

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD JUN 20 2005

STATE OF ILLINOIS
Pollution Control Board

IN THE MATTER OF:)

INTERIM PHOSPHORUS EFFLUENT)
STANDARD, PROPOSED 35 ILL. ADM.)
304.123 (G-K))

R4-26
(Rulemaking – Water)

NOTICE OF FILING

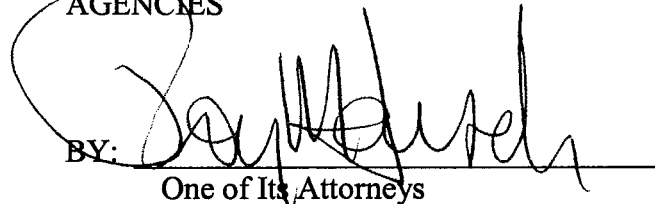
PC#21

TO: See Attached Service List

PLEASE TAKE NOTICE that on **Monday, June 20, 2005**, we filed the attached **Comments of the Illinois Association of Wastewater Agencies** with the Clerk of the Illinois Pollution Control Board, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ASSOCIATION OF WASTEWATER
AGENCIES

BY: 
One of Its Attorneys

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COMMENTS OF THE
ILLINOIS ASSOCIATION OF WASTEWATER AGENCIES

Introduction

The Illinois Association of Wastewater Agencies ("IAWA") appreciates the opportunity to comment on the Illinois Pollution Control Board's ("Board's") proposed rule establishing a state-wide effluent phosphorus standard. IAWA has reviewed the Board's discussion of the proposed rule. IAWA continues to oppose the rule for the reasons listed below.

Insufficient Justification for a State-wide Effluent Standard

IAWA believes that the record fails to provide sufficient justification for promulgation of a state-wide phosphorus effluent standard. The Board's authority to promulgate effluent standards is limited to known pollutants and must be coupled with a demonstration that economic treatment technology is available. IAWA does not believe that the record in the matter contains evidence that phosphorus is causing widespread pollution problems in the state of Illinois, or that promulgation of the proposed phosphorus effluent standard will have a measurable impact on eutrophication.

The record does contain discussion of the role of phosphorus as one of the two major nutrients in the aquatic environment. When phosphorus is present in excess and a number of other conditions are present, eutrophic conditions can develop. Eutrophic conditions may or may not be an environmental problem depending on the presence or absence of other conditions, such as low reaeration rates. No one in this proceeding has provided evidence defining the extent that elevated levels of phosphorus are causing environmental problems.

The Illinois Water Quality Report ("305(b) Report") as prepared by the Illinois Environmental Protection Agency ("Agency") does list many stream segments as being impaired due to phosphorus. This listing is not based on an onsite determination of cause and effect. It is based on statistical guideline that was set at the 85th percentile of statewide Ambient Water Quality Monitoring Network ("AWQMN") data. Any stream segment that has a few sample results above this concentration will be listed as impaired due to phosphorus. While the approach has

some value in identifying streams where phosphorus may be a concern, it can not be considered evidence that these elevated levels of phosphorus are causing environmental problems.

Therefore, the 305(b) Report can not be used as justification for a state-wide phosphorus effluent standard.

No Need to Shortcut a Science-Based Approach

It seems that all parties in this matter agree that the proposed phosphorus effluent standard is not science-based. The Agency with the Illinois Nutrient Work Group is in the midst of a multi-year undertaking to develop science-based water quality standards. IAWA does not believe the record in this matter documents an urgent need to short cut the science-based approach that is already under way.

Proposed Phosphorus Reductions are Insignificant

The proposed rule will have very limited impact on the total amount of phosphorus entering the aquatic environment. Agricultural sources are also major dischargers of phosphorus. In many areas there are also significant natural sources of phosphorus in Illinois soils. On a regional or statewide basis the proposed interim effluent standard will not noticeably reduce phosphorus concentrations in Illinois streams.

