2010 Implementation Plan for the Chloride Rule

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Wisconsin Department of Natural Resources
March 2010

Note: Effective on March 31, 2010, this guidance replaces the March 2000 guidance, which has been archived and is no longer available on the Watershed Management file server. This new guidance document is available to Watershed Management staff at: W:\manual\policies\2010 chloride guidance.doc. This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying statutes and administrative rules to the relevant facts.

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1. Preface

On February 1, 2000, Wisconsin's chloride rule for the protection of aquatic life became effective. Appendix A contains portions of the Administrative Code that have those elements associated with the implementation of the chloride rule as it was published on February 1, 2000. The rule included the addition of chloride toxicity criteria in Tables 1 and 5 of ch. NR 105, and the creation of subchapter IV of ch. NR 106 that contains the requirements for implementing the criteria in WPDES permits. Section NR 211.40 was also added to ch. NR 211. This section of Wisconsin's pretreatment regulations makes it very clear that POTWs have the authority to regulate discharges of chloride from all sources – industrial, commercial, and domestic – and that the regulation of such sources may include source reduction activities. Another part of the chloride rule not included in Appendix A is the addition of chloride to the list of toxic substances in NR 215.

On March 31, 2000, guidance for implementing the chloride rule was made available to Watershed Management staff by way of a document titled Implementation Plan for the Chloride Rule. The document was intended primarily to assist staff in drafting, and determining compliance with, WPDES permits.

What prompted the need for this new Chloride Rule implementation guidance was the realization that there is, in addition to two addenda to the original guidance, a large and growing body of "permittee-specific guidance" going out from the central office , via e-mail, to regional WPDES staff. It has become apparent, therefore, that it would benefit WPDES staff to have a single unifying document that encompasses the addenda and all of the diffused tidbits of guidance.

Furthermore, there have been a number of requests by WPDES staff to establish a uniform process for negotiating chloride source reduction measures (SRMs) and permit limitations for those permittees requesting chloride variances. While there cannot be a one-size-fits-all approach to negotiating limits and SRMs, this new guidance will elaborate in greater detail on the process itself, the expectations, and the constraints.

Lastly, WPDES staff has asked for a description of the various documents that must be sent to U.S. EPA to justify the granting of a chloride variance. Staff has also requested a "road map" of the process for granting chloride variances. This new guidance will address these two items.

2. Progress Report

It has now been ten years – two permit cycles – since Wisconsin's Chloride Rule was promulgated. It is instructive to summarize the progress that has been made thus far.

The DNR has granted 92 chloride variances, many of which are now in the second permit term. Of these 92 variances, 18 have gone to industrial dischargers (almost exclusively food processors), and the balance to municipal wastewater treatment plants (POTWs). Chloride variances are considered to be a stop-gap measure, allowing permittees sufficient time to implement source reductions measures (SRMs) that will ultimately enable the effluent to meet the WQBELs. From the onset of rule development, it became apparent that a source reduction-based approach would actually reduce the

releasing of chloride into the environment. End-of-pipe treatment for chloride is really no treatment, as it merely shifts the chloride to a different media. Chloride cannot be removed from the environment, but only moved around from one media to another. In other words, treatment becomes a "shell game". Some food processors have "reduced" their chloride effluent discharges by isolating their higher strength wastewater and land-applying it. Some entities – food processors, septage haulers, landfill operations, and even highway salt storage facilities – have hauled saline wastewater/leachate to POTWs that discharge to higher flow receiving streams, taking advantage of dilution. In the big picture, however, hauling is not only expensive, but comes with a big carbon footprint and does nothing to reduce chloride release to the environment.

2.1 Industrial Dischargers

Industrial dischargers have been more successful in reducing chloride discharges through the use of source reduction measures (SRMs) than POTWs. For cheese manufacturers, there are numerous examples of significant chloride reductions through the use of membrane technology for brine reclaim. Other chloride reductions have been achieved through reconfiguring and/or modifying brining operations to minimize brine spills.

Two meat processors in Wisconsin have had good success with SRMs. Unfortunately for meat processors, FDA imposes restrictions on brine reuse.

Many canneries have switched to reverse osmosis for removing minerals from incoming raw water, thus eliminating the use of salt for softening. The process of grading peas by floating in brine has passed into history years ago.

Very recently, DNR has been working with some County Highway Departments and industrial facilities (primarily cheese plants) to use waste brine from the industrial processing operations as a substitute for brine made from mined salt. This waste brine appears to function as well as the "virgin" brine. The waste brine would normally be either applied on farm land or discharged to surface water through a municipal wastewater treatment system. Using the waste brine for road deicing will, therefore, reduce the total amount of salt discharged to the environment.

2.2 Municipal Wastewater Treatment Plants (POTWs)

Statewide, POTWs have had only modest success in reducing chloride discharges through the use of SRMs. With the exception of a few POTWs that have relatively large industrial/commercial influent contributions, the major challenge has been controlling the pass-through of chloride from residential water softeners. Not surprisingly, most of the "problem" POTWs are located in the southern and eastern portions of the State, which are underlain by limestone/dolomite aquifers that produce a naturally hard water.

The majority of households in this region utilize point-of-entry (POE) sodium cycle ion exchangers (which we will refer to simply as "softeners") to remove water hardness. Softeners are currently the only cost-effective POE technology available for households. So-called softening membranes, which are actually nanofilters, do effectively remove hardness ions; but these devices have not been scaled down to residential size. And even if a community centrally softens its water supply using membranes, there is a significant continuous reject stream associated with these devices. Therefore, there would be an increase in raw water pumped. Many aquifers in the State are being drawn down at an alarming rate. The use of softening membranes would exacerbate this problem. Moreover, the

installation of central softening facilities, using either ion exchange or membranes is a huge capital investment for a community and greatly increases the operational cost of providing potable water.

Some communities in Wisconsin that have high radium levels in their groundwater have been required by the DNR to construct new water supply wells, and treat for radium. The most cost-effective radium treatment is sodium cycle ion exchange, the same technology used to soften water. One community in particular has successfully eliminated home water softeners as a result of providing a centrally treated water supply. This has resulted in a significant reduction in chloride discharged from the community's POTW. During the development of Wisconsin's Chloride Rule in the late 1990s, there was only anecdotal evidence to suggest that central water softening is more "salt efficient" than individual residential softeners. Now we have hard numbers to substantiate that claim. However, requiring communities to take that step would mean a huge shift in public policy.

The idea of using regenerant wastewater from municipal water softeners for use as a road deicing agent has some merit. However, two technical challenges are the need for high capacity storage tanks and the need to "boost" the stored wastewater with salt to achieve the proper salinity for application to roads.

One of the SRMs listed in Wisconsin's Chloride Rule, applicable to POTWs, is mandating the replacement of timer-based residential water softeners with "demand initiated regeneration" (DIR) softeners. The latter are more salt-efficient. Most POTWs with chloride problems have strongly resisted imposing mandates on residential customers. Anticipating the impasse, the DNR has over the past several years worked with the Wisconsin Department of Commerce (DComm) to revise the State plumbing code to require DIR. As of March 1, 2009, the plumbing code has been revised to require DIR for softeners. This should, over time, reduce chloride levels in municipal systems.

There are additional "enhancements" available for residential softening, such as counter-flow regeneration, brine reclaim, and twin resin tanks. While these enhancements further reduce salt usage, they increase the purchase price of the softener.

Another SRM in the Chloride Rule, applicable to POTWs is mandating that outside hose bibs not be connected to the softened water supply. The DNR has also been working with DComm to revise the plumbing code to require hose bibs to be unsoftened. What we are hearing from DComm is that plumbers ordinarily already connect hose bibs to the unsoftened water supply because of the public's perception that unsoftened is preferred over softened for watering plants. Dialog between the departments will continue on this subject.

Over the past several years, we have learned that all POTWs are affected by the intrusion of road salt into the collection systems in winter through spring. The road salt intrusion can have the effect of increasing the mass discharge to twice as much (or more) as the mass during the "non-snowmelt" months (usually July through November). The concentrations during the first five to six months of the year tend to be higher than the last six months as well. In addition to the variability due to snow melt, there is a fair amount of variability due to clear water intrusion into the collection systems at other times of the year when road salt is not contributing to the chloride mass. For example, if one looks at the chloride concentration for a rainy day in August vs a dry day, the concentration is lower on the rainy day because of clear water dilution.

It is therefore evident that variability in weather affects variability in chloride discharged from POTWs. For winter and spring in particular, there can be significant day-to-day variability in concentration (over 100 mg/l). This can present a problem in facilities that are required by their permit to monitor weekly, or less frequently, because the variation may not be captured. We have found that, for some facilities, requiring four consecutive days of monitoring in a month captures the variability due to different weather conditions. Refer to section 7.1 for a more detailed discussion of monitoring frequency.

Because of all of this, it's pretty hard to get an idea of reductions for most POTWs. It seems that in most permits with chloride variances and SRMs, we've seen some reduction in effluent chloride concentrations over time. However, there are other facilities that have apparently experienced little or no significant change in their discharge of chloride.

At this point in time, virtually all hard water communities have educated homeowners regarding the impact of softeners and ways to improve the salt-efficiency of softeners. The outreach normally consists of a pamphlet that is included with customer's water and sewer bill. Some communities even offer rebates for home owners that switch to demand softeners.

2.3 The Future

When Wisconsin's Chloride Rule was being developed, it was anticipated that some permittees would not be able to meet chloride WQBELs within one, or even two, permit terms. This is due to the long time frame needed to implement SRMs, particularly the tier 3 SRMs, which are the most capital intensive. Industrial dischargers will more likely be able to meet the WQBELs, through continuous improvements in manufacturing processes.

POTWs whose primary chloride inputs come from industries will also likely be able to meet the WQBELs by working in good faith with the industries to improve manufacturing processes. Unfortunately, some POTWs have been reluctant to press their industrial contributors, citing "bad economy" as a reason. This rationale has a familiar, yet hollow, ring. Plant improvements for reducing salt consumption, or softened water demand, generally result in operating cost savings. Efficiency improvements and pollution reduction are not mutually exclusive concepts.

