Clark County and City of Camas
Watershed Management
DRAFT Interlocal Agreement

City Council Workshop
February 20, 2024

Give credit where credit is due!

Clark County & Camas

DRAFT Interlocal Agreement

Clark County Council Work Session

February 7, 2024

Work Session Outline

- **Lacamas Background**
- **County& Camas Work Plan(s)**
- **DRAFT ILA Overview**
- **Next Steps**

Work Session Goals

Provide overview of DRAFT ILA.

Receive Council Input on DRAFT

Highlight actions staff can accomplish.

Discuss Next Steps.

Lacamas Background


Lacamas Watershed & Lake
Water Quality needs help.


Clark County
Department of Ecology
City of Camas
WARNING
TOXIC ALGAE PRESENT
Lake unsafe for people and pets
Until further notice:
• Do not swim or water ski.
• Do not drink lake water.
• Keep pets and livestock away.
• Clean fish well and discard guts.
• Avoid areas of scum when boating.
360-407-6000
564-397-8428

CLARK COUNTY
WASHINGTON
PUBLIC WORKS
CLEAN WATER

The Clean Water Commission invites you to the

Lacamas Watershed Symposium

Clark County Councilor
Gary Medvigy, District 4

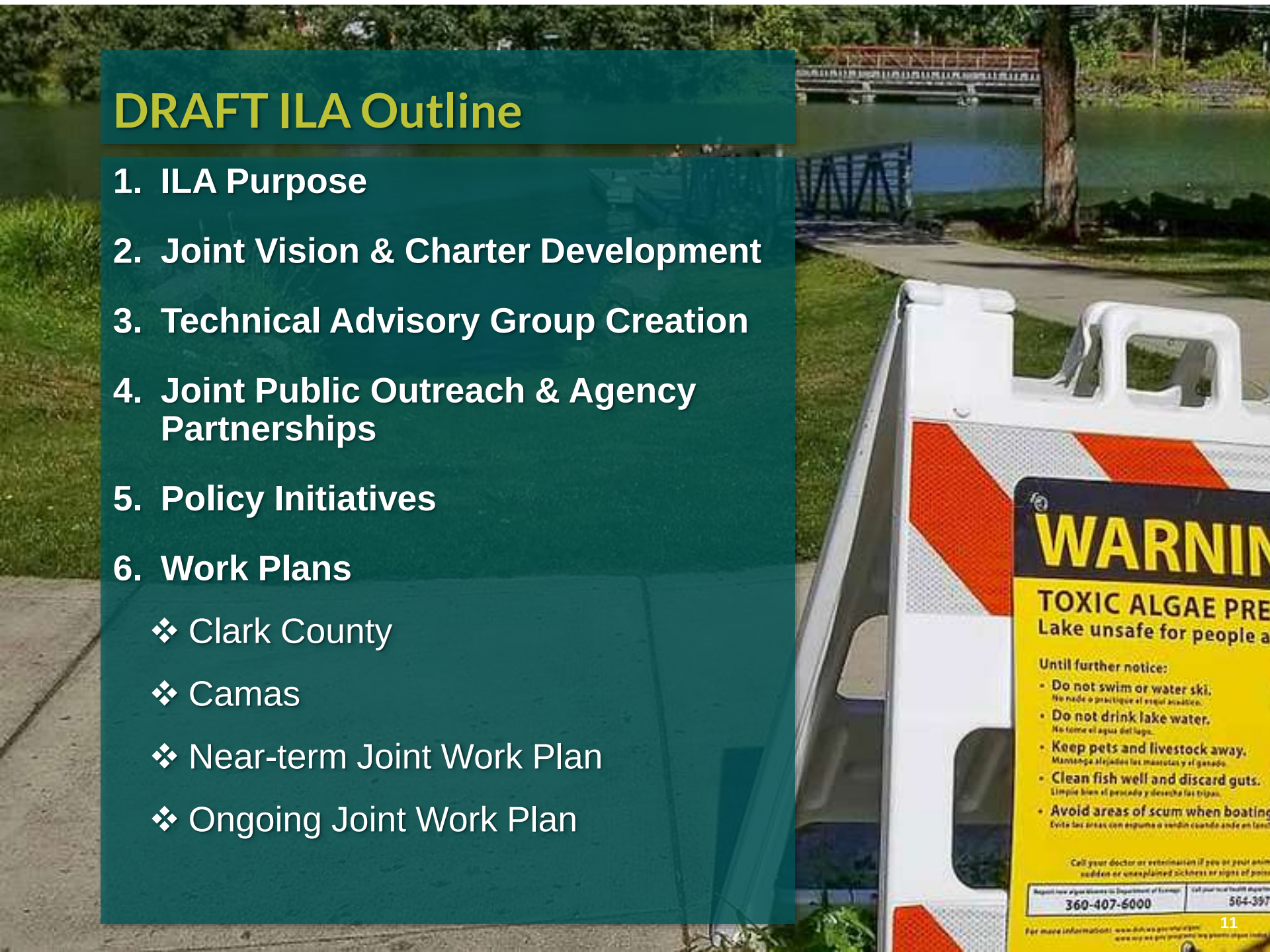
City of Camas Mayor
Steve Hogan


Where are we today?

Need for Interlocal Agreement

DRAFT ILA Outline

1. **ILA Purpose**
2. **Joint Vision & Charter Development**
3. **Technical Advisory Group Creation**
4. **Joint Public Outreach & Agency Partnerships**
5. **Policy Initiatives**
6. **Work Plans**
   - ❖ Clark County
   - ❖ Camas
   - ❖ Near-term Joint Work Plan
   - ❖ Ongoing Joint Work Plan



ILA Purpose


Long-term Partnership
Governance Structure
Roles & Responsibilities
Shared Vision & Policy Initiatives
Financial Expectations
Regulatory Authority
Mutual Responsibility

Joint Vision & Charter Development

Joint Vision & Charter Development

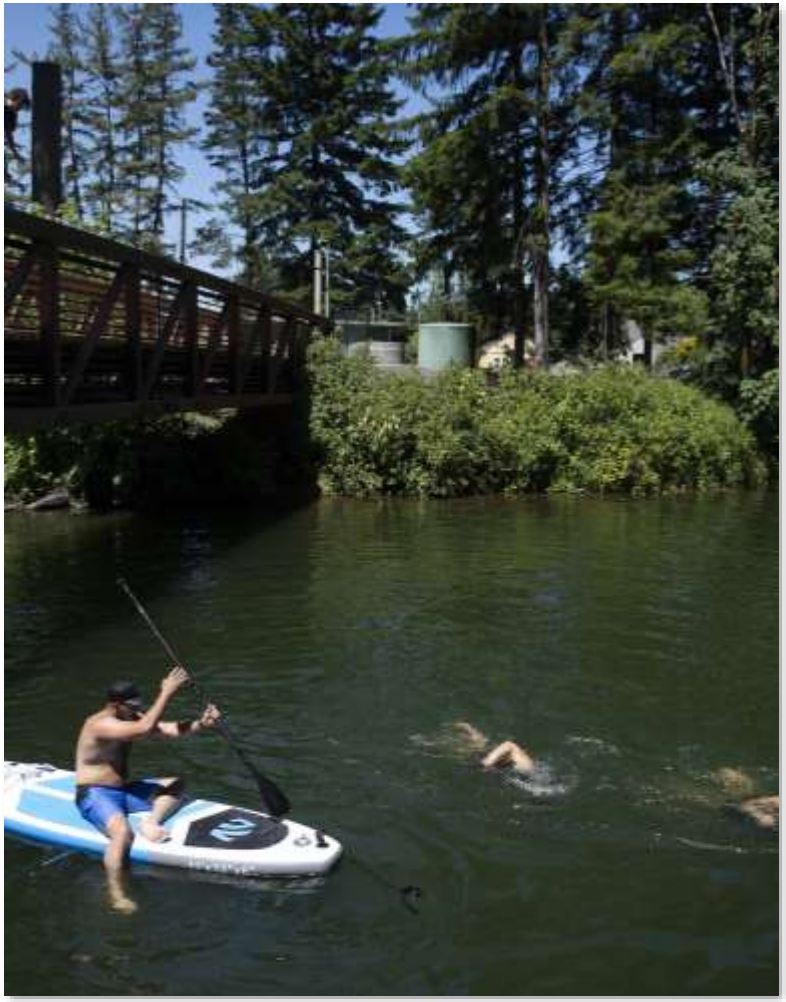
Goals:

