7-2200-14439-2

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE POLLUTION CONTROL AGENCY

In the Matter of the Saint Cloud Wastewater Treatment Plant NPDES Permit.

FINDINGS OF FACT, CONCLUSIONS, AND RECOMMENDATION

The above-entitled matter came on for hearing before Administrative Law Judge Richard C. Luis on March 8, 9, and 19, 2004, at the offices of the Minnesota Pollution Control Agency in Saint Paul, Minnesota. Posthearing Briefs were submitted on April 27, 2004. The hearing record closed on May 12, 2004, when Reply Briefs and Proposed Findings were filed.

Robert B. Roche, Assistant Attorney General, 445 Minnesota Street, Suite 900, St. Paul, MN 55101-2130, appeared on behalf of the Minnesota Pollution Control Agency (MPCA). Christopher M. Hood, Flaherty & Hood, P.A., 444 Cedar Street, Suite 1200, St. Paul, Minnesota, 55101, and John C. Hall, Hall & Associates, 1101 Fifteenth Street NW, Suite 203,Washington, D.C. 20005-5004, appeared on behalf of the City of St. Cloud (City). Janette K. Brimmer, Staff Attorney for the Minnesota Center for Environmental Advocacy (MCEA), 26 East Exchange Street, Suite 206, St. Paul, Minnesota, 55101-1667, appeared on behalf of MCEA.

NOTICE

This report is a recommendation, not a final decision. The Commissioner of the Pollution Control Agency will make the final decision after a review of the record. The Commissioner may adopt, reject or modify the Findings of Fact, Conclusions and Recommendation. Pursuant to Minn. Rule 7000.2000, the Commissioner may not issue a final order until at least ten days after receipt of this report. Any party may, within those ten days, comment to the Commissioner on the recommendation and the Commissioner will consider those comments. Parties should refer to Minn. R. 7000.2000 or may contact Sheryl Corrigan, Commissioner, Minnesota Pollution Control Agency, 520 Lafayette Rd., St. Paul, MN 55155, telephone 651-296-7301, to inquire about filing exceptions or presenting argument.

If the Commissioner fails to issue a final decision within 90 days of the close of the record, this report will constitute the final decision pursuant to Minn. Stat. § 14.62, subd. 2a. The record closes upon the filing of exceptions to the report or the presentation of argument to the Commissioner, or upon the expiration of the deadline for doing so. The Commissioner must notify the parties and the Administrative Law Judge of the date on which the record closes.

STATEMENT OF ISSUES

Does the City's discharge from its waste water treatment plant affect a lake or reservoir, thereby requiring phosphorus removal to one milligram per liter? The Administrative Law Judge (ALJ) concludes that it does not.

Should the City's application for a NPDES permit be granted with a phosphorus management plan requirement? The ALJ concludes that it should.

Based upon all of the files, records and proceedings herein, the Administrative Law Judge makes the following:

FINDINGS OF FACT

Procedural Background

1. The City of Saint Cloud ("City") operates a wastewater treatment plant ("WWTP") to reduce pollutants in the wastewater discharged by the City into the Mississippi River.[1] The operation of a WWTP requires the City to hold a National Pollutant Discharge Elimination System (NPDES) permit, issued by the MPCA. The City applied for reissuance of its NPDES permit. In the permitting process, notice and an opportunity for comment is afforded to interested persons and entities. Among those commenting on the City's application were the Minnesota Department of Natural Resources ("DNR") and the Minnesota Center for Environmental Advocacy (MCEA).

2. The MPCA Board considered a request from the MCEA that a contested case proceeding be held to develop a record to resolve disputed issues of fact relating to three issues. The three issues identified by the MCEA were: 1) whether the proposed discharge of phosphorus from the City's WWTP is in amounts that will affect a lake or reservoir; 2) does the proposed permit require the City to remove phosphorus to the fullest extent practicable; and 3) does the proposed permit allow the City to discharge phosphorus in amounts that are likely to cause pollution, impairment of water quality, or harm aquatic habitat resources.

3. MCEA's request for a contested case was granted. The City moved for summary disposition and that motion was granted by the ALJ and by the MPCA Board. MCEA appealed the grant of summary disposition. The Minnesota Court of Appeals reversed the grant of summary disposition and remanded the matter for a contested case hearing.[2]

WWTP Location and Operation

4. The City's WWTP discharges 9.9 million gallons per day (mgd) into the Mississippi River at UM-930.[3] The wet weather design capacity of the WWTP is 14.69 mgd.[4] The WWTP discharge contains phosphorus (P) in varying amounts.

5. The City's WWTP uses biological phosphorus removal (BPR) to reduce the amount of P in the discharge from the WWTP.[5] BPR is conducted by holding wastewater in tanks, allowing microorganisms to digest the P and settle out of the wastewater.[6] In 1993, the City's WWTP discharge contained an annual average P concentration of 2.843 mg/L.[7] In 2001, that annual average P concentration was 1.013 mg/L.[8] This P reduction has been obtained through an ongoing program of industrial wastewater testing and abatement.[9]

NPDES Permit System

6. The discharge of pollutants to public waters is regulated by the National Pollutant Discharge Elimination System (NPDES). Under NPDES, the MPCA is responsible for the issuance of permits that establish standards for pollutants to be met by the permit holder when discharging wastes. These permits are renewed every five years. The MPCA grants permits under water quality standards that have been adopted through rulemaking.

MPCA Phosphorus Rule

7. Phosphorus (P) is a naturally occurring element. P is widely used in fertilizer and in some cleaning products.[10] In the environment, P is an essential element in the growth of algae. Overabundance of algae in public waters, particularly in lakes and reservoirs, caused the MPCA to adopt Minn. Rule 7050.0211. subp. 1a (known as the "Phosphorus Rule" or "P-rule"), which states:

> Subp. 1a. **Total phosphorus effluent limits.** Where the discharge of effluent is directly to or affects a lake or reservoir, phosphorus removal to one milligram per liter shall be required. The limit must be a calendar month arithmetic mean unless the commissioner finds, after considering the criteria listed in items A and B, that a different averaging period is acceptable. In no case shall the one milligram per liter limit exceed a moving mean of 12 monthly values reported on a monthly basis, or a simple mean for a specified period, not to exceed 12 months. Calendar month effluent limits in effect on February 7, 2000, must remain in effect unless an assessment of the criteria listed in items A and B indicate a different averaging period is acceptable. A different averaging period is acceptable when:
>
> > A. the effects of the phosphorus loading from the facility on the receiving water or downstream water resources is generally not measurable; and
> >
> > B. the treatment technologies being considered offer environmental, financial, or other benefits.

> In addition, removal of nutrients from all wastes shall be provided to the fullest practicable extent wherever sources of nutrients are considered to be actually or potentially detrimental to preservation or enhancement of the designated water uses. Dischargers required to control nutrients by this subpart are subject to the variance provisions of part 7050.0190.

8. The MPCA, from the inception of the P-rule in the 1970s, has interpreted the rule to require that the "affects a lake or reservoir" trigger be a measurable impact on the receiving water. In 1996, the MPCA began a wide-ranging study of P in surface waters. A task force was formed to determine how the P-rule could be administered in light of the observed impacts. Among other suggestions, the task force recommended that the P-rule be clarified and broadened to: "Interpet 'affects' on the basis of aggregate, cumulative basinwide loadings rather than solely on individual source loadings."[11] The task force also recommended modification of the P-rule to address phosphorus impact to rivers.[12] The task force report was issued in January 1997, but not voted on by the MPCA Board as a policy of the agency.

