, 3M elected not to take water samples in its 2013 study. It is the MPCA's intent to re-sample all PFOS-impaired waters to determine if the impairment continues and whether MPCA-ordered cleanups of known disposal sites and pollution prevention measures implemented in the watersheds at industries and wastewater treatment facilities have been effective.

In addition, PFOS concentrations in water collected in 2009, 2011, and 2012 from the most downstream AUID, near the 3M Cottage Grove facility, were above the site-specific water quality criterion for Pool 2. Therefore, this AUID exceeds the impairment threshold for PFOS in water.

Comment 2: The MPCA did not follow its own guidelines and state rules for impairment listings in declining to delist the entire Pool 2 PFOS impairment, after the MDH changed its fish consumption advice to a one meal per week restriction.

Response: The MPCA has followed its guidelines and rules in determining when PFOS-contaminated waters should be listed as impaired. For the action of **delisting**, enough certainty exists to support delisting the three most upstream AUIDs of Pool 2, but substantial uncertainty remains with respect to the status of the most downstream assessment unit, as described above. Therefore the MPCA does not recommend delisting the most downstream assessment unit at this time, but is hopeful that positive trends will continue and that delisting can be justified based on additional data in the future.

The MPCA assessment for impairment of waters relating to fish for human consumption is on the basis of a water body. See [Minn. R. ch. 7050.0150](#), subp. 7. Water body is defined in [Minn. R. ch. 7050.0150](#), subp. 4.Y. as a lake, reservoir, wetland, or “a geographically defined portion of a river or stream.” Pool 2 is divided into four geographically defined portions as four AUIDs. Currently, as in the past, the MPCA has listed impairments based on each individual AUID within Pool 2. It continues to do so in this case, finding that only the most downstream AUID should continue to be listed as impaired based on a review of all of the historical data.

The Minnesota Health Department (MDH) continues to use the species averages for the whole pool for simplicity and clarity in fish consumption advice on rivers. However, MDH put a footnote in its fish consumption advisory for Pool 2 that states that fish near Lock and Dam No. 2 (which is in the most downstream AUID) may have higher levels of PFOS than those in other areas of Pool 2 and linked the reader to the MPCA’s 2012 report “Perfluorochemicals in Mississippi River Pool 2: 2012 Update” for more information on those higher levels. As described above, the MPCA’s 2012 Report indicated that two of the five fish species in the impaired portion of the most downstream AUID had average PFOS concentrations that exceeded the fish-tissue impairment threshold of 200 ng/g.

Comment 3: Fish data should be the sole basis for impairment determination.

Response: A site specific water quality criterion for PFOS was calculated and adopted in accordance with [Minn. R. ch. 7050.0218](#), and was revised according to the same rule after the MPCA fish and water study in 2012. As such, this criterion should be used along with monitoring data in determining the impairment status of the water in question.

PFOS concentrations in water collected in 2009, 2011, and 2012 from the most downstream AUID, near the 3M Cottage Grove facility, were above the site-specific water quality criterion for Pool 2. Therefore, this AUID exceeds the impairment threshold for PFOS in water.

Comment 4: Impairment should be evaluated for all of Pool 2, not individual assessment units within the pool.

Response: The listing of a water body as an impaired water is generally done by individual assessment units. In some instances with respect to rivers, assessment units may be aggregated for the listing of rivers for contaminants in fish tissue. When assessment units are aggregated, however, the listing of an individual assessment unit as impaired still occurs.

This does not necessarily mean, for restoration purposes, that the entire assessment unit requires remediation. Rather, it means that, where there is a water quality problem within the assessment unit, it needs to be addressed. Restoration and pollution prevention actions subsequent to the listing are then taken at the appropriate specific locations within or affecting the assessment unit.

In such a case, the averaging of pollutant concentrations across an entire assessment unit could be inappropriate, as it could mask localized water quality problems within the assessment unit.

The commenter is essentially arguing that, because fish can swim away from the problem area, the entire pool from one dam to another should be listed as impaired. From a review of all of the available historical data, however, it is apparent that fish with high contaminant levels of PFOS are found in only one specific area – the most downstream AUID. Based on all of the data collected, it is neither necessary nor appropriate to list the entire pool as impaired. (See also response to 3M Comment 1 above.)

Comment 5: Water concentrations are below the threshold for impairment because the monitoring in question was not done in accordance with the MPCA’s guidance. Using data that may be influenced by point sources is not acceptable.

Response: Contrary to commenter's assertion, no MPCA guidance has ever suggested that using data that may be influenced by point sources is not acceptable. The Agency was originally created to address water quality problems stemming from point sources. The guidance quoted by the commenter is written for citizen monitoring efforts to prevent inappropriate volunteer sampling within the mixing zones of point-source effluents. The monitoring location where the MPCA took samples is not located in such a mixing zone; consequently, it provides appropriate information regarding a portion of the river that has been shown to have high PFOS concentrations in both fish tissue and water.

Comment 6: MPCA's reasons for not delisting Pool 2 as impaired in 2012 have been addressed and are no longer valid. Commenter's Attachment B lists statements made by the MPCA in September 7, 2012 in MPCA's response to 3M's comments on the draft 2012 impaired waters lists, and 3M response at this time to each of those statements.

Response: 3M cites MPCA's stated concerns related to the design of 3M's 2011 study and MPCA's conclusion that there was not sufficient data to delist Pool 2 as an impaired water. The U.S. Environmental Protection Agency approved the 2012 Impaired Waters List, and thus agreed with the MPCA's reasoning. The MPCA's current reasons for delisting the three most upstream AUIDs of Pool 2 for the 2014 Impaired Waters List are based on additional data collected during the MPCA's 2012 study of Pool 2 and on a review of the historical data. See also MPCA's explanation of MPCA's decision to delist the three most upstream AUIDs and to continue to list the most downstream AUID in Pool 2 as an impaired water body, which is found at the beginning of these responses.

Comment 16: Comments from Metropolitan Council Environmental Services, February 11, 2014 letter from General Manager, Leisa Thompson.

Comment 1: The data supports the removal of the PFOS impairment for Pool 2. Pool 2 no longer meets criteria for inclusion on the impaired waters list and should be delisted for impairment during the 2014 cycle. Commenter cites data from four fish studies.

Response: See MPCA's Response to 3M Comment 1.

Comment 2: MPCA concerns for PFOS in Pool 2 are restricted to a specific area and should be addressed as such. The lower portion of Section 3 of Pool 2 is not impaired, and only a small portion of Section 4 may need additional attention. Fish, surface water, sediment and invertebrate PFOS data document that a site-specific approach may be needed for a portion of Pool 2. Remaining PFOS concerns can be addressed in other ways.

