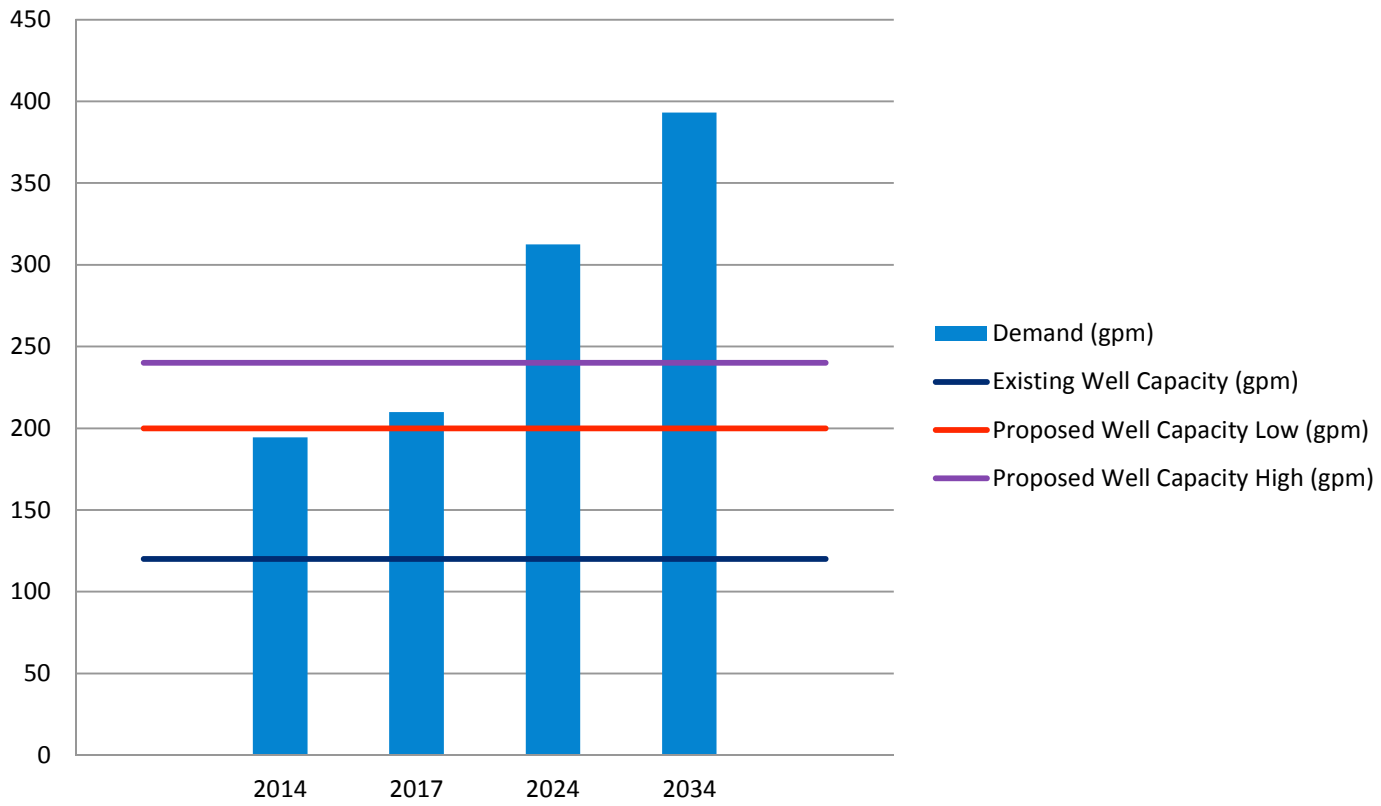
Town of Hinesburg Water Supply and Treatment Bond Public Information Hearing

October 20, 2014

Aldrich + Elliott

January 27, 2014 - State issues Notice of Alleged Violation due to *Inadequate Source Supply – User Demand Exceeds Supply Volume*



Diminishing Well Capacity

- Current authorized capacity: 120 gpm
  - Well 1: 45 gpm
  - Well 3: 75 gpm (originally permitted at 140 gpm)
- State requires wells to meet average day demands (140,000 gpd) within 12 hour period (194 gpm)
- Existing wells are run in excess of 12 hours to meet current demands (driving factor for NOAV)
- Physical plugging and biofouling (iron bacteria) are likely causes of reduced yield ("clogged" veins)
- Thorough rehabilitation is challenging with limited ability to take wells off-line
- Re-opening the veins is a concern with MTBE contamination (i.e. open vein to MTBE source)

Water Quality

Parameter	Units	Maximum Contaminant Level	Existing Wells 1 & 3	New Wells 4 & 5
Hardness	mg/l	None	306	322
Iron	mg/l	0.300	0.230	0.092
Manganese	mg/l	0.050	0.063	<0.020
MTBE	ppb	40	2.7	<0.5

Hardness causes no known health risks but can reduce lathering of soap, and buildup of scale in water heaters, cookware, and plumbing. No limits are established for water hardness.

