VILLAGE OF PADDOCK LAKE, WISCONSIN

FINAL CHLORIDE REPORT

WPDES PERMIT NO. WI-0025062-09-0 (2014-2019)

2019-2024 CHLORIDE SOURCE REDUCTION STUDY AND PROJECT PLAN

CONTENTS

EXECUTIVE SUMMARY

The Paddock Lake Sewer Utility District provides treatment for wastewater collected from 1,475 users of the sanitary system. The District serves 1,328 dwelling units, 52 apartments, 87 commercial businesses and 4 public users. Of these users, 290 are currently served by sanitary sewer and municipal water, the remaining (1,185) users are served by their own private water wells.

This scenario presents a challenge for the utilities control of chlorides entering the Districts collection system. The challenge can better be described by quantifying the average hardness of water drawn from these private wells throughout the eight (8) areas of the Village (see Exhibits). The Village has control over the quality of the municipal water delivered to the 290 users of the Water Utility District but lacks direct control over the quality of water used by the remaining 1,185 users. To that end the Village Board of Trustees and Village staff have developed a multiple phase approach to reducing chloride sources from entering the sanitary sewer collection system, this source reduction strategy will be presented in this report.

Increasingly stringent effluent limits for chloride are expected to be lowered for the Utility District in future Wisconsin Pollutant Discharge Elimination System (WPDES) Permits issued by the Wisconsin Department of Natural Resources (WDNR) and the United States Environmental Protection Agency (USEPA). The Utility Districts WPDES Permit has in the past contained a variance to the effluent quality standards for chloride. The variance specifies that chloride effluent limits shall be maintained at or below an interim limit of 685mg/L weekly average between the months of December through April and a chloride effluent limit of 612mg/L weekly average between the months of May through November. The variance and WPDES permit further requires that the utility district obtain an effluent chloride target of 540mg/L as a benchmark for the effectiveness of the present source reduction plan.

Section 1

BACKGROUND

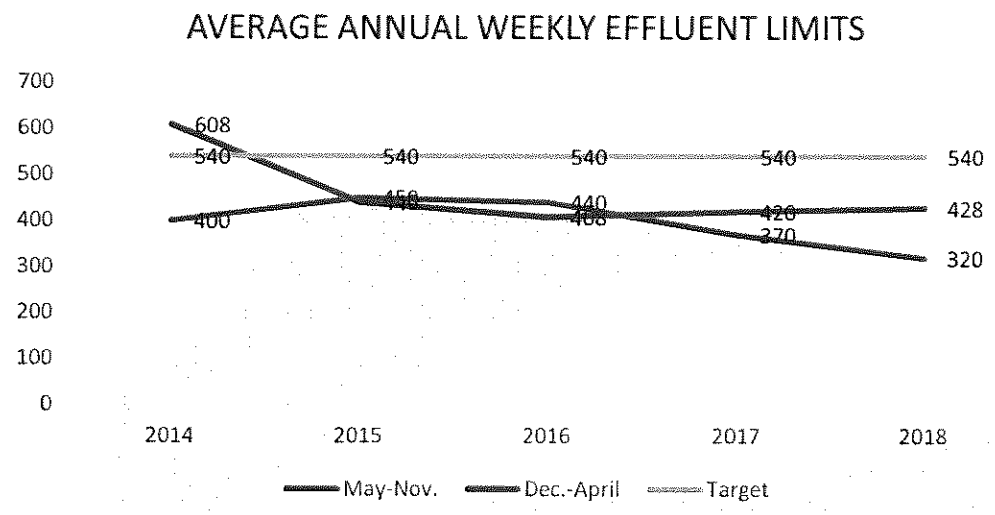
This report is prepared and submitted to meet the terms of the Utility Districts WPDES Permit No. WI-0025062-09-0, effective May 1, 2014, Final Chloride Report and specifically the terms of the permit and chloride variance limits. The permit contains a variance to the water-quality-based effluent limit for chloride. The existing permit specifies that effluent quality shall be maintained at or below the interim limit of 685mg/L as a weekly average and a limit of 612mg/L between the months of May through November. In addition, the permit requires implementation of specific chloride source reduction measures and compliance schedule actions.

The Village has constantly met both the interim limit and the limit set for May through November contained within the current WPDES permit. The Village has further met or exceeded the permits target value of 540mg/L in four (4) of the past five (5) years by implementing a source reduction plan. The reduction plan under the current WPDES permit was began in 2014 and has been successful; the following chart depicts the five (5) year results for the average weekly chloride limits for the interim period and the remainder of each year:

AVERAGE ANNUAL WEEKLY CHLORIDE EFFLUENT LIMITS

	2018	2017	2016	2015	2014
Interim limit 685mg/L Dec. through April	428mg/L	420mg/L	408mg/L	440mg/L	608mg/L
Chloride Limit 612mg/L May through Nov.	320mg/L	370mg/L	440mg/L	450mg/L	400mg/L

Figure No.1



Section 2

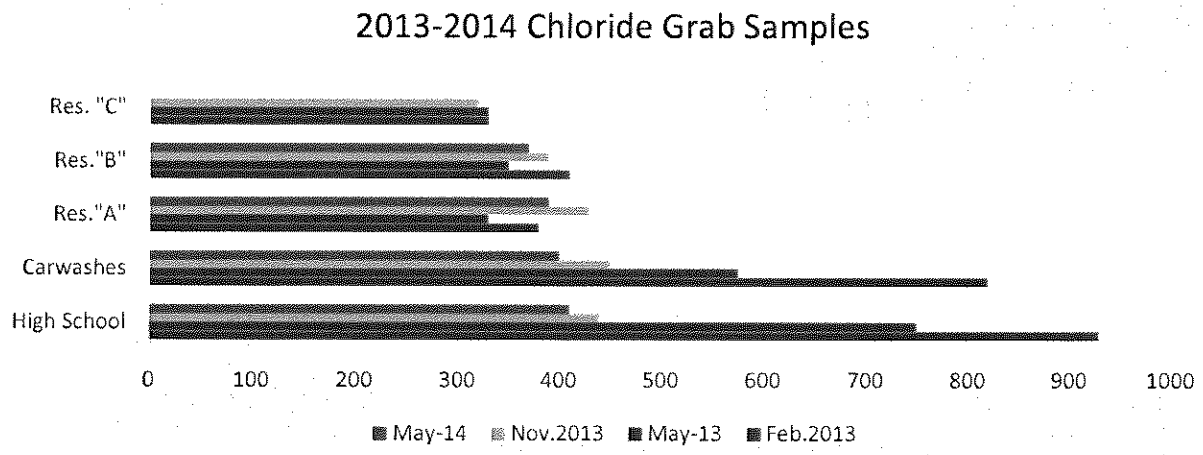
2.1 SOURCE REDUCTION EFFORTS

The chloride source reduction plan implemented during the current WPDES permit cycle (2014-2019) included evaluating the possible sources of chlorides contained in waste water from three (3) residential neighborhoods and the Village commercial business district. In addition to identifying chloride sources from residential and business occupancies, Village staff explored the impact the institutional occupancies (school, churches and seasonal camp) have on chloride loading.

The finding of the initial study (2013) revealed that the majority of the chloride loading was coming from the Village business district which includes the regional high school, two (2) carwashes and five (5) food prep businesses. Grab samples taken from monitoring manholes on the school's property and near the two (2) automatic carwashes revealed chloride concentrations of 930mg/L at the school and 820mg/L at the manholes serving the carwashes. The following lists the results of the 2013 investigation:

2013-2014 GRAB SAMPLE RESULTS

Sample Location	Feb. 2013	May 2013	Nov. 2013	May 2014
High School	930mg/L	750mg/L	440mg/L	410mg/L
Carwashes	820mg/L	575mg/L	450mg/L	400mg/L
Residential zone "A"	380mg/L	330mg/L	430mg/L	390mg/L
Residential zone "B"	410mg/L	350mg/L	390mg/L	370mg/L
Residential zone "C"	330mg/L	330mg/L	320mg/L	310mg/L



2.2 Progress Made

Using the data and information gathered in the 2013 study. Village staff met with commercial and public users of the sanitary sewer system contributing the greatest concentration of chlorides to the system. In addition to meeting with known contributors, Village staff developed FAQ's explaining the Villages plans to reduce the use of road salt and a FAQ encouraging the reduction of water softener use and salt (FAQ'S attached as Exhibits). Using the local media, Village staff disseminated several press releases for publication. The following describes specific corrective actions taken by the Village and results of those corrective actions:

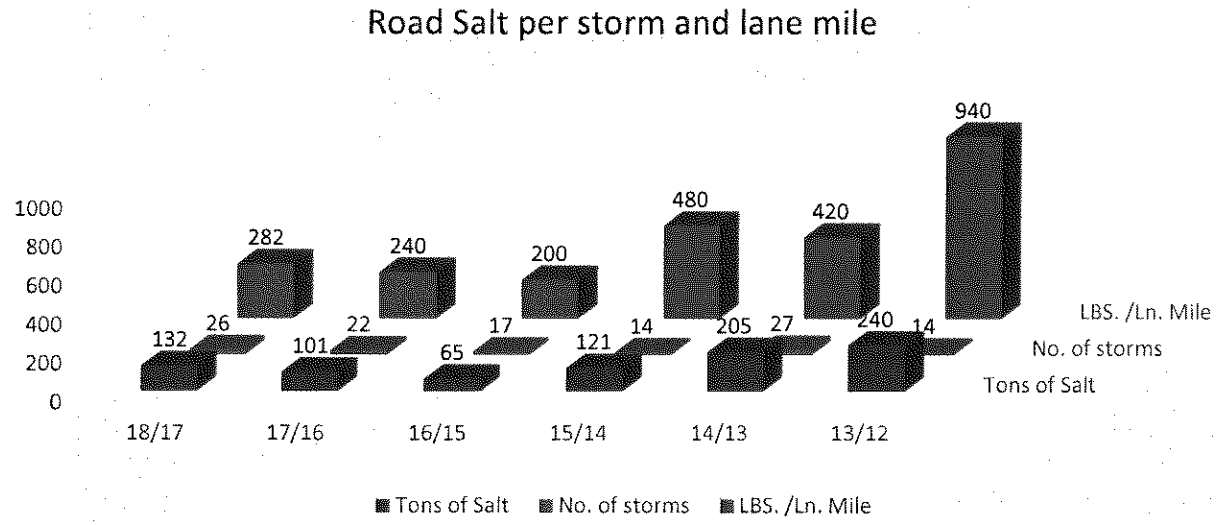
2.3 Road Salt

The 2013-2019 source reduction plan also addressed the Villages use of de-icing road salts by reducing their use by 35%, the following lists the annual use and demonstrates the reduction of de-icing road salts:

ROAD SALT USE

YEAR	Tons of salt	No. of storms	Tons of salt/Ln. mile
18/17	132	26	282
17/16	101	22	240
16/15	65	17	200
15/14	121	14	480
14/13	205	27	420
13/12	240	14	940

Figure No.3



2.4 SOURCES OF CHLORIDE

Determining chloride loading from various sources involves a certain assumption and estimation. For example, it is not possible to measure with certainty the amount of chloride entering the sanitary collection system from the use of road de-icing salts. The primary sources of chloride loading to a small sanitary sewer treatment system has historically been from residential homes, commercial food establishments, industrial operations and use of road de-icing salts.

It has long been presumed that the majority of chloride loading to the Village of Paddock Lakes collection system is associated with residential water softening. It is estimated that as much as 75% of the chloride reaching the treatment plant are coming from residential water softener use. Taking into account that 80% of the sanitary users (residential and commercial) are served by private wells with above average water hardness. Because of the assumptions, the Village Utility District began a study that continued into 2019, this study set out to determine the areas of the Village collection system receiving the greatest quantities of chloride. This chloride reduction study will be expanded, to include all eight (8) areas of the Village collection system and improved upon for the upcoming 2019-2024 WPDES Permit cycle. The following outlines the scope of the 2013-2014 Chloride Source Reduction Study and also the proposed 2019-2024 Chloride Source Reduction Study:

2.5 2013-2014 Chloride Source Reduction Study

Objective: Obtain chloride concentrations levels from five (5) of the eight (8) known sewer sheds. Use this data to determine the Utility Districts action toward public education, possible enforcement of concentrated wastewater loads and cooperative efforts between the High School, businesses and the Village.

Purpose: Use the gathered data to develop newsletters, public education documents and develop strategy to begin working with residents, School and businesses.

Measurable Goals: Using data obtained during the initial collection of samples, Village staff was able to meet (fall of 2013) with the school officials and owners/operators of the two (2) automatic car washes and explain the effects of chloride and the results and costs they would experience if chloride reduction was not undertaken.

