

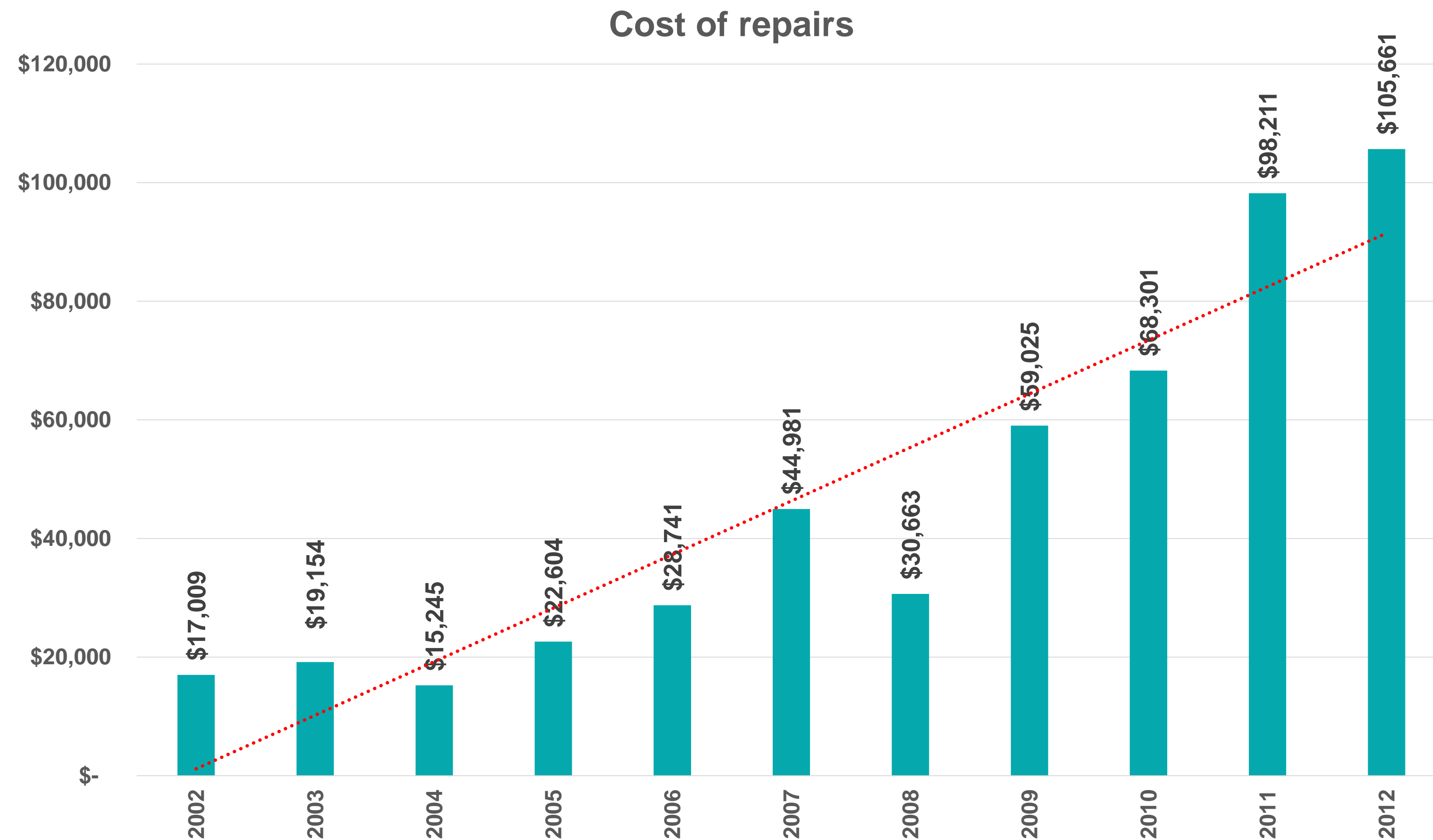


Saltair Water System
Public Meeting
April 8, 2019

Agenda

- Watermain Upgrade Program
- Surface Water Treatment Objectives
- Remediation of the Stocking Lake Dam