For many POTWs whose inputs are primarily from residences, compliance with WQBELs will be a daunting challenge, because doing so would result in significantly higher water and sewer bills for customers (centrally softened water supply), and a public policy shift (e.g. prohibiting the use and installation of residential water softeners). Reduction in I&I will also reduce the amount of chloride discharged from POTWs; but this involves infrastructure improvements that are very costly. Moreover, the public demand for driving automobiles on dry pavement in the winter is not going to diminish; and currently salt is the only feasible road deicing agent.

Lacking a major public policy shift, which would result in significantly higher expenditures by governmental units or private homeowners, or both, we are likely looking at continued variances for municipal entities for some time into the future.

3. Introduction

The goal of the chloride rule is that all point source dischargers of chloride to surface waters comply with the water quality-based effluent limitations for chloride. In recognition of the impracticality of

end-of-pipe treatment for chloride, the rule allows a WPDES permittee the option of requesting a permit based on "source reduction" rather than a traditional permit that imposes the water quality-based effluent limit (WQBEL). This "source reduction" approach will be the preferred option for many permittees because it will allow them more time – in some cases more than one permit term – to comply with the water quality-based effluent limits.

If the "source reduction" permitting option were not available, the only recourse a permittee would have is to seek a "statutory variance", under s. NR 283.15, Wis. Admin. Code. This is a burdensome and time consuming legal process involving, inter alia, a formal request to the DNR secretary, tentative decision by the secretary, final decision, intent to modify the permit, and permit modification. Over the past ten years, 92 source reduction-based WPDES permits were issued. Absent the source reduction permitting option, only a small fraction of those 92 permits would have been issued, due to the inordinate amount of legal and technical staff time needed to process the statutory variance requests.

4. Determining Applicability of the Chloride Rule

With one notable exception (discussed below), establishing a chloride WQBEL follows the same procedures as any other toxic and organoleptic substance discharged to surface waters. That is, the criteria in ch. NR 105 are used in conjunction with the procedures in ch. NR 106 to calculate a potential limit. A reasonable potential analysis is used to determine whether, based on the permittee's effluent data, a limit should be included in the permit. If a limit is recommended, at that juncture the source reduction-based permitting option (with a chloride variance) may be pursued.

As for the "notable exception", s. NR 106.05(6) allows a WQBEL to be established if there are less than 11 data points available. For chloride, s. NR 106.85(3) states that if there are insufficient data points to calculate a P_{99}, a chloride WQBEL cannot be established. This exception is really a moot point, because there has now been two cycles of WPDES permit reissuances since the Chloride Rule was promulgated and the amount of chloride sampling data is robust.

4.1 Calculating Chloride P_{99}'s

Section NR 106.85(3) requires the department to compare the calculated limitations to the upper 99th percentile (P_{99}'s) of available representative discharge concentrations to determine whether limits are required. It is generally recommended that the standard procedure specified in s. NR 106.05(5) be used to calculate P_{99}'s.

In theory (and what we are hoping to see) there will be, over the term of a permit, a reduction in chloride effluent concentration as a result of the implementation of source reduction measures (SRM's). When a permit is up for reissuance, it is entirely appropriate for an effluent limits calculator (ELC) to exclude effluent data that preceded implementation of SRM's. There should, however, be clear and convincing evidence to support the exclusion of data in calculating revised P_{99}'s and determining the need for limits. Appropriate documentation (i.e. a description of the excluded data and the rationale for excluding the data) should be included in the "limits recommendation" memo.

Another situation in which data can be excluded is when there has been a "facility expansion, production increase or process modifications which will result in new, different or increased discharges of pollutants." In this case, in accordance with ss. 283.31(4)(b) and 283.59, Stats, the permittee is required to report this to the Department. A substantial change in operation, as indicated

above, may necessitate the exclusion of obsolete data. However, it should be understood that the resulting new permit limitation may not be less stringent than the previous permit (in order to comply with State antidegradation and federal antibacksliding rules). There are, of course, exceptions to this rule; but a discussion of the exceptions is beyond the scope of this guidance.

Another consideration in calculating P_{99}'s – and this may require some collaboration between the DNR field contact and the ELC – is determining how representative the data points are. For example, if the existing permit has a weekly average chloride limit and the monitoring frequency is only once a month, the ELC needs to be pretty certain that that one sample point per month is truly representative; and this is particularly important for POTWs that have a lot of variability on a day-to-day basis. As previously discussed, the rationale for excluding any data must be included in the "limits recommendations" memo.

4.2 Conditions for Recommending a WQBEL

For purposes of evaluating the necessity for recommending a WQBEL, the 1-day P99 is compared to the calculated daily maximum limit, and the 4-day P99 is compared to the calculated weekly average limit. If the permittee has been monitoring four times per month, with the samples collected on four consecutive days, the arithmetic average of each 4-day period is compared to the calculated weekly average limit.

4.2 .1 P_{99} Less Than or Equal to the WQBEL

If the P_{99} is less than or equal to the calculated WQBEL, the ELC should not recommend a WQBEL, but may recommend monitoring for chloride (quarterly monitoring is suggested).

4.2.2 P_{99} Greater Than the WQBEL, But WQBELs Consistently Met

If the P_{99} is greater than the calculated WQBEL, but the effluent data shows that the WQBEL can be consistently met, the ELC should recommend a WQBEL. In this case, the permittee will not be eligible for a chloride variance under s. NR 106.83. Note that the term "consistently meet" is defined in s. NR 106.82(2). It means that 95% of the representative effluent data are less than the WQBEL. In the context of the chloride rule, this means that 95% of the data points have a lower numeric value than the calculated WQBEL. Here is an example:

> *The calculated weekly average WQBEL is 395 mg/L. There are 43 data points. Two of the data points exceed 395. The calculated 4-day P99 is 398. In this case 41/43, or 95.3%, of the data are less than 395. Therefore, the WQBEL can be consistently met, and the ELC should recommend a WQBEL. The permittee is not eligible for a chloride variance.*

4.2.3 P_{99} Greater Than the WQBEL, But WQBELs Not Consistently Met

If the P_{99} is greater than the calculated WQBEL, and the effluent data shows that the WQBEL cannot be consistently met, the ELC should recommend a WQBEL. In this case, the permittee is eligible to apply for a chloride variance under s. NR 106.83.

4.2.4 Arithmetic Average of Four Consecutive Days Exceeds Weekly Average WQBEL

This case applies only to the permittee whose permit specifies "four consecutive days" monitoring. If the arithmetic average of any 4-day period exceeds the calculated weekly average limit, the ELC should recommend a WQBEL. In this case, the permittee is eligible to apply for a chloride variance under s. NR 106.83.

5. Chloride Variances

Under the chloride rule, a permittee can, at the time of application for a reissued permit, also apply for a "chloride variance" [Refer to ss. NR 106.83 (2), (3), and (4).]. A chloride variance, if granted, is truly a variance from a water quality standard. Therefore, while obtaining a chloride variance is procedurally much simpler than obtaining a statutory variance under s.283.15 Stats., the decision to grant a variance is not taken lightly.

In recognition of the difficulties associated with the treatment of wastewater for the removal of chloride, the Department has made certain "findings" which appear in s. NR 106.83 (2)(a). The first two findings, in essence, state that end-of-pipe treatment is impractical. The third finding states that source reduction activities are preferred over treatment, in most cases. The fourth finding is that, for some dischargers, compliance with a WQBEL may result in a significant social and economic hardship. The first three findings can be universally applied to virtually all dischargers. However, the burden is on the permittee to demonstrate applicability of the fourth finding. This guidance document provides a framework for enabling a Department staff to determine whether the permittee has made sufficient showing that the fourth finding is applicable.

5.1 Situations in Which the Chloride Variance Cannot Be Granted

- Failure to implement the SRMs stipulated in the previous permit (this constitutes a permit violation).
- Pursuant to s. NR 106.93, new dischargers receiving a WPDES permit for the first time are not eligible for a variance under this rule, and the WQBEL, when necessary, will be effective upon permit issuance. [Refer to Section 12 of this guidance for additional discussion of "new" dischargers.]
- Whenever the chloride variance application fails to show sufficient need.
- Whenever effluent data indicates that the WQBEL is both necessary and can consistently be met (see ss. NR 106.88 (1) and NR 106.82 (2)), the permit should include the WQBEL and an appropriate compliance schedule.
- Whenever the permittee and the Department cannot mutually agree upon an interim limit, target limit or target value, and SRMs (see s. NR 106.83 (3)(b) and (c)), the permit will include the WQBEL and an appropriate compliance schedule.

5.2 Chloride Variance Application

The first step in obtaining a chloride variance is a "Chloride Variance Application" (Form 3400-193), which can be found in Appendix B. The instructions that accompany a WPDES permit reissuance application advises:

> *If you believe that you may have trouble meeting limits for chloride discharge, you should fill out the chloride variance request chloride variance application.**[This language needs to change to read: "… fill out the chloride variance application."]** Based on the chloride data you submit with this application, the DNR will determine if there is reasonable potential that your facility will exceed water quality based effluent limits. If the DNR determination concludes that limits are not necessary in your permit, no limits will be imposed in your permit, although some additional monitoring could be required. If the determination is that your discharge may exceed limits, the DNR will contact you to discuss options for source reduction efforts.*

It should be noted here that chloride variances are **not** "self-renewing"; that is to say, a permittee must reapply for a chloride variance with each permit renewal.

Prior to acting on a chloride variance application, a DNR effluents limits calculator (ELC) must make a determination of the need (or not) of water quality-based effluent limits (WQBELs) for chloride. This determination is formalized in an internal document known as "Effluent Limits Recommendations". The document is more commonly referred to simply as the "limits memo".

