PCB Variances for the Spokane River

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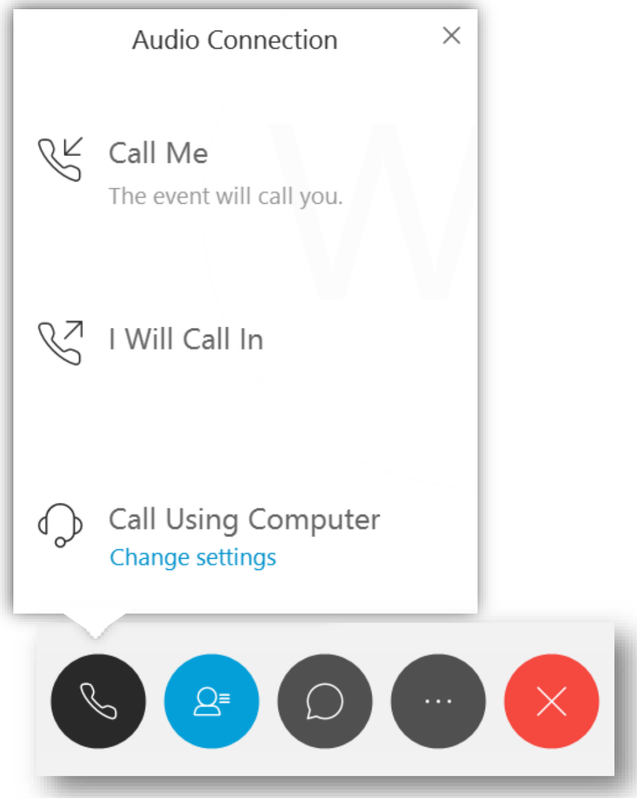

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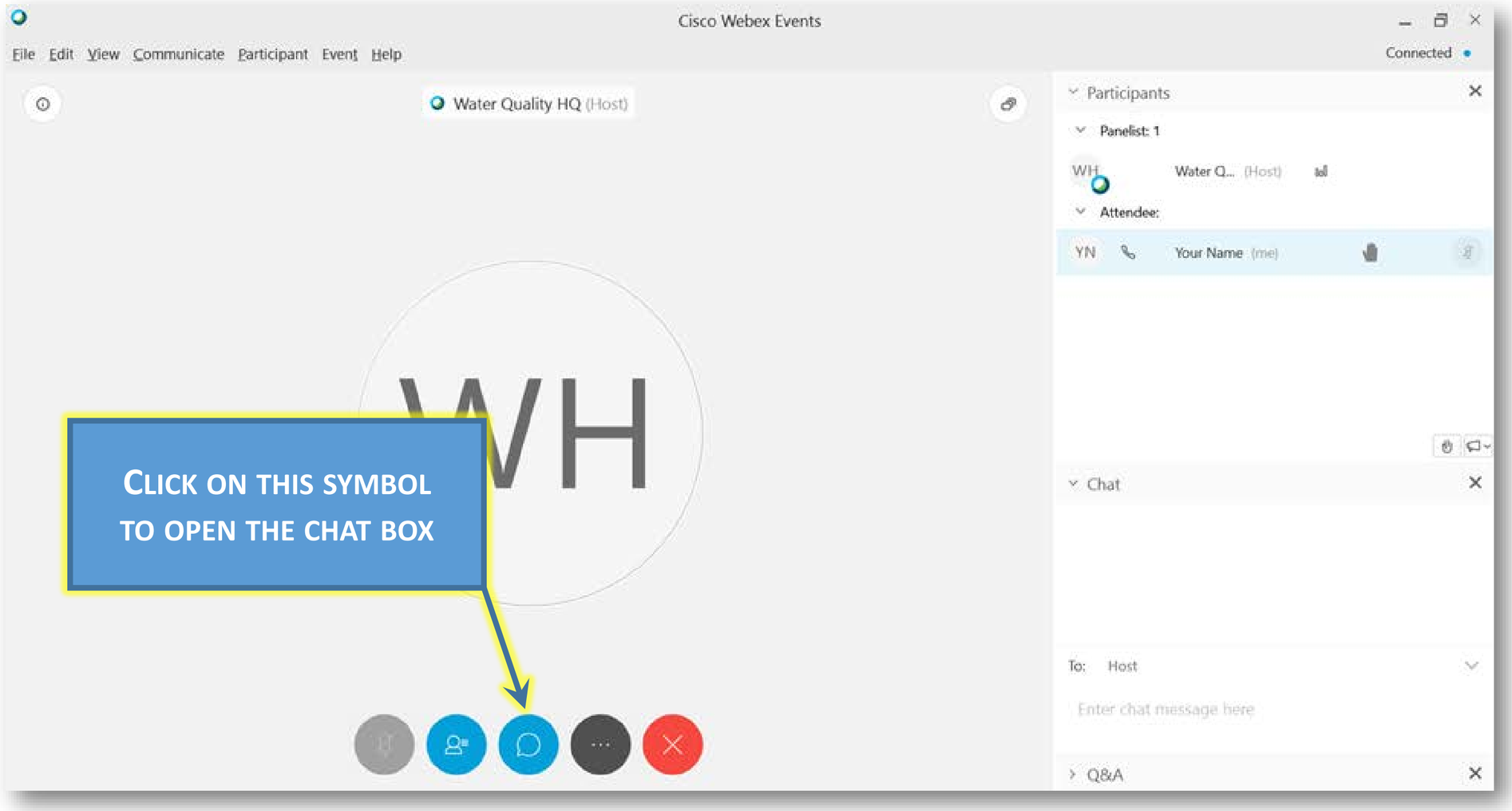
PCB Variances for the Spokane River

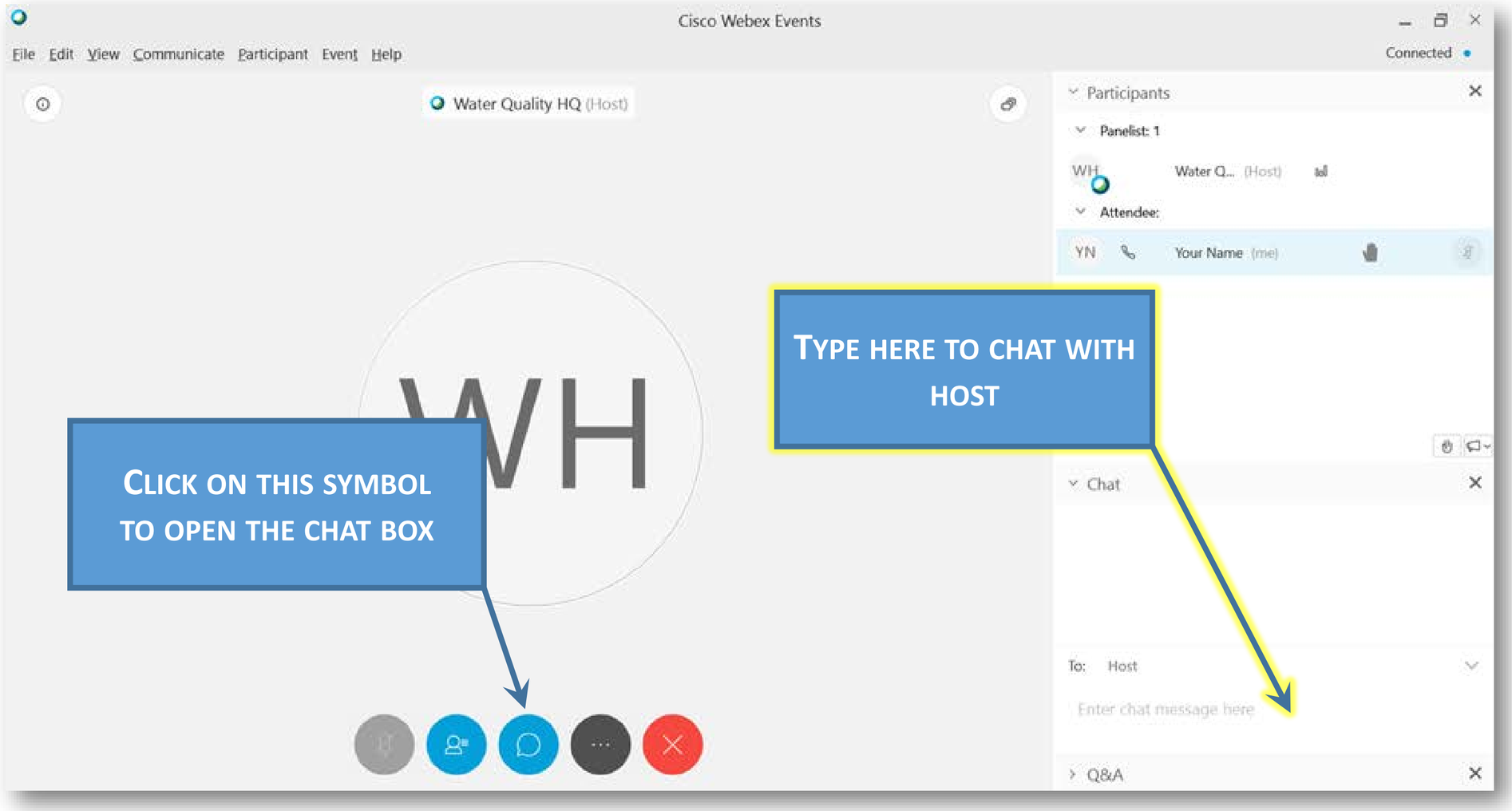
Wednesday, April 8, 2020, 6 pm
Open House Webinar

