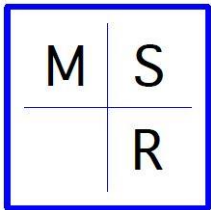




# Small Water System Design Challenges Lasqueti Island Case Study Pete's Lake Water Users Society



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Michael Day, P. Eng.

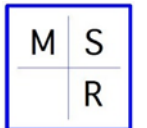
Todd Adamsson, P. Eng.

October 25<sup>th</sup> 2018

Parksville Community  
and Conference Centre

# Pete's Lake Service Community

- ~400 residents, 70 water connections
- No central power source
- Not a tourism economy
- Somewhat isolated, out of the mainstream
  - Passenger ferry
- Preference for independence
- People have elbow room
  - Low density development
- A few have solid financial resources
  - Current water system very inexpensive



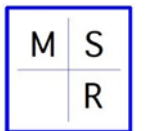
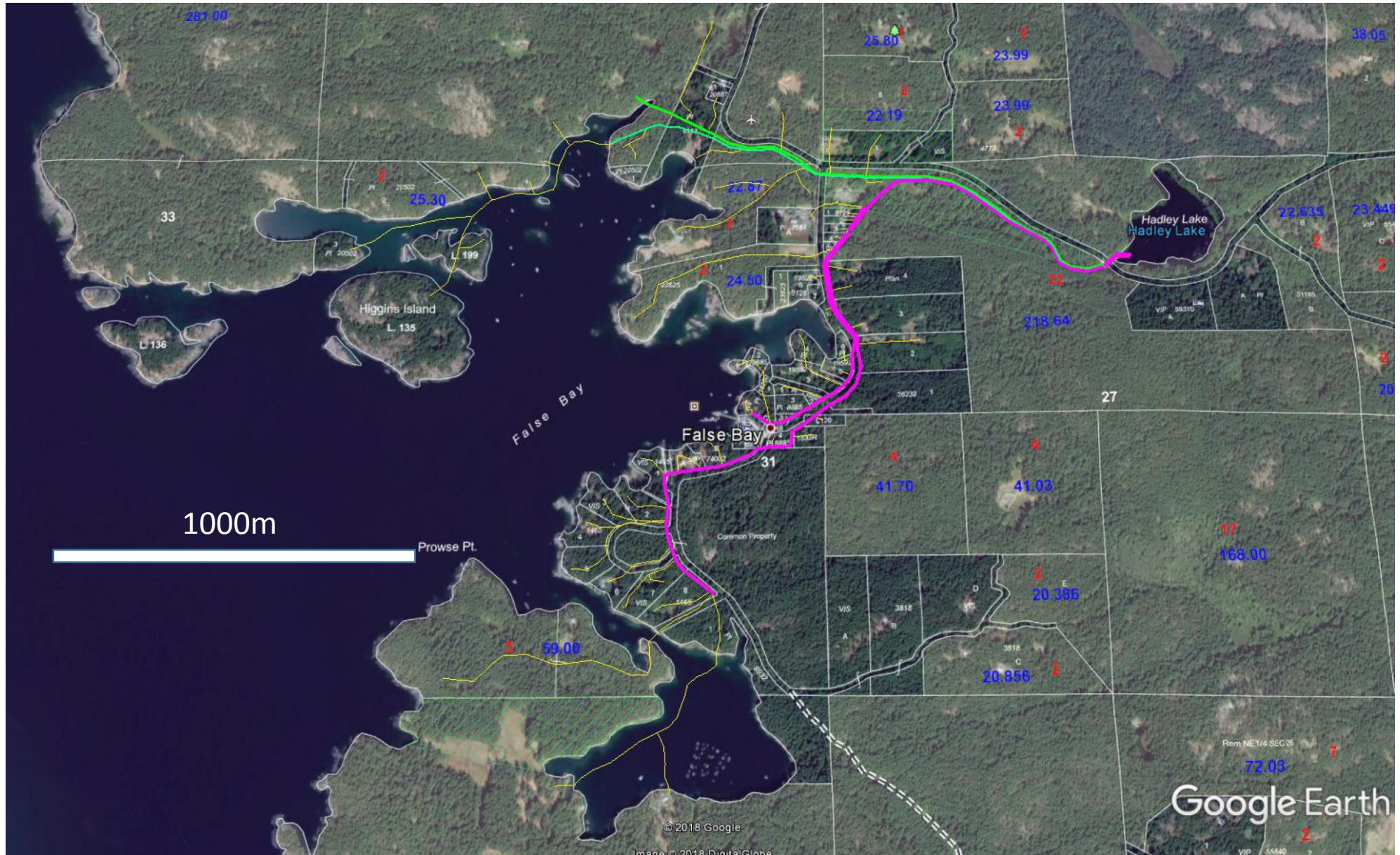


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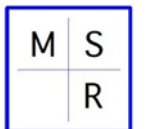
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# Challenges

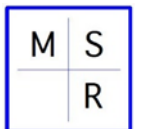
- No central power source
- Community resources
- Long distribution and service lines
- Home-grown distribution network
- No local gravel pit
- Long-standing boil water advisory
- Chlorine controversy
- Pete's Lake Water Users Society (PLWUS)





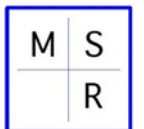
# Source Challenges

- Low elevation
- Beaver pond
- Beside main road
- Intake pipe not anchored
  - Airlock
- Quality parameters
  - TOC
  - Iron
  - Colour
  - Turbidity
  - Total coliforms
  - Fecal coliforms
  - Protozoa



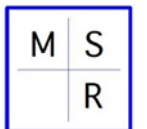
# Upgrade Options

Option	Capital Cost	O&M Cost	Notes
Do Nothing	\$0	\$14,000	Risk of losing insurance coverage Directors exposed to risk of fines
Private Rainwater	\$1,346,800	\$81,340	User maintained Pete's Lake irrigation supply
Private wells	\$2,386,930	\$78,747	User maintained Pete's Lake irrigation supply
Point of Entry	\$2,193,100	\$215,168	All components PLWUS maintained Registration on all property titles
UF Package Plant with new piping	\$657,130	\$88,107	PLWUS maintained WTP near lake, smaller footprint Bypass under high flow conditions
Conventional Plant with new piping	\$529,990	\$47,700	PLWUS maintained WTP near lake, larger footprint Bypass under high flow conditions
Conventional Plant with Dual Distribution	\$529,990-	\$61,700-	as above, no Bypass



# Proposed Approach

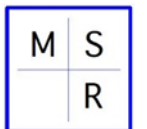
- Weigh down/anchor intake pipe to prevent flotation and air lock
- Retain existing system for irrigation and fire suppression
  - but freeze protect it
- Satisfy VIHA 43210 surface water objective
  - Implementation over two to five years
- New buried distribution system in road allowance
  - Welded HDPE DR  $\leq 9$
- Lowest power demand treatment plant
  - Coagulation
  - Sedimentation
  - Filtration
  - Chlorination





# Next steps

- Open questions
  - Best approach, cost for freeze-proofing existing
- Clarification of costs
  - Dual distribution network
  - Reduced production
- Determine funding approach
- Formal Society approval
- VIHA approval



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