Results: As a result of data obtained during the study (2013-2014), Utility District staff was able to meet with school officials and business owners with evidence from specific waste stream samples and convince the school and carwash owners to make immediate changes to lower their contribution of chlorides to the collection system. In addition, Village staff found that one (1) of the three (3) residential neighborhoods tested had lower concentration of chloride. This lower concentration of chloride was anticipated by staff due to the age of the homes.

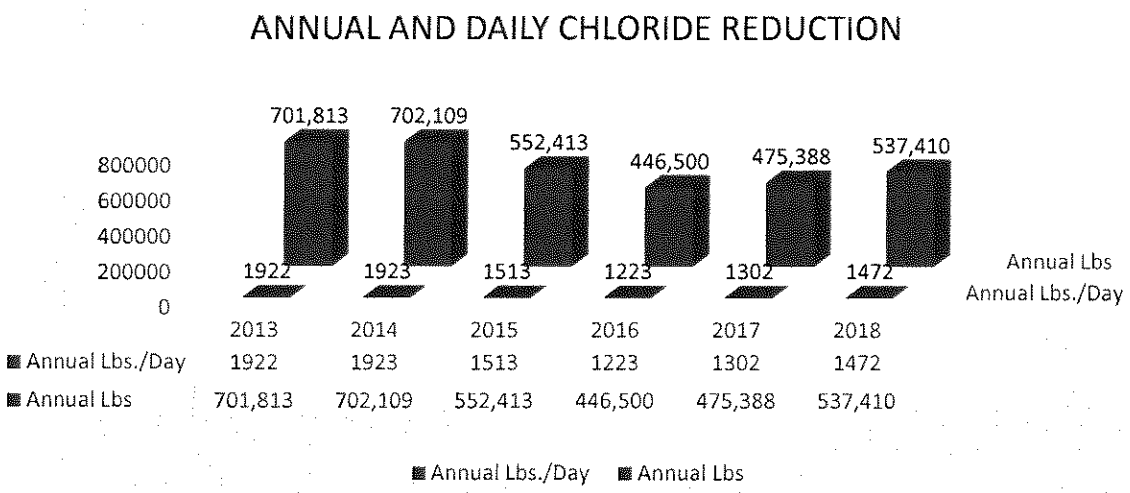
School: In early 2014 the school officials agreed to replace two (2) inefficient manual water softeners with new automated brine reclamation systems, reducing the schools water softener salt use by 35%. In addition, the school removed irrigation water lines from being treated with softener.

Business: Also, in spring of 2014, car wash operators agreed to put back into operation reclaimed and recirculated under body wash system (reducing 15% water use) and adjust existing water softening equipment to operate more efficiently.

Residents: Village residents were mailed letters, FAQ'S and newsletters appealing to their sense of proper environmental stewardship. The letters, FAQ's and newsletters explained the Village's Sanitary Sewer Districts concerns if the amount of chlorides entering the collection system from water softening was not drastically reduced. The information provided expressed what the cost would be to each sanitary sewer user if chloride was not lowered.

The results of the original source reduction study and actions taken by the Village was a net **reduction of 23.42% or an annual reduction of 164,363 pounds or 450 pounds per day from 2013 to 2018.**

Figure No.4



2019-2023 Chloride Source Reduction Study

Section-3

Objective: Expanding upon the **2013-2019** study the Village intends to continue gathering samples from all eight (8) areas of the Village collection system. This includes all of the residential neighborhoods, the High School and the business district. In addition to obtaining chloride concentration results, the private well water serving seven (7) of the eight (8) collection areas will be tested for water hardness, levels of iron, manganese and hydrogen sulfides.

Groundwater sampling wells will be installed throughout the Village to monitor the concentrated levels of chlorides within groundwater entering the collection system through infiltration and inflow.

Purpose: By expanding the chloride study and also including information specific to the condition of the water from the private water wells, the Village will be able to focus its limited resources on the neighborhoods contributing the most chloride to the system. Obtaining chloride concentrations within groundwater will provide important data to the Village Public Works Department and private facility departments for reduction of road and parking lot de-icing agents.

Measurable Goals: The anticipated measurable goals will include:

* Determine which residents may be over treating their water due to iron levels and not calcium carbonate.
* Determine by survey what percentages of residents served by municipal water have water softeners.
* Through Utility District sponsored incentives encourage residents having water softeners to adjust softeners for optimum performance.
* Using the gathered data determine how Village funds can be best spent to encourage residents to have their water softeners inspected and adjusted if necessary by a plumber or water softener service.
* Use the information and data to track progress of source reduction project.
* Using collected groundwater samples determine areas of Village being over treated with de-icing agents, and adjust accordingly.

Anticipated Results: Village staff anticipates through this study an increased understanding of the concentration of Chloride loading and gathering of data that will be used throughout this permit cycle as well as having base data to address chloride source reduction efforts in future permit cycles. In addition, Village staff feels confident that using this segmented approach to chloride source reduction the Village along with its well-educated and environmentally conscious users will continue to experience reductions in chloride loading.

3.1 Softening- Residential

Residential softening is estimated to be the largest source of chloride to the Village sanitary sewer collection system. Residential is defined as 1 and 2 family detached housing, apartments being attached 3 units and above are classified as commercial. There are 1,329 one and two family units, 52 apartment, 87 commercial occupancies and 4 public uses. It is estimated that 71% of the residential users have water softeners. The percentage having water softeners is less than first thought, and is based on information recorded by the Village water utility staff and plumbing inspector during cross-connection inspections, meter re-calibrations and plumbing inspections in 655 homes between 2009 and October of 2018.

Prior estimates of residential chloride had been based on the belief that 86% (1,142) of the homes in the Village had water softeners. With information provided by area plumbers, softener dealers and national standards the Village estimated the typical softener regenerates one to two times per week and uses 5 to 10pounds of salt per regeneration. The revised

estimate is similar in that it uses the same information obtained by softener dealers and plumbers but factors in the revised estimate of homes 71% (942) homes with softeners. The estimated residential softening loading using this data and approach for 86% of the homes equates to 1,626 to 3,211 lbs. of chloride reaching the treatment plant daily, while calculating 71% of homes having softeners the data equates to 1,342 to 2,684 Lbs. of chloride reaching the plant daily.

RESIDENTIAL LOADING

	1,142 Homes **(86%)**	Daily Lbs.	942 Homes **(71%)**	Daily Lbs.
5 pounds of salt twice/week	593,840 Lbs. /yr.	1,626	489,840 Lbs. /Yr.	1,342
10 pounds of salt twice/week	1,172,080Lbs. /Yr.	3,211	979,680 Lbs. /Yr.	2,684

3.2 Softening- Commercial

Commercial water softening is estimated to be the second largest source of chloride loading to the collection system. The Village presently has 87 commercial businesses, 4 public uses, and 52 apartment units, of this number, 7% or 10 units are served by municipal water with an average water hardness of 63mg-CaCO3/L. Through cross-connection inspection records it is known that only one of the 10 commercial units served by municipal water has an existing water softener.

In addition, the Village Water Utility District will be undertaking a water system expansion project that will be complete by fall of 2020. This water system expansion project will provide municipal water to the entire commercial business district and thereby serve all businesses, apartments and public occupancies within the Village.

2019-2024 CHLORIDE SOURCE REDUCTION PLAN

Section 4

4.0 Introduction

The current **2014-2019** permit includes a chloride variance with a 685mg/L interim limit for the months of December through April and a 612mg/L limit for the months of May through November with an expected target limit of 540 mg/L.

It is estimated and suggested that the Village would be capable of achieving a new interim Chloride effluent limit of 610mg/L and a May through November limit of 545mg/L with a new target limit of 470 mg/L

Chloride-reduction planning during the **2019-2024** permit will focus on attaining this lower chloride limit. Evaluation of chloride sources and attainable reductions indicates that compliance with a lower limit of 470 mg/L on a 4-consecutive-day weekly average limit will be possible with the implementation of the **2019-2024 Chloride Source Reduction Plan**, along with the expansion of the municipal water system to serve the existing business district.

Four feasible strategies for compliance have been identified. The first strategy involves residential water softener optimization program. The second strategy involves the further reduction of road salt use. The third strategy involves implementing a commercial business water softener optimization program after the municipal water main has been extended to serve businesses in the Village and the fourth strategy is to continue the repairs of collection system pipes to reduce groundwater infiltration and inflow. These are described in the following sections.

4.1 Chloride source investigation:

The primary potential for chloride reduction is associated with water softening, therefore, the primary focus of source reduction efforts in the coming WPDES permit cycle (**2019-2024**) will be water softeners from areas of the Village served by private water wells.

The Village collection system has been divided into eight (8) zones that Village sanitary sewer department staff will twice a year (winter and summer) gather collection system samples from waste water streams for chloride concentration sampling. The purpose of this investigation is as follows:

- Identify the zone or neighborhood with the greatest concentration of chloride loading.
  By finding the chloride concentration levels, the village can make better use of its resources to begin working with system users to lower chlorides.
- Determine what occupancy class contributes the greatest concentration.
- Determine if residences served by private water wells are treating their well water for Iron or Calcium Carbonate.
  It's been reported by users and softener companies that existing water softeners are not effective in removing iron from their water. The use of Iron filters may perform better than softeners and lead to the proper and efficient use of softeners.
- Formulating this gathered data to optimize a program that works with residential and commercial users contributing chloride to the system.

- Determine the concentration of chloride within groundwater.
  By installing and monitoring shallow-monitoring groundwater wells, data can be used to reduce de-icing agents used on public and private paved surfaces.

4.2 Residential Water Softening Optimization Program

Using the collected data from **2019-2024 Chloride Source Reduction Study**, the Village intends to develop a residential Water Softener Optimization plan. This plan will provide incentives to residents within targeted areas of the Village presently served by private water wells to have their water softeners inspected and adjusted by qualified water softener contractors to maximize salt efficiencies. Included in the softener inspection and optimization program water samples will be taken to determine if well water is being treated for water hardness due to Calcium Carbonate or iron content.

With Village Sanitary Utility Commissions approvals District staff intends to implement the residential water softener inspection and optimization program in 2020, the following outlines the optimization program:

1. 2019, develop residential water softener incentive program and receive Utility Districts approvals.
   Seek approvals to use District funds to encourage residents to have softeners inspected.
2. Negotiate with area plumbers and water softener contractors to participate in the Village water softener optimization program.
3. Notify residents, using letters, emails and newsletters of the program and incentive offer.

Anticipated Results:

Using the two estimates listed in section 3.1, the Village anticipates that during the four years of the Residential Water Softener Optimization Program, The Village will encourage through incentives, residential participation in the range of 40% or 377 residential water softener units to be inspected and adjusted to optimize performance. If the water softeners inspected and adjusted produce a modest 20 % reduction in chloride use as anticipated, the chloride load received at the WWTP would be reduced by, 39,208 Lbs. of chloride per year and reduced by 107 lbs. of chloride per daily average.

4.3 Commercial Water Softening Optimization Program

Also using gathered data from the **2019-2024 Chloride Source Reduction Study** along with the expansion of municipal water to serve all commercial occupancies within the Village, The Village Utility District anticipates developing a commercial water softening optimization program. This program will include the following:

- Work with new commercial water system customers to optimize the use of existing water softeners.
  This will be accomplished and implemented at the time new water connections to the municipal water system takes place (2020). Commercial users will be presented comparisons of the hardness of their existing well water to the new municipal water supplied and encouraged to adjust their existing softeners accordingly.

Anticipated Results:

The existing commercial occupancies presently served by their own private water wells will be required to connect to the expanded municipal water system. During the transition and or the connection to municipal water, the business/property owner will be required to adjust existing water softeners to correspond to the lower hardness of water supplied by the municipal water system. It is anticipated that the existing water softeners can be adjusted to yield an estimated chloride reduction of 30 to 40 %. Based on calculated water demand of the existing commercial users served by private water wells along with preliminary results of the **2019-2024 Chloride Source Reduction Study** (Investigation Zone 7 and 8) the Village estimates the chloride load received at the WWTP would be reduced by 10,000 lbs. of chloride per year and reduced by 27 lbs. per daily average.

4.4 Industrial Water Softening

The Village presently does not have any industrial uses or occupancies.

4.5 Groundwater Infiltration and Inflow

Groundwater infiltration and inflow volumes and chloride loading is currently estimated based on industry standards, soil types and known sanitary sewer collection system inflow and infiltration volumes. Infiltration and inflow have been approximated using collection system lift station pumping records and treatment plant influent volumes during both wet and dry weather conditions. The estimated loading of chloride from groundwater infiltration is estimated to be 10-15% of the documented chloride effluent sampling. During the **2019-2024 Source Reduction Program,** the Village plans to install several shallow groundwater monitoring wells throughout the Village to retrieve groundwater samples.