Response: The MPCA's listing an AUID as impaired applies to the entire AUID even if there is elevated data from only a portion of the AUID. The averaging of pollutant concentrations across an entire assessment unit could be inappropriate, as it could mask localized water quality problems within an assessment unit.

The listing of a water body as an impaired water is done by individual assessment units. With respect to rivers, assessment units may be aggregated for assessment of contaminants in fish tissue. When assessment units are aggregated, however, the listing of an individual assessment unit as impaired still occurs. This does not necessarily mean, for restoration purposes, that the entire assessment unit requires remediation. Rather, it means that where there is a water quality problem within the assessment unit, it needs to be addressed. Restoration and pollution prevention actions may then be taken subsequent to the listing, at the appropriate specific locations within or affecting the assessment unit.

As the commenter suggests, a localized approach to addressing PFOS contamination within the assessment unit may well be appropriate for implementation of a Total Maximum Daily Load (TMDL) or comparable action leading to effective remediation, prevention and/or restoration. The proposed 303(d) listing, however, represents a decision regarding impairment, not implementation. Implementation can take various approaches,

and implementation always looks at the specific problem within the impaired water body. A listing as impaired is a necessary first step in the process of determining steps that should then be taken to eliminate the impairment.

The MPCA believes that weight of scientific evidence supports **delisting** the three most upstream assessment units from the impaired water list for PFOS. Based on the MPCA's study data and best professional judgment, substantial concern and uncertainty remain with respect to the most downstream assessment unit of Pool 2. Therefore, the MPCA does not support **delisting** that most downstream AUID of Pool 2 at this time. It is of course the MPCA's goal to continue to work for full restoration of all beneficial uses of Pool 2 waters.

Comment 6: Commenter has continuous monitoring data to support the MPCA's decision to delist the dissolved oxygen impairment on the Thief River from Agassiz Pool to the Red Lake River.

The MPCA appreciates the efforts to collect and provide additional data in support of delisting of the dissolved oxygen (DO) impairment for 09020304-501—Thief River, Agassiz Pool to Red Lake River. The MPCA will retain the submitted data for documentation and future reference, and work to incorporate it into our Hydstra database along with your calibration and quality assurance information. The MPCA is currently working towards incorporating more continuous monitoring data into the assessment process by devoting additional resources towards identifying, storing, and managing these data in a central database.

Comment 7: Commenter is concerned that the MPCA's assessment relies heavily upon automated software and inconsistent delineation of assessment units (AUIDs).

Inconsistent delineation of assessment units (AUIDs)

AUID lengths are generally determined by changes in beneficial use classifications or confluences with major tributaries. Historically AUID lengths were established using maps with limited detail at a scale of 1:100,000 to identify major tributaries and reach lengths were generally several miles long. With the availability of more precise maps and GIS technology the MPCA has able to establish new AUIDs at a finer scale of 1:24,000. The more detailed maps provided better definition of tributaries. Better maps coupled with the expansion of our monitoring programs over the past ten years has meant that more monitoring stations are present on streams that had never been assessed. Therefore, the MPCA created new AUIDs on a more detailed map scale. Verification of beneficial use classifications against listings in [Minn. R. ch. 7050](#) has also resulted in AUID splits. These changes have resulted in AUIDs with more variable lengths.

AUIDs can be split into smaller reaches, but splits are generally done only when there are significant geographic or water quality differences present along an AUID (e.g., lakes, tributary streams, dams, geographic features, etc.) such that conditions are significantly different above and below a feature. Splits are not done only on the basis of pollutant sources along a reach, and careful consideration is given to how splits would affect other existing impairments.

Splitting AUIDs with multiple impairments presents some difficulties with AUID tracking, so recommendations for splits are thoroughly evaluated to determine how best to address existing impairments when splits are proposed. For example, the Thief River AUID 09020304-501 has been listed as impaired for Turbidity and Dissolved Oxygen since the 2006 TMDL list. If the AUID were split as proposed, the data used for listing the turbidity and DO impairments (and current DO delisting) would need to be re-evaluated.

Reliance on automated software

There are several steps in the assessment process, as identified in Section III of the [Guidance Manual for Assessing the Quality of Minnesota Surface Waters for determination of Impairment 305\(b\) Report and 303\(d\) List](#) (posted on the [Impaired Waters List website](#) and commonly referred to as the Guidance Manual). The MPCA does rely on automated software to help initially process the large volume of data used for assessments, but only to pre-process the data

according to the assessment methodology outlined in the Guidance Manual. The data are subsequently reviewed in greater detail during the desktop review step where staff review provides further evaluation, taking into account several factors/considerations and additional information to make preliminary assessment decisions. Preliminary assessment considerations may include dates of sample collection (years and months), variability of data within a month, magnitude of exceedances, laboratory qualifiers associated with individual values, previous assessments, 303(d) listings, etc. Data and preliminary assessments decisions are also reviewed and discussed, with opportunity for input from additional staff in Watershed Assessment Team (WAT) meetings. Preliminary assessments are later shared with stakeholders in Professional Judgment Group (PJG) meetings to provide additional input on AUIDs of interest before final assessment decisions are made.

Comment 7: Commenter requested the Thief River from Agassiz Pool to the Red Lake River be added to the 2014 Impaired Waters List due to bacteria (*E. coli*) impairment.

The desktop review of the Thief River, from Agassiz Pool to the Red Lake River (09020304-501), occurred on 2/21/13. The WAT meeting occurred on 2/28/13 and the PJG meeting occurred on 4/2/13. The commenter corresponded with MPCA staff on 4/15/13 following the PJG meeting, indicating his review of data showed a September geometric mean of 128 organisms (orgs)/100mL. The geometric mean standard is 126 orgs/100mL.

MPCA staff further reviewed and analyzed the data and communicated the results of this analysis in early May. The *E. coli* data for this AUID included a total of 218 individual samples from five stations over the ten year time period. Six sample results were greater than 1260 orgs/100mL, a 2.7% exceedance rate for the maximum part of the standard and less than the 10% threshold for impairment. The September geometric mean is 99.9 orgs/100mL using existing assessment methodology. Further evaluation of the September data shows that a change in the bacteria count from a single highest value could result in a geometric mean at or below the 126 org/100mLs geometric mean standard, so this was considered a borderline dataset with low confidence in impairment. MPCA staff responded to the commenter on 5/3/13 regarding the assessment methodology and results of further data review. The commenter replied on 5/7/13 with agreement that the AUID was "borderline" impaired and was open to accepting the results of the assessment as fully supporting.

Additional review was done to include newer sampling data from 2013 for this response. The dataset has a total of 238 individual samples from five stations over a ten year time period. Seven sample results are greater than 1260 orgs/100mL, which is a 2.9% exceedance rate for the maximum part of the standard and less than the 10% threshold for impairment. The September geometric mean is 97 orgs/100mL using existing assessment methodology. The result is similar to the previous assessment.