- ❖ Establish Charter.
- ❖ Governance Structure.
- ❖ Annual Workplan.
- ❖ Decision-making process.

Technical Advisory Group Creation

Goals:

- Streamline & Formalize Communication.
- Technical overview & guidance.
- Guide implementation.
- Establish funding & policy initiatives.
- Monitor effectiveness of implementation.



Joint Public Outreach

Goals:

- ❖ Public Participation Plan.
- ❖ Identify target audiences & key messages.
- ❖ Timeline for public meetings, events, or open houses.
- ❖ Establish shared webpage.
- ❖ Host water stewardship events.

Joint Public Outreach

Goals:

- Build resources for private landowners.
- Joint strategy for pollutant generating facilities.
- Support site visits, outreach, technical, & financial assistance.

Agency Partnerships

Goal: Participate in Ecology's planning process.

- Priority areas & projects.
- Implementation activities.
- Cost estimates.
- Implementation timeline.
- Effectiveness monitoring.
- Adaptive Management Plan.

Policy Initiatives

Policy Initiatives

- **Establish legislative priorities.**
- **Funding Requests.**
- **Legislative Support for:**
  - Septic
  - Sewer
  - Stormwater
  - Agriculture.
  - Riparian restoration
  - Phosphate fertilizer ban

Policy Initiatives

- Update local codes and ordinances.
- Review local fees & rates.
- Partnership opportunities.
- Long-term management frameworks.

DRAFT Work Plans

Clark County

DNA testing to identify human, livestock, dog, horse, or goose sources of pollution.

Monitoring for Lacamas Watershed.

Stormwater inventory and upgrade of all phosphorous removal cartridges.

Cyanobacteria monitoring and public notification.

Clark County

Poop Smart Clark funding for Lacamas

Behavior change campaign for nutrient reduction

Camas

Investigate Dam Management impacts on lake flushing.

Develop final Lake Treatment Plan for implementation in 2024 (w/ Clark County).

Implement monitoring in lakes.

Gather more information for Lake Management Plan.

Work we will achieve together!

- Develop joint Vision and Charter
- Create Technical advisory Group.
- Public Participation Plan.
- Education and Outreach.
- Pollutant Generating Facilities.
- Establish legislative priorities.
- Update local code and ordinances.
- Explore funding opportunities.
- Develop watershed improvement plan.

Other shared commitments

Revisit ILA biannually (every 2-years)

Work together with partners.

Inventory stormwater facilities for update.

Implement inspections, maintenance, repair of stormwater infrastructure.

Participate in Stormwater Partners for Southwest Washington.

Assess effectiveness of lake treatment.

Investigate Long-term treatment and BMP needs for HABs.

Document implementation annually for Council.

Work together towards better water quality for people, fish, and wildlife.