The Village continues to invest in infiltration and inflow reduction measures. The Village has implemented an aggressive collection system rehabilitation program. This program has divided the collection system into five segmented collection system zones. Each year one of the five

zones are cleaned and televised, using two years of televised records, the Village contracted to have necessary collection system pipes and manholes repaired to reduce infiltration and inflow. This collection system rehabilitation program will continue through the 2019-2024 permit cycle.

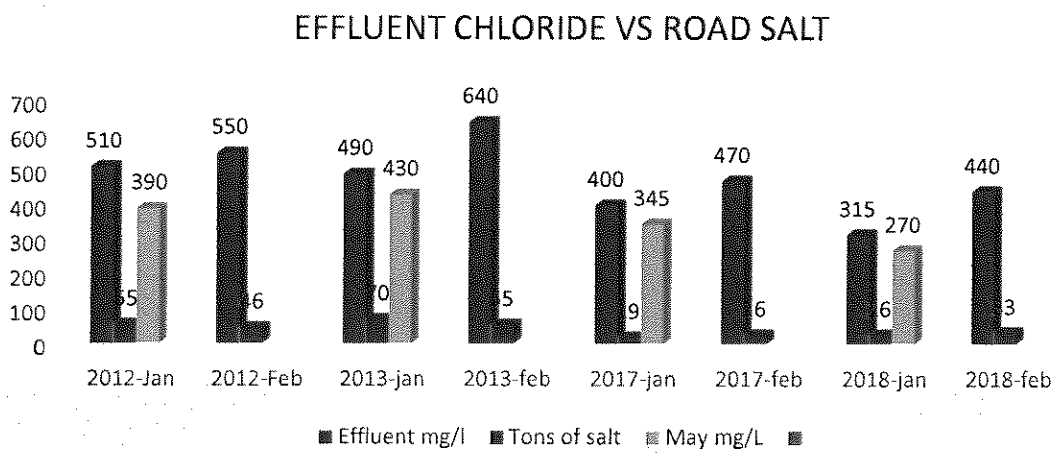
Anticipated Results:

It is anticipated that collected data from newly installed groundwater monitoring wells will provide key information as to the effects de-icing agents have on the groundwater table. Using this information, will be vital in determining a direct correlation between road salt use and chloride loading from infiltration and inflow.

4.6 Road Salt via Infiltration and Inflow

Road de-icing operations are an additional source of chloride. Figure No.5 compares road salt tonnage applied with effluent chloride concentrations, the chart in Figure 5 uses four years of data (2012, 2013 and 2017, 2018) and indicates that de-icing agents applied to pavement tend to coincide with higher effluent chloride concentrations. Chloride tends to increase by as much as 75 to 125 mg/L during winter months. As indicated earlier in this report, it is difficult to ascertain the precise effect that road salt has on chloride loading. As demonstrated in Figure No.4 in section 2.3, the Village has made marked reductions in its road salt use during the past 2014-2019 WPDES permit cycle. The month of May in each of the years of the data is for comparison use and is in place as a control.

Figure No.5



Anticipated Results:

It is anticipated that during the 2019-2024 Chloride Source Reduction Plan, the Village will continue and improve on reducing road salt use. In addition, using data collected from the shallow groundwater monitoring wells the village intends to implement a de-icing reduction plan that will include business parking lots and municipal managed pavement.

Estimated Achievable Chloride Reduction

Section 5

It is estimated that implementing the **2019-2024 Chloride Source Reduction Plan** should produce the following estimated chloride reduction in the WWTP effluent:

- Residential water softener optimization plan - 107 lbs./average annual daily chloride load
- Commercial water softener optimization plan- 27lbs./average annual daily chloride load
- Groundwater infiltration and inflow reduction- 5-10% chloride reduction during winter months
- Road salt and de-icing agent reduction plan- 5-10% chloride reduction during winter months.

The above listed estimates of chloride reduction indicate that a 3-5% percent reduction from the annual chloride mass is achievable for each year of the 2019-2024 Chloride Source Reduction Plan.

Challenges, Effort, and Time Required

Section 6

Significant time and effort will be required to implement the residential water softener optimization program, commercial water softening optimization program and the reduction of groundwater-based chloride component of the **2019-2024 Chloride Source Reduction Plan**. There are 1,328 residential users of the sanitary sewer collection system, and as previously noted, an estimated 71 percent or 942 residential units have water softeners. Adding commercial and public users, there is estimated to be 1,050 water softeners discharging chloride into the collection system. Taking into account, a small workforce along with limited annual operational funds available to implement and fund the optimization program, the Village anticipates administering the softener optimization plan over the course of the next five years.

Section 7

Path Forward

The Village intends to implement the two-phase water softener optimization program beginning in 2020. High water users and high salt users identified by sampling zones within the **2019-2024 Chloride Source Reduction Study** will be prioritized for earlier optimization. This provides a basis for prioritizing commercial and homes with softeners. Recently contacted water softener dealers have noted that a limited percentage (estimated 10-15 percent) of the residential softeners in the Village are rental units, these customers will be the easiest to contact and gain access for optimization. In addition to water-softener optimization, attempts will continue to reduce the seasonal influence of road salt on chloride concentrations. Aggressive infiltration and inflow reduction efforts are continuing through collection system rehabilitation based on annual sewer televising and manhole inspections. Sewer lining and replacement projects are routinely performed biennial, with $250,000 budgeted for lining (1,200 to 3,000 feet) in 2018, 2020, 2022 and 2024.

Municipal Water

As listed in the Executive Summary the Village sanitary sewer system receives sanitary waste from 1,475 users, of the users of the sanitary sewer system 290 users are currently served by municipal water, starting in 2020 an additional 107 users will be connected to the municipal water supply. The municipal water supply is not softened and will not be softened in the foreseeable future. Municipal water is treated for bacteria using chlorine and treated with

phosphates for iron sequestering. The water produced and distributed by the municipality does not directly contribute to chloride loading to the sanitary sewer system.

EXHIBIT "A"

CHLORIDE SOURCE INVESTIGATION ZONES (1 through 8)

ZONE 1:

Location: NE ¼ of Section 3, T. 1, N.R.20 and North ¼ of the NW ¼ of Sec.2, T.1, N.R.20

Collection System: 1.24 miles of 8 inch PVC and .75 miles of 8 inch Vitreous Clay pipe (circa 1969)

Percent of users: 4.3% users of the total collection system, all single family residential.

Average water hardness: The average hardness of well water in this zone is **98mg-CaCo3/L**

The zone consists of 71 single family homes with 32 homes being constructed before 1980's and 34 homes constructed in the late 1990's, all of these home are served by their own private water wells. Preliminary results of the chloride investigation for zone No. 1 reflects **165mg/L of chloride** in the collection waste stream gathered at manhole No. 26.

ZONE 2:

Location: NW ¼ of section 11, T.1, N.R.20 and south ¼ of the SW ¼ of section 2, T. 1, N.R.

Collection System: 2.4 miles of 8 inch Vitreous clay circa 1969.

Percent of users: 11.4%

Average water hardness: The water produced by the private wells in this zone averages **205mg- CaCO3/L**

Zone No.2 consists of 138 single family homes 105 of which were built prior to 1980, the remaining homes (25) are newer dwellings. This zone also consists of 36 businesses with 7 being food prep establishments. Preliminary results of the chloride investigation for this zone reflects a significant loading of chloride to the system, **440mg/L**. collected at manhole No. 19.

ZONE 3:

Location: NE ¼ of Section 2, T. 1, N.R.20 and SE ¼ of Section 2, T.1, N.R.20

Collection System: 3.82 miles of 8 inch clay pipe, circa 1956 and 1963

Percent of users: 32.75%

Average water hardness: The Average hardness of municipal ground water in this zone is **63mg- CaCO3/L**

The majority of this zone is served by municipal water (290 users), the water is treated for bacteria using chlorine in addition to treatment for bacteria the water is treated with phosphates for sequestering

of Iron. This zone consists of 449 single family homes, 24 apartment(condo's) units and 10 commercial.
The results of the grab sampling from manhole No. 147 reveals a lower than expected chloride load of **205mg/L of chloride**

ZONE 4:

Location: SW ¼ of Section 2, T.1, N.R. 20 and south half of the NW ¼ of Section 2, T.1, N.R.20
Collection System: 2.96 miles of clay and concrete pipe circa 1969-1971
Percent of users: 26.1%
Average water hardness: Water wells in this zone have been known to produce very hard water ranging from **193 to 220 mg-CaCo3/L**

This collection system consist of 373 single family dwellings and 12 apartments. The results of the grab sample at manhole No. 85 reveal a **360mg/L chloride load**.

Zone 5:

Location: SW ¼ of Section 2, T.1, N.R.20
Collection System: .52 miles of clay and concrete pipe installed in 1969-1971
Percent of users: 3%
Average water hardness: The water produced by the private wells in this zone have been known to be between **200-250 mg-CaCo3/L**
This portion of collection system consists of 40 single family homes. The grab sample taken at manhole No. 1-19 reveals a **345mg/L chloride** load.

ZONE 6:

Location: North half of the NW ¼ of Section 2, T.1, N.R.20
Collection System: 1.55 miles of clay and concrete pipe (circa 1969)
Percent of users: 8%
Average water hardness: The Village does not have data for hardness of well water in this zone, however, residents served by these private wells have reported that the water is very hard and contains hydrogen sulfide, iron and manganese.
This zone contains 115 single family homes all of which are served by private or community well systems. The chloride sample in this zone was retrieved from manhole No.48; the sample test reviled a chloride concentration of **285mg/L.**

ZONE 7:

Location: South half of the SW ¼ of Section 2, and the south ¼ of the SW ¼ of Section 3, T.1, N.R. 20.
Collection System: .85 miles of 8 and 10 inch clay pipe (circa 1970 and 1986)

Average water hardness: The businesses and the regional High School have reported water hardness ranging from **195-210 mg-CaCo3/L** along with high levels of hydrogen sulfides, iron and manganese.

Percent of users: 2.45%

This collection zone is currently served by private wells, the occupancies within this zone consists of 31 businesses, 1 church and one High School with a daily population of 1275. Plans are underway to construct municipal water mains in this zone and replace the private water wells with municipal water; this municipal project should be complete by spring of 2021. Chloride grab samples were taken from manhole No. 2-1 the results of the sampling was **556mg/L of chloride**.

ZONE 8:

Location: SE ¼ of Section 3, T.1, N.R.20

Collection System: 1.46 miles of 8 inch clay pipe (circa 1969)

Percent of users: 12%

Average water hardness: **146 to 158 mg-CaCo3/L**

Zone 8 consists of 145 single family homes, 8 commercial businesses and 24 apartment units all of which are served by private water wells. Grab samples were drawn from manhole No. 1-48 with chloride readings of **655mg/L**