Watermain Upgrade Program



Watermain Upgrade Program

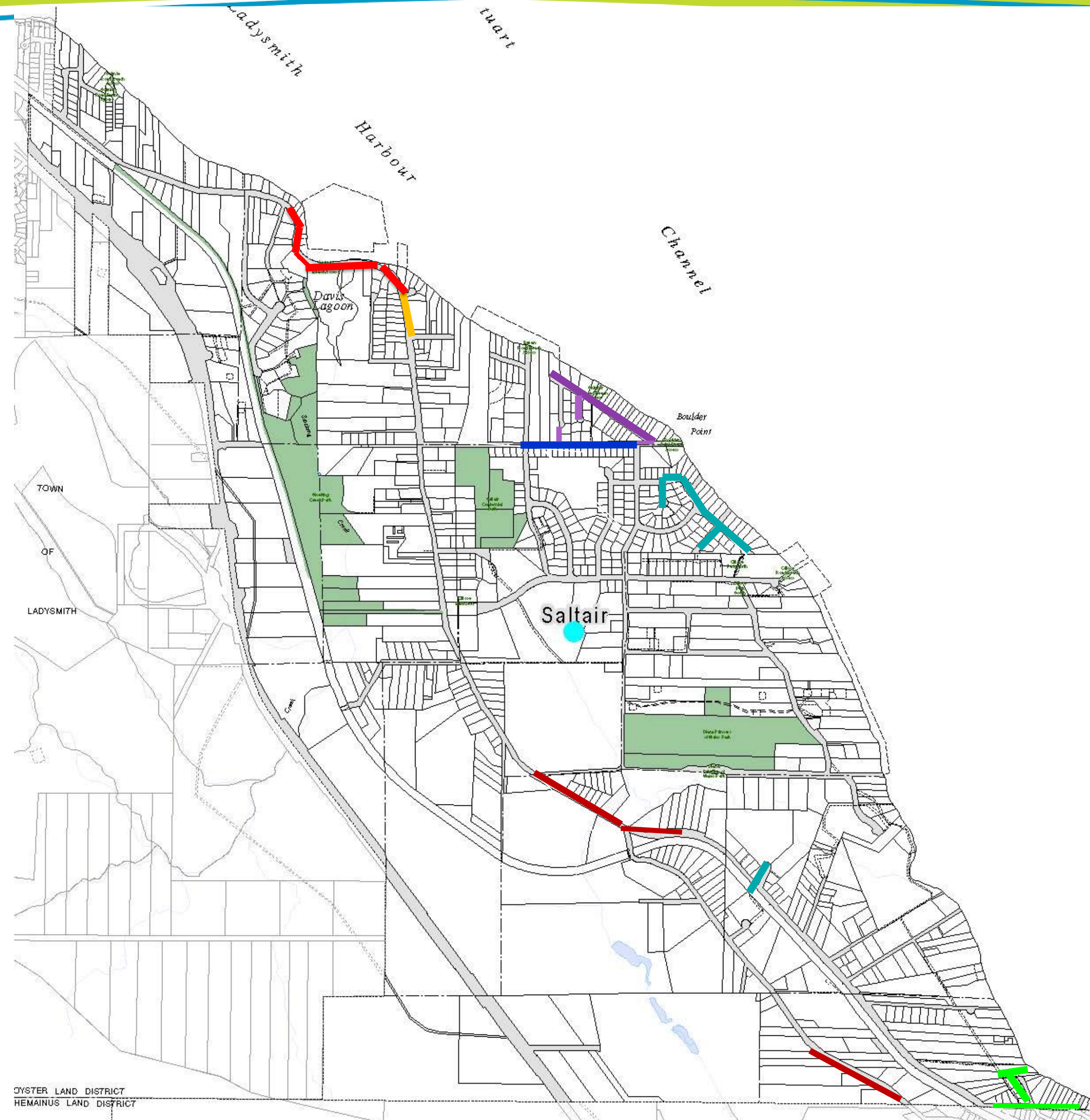
- **\$358** from each property in the Saltair Water System Service Area goes directly to fund system upgrades

2013-2018

4100 meters of pipe
have been replaced

\$1,821,733 has been spent
on watermain upgrades

2013-2019 Watermain Upgrades



2013

Contractor – David
Stalker Excavating

2014

Contractor – Palladian

2015/16

Contractor – David
Stalker Excavating

2016

Contractor – David
Stalker Excavating

2017

Contractor – David
Stalker Excavating

2018

Contractor – David
Stalker Excavating

2019

Contractor – David
Stalker Excavating

Costs of Watermain Upgrades

Year	Section	Cost
2013	Gardner Road East, part of South Oyster School Road, loop of Hilsea, Punnett Close	\$367,033
2014	Seaview Cres, Stuart Road, Shannon Road, Maytree Road	\$394,000
2015	Chemainus Road (Branksome to Linton Circle)	\$211,367
2016	Chemainus Road (Linton Circle to Rumble) and remaining portion of 2015 work	\$223,397
2017	South Oyster School Road (Seaview to Bazan)	\$231,578
2018	Chemoy/Dogwood Roads, design for Chemainus Road (Olsen to Reed Road) and Old Victoria Road	\$394,358
	Total	\$1,821,733 (\$300,000 x 6 years= \$1,800,000)