9. Dr. Richard Wedlund, Research Scientist II for the MPCA, drafted a memorandum in December 1999 to a manager in the MPCA Water Quality Division to describe how the P-rule is applied to "riverine dischargers."[13] Dr. Wedlund described the application of the P-rule "Prior to the implementation of the 1997 MPCA WQ Phosphorus Strategy" as being based, *inter alia*, on:

> Modeling and other analyses to determine the degree to which an individual facility affects a lake or reservoir 50 miles downstream, or less.
>
> The weight of evidence from several variables, including predicted changes in lake total phosphorus, chlorophyll-a, transparency, and lake use impairment to determine whether a limit should be applied to the discharge.[14]

10. In his memorandum, Dr. Wedlund described a "broader implementation of Minnesota's effluent limit rule" including, "Interpreting the 'affects' part of the P-rule on the basis of aggregate, cumulative basin-wide loading."[15] The absence of a "*single* quantitation method or 'logic train'" for imposing this broader interpretation of the P-rule was noted.[16] Instead, a number of factors were listed to be considered in arriving at the decision regarding imposing an effluent limit.[17]

11. To implement the P-rule in light of the serious environmental consequences of P in surface waters, the MPCA Board formally adopted a guideline to direct the analysis of phosphorus issues. This guideline is known as the Phosphorus Strategy. The Phosphorus Strategy was published in March 2000.[18]

12. The Phosphorus Strategy establishes a decision tree for staff to follow in determining how the P-rule applies to particular applicants for NPDES permits. The first gate in the decision tree is whether the discharge is "to or affecting a lake or reservoir…."[19] If this condition is met, a 1 mg/L P limit is included in the NPDES

permit. Where the discharge is to a river or drainage ditch and does not affect a lake or reservoir, MPCA staff assess whether the discharge is to an Outstanding Resource Value Water (ORVW), to a reach subject to a Total Mean Daily Limit (TMDL) on P, is upstream of an area with excess P from cumulative sources (as determined by water quality modeling), or is to a Basin or watershed with a phosphorus protection strategy.[20] If any one of those conditions is met, MPCA staff determines if the discharge constitutes a "new or expanded discharge or a significant upgrade."[21]

13. If the proposed discharge is greater than the existing discharge and the P content is above a *de minimus* amount, a P limit and phosphorus management plan (PMP) is recommended.[22] If the discharge qualifies as *de minimus* but is above 4 mg/l then a five-year monitoring PMP is imposed.[23]

14. If the proposed discharge is not greater than the existing permitted discharge amount but the P amount is above *de minimus*, the MPCA determines if a Basin Goal and Strategy is in place. If so, a PMP is required and a P limit will be imposed on the next upgrade or expansion. If no Basin Goal is in place, a PMP is required. Similarly, if the discharge on this track is *de minimus* but is above 4 mg/l then a five-year monitoring PMP is imposed.[24]

15. In the process of developing the Phosphorus Strategy, the MPCA conducted a number of public meetings.[25] The manner in which the decision tree was expected to work was discussed at these meetings. A copy of the decision tree with the names of dischargers added by specific outcomes was circulated. These dischargers were identified as examples of how the Phosphorus Strategy was intended to work.[26] The listing of dischargers on the document did not constitute a decision by the MPCA regarding the outcome of any NPDES application by any of the listed dischargers.

16. The Phosphorus Strategy includes definitions of terms. "Affects" and "measurable impact" are defined as follows:

> a. "affects" is measured in terms of actual or predicted increases in chlorophyll-*a* concentration, increased frequency of nuisance algae blooms, reduced transparency, reduced dissolved oxygen concentration (attributable to decaying algae) or related adverse responses to phosphorus. An assessment to determine whether the discharge "affects" the receiving water is typically made over a range in flow (runoff) conditions. However low flows (typically flows with a one in ten year recurrence) are the primary flow regime of concern. This is because lakes and reservoirs often exhibit stronger eutrophication-related responses (affects) during drier periods when water residence time is increased. This is particularly true for reservoirs that may have very short water residence times during average to high flow regimes.
>
> The assessment includes using standard lake/reservoir eutrophication models, data assessment, scientific research, and other information relating to the lake/reservoir and its tributaries, watershed, and cumulative

point and nonpoint source phosphorus loads. It is necessary to also use best professional judgment and consensus building among interested parties to apply limits that help ensure that the lake's water quality standards, trophic state, and water uses will be protected or re-attained (if the lake is already impaired).

b. "measurable impact" is the individual contribution of the discharge in causing any of the adverse changes in a. (above).[27]

17. The Phosphorus Strategy also defines "Lake" as follows:

For the purposes of applying effluent limitations under MPCA rules, MPCA staff are defining lakes as water bodies with Minnesota Department of Natural Resources lake identification numbers, with some exceptions. For navigation pools, MPCA staff are recommending the use of residence time as the criteria for determining whether a pool should be considered a lake or river-system.[28]

18. In addition to the definition language, the Phosphorus Strategy discussed the history and reasoning behind the MPCA's differing approaches between lakes and rivers. When the P-rule was first adopted in the 1970s the MPCA had little information concerning algal growth in rivers.[29] While the MPCA now recognizes that algae can grow in rivers, the MPCA maintains that information about specific impacts on rivers is still lacking.[30]

19. For identifying surface waters as lakes, the MPCA stated that it primarily relies upon the Minnesota Department of Natural Resources Bulletin 25 ("Bulletin 25").[31] The MPCA noted that unlisted still ponds, such as mine-pit lakes, are still considered lakes by MPCA even though they are not listed in Bulletin 25. The MPCA described examples of navigational pools that are listed in Bulletin 25 that are not suitable for inclusion in the MPCA definition of lakes. In describing its methodology to determine if a waterbody listed in Bulletin 25 is a lake, the Phosphorus Strategy states:

If we use 14 days as an indicator of the minimum residence time associated with "reservoir" conditions these initial estimates of residence time suggest that Pools 2, 3, and 5 [of the Mississippi River] have residence times more characteristic of large rivers than reservoirs. This is because of their relatively small volumes relative to the discharge of the river. Based on this cursory examination of these navigational pools it may not be appropriate to treat them as reservoirs, for the purpose of imposing the numeric portion (effluent limitation) of the phosphorus rule.

In contrast Pool 4, which contains Lake Pepin (a natural lake by definition), is much larger and hence exhibits longer residence time. In addition, Spring Lake, a side channel lake in Pool 2, has demonstrated significant algal growth during low flow periods and water quality modeling suggests it is a major contributor to the algal problems in Lake Pepin.

> Based on an analysis of water circulation in Spring Lake (Stefan and Dematracopoulus, 1979) water residence time is likely on the order of 9-35 days under low flow conditions (and is somewhat dependant on wind speed and direction).
>
> Thus wastewater treatment facility (WWTF) discharges directly to these pools, with the exception of Lake Pepin and Spring Lake, should not be treated as a discharge to a "lake or reservoir" and automatically be required to treat to a *monthly* 1 mg/L. For WWTF discharges in the Lower Mississippi River Basin (and potentially other basins as well), above Lake Pepin, the phosphorus effluent rule will be applied in terms of "affects" on Lake Pepin.[32]

The City's Application

20. The City applied to MPCA for renewal of its NPDES permit for the WWTP. The City's application ("the Application) described the characteristics of the WWTP and related the results of the City's monitoring of its wastewater, particularly with regard to phosphorus concentrations. Upon receiving the Application, MPCA staff undertook an assessment of the permit request in order to make a recommendation to the MPCA Board.

21. When initially preparing an assessment of the Application, Dr. Wedlund drafted a memorandum in December 1999. Dr. Wedlund's analysis of the Application resulted in a recommendation to require a PMP in the City's WWTP permit. The memorandum described the City's Application, the WWTP discharge of P (past and projected levels), predicted effects of the P discharge on the Coon Rapids Pool, and concluded that a PMP would "likely result in reduced phosphorus loads to the Mississippi River ORVW, downstream navigation pool lakes, Lake Pepin, and Gulf of Mexico."[33]

22. As part of his assessment, Dr. Wedlund used modeling (known as the "BATHTUB model") to determine the hydraulic residence time for water in the Coon Rapids Pool in 1988. The water flow in 1988 was the lowest in recent times. For all of 1988, the average residence time in the Coon Rapids Pool was .65 days (less than 16 hours).[34] The lowest flow period for all of 1988 occurred from July 26 to 31, when the Coon Rapids Pool had an average residence time of 1.9 days. Dr. Wedlund made no reference to the Phosphorus Strategy [which was then nearing adoption as agency policy] to determine if the Coon Rapids Pool met the definition of "lake" or "reservoir" in that document.