DEPARTMENT OF ECOLOGY
State of Washington

WEBINAR FEATURES: CHAT BOX



Navigating the Webinar Features



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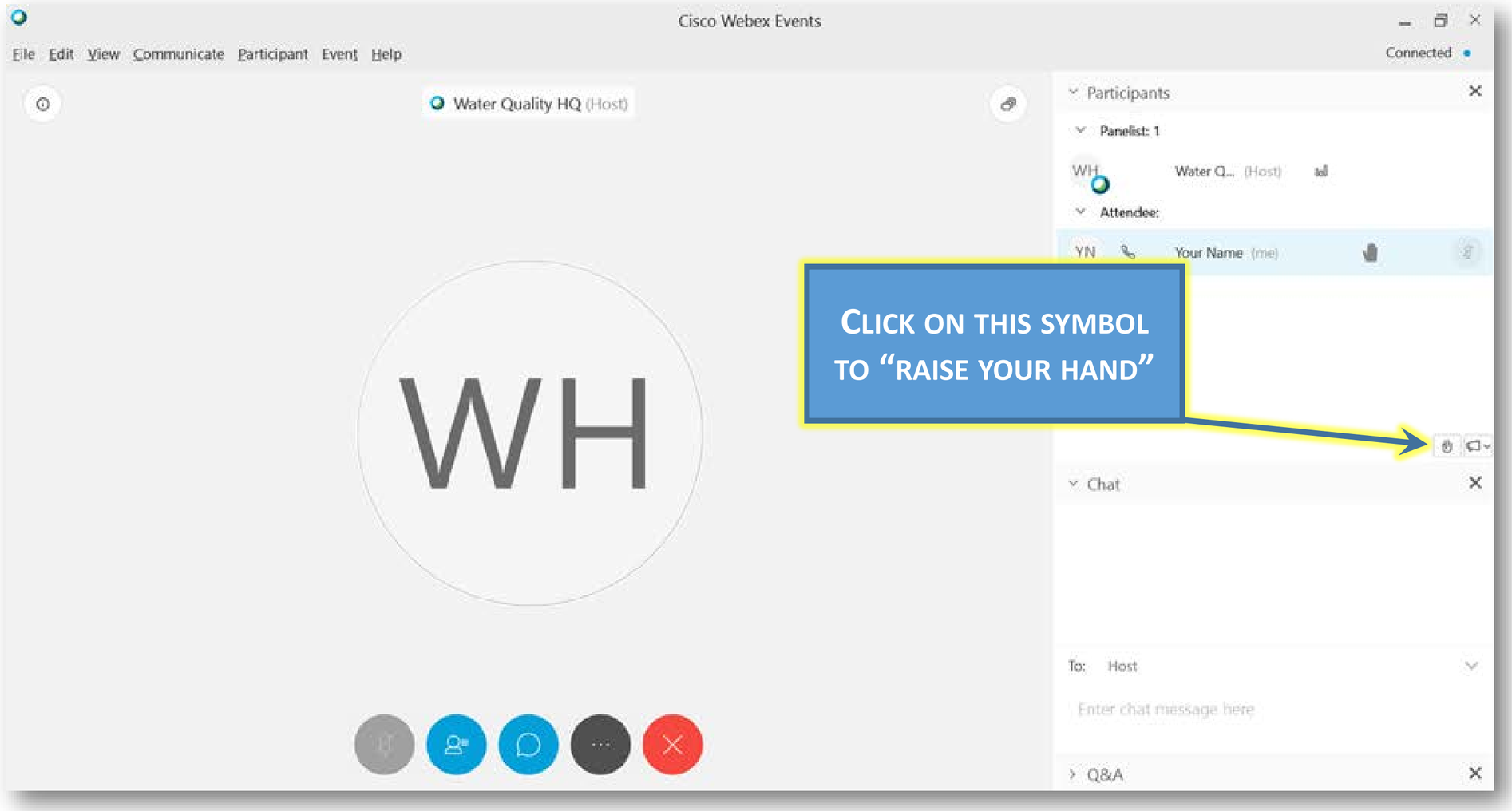

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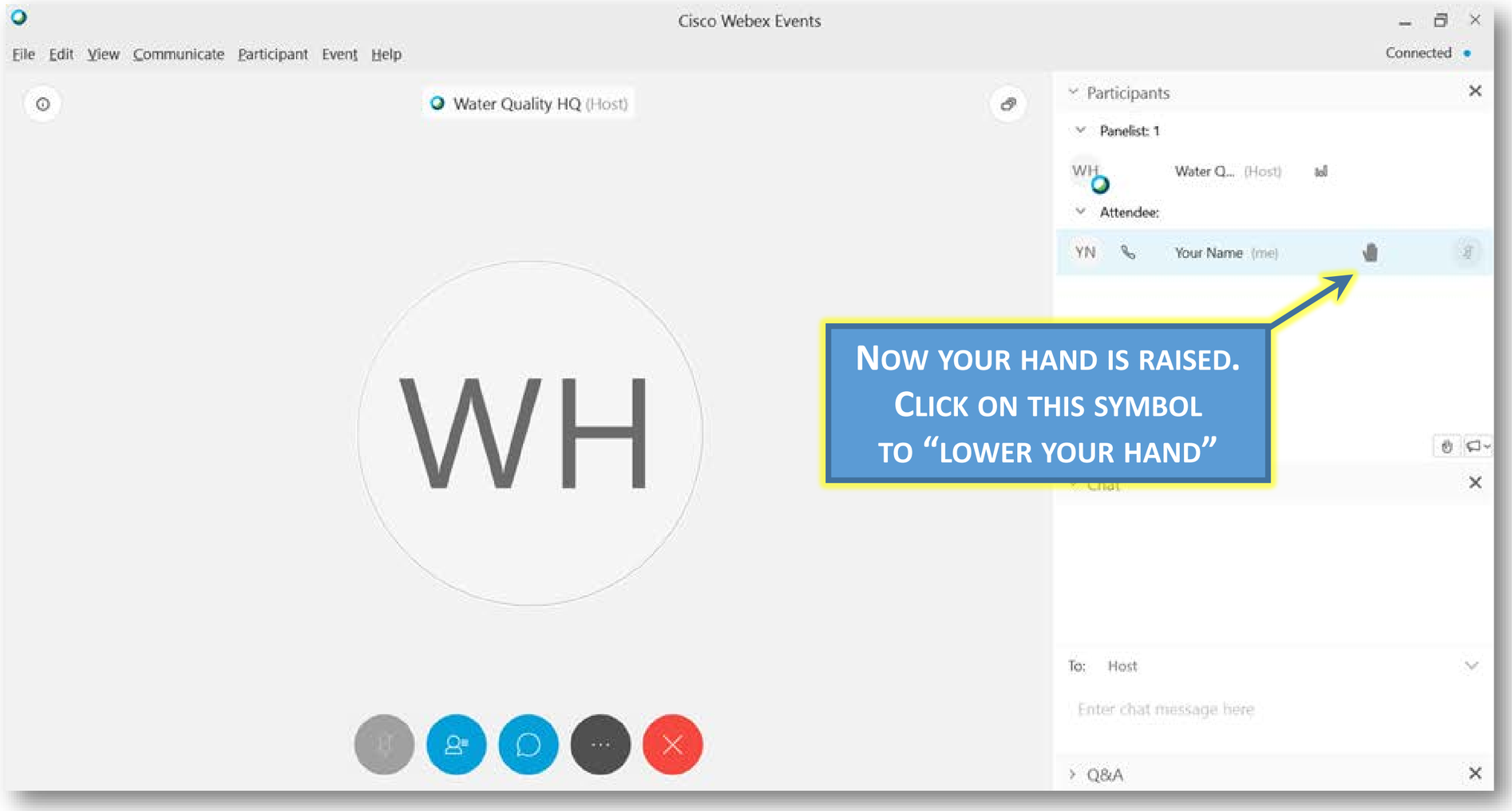

Agenda

1. Background on PCBs
2. What is a Variance?
3. Overview of technology
4. Preliminary rulemaking decisions
5. Next steps
6. Questions

OPENING REMARKS

Vincent McGowan, Water Quality Program Manager

DEPARTMENT OF ECOLOGY
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Background

Bryson Finch

Water Quality Program Toxics Specialist

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State of Washington

2018 Outreach

March

Spokane Permitting Workshop

March 14, 2018

August

Water Quality Permitting Tools Workshop

August 8, 2018

November

Water Quality Permitting Tools Workshop #2: Decoding the Variance Process

November 5, 2018

2019 - 2020 Outreach

November 2019

Workshop on PCB Variances for Spokane River Dischargers

November 14, 2019

April 2020

Statewide Webinar on Variances in the Spokane River

April 8, 2020

Summer 2020

Public informational workshops and hearings

During public comment period

Water Quality Standards

Three Components of WQS

DESIGNATED USES: management objectives for surface waters

CRITERIA: levels of water quality that will support the designated uses; expressed as numeric values and/or narrative statements

ANTIDEGRADATION POLICY AND METHODS: framework for maintaining and protecting water quality that has already been achieved

Designated Uses

Definition: Those uses specified in the water quality standard regulations for each water body or segment whether or not they are being attained

- Interpretation:
  - Goals/Objectives/Desired conditions of a water body
  - Ex. Fish harvest use

Designated uses establish water quality goals

- Determines appropriate criteria to meet goals
- Requires protection of downstream waters

Water Quality Criteria

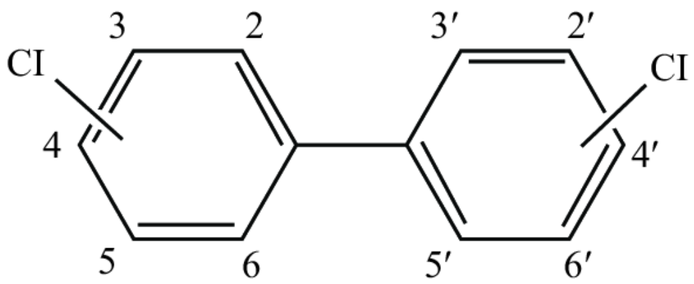
Defined: Elements of state/tribe water quality standards, expressed as a constituent concentration, levels, or narrative statements, representing a quality of water that supports a particular use

- When criteria are met, water quality will generally support the designated use

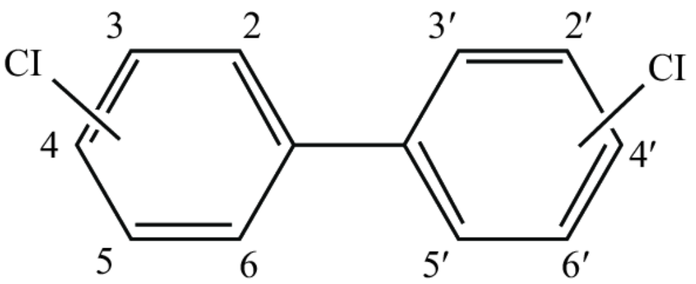
- **Magnitude**
  - How much of a pollutant or measure of a condition (e.g. concentration)

- **Duration**
  - Period of time over which the concentration is averaged

- **Frequency**
  - How often the average concentration can be exceeded



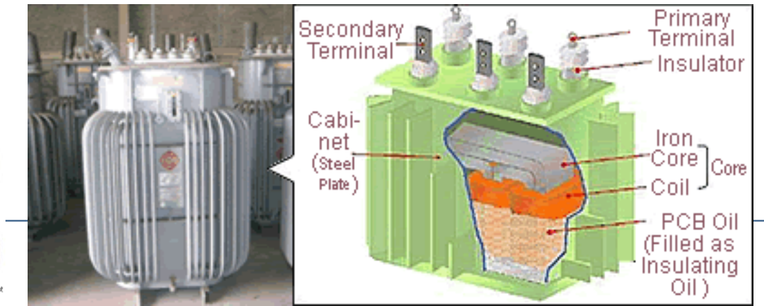
What are PCBs?