There are only a few dates when samples were collected both at upstream and the most downstream site S003-945 (THIEF R AT GOLF COURSE BRG ON CSAH-31, 2 MI N THIEF R FALLS). A review of the entire dataset by station in upstream to downstream order by date shows that bacteria concentrations are variable throughout the reach on any given sampling date. Downstream counts can be lower, similar, or higher than upstream counts. Although conditions on a particular day may indicate a potential exceedance of the standard, the use support assessment is meant to evaluate the overall long term condition of the AUID with respect to the standard, which is expressed as a geometric mean. The use of geometric mean makes sense on a broader scale when looking at a ten year time window for assessments, whereby the geometric mean reduces the impact of relatively rare events. The MPCA longer term use support assessments are based on several years of data and are distinguished from short term advisories that are based only on current real-time data.

For further evaluations it is appropriate to look at data from individual stations; however, we are not determining impairments for individual stations, rather for the entire reach. Although conditions on a particular day may indicate a potential exceedance of the standard, the assessment is meant to evaluate the overall long term condition of the AUID with respect to the standard, which is expressed as a geometric mean. The MPCA wants to be confident in our decisions to list impairments and have data that clearly supports our decisions. The MPCA does not feel that that data on the Thief

River clearly supports an impairment determination on the Thief River (09020304-501); therefore, it will not be added to the Impaired Waters List for *E. coli*.

The MPCA would like to note that [watershed approach](#) is meant not only to identify impaired waters, but to determine the overall health of water resources and identify waters in need of additional protection efforts to prevent impairments. Restoration and protection strategies and implementation plans for the watershed should address concerns, so that listing waters as impaired is not the only or primary method of addressing sources of impairment.

Comment 7: Commenter is concerned that using the arithmetic mean, over the geomean, may be better for the protection of public health.

The water quality standard is expressed as a geometric mean ([Minn. R. ch. 7050.0222 subp.4](#)) and its purpose is to protect human health. The geometric mean is a commonly used log transformation of data to provide more meaningful evaluations of bacteria data. Because bacteria counts can vary over several orders of magnitude and often have a skewed distribution resulting from many low values and fewer high values, a geometric mean is the preferred statistic for summarizing microbiological data. The use of a geometric mean is based on the distribution of the data. Therefore, the MPCA's methodology regarding the assessment of streams and rivers for the protection of human health will not change. See section VIII.A. of the Guidance Manual (posted on the [Impaired Waters List website](#)).

Comment 8: Commenter requested not adding Rice Lake – West Basin in Hennepin County to the 2014 Impaired Waters List due to nutrient impairment.

The west basin of Rice Lake (27-0116-02) is a small, (37 ac) shallow (maximum depth of 6 ft) bay at the upper end of Rice Lake's main basin (27-0116-01) in Maple Grove. The bay appears to be formed by impounded water as a result of constricted flow by Interstate 94. The 122Q10 flow residence time was calculated for the western basin of Rice Lake and found to be 9.8 days (1991-2012) and 11.4 days (2001-2012). This is below the 14 day residence time indicating this waterbody is more riverine than lake and lake eutrophication standards are an inappropriate application. As a result, a correction will be made to the Impaired Waters List to remove the western basin of Rice Lake (27-0116-02) because of its short residence time.

Comment 9, 19, 23, 24, and 26: Commenters are concerned with the appropriateness of the application of our existing chloride standard.

The MPCA has an existing water quality standard (WQS) for chloride in rule. The basis of any WQS is sound science. The MPCA adopts WQSs as a condition of the implementing the federal Clean Water Act, which are approved by the United States Environmental Protection Agency (USEPA). Water quality standards comprise a designated use that applies to state surface waters, a numeric value that is protective of aquatic life, recreation and human health and protection from degradation. Water quality standards are used to assess waterbodies for impaired condition. The current WQS for chloride is what is used for assessments at this time. When additional information is available from USEPA regarding chloride effects on aquatic life, this information will be considered for a revision to the chloride water quality standard in future rulemaking.

Comment 10: Commenter questioned the accuracy of the GIS linework for AUID 07010206-718 (Unnamed Creek)

The AUID 07010206-718 was corrected on 9/26/13 as a result of communication with the Minnehaha Creek Watershed District (MCWD). Linework is in the process of being updated and the old description and direction of flow does still appear on the impaired waters viewer web application. The new description reads "Unnamed ditch to wetland", instead

of “Headwaters to unn ditch”, and the direction of the flow had been reversed in the linework and should be available by the end of March 2014.

Comment 11 and 14: Commenters requested adding the Embarrass River (04010201-579 based on the coordinates in *Barr 2013b*), Partridge River (04010201-552 based on the coordinates in *Barr 2013b*), Lake Sabin (69-0434-01), Wynne Lake (69-0434-02) and Colby Lake (69-0249-00) to the 2014 Impaired Waters List due to mercury in water column impairment.

The MPCA again received three technical documents produced by Barr Engineering on behalf of the PolyMet Corporation that had been received by different staff at MPCA over a number of years. The reports were cited in the comment letter (Section 11 of the “Compilation of public comments” posted on the [Impaired Waters List website](#)) and will be referenced in the response as follows:

- *Barr 2013b* Technical Memorandum: ongoing data collection for the NorthMet water quality modeling (aka Data Sufficiency Document) – version 3, February 25, 2013;
- *Barr 2010c* Technical Memorandum: Results from the Additional Baseline Monitoring for Sulfate and Methylmercury in the Embarrass River Watershed (July – November 2009). April 9, 2010;
- *Barr 2007h* Technical Memorandum: Updated PolyMet Mining Baseline Surface water Quality Information Report (RS63), June 29, 2007.

The data are not in EQulS because they are in pdf reports and not ready to be entered into the database. MPCA has requested the PolyMet provide the data in an EQulS-ready format and that request has been passed on to Barr Engineering. The data from the 2010 and 2007 reports was received in an EQulS-ready format on March 18, 2014.

Between the three documents, only *Barr 2010c* explicitly details that clean hands/dirty hands methodology was used to collect the data. The EQulS submittal did include the data from the *2007h* and *2010c* reports and did list that USEPA analytical method 1631 was use for lab analysis for data collected in those reports. For this reason, only the data from *Barr 2010c* will be used for assessment determination.