23. Kelly Garvey, Project Manager for Environmental Review at MPCA, reviewed the draft memorandum as part of her duties as the permit writer on the City's Application. Garvey spoke to Dr. Wedlund regarding the focus and structure of the memorandum. Garvey told Dr. Wedlund that he needed to follow the MPCA's Phosphorus Strategy.[35] Garvey did not instruct Wedlund that a 1 mg/L limit was not to be used. Garvey did direct Wedlund to use the facts and his judgment in conformance

with the Phosphorus Strategy to determine what action should be taken regarding P when issuing the City's NPDES permit.[36]

24. Marvin Hora, a Program Manager for the MPCA, received comments from two other MPCA staffers that Dr. Wedlund's work was not supportive of the Phosphorus Strategy.[37] Hora discussed Dr. Wedlund's memorandum with him. Hora told Dr. Wedlund that the analysis of the Application needed to apply the Phosphorus Strategy to the facts of the City's WWTP discharge.[38] Dr. Wedlund took this to mean that the City's WWTP was not to get a 1 mg/L limit, as a decision that had already been made.[39] Hora asked Dr. Wedlund if additional modeling was required to assess the Application.[40] Dr. Wedlund indicated that no further modeling was needed to make a conclusion on whether a 1 mg/L limit was required of the City's WWTP discharge.[41]

25. In April 2000, Dr. Wedlund prepared a second draft memorandum regarding the Application. In the introduction to the memorandum, Dr. Wedlund wrote:

> During the development of the phosphorus strategy, MPCA managers and staff concluded that the St. Cloud facility does not discharge to, or affect a lake or reservoir, and, hence, is not subject to a 1.0 mg/L phosphorus limitation required by Minn.R. 7050.0211, subp. 1. The facility discharges to an Outstanding Resource Value Water (ORVW) and an 'area of concern' with excess phosphorus through cumulative sources. But, the strategy states that, because no basin plan or watershed strategy currently exists and the facility is not undergoing significant construction or increase in design flow, a phosphorus management plan (PMP), rather than a phosphorus effluent limitation should be included in the permit.[42]

26. Attached to the second draft memorandum was a summary rationale for reducing P loads to the Upper Mississippi Basin. The contents generally described the benefits to water quality derived from less P in the Mississippi River. Specific benefits were identified to the Vadnais Chain of Lakes, Lake Pepin, navigational pools on the Mississippi River, and the Gulf of Mexico.[43] The attachment also identified "Effects of Phosphorus on downstream lakes."[44] Dr. Wedlund listed the Coon Rapids Pool, the Vadnais Chain of Lakes, Spring Lake, and Lake Pepin in this portion of the attachment. He noted that the Coon Rapids Pool is "characterized as having short residence times … such that little additional algal growth occurs in the **lake**."[45]

27. In the second draft, Dr. Wedlund indicated that the Coon Rapids Pool was not considered for affects from P discharge due to the short residence time of water there.[46] Dr. Wedlund indicated that the effects of the City's WWTP discharge were not determined. No reference was made to the BATHTUB modeling done earlier and referred to in the first draft.

28. Due to the imminent retirement of Dr. Wedlund from the MPCA, MPCA staffer Steven Heiskary was assigned to work with Dr. Wedlund on the City's Application.[47] Heiskary, a Research Scientist 3, had worked primarily in the area of phosphorus and its impact on surface waters for the last ten years.[48]

29. On September 24, 2000, Dr. Wedlund issued the third memorandum explaining the inclusion of a PMP in the City's WWTP NPDES permit. The relevant circumstances were described as follows:

- Does not discharge directly to, or affect, a lake;
- Does not discharge to waters listed in Minn. R. 7065;
- Is not a new or expanding discharge;
- Discharges to an outstanding resource value water; [and]
- Discharges to waters not currently covered by a phosphorous protection strategy.[49]

30. Each of the bullet points was discussed individually in the memorandum. Regarding the conclusion that the WWTP discharge did not affect downstream lakes, the third memorandum stated:

> Downstream of the St. Cloud facility there are three waterbodies identified as lakes in … Bulletin 25 …. These lakes are the Coon Rapids Pool, Spring Lake and Lake Pepin. The definition of lakes in the phosphorus strategy also considers residence time in Spring Lake and Lake Pepin (but not the Coon Rapids Pool) can be of sufficiently long duration for algae blooms (attributable to high phosphorus levels) to occur in the lakes. Although the cumulative mass phosphorus load to Spring Lake and Lake Pepin can be excessively high, the St. Cloud discharge, by itself, is not known to cause measurable, adverse changes in these lakes. It is therefore concluded that the discharge does not affect these lakes.[50]

31. As a supplement to the analysis, Heiskary and Dr. Wedlund performed an analysis of the impact on surface waters from the City's discharge of P from its WWTP. Heiskary and Wedlund characterized the discharge as being to an ORVW (the Mississippi River at approximately UM-930).[51] They concluded that this reach "could be considered an 'area of concern' with excess P through cumulative sources based on downstream loading to Lake Pepin."[52] They noted that the area does not yet have a basin plan in place, but one was being prepared.

32. As part of their assessment, Heiskary and Dr. Wedlund conducted modeling to assess the impact of the WWTP discharge on Pleasant Lake in the Vadnais Chain of Lakes. Water from the Mississippi River is pumped into Pleasant Lake by the Saint Paul Regional Water Services (Saint Paul Water Utility) to maintain Saint Paul's water supply. Heiskary and Dr. Wedlund modeled the impact of P on the Vadnais Chain of Lakes using the BATHTUB methodology. To assure that any potential impact would be included in the model, they assumed that no P would be precipitated out of the water (or otherwise "lost") when traveling from the discharge point at UM-930 to the intake pipe (for pumping to the Vadnais Chain of Lakes) located at UM-859.[53] They

also assumed that there would be no reduction in the P level in the water, even though the Saint Paul Water Utility chemically treats the water to precipitate out an average of 15 to 25 percent of the P present in that water.[54]

33. The BATHTUB modeling was done to predict P level, chlorophyll-a, and Secchi level (transparency of the lake water).[55] The staffers assumed that there was no loss of P from the WWTP and that there was no reduction of P from the Saint Paul Water Utility's practice of treating the water before it entered Pleasant Lake.[56] The model used showed "a lack of significant difference in the various predictive scenarios …."[57]

34. Heiskary and Dr. Wedlund also considered previous BATHTUB modeling of Pleasant Lake done by David Schuler, Water Quality Supervisor for the Saint Paul Water Utility. The Schuler study concluded that there was no difference in the P level in Pleasant Lake whether the City's WWTP discharged P at levels of 4 mg/L or 1 mg/L.[58] Based on these modeling results, Heiskary and Dr. Wedlund concluded that no further BATHTUB modeling needed to be done regarding the City's WWTP discharge, since no measurable effects would be shown by that modeling.[59]

35. Following the Phosphorus Strategy framework, Heiskary and Dr. Wedlund concluded that the City's WWTP discharge is to a river that is an ORVW, that the discharge does not affect the first recreational lake encountered downstream, and that no basin plan is in place.[60] They did not explicitly mention that the discharge is above the *de minimis* level and that the discharge is not an increase from the existing discharge. They concluded that the City should prepare a PMP. No P limit was found to be appropriate.[61] The concluding paragraph of the Heiskary and Wedlund memorandum states:

> This evaluation should be viewed [as] relevant to this five-year permit only and dependent on: St. Cloud's performance on the PMP, new information on potential lake and river impacts from nutrients, development of ambient nutrient criteria, recommendations from basin planning efforts and/or the need to address downstream TMDLs an effluent P limit may be required in a future permit.[62]