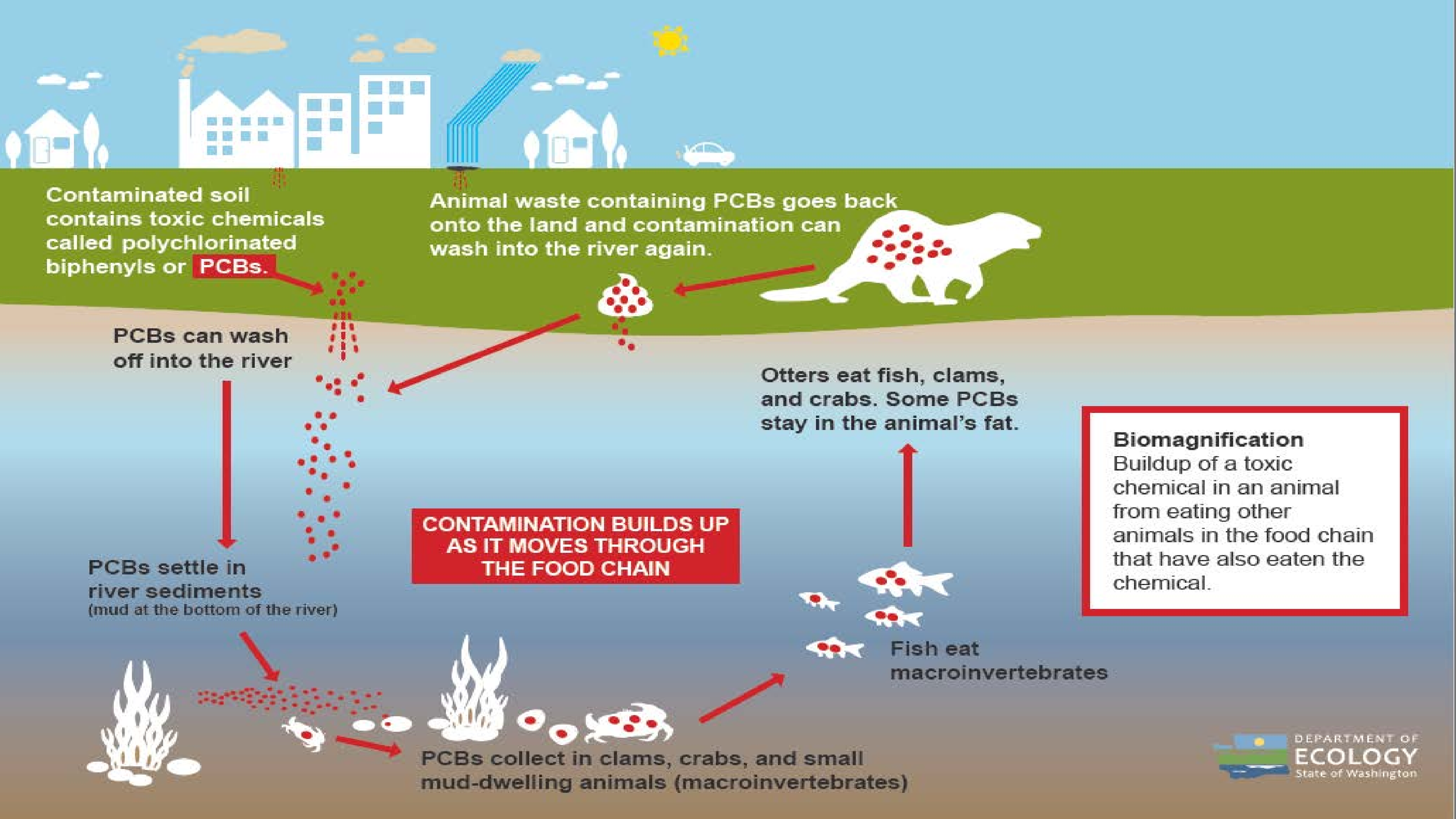


- Polychlorinated biphenyls
  - Historically used as coolants in electrical equipment, plasticizers, wax and pesticide extenders, and lubricants
  - 209 different PCB molecules
  - Found almost **everywhere**
  - **Long-lasting** in the environment

A typical pre-1979 PCB-containing fluorescent light ballast (FLB)

A typical Non-PCB containing fluorescent light ballast. The ballast has a "No PCBs" marking on the top of the ballast and the text "electronic ballast". Only magnetic fluorescent light ballasts contained PCBs.




Contaminated soil contains toxic chemicals called polychlorinated biphenyls or PCBs.
Animal waste containing PCBs goes back onto the land and contamination can wash into the river again.
PCBs can wash off into the river
Otters eat fish, clams, and crabs. Some PCBs stay in the animal's fat.
CONTAMINATION BUILDS UP AS IT MOVES THROUGH THE FOOD CHAIN
Biomagnification
Buildup of a toxic chemical in an animal from eating other animals in the food chain that have also eaten the chemical.
PCBs settle in river sediments
(mud at the bottom of the river)
Fish eat macroinvertebrates
PCBs collect in clams, crabs, and small mud-dwelling animals (macroinvertebrates)
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PCB Criteria: Spokane River

Regulatory levels for total PCBs		Total PCBs (ppq) (ppq = parts per quadrillion)	Basis
Human health criterion (HHC)		7	Fish ingestion by people
Aquatic life criterion	Acute	2,000,000	Fish health
	Chronic	14,000	

- Upstream Idaho HHC is 190 ppq
- Downstream Spokane Tribe HHC is 1.3 ppq

PCBs in our products*

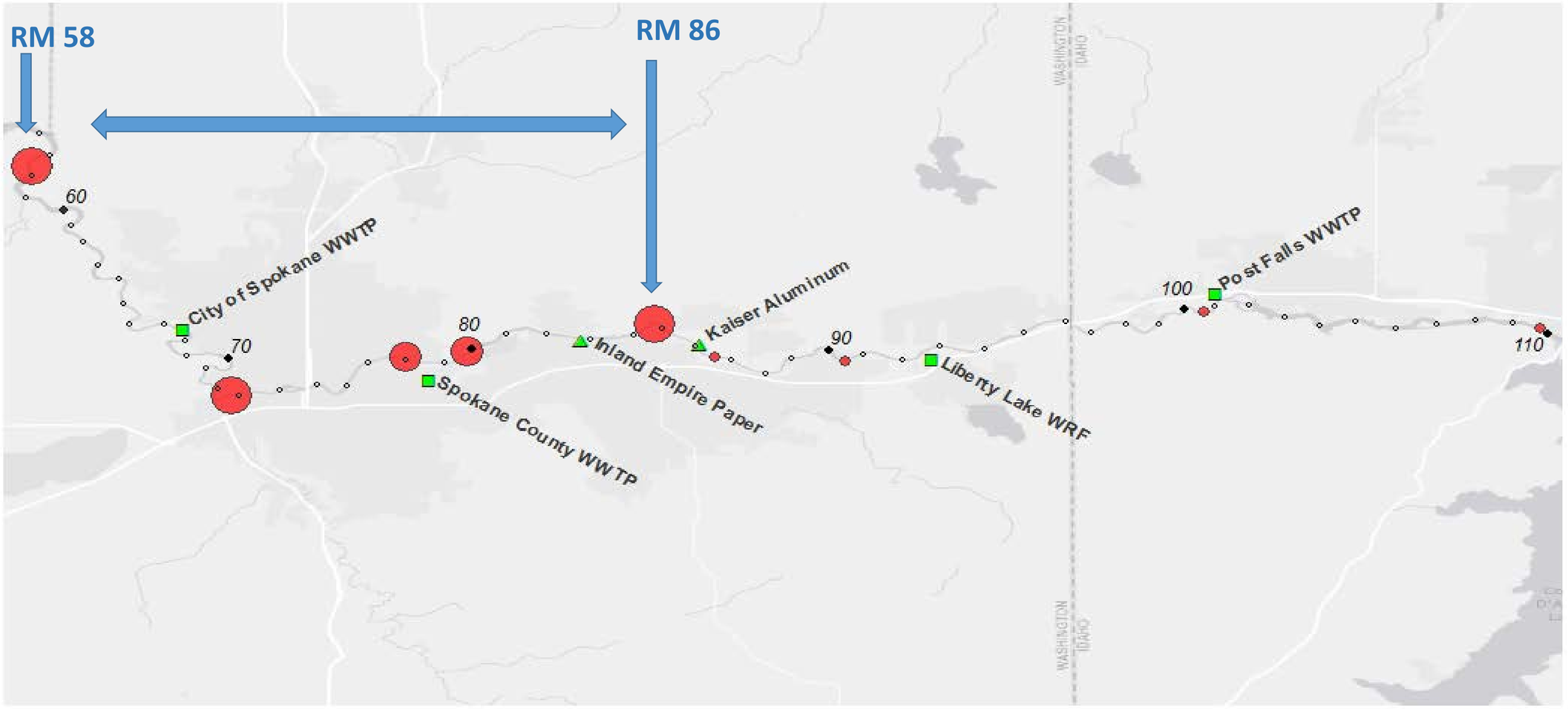
Product	Concentration
Laundry detergent[1]	174,000 ppq
Dish soap[1]	83,000 ppq
Toothpaste[2]	100,000 – 110,000 ppq
Body care products[2]	100,000 – 7,800,000 ppq
Printed materials/newsprint[2]	2,4000,000 – 53,500,000 ppq

*Results are based on sampling of some products

[1-]City of Spokane, 2015

[2-]Department of Ecology, 2016

PCBs in the Spokane River



Measuring PCBs

Two methods are available to measure PCBs

Measures	Method 608	Method 1668
EPA Approved for permit compliance	Yes	No
Sensitivity	High	Very High
Detection Limit	50,000 ppq	7-30 ppq
Blank Interference	Limited	High
Purpose	Compliance	Source tracking

- Human health criterion for PCBs is 7 ppq

State and Regional PCB Reduction Efforts

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Reducing PCBs in the Environment

Cleaning up Contaminated Sites

- Toxics Cleanup Program

Safer products for WA

- Implements Chapter 70.365 RCW
- PCBs in printing inks
- Safer alternatives

State purchasing policy

- Avoid products and packaging that contain PCBs
- Set PCB restrictions in state-purchased yellow road paint

Reducing PCBs in the Environment

Chemical Action Plan for PCBs

- Recommends actions to protect human health and environment, including:
  - Identify sources of PCBs in buildings and products
  - Address regulatory differences in TSCA and Water Quality Standards

Green Chemistry

- Promotes creating fewer toxic chemicals
- Uses 12 principles to guide safer chemical development and processes

Reducing PCBs in the Environment

Spokane River Regional Toxics Task Force

- Conduct studies that identify PCB levels, and pollution sources
- Identified PCBs in products and support reduction or elimination
- Developed Comprehensive Plan (2016) that contains 29 control actions
- Engage in public outreach and education activities

Stormwater controls

- Municipal Stormwater Permits
- City of Spokane Integrated Clean Water Plan


Photo by Adriane Borgias

QUESTIONS?