No Daily Maximum Limit

If the Board does proceed with establishing a phosphorus effluent standard, it should exempt the standard from the Averaging Rule (35 IAC 304.104 (a) (2) & (3)). The proposed effluent standard of 1.0 mg/l will be implemented as a monthly average limit in NPDES permits. The Averaging Rule will also require the Agency to place in NPDES permits a daily maximum limit of 2.0 mg/l. A daily maximum limit is both unnecessary and undesirable.

A daily maximum limit is not needed since phosphorus is not a toxic parameter. Daily maximum effluent limits are typically related to acute toxicity levels of pollutants. They are designed to prevent short term discharges of high levels of pollutants that would lead to acute toxicity in the aquatic environment. While this is appropriate for toxic pollutants, it is not appropriate for phosphorus. Phosphorus is a nutrient and is not toxic. If the intent of this rule is to force the use of what the Board considers to be available technology, a monthly average effluent limit, without a daily maximum limit, will accomplish that end.

A daily maximum limit is undesirable as it will discourage the use of biological phosphorus removal technology ("BPR"). BPR is a complex biological process that relies on a sequence of conditions to encourage the luxury uptake of phosphorus. If any number of conditions are not present, the process will not function at optimum levels. As a result, this process produces a more variable effluent.

The Board should encourage the use of BPR over chemical phosphorus removal. Chemical phosphorus removal is a more resource intensive process. It requires the manufacture of a chemical and transportation of the chemical to treatment facilities. It also leads to the creation of additional sludge, which must be processed and then transported to the final disposal site. Each of these additional functions are energy intensive; energy consumption has both air and water quality consequences and requiring such should be carefully evaluated.

The State of Wisconsin has allowed an exemption even to the monthly average limit for plants using BPR. See Wisconsin Administrative Code NR217.04 (2) included as Attachment 1. Note that the State of Wisconsin has never proposed a daily maximum limit, even for Great Lakes dischargers.

The presence of a daily maximum phosphorus limit will discourage the use of the most environmentally favorable option for meeting the phosphorus effluent standards. If the Board decides to promulgate a phosphorus effluent standard, IAWA recommends the following addition to the rule since phosphorus is not a toxicant:

g) (4) Monthly average permit limits established under this subsection (g) are not subject to the averaging rules under subsections (a)(2) and (a)(3) of Section 304.104.

Economic Reasonableness

IAWA believes the economic impact of the proposed rule has been seriously underestimated. We have obtained construction cost estimates for two recent plant improvement projects that included the upgrade to phosphorus removal.

The Village of Beecher is expanding its plant to 1.2 million gallons per day ("MGD"). The cost of chemical phosphorus removal includes a chemical feed building, equipment, electrical and controls for a total of \$288,000. This does not include the cost to handle the increased sludge production, which is estimated to comprise 20% of the total sludge volume for this plant. The cost for sludge handling (digester, storage building modifications and belt press) is \$892,800. The 20% attributable to phosphorus removal is \$178,600. This makes the total capital cost for phosphorus removal \$466,600 for a 1.2 MGD plant.

The City of McHenry's South plant is expanding to 1.5 MGD. This expansion is one of the first projects affected by the anticipation of the proposed rule, and has now entered the construction phase. The cost of the chemical feed equipment and building, including electrical and controls, reflected in the engineer's pre-bid estimate, was \$350,000, which is in line with the cost at Beecher. The engineer's total pre-bid estimate for the expansion project was 3 percent above the lowest bid received in April 2005. The impact on sludge processing at McHenry has not been established and is not reflected in the above figure. Furthermore, the chemical storage capacity and the size of the chemical feed building were governed by the capacity of chemical delivery trucks, not by the projected consumption of the chemical. Consequently, the McHenry South estimate provides an indication of the capital cost of adding chemical phosphorus removal to the smallest plants in the range targeted by the proposed rule when a new chemical feed building is required but sludge processing capacity is sufficient.