Coon Rapids Pool

36. Before any discharge from the WWTP reaches the intake pipe for the Saint Paul Water Utility, it must pass into the Coon Rapids Pool. The Coon Rapids Pool is formed at the Coon Rapids Dam (UM-866.2) and extends upstream for approximately six miles.[63] The Coon Rapids Dam consists of a number of gates equipped with inflatable baffles. These baffles allow the dam operator to control some of the flow of the Mississippi River at that point. The Coon Rapids Pool is listed as a reservoir in Bulletin 25.[64]

37. The Coon Rapids Pool has an average depth over its six-mile length of 7.5 feet.[65] The U.S. Geological Survey (USGS) completed a hydrographic study of the

Coon Rapids Pool. The cross sections of the Coon Rapids Pool in that study range from 1185 feet in surface width (near the dam face) to 622 feet at the narrowest point (approximately two miles upstream from the dam face).[66] Depths in the cross sections vary, generally showing deeper water where the Coon Rapids Pool is narrow and shallower water where the Pool is wider. This general relationship changed within the mile upstream of the dam face, where Pool shows depths approaching twenty feet at the dam face and reaching fifteen feet as far as two miles upstream.[67] Within many cross sections, depths can vary widely, including a depth of five feet surveyed in the cross section nearest the dam.[68]

38. From November to the end of April, the baffles are left open to allow the Mississippi River to flow unrestricted over the dam crest.[69] On May 1, the baffles are inflated and the Coon Rapids Pool expands.[70] With the baffles inflated, normal pool elevation is 830.1 feet above mean sea level (MSL).[71] When the average daily flow of water falls below 2,000 cubic feet per second (cfs), the Coon Rapids Dam must be operated as "run of the river."[72] This trigger flow of 2,000 cfs, measured at the USGS station in Anoka, corresponds to drought conditions.[73] Run of the river means that inflows should closely correlate to outflows from the pool.[74]

39. When viewed from above, the Coon Rapids Pool is largely indistinguishable from other reaches of the Mississippi River.[75] The only widening of this feature occurs in the proximity of the dam face.[76] The Coon Rapids Pool does not contain any broader pooled area extending beyond the width of the dam.

40. The residence time of water is the amount of time that elapses between water entering a particular geographic feature and when that water exits the feature. As a general rule, residence time is longest for periods with the lowest observed flow. The accepted practice for determining the longest likely residence time is to use data collected during low flow years. For the Coon Rapids Pool, 1988 was the most recent low flow year for which data is available. Dr. Wedlund performed BATHTUB modeling of the residence time of water in the Coon Rapids Pool. Measured over the entire year of 1988, the residence time was .44 days (approximately 11 hours).[77] The lowest flow period for the Coon Rapids Pool in that year was from July 26 to 31, with an average residence time of 1.9 days.[78]

Vadnais Chain of Lakes

41. The Saint Paul Water Utility pumps water from the Mississippi River at UM-859 to the Vadnais Chain of Lakes. In an earlier appeal of this matter, the Minnesota Court of Appeals assessed the legal effect of pumping that water from the Mississippi River. The Court of Appeals concluded that "St. Paul, and not the St. Cloud treatment facility, is legally responsible for any pollution entering the Vadnais Chain via the aqueduct."[79] That conclusion is controlling in this matter.

Lake Pepin

42. Downstream of the Saint Paul Water Utility intake pipe are two lakes identified in Bulletin 25, Spring Lake and Lake Pepin. Spring Lake is an in-channel lake at approximately UM-824 to UM-820.[80] The parties did not attempt to show that Spring Lake was affected by the City's WWTP. The next lake downstream on the Mississippi River is Lake Pepin at approximately UM-785 to UM-765.[81] Lake Pepin was formed through the impoundment of water caused by an alluvial dam where the flow of the Chippewa River enters the Mississippi River.[82]

43. Mean summer residence time of water in Lake Pepin varies according to the flow conditions experienced over that period. Lake Pepin's mean summer residence time ranged from forty-six to forty-eight days in low flow years to five days at the highest flow year.[83] The mean residence time in Lake Pepin has been calculated at 19 days.[84] All parties to this proceeding acknowledge that Lake Pepin meets the definition of "lake" set out in the MPCA's Phosphorus Strategy.

44. In 1988, Lake Pepin experienced extreme adverse impacts from the presence of P in the water.[85] These impacts included nuisance algal blooms resulting in "unsightly surface scum, obnoxious odors, low oxygen levels [in the water], and localized fish kills."[86] Where other factors, such as warmer temperature and access to light are present, P in water encourages algal growth. Increases in algal growth cause increases in chlorophyll-*a* concentration in water. Lake Pepin demonstrated levels of chlorophyll-*a* that suggested the overabundance of P was the primary cause of the algal growth in 1988.[87]

Sources of Phosphorus in Lake Pepin

45. Lake Pepin is downstream of a number of sources of phosphorus, both point-source and nonpoint-source. The Minnesota River joins the Mississippi River at UM-844. The Minnesota River basin consists primarily of cropland (73% of the basin is cultivated land) and P is used in agricultural fertilizers. The Metropolitan Council operates the Metro Treatment Plant (Metro Plant), the wastewater treatment facility for the Twin Cities Metro area. The Metro Plant discharges into the Mississippi River at UM-835.1.[88] The Metro Plant is the single largest point source for P upstream of Lake Pepin.[89] The Cannon and Vermillion Rivers also drain cropland and join the Mississippi River at UM-795.7.[90]

Lake Pepin Phosphorus Study

46. The severe adverse effects experienced in Lake Pepin in 1988 prompted a number of studies of P in that waterbody.[91] The most comprehensive study, entitled *Lake Pepin Phosphorus Study, 1994-1998* (Lake Pepin Study), was undertaken by the Metropolitan Council Environmental Services Division with the cooperation of the University of Minnesota, MPCA, and MDNR, as well as Wisconsin state agencies and several Federal agencies.[92] The final report of the Lake Pepin Study was published in March 2002.

47. The Lake Pepin Study comprehensively examined the history and sources of P arriving in Lake Pepin. The study area began at the Mississippi River Lock and Dam No. 1 (UM-847.7) through Lake Pepin. The manner in which P interacts in Lake Pepin was analyzed thoroughly. The factors controlling algal growth were assessed as follows:

> Under current conditions, phosphorus is not limiting algal growth in Lake Pepin. James *et al*. (2000) measured high SRP [soluble reactive phosphorus] concentrations (above 50 µg/L)[micrograms per liter] and extremely low levels of alkaline phosphatase activity during the summers of 1994-96. Alkaline phosphatase activity increase to higher levels in algae as phosphorus becomes limiting, but this heightened activity was not observed in Lake Pepin because adequate supplies of SRP were available during this period. Total phosphorus concentrations were consistently above the 100 µg/L in the model simulation of Lake Pepin during 1985-96 and SRP concentrations did not decrease below 30 µg/L (Hydroqual, 2002b). At these high concentrations, phosphorus limitation of algal growth was negligible. Nitrate concentrations were also generally high, so nitrogen limitation was only seen briefly in the model simulation of 1988.
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> James *et al*. (2000) discovered that increased in viable chlorophyll-*a* concentrations during 1994-96 could be partially explained by the occurrence of temporary stratification, longer water residence time, increased hydrologic stability, and the storage of heat in the water column. The researchers concluded that hydrological, climatological, and physical factors – not phosphorus concentrations – are currently regulating phytoplankton biomass in Lake Pepin. Physical factors include light and temperature. This was also the general conclusion of three modeling studies (HydroQual, 2002b; EnviroTech, 1993; Heiskary, *et al.*, 1993). The effects of zooplankton and zebra mussels on algal populations were not studied.
>
> This is not to say that phosphorus or nitrogen, if reduced to sufficiently low levels, couldn't potentially limit algal growth in Spring Lake and Lake Pepin. During the initial phosphorus study, Barr Engineering Company (1993) conducted a dilution bioassay study in the laboratory on water samples collected from the two lakes. Phosphorus or nitrogen was added to 0, 25, 50, and 75 percent dilutions of lake water, and the algal response was measured over 28 days. The initial phosphorus concentrations did not appear to control the algal growth rates, even in solutions with 25% lake water; however, phosphorus did ultimately limit the growth rate after algal uptake reduced the SRP concentrations to low levels. Nitrogen became limiting before phosphorus in the Lake Pepin samples.[93]