2014 - New Reservoir and Treatment Building Upgrades



FUNDING

COMMUNITY WORKS FUNDS (GAS TAX,
phase 1)
\$135,000

OPERATING SURPLUS FROM
PREVIOUS YEARS \$326,000

TOTAL \$461,000



Future Works

Existing Pressure Reducing Valves

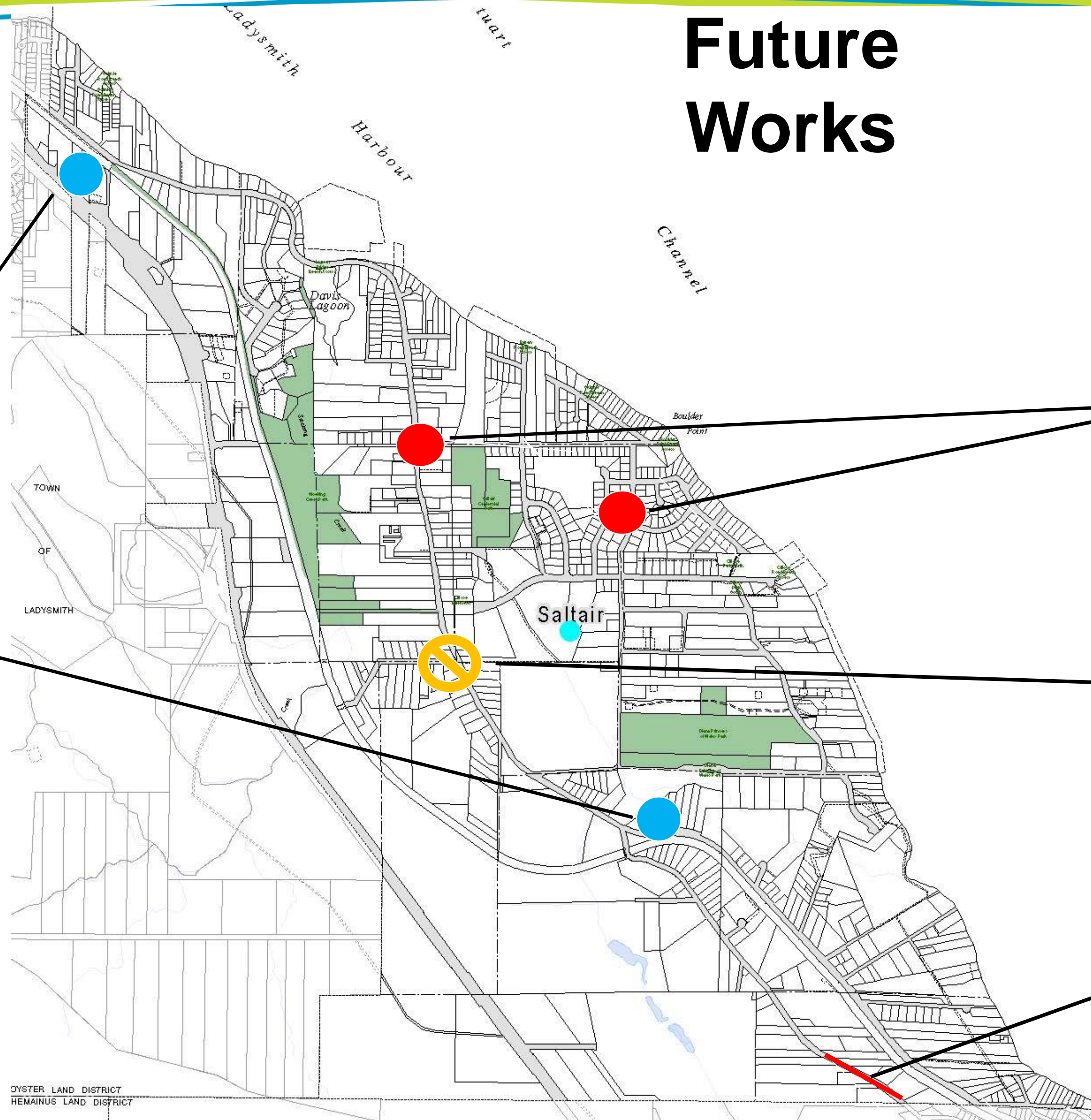
- Reed Road
- North Watts Road

Install two New Pressure Reducing Valves

- Chemainus and South Oyster School Road
- Seaview and Seavista

Remove Pressure Reducing Valve (Saltair Road and Chemainus Road)

