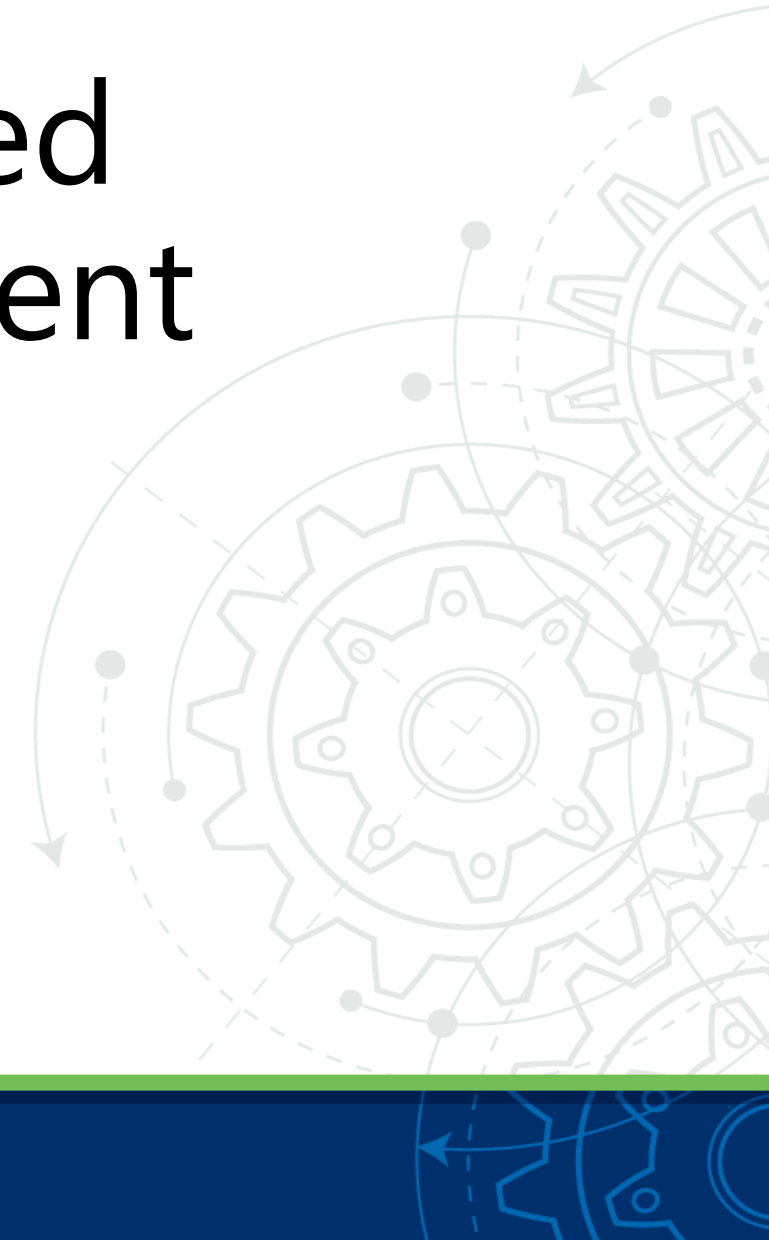


Shoreline Advanced Wastewater Treatment Innovation

Newman Lake Pilot Study

Lindsay Chutas

Morrison-Maierle



How We Got Here

Spokane Conservation District's OSS Program
-Help Honeymoon Bay **Stormwater Issues**