MCEA Evidence on Phosphorus Impact on Lake Pepin

48. Dr. James Perry testified on behalf of MCEA. Dr. Perry performed no analysis or modeling to determine individual impact of the City's WWTP on any downstream lake or reservoir.[94] Dr. Perry's testimony contains no quantitative estimate of impacts arising from the City's WWTP P discharge on any downstream lake or reservoir. Dr. Perry's testimony included the following conclusion:

> At this point, I cannot judge more specifically the exact degree of impact that the St. Cloud plant is having without actually conducting site-specific research relative to species diversity and integrity at each of the downstream waters. Therefore, my opinion is based on a general knowledge of impacts to be expected from a phosphorus load as large as we see in the data that I have reviewed and the fact that the data from the Pollution Control Agency clearly suggest nutrient over-enriched waters.[95]

49. Dr. Wedlund was called as a witness by MCEA. As part of his assessment of the City's NPDES permit application, Dr. Wedlund performed BATHTUB modeling to determine the residence time of water in the Coon Rapids Pool. The December 20, 1999 draft memorandum by Dr. Wedlund contained a chart describing an analysis of effects from different levels of P discharge from the City's WWTP on the Coon Rapids Pool.[96] Dr. Wedlund did not recall what modeling he had done to arrive at that chart.[97] The differences in the chart are within the standard measuring error of the BATHTUB model.[98] Dr. Wedlund performed no modeling to assess the individual impact of the City's WWTP on Lake Pepin. He indicated that, using the BATHTUB model, only the Metro Facility would show a statistically significant impact on Lake Pepin.[99]

50. Gary Oberts, Senior Environmental Analyst with Emmons and Oliver Resources, testified on behalf of MCEA.[100] From 1979 to 2001, Oberts worked for the Metropolitan Council Environmental Services Division.[101] Oberts performed no analysis or modeling to determine individual impact of the City's WWTP on any downstream lake or reservoir.[102] Oberts' testimony contains no quantitative estimate of impacts arising from the City's WWTP P discharge on any downstream lake or reservoir. Oberts' testimony included the following assertion:

> As phosphorus is added to or increases in waters, lakes and reservoirs especially, algae growth in the lake increases and a number of other negative effects then flow from the increased algae growth. In Minnesota, phosphorus is a limiting nutrient in most of our waters, meaning that the lack of phosphorus is the limiting factor for growing algae. The addition of or increase in, phosphorus will cause a corresponding increase in the growth of algae which in turn can cause a lot of other changes.[103]

51. Oberts' testimony did not make reference to the Lake Pepin Study produced through the efforts of the Metropolitan Council Environmental Services Division. His testimony did not address the finding of the Lake Pepin Study that "phosphorus is not limiting algal growth in Lake Pepin."[104]

NPDES Analysis – Greenfield WWTF

52. In 1998, the City of Greenfield applied for an NPDES permit for its proposed wastewater treatment facility (Greenfield WWTF). The Greenfield WWTF would discharge from a developing industrial park to the Crow River. The Crow River flows into the Mississippi River downstream of Anoka and upstream of the Coon Rapids Pool. The MPCA found that "the proposed project does not have the potential for significant environmental effects due to the discharge of wastewaters to the Crow River."[105] Based on its inability to conduct modeling of potential impacts to the river, the MPCA staff suggested the following:

> While the MPCA is not proposing to impose a limit or total loading cap on phosphorus at this time, the city is being encouraged to design the WWTF so that phosphorus removal can be cost effectively provided to meet such a limit in the future. The MPCA currently does not have sufficient information regarding the impacts of phosphorus on the Crow River, or the downstream ORVW stretch of the Mississippi River, to assign a specific limit to the facility at this time.[106]

53. On June 30, 1998, the MPCA Board reached an agreement with the City of Greenfield where the applicant agreed to a 1 mg/L P limit as a condition on the NPDES permit.[107] The staff language quoted in the foregoing Finding was deleted and replaced with language describing the agreed-upon P limit and noting that the imposition of that limit would occur on a timetable to be negotiated later.[108]

NPDES Analysis – Rush City WWTF

54. In 1998, an NPDES application for an expanded and upgraded discharge permit from the Rush City WWTF was made to MPCA to accommodate the addition of a new correctional facility.[109] The Rush City WWTF discharged to a tributary to Rush Creek and from there to the St. Croix Reservoir (the pool behind Taylor's Falls dam on the St. Croix River) and thence to Lake St. Croix.[110] The Rush City WWTF voluntarily agreed to accept a cap of 650 kilograms of P discharged per year.[111] MCEA requested a contested case hearing on the application, asserting that the discharge affected a lake or reservoir within the meaning of the P-rule.[112]

55. MPCA analyzed MCEA's request and concluded that the P-rule did not require the 1 mg/L P limit. The modeling conducted by MPCA showed that the discharge would not affect the St. Croix Reservoir. MPCA indicated that the entire P loading from the Rush City WWTF was too small to result in impacts that "could be measured or observed, either in the laboratory or in the field."[113] The MPCA also noted that the reservoir was not listed in DNR Bulletin 25.[114]

NPDES Analysis – Cannon Falls WWTF

56. On December 17, 1998, Dr. Wedlund sent a memorandum to a region director of the MPCA regarding the City of Cannon Falls' wastewater treatment facility (Cannon Falls WWTF) regarding the upgrade of the Cannon Falls WWTF NPDES

permit. The Cannon Falls WWTF discharges to the Cannon River, flowing into Devils Lake, Spring Creek Lake, Cannon Lake, and Round Lake. These lakes are located approximately 20 miles downstream of the Cannon Falls WWTF and immediately upstream of Red Wing, Minnesota, on the Mississippi River. Lake Pepin begins a few miles downstream of Red Wing. Dr. Wedlund concluded that the Cannon Falls WWTF P discharge affected these lakes stating:

> Lake Pepin and lakes in the Cannon River watershed are adversely affected by an excessively high cumulative mass phosphorus loading. In accordance with the MPCA's Phosphorus Strategy, the 'affects' portion of Minn. R. 7050.0211 is interpreted on the basis of aggregate, cumulative basin-wide loading rather than solely on individual source loading. Since we need to reduce the cumulative mass loading in the Cannon River watershed, I recommend that the city of Cannon Falls remove phosphorus to 1.0 mg/L upon construction of the upgraded wastewater treatment facility.[115]

NPDES Analysis – Worthington WWTF

57. On April 9, 1999, Dr. Wedlund sent a letter to the operator of the City of Worthington's two wastewater treatment facilities (Worthington WWTF) regarding the renewal of the Worthington WWTF NPDES permit. Dr. Wedlund assessed the P discharge of the Worthington WWTF as constituting between 90 percent (in low flow years) and 37 to 57 percent (in high flow years) of the P loading to North Heron Lake.[116] In 1998, the rate of P discharged from one WWTF was 4.1 mg/L (down from 7.9 mg/L in 1997) and from the other WWTF the P discharged was 25.5 mg/L.[117] Regarding impacts to Heron Lake, Dr. Wedlund wrote:

> Due, in large part to the high Okabena Creek stream concentrations, the current Heron Lake phosphorus concentrations are very high (Table 6). The mean growing season concentration was 0.302 mg/L in 1992, 0.603 mg/L in 1997, and 0.543 mg/L in 1998. The concentration needs to be much lower to increase transparency, reduce algal growth, and encourage macrophyte growth (including Sago Pondweed and Wild Celery) to improve the lake's suitability for waterfowl feeding.[118]

58. Based on this analysis, Dr. Wedlund concluded that the Worthington WWTF should have a combined P limit of 1 mg/L.[119] No reference is made to any specific levels of transparency, algal growth, or macrophyte growth identified in Heron Lake and no modeling was done to show what change in affects would likely result from imposing the 1 mg/L P limit on the Worthington WWTF combined discharge.

