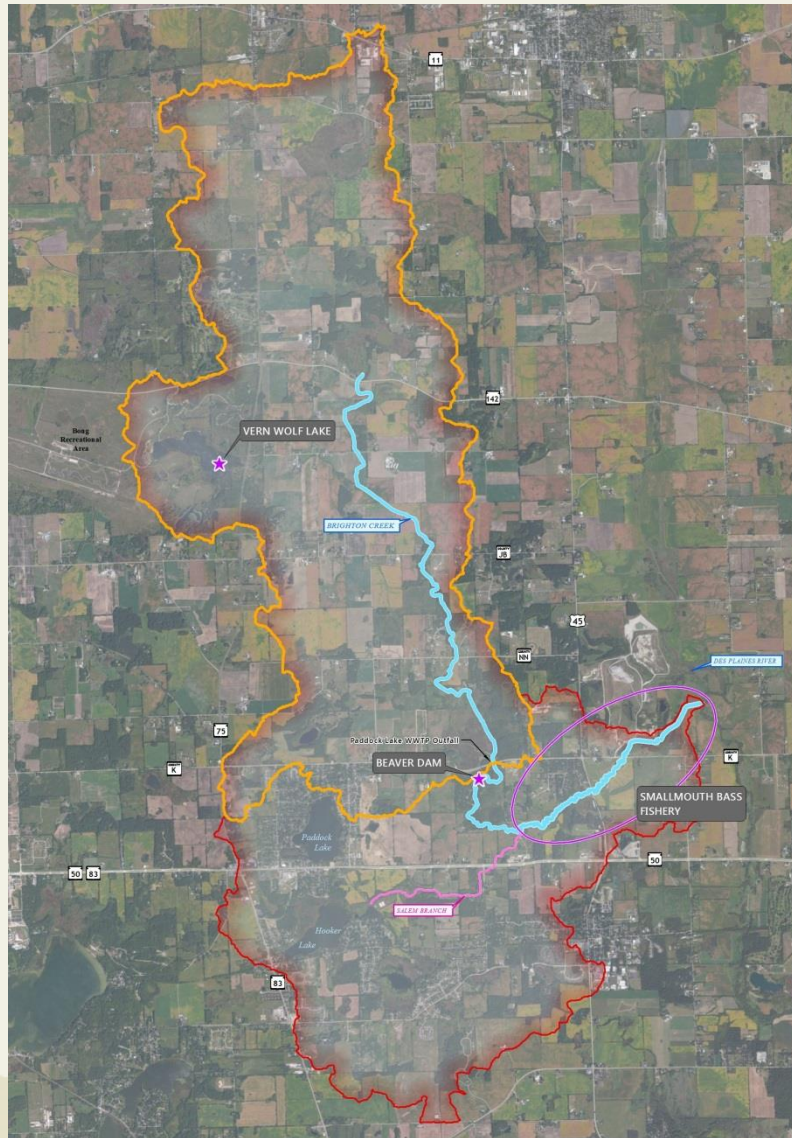


Village of Paddock Lake Proactive Approach to Effluent Chlorides Reduction

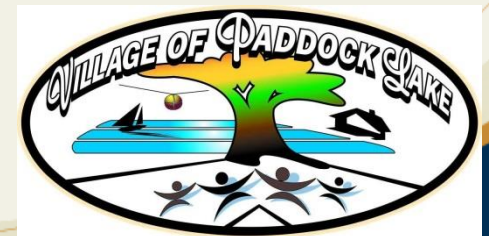
Tim Popanda, Village Administrator
James E. Kleinschmidt, P.E. ENV SP
February 26, 2015



Paddock Lake Overview



Population 3,000
High School 1,300 Students



Paddock Lake-WWTP and Brighton Creek



Design Average Flow 0.8 MGD

Chlorides Limits-Interim

612 Weekly Average-May to November

683 Weekly Average-December to April

Ultimate Limit-395 mg/L (At Criteria)