Upgrade part of Old Victoria Road – Comm. Works Funds (phase 2) \$258,000



Future Works

Looping at Branksome

Upgrade Rumble Road and Gardner Road West

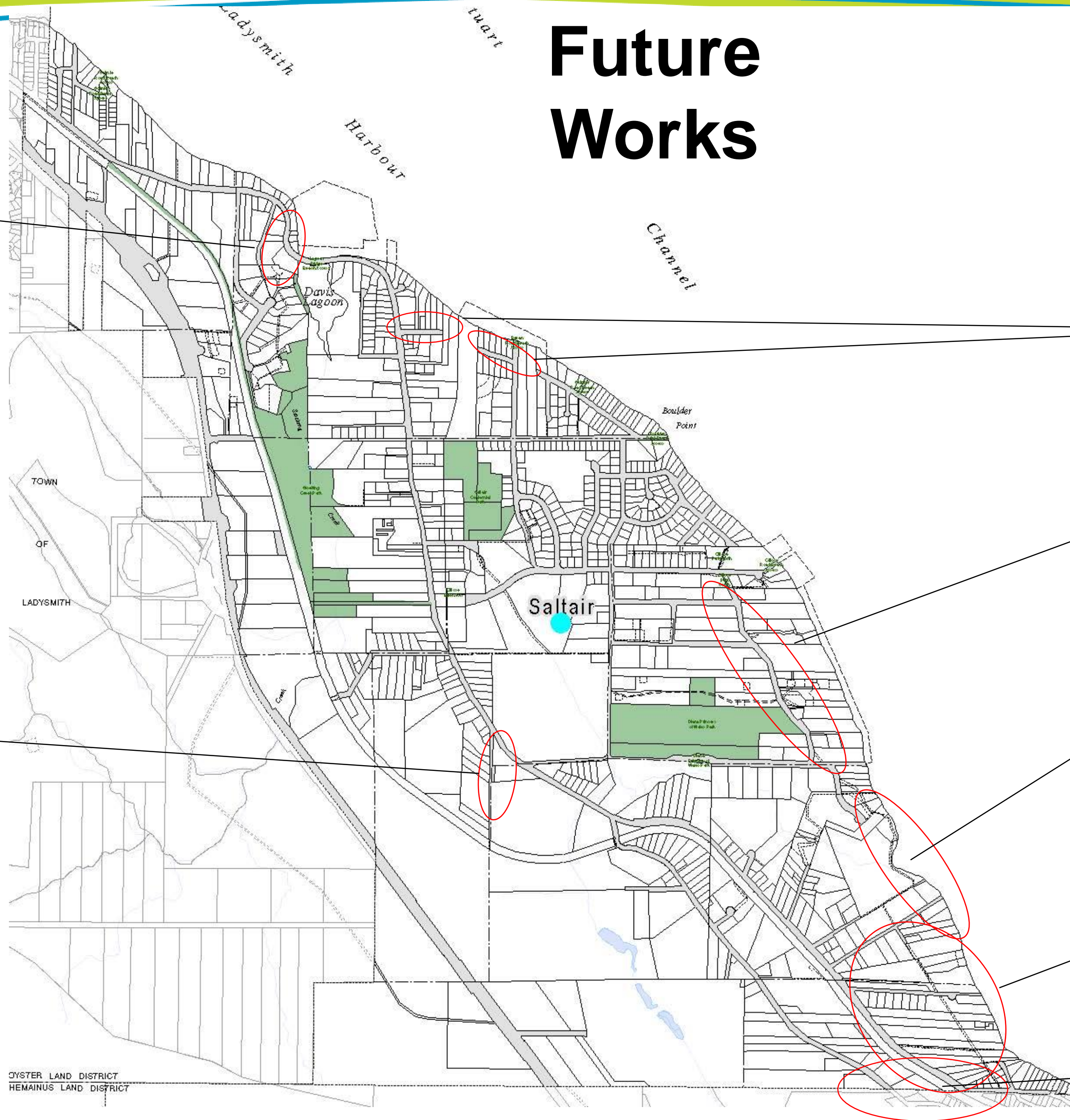
Upgrade Guildbride Drive/Rocky Beach

Upgrade watermain between Whitecap Place and Bestview.