Based on recent facilities planning at a 30 mgd Lexington, Kentucky WWTP, the total costs for BPR and chemical phosphorus removal (“CPR”), including the impact on sludge processing and anticipating a 1 mg/L phosphorus limit, were as follows based on a 20 year present worth analysis:

	BPR	CPR
Initial Capital Costs	\$10,092,000	\$4,286,000
Operation and Maintenance Costs	\$1,625,000	\$11,455,000
Equipment Replacement Costs	\$457,000	\$205,000
Total Present Worth	12,174,000	\$15,946,000

Costs for several Wisconsin facilities studied during the Rock River phosphorus total maximum daily load pilot project (2000) have been updated to 2005 costs and are presented in the attached graphs. The capital costs presented above for Beecher, McHenry and Lexington are consistent with the attached graph. These costs are dramatically different from those referenced by the Board.

The Board’s decision was erroneously based upon an estimate of the capital cost for phosphorus removal of \$35,000 as quoted in the First Notice Opinion. Based on the information presented in these comments, the actual costs will be ten times that amount for plants in the one to five MGD range and four times that amount for plants above 30 MGD. For CPR, the capital cost is only a fraction of the total 20 year present worth cost. For plants with a capacity of one or two MGD using CPR, it appears that the 20 year present worth including sludge processing and disposal will be \$600,000 to \$1,000,000.

Conclusion

IAWA continues to oppose the proposed interim phosphorus effluent standard. In our opinion, the record in this matter does not support the establishment of a state-wide effluent standard for phosphorus for the following reasons:

- A demonstration has not been made of a state-wide water pollution problem due to phosphorus induced eutrophication.
- There is no need to shortcut a science-based water quality standard for phosphorus currently underway.
- The proposed rule will only decrease ambient levels of phosphorus an insignificant amount.
- The anticipated costs of complying with the proposed rule are unreasonable in light of the magnitude of projected benefits.
- The cited costs of complying with the proposed rule understate the actual costs by between a factor of 4 to 10 times.

ATTACHMENT NO. 1

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

Chapter NR 217

EFFLUENT STANDARDS AND LIMITATIONS

NR 217.01 Purpose.
NR 217.02 Applicability.

NR 217.03 Definitions.
NR 217.04 Effluent standards and limitations for phosphorus.

Note: Effluent standards are being created for phosphorus at this time. Effluent standards for other pollutants may be added to this chapter at later dates.

Note: Corrections made under s. 13.93 (2m) (b) 7., Stats., Register, August, 1997, No. 500.

NR 217.01 Purpose. The purpose of this chapter is to reduce the amount of pollutants discharged to surface waters by establishing effluent standards and limitations for pollutants in effluent discharged to surface waters of the state. Effluent standards and limitations are adopted pursuant to ch. 283, Stats.

History: Cr. Register, November, 1992, No. 443, eff. 12-1-92.

NR 217.02 Applicability. This chapter is applicable to point sources which discharge wastewater to the surface waters of the state.

History: Cr. Register, November, 1992, No. 443, eff. 12-1-92.

NR 217.03 Definitions. Definitions of terms and the meaning of abbreviations used in this chapter are as defined in chs. NR 102, 106, 205, 210 and 243. In addition: "effluent standard" means any requirement for a specific pollutant applicable to a category or class of point sources which are more stringent than the requirements under s. 283.13 (1) to (4), Stats.

History: Cr. Register, November, 1992, No. 443, eff. 12-1-92.

NR 217.04 Effluent standards and limitations for phosphorus. (1) GENERAL. Effluent limitations for total phosphorus shall be imposed in WPDES permits for wastewaters discharged to surface waters as specified in this section.

(a) An effluent standard for total phosphorus shall apply as follows:

1. An effluent limitation equal to 1 mg/L total phosphorus as a monthly average shall apply to publicly owned treatment works and privately owned domestic sewage works subject to ch. NR 210 which discharge wastewater containing more than 150 pounds of total phosphorus per month, unless an alternative limitation is provided under sub. (2).