Brighton Creek



Chloride Reduction Activities

Public Education and Outreach

Good Housekeeping for Municipal Operations

Sewer System Improvement-Best Management Practices



Public Education and Outreach

Newsletters and Web Page-Residents

Business and Institutional Users-Proper Use of Deicing Materials

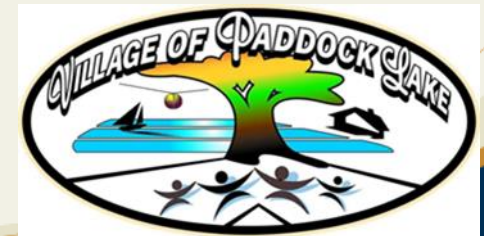
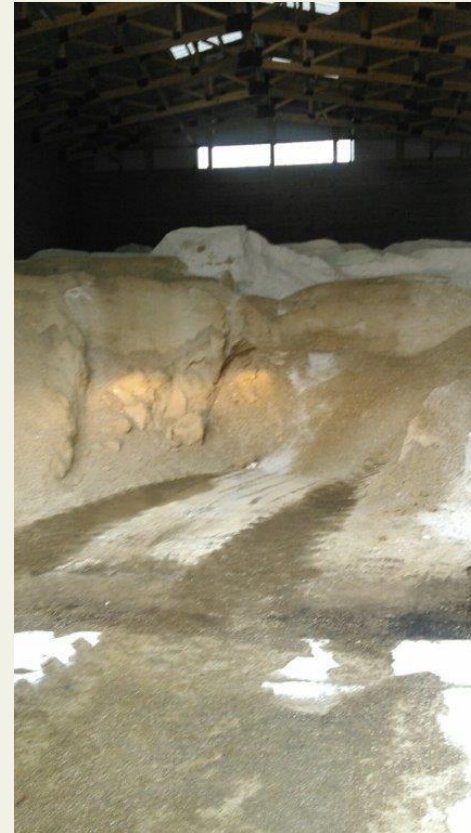
Business and Institutional Users-Efficient Water Softeners