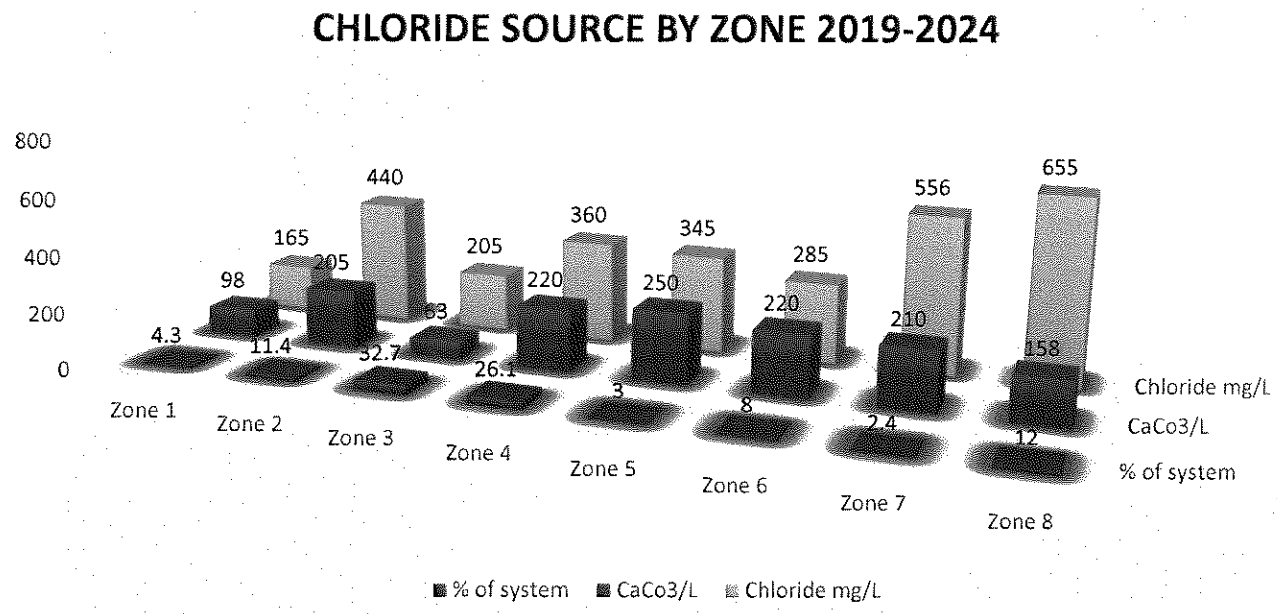
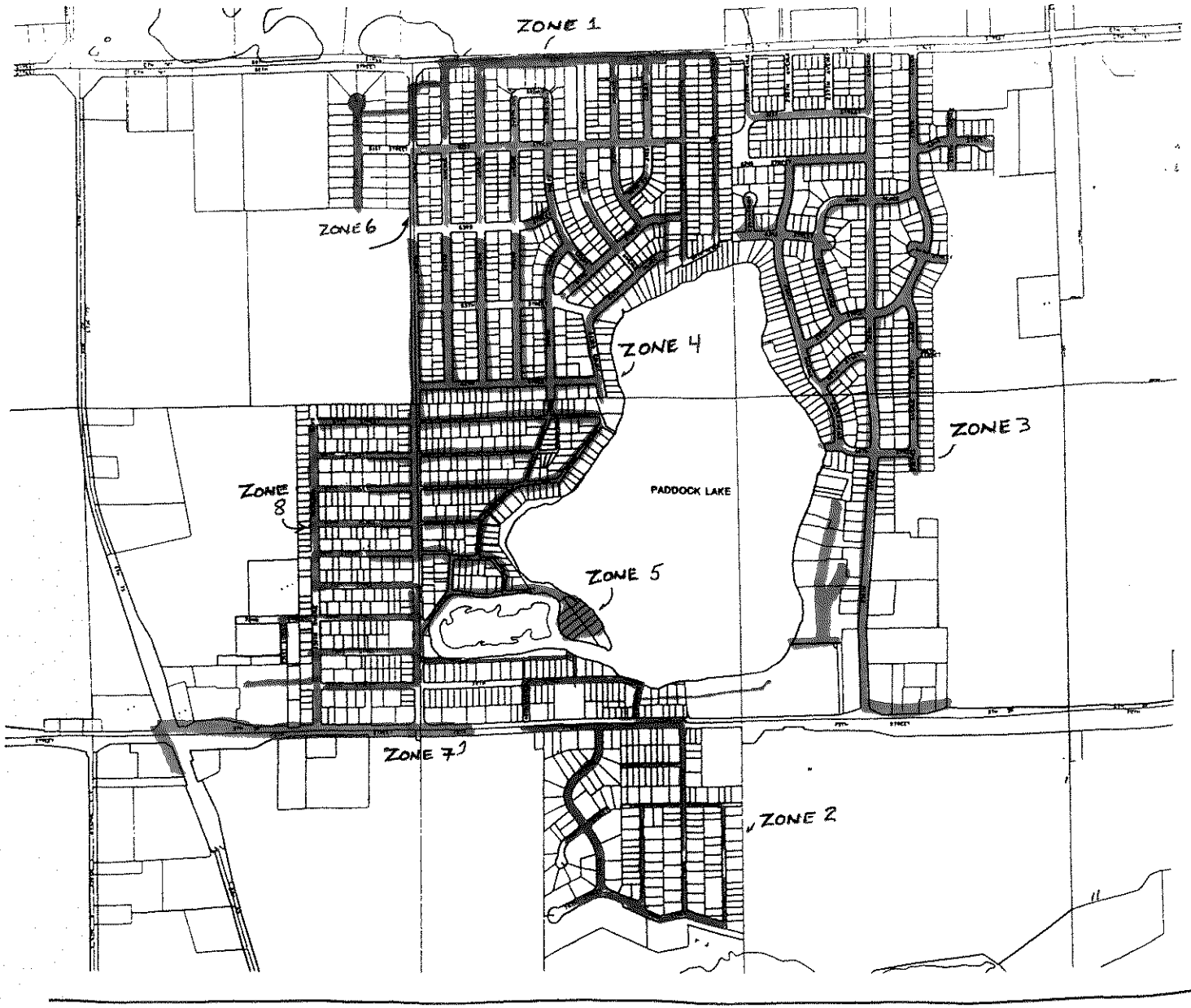

CHLORIDE SOURCE BY ZONE 2019-2024
800
600
400
200
0
4.3
98
165
440
11.4
205
32.7
63
205
26.1
220
360
3
250
345
8
220
285
2.4
210
556
12
158
655
Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7
Zone 8
Chloride mg/L
CaCo3/L
% of system
% of system
CaCo3/L
Chloride mg/L

Exhibit "A" Sample Zones		SFH	SFH	SFH	SFH	Total SFH	Bus.	APT.	Total
	User %	Pre 1980	1980's	1990's	2000's				
Zone 1	4.3	32	2	34	3	71	0	0	71
Priavte wells									
Zone 2	11.4	105	4	25	4	138	21	15	174
Private wells									
Zone 3	32.75	314	49	47	39	449	10	24	483
Muni. Water									
Zone 4	26.1	300	12	42	19	373	0	12	385
Private wells									
Zone 5	3	36	0	4	0	40	0	0	40
Private wells									
Zone 6	8	73	8	13	21	115	0	0	115
Private wells									
Zone 7	2.45	2	0	0	0	2	31		35
Private wells									
Zone 8	12	121	4	11	9	145	8	24	177
Private wells									1,480
Chloride Consentration	2019	2020	2021	2022	2023	2024			
Zone 1 Winter	165mg/L								
Zone 1 Spring									
Zone 2 Winter	440mg/L								
Zone 2 Spring									
Zone 3 Winter	205mg/L								
Zone 3 Spring									
Zone 4 Winter	360mg/L								
Zone 4 Spring									
Zone 5 Winter	345mg/L								
Zone 5 Spring									
Zone 6 Winter	285mg/L								
Zone 6 Spring									
Zone 7 Winter	565mg/L								
Zone 7 Spring									
Zone 8 Winter	655mg/L								
Zone 8 Spring									

VILLAGE OF PADDOCK LAKE

KENOSHA COUNTY, WISCONSIN

STREET MAP



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10:03am

NEWS LETTER
VILLAGE OF PADDOCK LAKE

6969 236th Avenue – Salem, Wisconsin 53168
Office 262-843-2713 Municipal Court 262-843-9314

PADDOCK LAKE NEWSLETTER

SPRING CLEAN UP AND ELECTRONIC WASTE PICK UP

The Village of Paddock Lake will again be having the annual spring clean up. This is your opportunity to get rid of all those things that have accumulated in the garage, basement, etc.

On May 3, 2014 from 8:00 A.M. until 1:00 P.M. there will be dumpsters at the public works facility at the east end of 62nd Street. Residents are invited to dispose of their unwanted items at this time. There will be a Village employee on site to help you.

Sorry, some things are not accepted. Do not bring tires, paints, solvents, oil, pesticides, or any other hazardous material.

Also, on May 3, 2014, the Village of Paddock Lake will be accepting electronics (computers, telephones, printers, etc. and televisions) at NO charge. Drop off will be at the Village Public Works facility at 23201 62nd St., Paddock Lake. Hours of drop off are 8:00 am until 1:00 pm.

This event is being held at the same time the County Hazardous Waste Drop off date. Any hazardous waste can be taken to the county building on the corner of Highway 45 & 50. See the web for more information.

SPRING LEAF PICK UP

The Public Works crew will be doing a spring leaf pick up, beginning April 14th and ending May 16th. However, you can bring yard waste to the Public Works Facility at the east end of 62nd Street or to one of the new drop off sites. One at the corner of 250th and 67th St on the west side of the lake and on 78th and 244th on the south side of highway 50 where a bins are provided. Please, do not put any leaves along the road after the end of spring leaf pick up. It will not be picked up, and you may be cited for ordinance violation. Do not rake rocks, wires, brush, dog droppings, or other objects into the leaf piles. They are very dangerous to workers and will clog and damage the equipment. Leaves must be raked as close to the road as possible. Do not rake leaves near mailboxes, the vacuum hose cannot reach around the posts. If you bag your leaves, the bags will not be returned.

SCRAPPERS IN THE VILLAGE

In the Village of Paddock Lake we believe in recycling. When you put things out for John's Disposal to pick up and a "scrapper" picks up the item they are taking money away from the recycling rebate. We ask that if you see a vehicle picking up "scrap" to call the non-emergency number 262-843-2371 to report the matter.

THINGS THAT DO NOT BELONG IN THE SEWER SYSTEM

Never put sanitary napkins down the toilet, even if the label indicates that you can do so. These products were not meant to be disposed of in this manner. Besides backing up the sewer lines, you could cause serious damage to your plumbing system. Visit www.paddocklake.net for more information.

WINTER ROAD CONDITION, FREQUENTLY ASKED QUESTIONS

Q. Why is the village using less salt on the roads this winter, compared with past years?

A: This is a complex and long answer that will be addressed in the following FAQ

The village for many years has had a snow and icy roads protocol that does not include a bare pavement policy on all streets. In recent years the village boards have favored a bare pavement approach to snow removal. The conditions of the roads this year are more in line with adopted policies.

In August of 2013 the Village of Paddock Lake Waste Water Utility District (sewer plant) was served with a new five year pollution elimination permit from the Wisconsin Department of Natural Resources. The new permit (2014-2019) requires that the village waste water treatment plant reduce the amount of phosphorous, chlorides (salt) and lower the temperature of its treated waste water that is discharged to the Brighton Creek.

The past five year permits required that the effluent water have no more than 720 mg/l of chloride, while the new permit has an effluent limit of no more than 612 mg/l (milligram per liter).

For the most part the village meets the reduced limits of chloride in the waste water effluent, with the exception of February, March, April and May when the village often violates the effluent chloride limits.

The reason the village violates the terms of the pollution elimination permit in the spring months is due to the run off of the road de-icing salts. These salts make their way into the ground water and enter cracks and joints in the village sanitary sewer system.

Q: How does the use of road salt have an effect on the sanitary sewer plant?

A: Road salt or calcium chlorides in the past have been placed on the village roads at a rate of 7 tons of salt per lane mile of road per year or season. Road salt is washed off the village roads by spring rains, the water soluble chloride leaches into the groundwater and because older sewer systems have joints and cracks in the pipes the ground water seeps into the sanitary sewer system and drains to the sewer plant where the sewer plant is currently unable to treat or remove the chloride from the waste stream.

Q: What does the Wisconsin Department of Natural Resources do to the village if it violates the pre-set chloride limits?

A: In the past when the village has violated the pre-set limits, the Wisconsin Department of Natural Resources and the Environmental Protection Agency have ordered the village to increase its efforts on reducing the use of road salts and water softener salts. However; under the newest pollution elimination permit, the village believes that if the sanitary sewer plant violates the preset chloride limits. The Wisconsin Department of Natural Resources and the Environmental Protection Agency will force the village to construct yet another waste water treatment device to separate the chloride from the effluent waters that leaves the treatment plant.

Q: What would the costs be to construct a filter at the Waste Water Treatment Plant?

A: Based on the size of our treatment plant, it is estimated that the cost to construct a micro filter would be between $2.2 million and $3.6 million dollars with annual operating costs of $105,000 to $170,000 per year.

Q: How much more would a home owner pay to construct the filter and operate the system and filter?

A: The village estimates that the debt payments and operational costs would be between $44.31 and $68.97 per household per quarter, which would bring the quarterly sewer bill to $254.73 to $279.39.

Q: How much has the village reduced the use of road salt?

A: The village is committed to reducing its seasonal road salt use by 30% or more. This has been accomplished by reducing the application rate of salt during snow events.

Q: What other steps has the village taken to reduce the amount of chlorides reaching the environment and sewer treatment plant?

A: The village public works department has implemented best management practices at the public works yards where the bulk road salt is stored, by storing bulk road salt in a building.

Q: Sometime it seems especially icy following a storm, does the village treat icy roads?

A: The village streets department uses a Board of Trustees adopted snow removal/Ice control policy which provides for snow removal activities and establishes priorities for how this is accomplished. The village board has not established a "bare pavement" or "ice free" requirement. Recently, use of chemical and/or sand applications has been reduced due to environmental and budgetary implication especially on streets where traffic volumes and speeds are low. Thus, treatment of slippery areas chemical/sand is limited to high traffic thoroughfares, hills, curves and known hazardous intersections.