Questions & Discussion

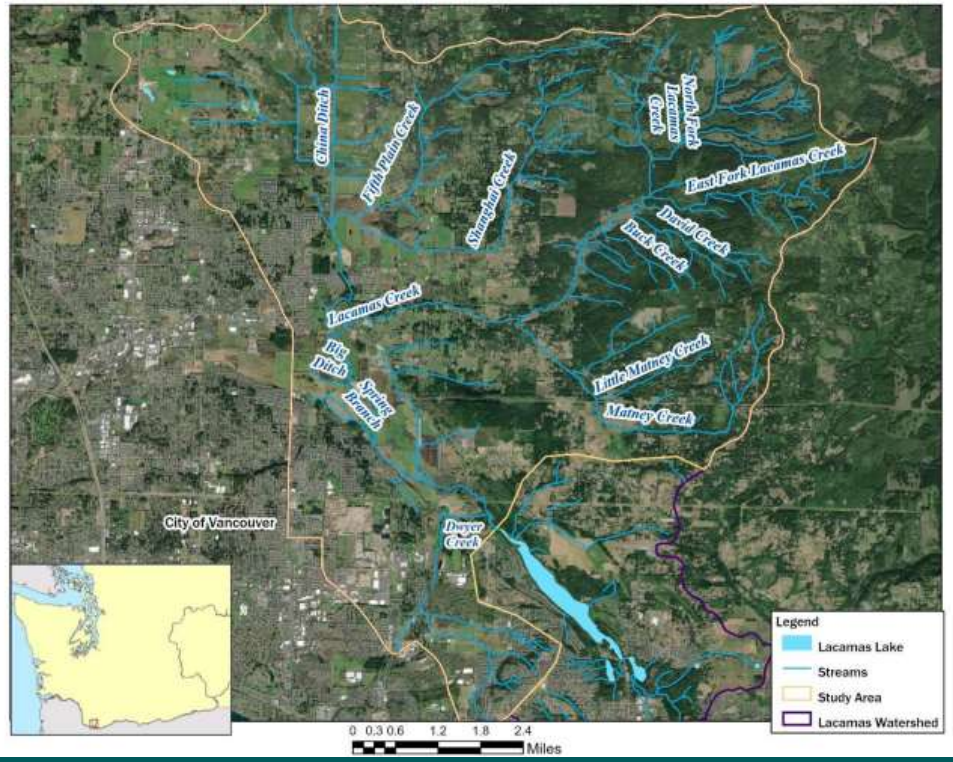
Clark County Council Work Session

February 7, 2024

Appendix Slides

Summary of Priority Areas

- China Ditch: Phosphorus, Nitrogen
- Shanghai Creek: Bacteria
- Fifth Plain Creek: Temperature (upper), Nitrogen (lower)
- Big Ditch: Temperature
- Spring Branch Creek: Phosphorus, Nitrogen
- Lower Lacamas Creek: Nitrogen, Bacteria
- Dwyer Creek: Phosphorus, Temperature, Bacteria



Camas Lake Management Plan - Timeline

Phase 2: Fall 2023 through Spring 2024 (We are here)

- Present draft Lakes Management Plan, including recommended strategies to City Council.
- Receive feedback from Clark County, Ecology and other agency and non-profit stakeholders.
- Submit draft Lakes Management Plan to Washington State Department of Ecology for review and approval.

Future phases: 2024 and beyond

- Implement in-lake management strategies (spring 2024).
- Continue collaboration with agency partners and identify additional partnerships and opportunities for carrying out and implementing management actions to improve water quality in the 67 square-mile Lacamas Watershed.

Department of Ecology - Timeline

Source Assessment (Water Quality Study)