County Highway Department-Proper Use of Deicing Materials

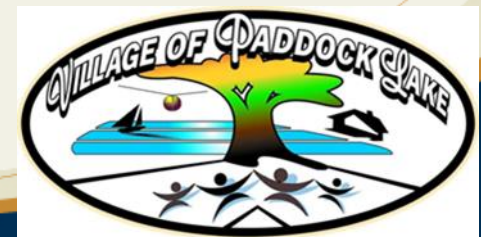
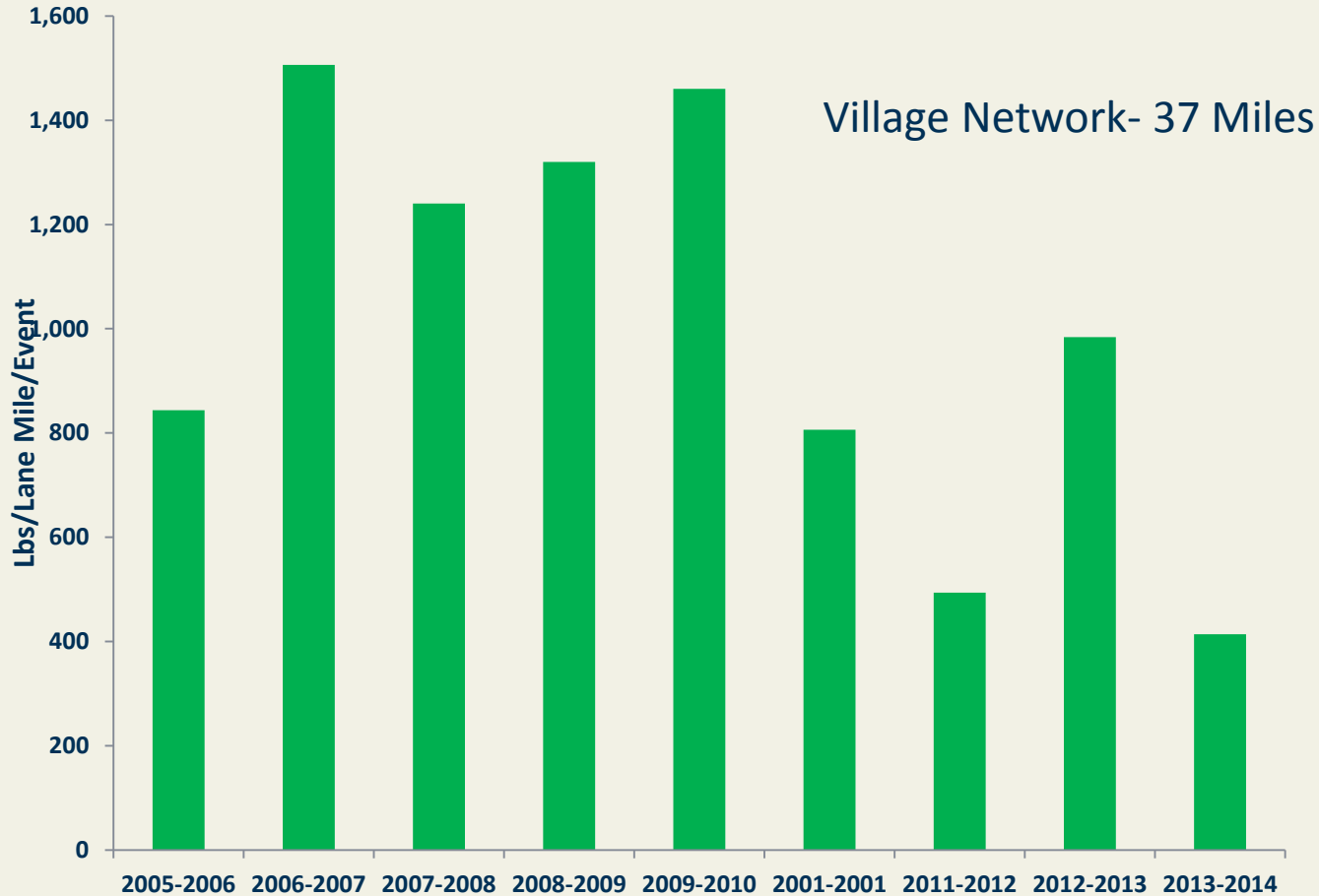


Chloride Reduction for Municipal Operations

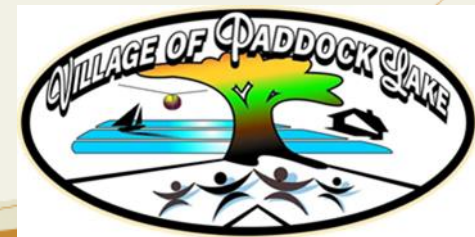
- Audit of Snow Removal Operations
 - 40 % Reduction Target
 - Plow then Salt
 - Southern Exposure Reductions
- Snow Removal and Salt Use Policy
 - Priority Zones
 - Snow Fence in Selected Locations
- Public Works Housekeeping
 - Pre-wash Cleaning (600 lbs)
- Annual Training
 - Calibrate Truck Salters
- Road Salt Additives-Mixture
 - Birds Eye Stone
 - 40 % to 50 % Ratio
- Equipment Purchases
 - Spill Guards
 - Infrared Thermometers
- County Coordination-Spring Road Cleaning