Please use the “raise hand feature,” or type your question in the chat box

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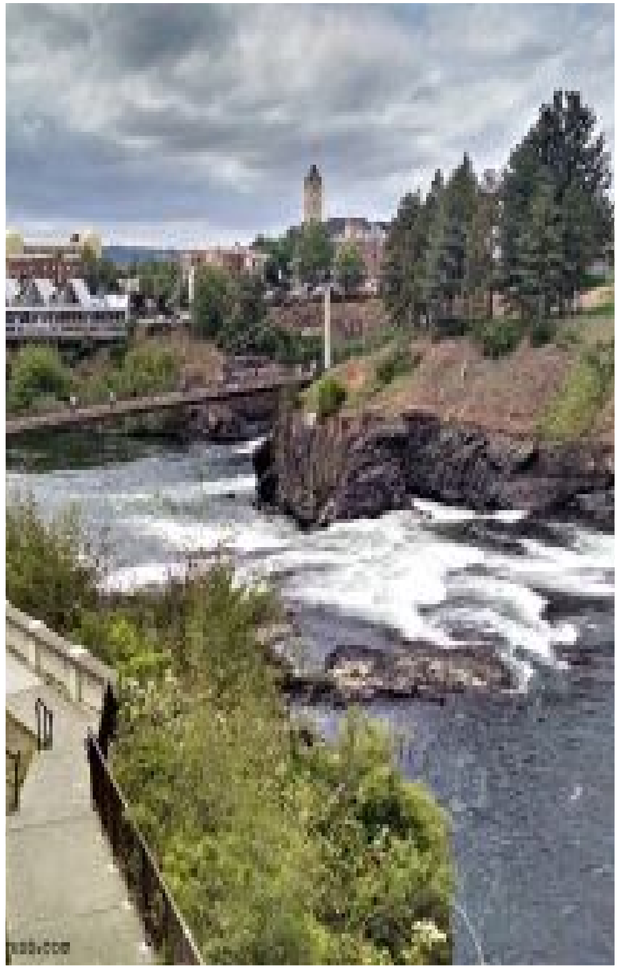
Strategies to reduce PCBs

Chad Brown

Water Quality Standards Unit Supervisor

DEPARTMENT OF ECOLOGY
State of Washington

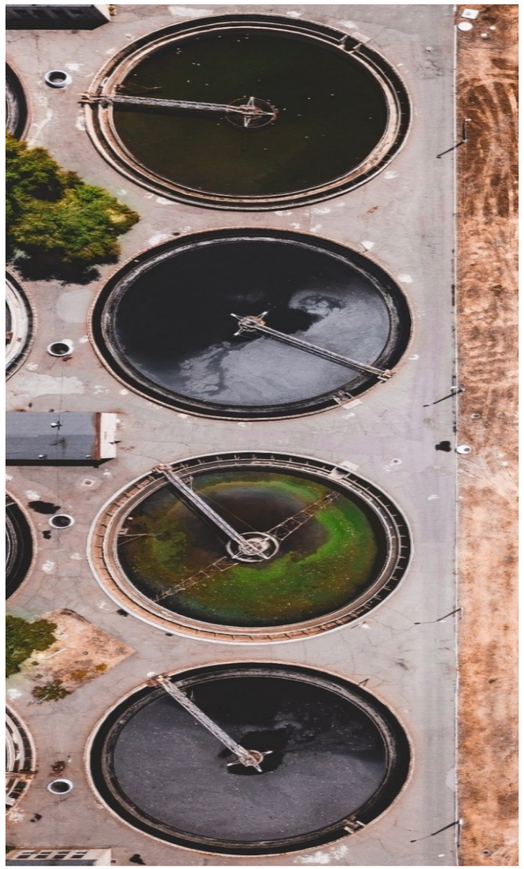
TMDL approach to reducing PCBs



Develop a Total Maximum Daily Load (TMDL) or Cleanup Plan

- Identifies reductions needed by point sources & nonpoint sources
- Not self implementing
- Point source reductions are put into NPDES permits
- Nonpoint sources addressed through “other” efforts

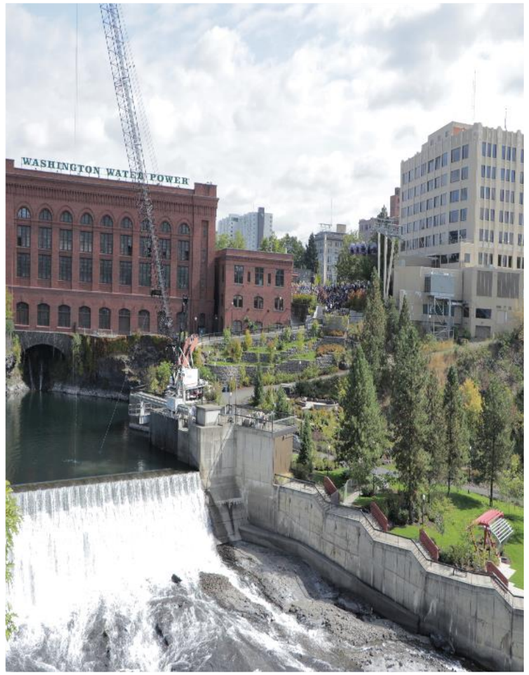
Variance approach to reducing PCBs



Issue variance to 5 dischargers and place requirements in rule and permits

- Highest attainable condition applies at point of discharge and is used in each permit
- Compliance with effluent limit based on Method 608 which measure to 50,000 ppq
- Requires implementation of Pollution Minimization Program (PMP) actions
- PMPs address waste stream sources, emerging technologies, and requirements for highest level of reductions

Permit-only approach



Alternate option: Issue permits without adopting a variance

- 7 parts per quadrillion (ppq) effluent limit
- NPDES regulations use method 608 which measures PCBs to levels only as low as 50,000 ppq
- Discharger remains in compliance with the regulatory levels if meeting less than 50,000 ppq
- A variance is a uniquely suitable tool to further the reduction of PCBs (and other pollutants that have regulatory limits well below the ability of the approved analysis to detect them.

What is a Variance and how does it work?

Chad Brown

Water Quality Standards Unit Supervisor

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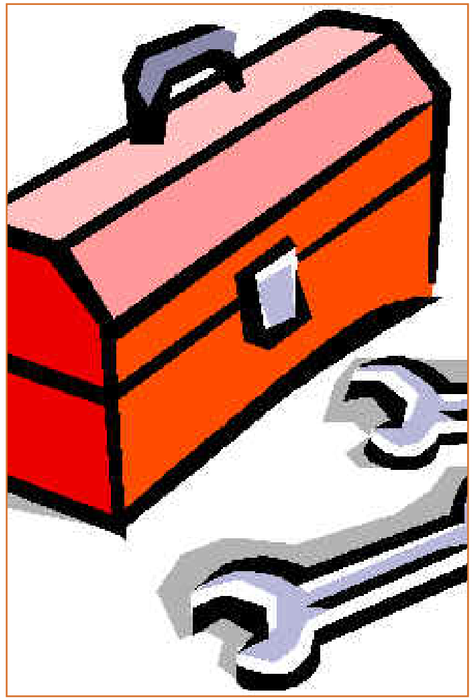
What is a Variance?



Clean Water Act and Water Quality Standards Tool

40 CFR 131.14 | 173-201A-420 WAC

- WQS cannot be attained
- Enforceable conditions
- Progress meeting standards by working towards the highest attainable condition
- Regular evaluation of progress

Variances can apply to dischargers or waterbodies

Discharger variance - Individual or multiple

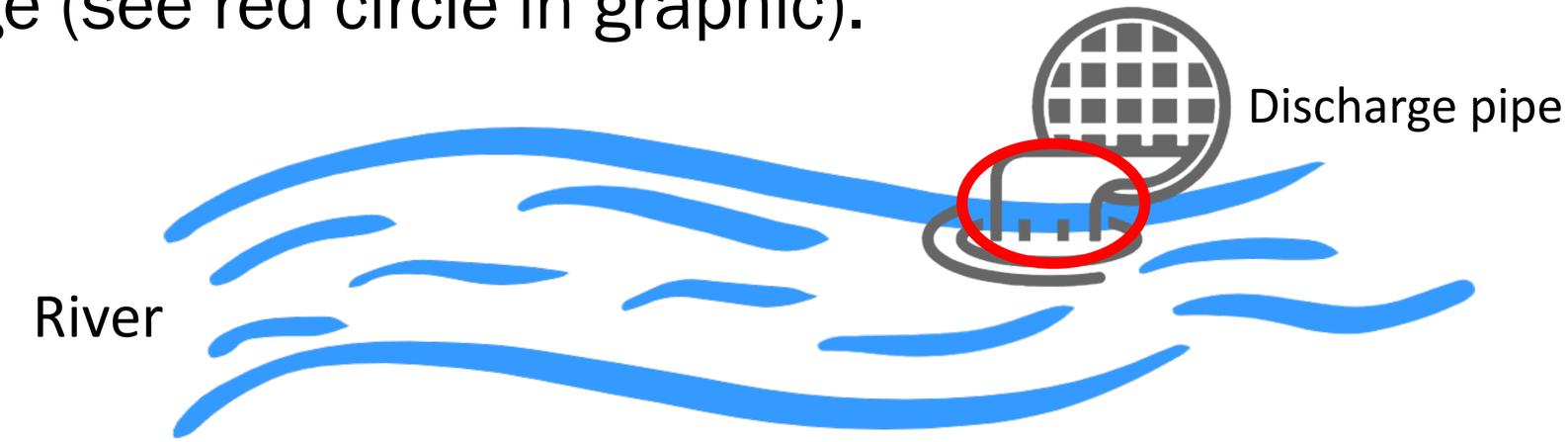
- Only applies at **points of compliance** for the facility

Waterbody variance

- Stretch of water or waterbody
- Dischargers of pollutant on waterbody can be covered as long as they meet variance requirements

A discharger variance applies at the end of the pipe

- A discharger variance does **not** apply to the entire river.
- The new interim criterion (HAC) and designated use apply only at the point of discharge (see red circle in graphic).