Data are available from 2009 only for Wynne and Sabin Lakes. Five water samples were collected; July to November. The MPCA conducts mercury assessments using a 30 day average. Two of the data from Wynne and Sabin Lakes were collected within a month of each other, which reduces the total number of samples to 4. Consistent with the assessment method 2 or more exceedances within a 3 year period count as an impairment. QA/QC information provided with the *Barr 2010c* indicated that equipment/field blanks picked up low levels of mercury, so all samples taken at depth were excluded; the document indicated that the clean hands dirty hands protocol was used and that the USEPA 1631 analysis method was used which is required for assessment level data. Samples were collected at (PM-21) 69-0434-01-101 and (PM23) 69-0434-02-202 (Table 1). MPCA will add Sabin and Wynne Lakes to the Impaired Waters List for mercury in the water column.

Table 1. Sabin and Wynne mercury in water column data

Total Hg (ng/L)	PM-21 (Sabin)	PM22 (Wynne)
7/9/2009	5.50	5.0
7/29/2009	3.20	3.6
7/09 Avg	4.35	4.3
8/21/2009	2.10	2.2
9/23/2009	2.20	2.8
11/4/2009	3.30	2.0
Standard 1.3 ng/L	4/4 exceedances	4/4 exceedances

Colby Lake was sampled in 2010 (sites LCy1 and LCy2). However, mercury was not included in the analyte list (*Barr 2013b*). Therefore, no assessment of mercury content in Colby Lake can be made.

Data from *Barr 2010c* included chemistry sampling from Embarrass River (04010201-579). It did not include stations on the Partridge River (04010201-552). The data reported to MPCA in was as the dissolved sample fraction; total fraction is used for assessments. Therefore, no assessment of mercury content in the Embarrass and Partridge rivers can be made at this time.

Comment 12: Commenter requested Carlson (Quigley) Lake in Dakota County not be added to the 2014 Impaired Waters List.

Carlson (Quigley) Lake (19-0155-00) was review by MPCA staff to determine if this waterbody is in fact a shallow lake or a wetland. Based on Carlson's (Quigley) shallow depth (6 feet maximum, 3.7 feet mean), and the percentage of emergent aquatic vegetation, the basin appears to be a wetland. As a result, lake eutrophication standards do not apply and the MPCA will remove Quigley from the 2014 draft Impaired Waters List.

Comment 12: Commenter requested the delisting of Fish Lake in Dakota County for nutrients.

Fish Lake (19-0057-00) has been actively managed for excess nutrients based on a TMDL study in 2010. Water quality has shown improvements since implementation of the TMDL Plan. However, currently active management is ongoing in the form of inflow alum treatments and aquatic plant harvesting. These management practices are likely the cause of increased water quality to the point of meeting lake eutrophication standards. With three years of water quality data 2011-2013 meeting lake eutrophication standards it is recommended that Fish Lake be removed from the impaired waters list, see comment from the City of Eagan. However, it should be noted that if these active management practices cease and water quality degrades to the point of not meeting the lake eutrophication standard, Fish Lake would be placed back on the impaired waters list. As a result, Fish Lake will be delisted from the Impaired Water List fro nutrients.

Comment 13: Commenter supports the MPCA's decision to list Diamond Lake in Hennepin County for chloride.

Thank you for the comment of support on the listing of Diamond Lake for exceedance of the chloride standard.

Comments 14, 18, 27: Commenters expressed concern because no waters were listed as impaired for the wild rice sulfate standard and requested the addition of specific waters to the list as impaired for the wild rice sulfate standard.

As noted in Comment 14, USEPA stated the need for the MPCA to assess waters for the wild rice sulfate standard as part of the 2014 303(d) List during their review of the draft 2012 Impaired Waters List. At the beginning of 2013 USEPA Region 5 and the MPCA jointly prioritized assessments for the wild rice sulfate standard as part of the draft 2014 Impaired Waters List. Since then EPA Region 5 and the MPCA agreed that the submittal of draft 2014 Impaired Waters List would be in two-parts. This two-part submittal is necessary in order to allow the process of developing factors to identify “waters used for production of wild rice” (WUFPOWR), identifying those waters and assessing the status of those waters to go forward. Additional time is also needed for the MPCA to review the draft wild rice sulfate assessment methodology in light of new data and analysis from the Wild Rice Sulfate Standard study. As that work is still ongoing, the MPCA is submitting a first part that does not contain an assessment of waters for the wild rice sulfate standard. When the process for identifying WUFPOWR is complete and an up-to-date assessment methodology is available, the MPCA will complete the assessment, including a formal public notice of the results with comment period, and submit a second part, the wild rice sulfate standard assessment results, to USEPA for review and approval separate from the rest of the 2014 Impaired Waters List.

Comment 15: Commenter requested that the north basin of Long Lake in Ramsey County be assessed separately from the south basin, and removed from the draft 2014 Impaired Waters List for nutrients.

This request is based on two factors: 1) Inherent differences exist between the north and south basins on Long Lake (62-0067-00), and 2) the north basin of Long Lake lacks sufficient hydraulic residence time to be assessed on the Impaired Waters List.

During the modeling analysis for Long Lake it was determined that the residence time of the north portion of the lake was ~3 days, with the influence of Rice Creek. The northern and southern portions of the lake are separated by a narrow channel, flow is generally from the south to the north with Rice Creek entering and exiting the north portion, with little mixing between the basins.

MPCA, in consultation with the Rice Creek Watershed District, agreed to request that the Minnesota Department of Natural Resources split Long Lake into a northern (North Long, 62-0067-01) and a southern basin (South Long, 62-0067-02). Existing mercury impairments for fish consumption would apply to both basins, as the narrows is not an effective barrier for fish movement.

The two basins are very different; Rice Creek heavily influences the north basin. With a very short residence time, the lake eutrophication standards are not appropriate, as the high flushing rate indicates a replacement of the water in the north basin every three days. It is likely that North Long Lake will be reconsidered during future assessments of Rice Creek for the not-yet-promulgated draft river eutrophication standards. As a result, MPCA will remove the listing for nutrient for North Long (62-0067-01) and retain the impairment for nutrients on South Long (62-0067-02), as it still exceeds the deep lake eutrophication standard (Table 2).

Table 2. Comparison of lake eutrophication standards to Long Lake data

Ecoregion	TP	Chl-a	Secchi
	µg/L	µg/L	meters
NCHF – Aquatic Rec. Use (Class 2B)	< 40	< 14	> 1.4
NCHF – Trophic State Thresholds for impairment (pre-2010 cycle)	< 45	< 18	> 1.1
2004-2013 Long Lake (North) 62-0067-01	121	48	0.7
2004-2013 Long Lake (South) 62-0067-02	49	26	1.5

Exceedances of the chloride standard were limited to the southern basin and the aquatic life impairment in the 2014 Impaired Waters List will be assigned to South Long Lake (62-0067-02) only.