Q: Why are some streets plowed and salted while my street is not?

A: Primary collector streets or emergency routes are maintained using the bare pavement approach. These collector streets are roads that connect to state highway 50 or county highway K. For the most part village residents are only 1 to 2 blocks away from collector streets.

Q: What are the Village costs to remove snow and ice?

A: It generally costs the Village about $1,600 per inch of snow removed and $1,400 for treatment of ice from freezing rain events. The average cost per year (2009-2012) to remove snow and treat roadways is $48,000, this includes amortize of equipment, purchase of salt, fuel, repairs and labor. This year however is turning out to be a traditional Wisconsin winter the type and duration we have not experienced since the mid 1970's.

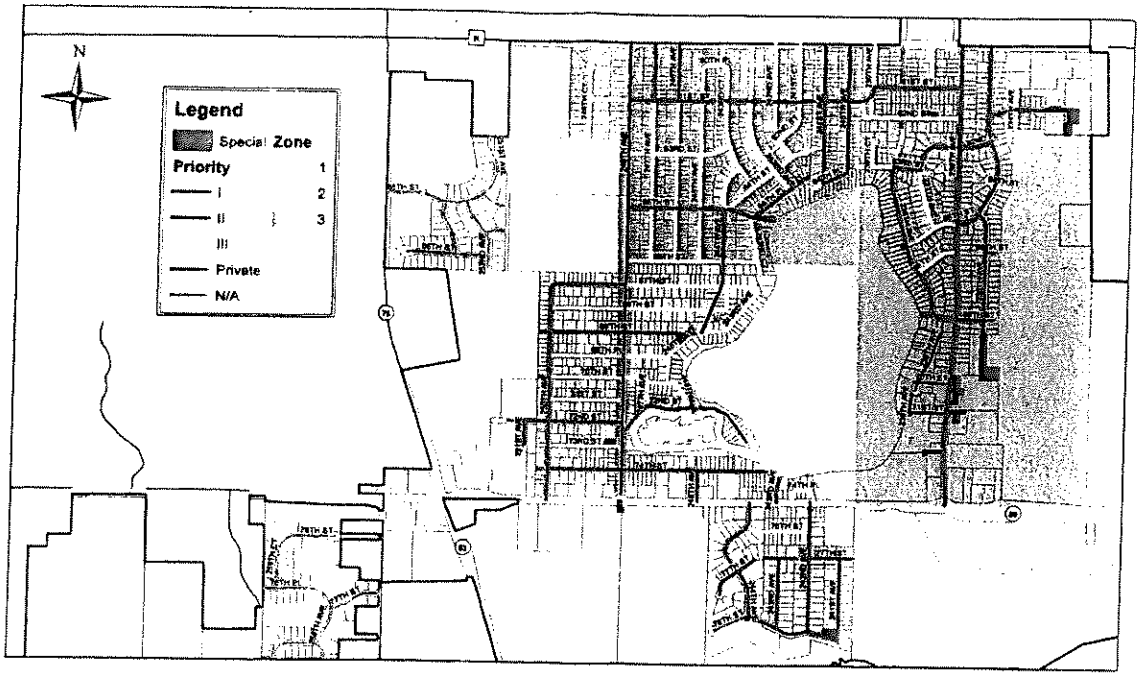
ADDITIONAL INFORMATION:

Water softener, chloride reduction FAQ – www.paddocklake.net

Village snow and ice removal policy – www.paddocklake.net

Wisconsin Pollution Elimination Permit – www.paddocklake.net

VILLAGE OF PADDOCK LAKE - SNOW ROUTE MAP



November 7, 2011

VILLAGE OF PADDOCK LAKE SEWER UTILITY
FREQUENTLY ASKED QUESTIONS ABOUT CHLORIDE

The Wisconsin Department of Natural Resources is reissuing the Village's waste water discharge permit. The new permit will require lower limits on chlorides that the treatment plant discharges to the Brighton Creek. The current limit is 720 mg/liter, with new limits being reduced to 570 mg/liter. Chlorides or salts are not something we can treat at our sewer plant therefore; we must concentrate on reducing chlorides in the water coming into the sewer plant, i.e. water softeners and road salts. The Village is constantly trying to reduce the amount of road salt used on icy roads. Water softener usage, on the other hand, is entirely up to the residents.

If the Village is unsuccessful in reducing the amount or chlorides in the waste water, the alternatives are an increase in operational costs.

What is it?

Chloride is one of two components of sodium, also known as table salt or rock salt. When salt dissolves in water, it separates into sodium (Na+) ions and Chloride (CI-) ions.

Where does Chloride come from?

Small amounts of Chloride come from soaps, detergents, and other cleaning products. Some also comes from commercial processes and road deicing operations. A significant amount of Chloride comes from self-regenerating water softeners.

OUR ENVIRONMENT

Why should I care about Chloride?

Our freshwater streams and lakes contain low levels of naturally occurring salts, including chloride. These salts are essential to the aquatic organisms that live there. However, high concentrations of Chloride are harmful to aquatic plants and animals.

How does it get in the Environment?

From the water softener, Chloride is flushed into the sewer where it goes to the wastewater treatment plant. Treatment plants are designed to remove particles, like grit and sand, and to biologically degrade organic waste, such as food and human waste. Once Chloride is dissolved in water it cannot be removed by settling, or biologically degraded by standard treatment processes. Chloride that comes to the Village of Paddock Lake treatment plant passes through the plant to the Brighton Creek and eventually the Des Plaines River. About 1450 pounds of salt pass through the Village of Paddock Lake plant to the environment each day.

Can treatment plants be modified to remove Chloride?

The technology to remove Chloride is available, but is very costly. It would involve microfiltration and reverse osmosis, which are the same treatment processes used to produce pure water used in laboratories. One community determined that it would cost about twenty cents to add a pound of Chloride at the water softener, and $5.00 to remove it at the treatment plant. Households can use up to 100 lbs. of salt a month in their water softeners.

Is Potassium Chloride a better choice than Sodium Chloride for my water softener?

No. Although it consists of Potassium instead of Sodium, it still contains Chloride. There is no advantage to using Potassium Chloride as your softener salt in the Paddock Lake area. In some of the drier parts of the western U.S., crops are regularly irrigated with treated effluent wastewater. Certain crops are sensitive to sodium, and in those areas, they are promoting the use of Potassium Chloride over Sodium Chloride.

HARD WATER

What makes hard water hard?

Rainwater that falls is "soft". It does not contain any minerals. As it percolates through the soil, water dissolves minerals which can include calcium and magnesium. Water with substantial amounts of calcium and magnesium is referred to as "hard water".

How do you measure hardness?

Hardness is measured in terms of grains per gallon (g/gal) or milligrams per liter (mg/l). If you were to evaporate one gallon of water that had a hardness of 5 g/gal, the residue would be equal to one-5-grain aspirin tablet. Laboratories often record hardness as mg/l or parts per million (ppm). One g/gal hardness is equal to 17.1 mg/l of hardness. In the example above, 5 g/gal equals 85.5 mg/l hardness. Water that is 10g/gal or more is considered very hard.

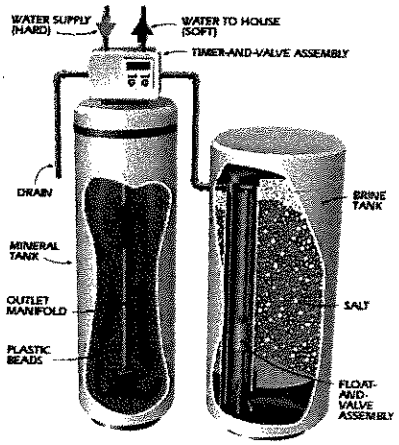
What is the problem with hard water?

The minerals in hard water can be deposited as scale on pipes and in hot water heaters. They also chemically interact with soaps and detergents and make them less efficient. For example, it takes 50% to 75% less detergent to clean laundry in soft water than hard water.

Why is my water hard?

The hardness of water from the wells in Paddock Lake are typically between 18 to 30 g/gal. Various minerals that are pumped from private water wells make our water hard.

WATER SOFTENERS

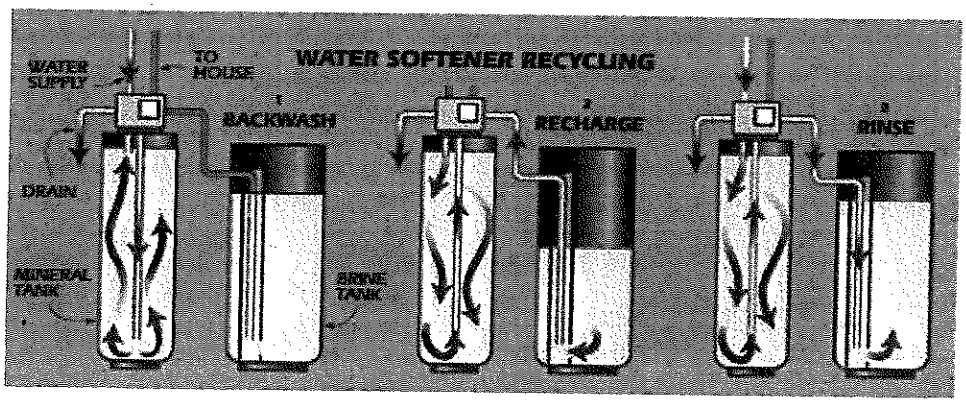


How is water Softened?

Home water softeners have two tanks: a mineral tank that contains resin in the form of small beads, and a brine tank which holds the sodium salt chloride (salt) solution. As water flows through the mineral tank, the hard minerals, magnesium (Mg++) and calcium (Ca++) ions, replace sodium (Na+) ions on the resin. This process is called ion exchange. The water that flows out is considered "soft" because sodium ions do not build up on pipes as lime or interfere with detergents and soaps.

What is the Regeneration Cycle?

Eventually, the resin reaches its limit as to how much calcium and magnesium it can hold. At this point, the resin is flushed with a strong brine solution from the brine tank. Because of its high salt concentration, the brine washes off the calcium and magnesium and replaces them with sodium. The minerals and brine wash go down the drain and into the sewer system. New salt must be added regularly to the brine tank to replace the salt that is used to regenerate the resin. The regeneration cycle can be initiated by a timer or by demand. A timer regulated softener regenerates the resin after a fixed amount of time regardless of how much water is used. A demand initiated regeneration (DIR) softener either tracks the amount of water used or utilizes a hardness sensor to indicate the resin is near capacity and needs to be regenerated. A DIR softener is the more efficient softener in terms of salt and water usage.



1. The back wash phase removes dirt from the mineral tank.

2. Recharging the mineral tank with sodium from the brine solution displaces calcium and magnesium, which is washed down the drain.

3. The final phase rinses the mineral tank with fresh water and loads the brine tank so it is ready for the next cycle.

Road Salt

How much chloride comes from road de-icing?

Road salt used to de-ice streets is also a source of chloride.

The road salt dissolves and enters the ground water; this ground water enters the Village sanitary sewer collection system through small cracks and joints of the sewer pipes. From the winter of 2001 to 2003 the Village applied 767 tons of road salt. During the 2010 to 2013 winter seasons the Village has reduced its use of road salt using 659 tons of salt.

The Village Administrator and Village Board anticipates lowering road salt use in the winters to come by 30% by upgrading existing equipment and training staff in the proper application of road salt.

What Can I Do?

Check to see how your softener is calibrated. Some softeners are preset for the highest hardness setting at the factory. This setting may be as hard as 30 grains. Reset the hardness to 20 grains.

Soften only water used inside the home. Do not treat the outside hose faucets.

Check the timer. When was it last adjusted? Many of us move into a house or purchase a water softener and never check it again. Children move out or other factors come into play that affects the amount of water we use. If your softener is regulated by a timer, you may be able to increase the interval between regeneration cycles without affecting the water quality. Increase the time by one day and see if there is any effect on dish washing and laundry during the next month.

If you are replacing your old softener, replace it with a softener that regenerates based on a meter or a sensor. The Benefits to you are a substantial cost savings from your salt and water usage reduction, with the added benefit that you are helping to protect our environment right here in the Village of Paddock Lake.

Discharge of Softener

Under the State of Wisconsin plumbing code and the Village of Paddock Lake code the by-pass water from a softener may be discharge to a clear water sump pump or to the surface of the ground provided a nuisance from the discharge water is not created.

Together the residents, Village Board and the Village Staff can avert the need to construct an expensive sewer treatment plant micro filter and prevent future increases to sewer user fees.

If Village households could reduce their softener salt use by as little as $1/4^{th}$ of a bag (10 lbs.) per month the Village sewer treatment plant could see a reduction of chloride by 415 pounds per day.