Previous Studies Newman Lake

TMDL

Spokane Co. Flood Control District
In-Water Treatment

Newman Lake Community Feels Stuck

Difficult with Real Estate Transactions

Lifestyle Issues

Use Concerns

Regulators Feel Stuck

Public health issues

No solutions



Where We're Going

Find septic alternative solution for homes
and cabins

Create regulatory environment that works
across Washington

Reduce nutrient inputs into water bodies
from septic systems

Case Study Steps

Problem Identification

- Degraded water quality from septic and natural sources

Identification of Solutions

- Feasibility Study

Testing of Alternatives

- Pilot Study Phase 1

Community Engagement

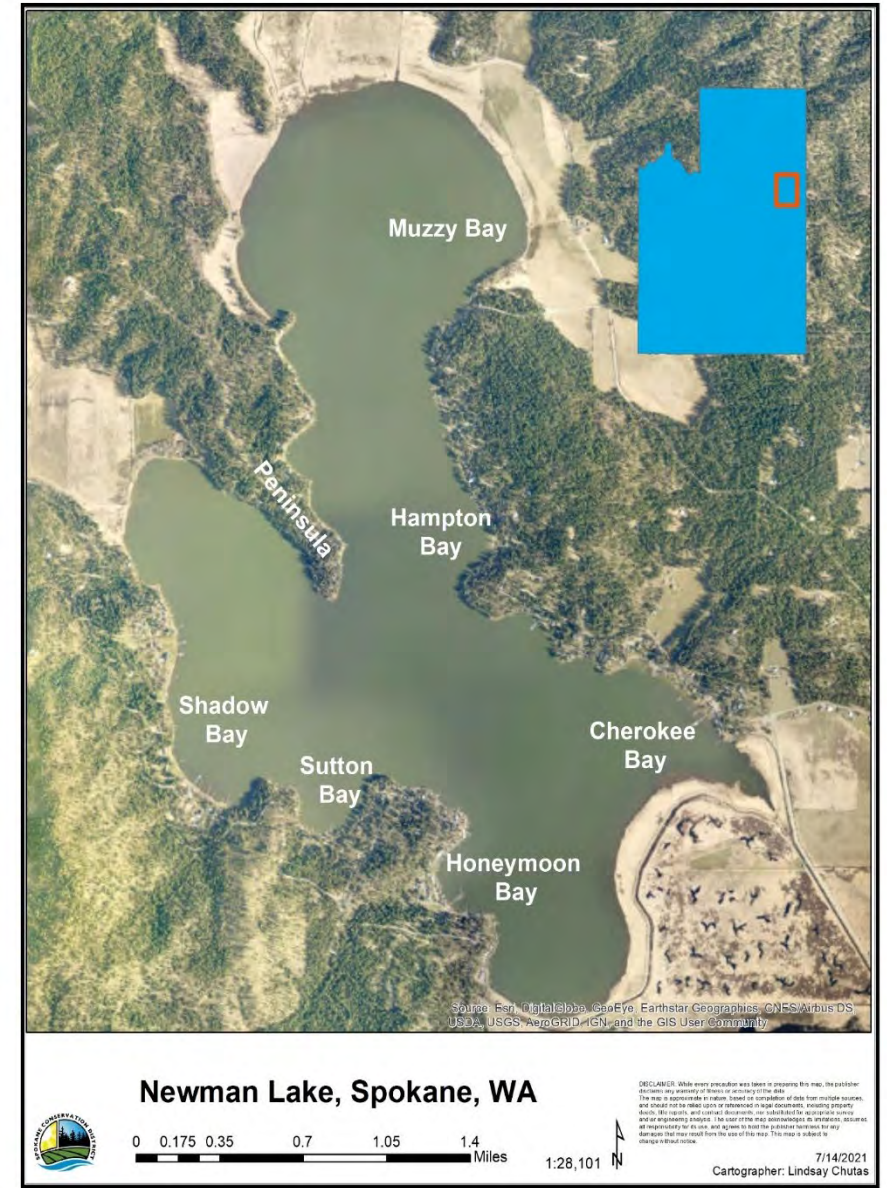
- Surveys, Community Education

Closing the Regulatory Gaps

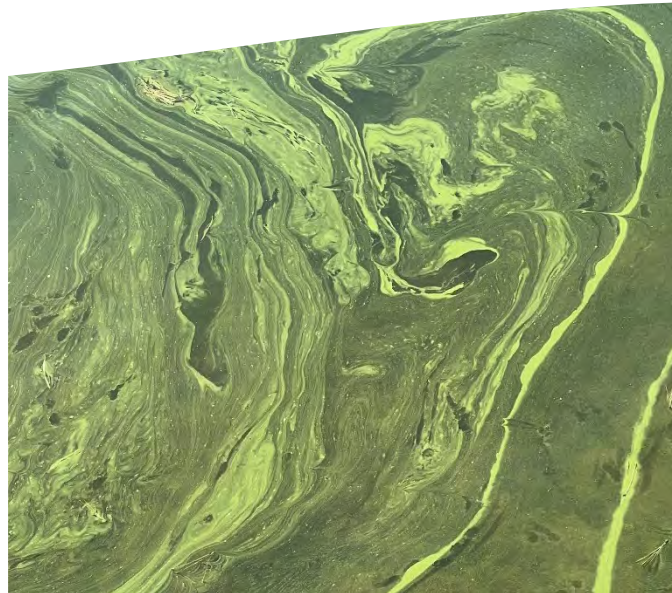
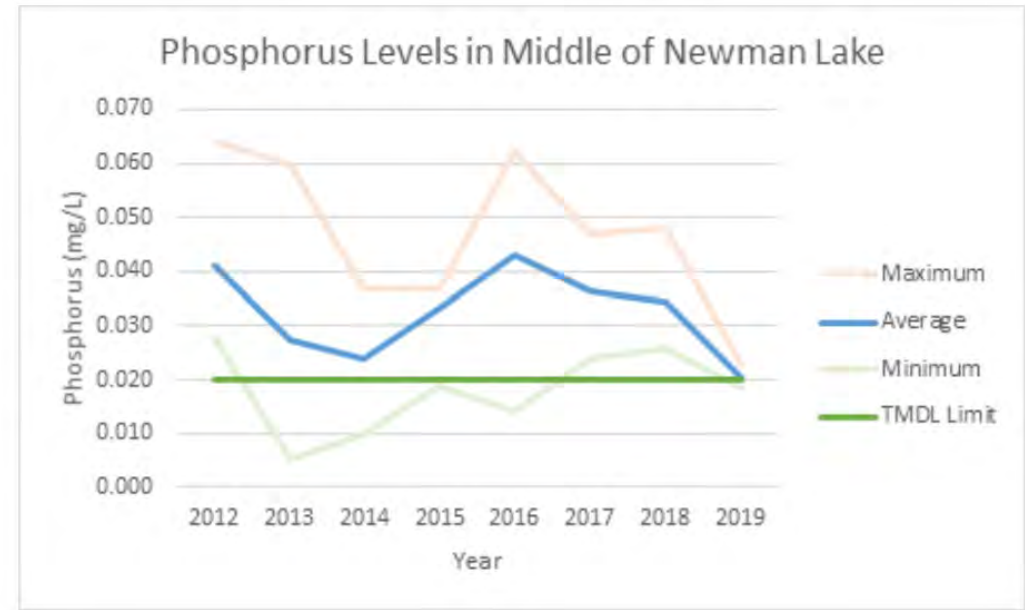
- How big is this problem?