If the limits memo recommends WQBELs for chloride, the permit drafter should review the completed chloride variance application to determine whether the permittee has sufficiently demonstrated the need for a chloride variance. Concurrently, the permit drafter should review the "final chloride reduction report", which was to have been submitted to the DNR no later than six months prior to permit expiration. A critical review of this report, paying particular attention to the implementation of SRMs, should enable the permit drafter to determine whether the permittee has made a good faith effort to reduce chloride discharges.

In the event that the limits memo recommends WQBELs, the permittee has implemented all SRMs under the current permit, and the permit reissuance application does not include a chloride variance application; the permit drafter should contact the permittee, explaining that the submittal of a chloride variance application is advised.

Appendix B shows a Chloride Variance Application form, which the permittee must complete and send to the Department, with the completed permit reissuance application.The permit drafter needs to review the submitted chloride variance application. If information is missing – and this includes not checking a "yes" or "no" in all of the check boxes – the chloride variance application is incomplete and the permit drafter needs to advise the permittee.

Chloride effluent data (as reported on the DMRs), the chloride variance application, and the final chloride report are all critical pieces of information that the permit drafter reviews in order to determine whether a chloride variance can be granted.

In the chloride variance application, the permittee lays out its argument for concluding that the findings in s. NR 106.83(2)(a)1-4 apply to its discharge. Those findings – paraphrased, except for what is within quotation marks - are as follows:

- End-of-pipe treatment for chloride is prohibitively expensive.
- End-of-pipe treatment produces a concentrated brine that can be as much or more of an environmental liability than the treated effluent.
- Source reduction measures (SRMs) are better, environmentally, than end-of-pipe treatment.
- Compliance with the chloride WQBELs "may cause substantial and widespread adverse social and economic impacts in the area where the discharger is located."

If the Department agrees with the permittee's argument, it shall approve the chloride variance application. Note, however, that approving the chloride variance is not the same as granting a chloride variance; and this will be explained further in the rest of this guidance.

The information requested in the variance application is self-explanatory. However, there are a couple of key items that warrant some discussion here:

5.2.1 Capital and O&M Costs

The permittee determines and enters information on the capital and operational costs of end-of-pipe treatment. Currently, the only technically feasible end-of-pipe treatment for chloride is reverse osmosis (RO). If facility-specific cost information is not available, the permittee may use the default formulas to calculate the capital and O & M costs for RO treatment. Permittees should be encouraged to provide facility-specific cost calculations, rather than relying on the generic formulas.

5.2.2 Treatment Facility Information

Although RO will remove nearly all chloride from the effluent stream, it also produces a concentrated brine that must be disposed of. The default formulas do not consider the cost or feasibility of brine disposal. That is why the question is asked: "Do you know of a facility that could accept the concentrated brine solution?"

6. Negotiating Permit Requirements

If Department staff approves the chloride variance application, the next step is to meet, or otherwise communicate, with the permittee to establish appropriate interim limits, target values (or limits), and source reduction measures that will be included in the new permit**.**

This step is where the DNR emphasizes its commitment to protecting the water quality. A formal discussion between the DNR and permittee is recommended. A chloride variance may be proposed in a permit if and only if the Department and the permittee can mutually agree on interim limitations, target limitations (or target values, as appropriate), and source reduction activities. If agreement is reached, a file memo describing the successful negotiations should be put in the "documents" section of SWAMP. Elements of the file memo should include date, name(s) of DNR and permittee negotiators, interim limitations, target limitations (or values), source reduction measures agreed upon, and the basis for limitations and SRMs. A good example of the file memo can be found on the W drive at Variances/Chloride/Brillion/Brillion Negotiated Chloride Limits.

If agreement cannot be reached on any of these items, the permit must include the water quality-based effluent limitations for chloride, along with a compliance schedule. Negotiations regarding the target limitation and other variance conditions should be completed prior to the time the proposed permit is public noticed. Otherwise, the permit may be delayed while disagreements are being worked out. Worse still, the permit may have to be re-noticed.

6.1 Establishing the Interim Limit

Interim limitations are determined by representative effluent data and are effective on the date of permit issuance. If there is insufficient representative data to calculate a p99, the permit should include monitoring requirements, but no interim limit. Monthly monitoring is the suggested frequency. If there is sufficient representative data to calculate a p99, this value should be compared to the calculated WQBEL. If a chloride variance is determined to be needed, then the permit will include an interim limit, which may be expressed, as a weekly average, a daily maximum, or both (s. NR 106.87(2)). The interim limitation(s) may be either the upper 99th percentile of the representative data or a value no greater than 105% of the highest representative datum. Daily data is used to calculate daily maximum limitations and the 4-day average is used for the weekly average limitation. Using 105% will create a situation where the permittee will be less likely in violation of the limitation, whereas using the p99 could cause a small probability for a limit violation. The method

may be negotiated between the permittee and the Department. According to the Chloride Rule, interim limits and target limits (or target values) are expressed in concentration units only. However, as discussed in Section 7 of this guidance, it is desirable for the interim limits and target limits/values to also be expressed in mass units.

6.2 Negotiating Source Reduction Measures

Source reduction measures (SRMs) are listed in s. NR 106.90. The listed SRMs may or may not be applicable to a particular discharger. The listed SRMs are examples. There may be other ways, not indicated in the code, to reduce chloride in the wastewater. The permittee and Department staff must negotiate the applicable SRMs on a case-by-case basis.

The SRMs in the chloride rule are divided into three tiers. Tier 1 SRMs are activities that involve the least capital expenditures, and are focused primarily upon identification of the sources of chloride and education of salt users. Tier 2 SRMs involve greater capital expenditures and focus on equipment optimization, restrictions, and recycling practices. Tier 3 SRMs involve the most capital expenditures and focus on equipment upgrading and alternative technologies.

Generally, it was intended that Tier 1 SRMs be implemented in the first permit term, Tier 2 SRMs in the second term, and Tier 3 SRMs in the third term. However, some permittees may have already implemented Tier 1, or even Tier 2, SRMs prior to being regulated under the chloride rule. In some instances, a Tier 3 measure may be entirely appropriate for the first permit term. The specific SRMs will be negotiated between the permittee and staff on a case-by-case basis.

Some POTWs have not shown a commitment to regulate chloride discharges from industrial contributors. It should be noted that ch. NR 211 clearly confers authority upon POTWs to regulate the discharge of "pass-through" pollutants, such as chloride, for any category of discharger, be it an industrial or domestic source. At this point all POTWs should have been requiring industrial contributors to take steps as specified in the code for tier 2 SRMs for second term chloride variances.

6.3 Establishing a Target Limit or Value

As stated in s. NR 106.82, the target value or limitation represents the level of chloride effluent concentration which the permittee can "reasonably" meet after implementing source reduction measures. The target value or limitation becomes effective on the last day of the permit term. The term "reasonably" won't be defined here. It is up to the permittee and the appropriate Department staff to negotiate a reasonable target value or limitation. A target value establishes a benchmark to gage the effectiveness of the source reduction measures. It is distinguished from a target limitation in that the latter is enforceable, and the former is not.

The rationale behind the target value was the recognition that there was some uncertainty in predicting a quantifiable reduction in chloride discharges resulting from implementing SRMs. There has now been two rounds of post-Chloride Rule permit reissuances. That's ten years of evaluating the efficacy of SRMs. It is, therefore, generally recommended that permit reissuances now impose a target limit, rather than a target value.

Nevertheless, there will still be some instances in which a target value is justified (e.g. when a POTW's effluent data shows a large variability in chloride inputs during snow melt events). When a

reissued permit includes a target value, it is reasonable to expect the target value to represent a 10% reduction in chloride concentration.

It would be desirable for the DNR to maintain a database on the W drive that documents chloride reductions resulting from implementing SRMs. This would be an aid to both DNR staff and the permittees in predicting chloride reductions.

In the process of negotiating a target limit or value, it may be necessary to engage a broader complement of Department staff. For example, if a particular receiving stream stretch is especially sensitive, other members of the GMU team should participate in the negotiations.

7. Drafting Permit

7.1 Sampling Frequency

Many permits have monthly chloride monitoring. This sampling frequency can be problematic for some facilities, in that variability may not be captured. Variability is particularly problematic for facilities experiencing wide variations on a daily basis. For these facilities, it would be better for the permittee to take 4 consecutive daily samples in a month. The resulting average will be more representative of the true effluent concentration. It is recommended that basin engineers/specialists now begin asking municipal permittees whose data shows a lot of variability, or who are exceeding their interim limitations, to voluntarily sample four consecutive days per month, at a minimum; and to report sampling data on the discharge monitoring reports. It is also recommended that when the permit is reissued, the "4 consecutive daily samples" be required.

SWAMP now includes the option to specify a '4X/Month' sample frequency for permit drafting. The permit drafter would need to specify that the samples be collected on four consecutive days as a permit footnote. The drafter may also want to specify that the four consecutive days be included within a "SWAMP week"; that is days 1-7, 8-14, 15-21, or 22-28. Here is an example of permit footnote language that could be used:

> *Chloride Sampling and Calculation of Weekly Average*
> *A sample frequency of 4/month requires that samples be collected on four consecutive days each month. Any four consecutive days of sampling shall be exclusive to one week of a month; where Week 1 is days 1-7, Week 2 is days 8-14, Week 3 is days 15-21, and Week 4 is days 22-28. The weekly average discharge shall be calculated and reported for any week that samples are collected.*

When four consecutive days are monitored, the averages of the concentrations for four consecutive days can be used by the ELC to help determine the necessity of a weekly average WQBEL, in accordance with NR 106.05(3)(b). An average of four days may "smooth out" the maximums, which affords a better opportunity for a direct comparison with a weekly average limit, and may demonstrate better chloride reductions than a P_{99} determination using the same number of nonconsecutive concentrations.

If there are not enough representative data points to calculate a P_{99}, it is suggested that the new permit require at least monthly monitoring for chloride. This is a highly unlikely scenario, since over ten years have elapsed since the rule was promulgated and, presumably, all facilities should have a fairly

robust data set. Nevertheless, it is possible that some data are not truly "representative". Please refer to the "Calculating Chloride P99's" section for a detailed treatment of this subject.