Iron is an essential element and does not generally cause health effects. However, high amounts of iron can cause staining of clothing, sinks, toilets, and bathtubs. Iron can give water a metallic taste. The maximum level for iron in water is 0.3 mg/l.

Manganese is an essential element for human metabolism. However, manganese can discolor water and stain clothing and bathroom fixtures grey/black. The maximum level for manganese in water for staining is 0.050 mg/l.

Sodium is a necessary dietary element and can occur naturally in water. Water with high levels of sodium tastes salty, can corrode metal piping, and can contribute to high blood pressure. The maximum level for sodium in drinking water is 250 mg/l.

Project Approach

- Transition away from existing wells due to diminishing source capacity and water quality concerns (keep them as emergency source until no longer needed
- Utilize new wells to satisfy existing demand and provide limited future capacity
- Provide treatment for hardness at new wells
- Pursue additional source based on future development needs

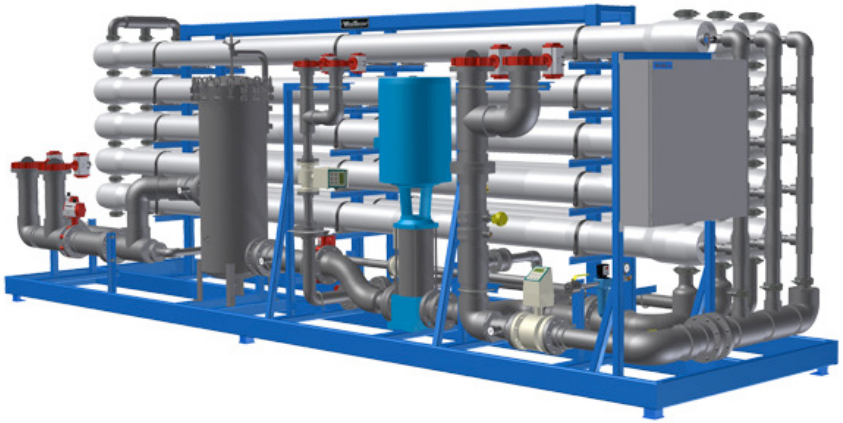
Water Treatment

Ion Exchange

- Trade Na ions for hardness
- 120 ppm typical target
- Can be impacted by iron

Reverse Osmosis

- Semi-permeable membranes
- Removal uses high pressure
- Removes iron and manganese



Ion Exchange and Sodium

For every grain of hardness there will be 30 mg of sodium in a gallon after softening

Raw Water Hardness	19.6 gr/gal	
Sodium per gallon water	588 mg Na/gal	
Sodium per ounce water	4.59 mg Na/oz	(128 oz per gallon)
Sodium per 8 oz water	36.75 mg Na/8 oz	(8 oz is vol of typical glass of water)