Comment 17: Commenter suggested that the listing of Grand Marais Creek for chlorpyrifos is not justified based on the available data. Commenter also noted that there is a possible error in the TMDL schedule as shown for the Tamarac River.

Grand Marais Creek was actually sampled 27 times for chlorpyrifos between 2008 and 2012. Chlorpyrifos concentrations exceeded the chronic standard on four occasions (5/25/10, 7/25/11, 7/27/11, 8/11/11). The measured concentration on the last of these dates was 0.16 mg/L, almost twice the maximum standard. This exceedance of the maximum standard is sufficient for a determination of impairment of aquatic life.

Regarding the TMDL schedule, the error has been corrected.

Comment 19, 21, 23, and 26: Commenters are concerned with the consistent application of methodology and documentation of guidance regarding the MPCA's assessment for chloride in Minnesota waters.

It was noted in the 2012 Guidance Manual that the MPCA was applying the chloride standard to lakes and a brief description was provided on page 14 of the document that was available for review with the 2012 Impaired Waters List.

The methodology description was revised in 2014 to better describe how it was applied in the 2014 assessments. The draft Guidance Manual was included in the January 13, 2014 State Register public notice. As stated in the notice this is the opportunity for public review and comment on the Guidance Manual along with the draft Impaired Waters List. Comments received regarding assessment methodologies in the Guidance Manual are considered and included in our response to comments along with any revision made to the Guidance Manual based on comments received.

As a result of comments received during the public comment period, it was determined that the description of the methodology was not adequate and needed to be revised. Since the close of the public comment period, the guidance has been updated (see the 2014 Guidance Manual posted on the [Impaired Waters List website](#)) to better detail the method that was used to apply the standard to lakes and wetlands (non-flowing waters). Assessment decisions were reviewed and in some cases corrected to meet the revised methodology.

Kohlman Lake (62-0006-00) is a very shallow basin (max depth 2-3 meters). As a result of the revised mentioned above, the lake was reviewed. Exceedances do occur in May, June and July 2009. Sampling is limited to monthly. Exceedances were also noted in spring of 2011, 2012, and 2013. In 2011 and 2012, an increase in concentrations was observed leading up to the exceedance and a decline after the exceedance. These exceedances are averages of the entire water column, resulting in 3 exceedances in 2009 (reviewed as stable conditions by professional judgment group) and not considered to be an isolated incident, as late winter/early spring spikes were noted in subsequent years (2011 and 2012). The lake is meeting the assessment guidance and will remain on the Impaired Waters List for chloride.

Carver Lake (82-0166-00) has consistent exceedances at bottom depth and mid-depth. The revised and methodology was applied and the lake exceeds the chronic standard and will remain on the Impaired Waters List for chloride.

Comment 19 and 23: Commenters requested that Gervais, Wakefield, and Johanna Lakes in Ramsey County not be added draft 2014 Impaired Waters List for chloride.

Review of Gervais Lake (62-0007-00)

All relevant pollutant data collected during the most recent 10 years is reviewed during the assessment; to help during the professional judgment group meeting, notes are made that describe the dataset. Consistent elevated concentrations are helpful to discern if exceedances are an outlier or a localized (temporal or spatial) problem. The assessment determination of Gervais Lake was made considering the three exceedances of the standard in a three year period, which meets the listing guidance for toxic pollutants.

In light of revisions to the guidance regarding toxics assessments, a closer look was made into single data points extrapolated to a 4-day average. Upon further review of the data, it was determined that the will not be included on the Impaired Waters List for chloride (aquatic life impairment). Chloride concentrations in the lake are extremely variable and the existing dataset is not sufficient to characterize an impaired condition. None of the three exceedances in the data record were sustained in subsequent sampling events (two to three weeks following the initial samples). The variability in the data does not provide sufficient evidence that the single sample is representative of a condition present for 4 days. To be able to determine aquatic life use support, monitoring at a greater frequency will be required in this lake where chloride concentrations appear variable.

The assessment will be changed to insufficient information for aquatic life use support and the impairment will be removed from the draft Impaired Waters List.

Review of Wakefield Lake (62-0011-00)

Commenter raised concern that the time between the chronic standard exceedances (2004 and 2005) and the more recent exceedances (single in 2009 and single in 2013) does not adequately represent a chronic condition.

The data from 2004 and 2005 does meet the listing criteria. The concentrations do exceed the standards. However, upon further review for the data on Wakefield Lake, MPCA agrees with the comment; the sampling frequency is not great enough to determine that a single sample is representative of a 4-day chronic condition. The concentrations vary greatly, and preceding and successive samples do not show a gradual or sustained increase or decline.

The assessment will be changed to insufficient information for aquatic life use support and the impairment will be removed from the draft Impaired Waters List.

Review of Lake Johanna (62-0078-00)

Concern noted that comments were made about recent data having concentrations approaching the standard. All data is reviewed during the assessment; to help during the professional judgment group meeting, notes are made that describe the dataset. Consistent elevated concentrations are helpful to discern if exceedances are an outlier or a localized (temporal or spatial) problem. The assessment determination was not made based on the presence of samples close to the standard; the determination was made on the presence of two exceedances of the standard in a three year period, which meets our listing guidance for toxic pollutants.

In light of revisions to the guidance regarding toxics assessments, a closer look was made into single data points extrapolated to a 4-day average. Upon further review of the data, it was determined that the lake should be removed from the list for chloride (aquatic life impairment). None of the three exceedances in the data record were sustained in subsequent sampling events. The variability in the data does not provide sufficient evidence that the single sample is representative of a condition present for 4 days. To be able to determine aquatic life use support, monitoring at a greater frequency will be required in this system where chloride concentrations are variable.

The assessment will be changed to insufficient information for aquatic life use support and the impairment will be removed from the draft Impaired Waters List.

Comment 20: Commenter is concerned about the shoreline maintenance, fishery, and lack of action to improve Hunt Lake in Rice County.

This comment is not directly related to the Impaired Waters List but the following information was sent to the commenter.

MPCA notes the importance of lake shoreline best management practices (BMPs) and encourages their application. Hunt Lake (66-0047-00) residents can work with MN DNR and Rice County to examine shoreline practices, educate landowners and pursue voluntary improvements and/or funding to cost-share projects. Information about the DNR's [Aquatic Habitat Restoration Grant Program](#) can be found on their website.

MPCA notes the comment includes anecdotal references and information regarding the Hunt Lake fishery that will be useful as we examine the lake further and construct a nutrient Total Maximum Daily Load (TMDL). Recent fisheries data can be examined at the [DNR Lakefinder website](#). Historical data can be obtained from the Waterville Area Fisheries Office (507-362-4223).