7.2 Reporting Mass Discharges of Chloride

While chapter NR 106 specifies that interim limits and target values (or target limits) shall be expressed as a concentration, reissued permits should also require mass monitoring. There are several reasons for this recommendation.

Looking at only the concentration in an effluent may not provide a complete picture. In fact, it may mask actual reductions in the total mass of chloride discharged. For example, a meat processor (Sara Lee Foods – Hillshire Farms division in New London) has embarked on a successful water conservation program. This will improve the level of treatment in their WWTF, and generally reduce energy consumption, both goals that should be promoted by WDNR. As a result, the effluent chloride concentration has risen, even though the mass discharge of chloride has actually been reduced. Looking at only the concentration may also fail to address reduction in the concentration of chloride resulting from dilution. For example, the Village of Whitelaw (in Manitowoc County) recently began accepting trucked-in wastewater from a groundwater remediation site contaminated with only trace amounts of VOC's. The effluent chloride concentration appears to have been reduced, without a reduction in the mass. Other means of diluting the effluent may be misguidedly considered by permittees that are struggling to comply with permit requirements calling for concentration reductions. We can discourage this activity by advocating <u>mass</u> reduction as the true measure of the efficacy of implementing the source reduction measures specified in the permit.

The integrity of the collection system for municipal wastewater treatment facilities may have a significant impact on the chloride discharge if the system is subject to considerable infiltration/inflow. In some cases, this impact can be most easily discerned by examining the mass discharge along with the concentration. In evaluating any apparent increase in the mass discharge, department staff should remain cognizant of any increase attributable to increased population, or other significant changes in influent loading. Considerations such as these are useful in specifying, or at least emphasizing different aspects of the source reduction measures included in the permit.

Some annual progress reports include mass discharge data, but that information is not captured in the SWAMP system. By including mass reporting as a permit requirement, the data will be captured. The mass discharge should be calculated by multiplying the observed concentration by the discharge flow rate on the day of sampling, and the appropriate conversion factor. That is, the sampling and flow reporting period should coincide. It should not be calculated by taking an average concentration multiplied by the total flow over a given period. For example, the guidance for determining whether a discharger exceeds the threshold for requiring limits for total phosphorus suggests multiplying the monthly average concentration by the total monthly flow and a conversion factor. This is not the method we would want to use for calculating chloride mass because it would not characterize the mass discharge accurately.

Reporting mass should not increase the workload for most permittees, as it will be a simple programming change for electronically prepared DMR's. There may be some instances where an individual will have to manually perform the calculation, but those are believed to be few and decreasing with time. While WDNR staff can calculate the mass discharge using available DMR data, it can be time-consuming.

7.3 WET Testing and Limits (s. NR 106.89)

If chloride is determined to be the cause of whole effluent toxicity, acute WET testing/limits may be held in abeyance until SRMs have been completed when the following conditions apply:

- If the effluent concentration of chloride exceeds 2,500 mg/L, then the department may hold acute WET testing /limits in abeyance.
- If the effluent concentration is less than 2,500 mg/L, but greater than 1,514 mg/L (acute WQBEL), the department may defer requirements for acute WET testing/limits if additional data are submitted to demonstrate that chloride is the sole source of acute toxicity.

The biomonitoring coordinator in the Bureau of Watershed Management should be notified if the effluent concentration exceeds 2500 mg/l, and should be contacted for advice if the effluent chloride concentration is between 1514 mg/L and 2500 mg/L.

For the department to hold chronic WET testing /limits in abeyance, the permittee must demonstrate that the existing effluent concentration of chloride exceeds twice the calculated weekly average WQBEL. If the effluent concentration exceeds the calculated weekly average WQBEL, but is less than twice the calculated weekly average WQBEL, it is still possible for WET testing/limits to be deferred if additional data are submitted to demonstrate that chloride is the sole source of chronic toxicity. The biomonitoring coordinator should be notified if the effluent concentration exceeds twice the calculated weekly average WQBEL, and should be consulted if the effluent chloride concentration is between the calculated weekly average WQBEL and twice the calculated weekly average WQBEL.

WET monitoring and limits that are held in abeyance will not appear in the WPDES permit, but the permit drafter should address the issue in the briefing memo or permit information form. A suggested paragraph is:

> "The permittee has submitted information to the Department that suggests that previous positive (*acute, chronic, or acute and chronic)* whole effluent toxicity (WET) results may have been caused by chloride levels in the discharge. This permit requires that the permittee address chloride concerns by completing the source reduction efforts described in the compliance schedule section of the permit. According to s. NR 106.89, Wis. Adm. Code, (*acute, chronic, or acute and chronic)* WET testing and limits may be held in abeyance until these source reduction actions are completed. Therefore, no (*acute, chronic, or acute and chronic)* WET testing will be required until these actions have been completed and it is believed that the discharge chloride level has been reduced to a level that will not cause (*acute, chronic, or acute and chronic)* toxicity."

7.4 Implications of Antidegradation Rule

Chapter NR 207, Wisconsin's antidegradation rule, establishes implementation procedures for the antidegradation policy found in s. NR 102.05(1)(a). Under the chloride rule, if a target value or limitation is included in a permit and the permittee meets that value or limitation within the term of the permit, the target value or limitation will become the interim limit in the subsequent permit. The subsequent permit will also include a new, more restrictive target limitation. In theory, the implementation of progressively more stringent limits would continue into subsequent permit terms until the permittee is finally able to meet the WQBEL.

There may occur, however, some situations in which the permittee has made a diligent effort to meet the target limitation by the end of the permit term through implementation of the SRMs and, yet still fall short of meeting the limit. Under those circumstances, the antidegradation policy would prevent the interim limitation in the subsequent permit from being more lenient than the target limitation in the first permit.

Section NR 106.84 was created to avoid this practical problem and exempts a permittee from the requirements of NR 207, as long as progress continues to be made in chloride reduction. This section of the rule allows a subsequent permit's interim limitation to be a higher value than the prior permit's target limitation, as long as it is less than the prior permit's interim limitation. An example of how s. NR 106.84 may be implemented is in Appendix E.

7.5 Compliance Schedules

A compliance schedule should be included in any permit regulated by the chloride rule - whether the permit has a WQBEL, a target limit, or a target value. The compliance schedule should include the submittal of annual progress reports. The progress reports should indicate which SRMs have been implemented and should also include a determination of the annual mass of chloride discharged, based on monthly chloride sampling and flow data.

For permittees who have been granted a chloride variance, s. NR 106.90(5) requires that after the SRMs have been completed, a report is to be submitted to the DNR documenting the current reductions as well as the anticipated future reductions in salt usage and chloride effluent concentrations. This report, due no later than 6 months before permit expiration, should be included in the compliance schedule, but may also be part of the permit application.

8.0 Public Noticing the Draft Permit

If there is agreement on the variance conditions, the next step is to public notice the permit. Here is the language that SWAMP will automatically add to the public notice page, immediately following the "Facility Description" section:

> *The Department has determined that a water quality-based effluent limitation (WQBEL) for chloride is needed in this permit to protect aquatic life. As allowed under s. NR 106.83(2),Wis. Adm. Code, the permittee has requested a variance to the chloride WQBEL. In support of this request, the permittee has submitted documentation intended to demonstrate that the cost of complying with the WQBEL through the use of end-of-pipe wastewater treatment may cause substantial and widespread adverse social and economic impacts in the area where the discharger is located. The Department concurs with that assessment. In an effort to achieve chloride effluent reductions that are practically and economically achievable within the term of the proposed permit, the Department and the permittee have mutually agreed upon specific permit terms that include an interim limitation, a target limit (or value, as the case may be), and certain source reduction activities. As allowed under s. NR 106.83(3), Wis. Adm. Code, these requirements are contained in the proposed permit.*

If no agreement is reached on an interim limitation, a target limitation (or target value, as appropriate) and source reduction activities, SWAMP will automatically insert the following language in the public notice page, immediately following the "Facility Description" section:

The Department has determined that a water quality-based effluent limitation (WQBEL) for chloride is needed in this permit to protect aquatic life. While the permittee requested a variance to the chloride WQBEL pursuant to s. NR 106.83(2)(b), Wis. Adm. Code, the permittee and the Department have been unable to agree on voluntary source reduction activities and both an interim limitation and a target value/target limitation to be included as permit requirements. Consequently, pursuant to s. NR 106.83(3)(c) , Wis. Adm. Code, the Department has included a chloride WQBEL in the proposed permit.

9. Documentation

The table below lists the documents that go to EPA whenever the DNR proposes a chloride variance. The table also shows who prepares them and where a template or sample of the document can be found.

Item Number	**Document**	**Who prepares**	**Location of Template or Sample Document**
1	Request for U.S. EPA Approval of a Chloride Variance	CO Variance Coordinator	Appendix C of this guidance
2	Background Information	Permit drafter	Appendix C of this guidance
3	Certification Statement for Approval of a Chloride Variance	CO Variance Coordinator	Appendix C of this guidance
4	Water Quality Criteria Evaluation	CO Variance Coordinator	Watershed on Central (W:)/Variances/Chloride/Brillion/Water Quality Criteria Evaluation
5	Chloride Variance Application (form 3400-193**)**	permittee	Appendix B of this guidance
6	File Memo – Negotiated limits and SRMs	Permit drafter	Watershed on Central (W:)/Variances/Chloride/Brillion/Brillion Negotiated Chloride Limits …
7	Draft permit	Permit drafter	Pick a sample out of SWAMP

8	Public notice	Permit drafter	Pick a sample out of SWAMP
9	WQBEL Memo	Limits calculator	Pick a sample out of SWAMP
10	Fact sheet	Permit drafter	Pick a sample out of SWAMP

The permit drafter notifies the Central Office (CO) Variance Coordinator of the location of the documents (except 1, 3, and 4). The CO Variance Coordinator then "bundles" all documents and sends to U.S. EPA.