For Assistance or Questions:

Please Contact the Village of Paddock Lake Administrator at 262-843-2713

Paddock Lake sets low-salt diet

Village seeks to limit chloride entering wastewater facility

BY JILL TAYNE ROZELL
jrozell@kenoshanews.com

PADDOCK LAKE — Paddock Lake will continue to operate under a "low-salt diet" this snowplowing season, Administrator Tim Popanda said.

But he doesn't anticipate residents will complain.

"Not like one would think," Popanda said. "Our residents have accepted we are going to use less salt."

The effort to reduce the amount of salt used on roads is part of a larger goal to reduce the amount of chloride that enters the village water treatment plant. The plant discharges into Brighton Creek, which leads to the Des Plaines River.

Like in many municipalities, new permit requirements have lowered the chloride discharge limit, Popanda said. The previous limit was 720 mg per liter for Paddock Lake, compared to 570 mg per liter under the new requirement.

In order to meet the new requirement, the village not only instituted the new low-salt policy on roads, but also asked residents to do their part. Popanda said road salt accounts for 20 percent of the chloride that enters the treatment facility. Chloride from household water softeners accounts for 70 percent.

Avoiding expense

A letter was sent to residents that explained if the village was unsuccessful in meeting the new limit, it could be forced by the Wisconsin Department of Natural Resources and the Environmental Protection Agency to make expensive upgrades to the plant that would also increase operational costs.

The village also worked with local businesses and Central High School to get the word out about the need to reduce chloride. The school did install a new softener system with an automatic timer and brine regeneration system.

"Technology to remove chloride at the treatment plant is available, but is very costly," Popanda said. "It would involve microfiltration and reverse osmosis, which are the same treatment processes used to produce pure water used in laboratories."

Based on the size of the village treatment plant, Popanda said it is estimated the cost to construct a microfilter would be between $2.2 million and $3.6 million, with annual operating costs of $165,000 to $170,000 per year.

The associated debt payments and operational costs would add between $44 and $69 per household per quarter. This would increase the quarterly sewer bill from $210 to between $255 and $279, Popanda said.

Changing habits

Residents responded by changing their habits and giving their water softeners some needed attention.

In the last 12 months, Popanda said residents have reduced the household chloride load into the treatment plan by 300,000 pounds.

"The first year out we were a success," Popanda said. "All indications are we are going to meet it again."

Part of continuing this effort includes a commitment to maintain the low-salt road plan put in place last year.

"We salt the roads; don't get me wrong," Popanda said. "But until you try it, you don't know how little salt you need."

Instead, the village uses a mix of 50 percent salt and 50 percent traction-increasing stone, he said. It also allows the sun to do most of the work on roads with a southern exposure.

Also, only primary collector streets and emergency routes are plowed to bare pavement. Collector streets are roads that connect to Highway 50 or Highway K. For the most part, Popanda said, village residents are only one or two blocks away from collector streets.

Making a difference

This change made a significant difference, Popanda said. The village used about 1,000 pounds of salt per lane mile during the 2012-13 snowplowing season.

During the 2014-15 season — one of the harshest on record with almost double the salt events over the previous year — the village used

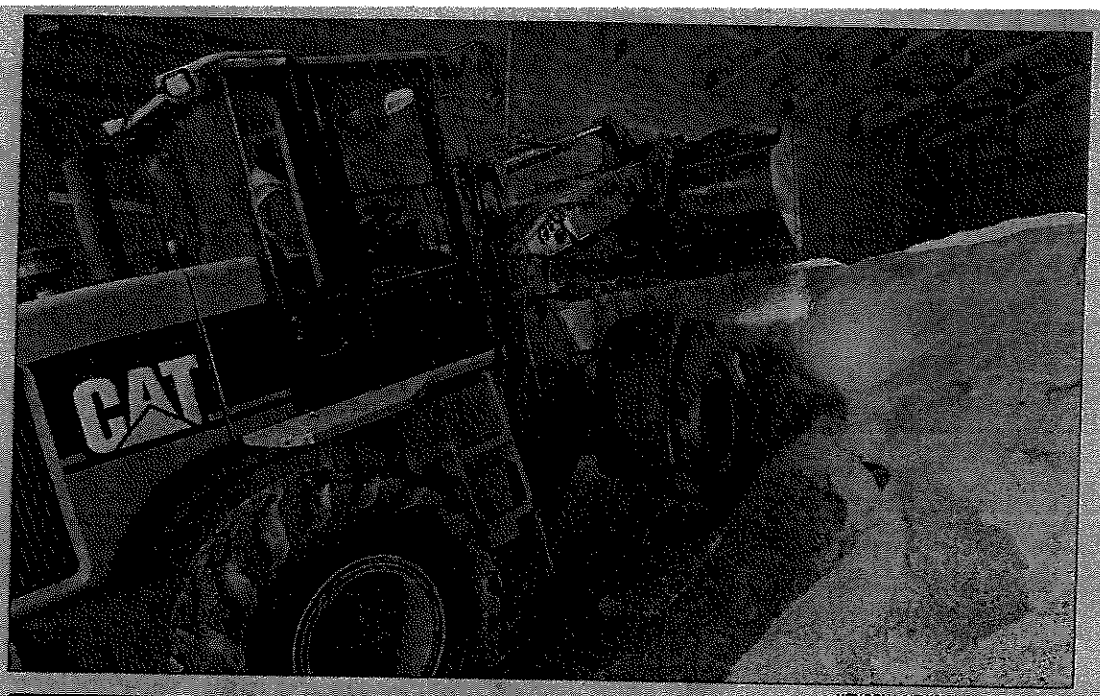
Video footage

Paddock Lake public works department emp stone for use in very cold winter road condi going into its wastewater treatment plant.

What can you do?

Homeowners can help reduce the amount of chloride that enters treatment plants and the environment by taking a few simple steps:

- Check to see how the water softener is calibrated. Some softeners are preset for the highest hardness setting at the factory. Reset the hardness to 20 grains.
- Soften only water used inside the home. Do not treat the outside hose faucets.
- Check the timer. It may have been set when more people lived in the home. If the softener is regulated by a timer, the interval between regeneration cycles may be able to be increased without affecting the water quality.
- When replacing an old softener, replace it with a softener that regenerates based on a meter or a sensor.
- Under the state plumbing code and many municipal codes, the bypass water from a softener may be discharged to a clear water sump pump or to the surface of the ground provided a nuisance from the discharge water is not created. Check with the local municipality.



KENOSHA NEWS PHOTO BY BILL SIEL

Video footage
From the Kenosha News Video

Paddock Lake public works department employee Greg Glaze blends road salt with birdseye stone for use in very cold winter road conditions. The mix will help the village limit chloride going into its wastewater treatment plant.

What can you do?

Homeowners can help reduce the amount of chloride that enters treatment plants and the environment by taking a few simple steps:

- Check to see how the water softener is calibrated. Some softeners are preset for the highest hardness setting at the factory. Reset the hardness to 20 grains.
- Soften only water used inside the home. Do not treat the outside hose faucets.
- Check the timer. It may have been set when more people lived in the home. If the softener is regulated by a timer, the interval between regeneration cycles may be able to be increased without affecting the water quality.
- When replacing an old softener, replace it with a softener that regenerates based on a meter or a sensor.
- Under the state plumbing code and many municipal codes, the bypass water from a softener may be discharged to a clear water sump pump or to the surface of the ground provided a nuisance from the discharge water is not created. Check with the local municipality.

routes are plowed to bare pavement. Collector streets are roads that connect to Highway 50 or Highway K. For the most part, Popanda said, village residents are only one or two blocks away from collector streets.

Making a difference

This change made a significant difference, Popanda said. The village used about 1,000 pounds of salt per lane mile during the 2012-13 snowplowing season.

During the 2014-15 season — one of the harshest on record with almost double the salt events over the previous year — the village used only 400 pounds of salt.

Village engineer Jim Kleinschmidt said the measures taken in Paddock Lake are being shared with other municipalities through the Wisconsin Wastewater Association.

He credits Popanda with getting all the partners to work together on a common goal.

"We did a statewide presentation on this program," Kleinschmidt said. "This has provided a valuable model for other small communities to follow."

Obituaries

For the most current obituaries and to view condolences, visit kenoshanews.com

Julia Caroline Covelli

1920 - 2015

Julia Caroline Covelli, 95, of Kenosha passed away peacefully at her residence surrounded by her family.

Julia was born April 12, 1920, in Kenosha to the late Simone and Amelia (Asta) Costanzo. Julia was a lifelong resident and educated in local schools graduating from Mary D. Bradford.

On Aug. 17, 1940, she married Bennie J. Covelli, at Our Lady of Mount Carmel Church, celebrating 68 years of marriage.

Julia worked at Jockey International, then Coopers Factory in the sewing room, retiring in 1982, from the shipping department.

Julia's life revolved around her family and Bennie's sporting schedules. She loved cooking and feeding her guests around the kitchen table, insisting you have

Paddock Lake Report

Free

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Paddock Lake, Wisconsin 53168 FRIDAY, JAN. 31, 2014 Vol. 11 No. 13 mykenoshacounty.com

•DNR permit

(Continued from front page)

which causes problems in the environment. Freshwater streams and lakes contain low levels of naturally occurring salts, including chloride. These salts are essential to aquatic organisms. High concentrations, however, are harmful to aquatic life.

The salt that enters a body of water sinks to the bottom and doesn't dissolve. Fish will not spawn in areas of high chloride concentration. The high concentration of salt also affects the fish's ability to process oxygen, and they die.

Some road salt also ends up in the wastewater effluent. The snowmelt and rains that occur in spring takes the chloride into the shallow groundwater. That groundwater can enter the sewer system through small cracks in the pipes and in joints. Chloride added this way pushes the amount of chloride beyond amounts considered acceptable to the DNR. And some road salt ends up in the lake through runoff during the spring snowmelts and rains.

on the roads for driver safety, cost cutting and environment protection. (see Safety first in Paddock Lake) Chloride that comes to the village treatment plant passes through to Brighton Creek and eventually to the Des Plains River. About 1450 pounds of salt pass the village wastewater treatment plant each day.

As village administrator Tim Popanda researched the issue, he discovered that one community found it take 20 cents to add a pound of salt to the water softener and $5 to remove it at the treatment plant. If the village isn't able to reduce the amount of chloride in the wastewater discharge, the other available option is to have a filter installed.

It would cost the village between $2.2 million and $3.6 million to construct and would have an annual operations cost of $120,000 to $170,000. Sewer users would see an additional $44 to $70 added to quarterly bills.

Popanda said the village doesn't want to see that happen, so residents are being tested for hardness," he said. "If you use a service, they will test it for you and make sure your softened is set at the right level. If you handle it yourself, hardware stores can help with the testing."

Once you discover how hard you water actually is, Popanda suggests that you check out the manual that came with the softener and make sure you have the softener set at the right level. If its set too high and you adjust that setting, you will use less salt and save a little money that way. And you might just help the village avoid a costly fix that will have everyone paying more.

The village is also calling on commercial water users. Popanda recently met with central High School administrator Dr. Scott Pierce to discuss how much chloride the school puts into the water system and ways to lower the amount. The village also has requested cooperation from other commercial and institutional users.

You can visit or call the village hall for more infor-

DNR permit limits create a challenge

By Gail Peckler-Dziki
CORRESPONDENT

The new Department of Natural Resource (DNR) permit for the Paddock Lake wastewater treatment plant has some new, tighter restrictions for the amount of chloride that Paddock Lake can discharge in its wastewater into Brighton Creek. That amount has changed from 620 mg/liter to 570 mg/liter.

Chloride is one of two components of sodium, known as either table or rock salt. When salt dissolves in water, it separates in sodium or chloride ions.

Soaps, detergents and other cleaning products and food are sources that contribute small amounts of chloride into the wastewater treatment plant. Significant amounts of salt come from self-regenerating water softeners.

Wastewater treatment plants are not equipped to remove chloride.

See DNR PERMIT, Page 2

Central helps Paddock Lake clean up environment

2/7/2011

By Gail Peckler-Dziki
CORRESPONDENT

Tim Popanda recently spent some time with Westosha Central District Administrator Dr. Scott Pierce, talking about how much chloride the district puts into the village's wastewater treatment plant., The duo discussed ways to cut that down.

Currently, Central is working with Nexus Solutions to keep moving forward on upgrades and improvements to different systems within the district. In 2009, Central made $461,000 worth of energy efficient improvements to the building. The district expected to recoup that cost within five years. The school has seen a $499,000 reduction in electric and gas expenses, ahead of the expected schedule.

Pierce and the school board plan to continue that trend and improving the water softening system is part of that plan.