At the present time MPCA staff and partners are studying the surface waters of the Cannon River watershed, including both lakes and streams. In 2014 and 2015 this work will produce pollution reduction goals and plans for pursuing them. For more information on this process and its current status please contact Justin Watkins at the Rochester office (507-206-2621).

Water clarity is an important trophic status indicator that tracks very well with total phosphorus and chlorophyll-a. The measurement is simple and it takes little time. Hunt Lake would benefit from long-term documentation of water clarity. The Citizen Lake Monitoring Program (CLMP) provides a free Secchi disc to a lake volunteer. For more information go to the MPCA [CLMP website](#).

Comment 21: Commenter is concerned with the applicability of chloride standard to all waters.

Water quality standards are designed to protect beneficial uses of waters such as recreation and aquatic life. All waters of the state are assigned uses and awarded the protection of the water quality standards associated with those uses. The chloride water quality standard protects the aquatic life beneficial use and applies to lakes, wetlands, and rivers that carry the aquatic life beneficial use.

Comment 21: Commenter requested Medicine, Wirth, and Spring Lakes in Hennepin County not be added to the 2014 Impaired Waters List for chloride.

Review of Medicine Lake (27-0104-00)

Commenter expressed concern with the application of the chloride methodology and questioned the validity of the aquatic life listing based on the chronic standard exceedance for chloride.

MPCA has reviewed and updated the methodology applied to non-flowing waters for chloride and the guidance document has been updated. To meet the 4-day average, for lakes daily averaging of the bottom two meters will occur, which will result in no exceedances of the chloride standard in Medicine Lake. The Medicine Lake exceedances were limited to the station in the southwest bay and were not representative of conditions across the depth of the entire lake.

The assessment will be changed to insufficient information for aquatic life use support and the impairment will be removed from the draft Impaired Waters List.

Review of Wirth (27-0037-00)

Commenter expressed concern that exceedances were noted during a construction project and not representative of normal conditions.

During the professional judgment meeting, local stakeholders indicated that construction occurred in 2011. Many of the exceedances were from 2011; however, 4 of the exceedances were from other years, preceding and following the construction project.

In light of revisions to the guidance regarding toxics assessments, a closer look was made into single data points extrapolated to a 4-day average. Upon further review of the data, it was determined that the lake should be removed from the list for chloride (aquatic life impairment). None of the samples from 2010 and 2012 that exceeded the standard had high concentrations in subsequent sampling events. The variability in the data does not provide sufficient evidence that the single sample is representative of a condition present for 4 days. To be able to determine aquatic life use support, monitoring at a greater frequency will be required in this system where chloride concentrations are variable.

The assessment will be changed to insufficient information for aquatic life use support and the impairment will be removed from the draft Impaired Waters List.

Review of Spring Lake (27-0654-00)

Commenter expressed concern that the proposed listing is "not justified as the attainable use of aquatic life in this system is limited by the fact that it is a meromictic lake and not by the high levels of chloride that likely is a byproduct of the lake mixing status."

The basin has only 3 acres of open water and is 6-7 meters deep; this likely physically limits mixing. However, concentrations exceed the acute standard multiple times at the surface; higher concentrations are found at depth. Waters in Minnesota are not naturally saline; while the lake cannot mix (i.e., it is meromictic), the surface should be capable of supporting aquatic life and the concentrations at the surface exceed the standard. The basin will remain on the Impaired Waters List as impaired for aquatic life use due to excess chloride.

Comment 21: Commenter requested the delisting of Wirth Lake in Hennepin County for nutrients.

The lake was originally listed in 2002. An extensive data set is available for Wirth Lake. Annual data was available from 1992-2012. Since Wirth Lake was listed as impaired in 2002 significant improvements in water quality have been made. Basset Creek Watershed Management Commission has documented these improvements to be a result of lake and watershed management activities.

The original listing data (1993-2002) indicated total phosphorus, chlorophyll-a, and Secchi exceeded the thresholds for the lake eutrophication standard (Table 3).

Table 3. Comparison of lake eutrophication standards to Wirth Lake Data

Ecoregion	TP µg/L	Chl-a µg/L	Secchi meters
NCHF – Aquatic Rec. Use (Class 2B)	< 40	< 14	> 1.4
1993-2002 Wirth Data	73	30.2	1.2
2003-2012 Wirth Data	36	12.6	2.5

Recent data (2003-2012) shows that Wirth Lake is now meeting the lake eutrophication standards (Table 3). As a result, Wirth Lake will be delisted from the Impaired Waters List for nutrients.

Comment 22: Commenter requested that the MPCA consider including drinking water as an affected designated use for the Thief River from Agassiz Pool to the Red Lake River.

The Minnesota Department of Health (MDH) is working on issues of disinfection-by-product (DBP) formation and exceedance of Safe Drinking Water Act standards in Thief River Falls finished drinking water. The MDH provided information showing these exceedances were occurring when Total Organic Carbon (TOC) and flow was elevated in the Thief River upstream of the city's drinking water reservoir. Currently, the Thief River (09020304-501) is not classified for drinking water use and there are no water quality standards relevant to TOC or other organic or turbidity parameters to specifically protect drinking water uses in [Minn. R. ch. 7050](#). However, the MPCA had previously identified the Thief River as having turbidity concentrations that exceed the water quality standards that protect aquatic life. The MPCA is actively working on this TMDL and has connected the MDH with the MPCA staff leading this effort. The MPCA discussed this opportunity to include the MDH data with other information being used to develop the TMDL. The MPCA is working on updating its water quality standards to classify the section of the Thief River at the Thief River Falls intake to a Class 1 Domestic Consumption designated use. The MPCA also informed the MDH that through our recent Triennial Standards Review (TSR) process, the MPCA is actively engaging the MDH and others to improve the Class 1 standards that protect drinking water uses and that this issue of DBP formation is relevant to improvements being considered.

Comment 23: Commenter requested that the MPCA include the stakeholders outside the Agency during the evaluation (assessment) process.

As mentioned in **Comment 7** above, preliminary assessments are later shared with stakeholders in Professional Judgment Group (PJG) meetings to provide additional input on AUIDs of interest before final assessment decisions are made.

Specific to the Metro Area Chloride Project, the Monitoring Guidance has been on the MPCA webpage since 2011 (for both [lakes](#) and [streams](#)). An extensive stakeholder process for the Metro Area Chloride Project has been ongoing since 2010, including representatives of state and local agencies, municipalities, and counties. Information about the project including environmental concerns related to chloride and tips for reducing salt use can be found on the MPCA [Metro Area Chloride Project webpage](#). Assessment activities and process have been discussed at many project meetings.

Comment 23: Commenter requested that the MPCA develop and implement a process to include public safety issues and concerns in the consideration, review, and revision of the new chloride water quality standards.