Further Implementation and Testing

- Pilot Study Phase 2



Problem Identification



Problem Identification: Previous Studies

TMDL

Algae blooms caused by
high N and P

Septic
System
Survey

Old seasonal cabins are
now permanent residences

Geologic
Setting

Creates runoff issues

2018 Feasibility Study of Waste Water Treatment Options

Identified Options

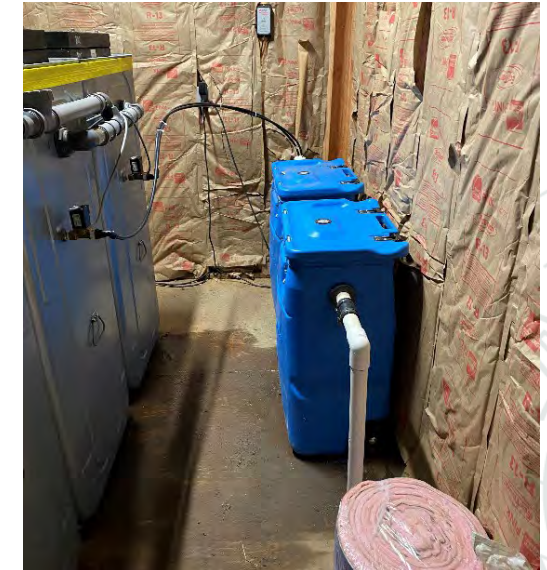
- Centralized Collection Systems
 - STEP System to Pressurized Bed
 - Land Treatment
 - STEP to Subsurface Drip
- Individual Systems (Reclaimed Water Rule)
 - Membrane Bio Reactor Treatment
 - Busse
 - Biomicrobics



Identification of Alternative Solutions

Advanced Treatment Systems

- Membrane Bioreactor Technology
- High Quality Treated Water
 - Remove the need for drainfields with defined beneficial reuse
- Efficient Use of Space
- In-ground and Above-Ground Options

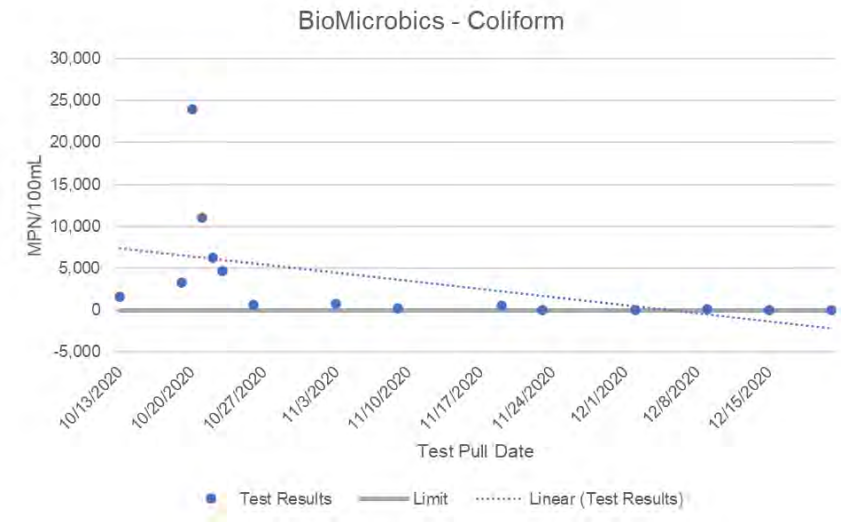
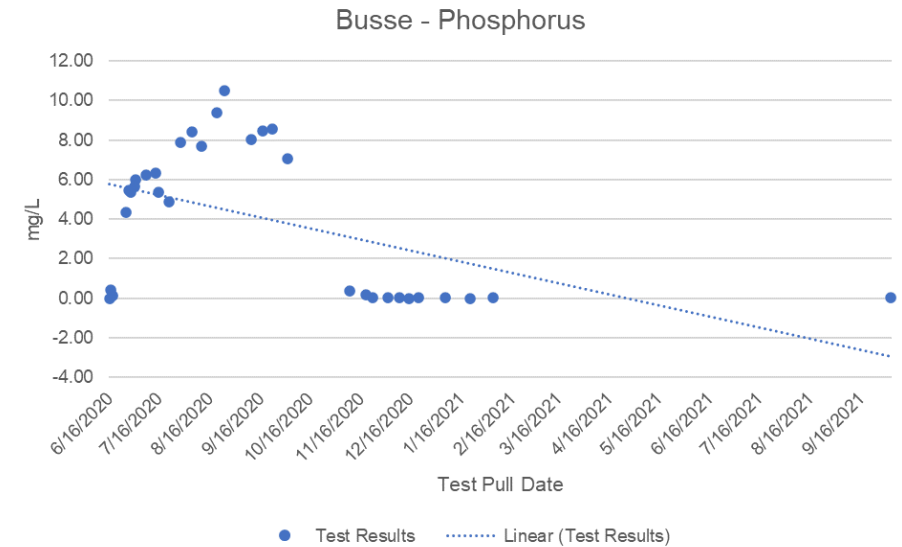