NPDES Analysis – McGregor WWTF

59. On July 10, 2000, Dr. Wedlund sent a memorandum to Marvin Hora recommending a 1 mg/L P limit on the McGregor WWTF in Aitkin County. The McGregor WWTF discharges to the Sandy River, which flows into Steamboat Lake (and

then to Davis Lake) less than five miles downstream. Dr. Wedlund's analysis included an assessment of residence time in the lakes and BATHTUB modeling to determine the level of impact on water quality in the lakes.[120] The residence time in the two lakes was calculated to range from 10 days (in normal flow years) to 39 days (in low flow years).[121] The BATHTUB modeling indicated that the McGregor WWTF's "discharge can cause measurable changes in the total phosphorus and chlorophyll-*a* …."[122] Based on his analysis, Dr. Wedlund concluded that the McGregor WWTF discharge affects Steamboat and Davis Lakes within the meaning of the P-rule.[123]

Based upon the foregoing Findings of Fact, the Administrative Law Judge makes the following:

CONCLUSIONS

1. The Administrative Law Judge and the MPCA have jurisdiction to consider this matter under Minn. Stat. §§ 14.50 and 116.07 and Minn. R. 7000.1750 to 7000.2200 and 7001.0130 to 7001.0140.

2. Proper notice of the hearing has been given and the MPCA has complied with all required procedures. This matter is properly before the MPCA and the Administrative Law Judge.

3. As the party objecting to the action to be taken in this matter, the MCEA has the burden of demonstrating that its proposed action is required by a preponderance of the evidence.[124]

4. Minn. Rule 7050.0211, subp. 1a, provides, in relevant part, as follows:

> Subp. 1a. **Total phosphorus effluent limits.** Where the discharge of effluent is directly to or affects a lake or reservoir, phosphorus removal to one milligram per liter shall be required … .

5. The City discharges effluent to the Mississippi River.

6. The City's effluent reaches the Coon Rapids Pool of the Mississippi River. The Coon Rapids Pool is not a "reservoir" within the meaning of Minn. Rule 7050.0211, subp. 1a, because, under the MPCA's interpretation of the rule, the residence time of water in the Coon Rapids Pool is too short to constitute a reservoir and the Coon Rapids Pool does not have an adequate volume of water to support treatment of this feature as anything other than a stretch of river.

7. The City's effluent reaches Lake Pepin. There is no evidence in the record to show that the City's effluent has an individual impact on Lake Pepin. Measurement of individual impact of effluent on a lake or reservoir is required before the 1 mg/L limitation of the P-rule applies to a discharge.

8. The phosphorus limitation of Minn. Rule 7050.0211, subp. 1a, does not apply to the City's WWTP discharge.

9. Under the MPCA's Phosphorus Strategy, a phosphorus management plan is the appropriate means of addressing the phosphorus content of the City's WWTP discharge.

10. The City's application for an NPDES permit should be granted with a phosphorus management plan.

Based upon the foregoing Conclusions, the Administrative Law Judge makes the following:

RECOMMENDATION

IT IS RECOMMENDED that the MPCA Board GRANT the application of the City of Saint Cloud for a NPDES Permit for the City's waste water treatment plant with a requirement for a phosphorus management plan.

Dated May 27, 2004.

/s/ Richard C. Luis
RICHARD C. LUIS
Administrative Law Judge

Reported: Transcript prepared (three volumes)
Jean Brennan, Brennan and Associates

NOTICE

Under Minn. Stat. § 14.62, subd. 1, the agency is required to serve its final decision upon each party and the Administrative Law Judge by first class mail or as otherwise provided by law.

MEMORANDUM

A variety of issues and arguments were raised, most of which were addressed in the Findings of Fact and Conclusions set forth above. Issues benefiting from additional analysis are discussed in this Memorandum.

Status of the Coon Rapids Pool.

MCEA relied heavily on the opinions of Dick Osgood in asserting that the nature of the Coon Rapids Pool renders it appropriately classified as a reservoir under the P-rule. Osgood's conclusions regarding the Coon Rapids Pool are based on general calculations, not specific evidence regarding this reach. For example, Osgood maintained that "the dam is a 12 ft [foot] head dam meaning it holds back 12 feet of water."[125] Regarding Dr. Wedlund's residence time calculation, Osgood testified to "assuming it is the winter level … because if you subtract seven feet of volume from the volume PCA uses, the reservoir would be essentially empty."[126] Based on this

assumption, Osgood calculated a residence time twice that of Dr. Wedlund's estimate.[127]

The USGS hydrologic study unambiguously shows that the depth of the Coon Rapids Pool near the dam face ranges from five feet to ten feet for approximately half of the width of the Pool's cross section at the point nearest the dam face.[128] The USGS study used the surface water level of 830 MSL, which is the operating level of the Coon Rapids Pool during the summer months when the baffles are inflated. The 12-foot dam head, combined with an additional seven feet of depth from the baffles, approaches the twenty foot maximum depth of the Coon Rapids Pool, but that depth occurs only over a limited portion of the cross section.[129] Dr. Wedlund's calculation of the residence time is based on more accurate information and is the appropriate figure to use in this proceeding.[130]

Riverine versus Lacustrine

MCEA maintains that the distinction between riverine (river-like) and lacustrine (lake-like) stretches of the Mississippi River is not supported by the record and that this distinction leads to inconsistent results.[131] MPCA staff and the City assert that the MCEA's approach improperly removes the distinction between rivers and lakes to create, in effect, an entirely different rule.

The P-rule itself distinguishes between rivers and lakes in its express language. As originally applied by the MPCA, the P-rule would not apply to the City's WWTP discharge. This is because the Coon Rapids Pool (the nearest body of water that could even arguably trigger the P-rule), is more than 50 miles downstream of the discharge. When the P-rule was adopted, the MPCA applied a 50-mile rule of thumb to potential impacts. That MPCA policy was changed in the Phosphorus Strategy to eliminate the limitation.[132]

Lake Pepin exhibits a range of residence times, depending on the flow into the Lake Pepin basin. MCEA points out that approximately half the time, Lake Pepin has a residence time below 14 days. MCEA asserts that this demonstrates that the MPCA is inconsistent in describing Lake Pepin as lacustrine on the basis of residence time.[133]

The MPCA's approach is criticized by MCEA as using "rigid yet artificial distinctions."[134] MCEA's approach is to accept the listing on DNR Bulletin 25 as determinative. This approach would prevent the MPCA from applying the P-rule to still ponds that are not listed in Bulletin 25. Similarly, river stretches that exhibit lacustrine behavior would not be protected by the P-rule unless such stretches were already listed on Bulletin 25. Using the characteristics of the individual waterbody to determine if the P-rule applies is both flexible and rationally related to the goal of protecting lakes and reservoirs.

The MPCA asserts that it applies the P-rule in a protective fashion. The treatment of Lake Pepin as a lake under the P-rule, even with half of its annual residence times falling in the riverine category, supports the MPCA's position. Even if

MCEA's assertion of inconsistent treatment had merit (and it does not), this claim would not advance a different treatment for the Coon Rapids Pool. The maximum residence time for the Coon Rapids Pool falls well below the minimum annual residence time for Lake Pepin. Stated another way, Lake Pepin is more lacustrine at its shortest residence time than is the Coon Rapids Pool at that water body's longest residence time. This difference in the movement of the water through the Coon Rapids Pool supports the MPCA's treatment of that body as riverine in applying the P-Rule.