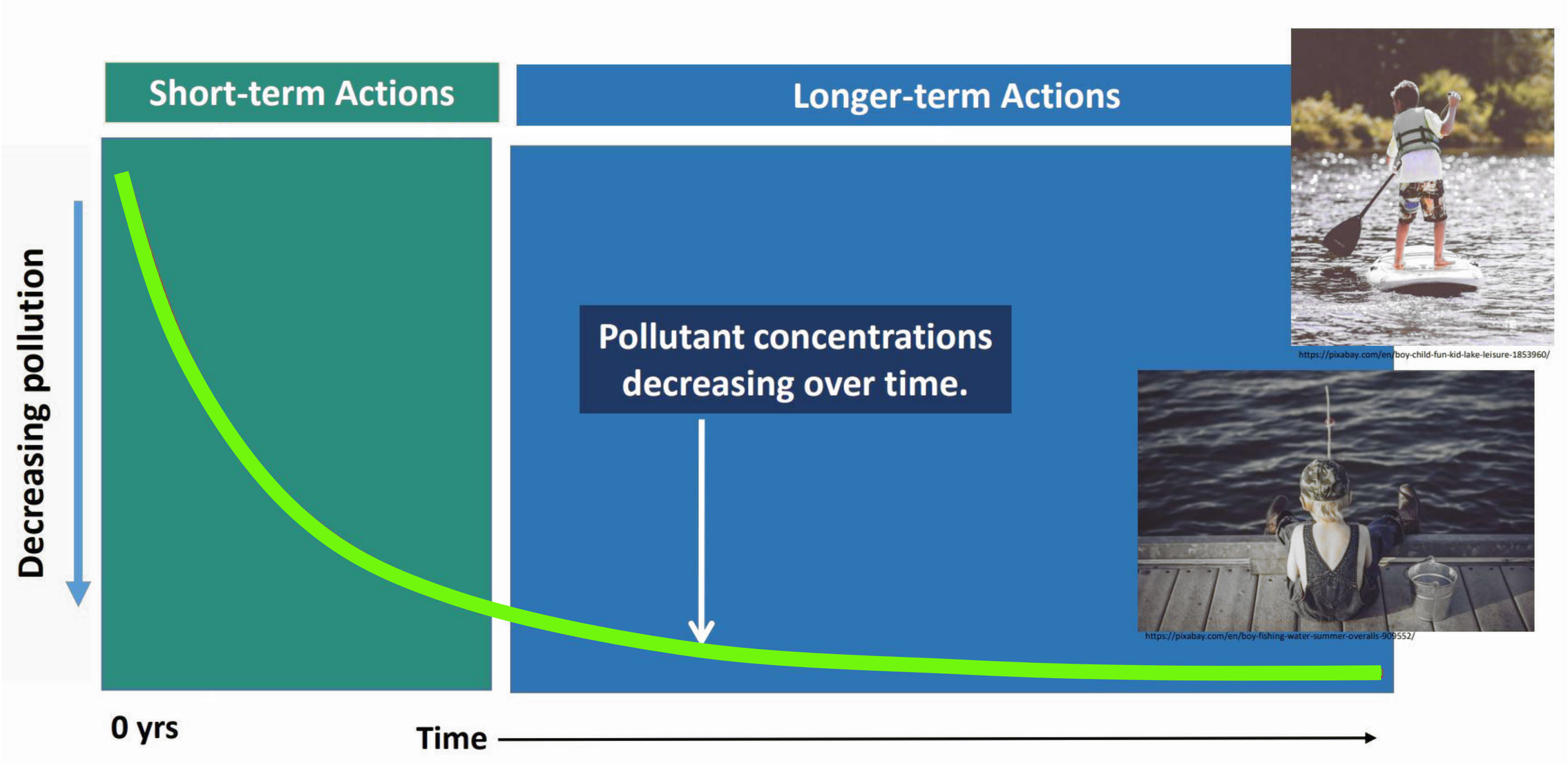


A discharger variance does not change other uses or criteria on the river

Reasons why a variance may be needed

1. Naturally occurring pollution concentrations
2. Natural, ephemeral, intermittent, or low flow conditions
3. Human caused conditions or sources of pollution
4. Dams, diversion, or other types of hydrologic modifications
5. Physical conditions related to the natural features of the water body
6. Substantial and widespread economic and social hardship
7. Lake, wetland, or stream restoration activities

Variance is a path to clean water over time



https://pixabay.com/en/boy-child-fun-kid-lake-leisure-1853960/

https://pixabay.com/en/boy-fishing-water-summer-overalls-909552/

Highest attainable condition (HAC)

Must be maintained throughout the term of the variance

For dischargers that will be installing treatment technologies during the variance

- Best effluent condition, once technology is installed
+
Pollution minimization program

2

For dischargers with treatment technologies installed

- Interim effluent condition that reflects the greatest pollutant reduction achievable
+
Pollution minimization program

3

Core Components of HAC

Quantifiable Effluent Quality Improvement

The highest attainable effluent condition expressed as a measurement

Actions to reduce pollution throughout the term of the variance

- Actions that the discharger shall take to continue pollutant reductions
- Actions that that the state shall take to continue pollutant reductions

How Does a Variance Work?

A Variance is a path to cleaner water over time

Variance Process

PLAN
- Evaluate Highest Attainable Condition (HAC)
- Establish a Pollution Minimization Program
- Get public input on variance

IMPLEMENT
- Implement actions to reduce pollutant entering the facility
- Install and optimize best feasible pollution control technology at the facility

EVALUATE
- Monitor river and effluent to make sure HAC is achieved
- Monitor treatment efficiency and progress to reduce pollutant

LEARN
- Review variance every at least every five years
- Ensure that the additional pollutant reductions are occurring
- Demonstrate that the variance is still needed

A Pollutant Minimization Program (PMP) provides a multi-pronged approach to address PCB reductions. A PMP looks at sources, improved treatment technologies, and education.

ADAPT

Use adaptive management to further reduce PCBs entering the environment.

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Re-evaluation every 5 years
(or more often if necessary)

Learn

- **Review variance every five years**
- **Ensure that the further pollutant reductions are occurring**
- **Demonstrate that the variance is still needed**

The re-evaluation is separate from the permit process but can be coordinated

Ecology re-evaluates the data and PMP implementation

- **In river data** – demonstrates that the variance still necessary
- **Facility treatment data** – tracks progress to determine what is the level of reduction is being achieved
- **Review reports on all other actions to reduce PCBs**

Process

Ecology's evaluation determines if the variance requirements being met and what more is needed.

Ecology conducts a public review

Ecology submit the evaluation to EPA and modifies the next permit issuance as necessary.


Photo by Adriane Borgias

QUESTIONS?

Please use the “raise hand feature,” or type your question in the chat box

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State of Washington

Overview of treatment technology

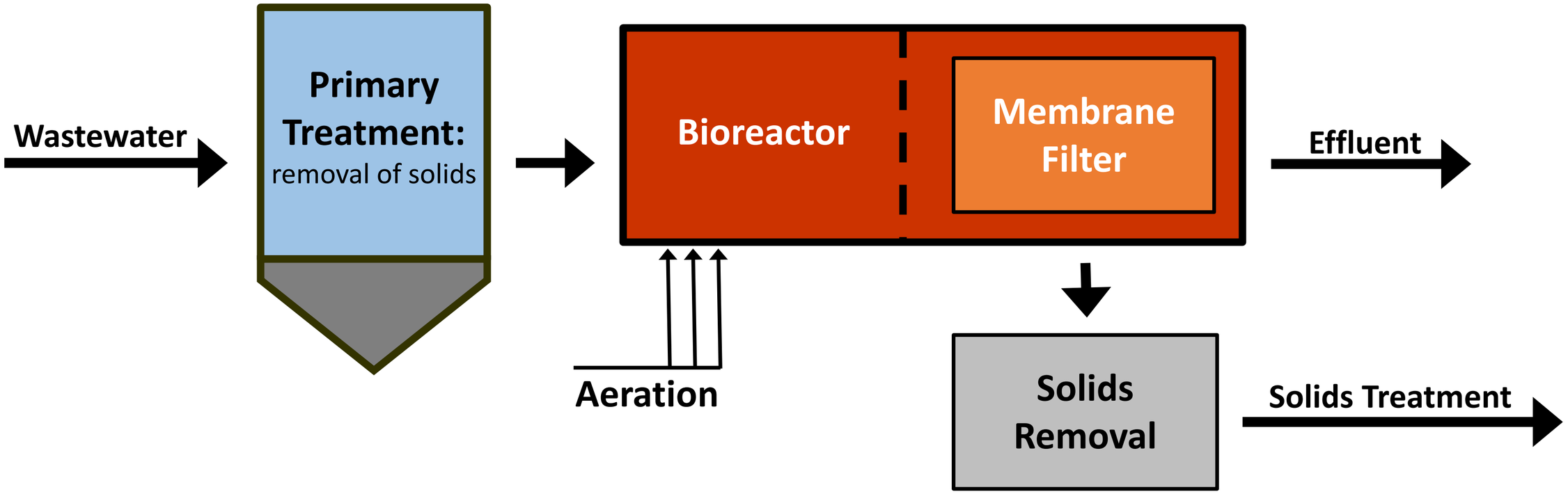
Pat Hallinan

Department of Ecology

DEPARTMENT OF ECOLOGY
State of Washington

Overview of current technology

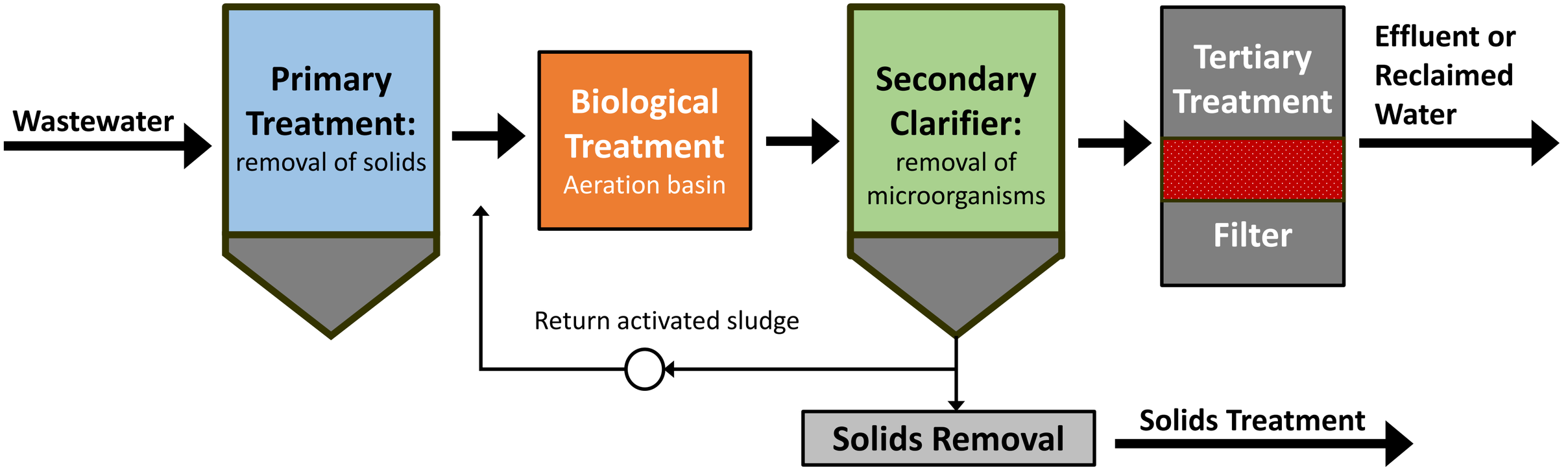
Spokane County (Installed in 2011)