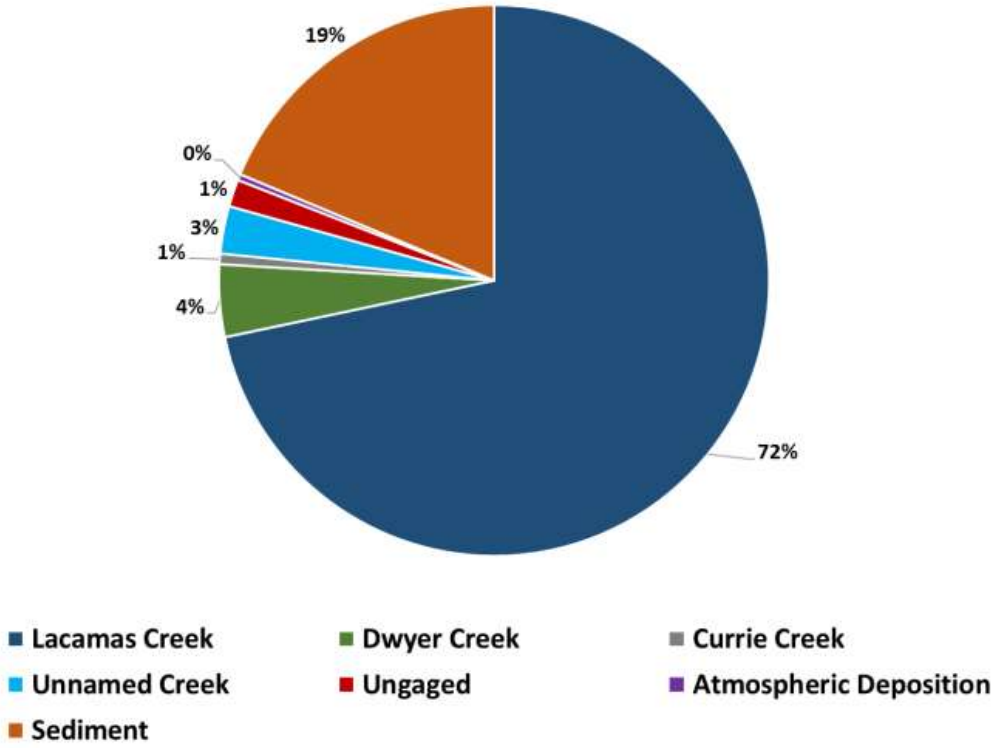
Expected: March 2024

Advanced Restoration Plan (Implementation)

Expected: March 2025

Results - Total Phosphorus Budget

- Data Collected May 2022-April 2023
- Majority of phosphorus enters from Lacamas Creek
- Sediment contributes a sizeable percentage of phosphorus as well
- Creeks contribute minor amounts of phosphorus, mostly due to smaller inflows



3-Part Recommended Management Strategy

1. Annual removal of phosphorus from the **water column** using chemical treatment - beginning Spring 2024

2. Inactivation of phosphorus in the **sediments** using chemical treatment over 5-10 years - beginning Spring 2024

3. Reduction of phosphorus loading from the **watershed**, through continued partnerships with Clark County and other regional and state organizations - Ongoing

Recommended Approach Part 1: Water Column Phosphorus Removal

- Annual removal of phosphorus from water column using aluminum sulfate (alum) or Eutrosorb WC
  - Alum has been applied to numerous lakes in Washington
    - Depending on the required dose, buffering to maintain a pH range that will prevent formation of compounds toxic to aquatic life
  - Eutrosorb WC is a more recent product (2022) and is believed to have a lower risk to aquatic organisms
  - Recommend initially focusing on Lacamas Lake for treatment
  - Estimated Cost = $70,000 to $190,000 per year

Recommended Approach Part 2: Sediment Phosphorus Inactivation

- Inactivation of Phosphorus in the sediments in the deepest portions of Lacamas and Round Lakes, using alum or Eutrosorb G, over 5-10 years
  - The deepest portions of the lake are most likely to release phosphorus from the sediments. Target areas where water depths exceed 30 feet for treatment (**88 acres in Lacamas Lake** and 11 acres in Round Lake)
  - To control dosage, reduce potential adverse impacts, allow for adaptive management, and reduce costs, inactivation of these sediments can be done over 5-10 years
  - Timing of potential future sediment treatment (10 to 50-year time frame) depends on inflow rate of solids from watershed and effectiveness of watershed-based solutions.
  - Estimated Cost = $260,000 to $340,000 per year for 5+/- years