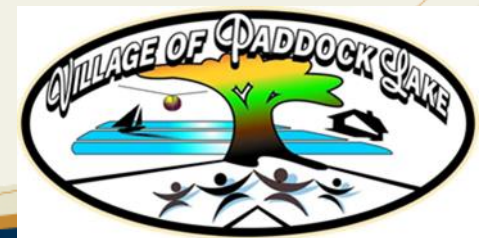
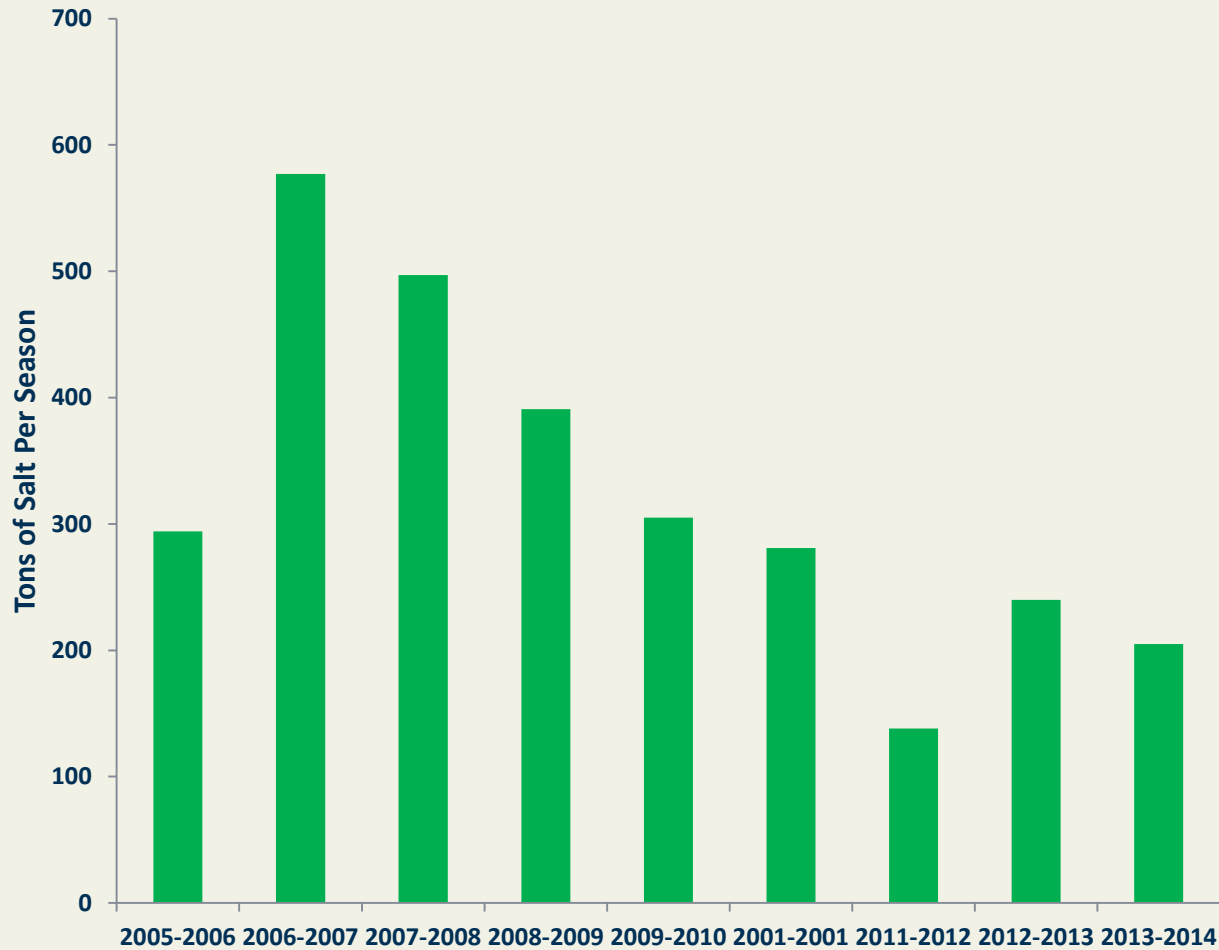
Chloride Reductions-Municipal Operations