Pierce said that the replacement system would recirculate discharge and reuse the brine. That may not save a huge amount of money, but it might allow the school to meet Department of Natural Resource (DNR) restrictions for how much chloride can be released.

Spot testing done by the when the chloride in the school's discharge peaked well beyond DNR limits. Pierce plans to have a long-term testing program to track the discharge when the new system is in place. The replacement is scheduled for this summer.

The DNR permits granted to the wastewater treatment plant lasts for five years. Popanda said that the village and shown a decrease in the amount of chloride every time.

Unless that trend continues, the village could pay big bucks, between $1 and $3 million, for a filtration system that would cost between $120,000 to $170,000 annually to operate. The school would put between $16,000 and $25,000 into that annual kitty. Pierce would rather not see school tax dollars float down the creek.

If the new system doesn't get those numbers down. Pierce and Popanda discussed another possibility. The school could put in holding tanks and have the water pumped out and into Pheasant Run landfill.

The equipment cost is estimated at $3400 and annual costs would be determined by volume of [illegible]

VILLAGE OF PADDOCK LAKE, WISCONSIN
ANNUAL CHLORIDE REPORT 2018

Annual Chloride Mass Discharge Computations

Month	Sample Date	Chloride Conc (mg/l)	Effluent Flow (MGD)	Daily Chloride Mass (lbs/day)	Average Chloride Mass (lbs/day)	Days in Month	Monthly Chloride Mass (lbs/month)
	1/22	420	0.5673	1987.1			
Jan-18	1/23	380	0.7089	2246.6			
	1/24	360	0.4884	1466.4			
	1/25	380	0.4014	1272.1	1743.1	31	54035.1
	2/25	430	0.595	2133.8			
Feb-18	2/26	430	0.5755	2063.9			
	2/27	450	0.5117	1920.4			
	2/28	450	0.5051	1895.6	2003.4	28	56095.9
	3/12	490	0.3875	1583.6			
Mar-18	3/13	480	0.3603	1442.4			
	3/14	490	0.3488	1425.4			
	3/15	480	0.3424	1370.7	1455.5	31	45120.6
	4/23	380	0.6384	2023.2			
Apr-18	4/24	370	0.5595	1726.5			
	4/25	410	0.5108	1746.6			
	4/26	450	0.4723	1772.5	1817.2	30	54516.7
	5/20	350	0.6419	1873.7			
May-18	5/21	260	0.9803	2125.7			
	5/22	230	1.341	2572.3			
	5/23	250	0.8807	1836.3	2102.0	31	65161.6
	6/10	380	0.4641	1470.8			
Jun-18	6/11	350	0.4464	1303.0			
	6/12	390	0.4523	1471.2			
	6/13	400	0.5026	1676.7	1480.4	30	44412.7
	7/9	430	0.3458	1240.1			
Jul-18	7/10	430	0.3127	1121.4			
	7/11	440	0.2979	1093.2			
	7/12	430	0.2794	1002.0	1114.2	31	34539.2
	8/13	380	0.2896	917.8			
Aug-18	8/14	390	0.2443	794.6			
	8/15	400	0.2367	789.6			
	8/16	400	0.2403	801.6	825.9	31	25603.5
	9/3	270	1.1022	2481.9			
Sep-18	9/4	210	0.9424	1650.5			
	9/5	180	0.5642	847.0			
	9/6	210	0.5653	990.1	1492.4	30	44771.2
	10/19	290	0.3929	950.3			
Oct-18	10/16	280	0.349	815.0			
	10/21	300	0.3383	846.4			
	10/22	320	0.3418	912.2	881.0	31	27310.0
	11/5	310	0.7266	1878.6			
Nov-18	11/6	280	0.9450	2206.8			
	11/7	190	0.7138	1131.1			
	11/8	220	0.5669	1040.1	1564.1	30	48488.3
	12/9	320	0.4898	1307.2			
Dec-18	12/10	320	0.4562	1217.5			
	12/11	350	0.4569	1333.7			
	12/12	330	0.4078	1122.3	1245.2	31	37355.4
Annual Total LBS							537410.3
Annual Average LBS/Day							1472.4

VILLAGE OF PADDOCK LAKE, WISCONSIN
ANNUAL CHLORIDE REPORT 2017
WPDES PERMIT # WI-0025062-08-0

Annual Chloride Mass Discharge Computations

Month	Sample Date	Chloride Conc (mg/l)	Effluent Flow (MGD)	Daily Chloride Mass (lbs/day)	Average Chloride Mass (lbs/day)	Days in Month	Monthly Chloride Mass (lbs/month)
	1/23	370	0.693	2138.5			
Jan-17	1/24	390	0.6538	2126.5			
	1/25	410	0.8007	2737.9			
	1/26	420	0.7433	2603.6	2401.6	31	74450.8
	2/13	470	0.3766	1476.2			
Feb-17	2/14	470	0.3701	1450.7			
	2/15	470	0.3128	1226.1			
	2/16	470	0.3201	1254.7	1351.9	28	37854.3
	3/20	430	0.5439	1950.5			
Mar-17	3/21	430	0.4847	1738.2			
	3/22	440	0.4521	1659.0			
	4/24	360	0.453	1360.1			
Apr-17	4/25	370	0.4528	1397.3			
	4/26	390	0.6022	1958.7			
	4/1	410	0.555	1897.8	1653.5	30	49603.7
	5/22	340	0.4732	1341.8			
May-17	5/23	340	0.4215	1195.2			
	5/24	360	0.6431	1930.8			
	5/25	340	0.5739	1627.4	1523.8	31	47237.8
	6/12	440	0.3056	1121.4			
Jun-17	6/13	440	0.2954	1084.0			
	6/14	440	0.2855	1047.7			
	6/15	470	0.2843	1114.4	1091.9	30	32756.2
	7/23	300	0.5719	1430.9			
Jul-17	7/24	310	0.5237	1354.0			
	7/25	310	0.4853	1254.7			
	7/26	300	0.4307	1077.6	1279.3	31	39658.1
	8/14	400	0.3021	1007.8			
Aug-17	8/15	400	0.3364	1122.2			
	8/16	390	0.2928	952.4			
	8/17	400	0.3301	1101.2	1045.9	31	32423.0
	9/18	460	0.2281	875.1			
Sep-17	9/19	470	0.2099	822.8			
	9/20	470	0.2333	914.5			
	9/21	460	0.2416	926.9	884.8	30	26544.1
	10/16	210	0.4593	804.4			
Oct-17	10/17	230	0.3366	645.7			
	10/18	270	0.2996	674.6			
	10/19	300	0.2769	692.8	704.4	31	21835.8
	11/13	390	0.3163	1028.8			
Nov-17	11/14	380	0.2799	887.1			
	11/15	380	0.3296	1044.6			
	11/16	370	0.3402	1049.8	1002.6	30	31079.2
	12/11	430	0.2687	963.6			
Dec-17	12/12	430	0.2686	963.3			
	12/13	430	0.2707	970.8			
	12/14	430	0.243	869.7	941.8	31	28254.8
Annual Total 2017 lbs							475388.3
Annual Average LBS/Day							1302.4

VILLAGE OF PADDOCK LAKE, WISCONSIN
ANNUAL CHLORIDE REPORT 2016
WPDES PERMIT # WI-0025062-08-0

Annual Chloride Mass Discharge Computations

Month	Sample Date	Chloride Conc (mg/l)	Effluent Flow (MGD)	Daily Chloride Mass (lbs/day)	Average Chloride Mass (lbs/day)	Days in Month	Monthly Chloride Mass (lbs/month)
	1/18	380	0.4194	1329.2			
Jan-16	1/19	380	0.4024	1275.3			
	1/20	380	0.3905	1237.6			
	1/21	390	0.3784	1230.8	1268.2	31	39314.2
	2/22	370	0.4504	1389.8			
Feb-16	2/23	370	0.4837	1492.6			
	2/24	380	0.4311	1366.2			
	2/25	390	0.4701	1529.0	1444.4	29	40444.1
	3/21	390	0.4669	1518.6			
Mar-16	3/22	410	0.4531	1549.3			
	3/23	420	0.5085	1781.2			
	3/24	420	1.1009	3856.2	2176.3	31	67466.7
	4/24	440	0.4176	1532.4			
Apr-16	4/25	440	0.4228	1551.5			
	4/26	440	0.3897	1430.0			
	4/27	450	0.4116	1544.7	1514.7	30	45440.3
	5/23	430	0.5627	2018.0			
May-16	5/24	430	0.2775	995.2			
	5/25	450	0.360	1351.1			
	5/26	450	0.3427	1286.2	1412.6	31	43790.3
	6/19	450	0.3183	1194.6			
Jun-16	6/20	450	0.2961	1111.3			
	6/21	460	0.2732	1048.1			
	6/22	470	0.2661	1043.1	1099.3	30	32977.5
	7/11	480	0.2276	911.1			
Jul-16	7/12	490	0.2329	951.8			
	7/13	480	0.2349	940.4			
	7/14	480	0.3092	1237.8	1010.3	31	31318.0
	8/19	420	0.2687	941.2			
Aug-16	8/20	420	0.3166	1109.0			
	8/21	450	0.2607	978.4			
	8/22	440	0.2327	853.9	970.6	31	30089.5
	9/12	370	0.2609	805.1			
Sep-16	9/13	380	0.2564	812.6			
	9/14	410	0.241	824.1			
	9/15	420	0.2513	880.3	830.5	30	24915.0
	10/9	430	0.2537	909.8			
Oct-16	10/10	410	0.224	765.9			
	10/11	440	0.2494	915.2			
	10/12	440	0.2803	1028.6	904.9	31	28051.5
	11/14	430	0.3055	1095.6			
Nov-16	11/15	440	0.223	818.3			
	11/16	460	0.2754	1056.5			
	11/17	460	0.2727	1046.2	1004.2	30	31128.9
	12/12	400	0.3047	1016.5			
Dec-16	12/13	410	0.3065	1048.0			
	12/14	440	0.2949	1082.2			
	12/15	430	0.296	1061.9	1052.1	31	31564.2

Annual Total 2016 lbs 446500.4

Annual Average LBS/Day 1223.3

VILLAGE OF PADDOCK LAKE, WISCONSIN
ANNUAL CHLORIDE REPORT 2015
WPDES PERMIT # WI-0025062-08-0

Annual Chloride Mass Discharge Computations

Month	Sample Date	Chloride Conc (mg/l)	Effluent Flow (MGD)	Daily Chloride Mass (lbs/day)	Average Chloride Mass (lbs/day)	Days in Month	Monthly Chloride Mass (lbs/month)
	1/12	440	0.338	1240.3			
Jan-15	1/13	440	0.3029	1111.5			
	1/14	440	0.2882	1057.6			
	1/15	460	0.2974	1140.9	1137.6	31	35265.4
	2/16	460	0.2855	1095.3			
Feb-15	2/17	450	0.268	1005.8			
	2/18	460	0.2769	1062.3			
	2/19	460	0.2978	1142.5	1076.5	28	30141.1
	3/16	420	0.6292	2204.0			
Mar-15	3/17	460	0.5847	2243.1			
	3/18	510	0.5047	2146.7			
	3/19	460	0.4782	1834.6	2107.1	31	65319.8
	4/13	360	0.63	1891.5			
Apr-15	4/14	380	0.5236	1659.4			
	4/15	400	0.5236	1746.7			
	4/16	430	0.4577	1641.4	1734.8	30	52042.8
	5/11	430	0.5366	1924.4			
May-15	5/12	420	0.4754	1665.2			
	5/13	420	0.4101	1436.5			
	5/14	450	0.4045	1518.1	1636.0	31	50717.3
	6/15	290	1.479	3577.1			
Jun-15	6/16	230	0.8575	1644.9			
	6/17	240	0.7138	1428.7			
	6/18	280	0.5701	1331.3	1995.5	30	59865.0
	7/13	440	0.37	1357.8			
Jul-15	7/14	420	0.298	1043.8			
	7/15	430	0.2842	1019.2			
	7/16	430	0.457	1638.9	1264.9	31	39212.5
	8/10	430	0.2495	894.8			
Aug-15	8/11	420	0.2264	793.0			
	8/12	430	0.246	882.2			
	8/13	440	0.2113	775.4	836.3	31	25926.7
	9/20	250	0.6382	1330.6			
Sep-15	9/21	270	0.5003	1126.6			
	9/22	300	0.4184	1046.8			
	9/23	330	0.3895	1072.0	1144.0	30	34320.3
	10/12	450	0.2639	990.4			
Oct-15	10/13	440	0.239	877.0			
	10/14	450	0.3089	1159.3			
	10/15	430	0.2362	847.1	968.5	31	30022.1
	11/16	390	0.3079	1001.5			
Nov-15	11/17	400	1.003	3346.0			
	11/18	400	0.8448	2818.3			
	11/19	250	0.5878	1225.6	2097.8	30	65032.6
	12/14	380	1.243	3939.3			
Dec-15	12/15	220	0.9005	1652.2			
	12/16	230	0.8154	1564.1			
	12/17	260	0.669	1450.7	2151.6	31	64547.3
Annual Total 2015 lbs							552413.0
Annual Average LBS/Day							1513.5