Affects in the River

The growth of algae in the Mississippi River upstream of the Coon Rapids Pool is cited by MCEA as demonstrating that the P-rule must be applied. The City argues that this approach is "an attempt to rewrite and greatly expand application of the Phosphorus Rule."[135] The P-rule explicitly authorizes discharge of phosphorus to rivers without a limit. This authority is limited only where the facts demonstrate that the discharge "affects a lake or reservoir."[136] The fact that algae can grow in moving water does not, by itself, demonstrate an effect on a lake or reservoir within the meaning of the P-rule. For the City's Application, the P-rule must be assessed as it is written.

Cumulative Effects versus Measurable Effects

There are negative impacts on Lake Pepin arising from excess nutrients. The City's WWTP P discharge is the largest point source P discharge upstream of the Metro plant. These two facts are cited by MCEA as demonstrating that the City's WWTP affects Lake Pepin. The City and MPCA staff point out that no study indicates a measurable effect arising from that discharge. MCEA argues that the inability of the BATHTUB study to measure an effect should not prevent the application of the P-rule.

The Court of Appeals has explicitly addressed that issue in this case. The Court of Appeals stated:

> We agree with the MPCA's arguments that the Statement of Need and Reasonableness requires a measurement of individual impact prior to application of the phosphorus rule and the phosphorus rule cannot be triggered merely by measuring the cumulative impact of several discharge sources upon a lake or reservoir or by presuming a source that discharges phosphorus has a measurable effect on a lake or reservoir.[137]

The Court of Appeals did not require the use of any particular model. Anyone may use any suitable model to measure the individual impact of a particular discharge on a lake or reservoir to trigger the 1 mg/L limit of the P-rule. But the holding of the Court of Appeals does not allow the imposition of the limit in the absence of any modeling to demonstrate the individual impact of the discharge.

MCEA's approach to demonstrating effects is explicitly and exclusively based on cumulative effects. MCEA's own witness on the subject, Dr. Wedlund, testified that he believed that the MPCA should rely on cumulative sources stating that:

> You can't look at individual sources and apply, for example, BATHTUB modeling to Lake Pepin because it would essentially be out of business in terms of reducing loads in the basin because only - - possibly only the metro facility would have a statistically significant impact if you use that on Lake Pepin and Spring Lake, and possibly the Coon Rapids Reservoir and the Vadnais Chain of Lakes.[138]

There is no evidence in the record demonstrating an individually measurable effect on Lake Pepin from the City's WWTP P discharge. Under the holding of the Court of Appeals, the 1 mg/L limit cannot be applied to the City's discharge.

Agency Interpretation

The P-rule was adopted in the early 1970s.[139] The MPCA has not conducted rulemaking on the P-rule since its adoption. The P-rule contains two triggers – discharge going directly to a lake or reservoir and discharge affecting a lake or reservoir. The first trigger, "directly to," requires no interpretation. The second trigger, "affecting," is inherently ambiguous.

From the inception of the P-rule, the MPCA has relied upon its interpretation of "affecting" to apply the 1 mg/L limitation to riverine dischargers. The MPCA's interpretation of affecting has been, from the adoption of the P-rule, to require individually measurable effects on a downstream lake or reservoir.

The only period where any part of the MPCA applied a different interpretation of "affecting" was during the operation of the Phosphorus Task Force. At that time, from 1997 through 1999, other approaches to interpret the P-rule were considered. The recommendation of the Phosphorus Task Force was to change the interpretation of affecting to a cumulative, basin-wide loading of P in particular lakes and reservoirs. This recommendation has never been adopted by the MPCA Board.

While no change in MPCA policy had occurred, Dr. Wedlund incorporated the Phosphorus Task Force recommendations into his approach to NPDES permitting. In the Cannon Falls WWTF NPDES permit analysis, Dr. Wedlund described the MPCA Phosphorus Strategy as:

> In accordance with the MPCA's Phosphorus Strategy, the 'affects' portion of Minn. R. 7050.0211 is interpreted on the basis of aggregate, cumulative basin-wide loading rather than solely on individual source loading.[140]

At the time that Dr. Wedlund wrote this description, December 1998, the Phosphorus Task Force had been meeting, but no strategy had been adopted by the MPCA Board. The MPCA Board explicitly adopted the Phosphorus Strategy in March 2000. The adopted Phosphorus Strategy expressly limits the interpretation of "affecting" to "the individual contribution of the discharge in causing any of the adverse changes [that constitute affecting a lake or reservoir]."[141]

Agency policy is established by the MPCA Board.[142] While at least one MPCA staffer has, for a brief period, interpreted the "affects" portion of the P-rule to include cumulative impacts, this interpretation does not constitute MPCA policy. Requiring individually measurable effects on a downstream lake or reservoir before imposing the 1 mg/L limit is the long-standing agency interpretation of the P-rule by the MPCA Board. This interpretation is entitled to deference in this matter.[143] The Court of Appeals has decided the issue, in favor of the MPCA Board's longstanding interpretation.[144]

MCEA Approach to the P-rule

MCEA has asserted that the existence of negative effects of P, regardless of where these effects are found, compels imposition of the 1 mg/L limit. The absence of individually measurable effects is, to MCEA, irrelevant to the need for the limit. MCEA cites the MPCA actions on the NPDES permits for Worthington and McGregor as support for this approach.

The Worthington WWTF discharges up to 90% of the P loading to North Heron Lake, twenty miles away. The volume of the discharge greatly exceeds the 1 mg/L limit of the P-rule. In assessing the Worthington NPDES permit application, Dr. Wedlund did not follow all of the steps that would show measurable impact on North Heron Lake from the Worthington WWTF's individual discharge.

Dr. Wedlund's assessment on the Worthington application was completed on April 9, 1999. At this time, he was under the impression that cumulative effects were all that needed to be shown to impose the 1 mg/L P limit of the P-rule.[145] By contrast, the McGregor WWTF NPDES permit application was analyzed using BATHTUB modeling. The residence time of water in both Davis Lake and Steamboat Lake was determined. Measurable changes in P and chlorophyll-*a* were determined and attributed to the discharge of the McGregor WWTF. The McGregor application analysis was completed on July 10, 2000, after Hora and Garvey had discussed the proper application of the P-rule with Dr. Wedlund. The difference in approach to these applications demonstrates that a MPCA staffer failed to follow the agency interpretation, not that some different interpretation is appropriate.

Summary

MCEA has not met its burden to demonstrate that the City's WWTP discharge has any individual measurable effects on a downstream lake or reservoir. Such a demonstration is required to trigger the "affects" portion of Minn. Rule 7050.0211, subp. 1a, that would require the City to meet a 1 mg/L limit on phosphorus in its effluent. The appropriate condition to add to the City's NPDES permit is a phosphorus management plan. The ALJ recommends that the City's permit application be granted with a phosphorus management plan requirement.

R.C.L.