2. An effluent limitation equal to 1 mg/L total phosphorus as a monthly average shall apply in cases where the discharge of wastewater from all outfalls of a facility other than those subject to ch. NR 210 contains a cumulative total of more than 60 pounds of total phosphorus per month, unless an alternative limitation is provided under sub. (2). Outfalls consisting of noncontact cooling water without phosphorus containing additives may not be included in the calculation of the cumulative total of phosphorus discharged from the facility. Compliance with the concentration limit shall be determined as a rolling 12 month average as determined by the total phosphorus from all outfalls subject to the effluent limitation for the most recent 12 months divided by the total flow for all those outfalls for the same period.

3. Effluent limitations for phosphorus equal to 1 mg/L as a monthly average contained in permits on December 1, 1992 shall remain in effect.

4. Effluent limitations for phosphorus equal to 85% removal of influent concentrations of phosphorus contained in permits on December 1, 1992 shall be modified to 1 mg/L total phosphorus as a monthly average upon reissuance of the permit unless an alternative limitation is provided under sub. (2).

5. Runoff to surface waters from animal feeding operations shall be controlled using best management practices to achieve the purpose of this chapter pertaining to phosphorus.

6. The department shall determine if a permittee is discharging more than the applicable threshold value specified in subd. 1. or 2. by examining available data on or requiring monitoring of the amount of phosphorus contained in the wastewater effluent. Such data shall be representative of the amount of phosphorus contained in the wastewater effluent during periods of discharge or operation.

Note: The threshold values of this section will be applied at the time of WPDES permit reissuance or permit modification which may occur due to changes in waste characteristics.

Note: See NR 102.06 in reference to water quality standards.

(2) ALTERNATIVE EFFLUENT LIMITATIONS TO THE EFFLUENT STANDARD FOR PHOSPHORUS. (a) Permittees subject to sub. (1) (a) 1., 2., or 4. may request an alternative effluent limitation for total phosphorus if one or more of the following apply:

1. A permittee may request an alternative effluent limitation in cases where achieving the 1 mg/L total phosphorus effluent standard is not practically achievable.

a. A permittee requesting an alternative effluent limitation under this subdivision shall provide, as a part of the WPDES permit process, information which demonstrates that the 1 mg/L total phosphorus effluent standard is not practically achievable and information necessary for the department to establish an alternative effluent limitation. The information provided shall include but not be limited to the following: the results of a comprehensive phosphorus minimization study to determine the sources of phosphorus to the wastewater, an evaluation of possible methods to reduce the sources of phosphorus to the wastewater, a description of actions implemented to reduce the sources of phosphorus to the wastewater. In addition, the permittee shall provide data on the phosphorus concentrations in the influent to and effluent from the wastewater treatment facilities which are achievable after phosphorus minimization steps have been implemented, alternative treatment technologies which may be employed to achieve the 1 mg/L effluent standard, and their associated removal efficiencies and costs and the requested alternative effluent limitation.

b. The department shall review requests and the information provided by permittees and may establish alternative effluent limitations to the effluent standard imposed under sub. (1) (a) 1., 2. or 4. where this standard, in the best professional judgment of the department, is not practically achievable. For these cases, the department shall establish an alternative effluent limitation considering the effluent quality achievable with the application of treatment technologies, process changes, and phosphorus minimization steps to reduce the amount of phosphorus to the maximum extent practically achievable taking into account energy, economic and environmental impacts.

2. A permittee may request an alternative effluent limitation in cases where the operation of specific biological phosphorus removal technologies will achieve a level of performance equivalent to a 1 mg/L effluent standard. Systems which employ biological phosphorus removal technology shall result in the removal of not less than 90% of the phosphorus which would be removed by achieving the 1 mg/L total phosphorus effluent standard based upon a mass determination.