Appendix D, Roadmap for Granting Chloride Variances, describes the flow of information and the decisions that need to be made prior to granting a chloride variance. It should be noted that the DNR only **proposes** to grant a chloride variance. It is U.S.EPA that ultimately grants the chloride variance. It should also be noted that there is some subjectivity involved in determining whether a permittee has made a "good faith" effort in reducing chloride discharges. While it is desirable to base decisions entirely upon empirical information, there is some professional judgment that comes into play.

For example, if over the course of two permit terms, a POTW has been unable to accurately account for a third of the chloride going into the plant, it is safe for the permit drafter to make the judgment that a good faith effort has not been made.

Rejection of a permittee's chloride variance request does not bar a permittee from seeking a statutory variance under s. 283.15, Wis Stats., although the process is rather arduous.

10. POTW Authority to Regulate Domestic Sources of Chloride

POTWs have always had authority to regulate pass-through pollutants (chloride being a good example), discharges that would interfere with the treatment process, or discharges of pollutants that could result in exceedences of water quality standards. However, administrative rules and statutes implied that the sources of these pollutants were industrial based. We now know that some POTWs have high chloride effluent concentrations as a result of residential water softeners. To assure that POTWs have the authority to regulate domestic sources of chloride, a new subchapter was added to ch. NR 211 as part of the chloride rule package. Section NR 106.92 refers to s. NR 211.40, a new section that gives POTWs authority to regulate domestic sources of chloride as well as industrial and commercial sources.

11. The Safe Drinking Water Issue

Section NR106.91 recognizes there may be circumstances where a POTW may be accepting ion exchange backwash water containing chloride from a municipal water treatment system, and the water system provides ion exchange to meet primary safe drinking water standards. The rule provides that if the POTW is doing the best it can to minimize chloride discharges, no chloride effluent limit will be imposed that would result in a drinking water standard being exceeded. In most, but not all cases, the safe drinking water standards in question are combined radium-226 and radium-228, and nitrate.

The EPA drinking water standard for nitrate is 10mg/L and is found in s. NR 809.11, Wis. Adm. Code. The EPA drinking water standard for combined radium-226 and radium-228 is 5pCi/L and is found in s. NR 809.50, Wis. Adm. Code. Exceedance of these standards requires additional action by water utilities to address this problem, including the construction of new drinking water treatment plants. If water utilities find that sodium cycle ion exchange is the most cost-effective way to remove radium and/or nitrate, these water utilities may want to discharge high chloride wastewater into the sanitary sewer, and this may be the most environmentally sound method of disposal. However, no matter how salt-efficient an ion exchange system is, its regenerant waste stream is very high in chloride. The rule prevents us from issuing a WPDES permit that forces a POTW to take measures that would result in the radium or other drinking water standard being exceeded. This factor should be taken into consideration when issuing permits, and developing SRMs for specific facilities.

12. Relocation of an Existing Discharge

Ss. NR 106.93 and 106.94 specifically allow relocated discharges to be treated as existing discharges, thus allowing the permittee to apply for a chloride variance. Relocation can include the diversion of a land treatment system to a surface water. Note however, that a "land treatment system" is not the same as a landspreading operation. A landspreading operation, diverted to a surface water, would be considered a new discharge and not eligible for applying for a chloride variance. The reason for excluding landspreading is that the chloride concentration of the wastewater may be very high and variable.

APPENDIX A
The Chloride Rule

NOTE: The excerpts from the Wisconsin Administrative Code contained in this Appendix may also be reviewed or downloaded from the Web site of the Revisor of Statutes. The Web addresses are:

http://www.legis.state.wi.us/rsb/code/nr/nr105.pdf,
http://www.legis.state.wi.us/rsb/code/nr/nr106.pdf
http://www.legis.state.wi.us/rsb/code/nr/nr211.pdf

From: http://www.legis.state.wi.us/rsb/code/nr/nr105.pdf , (Register, November,2008)

Table 1
Acute Toxicity Criteria for Substances With Toxicity Unrelated to Water Quality
(in ug/L except where indicated)

Substance	Cold Water	Warm Water Sportfish, Warm Water Forage, and Limited Forage Fish	Limited Aquatic Life
Arsenic (+3)*	339.8	339.8	339.8
Chromium (+6)*	16.02	16.02	16.02
Mercury (+2)*	0.83	0.83	0.83
Cyanide, free	22.4	45.8	45.8
Chloride	757,000	757,000	757,000
Chlorine*	19.03	19.03	19.03
Gamma – BHC	0.96	0.96	0.96
Dieldrin	0.24	0.24	0.24
Endrin	0.086	0.086	0.12
Toxaphene	0.73	0.73	0.73
Chlorpyrifos	0.041	0.041	0.041
Parathion	0.057	0.057	0.057

Note: * – Criterion listed is applicable to the "total recoverable" form except for chlorine which is applicable to the "total residual" form.

Table 5

Chronic Toxcity Criteria Using Acute–Chronic Ratios for Substances with Toxicity Unrelated to Water Quality
(all in ug/L)

Substance	Cold Water	Warm Water Sportfish, Warm Water Forage and Limited Forage Fish	Limited Aquatic Life
Arsenic (+3)*	148	152.2	152.2
Chromium (+6)*	10.98	10.98	10.98
Mercury (+2)*	0.44	0.44	0.44
Cyanide, free	5.22	11.47	11.47
Chloride	395,000	395,000	395,000
Chlorine*	7.28	7.28	7.28
Dieldrin	0.055	0.077	0.077
Endrin	0.072	0.072	0.10
Parathion	0.011	0.011	0.011

Note: * Criterion listed is applicable to the "total recoverable" form except for chlorine which is applicable to the "total residual" form.

From: http://www.legis.state.wi.us/rsb/code/nr/nr106.pdf, (Register, May, 2005)

Subchapter IV – Effluent limitations for chloride discharges

NR 106.80 Purpose. The purpose of this subchapter is to specify how the department will regulate the discharge of chloride to surface waters of the state. Nothing in this subchapter shall be construed to prevent or prohibit the use, sale, rental, installation, and service of ion exchange water softeners.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.81 Applicability. The provisions of this subchapter are applicable to point sources which discharge wastewater containing chloride to surface waters of the state. The provisions of this subchapter are not applicable to discharges of storm water run–off regulated by a storm water permit.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.82 Definitions. In this subchapter:

(1) "Calculated limitation" means a chloride water quality–based effluent limitation.

(2) "Consistently meet" means that 95% of the representative effluent data are less than the calculated limitation.

(3) "DIR" means demand initiated regeneration.

(4) "Daily maximum interim limitation" means an effluent limitation calculated by the department which may be either:

(a) The upper 99th percentile of the permittee's representative data available to the department, or

(b) A value no greater than 105% of the permittee's highest representative effluent datum.

(5) "Reasonably meet" means that all of the permittee's representative effluent data would, using appropriate statistical techniques, be expected to be less than or equal to the target limitation following the completion of all of the source reduction efforts required by the permit.

(6) "Representative effluent data" means data, above the level of detection, which is not serially correlated and which represents normally expected effluent concentrations of chloride, collected during a period that can represent current or expected operations, or both, within the term of the permit.

(7) "Target limitation" means an effluent limitation which the permittee can reasonably meet within the term of the permit, following implementation of appropriate voluntary source reduction activities.

(8) "Target value" means an effluent concentration of chlorides which a permittee may be expected to reasonably meet following implementation of appropriate voluntary source reduction activities. A target value is not an enforceable limitation under the terms of the permit program, but establishes a measure of progress of source reduction activities.

(9) "Weekly average interim limitation" means an effluent limitation calculated by the department which may be either:

(a) The upper 99th percentile of the permittee's 4–day average of the representative data available to the department, or

(b) A value no greater than 105% of the permittee's calculated highest weekly average of the representative effluent data.

(10) WPDES" means Wisconsin pollutant discharge elimination system.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.83 Regulation of chloride discharges. **(1)** CHLORIDE EFFLUENT LIMITATIONS. The department shall evaluate the need to establish effluent limitations for chloride whenever representative effluent data indicate that the discharge from a point source contains chloride. If the department determines that a water quality–based effluent limitation for chloride is needed, a calculated limitation as defined in s. NR 106.82 (1) shall be included in the permit to meet the applicable water quality standards specified in chs. NR 102 to 105, unless a chloride variance is given pursuant to sub. (2).

(2) CHLORIDE VARIANCE. (a) *Findings.* On February 1, 2000, the department finds that:

1. End–of–pipe wastewater treatment technology for chloride is prohibitively expensive;

2. End–of–pipe wastewater treatment technology for chloride produces a concentrated brine that can be as much or more of an environmental liability than the untreated effluent;

3. Appropriate chloride source reduction activities are preferable environmentally to end–of–pipe effluent treatment in most cases; and

4. For some dischargers, attaining the applicable water quality standards specified in chs. NR 102 to 105 may cause substantial and widespread adverse social and economic impacts in the area where the discharger is located.

5. These findings shall be reviewed by the department every 3 years.

(b) *Application.* An existing discharger seeking a chloride variance under this subsection shall submit an application for a chloride variance when it submits its application for permit reissuance. The application shall include the permittee's basis for concluding that the findings in sub. (2) (a) for a chloride variance are applicable to its discharge.

(c) *Department determinations.* The department shall review the application submitted by the permittee. The application shall be approved if the department agrees with the permittee's basis for concluding that the findings in sub. (2) (a) for a chloride variance are applicable to its discharge.

(d) *Permit conditions implementing a chloride variance.* The department shall grant a chloride variance to an existing discharger when:

1. The findings in par. (a) supporting a chloride variance apply to the specific discharge; and

2. The permittee and the department agree upon specific permit language imposing an interim limitation, a target value or, where appropriate, a target limitation, and source reduction activities.