[1] The discharge occurs at mile 930 of the Upper Mississippi ("UM 930"). Exhibit 26, at 3.
[2] ***City of St. Cloud Wastewater Treatment Facility Request***, C3-03-75 (Minn.App. September 12, 2003).
[3] Ex. 26, at 3.
[4] *Id*.
[5] Ex. 26, at 3.
[6] Ex. 26, Appendix 1.
[7] Ex. 26, at 4.
[8] *Id*.
[9] Ex. 26, at 8-9 and Appendix 7.
[10] Ex. 10 at 22.
[11] Ex. 2, Wedlund Exhibit 2, at 2.
[12] *Id*., at 3.
[13] Ex. 2, Wedlund Exhibit 3, at 1.
[14] *Id*.
[15] *Id*., at 2.
[16] *Id*., at 3.
[17] *Id*.
[18] Ex. 38, Attachment A.
[19] Ex. 38, Attachment A, at 1.
[20] *Id*.
[21] *Id*.
[22] Ex. 38, Attachment A, at 1.
[23] *Id*.
[24] *Id*. The description in the foregoing findings includes the City's WWTP situation. Therefore, the other path (that addresses discharges not upstream of areas of concern caused by P) will not be described here.
[25] Tr. at 699-700.
[26] Tr. at 803.
[27] Ex. 38, Attachment A, at 2.
[28] Ex. 38, Attachment A, at 3.
[29] Ex. 38, Attachment A, at 11.
[30] *Id*.
[31] Ex. 38, Attachment A, at 12.
[32] Ex. 38, Attachment A, at 13 (emphasis in original).
[33] Ex. 2, Wedlund Exhibit 4, at 2.
[34] Ex. 2, Wedlund Exhibit 4, at 2.
[35] Tr. at 813.
[36] *Id*.
[37] Tr. at 789.
[38] Tr. at 729-730.
[39] Tr. at 116-119.
[40] Tr. at 790.
[41] Tr. at 790.
[42] Ex. 2, Wedlund Exhibit 5, at 1.
[43] Ex. 2, Wedlund Exhibit 5, Attachment A, at 2-4.
[44] Ex. 2, Wedlund Exhibit 5, Attachment A, at 5.
[45] Ex. 2, Wedlund Exhibit 5, Attachment A, at 5 (emphasis added).
[46] *Id*.
[47] Ex. 38, at 9.
[48] *Id*., at 2.
[49] Ex. 2, Wedlund Exhibit 6, at 1.
[50] Id., at 2.
[51] Ex. 38, Attachment B, at 1.
[52] *Id*.

[53] Ex. 38, Attachment B, at 2. One estimate suggests that measured total P load in the Mississippi River at Anoka is up to 29% lower than the P loading from cumulative sources at Saint Cloud would call for. Ex. 30, Appendix 2, at 2-7. This reduction is described as "a substantial loss of phosphorus… ." *Id*.
[54] Ex. 38, Attachment B, at 2.
[55] Ex. 38, Attachment B, at 3.
[56] *Id*. at 2-3.
[57] *Id*. at 7.
[58] Ex. 38, Attachment B, at 2.
[59] Tr. at 762.
[60] Ex. 38, Attachment B, at 1.
[61] Ex. 38, Attachment B, at 1.
[62] Ex. 38, Attachment B, at 7 (emphasis in original).
[63] Ex. 30, Appendix 2, at 2-1. The parties generally accept that the Coon Rapids Pool begins at UM-871.6.
[64] Ex. 8, at 165.
[65] Ex. 30, at 3 and Appendix 2, at 2-2.
[66] Ex. 36.
[67] *Id*.
[68] Ex. 36.
[69] Ex. 36.
[70] *Id*.
[71] Ex. 36; Ex. 39, System-Wide Low-Flow Management Plan Matrix (Plan Matrix).
[72] Ex. 39, at 1; Plan Matrix.
[73] Ex. 39, at 1.
[74] Ex. 39, at 2.
[75] Ex. 38, at 18, and Attachment C.
[76] *Id*.
[77] Ex. 2, Wedlund Exhibit 5, Attachment A, at 8. The annual average residence time is shorter than that calculated earlier by Dr. Wedlund (and discussed in a foregoing finding), since he used different data in the two calculations.
[78] *Id*.
[79] ***City of St. Cloud Wastewater Treatment Facility Request***, C3-03-75 (Minn.App. September 12, 2003)(citing ***Miccosukee Tribe of Indians of Florida v. South Florida Water Management Dist.***, 280 F.3d 1364, 1368 (11th Cir. 2002)).
[80] Ex. 5, at 17.
[81] *Id*.
[82] Ex. 5, at 9.
[83] Ex. 5, at 8.
[84] Ex. 5, at 17.
[85] Ex. 5, at 1.
[86] *Id*.
[87] *Id*. at 1-2.
[88] Ex. 5, at 17.
[89] *Id*. at 19.
[90] Ex. 5, at 17.
[91] *See* Ex. 5, at 14.
[92] Ex. 5.
[93] Ex. 5, at 56.
[94] Tr. at 31-32.
[95] Ex. 1, at 5.
[96] Ex. 2, Wedlund Exhibit 4, at 2. The chart is captioned: "Table 2. BATHTUB Model Predicted Changes in Coon Rapids Reservoir During a Low Flow Year Due to Phosphorus Discharged by St. Cloud WWTF."
[97] Tr. at 56-59.
[98] Tr. at 58-59.
[99] Tr. at 81.

[100] Oberts adopted the testimony of Dr. Daniel Engstrom, who was unavailable to testify at the hearing. For the purposes of this matter, Dr. Engstrom's adopted testimony is attributed to Oberts.
[101] Ex. 11, at 2.
[102] Tr. at 204.
[103] Ex. 11, Oberts Ex. 2, at 5.
[104] Ex. 5, at 56.
[105] Ex. 10, TenEyck Ex. 2, at 8.
[106] Ex. 10, TenEyck Ex. 2, at 7.
[107] Ex. 10, TenEyck Ex. 2, Watershed Steering Committee cover letter, at 1.
[108] Ex. 10, TenEyck Ex. 2, at 7.
[109] Ex. 10, TenEyck Ex. 3, at 1.
[110] *Id.*, at 2 and 5.
[111] Ex. 10, TenEyck Ex. 3, at 3.
[112] Ex. 10, TenEyck Ex. 3, at 5.
[113] *Id.*
[114] *Id.*, at 6.
[115] Ex. 2, Wedlund Exhibit 11, at 2.
[116] Ex. 2, Wedlund Exhibit 7a, at 2. The Worthington WWTF discharges to Okabena Creek which flows into Heron Lake, about twenty miles downstream.
[117] *Id.*
[118] Ex. 2, Wedlund Exhibit 7a, at 2.
[119] *Id.*, at 3.
[120] Ex. 2, Wedlund Exhibit 8, at 3-11.
[121] Ex. 2, Wedlund Exhibit 8, at 3.
[122] *Id.*
[123] *Id.*, at 4.
[124] Minn. R. 1400.7300, subp. 5.
[125] Ex. 12, at 13.
[126] *Id.* at 13-14.
[127] Ex. 12, at 14.
[128] Ex. 36.
[129] Ex. 36.
[130] By contrast, Osgood's calculation adds an additional seven feet of depth to the Coon Rapids Pool that does not exist.
[131] MCEA Reply Brief, at 12-13.
[132] MCEA has not objected to this policy change, even though it was not accomplished by rulemaking.
[133] MCEA Reply Brief, at 13.
[134] MCEA Reply Brief, at 13.
[135] City Reply Brief, at 1.
[136] Minn. Rule 7050.0211. subp. 1a.
[137] ***City of St. Cloud Wastewater Treatment Facility Request***, *supra*.
[138] Tr. at 81.
[139] Ex. 38, at 3 and Attachment A, at 11.
[140] Ex. 2, Wedlund Exhibit 11, at 2.
[141] Ex. 38, Attachment A, at 2.
[142] *See* ***ITMO Multi-Flo Wisconsin Aerobic Treatment Units***, C0-01-823 (Minn.App. December 21, 2001).
[143] ***ITMO the Application of Northern State Power Company for Approval of its 1998 Resource Plan***, C0-99-917 (Minn.App. January 18, 2000)(citing ***Bankruptcy Estate of United Shipping Co., v. Tucker Co.***, 474 N.W.2d 835, 839 (Minn. App. 1991)("`[C]onsiderable weight should be accorded to an executive department's construction of a statutory scheme it is entrusted to administer.'")(quoting ***Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.***, 467 U.S. 837, 844, 104 S. Ct. 2778, 2782 (1984)), *review denied* (Minn. Oct. 31, 1991)).
[144] ***City of St. Cloud Wastewater Treatment Facility Request***, *supra*.
[145] One may also conclude that, with up to 90% of the P loading coming from one facility, any impact observed is necessarily the result of that facility's discharge.