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

a. A permittee requesting an alternative effluent limitation under this subdivision shall, as a part of the WPDES permit application process, provide information which demonstrates that achieving the requested alternative effluent limitation using biological phosphorus removal will achieve this requirement. The information shall include data on the total mass of phosphorus discharged using biological removal with and without chemical polishing and the total mass of phosphorus discharged using treatment technologies to achieve the 1 mg/L effluent standard and the information necessary for the department to establish an alternative effluent limitation.

b. The department shall review requests and the information provided by permittees and may establish alternative effluent limitations to the effluent standard imposed under sub. (1) (a) 1., 2., or 4. where the alternative limitation, in the best professional judgment of the department, will result in insignificant differences in the amount of phosphorus discharged, on a mass basis, compared to the mass which would be discharged by achieving the 1 mg/L total phosphorus effluent standard. For these cases, the department shall establish an alternative effluent limitation considering the effluent quality achievable with the application of biological phosphorus removal technologies, taking into account the total phosphorus removal performance on a mass basis. The alternative effluent limitation established by the department under this subparagraph may not exceed 2 mg/L as a monthly average.

3. A permittee may request an alternative effluent limitation in cases where phosphorus-deficient wastewaters necessitate the addition of phosphorus to a biological treatment system to assure efficient operation and compliance with other effluent limitations.

a. A permittee requesting an alternative effluent limitation under this subdivision shall, as a part of the WPDES application process, provide information which demonstrates that achieving the 1 mg/L total phosphorus effluent standard is not practically achievable and the information necessary for the department to establish an alternative effluent limitation. The information provided shall include but not be limited to the following: the results of a comprehensive phosphorus minimization study to minimize the amount of phosphorus discharged while allowing efficient operation of the wastewater treatment system, a description of actions implemented to reduce the amount of phosphorus discharged, the phosphorus effluent concentrations achievable after phosphorus minimization steps have been implemented, the removal efficiencies and costs associated with alternative treatment technologies which would be necessary to achieve the 1 mg/L effluent standard and the requested alternative limitation.

b. The department shall review requests and the information provided by the permittee and may establish alternative effluent limitations to the effluent standard imposed under sub. (1) (a) 2. where this standard, in the best professional judgment of the department, is not practically achievable. The department shall establish an alternative effluent limitation considering the minimum phosphorus effluent quality achievable while allowing efficient operation of the wastewater treatment system. The alternative effluent limitation established by the department under this subdivision may not exceed 2 mg/L as a monthly average.

(b) Permittees subject to sub. (1) (a) 1. or 2. which do not discharge their effluent into the basins of the Great Lakes or the Fox (Illinois) river may request an alternative effluent limitation for total phosphorus according to the provision of this paragraph.

1. A permittee may request an alternative effluent limitation under this paragraph in cases where achieving the 1 mg/L effluent

standard would not result in an environmentally significant improvement in water quality and material progress towards the attainment and maintenance of associated surface water quality standards for the receiving water as established in chs. NR 102 to 104.

2. A permittee requesting an alternative effluent limitation under this paragraph shall propose for the department's approval a study plan to identify the receiving waters affected or potentially affected by the discharge, describe how information will be obtained to justify an alternative effluent limitation under this paragraph, and provide the information necessary to establish interim and alternative effluent limitations under this paragraph. This study plan shall be submitted as a part of the WPDES permit application process. The results of the study shall include an evaluation of all point and non-point sources of phosphorus in the watersheds and the impacts of the phosphorus contributions on biological and chemical water quality conditions. Upon review of the study plan, the department may require additional information as deemed necessary and may expand the study to include other watersheds or portions thereof that may be significantly impacted by the permittee's discharge of phosphorus.

3. The department may establish an alternative effluent limitation where, in the best professional judgment of the department and based upon the information provided by the permittee pursuant to the study plan and other relevant information, achieving the effluent standard under sub. (1) (a) 1. or 2. would not result in an environmentally significant improvement in water quality and material progress towards the attainment of associated surface water quality standards for the receiving waterbody as established in chs. NR 102 to 104.