Dietary Comparison

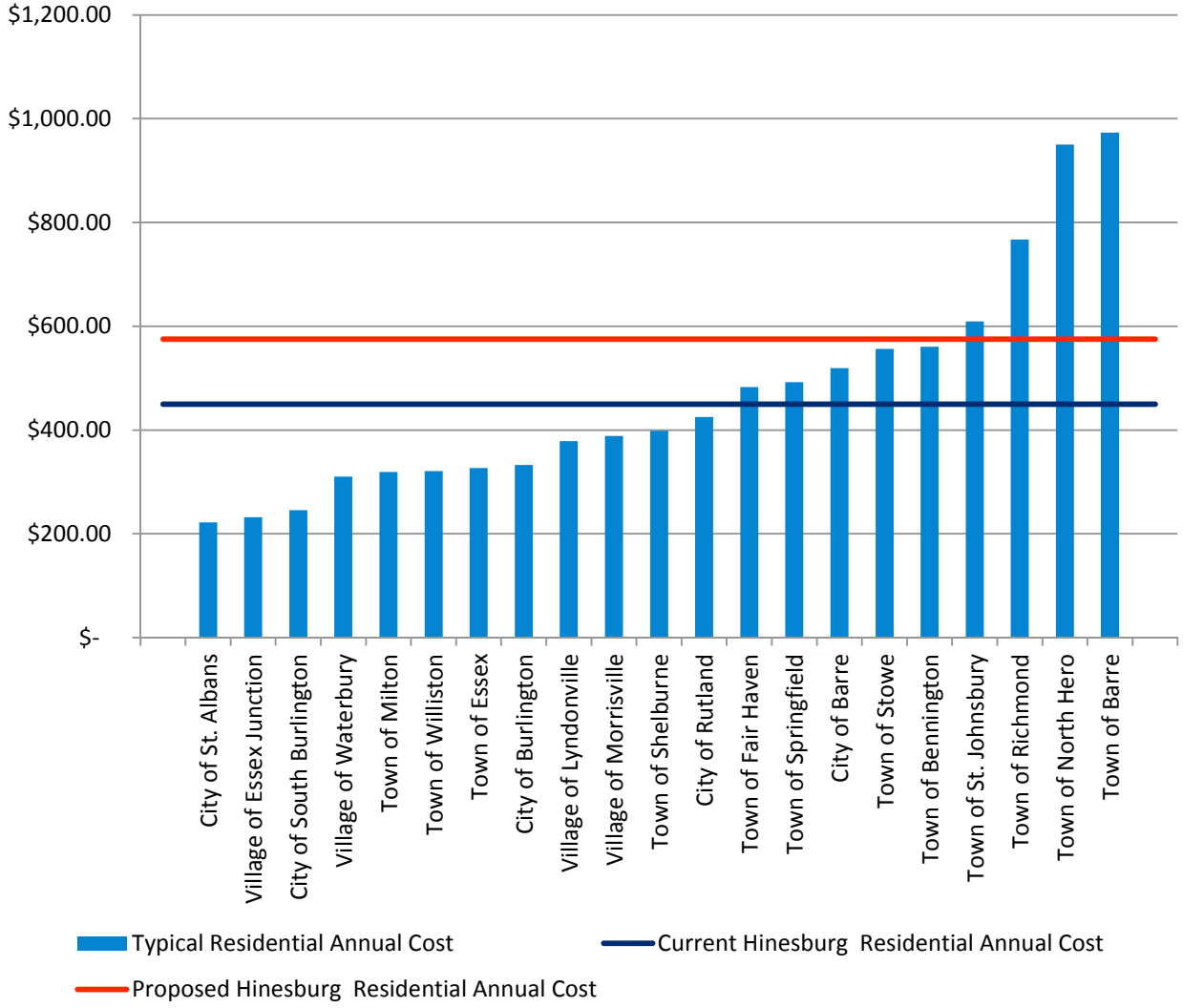
Food	Serving Size	Sodium Content
Skim Milk	1 cup	120 mg
Eggs	2 medium	110 mg
Banana	1 medium	1 mg
Bacon, Cooked	1 piece	82 mg
Cheerios	1 cup	200 mg
White Bread	1 slice	170 mg
Diet Coke	12 oz	40 mg
Soy Sauce	1 tsp	1,000 mg
Salt	1 tsp	2,440 mg

- FDA recommends that individuals consume no more than 2,300 milligrams of sodium per day, and that certain groups limit intake to 1,500 milligrams per day
- Per FDA "Very Low Sodium“ is 35 mg or less

Project Costs

- Total Project Cost (Bond Amount): $1.5M
- Max Rate Increase from Debt: $125/year
- Ion Exchange O&M Costs: $10,750/year
  - @721 EUs Treatment O&M=$15/year per EU
- Max Total Rate Increase: $140/year
- Town to implement water allocation process to offset rate increase; also may utilize MTBE settlement funds
- Note: Typical home softener costs range from $100 to $200/year

Rate Comparison



Project Financing

- Project is eligible for loan funding through the Vermont DWSRF program at 3% for 20 years
- $1.5M debt service to be paid by the current and future connected users with no impact to property taxes

Bond Vote

- Authorization to borrow $1.5M to fund increased well water capacity and treatment for the Town's water system

Vote Tuesday, November 4, 2014

Polls open from 7 am to 7 pm at Town Hall

Questions?