(3) INTERIM LIMITATIONS, TARGET VALUES AND TARGET LIMITATIONS AND SOURCE REDUCTION ACTIVITIES. (a) If the permittee and the department agree on the inclusion of voluntary source reduction activities and the imposition of an interim limitation and a target value or a target limitation in its permit, those activities and the interim limitation and target value or target limitations shall become permit requirements.

(b) If the permittee and the department cannot agree on voluntary source reduction activities to be included as permit requirements, those activities may not be included in the permit. If the permittee and the department cannot agree on an interim limitation and target value or a target limitation to be included as permit requirements, those limitations may not be included in the permit.

(c) If the permittee and the department cannot agree on voluntary source reduction activities and both an interim limitation and a target value or an interim limitation and a target limitation to be included as permit requirements, the department shall include a calculated limitation as defined in s. NR 106.82 (1) in the permit to meet the applicable water quality standards specified in chs. NR 102 to 105.

(4) REAPPLICATION FOR A CHLORIDE VARIANCE. When a permit containing a chloride variance approved by the department under sub. (2) (c) expires, the permittee may reapply for a chloride variance when it submits its application for permit reissuance. The application shall include the permittee's basis for concluding that the findings in sub. (2) (a) are applicable to its discharge.

(5) APPLICABILITY OF THE VARIANCE PROCESS IN S. 283.15, STATS. If a calculated limitation is included in the permit, a permittee may apply to the department for a variance from the water quality standard used to derive the calculated limitation, pursuant to s. 283.15, Stats. Where a permittee has been granted a chloride variance and its permit includes an interim limitation, a target value, a target limitation and requirements for chloride source reduction activities, the provisions of s. 283.15, Stats., are not applicable to the interim and target limitations.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.84 Compliance with Wisconsin water quality antidegradation rules when reissuing a permit. Chapter NR 207 does not apply in those instances in which a reissued permit includes effluent limitations for chloride which represent a lowering of concentration as compared to the interim limitation in the previous permit.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.85 Determination of the necessity for water quality–based effluent limitations. **(1)** The department shall determine the need for chloride water quality–based effluent limitations for point source discharges whenever the discharges from the point sources contain chloride at concentrations or loadings which do not, as determined by any method in this section, meet the applicable water quality standards specified in chs. NR 102 to 105.

(2) When considering the necessity for water quality–based effluent limitations, the department shall consider in–stream biosurvey data and data from ambient toxicity analyses whenever the data are available.

(3) When considering the necessity for chloride water quality–based effluent limitations, the department shall compare the upper 99th percentile of available representative discharge concentrations to the calculated limitations, pursuant to s. NR 106.05 (4).

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.86 Monitoring. Notwithstanding any other section in this subchapter, the department shall determine on a case–by–case basis the chloride monitoring frequency to be required in the permit.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.87 Establishment of effluent limitations. **(1)** CALCULATED LIMITATIONS. If water quality–based effluent limitations for chloride are deemed necessary, those limitations shall be derived pursuant to s. NR 106.06 and, for the purposes of this subchapter, shall be labeled "calculated limitations".

(2) INTERIM LIMITATION. The interim limitation may be expressed as both a daily maximum and a weekly average, calculated in accordance with s. NR 106.82 (4) and (9).

(3) TARGET VALUE. The target value may be expressed as both a daily maximum and a weekly average. The department and the permittee shall consider both the implementation and the antici-

pated effectiveness of appropriate voluntary source reduction activities in order to determine a target value which is reasonably achievable within the term of the permit.

(4) TARGET LIMITATION. The target limitation may be expressed as both a daily maximum and a weekly average. The department and the permittee shall consider both the implementation and the anticipated effectiveness of appropriate voluntary source reduction activities in order to determine a target limitation which is reasonably achievable within the term of the permit.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.88 Application of and compliance with chloride effluent limitations in a permit. (1) If chloride water quality–based effluent limitations are deemed to be necessary in accordance with s. NR 106.85 and the permittee's representative effluent data indicate that the permittee can consistently meet the calculated limitation, the department may include the calculated limitations in the permit with an appropriate compliance schedule.

(2) If chloride water quality–based effluent limitations are deemed to be necessary, and the permittee's representative effluent data indicate that it cannot consistently meet the calculated limitation, and the provisions of s. NR 106.83 for a chloride variance are met, the department may instead include all of the following in the permit:

(a) Chloride monitoring.

(b) An interim limitation for chloride which is effective on the date of permit issuance.

(c) Tier 1 source reduction.

(d) A target value or a target limitation with an appropriate compliance schedule, which is effective on the last day of the permit.

(e) If appropriate, either tier 2 or tier 3 source reduction if the department believes that any of the additional conditions in the tier 2 or tier 3 source reduction activities are reasonable and practical within the term of the permit.

(3) Interim limitations, target values and target limitations established according to this subchapter shall be expressed in the permit as a concentration limitation, in units of mg/L or equivalent units. Pursuant to s. NR 106.07 (2), calculated limitations established in accordance with this subchapter shall be expressed in the permit both as a concentration limitation, in units of mg/L or equivalent units, and as a mass limitation, in units of Kg/d or equivalent units.

(4) Effluent limitations based on an acute criterion shall be expressed in permits as daily maximum limitations; and effluent limitations based on a chronic criterion shall be expressed in permits as weekly average limitations.

(5) A determination of compliance with interim, target and calculated limitations and comparison with target values shall be based upon 24–hour composite samples.

(6) Mass limitations shall be determined for calculated limitations pursuant to s. NR 106.07 (2) and (9).

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.89 Alternative whole effluent toxicity monitoring and limitations for dischargers of chloride. (1) In addition to interim, target and calculated water quality–based effluent limitations and target values for chloride, the department may establish whole effluent toxicity testing requirements and limitations pursuant to ss. NR 106.08 and 106.09.

(2) Acute whole effluent toxicity testing requirements and acute whole effluent toxicity limitations may be held in abeyance by the department until source reduction actions are completed if either:

(a) The permittee can demonstrate to the satisfaction of the department that the effluent concentration of chloride exceeds 2,500 mg/L, or

(b) The permittee can demonstrate to the satisfaction of the department that the effluent concentration of chloride is less than 2,500 mg/L, but in excess of the calculated acute water quality–based effluent limitation, and additional data are submitted which demonstrate that chloride is the sole source of acute toxicity.

(3) Chronic whole effluent toxicity testing requirements and chronic whole effluent toxicity limitations may be held in abeyance by the department until source reduction actions are completed if either:

(a) The permittee can demonstrate to the satisfaction of the department that the effluent concentration of chloride exceeds 2 times the calculated chronic water quality–based effluent limitation, or

(b) The permittee can demonstrate to the satisfaction of the department that the effluent concentration of chloride is less than 2 times the calculated chronic water quality–based effluent limitation, but in excess of the calculated chronic water quality–based effluent limitation, and additional data are submitted which demonstrate that chloride is the sole source of chronic toxicity.

(4) Following the completion of source reduction activities, the department shall evaluate the need for whole effluent toxicity monitoring and limitations.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.90 Source reduction. (1) INTRODUCTION. A 3–tiered system of source reduction measures is established in ascending order of increasing capital and operating costs.

(2) Tier 1 source reduction measures are those voluntary source reduction activities that identify and quantify chloride and softened water sources and usage, educate users and system operators on the need to minimize salt and softened water demands and promote better housekeeping practices that will reduce chloride and softened water consumption, and other activities similar in nature. Tier 1 source reduction measures may include any of the following:

(a) For POTWs:

1. Identify sources of chloride to the sewer system.

2. Educate homeowners on the impact of chloride from residential softeners, discuss options available for increasing softener salt efficiency, and request voluntary reductions.

3. Recommend residential softener tune–ups on a voluntary basis.

4. Request voluntary support from local water softening businesses in the efforts described in subds. 2. and 3.

5. Educate licensed installers and self–installers of softeners on providing optional hard water for outside faucets for residences.

6. Request voluntary reductions in chloride input from industrial and commercial contributors.

7. Where a public water utility has been identified as a significant contributor of chloride to the sewer system, request that the water utility conduct activities listed in par. (b).

(b) For direct–discharging municipal or commercial water softening plants:

1. Identify the users of soft water or the processes using soft water, and the amounts they use.

2. Determine which users or processes can tolerate unsoftened water, and determine their impact on demand.

3. Determine which users can close–loop their once–through cooling system or which processes can be close–looped, and determine their impact on demand.

4. Seek voluntary demand reductions.

(c) For dairies, train plant personnel to be more aware of salt conservation, emphasizing simple, cost effective housekeeping measures. For example, spilled salt can be cleaned up as a solid waste rather than flushed down the floor drain.

(d) For those facilities which process vegetables or meats:

1. Train personnel as described in par. (c) in housekeeping measures.

2. Optimize softener operation to ensure the appropriate regeneration interval and salt dosage are used.

(e) For any other facility not listed in pars. (a) to (d), conduct activities that identify and quantify chloride and softened water sources and usage and educate personnel on appropriate housekeeping practices and the need to minimize salt and softened water demands.

(3) Tier 2 source reduction measures are those voluntary source reduction activities that improve and optimize equipment and processes, encourage restricted chloride use by users, eliminate wasteful practices and establish recycling practices where feasible, and other activities similar in nature. Tier 2 source reduction measures may include any of the following:

(a) For POTWs, institute sewer use ordinances that:

1. Require significant industrial and commercial contributors to evaluate their water treatment systems with regard to softened water requirements, with the results of that evaluation being the basis for potential restrictions of chloride inputs.

2. Mandate a DIR and high salt efficiency standard for new residential softeners.

3. Mandate participation in a residential softener tune–up program, which involves qualified periodic servicing to ensure proper control settings and adjustments.

4. Where a public water utility has been identified as a significant contributor of chloride to the sewer system, request that the water utility conduct activities listed in par. (b).

