Village of Paddock Lake
Proactive Approach to Effluent Chlorides Reduction

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Paddock Lake Overview

Population 3,000
High School 1,300 Students
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
Number of Storm Events

Number of Salting Events

- 2005-2006
- 2006-2007
- 2007-2008
- 2008-2009
- 2009-2010
- 2010-2011
- 2011-2012
- 2012-2013
- 2013-2014
Salt Usage

Tons of Salt Per Season

- 2005-2006: 300 tons
- 2006-2007: 500 tons
- 2007-2008: 500 tons
- 2008-2009: 400 tons
- 2009-2010: 300 tons
- 2010-2011: 200 tons
- 2011-2012: 200 tons
- 2012-2013: 200 tons
- 2013-2014: 200 tons
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
Effluent Chloride Concentrations

Interim Limit - December to April
Interim Limit - May to November
Criteria and Ultimate Limit

Weekly Average Effluent Chlorides (mg/L)

Date:
- Jan-14
- Feb-14
- Mar-14
- Apr-14
- May-14
- Jun-14
- Jul-14
- Aug-14
- Sep-14
- Oct-14
- Nov-14
- Dec-14
- Jan-15
Chlorides-Monthly Mass

Brine Regeneration Installed
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

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