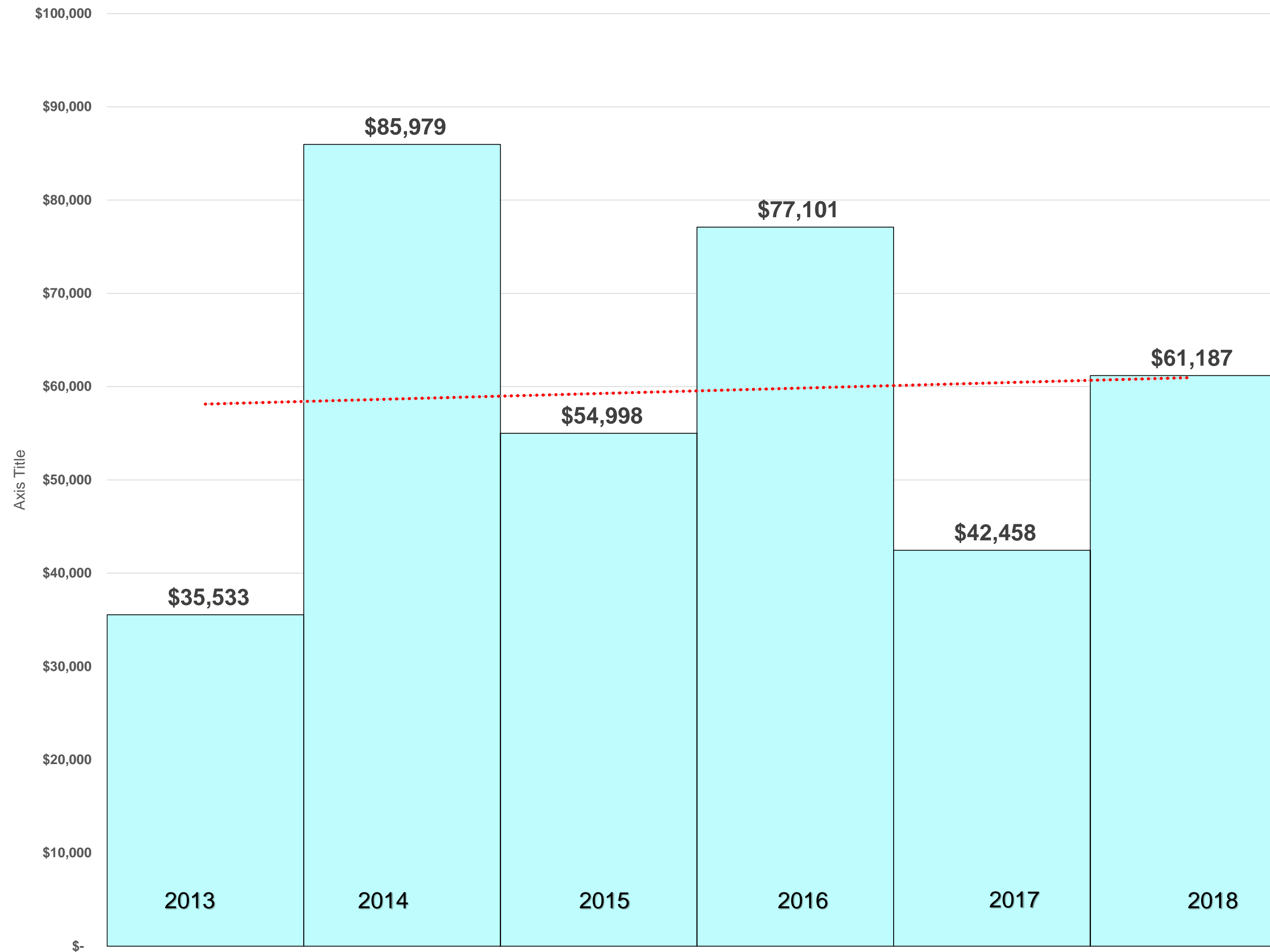
Upgrade watermain between Bestview and Hillside and between Hillside and Chemoy. Alternatively install a new watermain on Chemainus Road and redirect services

Loop Old Victoria with Dogwood road

Upgrade Southin



Annual Cost of Watermain Repairs



BC's Surface Water Treatment Standards

What are the Objectives of the Standards?

1. Inactivation of viruses
2. Protection against parasites
3. Two treatment processes
4. Less than or equal to 1 NTU of turbidity
5. No detectable E.Coli, fecal coliform and total coliform in the treated water

Trihalomethanes (THMs)* and Haloacetic Acids (HAAs)*

- THMs and HAAs are referred to as disinfection by-products

Organics + Chlorine = THMs and HAAs

- THMs and HAAs are considered 'probable carcinogenic' to humans as listed in the Canadian Drinking Water Guidelines
- The average levels of THMs and HAAs in Saltair's water are slightly above the Canadian Drinking Water Guidelines

Do other Water Systems also have to meet these Standards?

All water systems in BC that use surface water as the source water must meet the standards for the delivery of safe drinking water.

How much are other water systems spending?

- Comox Valley Regional District - \$110 million
- North Saltspring Island Waterworks District - \$8.4 million
- Ladysmith - \$14 Million

What Options have been Explored?