(b) For direct–discharging municipal or commercial water softening plants:

1. Optimize softener operation to ensure the appropriate regeneration interval and salt dosage are used.

2. If the regeneration is manual or timer–initiated, switch to a DIR controller.

3. Evaluate the feasibility of brine reclamation.

(c) For dairies:

1. Improve the handling of salt brines and the handling of cheese into and out of brine systems. Consider capital improvements such as automating the brine system, properly designed drip pans and splash guards.

2. Optimize softener operation to ensure the appropriate regeneration interval and salt dosage are used.

3. If the regeneration is manual or timer–initiated, evaluate the feasibility of switching to a DIR controller.

4. Evaluate the feasibility of softener brine reclamation.

5. Determine which subprocesses can tolerate unsoftened water, and make appropriate changes.

6. Determine whether once–through cooling systems can be close–looped, and make appropriate changes.

7. For plants that condense whey, evaluate the feasibility of using condensate of whey (COW) water for the first rinse for clean–in–place (CIP) systems and for boiler makeup water.

(d) For those facilities which process vegetables:

1. If the regeneration is manual or timer–initiated, evaluate the feasibility of switching to a DIR controller.

2. Evaluate the feasibility of softener brine reclamation.

3. Investigate the feasibility of using a phosphonate additive instead of softening the cooling water.

4. Evaluate the feasibility of reusing once–through cooling water as boiler make–up.

5. Investigate the feasibility of using unsoftened water for container fill.

(e) For those facilities which process meats:

1. If the regeneration is manual or timer–initiated, evaluate the feasibility of switching to a DIR controller.

2. Evaluate the feasibility of softener brine reclamation.

(f) For any other facility not listed in pars. (a) to (e), conduct activities that improve and optimize equipment and processes, eliminate wasteful practices and establish recycling practices to achieve chloride reductions.

(4) Tier 3 source reduction measures are those voluntary source reduction activities that evaluate the feasibility of replacing or upgrading equipment and processes or evaluate the feasibility of using alternative technologies or processes, and other activities similar in nature. Tier 3 source reduction measures may include any of the following:

(a) For POTWs, where residential point–of–use softening is the primary chloride input:

1. Evaluate the requirement for new and replacement softeners to be metered demand type, with a higher, greater than 3350 grains of hardness exchange per pound of salt, efficiency capability.

2. Evaluate the imposition of installation restrictions so that outside hose bibs are on unsoftened water. If restrictions are imposed, new homes and those in real estate transfers should be required to have plumbing restrictions for hard water by–passes, and the requirement should apply to self–installed equipment as well.

(b) For POTWs, where a central water supply softener is the primary chloride input, conduct activities listed in par. (c).

(c) For direct–discharging municipal or commercial water softening plants:

1. Evaluate the feasibility of achieving greater salt efficiencies, greater than 3350 grains of hardness exchange per pound of salt.

2. Evaluate softening alternatives that replace the sodium cycle ion exchange method of softening.

3. Blend softened and unsoftened water to strike a balance between delivered water quality and environmental protection.

(d) For dairies:

1. For plants that make brine salted cheeses, evaluate the feasibility of membrane filtration for reconditioning the brine so that it can be reused.

2. For plants that make brine salted cheeses, evaluate the feasibility of using a no–brine make procedure in which salt is added directly to curd during the manufacturing procedure, thereby reducing salt discharges from spent brines.

(e) For those facilities which process vegetables:

1. Evaluate the feasibility of eliminating brine flotation for quality grading, if applicable.

2. Evaluate the feasibility of installing a closed–loop system for cooling water.

3. Evaluate the feasibility of installing a brine recovery and reuse system for reducing salt waste at the point of supplying flavorings to containers.

(f) For those facilities which process meats:

1. Investigate the feasibility of replacing brine chills with air, water or air–water chills.

2. Reduce drainback through operational and equipment improvements.

3. Investigate the feasibility of chill brine reconditioning and reuse.

4. Evaluate the feasibility of reusing once–through cooling water, or installing a closed–loop cooling water system.

5. Evaluate phosphonate additives instead of softened water.

(g) For any other facility not listed in pars. (a) to (f), evaluate the feasibility of replacing or upgrading equipment and processes,

and the use of alternative softening technologies to affect chloride reductions.

(5) SOURCE REDUCTION REPORTING. Following the completion of tier 1, 2 or 3 source reduction activities specified in the permit, but no later than 6 months prior to permit expiration, the permittee shall file a written report to the department documenting the current reduction as well as the anticipated future reduction in salt usage and chloride effluent concentrations.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.91 Publicly owned treatment works which accept wastewater from public water systems treating water to meet primary safe drinking water act standards. Publicly owned treatment works which accept wastewater from a public water system treating water to meet the primary maximum contaminant levels specified in ch. NR 809, if not able to meet the calculated limitation, may be given an interim limitation, a target value, a target limitation and appropriate source reduction requirements, pursuant to s. NR 106.83. No calculated limitation, interim limitation, target value, target limitation, or source reduction requirement shall interfere with the attainment of the primary maximum contaminant levels specified in ch. NR 809.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.92 Authority of a publicly owned treatment works to regulate chloride discharges. A publicly owned treatment works has the authority to regulate the discharge of chloride as enumerated in s. NR 211.40.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.93 New discharges. Any point source which has not been authorized under a WPDES permit prior to February 1, 2000, shall be required to meet the calculated limitations. Relocation of an existing discharge which was issued a WPDES permit prior to February 1, 2000, may not be considered a new discharge.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.94 Relocation of an existing discharge. An existing discharge which was issued a WPDES permit prior to February 1, 2000, and which is relocated after February 1, 2000, may be subject to voluntary source reduction activities and both an interim limitation and a target value or an interim limitation and a target limitation pursuant to s. NR 106.83 if the provisions of ch. NR 207 are met. Relocation includes the diversion of a discharge from a land treatment system to a surface water.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.95 Multiple discharges. The provisions of s. NR 106.11 are applicable to multiple discharges of chloride.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

NR 106.96 Analytical methods and laboratory requirements. The provisions of s. NR 106.14 regarding analytical methods, sample handling and laboratory requirements are applicable to discharges of chloride.

History: Cr., Register, January, 2000, No. 529, eff. 2–1–00.

From: *http://www.legis.state.wi.us/rsb/code/nr/nr211.pdf*, **(Register, October, 2002)**

Subchapter IV—Regulation of chloride sources

NR 211.40 POTW authority to regulate chloride discharges from all sources. Notwithstanding all other provisions of this chapter, a POTW may develop and enforce specific standards or requirements, including but not limited to source reduction activities enumerated in s. NR 106.90, to regulate the discharge of chloride from industrial, residential and commercial sources. The POTW's authority includes the authority to regulate all industrial, commercial and domestic wastewater containing chloride.

History: Cr. Register, January, 2000, No. 529, eff. 2–1–00.

APPENDIX B

Chloride Variance Application

Chloride Variance Application

Form 3400-193 (R 4/06) Page 1 of 2

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Notice: Information requested is required for the Department to determine whether or not to grant a variance under the provisions of sections NR 106.80 through 106.96, Wis. Adm. Code. Failure to provide all of the requested information may result in denial of your application. Personal information collected will be used to administer the watershed program and may be provided to requesters as required by Wisconsin's Open Records law [ss. 19.31-19.39, Wis. Stats.]

Applicant Information

Company Name			Contact Name			
WPDES Permit No.			Street Address			
Facility Name			City		State	ZIP Code
Street Address			Telephone Number(include area code)	FAX Number		
City	State	ZIP Code	E-mail Address			
Receiving Water			Average Discharge Flow Rate			

Capital Cost

Have you done a study to determine the capital cost of end-of-pipe chloride removal for your facility? Yes - Please include the information with this worksheet or mail it with the signature portion of the permit application. No - Please complete this estimate of relative capital cost:

Chloride Removal Capital Cost:

$1.125 x Annual Average Design Flow (in MGD) X 1,000,000 = _____

Chloride Removal as a Percentage of Annual Capital Cost:

$$\frac{\text{Chloride Removal Capital Cost (from above)}}{\text{Capital Cost of Current Wastewater Facility}} \times 100 = \_\_\_\_\_\%$$

Operational (O&M) Cost Based on the Cost Estimate

Have you done a study to determine the annual O & M cost of end-of-pipe chloride removal for your facility?

Yes - Please include the information with this worksheet or mail it with the signature portion of the permit application.

No - Please complete this estimate of relative O&M cost:

Chloride Removal O&M Cost:

($1.00 x Annual Average Design Flow (in MGD) x 1000 x 365) = _____

Chloride Removal as a Percentage of Annual O&M Cost:

$$\frac{\text{Chloride Removal O\&M Cost (from above)}}{\text{O\&M Costs of Current Wastewater Facility}} \times 100 = \_\_\_\_\_\%$$

Treatment Facility Information

Do you know of a facility that could accept the concentrated brine solution that would result from end-of-pipe chloride treatment?

Yes / No

If yes, Name of Facility

The information in the following questions is requested to assist the permittee and the Department in determining appropriate effluent values or limitations, compliance schedules and source reduction measures.

Sample Information

Have you sampled at least eleven effluent samples for chloride over the course of at least a year? Yes / No

Source Reduction Efforts

If your current permit contains a compliance schedule for implementing chloride source reduction measures, what difficulties or impediments have you experienced in achieving additional chloride reductions? [Attach separate page, if necessary.]

For Municipalities Only	**Yes**	**No**
a) Have you identified industrial contributors of chloride to your sewer system?		
b) Have you requested voluntary reductions of chloride from any industrial users to your sewer system?		
c) Have you instituted sewer use ordinances regulating or limiting the discharge of chloride from significant industrial users?		
d) Does your community have centralized softening of source water through a water utility?		
e) Have you determined typical concentrations of chloride from domestic users of your sewer system?		
f) Does your community implement a public information program on proper maintenance and improved efficiency of residential softeners?		
g) Have you implemented local ordinances to mandate the use of efficient softeners?		
For Industry Only	**Yes**	**No**
a) Is privately softened water, use of brine, or use of salt integral to your production process?		
b) Do you operate a private softener for your industrial process?		
c) Have you optimized operation of your water softener (adjustment of regeneration interval, salt dosage, replacement of backwash controller)?		
d) Have you determined which industrial processes can be run without softened water?		
e) Have you implemented practices to reduce or reuse any brine solutions or softened water in your industrial process?		
f) Have you implemented housekeeping practices to reduce spillage of any brine solutions, or to minimize the contribution of salt to the wastewater treatment system?		