Number of Storm Events



Salt Usage



Institutional Customers-High School

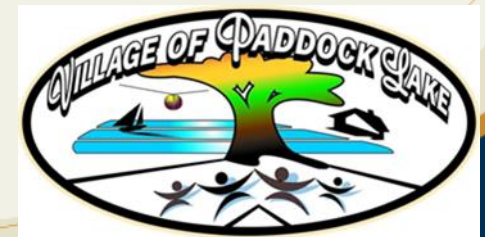


Village Population
3,000
School Census
1,300

Hardness
> 300 mg/L

Impervious Pavement
35 acres

Manual Softening Regeneration
1971 and 1992 Equipment



Investigation and Negotiation

Grab Sampling

1,523 mg/L

780 mg/L

Use of Salt 4 tons/year

Softening-Irrigation Water

School's Potential Costs-Village Reduction of Effluent Chlorides



Solution-Brine Regeneration



Automated Operation
Brine Reclaim 25 % Reduction
Cost to School-\$50,000



Culligan® Available Options
Customize your water treatment equipment for improved return on investment

To operate your facility at improved levels of efficiency and achieve accelerated ROI, customize your water treatment system with Culligan exclusive accessories:

- Brine Reclaim
- Aqua Sensor®
- Progressive Flow

Culligan exclusive accessories are part of Culligan Matrix Solutions® that combine durable and efficient equipment, systems experience, and technical experts who understand your unique requirements. From planning your system to installing your water treatment equipment, Culligan Matrix Solutions offer options that help deliver the quality of water to meet your needs.

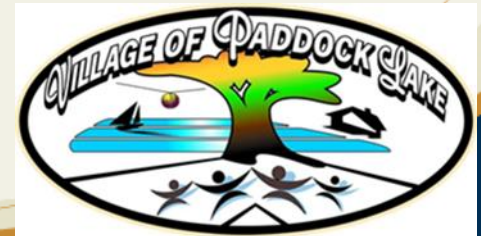
Markets Served:

- Clean
- Educational Facilities
- Food/Beverage
- Food/Beverage Production
- Food Service/Restaurants
- Hotels
- Health Care/Hospitals/Pharmaceutical
- Manufacturing
- Municipalities
- Multi-Family Housing
- Offices