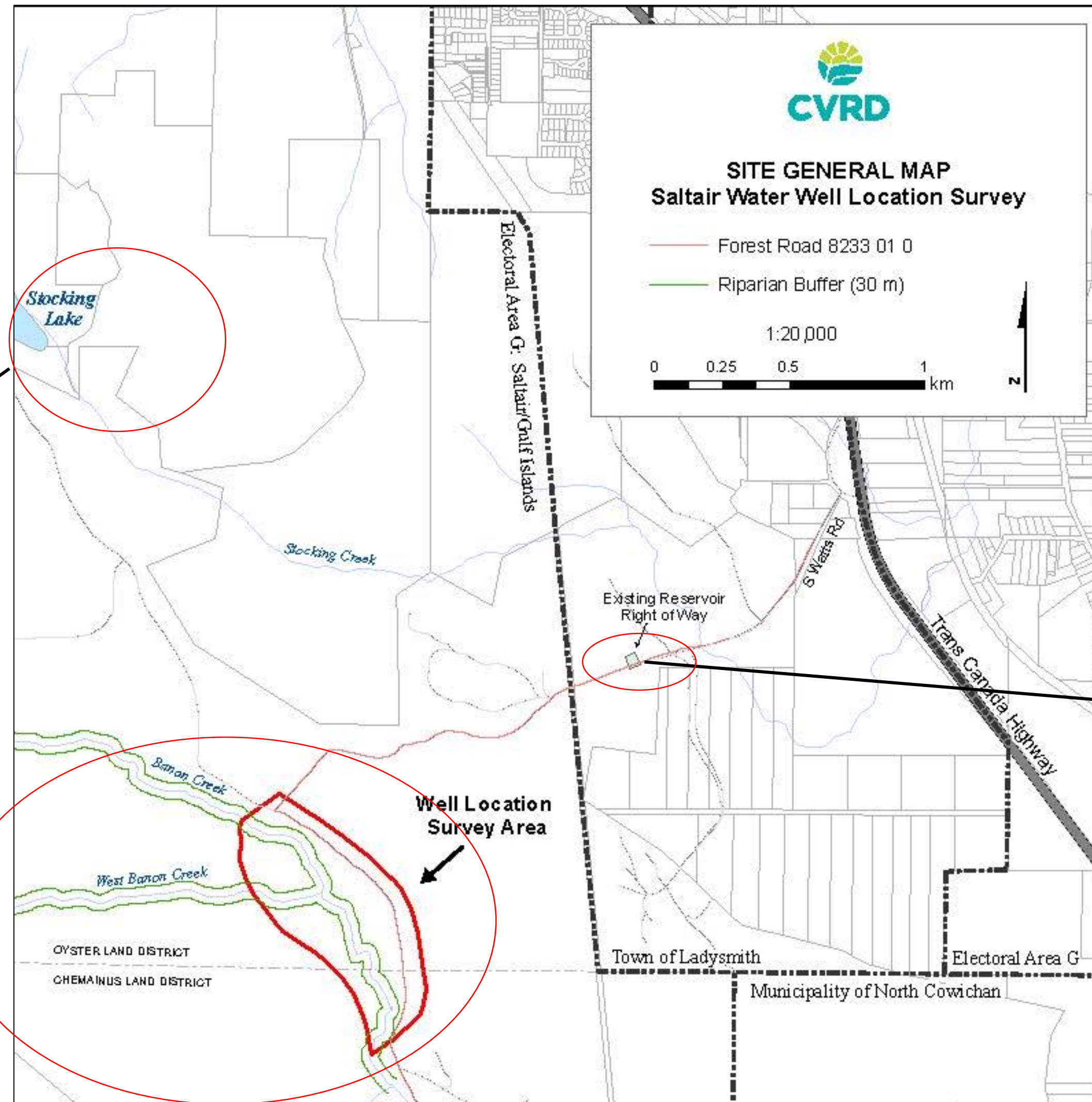
Stand alone system – add a filtration system to the treatment process

Combined system with the Town of Ladysmith

Switching to a groundwater source

Suitable groundwater sources do not have the filtration requirement

Exploration of Groundwater



Well Drilling Locations

Water Treatment Facility

Groundwater Exploration

Provincial approval to drill on crown land took longer than anticipated – it took over 1 year to receive approval to drill one hole

4 test wells were drilled

Approximately 100 gpm of water was found

- Saltair Water System needs about 300 gpm to meet system demand

Testing results showed good quality water

What did we learn from the groundwater study?

Substantial groundwater is located in the Banon Creek/Stocking Lake area.

However, due to the need to comply with the treatment standards further exploration will be suspended at this time.