Water quality standards comprise a numeric value to protect designated beneficial uses of water such as aquatic life use and protection from anti-degradation. Water quality standards are used to assess waterbodies for impaired condition. The chloride standard is designed to protect aquatic life use; the use is not tied to, nor is it directly related to, public safety. However, the development of chloride TMDLs and associated implementation plans may include specific considerations such as public safety in relationship to recommended best management practices. Please see the Metro Area Chloride Project webpage for the [Field Handbook for Snowplow Operators \(2005\)](#) designed to help plow operators to reduce salt/sand use and environmental impacts while meeting the safety and mobility needs of roadway users.

Comment 23: Commenter requested that the MPCA establish a stakeholder approach to address all the issues related to chloride and its water quality and public safety impacts in Minnesota.

The MPCA has had a [stakeholder group](#) that discusses chloride in the metropolitan area since 2010. Composition of this group includes cities, counties, MnDOT and a variety of other metropolitan stakeholder groups. Chloride water quality standards are reviewed as part of the Triennial Review Process and the public comment process for that is separate from the Impaired Waters List public comment period.

Comment 23: Commenter is concerned that the MPCA's protocol relies largely on single measurements that are interpreted to be reasonable representations of 4-day averages

The State chloride chronic standard is stated in terms of a 4-day average rather than, as the commenter implies should be the case, longer-term conditions. For a determination of impairment under the chronic standard, the revised 2014 Guidance Manual (posted on the [Impaired Waters List website](#)) now requires a sufficient number of samples to give reasonable assurance that two or more exceedances of the standard within a 3-year period have in fact occurred. This number of samples may be more or less than five, depending on sample type and the variability of pollutant concentrations as influenced by factors such as the type and size of the waterbody, weather and flow conditions, and the source and nature of the pollutant.

Comment 23: Commenter is concerned that the MPCA's protocol regarding five samples over a 3-year period does not capture environmentally representative long term conditions in a way to determine chronic impairment.

Five samples over a three year period are consistent with guidance from USEPA on the application of toxicity standards. Five samples is a minimum; when more data is present, it is utilized.

Comment 23: Commenter is concerned that the role of biological data appears to be inadequate and insufficient in the MPCA's assessment process.

The Metro Area chloride assessment was a special assessment requested by MPCA project managers for the Metro Area Chloride Project to review the data collected as part of a specific monitoring effort for that project. The majority of the Metro Area stream reaches were assessed for aquatic life use in 2012 using both chemical (DO, turbidity, pH, ammonia, chloride) and biological (fish and invertebrate) data. The additional chloride data considered for the 2014 assessments were collected after the conclusion of the 2012 aquatic life assessments. The additional chloride data were the only data considered as part of the 2014 assessments. In the future additional fish and plant assessment tools will be available for consideration as part of aquatic life assessments. However, these tools are currently under development for lakes and chloride is the only standard used for lakes in the aquatic life use assessment.

Comment 23: Commenter reiterates the formal comments submitted by MnDOT (Comment 24).

Comment noted.

Comment 23 and 24: Commenters are concerned the database that supports listing is flawed and not accessible by third parties that should be involved in this process.

The MPCA is currently developing a new assessment database for the purposes of assessing waters; this system will be used for assessments starting with the 2014 cycle. The current database is housed on agency servers and is not accessible to external users; exports from the database are available to the public. Toxics data is not completely automated and all assessments receive expert review and data manipulations are documented. At the time MnDOT requested data from MPCA, MPCA staff were unable to extract necessary reports; repairs were made to the database

and data was supplied to MnDOT and Mr. Neprash. Following the distribution of this data, two MPCA staff met with MnDOT representatives and Mr. Neprash and discussed assessment methodology, example assessments, and answered all additional questions. Due to the difficulty in getting the files out of the database, the public comment period was extended.

In addition, data used for assessments must have a Quality Assurance Project Plan on file with MPCA and must meet data requirements for the EQulS database. For all data to be entered into EQulS, MPCA provides guidance on data submittal. Sample type is a field in EQulS that records the type of sampling; this is not a field used to discern whether the data is of use for assessments and is at the discretion of the data provider. Sample date/ time and Analysis date/time provided by the data submitter undergo a review after the data are entered into EQulS. The MPCA uses only data that the local data provider has determined to be valid and correct.

Comment 24: Commenter is concerned that data submitted to the MPCA without required information should not be used as the basis for listing waters.

Use of results with incorrect showings of time

For data to be loaded into EQulS, a location, date, time, and depth must be associated with each sample. MPCA provides guidance on data submittal, has a required data review process prior to final data storage, and uses only data that the local data provider has determined to be valid and correct.

Not all data used in assessments are in EQulS; the United States Geologic Survey (USGS) and Metropolitan Council Environmental Services (MCES) both supply stream data outside of EQulS, which are directly imported into the assessment database. An example would be what we reported in the assessment database as a Jan 8, 2003 sample from 07010206-502 Mississippi River at mile 815.6 with a time of "0000" was submitted to MPCA with a time of 10:22 am by the Metropolitan Council – the incorrect display of the time was the result of the current assessment database limitations. As mentioned in the response to **Comment 23**, MPCA is in the process of developing a new assessment database and improvements will be made in the incorporation of data from sources like USGS and MCES.

Use of data without lab analysis date/time

The MPCA does not require data providers to submit laboratory analysis date and time so the concern is that results that exceed holding time will be included in the assessment process. The MPCA, however, does receive lab qualifiers with laboratory result data. Lab qualifiers, like those that indicate "exceeds holding time," are made available to staff assessing water quality data and are considered in data assessments. MPCA staff are currently working on an EQulS-ready Lab EDD (electronic data deliverable) that would allow laboratories across the state to submit data electronically to the MPCA for entry into the EQulS database. Lab analysis date and time will be easily provided in the EDD (more easily than the current method of data submittal). MPCA's work on the Lab EDD, which includes the technical database set-up and coordination with labs across the state, will take place over the next few years.

Comment 24: Commenter requested that the MPCA should clearly state in the Chloride Guidance Manual specific acceptable analytical methods. Commenter requested that the MPCA be aware of samples taken near the bottom with respect to quality control.

The Chloride Guidance Manuals (for both [lakes](#) and [streams](#)) are specific to monitoring and not assessments and do not pertain to the public comment period for the Impaired Waters List. Analytical methods were detailed in the guidance documents.

Comment 24: Commenter requested that the MPCA not use questionable values as a basis for listing.