Summary - Budgetary Level 10-Year Costs

Recommendation	Year	Annual Cost	10-Year Cost	Notes
Water Column Phosphorus Stripping	1-10	$180,000	$1.8 Million	Annual treatments required; initial dosage determined from jar testing future applications influenced by loading from watershed.
Sediment Phosphorus Inactivation	1-5	$260,000	$1.3 Million	Need for additional sediment phosphorous inactivation determined by measured conditions, accumulation of additional phosphorous and sediment from the watershed.
Monitoring	1-10	$50,000	$500,000	Monitoring is needed to refine appropriate dosage of treatments, evaluate effectiveness.
Public Outreach	1-10	$50,000	$500,000	Reduction in nutrient loading from watershed will reduce in-lake treatment costs over time.
	Total	**~$540,000 (Years 1-5)** **~$280,000 (Years 6-10)**	**~$4.1 Million**	

Available Funding - $515,000 thru Direct Grant in 2023-2025 State Capital Budget

Other Options Evaluated - Not Recommended at this time…

Phosphorus Removal at Inflow

Option	Planning Level Initial Cost	Planning Level Annual Cost	Notes	Reason for not recommending this option
Alum dosing at Lacamas Creek	$500,000	$650,000	Initial costs construction, permitting, and design costs are very approximate due to absence of local examples.	High initial costs, and time required to design, permit, construct, and implement system.
Eutrosorb WC dosing at Lacamas Creek	$500,000	$220,000	Initial costs construction, permitting, and design costs are very approximate due to absence of local examples.	High initial costs, and time required to design, permit, construct, and implement system.

Other Options Evaluated - Not Recommended at this time…

Types of Aeration

Option	Planning Level Initial Cost	Planning Level Annual Cost	Notes	Reason for not recommending this option
Hypolimnetic aeration or oxygenation	$690,000	$55,000	Costs based on systems at similarly sized lakes; Assumed $20,000 for annual Operation and Maintenance, and replacement after 20 years ($690,000 annualized)	**Not expected to reduce HABs by itself** - only helps with sediment P (~20% load). Does not address the creek loading. Substantial initial costs; time required to design, construct and implement the system.
Nanobubbler	$800,000	$50,000	Costs assume 10 of the largest units available from Moleaer.	**Not expected to reduce HABs by itself** - only helps with sediment P (~20% load). High initial costs, Need for property for device placement.

Other Options Evaluated - Not Recommended at this time…

Option	Description	Reason for not conducting detailed costing
Algaecide	Risk of toxicity to fish and vegetation; short term solution, requires monitoring	Not at this time; however, new products continue to be developed with lower potential for toxicity to fish and benthic organisms. Maintain for future consideration.
Carp removal	Carp are known to stir up Phosphorus in bottom sediments; reducing Carp population may reduce internal loading.	Consider communications encouraging carp fishing; maintain consideration of commercial removal of carp. However, Further discussions with WDFW needed.
Limiting of motor use in shallow areas of lake	In some areas of Lacamas Lake, motors can stir up sediments from the bottom of the lake, potentially resulting in Phosphorus transfer to the water column.	There is not enough evidence to demonstrate that this would meaningfully reduce internal loading. Maintain for future consideration. *Policy decision*
Dredging	Remove Phosphorus-containing sediments from the bottom of the lakes.	Not at this time due to high costs and need to determine where dredged sediments would be placed.
Ultrasound	Ultrasonic waves create a barrier preventing algae from moving up and down the water column to access nutrients and light needed for growth.	Relatively few examples; not found to be effective at Lake Ketchum
Full Water Column Mixing	Mixing the like using solar-powered mixers or mechanical mixing	Risk of moving high concentrations of nutrients in water near the bottom of the lake to the surface, leading to greater algae growth.