Groundwater may be used in the future to accommodate future growth

Remaining Options

Stand Alone System – add a filtration system to the treatment plant

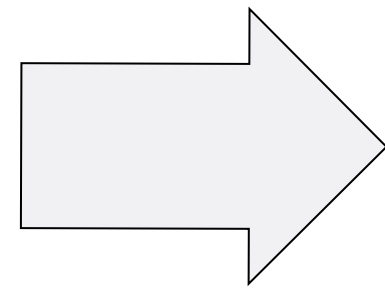
Combined system with the Town of Ladysmith - construct an interconnection with the Town of Ladysmith and purchase treated water from Ladysmith

Comparison of Preliminary Costs for Treatment

	Stand Alone System	Combined System with the Town of Ladysmith
Capital Costs	\$3.45 million	1. Installation of the interconnection points \$670,000 - \$970,000 2. 17.7% share of the total cost to build the treatment plant \$2.4 million Total \$3.07 - \$3.37 million
Estimated Annual Operating and Maintenance Costs	\$90,000	1. Bulk water purchase \$.62/m ³ 299,000 m ³ (average per year) x \$.62 = \$185,380/year 2. Parcel tax to be paid to Town of Ladysmith \$144,000/year 3. CVRD costs for distribution, maintenance, overhead \$275,600 Total \$604,980

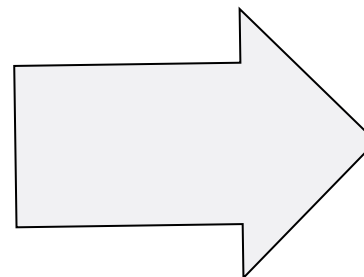
Grant Funding may be Available

A grant application has been submitted to the 'Investing in Canada Infrastructure Program'



If the grant is successful, the funding will pay for 73.33% of the capital cost. The remaining 23.67% will come from the Saltair Water System budget

If the grant application is not Successful



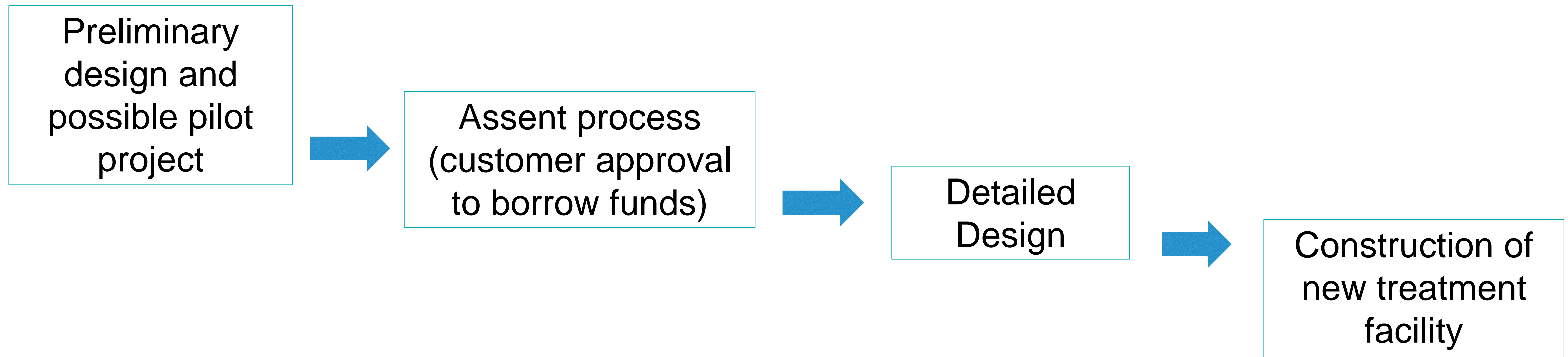
100% of the capital cost will come from the Saltair Water System budget through long-term borrowing

****Increased operational and maintenance costs will result in an increase to annual charges even if the grant application is successful**

Comparison of **Additional** Estimated Annual Charges for Compliance with Surface Water Treatment Policy

Stand Alone System (Annual Charges)		Annual Cost		Combined System with Town of Ladysmith (Annual Charges)
\$310/customer	←	20-year borrowing cost for capital work (assuming 4% interest rate)	→	\$302/customer
\$105/customer	←	Operational and Maintenance Costs.	→	\$315/customer
\$415/customer	←	Total Additional Charges	→	\$617/customer

Next Steps for Surface Water Treatment



Stocking Lake Dam

Originally constructed in 1902 by the Wellington Colliery Company. Built for the supply of water to a coal washer and the newly located town site of Ladysmith

Saltair Water District incorporated 1954. In 1957 an agreement was met in shared ownership of the Stocking Lake lands, dam, and a portion of the supply works. Following upon this agreement the Water Rights Branch issued a water licence to Saltair



In 2018 the Cowichan Valley Regional District (CVRD) engaged Ecora Engineering & Resource Group Ltd. to undertake a comprehensive Dam Safety Review (DSR) and risk assessment of all of its dams as a regional study supported in funding by the National Disaster Mitigation Program (NDMP).