4. An interim effluent limitation and compliance schedule for completing the study shall be imposed in a permit until the request for an exemption from the 1 mg/L effluent standard is approved or denied. The interim effluent limitation shall be equal to the representative concentration of total phosphorus as a monthly average in the effluent based on the information provided by the permittee as a part of the WPDES permit application process.

5. Alternative effluent limitations established under this paragraph may not exceed the interim effluent limitation established under subd. 4.

(3) ANALYTICAL METHODS AND LABORATORY PROCEDURES. Methods used for analysis of influent and effluent samples shall be as described in ch. NR 219 unless alternative methods are specified in the WPDES discharge permit.

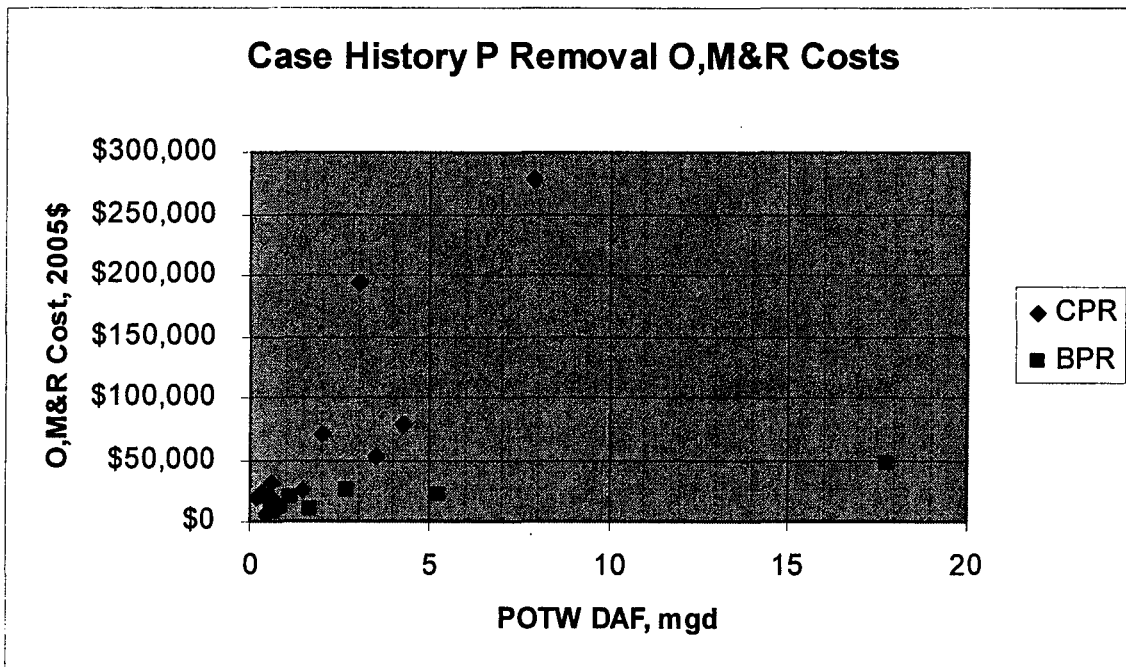
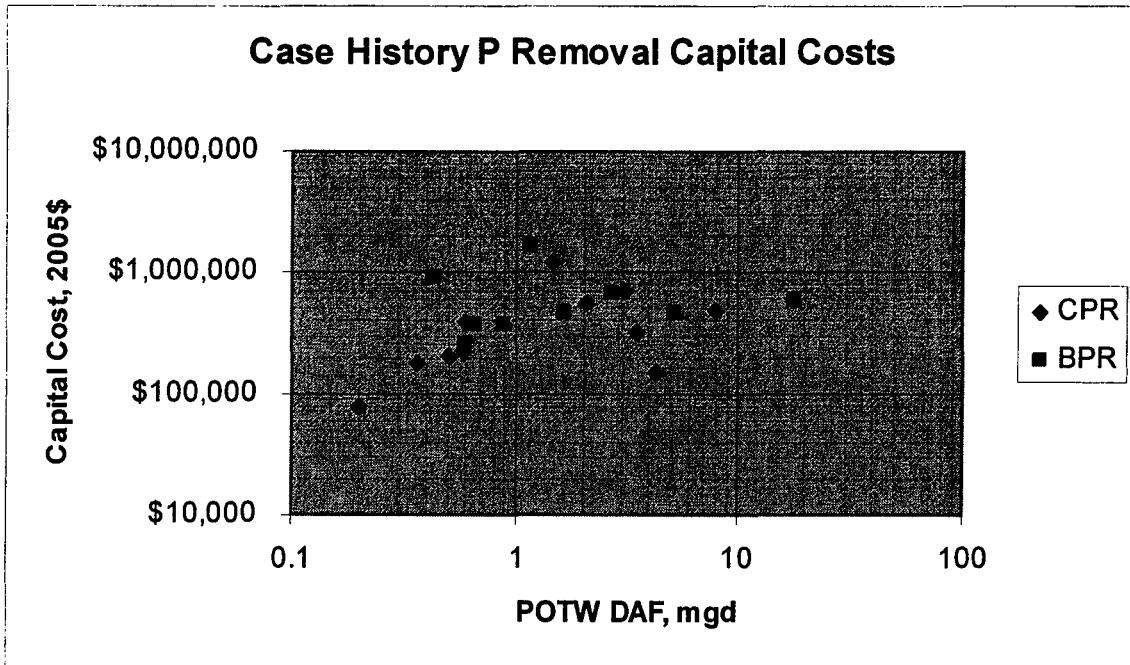
(4) COMPLIANCE. The department shall determine and specify a reasonable compliance schedule in the permittee's WPDES permit if the facility is unable to meet the effluent standard or limitations determined according to this section at the time of permit issuance or reissuance. The date for compliance with this section may not extend beyond 3 years from the date of permit issuance or reissuance, unless the department determines that circumstances beyond the permittee's control, such as an environmental impact statement, require additional time for compliance. In such circumstances, the date for compliance with this section may not extend beyond 5 years from the date of permit issuance or reissuance.