✓ Meets Greatest Pollutant Reduction Achievable (HAC#3)

Overview of current technology

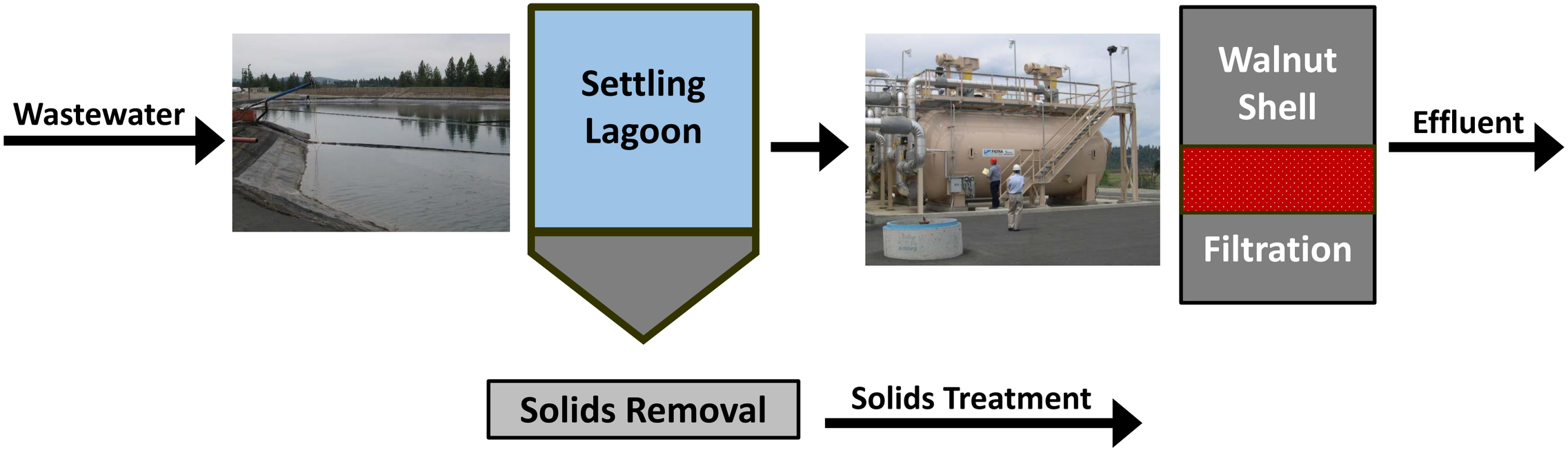
LLSWD (2017), **IEP** (2020), **City of Spokane** (2021)



✓ Meets Greatest Pollutant Reduction Achievable (HAC#3)

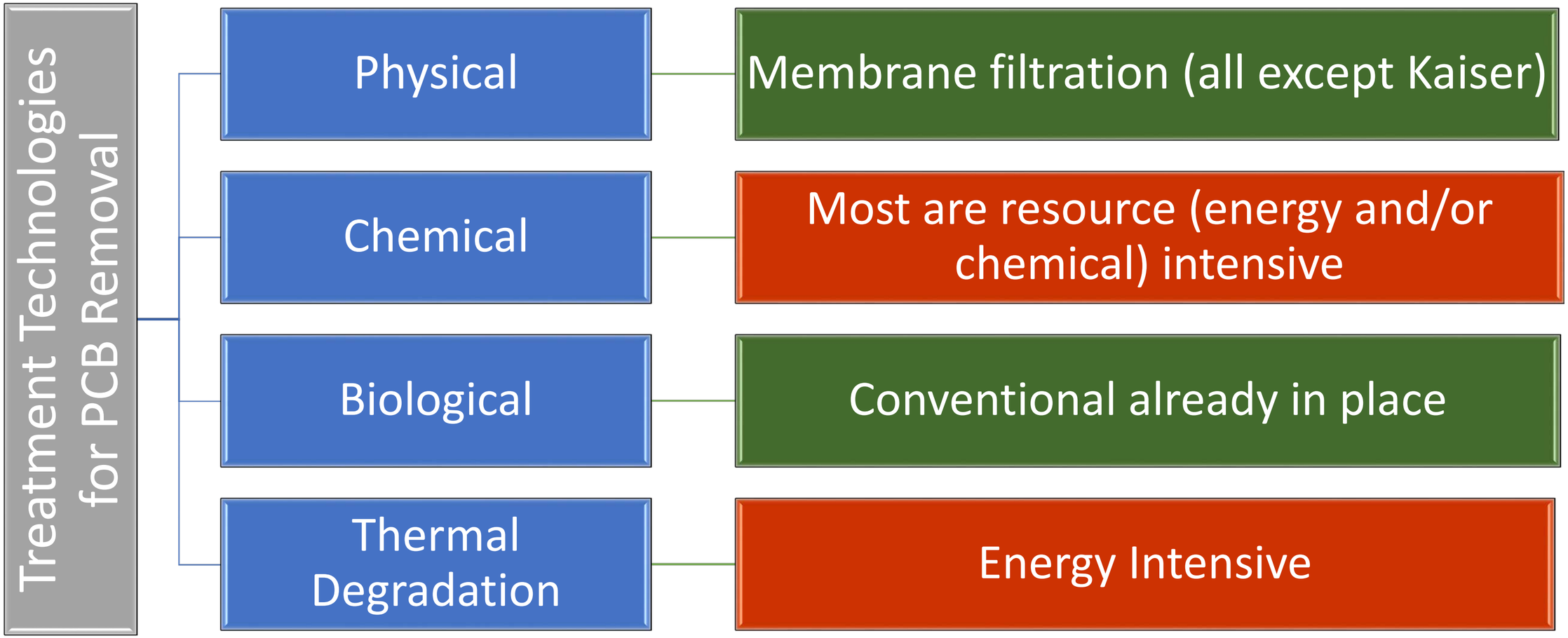
Overview of current technology

Kaiser Aluminum (2003)

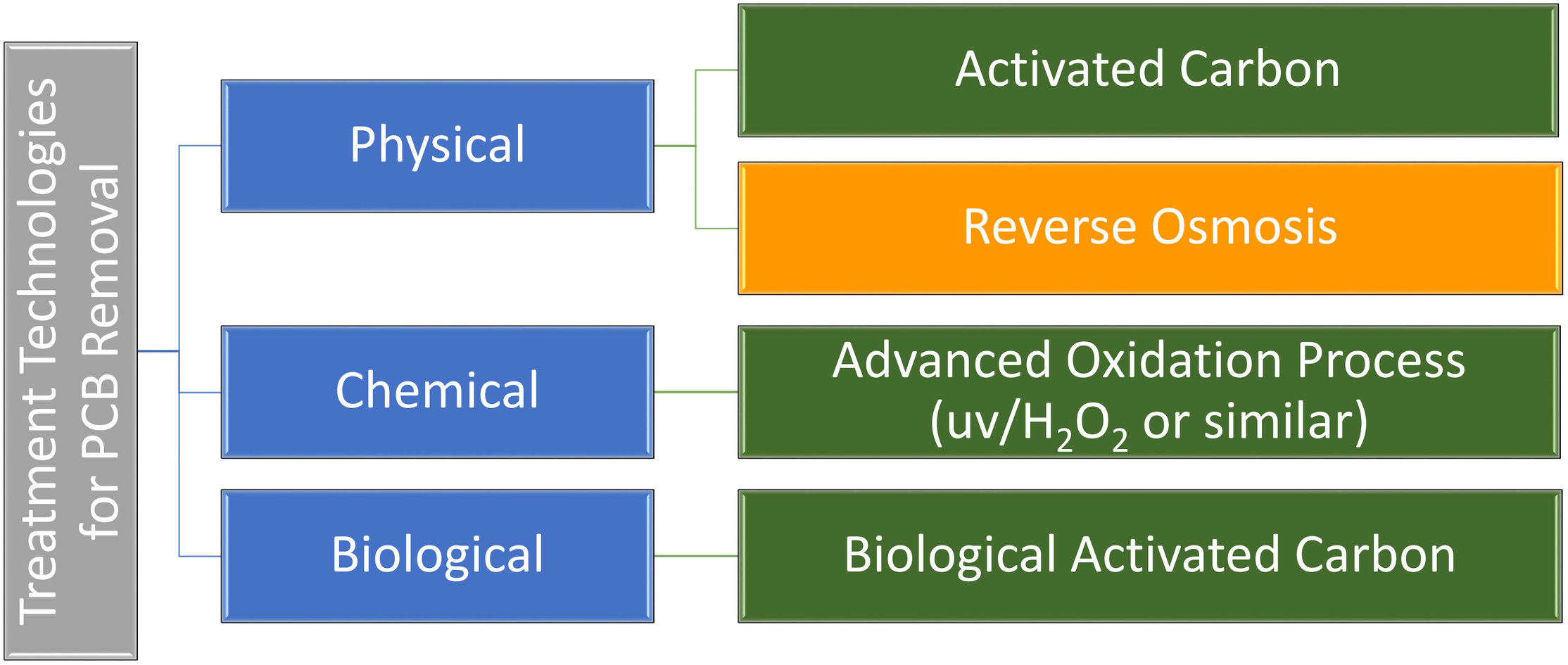


✓ Does NOT Meet Greatest Pollutant Reduction Achievable (HAC#2)

Technology in-place vs determined infeasible at full scale



Potential future technology (TBD)



Highest Attainable Condition (HAC)