VILLAGE OF PADDOCK LAKE, WISCONSIN
ANNUAL CHLORIDE REPORT 2014
WPDES PERMIT # WI-0025062-08-0

Annual Chloride Mass Discharge Computations

Month	Sample Date	Chloride Conc (mg/l)	Effluent Flow (MGD)	Daily Chloride Mass (lbs/day)	Average Chloride Mass (lbs/day)	Days In Month	Monthly Chloride Mass (lbs/month)
Jan-14	1/13	830	0.507	3509.6			
	1/14	840	0.428	2998.4			
	1/15	900	0.3892	2921.3			
	1/16	470	0.3378	1324.1	2688.3	31	83338.8
Feb-14	2/9	450	0.2807	1053.5			
	2/10	440	0.2475	908.2			
	2/11	450	0.2505	940.1			
	2/12	450	0.2539	952.9	963.7	28	26982.9
Mar-14	3/9	600	0.3659	1831.0			
	3/10	650	0.7919	4292.9			
	3/11	730	0.8904	5420.9			
	3/12	740	0.7154	4415.2	3990.0	31	123689.6
Apr-14	4/6	580	0.4607	2228.5			
	4/7	580	0.4231	2046.6			
	4/8	600	0.4163	2083.2			
	4/9	620	0.413	2135.5	2123.5	30	63703.7
May-14	5/11	490	0.4271	1745.4			
	5/12	450	1.2951	4860.5			
	5/13	270	1.2426	2798.1			
	5/14	320	0.9029	2409.7	2953.4	31	91555.7
Jun-14	6/8	490	0.4827	1972.6			
	6/9	540	0.3816	1718.6			
	6/10	580	0.5732	2772.7			
	6/11	280	1.4769	3448.9	2478.2	30	74345.4
Jul-14	7/6	360	0.524	1573.3			
	7/7	370	0.4749	1465.4			
	7/8	400	0.4676	1559.9			
	7/9	410	0.4444	1519.6	1529.5	31	47416.0
Aug-14	8/17	400	0.2904	968.8			
	8/18	410	0.313	1070.3			
	8/19	400	0.3608	1203.6			
	8/20	400	0.3429	1143.9	1096.6	31	33996.1
Sep-14	9/7	340	0.4047	1147.6			
	9/8	360	0.3684	1106.1			
	9/9	370	0.3495	1078.5			
	9/10	360	0.5791	1738.7	1267.7	30	38031.2
Oct-14	10/12	460	0.2808	1077.3			
	10/13	430	0.4974	1783.8			
	10/14	320	0.7109	1897.2			
	10/15	290	0.6053	1464.0	1555.6	31	48222.6
Nov-14	11/10	430	0.2818	1010.6			
	11/11	440	0.2959	1085.8			
	11/12	450	0.261	979.5			
	11/13	440	0.2627	964.0	1010.0	30	31309.7
Dec-14	12/14	440	0.3546	1301.2			
	12/15	430	0.3405	1221.1			
	12/16	460	0.3859	1480.5			
	12/17	450	0.3374	1266.3	1317.3	31	39518.0

Annual Total 2014 lbs	702109.8
Annual Average LBS/Day	1923.6

VILLAGE OF PADDOCK LAKE, WISCONSIN
ANNUAL CHLORIDE REPORT 2013

Annual Chloride Mass Discharge Computations

Month	Sample Date	Chloride Conc (mg/l)	Effluent Flow (MGD)	Daily Chloride Mass (lbs/day)	Average Chloride Mass (lbs/day)	Days in Month	Monthly Chloride Mass (lbs/month)
	1/14	430	0.4391	1574.7			
Jan-13	1/15	480	0.3816	1527.6			
	1/16	520	0.3776	1637.6			
	1/17	540	0.3275	1474.9	1553.7	31	48164.9
	2/11	620	0.7877	4073.0			
Feb-13	2/12	670	0.5996	3350.4			
	2/13	640	0.5571	2973.6			
	2/14	620	0.5191	2684.2	3270.3	28	91568.6
	3/11	630	1.3399	7040.1			
Mar-13	3/12	490	0.9192	3756.4			
	3/13	580	0.7725	3736.7			
	3/14	600	0.6812	3408.7	4485.5	31	139050.2
	4/8	520	0.7632	3309.8			
Apr-13	4/9	500	1.1421	4762.6			
	4/10	460	1.8148	6962.3			
	4/11	340	1.6239	4604.7	4909.9	30	147295.7
	5/13	420	0.5041	1765.8			
May-13	5/14	430	0.4514	1618.8			
	5/15	440	0.4228	1551.5			
	5/16	430	0.4377	1569.7	1626.4	31	50419.6
	6/10	470	0.3001	1176.3			
Jun-13	6/11	470	0.2931	1148.9			
	6/12	460	0.478	1833.8			
	6/13	470	0.4508	1767.0	1481.5	30	44445.5
	7/14	430	0.3370	1208.5			
Jul-13	7/15	440	0.3177	1165.8			
	7/16	440	0.3400	1247.7			
	7/17	450	0.3094	1161.2	1195.8	31	37070.0
	8/10	430	0.2722	976.2			
Aug-15	8/11	420	0.2884	1010.2			
	8/12	430	0.2777	995.9			
	8/13	440	0.2603	955.2	984.4	31	30515.3
	9/17	410	0.2704	924.6			
Sep-13	9/18	400	0.2664	888.7			
	9/19	420	0.3300	1155.9			
	9/20	420	0.2520	882.7	963.0	30	28889.6
	10/13	400	0.2456	819.3			
Oct-13	10/14	410	0.2478	847.3			
	10/15	420	0.2324	814.1			
	10/16	470	0.2200	862.4	835.8	31	25908.7
	11/11	440	0.2702	991.5			
Nov-13	11/12	440	0.2560	939.4			
	11/13	450	0.2518	945.0			
	11/14	450	0.2330	874.4	937.6	30	29065.6
	12/15	500	0.2530	1055.0			
Dec-13	12/16	490	0.2352	961.2			
	12/17	500	0.2178	908.2			
	12/18	510	0.2347	998.3	980.7	31	29420.1

Annual Total 2013 lbs	701813.8
Annual Average LBS/Day	1922.8

Facility Inputs for Lime Softening Eligibility Calculation

Facility Name: Village of Paddock Lake

WPDES Permit No.: WI-0025062-09-0 **Date:** 3/19/019

The yellow shaded cells are the minimum inputs needed to run the calculation. If the facility knows the capital cost per million gallons max and knows of additional capital costs associated with lime softening, they may input data into the green shaded cells. Supporting documentation may be required for justification for those inputs.

Treatment Plant Characteristics

Maximum Daily Production of Drinking Water Facility (gallons per day)		42,597	Input
Capital Cost per million gallons max			Input
Additional Capital Costs			Input
Total Capital Costs			Calculated
Grant Funding		$0.00	Input (assumed)
Drinking Water			
Current O&M (does not include depreciation)		70,396	Input
Current Liabilities		188,741	Input
Future O&M		123,000	Calculated
Future Capital Costs		4,950,000	Calculated
Attaching Households to Drinking Water			
Households Served current by both Wastewater and Drinking Water		280	Input
Households to be connected to Drinking Water		28	Input
Current Miles of Drinking Water Pipes		2.9	Input
Expected Pipes to be Laid		1.3	Calculated
Cost per Mile of Pipe		$1000000	Assumed
Total Cost for New Pipe		1,400,000	Calculated
Cost per Household for Hookup		$15000	Assumed
Annualized Cost for each Household hookup			Calculated

Annualized Cost for each Household Hookup (weighed by percent of households needing a hookup)			Calculated
Wastewater			
Current O&M (does not include depreciation)		510,616	Input
Current Liabilities (Debt Service)		581,372	Input
Future O&M		695,616	Calculated
Future Capital Costs		7,350,000	Calculated
Subtotal Annual Costs			Calculated
Subtotal Future Costs Annualized			Calculated
Percent of User Fees Residential		81.48	Input
Annualization Factor			Calculated
Annualized Cost			Calculated
Number of households		1328	Input
Softener Removal Charge for Households		$2000	Assumed
Annualized Cost of Softener Removal per Household			Calculated
Annualized Cost per Household			Calculated
Monthly Cost per Household			Calculated
Median Household Income		67,739	Input

Water Service Laterals

- The utility's service lateral is the pipe from the main to and through the curb stop.
- Explain all reported adjustments as a schedule footnote.
- Report in column (h) the number of utility-owned service laterals included in columns (g) which are temporarily shut off at the curb box or otherwise not in use at end of year.
- For service laterals added during the year in column (d), as a schedule footnote:
  - Explain how the additions were financed.
  - If assessed against property owners, explain the basis of the assessments.
  - If installed by a property owner or developer, explain the basis of recording the cost of the additions, the total amount and the number of service laterals recorded under this method.
  - If any were financed by application of Cz-1, provide the total amount recorded and the number of service laterals recorded under this method.
- Report service laterals separately by diameter and pipe materials.

Pipe Material (a)	Diameter (inches) (b)	First of Year (c)	Added During Year (d)	Removed or Permanently Disconnected During Year (e)	Adjustments Increase or (Decrease) (f)	End of Year (g)	Utility Owned Service Laterals Not in Use at End of Year (h)		
Other Metal	0.750	260				260			1
Other Metal	1.000	25	1			26		*	2
Other Metal	1.500	2				2			3
Other Metal	2.000	2				2			4
Utility Total		**289**	**1**			**290**			5

Water Mains

- Report mains separately by pipe material, function, diameter and either within or outside the municipal boundaries.
- Explain all reported adjustments as a schedule footnote.
- For main additions reported in column (e), as a schedule footnote:
  - Explain how the additions were financed.
  - If assessed against property owners, explain the basis of the assessments.
  - If the assessments are deferred, explain.
- Report all pipe larger than 72" in diameter in the 72" category.

			Number of Feet					
Pipe Material (a)	Main Function (b)	Diameter (inches) (c)	First of Year (d)	Added During Year (e)	Retired During Year (f)	Adjustments Increase or (Decrease) (g)	End of Year (h)	
Other Metal	Distribution	4	4,171				**4,171**	1
Other Metal	Distribution	6	8,545				**8,545**	2
Other Plastic	Distribution	6	1,801				**1,801**	3
Other Metal	Distribution	8	853				**853**	4
Total Within Municipality			**15,370**				**15,370**	5
Total Utility			**15,370**				**15,370**	6

Facility Inputs for Lime Softening Eligibility Calculation

Facility Name: _____

WPDES Permit No.: _____ **Date:** _____

The yellow shaded cells are the minimum inputs needed to run the calculation. If the facility knows the capital cost per million gallons max and knows of additional capital costs associated with lime softening, they may input data into the green shaded cells. Supporting documentation may be required for justification for those inputs.

Treatment Plant Characteristics

Maximum Daily Production of Drinking Water Facility (gallons per day)			Input
Capital Cost per million gallons max			Input
Additional Capital Costs			Input
Total Capital Costs			Calculated
Grant Funding		$0.00	Input (assumed)
Drinking Water			
Current O&M (does not include depreciation)			Input
Current Liabilities			Input
Future O&M			Calculated
Future Capital Costs			Calculated
Attaching Households to Drinking Water			
Households Served current by both Wastewater and Drinking Water			Input
Households to be connected to Drinking Water			Input
Current Miles of Drinking Water Pipes			Input
Expected Pipes to be Laid			Calculated
Cost per Mile of Pipe		$1000000	Assumed
Total Cost for New Pipe			Calculated
Cost per Household for Hookup		$15000	Assumed
Annualized Cost for each Household hookup			Calculated

Annualized Cost for each Household Hookup (weighed by percent of households needing a hookup)			Calculated
Wastewater			
Current O&M (does not include depreciation)			Input
Current Liabilities (Debt Service)			Input
Future O&M			Calculated
Future Capital Costs			Calculated
Subtotal Annual Costs			Calculated
Subtotal Future Costs Annualized			Calculated
Percent of User Fees Residential			Input
Annualization Factor			Calculated
Annualized Cost			Calculated
Number of households			Input
Softener Removal Charge for Households		$2000	Assumed
Annualized Cost of Softener Removal per Household			Calculated
Annualized Cost per Household			Calculated
Monthly Cost per Household			Calculated
Median Household Income			Input