(5) DEPARTMENT DETERMINATIONS. Effluent standards and limitations established under subs. (1) (a) and (2) are not subject to the variance procedure under s. 283.15, Stats.

History: Cr. Register, November, 1992, No. 443, eff. 12-1-92.

ATTACHMENT NO. 2

Attachment 2 – Cost graphs for Wisconsin facilities studied as part of the Rock River phosphorus pilot project, 2000.



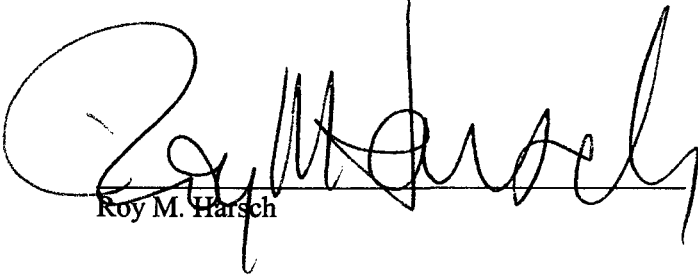
References: *Rock River POTW Watershed Group Summary of Watershed Studies* by Earth Tech and Strand Associates, Inc., 2000; and *To BPR or Not To BPR, That is the Question: A*

***Comprehensive Comparison of Phosphorus Removal Technologies* presented to the Central States Water Environment Association Annual Meeting by Troy A. Larson, Strand Associates, Inc., May 2005.**

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing **Comments of the Illinois Association of Wastewater Agencies** were filed by hand delivery with the Clerk of the Illinois Pollution Control Board and served upon the parties to whom said Notice is directed by first class mail, postage prepaid, by depositing in the U.S. Mail at 191 North Wacker Drive, Chicago, Illinois on **Monday, June 20, 2005.**

SEE ATTACHED SERVICE LIST



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R04-26

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