Testing Systems

2 Systems Tested

- Biomicrobics Biobarrier System (in ground)
replaced failed traditional system with undersized drainfield
- Busse GT 500 gallon (above ground in shed)
replaced cesspool with no drainfield, added drip irrigation

97.9% reduction nitrogen
98.1% reduction phosphorous
99.99% reduction fecal coliforms





Conclusions from Phase 1

- Our Waste Treatment Toolbox has Grown
- Membrane Bioreactor Technology
 - so good we don't need large areas anymore for treatment
- Both above-ground and in-ground options work well.
- Can be solution for majority of homes who want to be cleaner

Despite this technology, we don't have a regulatory system for reducing overall wastewater treatment footprint, yet...

Closing the Regulatory Gap

- Individual Septic Permits
 - Managed by Regional Health Districts
 - Guidance by WA Department of Health
 - Relies on Treatment Ability and Capacity of Soil
- Industrial/Large Treatment Facilities
 - Permits based on effluent quality
 - Permits issued by Ecology or WA Department of Health
 - No allowance to Permit Individuals

Someone Needs To Step Up And Create/Use an Existing Permit

Water quality is getting worse the longer we bury our heads in the sand

Community Engagement



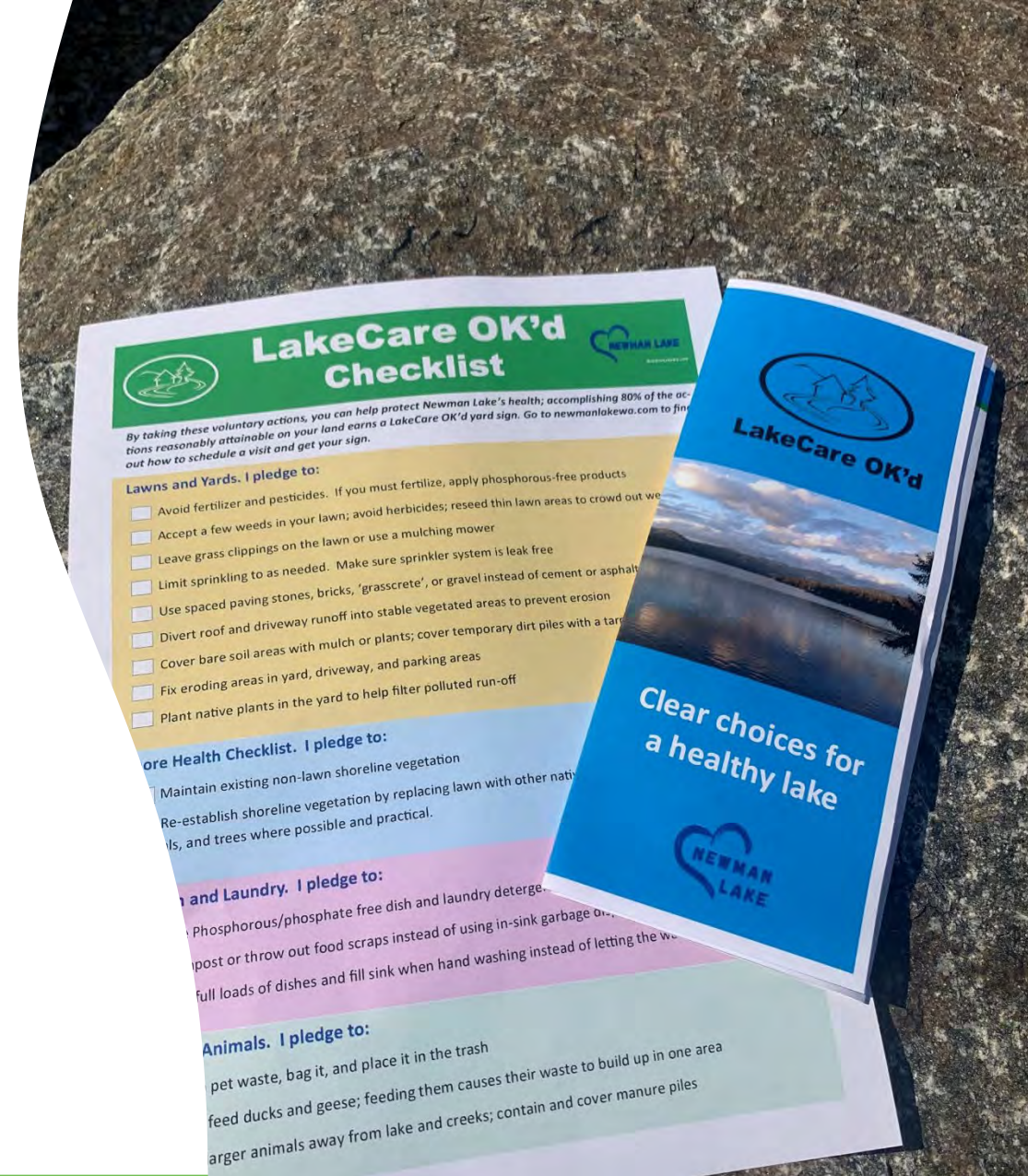
Community Surveys

- Public
- Residential

Conversations with locals

- Locals Desperately Want to Improve Water Quality

Lake Care Ok'd Certification Program





Phase 2: Lake-wide Implementation

- Grant and Loan Program
 - Goal: install 10+ systems around Newman Lake
 - More variation
 - Monitor results
 - Create buzz around the lake
 - Slow the input of nutrients

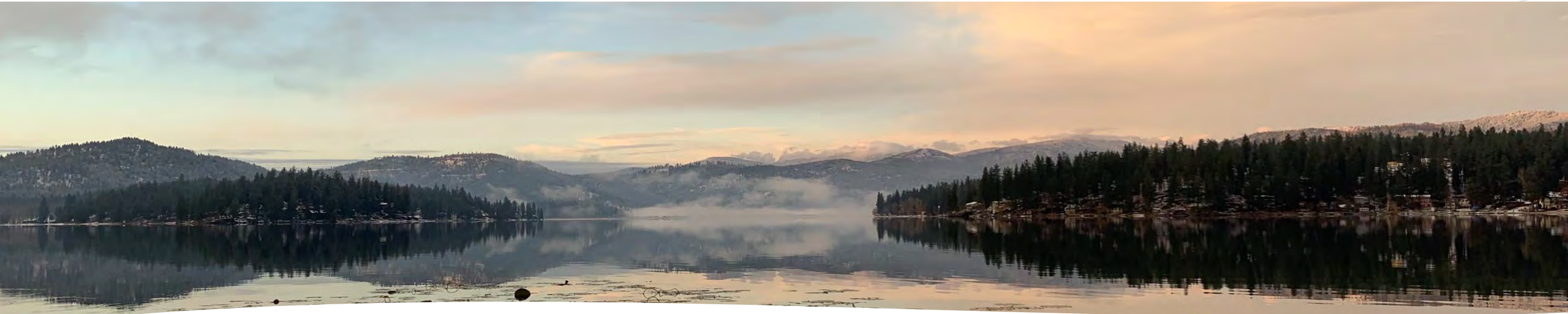
Let the Results and the Environmental Need Drive

Done:

- Proof with results
 - 2 systems installed
- Willing community locally
 - Volunteer engagement
 - Survey results
- Increased Interest to Participate

To Do:

- Study of other community need in WA
- Implement Phase 2- 10+ systems
 - Incentivized program-loan and grant \$\$
- Work with DOH, ECY, SRHD create setting for regional health districts to permit



Takeaways

- MBR's work as advertised. Advanced treatment levels without soil
 - SCD Grant/Loan/Outreach Program to install more
- Permit Gap Still exists
 - Ecology, DOH, SRHD, SCD and Morrison-Maierle working to close it
- Identifying the need and expand program to other shoreline communities

Questions?



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