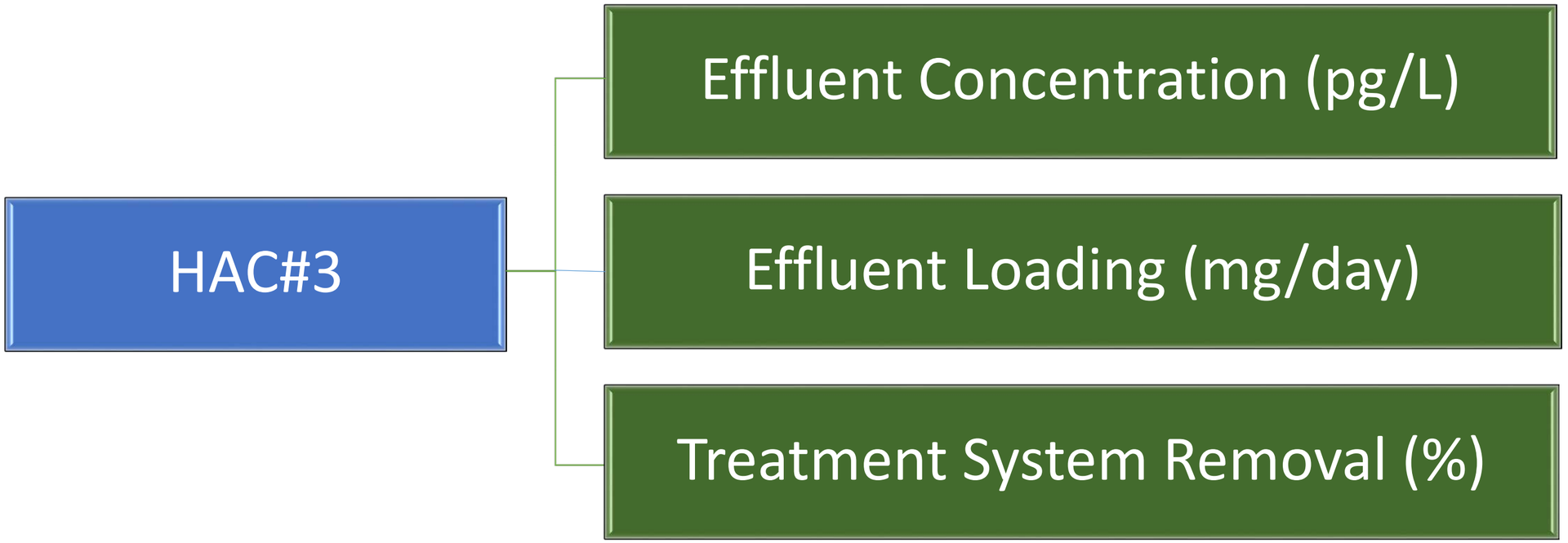
Pat Hallinan

Water Quality Program

DEPARTMENT OF ECOLOGY
State of Washington

Preliminary Decision – HAC#3

The interim effluent condition that reflects the greatest pollutant reduction achievable with the installed technologies (City of Spokane, Spokane County, LLSWD, IEP)



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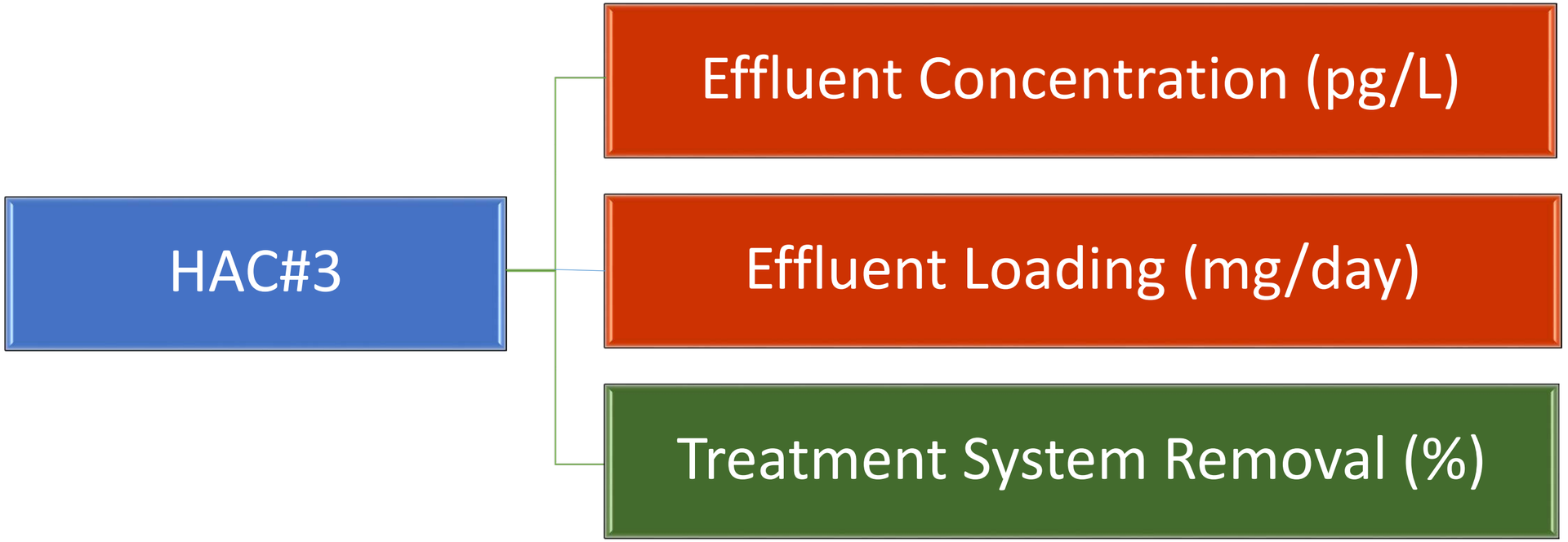

Analysis – HAC#3

Treatment System Removal

- Must be quantifiable!
- $\% \, Removal = \frac{Influent - effluent}{Influent} \, x \, 100$
- Used discharger data **if** available
- Estimated when discharger data was limited/unavailable

Preliminary decision – HAC#2

The interim effluent condition that reflects the greatest pollutant reduction achievable (Kaiser)

- Complete flow reduction projects
- Evaluate treatment alternatives
- Install technologies that reflect the greatest pollutant reduction achievable (next level of treatment for PCBs)
- Ten year timeline

Preliminary decision – HAC#2

Also requires knowledge of the best quality effluent that is achievable

- Must be quantifiable!
- Treatment system removal
- Estimated based on PCB removal from existing walnut shell system plus additional suspended solids removal

Alternative Actions

Pat Hallinan

Water Quality Program

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State of Washington

Alternative actions considered

Actions that would result in meeting effluent limits based on the underlying water quality criteria

- Municipalities
  - Reclaimed water, land treatment, infiltration/injection, evaporation ponds
- Industries
  - Reducing water use, elimination of paper recycling

Next Steps

Bryson Finch

Water Quality Program Toxics Specialist

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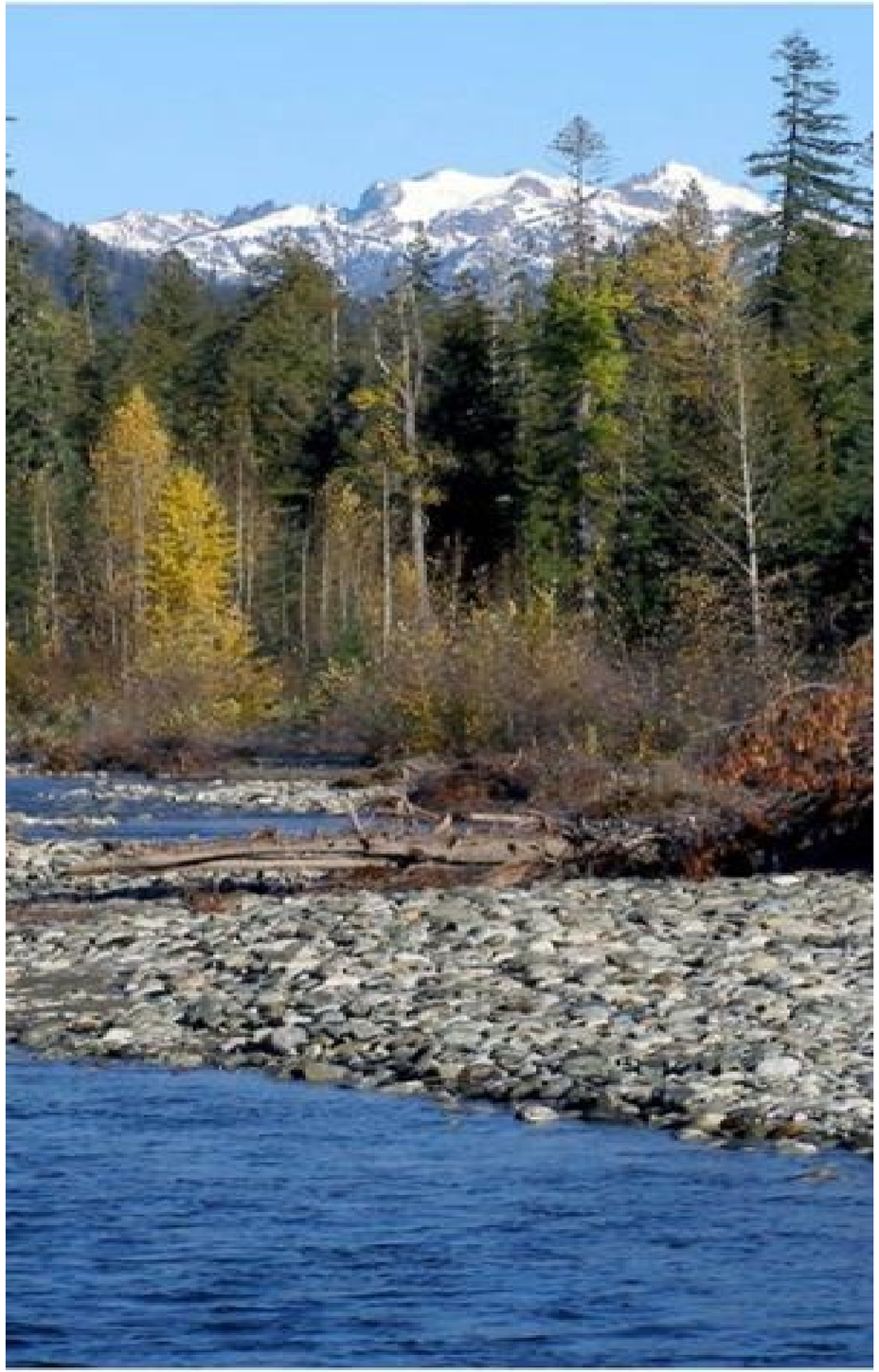


What to expect when you see the draft rule package - CR-102

May 2020

1. Draft rule language
2. Draft State Technical Support Document
3. Draft Implementation Plan
4. Draft Environmental Impact Statement
5. Draft Regulatory Analyses

1. Draft Rule Language

Components of the Rule

- Justification for the variance (what factor is used)
  - ***Factors*** 1 – 7 from the Code of Federal Regulations (CFR 131.10)
- Highest attainable condition including quantification method
  - E.g. percent removal
- Pollutant Minimization Program (statewide and discharger specifi
- Highest interim use (e.g. limited fish harvest)
- Variance *pathway* from code of federal regulation (CFR 131.14)
- Variance duration
- Procedures used to reevaluate the variance