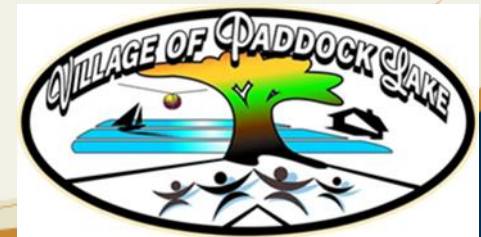
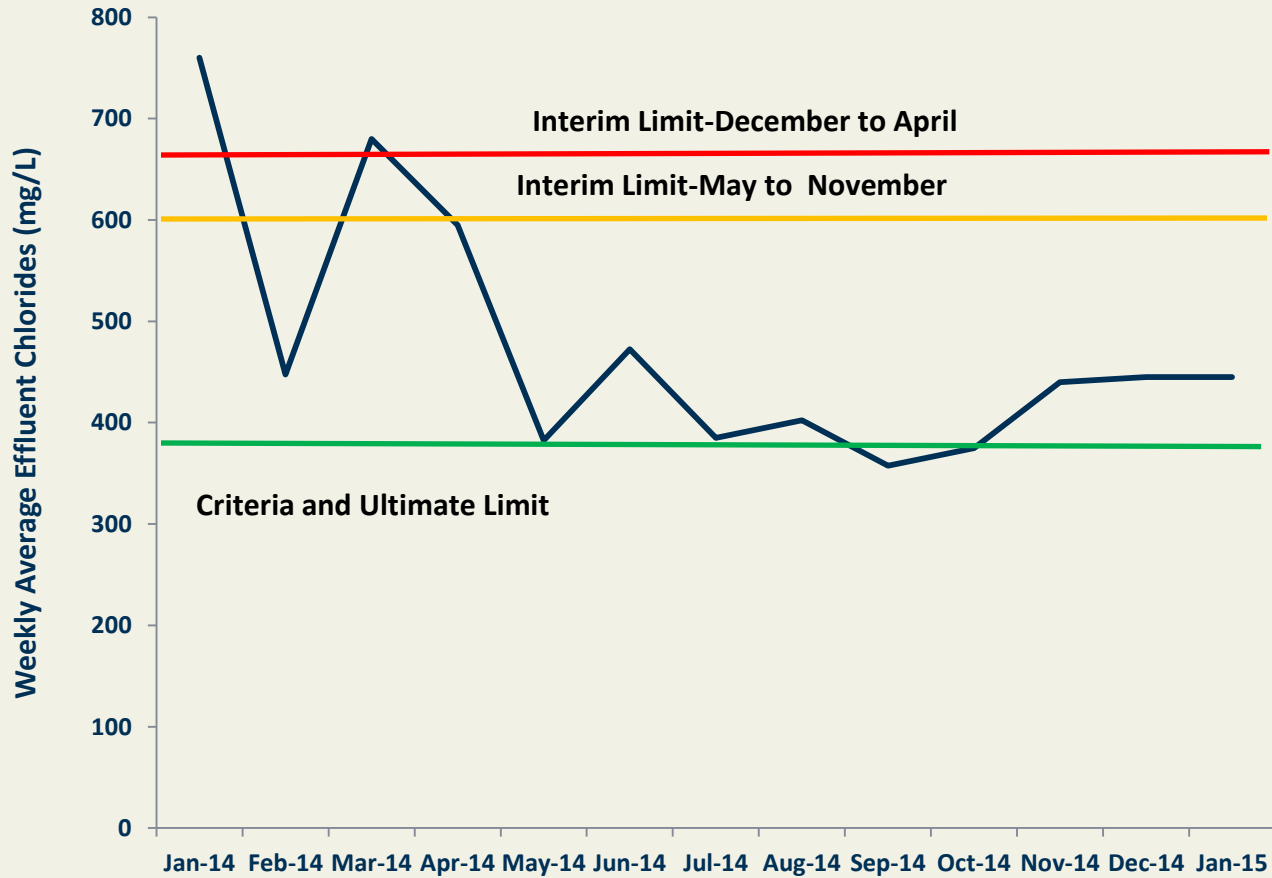
CULLIGAN MATRIX SOLUTIONS ADVANTAGES:

- Single System Integration
- Global Product Platform
- Flexible Configurations
- Quick Delivery/Easy Installation
- Exclusive Culligan Advanced Electronics
 - Historical Operating Data
 - Alarm Notifications
 - US Standard and Metric Readings
 - Wireless Remote Monitoring Options
 - Telemetry Options