Additional Information or Comments

Certification

Based on the information provided, I believe that attainment of the applicable water quality standards for chloride may cause substantial and widespread adverse social and economic impacts in the area where this discharge is located. I understand that, as a condition of the variance, the Department and the permittee will need to agree upon an interim effluent limitation, a target value or target limitation, and a compliance schedule to implement source reduction. I understand that these conditions will be included in the WPDES permit issued to this facility.

I certify that the information provided is true, accurate and complete.

Individual Submitting Request (Individual must be an Authorized Representative)	Title
Signature of Official	Date Signed

APPENDIX C

Documents for U.S. EPA

Note: Following are only some of the documents that the Department sends to U.S. EPA in connection with the granting of chloride variances. Refer to the table in Section 9 of this guidance for the location of the other documents that go to U.S. EPA.

[DATE]

Ms. Tinka Hyde, Director Water Division
USEPA, Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Subject: Certification Statement for Approval of a Variance to Water Quality Standards
[Name of Permittee, WPDES Permit No. WI-]

Dear Ms. Hyde:

The Wisconsin Department of Natural Resources is proposing a variance to water quality standards used to establish effluent limitations for chloride at the above-named facility.

EPA has recently informed Department staff that pursuant to §§ 40 CFR Part 131.21 and 131.6, the Department must submit a certification statement to EPA for each variance approved in the state. The statement must certify that the variance to a water quality standard was approved in accordance with state law.

Accordingly, I hereby certify that the chloride variance for **[Name of Permittee]** was reviewed and approved by Department staff in accordance with procedures in subchapter VII of chapter NR 106, Wis. Adm. Code. The application for this variance was submitted on **[Date chloride variance application was submitted]** and the department public noticed its intent to reissue the permit and grant the chloride variance on **[Date draft permit was public noticed]** in accordance with Wis. Stats. §§ 283.15(3) and 283.39.

If you have any questions regarding the variance approval, please contact **[Permit Drafter's Name]** at **[Permit Drafter's Phone #]**.

Sincerely,

Michael Lutz
General Counsel
Director, Bureau of Legal Services

cc [Permit Drafter]
David Pfeiffer - EPA, Region V

[DATE]

Ms. Tinka Hyde, Director, Water Division
U.S. EPA, Region V
77 W. Jackson Boulevard
Chicago, IL 60604

Subject: Request for Approval of a Variance from Water Quality Standards for Chloride
Receiving Stream: **[stream name and county]**
Permittee: **[permittee name and WPDES number]**

Dear Ms. Hyde:

In accordance with s. 283.15 of the Wisconsin Statutes and Chapter 40, Part 131 of the Code of Federal Regulations, the Department requests U.S. EPA, Region V to approve a water quality standards variance for the above-referenced discharge. The water quality criterion for which the permittee is seeking a variance is contained in chapter NR 105, Wisconsin Administrative Code.

To assist your staff during their review, relevant background information pertaining to this variance is attached to this letter. The proposed permit and variance was publicly noticed on **[public notice date]**. The comment period has now ended. No comments from the public have been received. **[If comments were received, attach a list of the comments along with the Dept.'s responses to each. Comments and DNR responses normally accompany a "Record of Determination"]**

We are committed to working with the permittee during the term of this variance to find a solution that will lead to full compliance with the applicable water quality standard. Conditions on the variance, to be included in the WPDES permit, specify actions to be taken by the permittee and timetables for those actions.

We appreciate your consideration of this request. Should you have further questions regarding this matter, please contact **[Permit Drafter's name and phone #]**.

Sincerely,

Todd L. Ambs, Administrator
Division of Water

Attachment

e-cc Russ Rasmussen - WT/3
[DNR Permit Drafter]
Robert Masnado - WT/3
Bruce Baker - AD/8
Margaret Hoefer – LC/5
David Pfeifer - EPA, Region V

BACKGROUND INFORMATION REGARDING WATER QUALITY STANDARDS VARIANCE

Receiving Stream: [**Name of stream and basin**]

Receiving Stream Classification: [**Stream classification and whether or not it's a public water supply**]

Permittee Name:

WPDES Permit No.:

Facility Name: [**Name of Treatment Plant or Facility**]

Substance: Chloride

Criteria: 757 mg/l acute, 395 mg/L chronic

Water Quality Based Permit Limit: **[Use what's in the WQBELs Recommendations Memo.]**

Permit Limit Based on Variance: **[chloride interim concentration limit and target concentration value (or limit); should be consistent with what's in the fact sheet]**

Duration of Variance: From the effective date of the permit reissuance through the end of the permit term (permit expiration date).

Department Rationale for Approving Variance: See Attached Document – File Memo: Negotiated Chloride Limits and SRMs

Conditions to be Included in WPDES Permit Reissuance: See Draft Permit being sent to EPA in Electronic Format.

List of Supporting Documents Attached:

- File Memo: Negotiated Chloride Limits and SRMs – Dated **[Date of document]**
- Certification from DNR Chief Legal Counsel – Dated **[Date of document]**
- Water Quality Criteria Evaluation – Dated **[Date of document]**

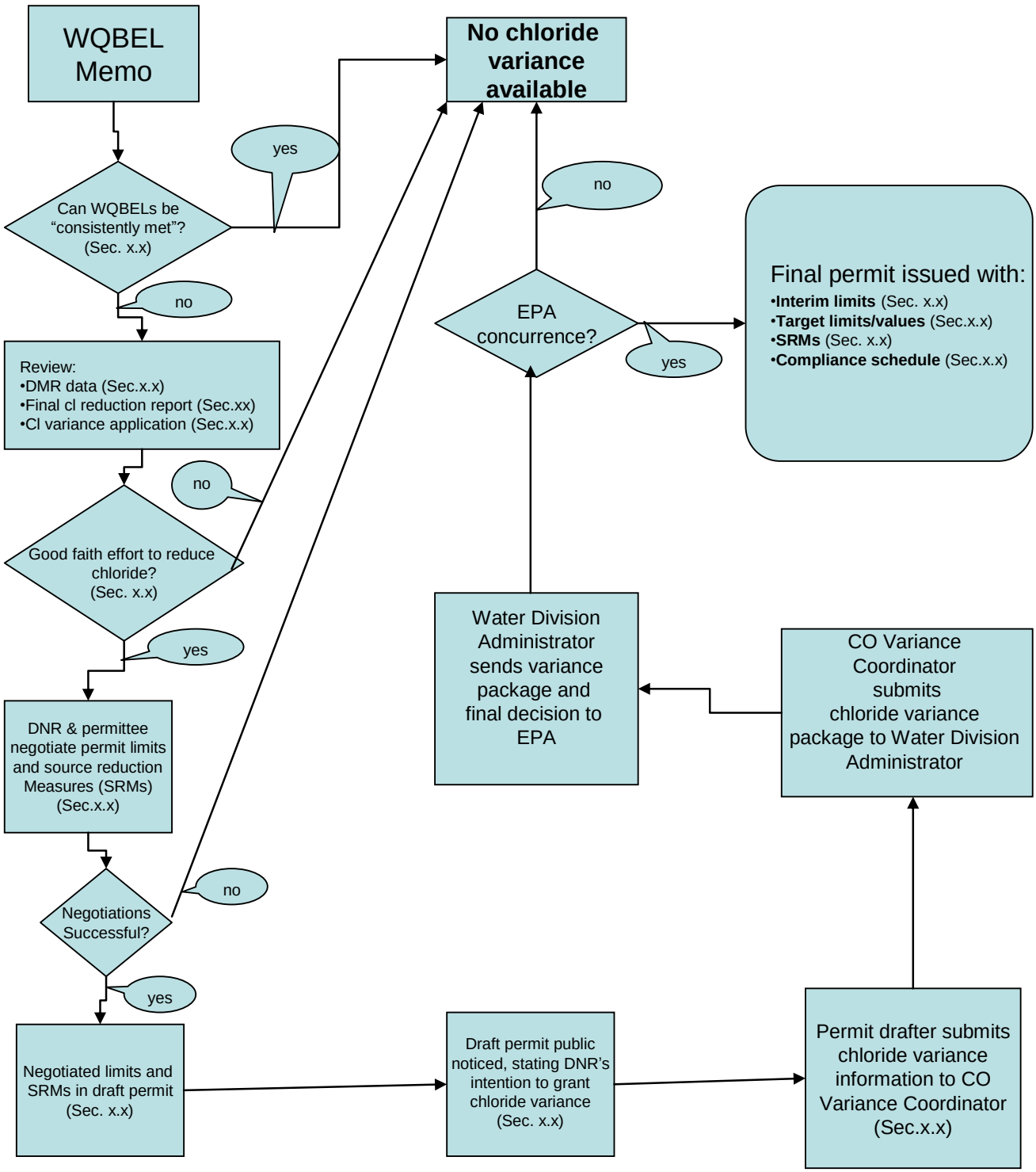
Documents Being Sent Electronically to David Pfeifer

- Public Notice of Intent to Reissue the Permit
- Draft Permit and Fact Sheet
- WQBELs Recommendations Memo
- Draft Notice of Final Determination **[if a final determination is necessary]**

APPENDIX D

Roadmap for Granting Chloride Variances

Roadmap for Granting Chloride Variances for WPDES Permit Renewals



Note: "(Sec. x.x)" in boxes/decision points refer to applicable section of this guidance document.

APPENDIX E

Affect of NR 106.84 When Target is Missed

AFFECT OF s. NR 106.84 WHEN TARGET IS MISSED AFTER IMPLEMENTING SOURCE REDUCTION MEASURES