2. Draft State Technical Support Document

Analysis of the variance applications

- Background information on PCBs in the Spokane River
- Justification for the variance
- Technology overview (current and feasibility analyses)
- Recommendations on a numeric value that describes the greatest pollutant reduction achievable
- Details of pollutant minimization programs including a schedule of actions to reduce PCBs
- Reevaluation procedures of the HAC

3. Draft Implementation Plan

Explains how the rule will be implemented across all of our water quality actions

- How variance review will be conducted
- How the variance review will be coordinated with permit updates
- Translation of the variance to permits
- Public notification process

4. Draft Environmental Impact Statement

- Evaluate alternatives for the rulemaking
- Identify our draft preferred alternative
- Will discuss:
  - Regulatory context (federal and state regulations and statutes)
  - Comments we heard during the scoping period (June-July 2019)
  - Role of a Total Maximum Daily Load (TMDL or cleanup plan)
  - Assessment of issuing permits without a variance
  - Assessment of variances as an option

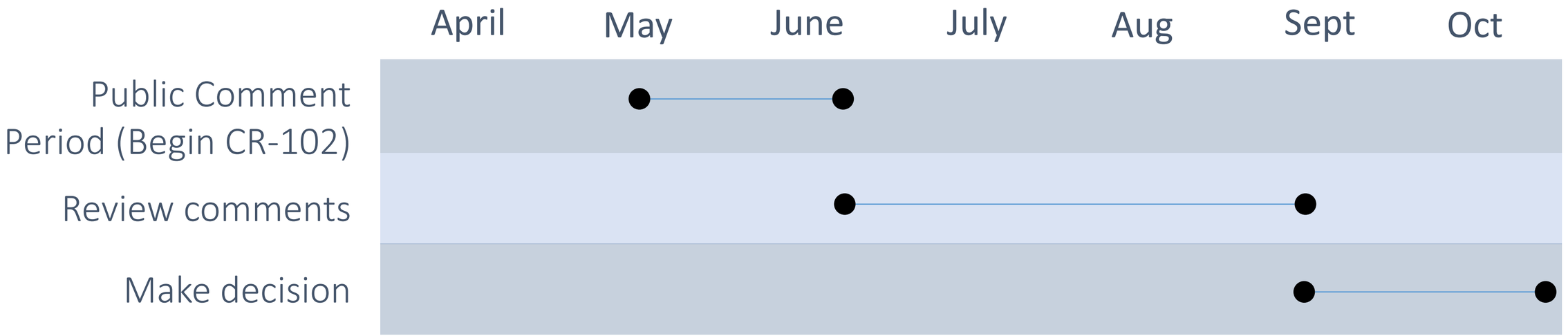
5. Draft Regulatory Analyses

Draft rule analysis for two state statutes

- **Administrative Procedures Act** determinations:
  - Cost-benefit analysis
  - Least-burdensome analysis

- **Regulatory Fairness Act** requires:
  - Analysis to determine impacts on small business

Rulemaking Schedule



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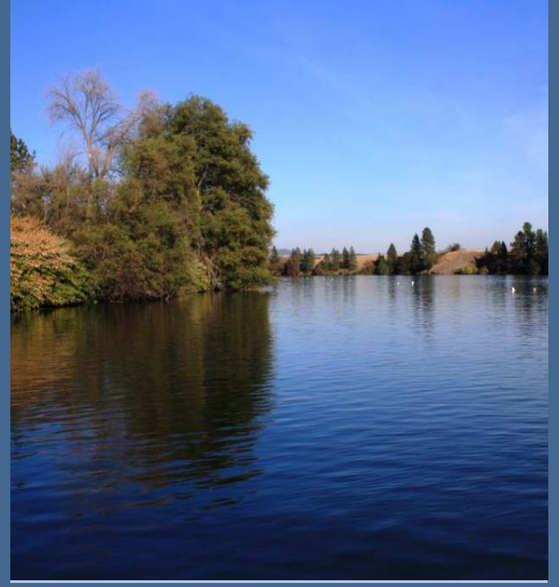

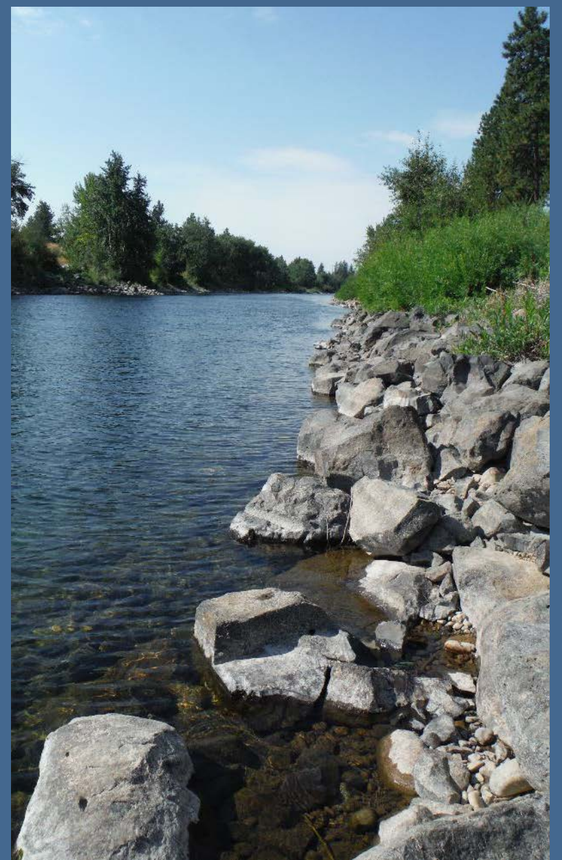

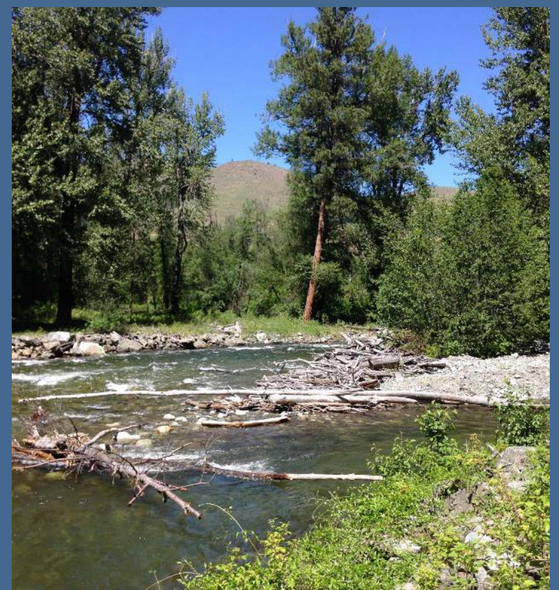


Photo by Adriane Borgias

QUESTIONS?

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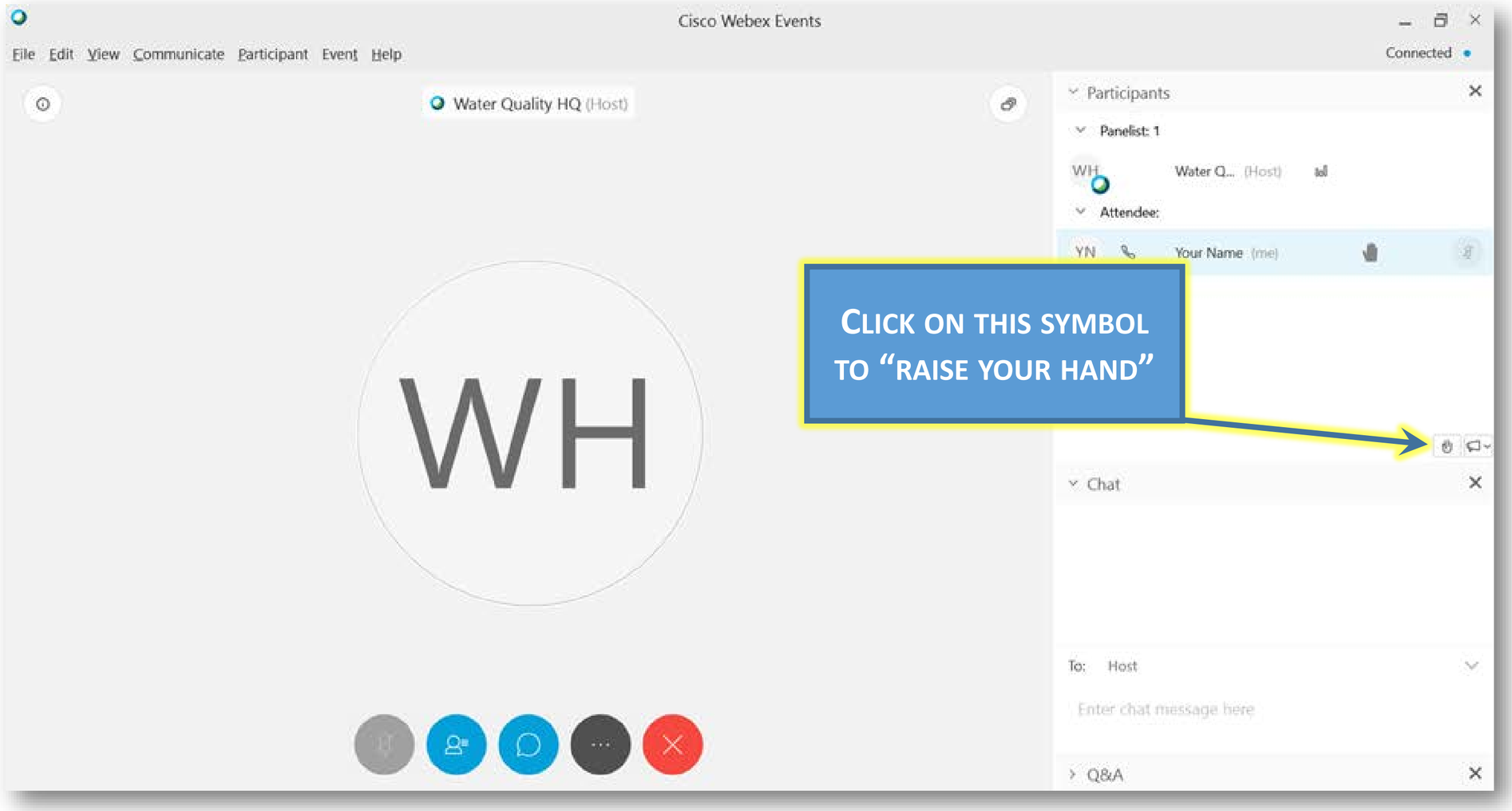
State of Washington

Navigating the Webinar Features



Navigating the Webinar Features