As mentioned earlier, the Sample type is not used to determine usability for assessments; it is a requirement for EQulS. The actual depth of the sample matters for assessments. MnDOT notes the erroneous data from Lake Calhoun; occasionally erroneous data is supplied, is reviewed by the local data provider (i.e., verified as final in EQulS), and included in assessment. In these instances, MPCA relies on the PJG meeting to allow for a final look at the assessments before support decisions are final. This is why the assessments are a public process. Staff review the data, provide preliminary assessments, send the results to the local data providers and then provide a public forum to discuss any AUIDs that are being considered as not supporting to ensure we have the data and the decision correct.

MPCA is following up with the -0.02 meter sample that was collected on Diamond Lake (27-0022-00-202) on April 20, 2009 with a concentration of 368 mg/L by the Minneapolis Chain of Lakes Project. With the potentially erroneous data point removed, there is still sufficient data for the lake to remain on the Impaired Waters List and no change will be made regarding Diamond Lake.

Comment 24: Commenter requested that the MPCA not use multiple values from within the averaging period (1-day, 4-day) to declare multiple violations.

Agreed.

Comment 24: Commenter requested that the MPCA should not count chloride concentrations of 230 mg/L as violations.

Agreed.

Comment 24: Commenter requested the MPCA delist all those waters classified as wetlands.

The MPCA has authority to assess waters of the state. Any basin that is assigned a 2B status is protected for aquatic life aquatic recreation use and human health beneficial uses. The MPCA has definitions for lakes, shallow lakes, reservoirs, and wetlands. These definitions are not the same as DNR definitions nor are they tied to protected waters inventory assignments. The MPCA will not remove wetlands from the impaired waters list since water quality standards apply to these resources and based on the assessment guidance.

Comment 24: Commenter requested the MPCA not list Pickerel Lake in Dakota County for nutrients due to a non-typical situation.

A request was made to not assess Pickerel Lake (19-0079-00) by applying lake eutrophication standards because of the influence of the Mississippi River. It is requested that for this non-typical lake that site specific standards be developed.

Pickerel Lake is located within the floodplain of the Mississippi River and during high flows is dramatically influenced by the river changing the water chemistry of the lake. The worst annual water quality data (2011 seasonal average) on record appears to correlate with April 2011 high flows based on the USGS gage in St. Paul, MN. In 2012 flows were much lower and water quality data shows a significant improvement. The occasional flooding of Pickerel Lake is a natural process that will continue because the lake was formed in an old channel of the Mississippi River. After reviewing the data, MPCA agrees that in low flow conditions the basin acts more lake-like but in higher flow years is much more characteristic of a river system. Applying lake eutrophication standards is not appropriate. The assessment will be changed from nonsupport to not assessed and it will be removed from the draft 2014 Impaired Waters List.

Comment 24: Commenter requested the delisting of Tamarack Lake in Carver County for nutrients.

Tamarack Lake (10-0010-00) was also requested to be removed from the 2012 Impaired Waters List. The water quality data at that time was through 2011 and the decision was made to not remove the basin from the 2012 List because data were not showing an improvement.

The lake was originally listed in 2008. The original listing data (Table 4) 1997-2006 indicated total phosphorus and chlorophyll-a exceeding the threshold and Secchi was meeting the threshold for the lake eutrophication standard.

Table 4. Comparison of lake eutrophication standards to Tamarack Lake data

Ecoregion	TP µg/L	Chl-a µg/L	Secchi meters
NCHF – Aquatic Rec. Use (Class 2B)	< 40	< 14	> 1.4
1997-2006 Tamarack Data	41	16.8	2.1
2002-2011 Tamarack Data	41	16.2	2.1
2004-2013 Tamarack Data	43	16.4	2.2

The most recent 10 year data set, 2004-2013, shows little change in water quality since the original listing. In addition annual mean concentrations of phosphorus and chlorophyll-a both show slight increases in concentration while Secchi became slightly better (Table 4). Annual fluctuations in water quality have been apparent throughout the period of record for Tamarack Lake (Table 5). Water quality data has not shown a long term trend that standards are being met. As a result Tamarack Lake does not meet delisting criteria and will remain on the Impaired Waters List.

Table 5. Annual mean total phosphorus (TP), chlorophyll-a (Chl-a), and Secchi concentrations for Tamarack Lake

Year	TP (µg/L)	Chl-a (µg/L)	Secchi (m)
1996			3.4
2001	27	14.3	2.6
2002	26	7.7	2.2
2003	36	16.4	1.4
2004	82	38.5	1.1
2005	34	24.0	1.9
2006	80	21.5	2.0
2007	30	12.5	2.4
2008	25	9.3	2.8
2009	29	12.2	2.2
2010	28	9.8	2.9
2011	46	9.8	2.4
2012	24	6.3	3.0
2013	39	17.0	2.1

Comment 25: Commenter requested reevaluating the chloride data for the following lakes in Hennepin County: Calhoun, Brownie, Spring, and Wirth.

Review of Lake Calhoun (27-0031-00)

MPCA is looking into a single questionable data point. The erroneous result from 4/17/06 was removed from the analysis and the assessment was re-evaluated. As a result of the removal of the 4/17/06 data point, there is only a single exceedance from 4/15/09 and the lake does not meet the minimum number of exceedances of the chronic

standard. The lake will be removed from the Impaired Waters List for aquatic life use based on chloride exceedances and the assessment will be changed to insufficient information.

Review of Brownie (27-0038-00) and Spring (27-0654-00)

The chloride aquatic life standards apply to all waterbodies with a 2B use classification ([Minn. R. ch. 7050](#)), regardless of mixing condition. Exceedances of the chloride water quality standard are present in both the shallow and deep parts of the lake. No change will be made to the proposed listings for chloride.

Review of Wirth (27-0037-00)

As a part of the [Wirth Lake Excess Nutrients TMDL Project](#), a new outlet was constructed in 2011 that prevents water from backing up from chloride-impaired Bassett Creek flow into Wirth Lake during high-flow events. In light of revisions to the guidance regarding toxics assessments, a closer look was made into single data points extrapolated to a 4-day average. The samples collected during 2011 were during a construction project where disturbed sediments were introduced into the water column; concentrations dropped markedly at the conclusion of the project. None of the samples from 2010 and 2012 that exceeded the standard had high concentrations subsequent sampling events. The variability in the data does not provide sufficient evidence that the single sample is representative of a condition present for 4 days. To be able to determine aquatic life use support, monitoring at a greater frequency will be required in this system where chloride concentrations are variable. So upon further review of the data, it was determined that the lake should be removed from the 2014 Impaired Waters List for chloride.

Comment 25: Commenter suggested a site specific standard or site specific evaluation may be justified at lakes in Minneapolis.

Site specific standards are developed to reflect local environmental conditions. While site specific standards may differ from statewide standards levels they need to be based on a sound scientific rationale and still need to be protective of beneficial uses. Additional information on site specific standards can be found online in USEPA's Water Quality Standards Handbook – [Chapter 3](#).