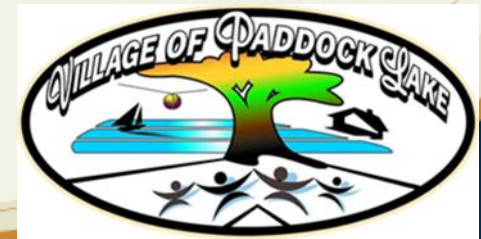
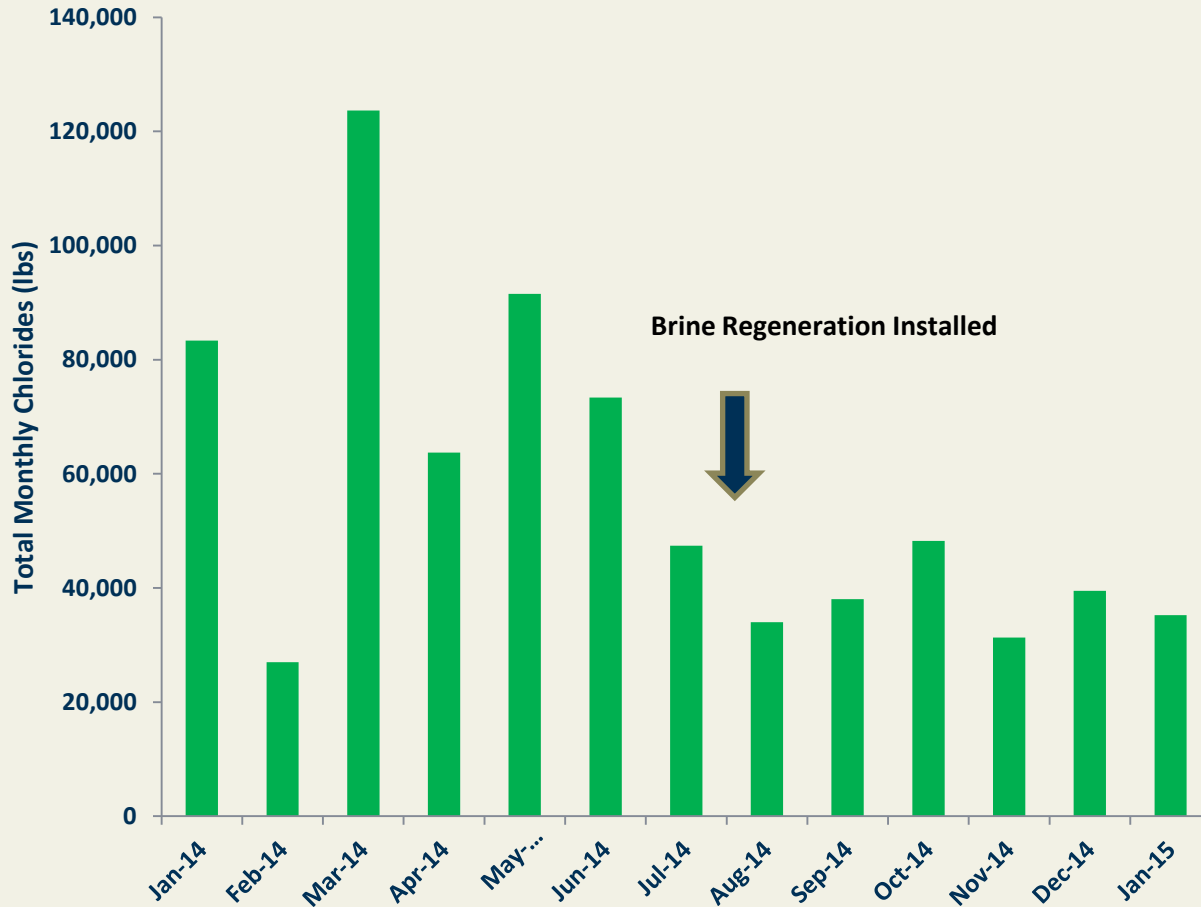
END TO END SOLUTIONS.



Effluent Chloride Concentrations



Chlorides-Monthly Mass



Lessons Learned-Proactive Approach

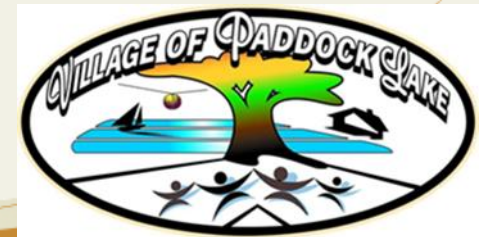
Proactive Approach Resident Communication-Costs of Future Treatment

Focus on Institutional, Commercial and Industrial Customers

Optimize De-Icing Operations

Municipal

Institutional/ Commercial/Industrial



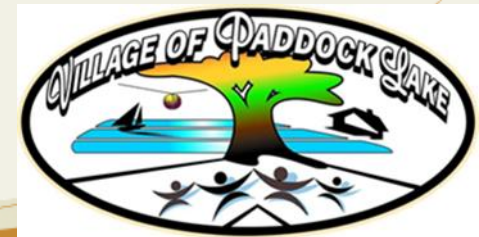
Future Actions

Ongoing Optimization of Deicing Operations

Mandate-Demand Initiated Regeneration (DIR)-New Residences

Mandate-Residential Softener Tune-Up Program

Next WPDES Permit-2019



Questions



TPopanda@paddocklake.net

jkleinschmidt@baxterwoodman.com