Dam Safety Review (DSR)

The scope of the DSR included:

- Background review
- Site reconnaissance
- Review of consequences classification
- Geotechnical assessment
- Structural stability assessment
- Hydrotechnical analysis
- Mechanical and electrical review
- Review of any public safety management strategies;
- Risk assessment as per the NDMP framework;
- Assessment of compliance with Canadian Dam Association design criteria; and,
- Development of conclusions and recommendations.

Dam Breach Inundation Flood
Modelling

Concerns

- Regulatory Requirement
- Risk/Liability
- Outcomes and Recommendations
- Next steps

Regulation

The objective of the BC Dam Safety Regulation (BC Reg. 40/2016) is to mitigate loss of life and damage to property and the environment from a dam breach. **This Regulation requires dam owners to:**

- Operate the dam in a safe manner in accordance with any terms and conditions;
- Inspect their dams;
- Undertake proper maintenance;
- Report incidents and take remedial action; and,
- Undertake periodic Dam Safety Reviews.

Public Safety Management

- Dam owners are responsible for managing the public safety risks caused by a dam, as far upstream and downstream as the owner has property rights.
- Beyond the property the dam owner may have additional responsibilities to assess specific locations where the hazards are known by the owner to result directly from the dam or its operation and to inform the public and other affected property owners of these hazards.

Outcomes/Recommendations

- The condition of the dam access road should be improved in accordance with the BC Ministry of Forests, Lands, Natural Resource Operation & Rural Development (MFLNRORD)
- The current log boom should be replaced with one that is effective at capturing debris under both normal and storm conditions
- The importance of regular monitoring of the seepage clarity and rate of seepage when the risk of piping exists is underlined by Foster et. Al (2000b) study. Weekly documented monitoring of the “sinkhole” present near the right abutment of the dam noting observations of any leakage and turbidity of the water along the toe of the dam should be undertaken during site surveillance activities until remedial works have been constructed.

Outcomes/Recommendations

- A Seepage Barrier should be design and placed over the “sinkhole” present near the right abutment until remediation of the existing dam or the construction of a new dam has been completed (High priority).
- Based on the estimated potential loss of life and economic losses within the dam break flood inundation area it is recommended that the consequence classification of Stocking Lake Dam be increased from “Significant” to "High". However, any decision to modify the consequence classification rating must be confirmed by the BC MFLNRORD Dam Safety Section (Very High priority).
- CVRD and Ladysmith should commission a design study to address the major deficiencies in the Stocking Lake Dam, namely its susceptibility to liquefaction under the design seismic event and its susceptibility to piping. It is envisioned this would result in a recommendation to either substantially remediate the existing dam or the construction of a new dam immediately downstream (Medium Priority).

Next Steps for Stocking Lake Dam

- Develop an Operation, Maintenance and Surveillance Manual and a Dam Emergency Plan for Stocking Lake Dam
- Meet Regulatory Compliance and implementation of a Public Safety Plan (PSP), records of decisions made and activities performed to manage public safety at the dam providing evidence of due diligence
- Proceed with a funding application to undertake a more detailed cost estimate for the future remediation or replace Stocking Lake Dam
- Address immediate recommendations based on priority e.g.. Filter Buttress, Road Access, until remediation or replacement of the dam

Decisions we want input on...

What option is more favourable to customers for meeting compliance with the Surface Water Treatment Policy:

Stand Alone System

Combined System with Ladysmith

Should the watermain upgrade funds be redirected to the treatment costs/dam repairs?

The preferred method for receiving assent for borrowing funds:

Petition Process

Approval must be given from greater than 50% of the property owners representing greater than 50% of the taxable value of all land and improvements of Saltair Water customers. Individual approval is given by property owners signing a Petition Form.

Alternate Approval Process –

Approval is given if less than 10% of eligible Electors sign a Electoral Response Form **against** borrowing of the funds

Referendum

Approval is given by customers of Saltair Water casting a vote on a specific day.

Questions?

Question 1 (warm up question)

What is the combined age of CVRD staff in attendance tonight?

a) 100

b) 175

c) 199

d) 188

Question 2

Select the option you support for achieving compliance with the Surface Water Policy:

- a) Stand Alone System
- b) Combined System with the Town of Ladysmith

Question 3

Do you support re-directing the money from the watermain upgrades to the treatment costs/dam repairs?

- a) Yes, I support re-directing the money to the treatment costs/dam repairs
- b) No, I want the money to remain for watermain upgrades

Question 4

What method of Approval for borrowing the funds for the treatment upgrades do you prefer?

- a) Petition Process
- b) Alternate Approval Process
- c) Referendum