

# How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to Monitoring and Adaptive Management

JANUARY 13, 2021



Washington  
Department of  
**FISH and  
WILDLIFE**



Washington State  
Department of  
**Commerce**



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

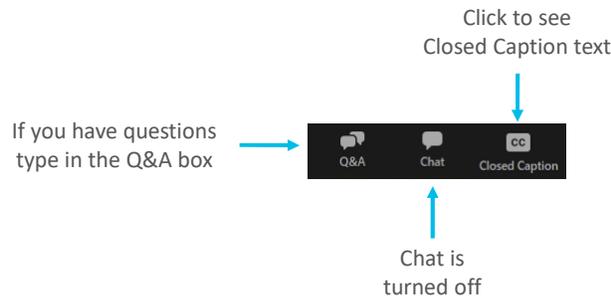
## 2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops



Welcome to

How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to  
Monitoring and Adaptive Management

# 2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops



# 2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops

The screenshot shows a presentation slide on the left with the title 'How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to Monitoring and Adaptive Management' and the date 'JANUARY 13, 2021'. To the right of the slide are logos for the Washington Department of Fish and Wildlife, Washington State Department of Commerce, and the Department of Ecology, State of Washington. On the far right, a video call interface is visible with two participants, one of whom is labeled 'Mara Sporne (on/off)'. An annotation 'Click in between to change size' with a white arrow points to the space between the slide and the video call.

## Visit Project Website for More Information

[https://www.ezview.wa.gov/site/alias\\_1992/37576/overview.aspx](https://www.ezview.wa.gov/site/alias_1992/37576/overview.aspx)

**EZview** Critical Areas Adaptive Management Training Workshops

Overview Contacts Events **2021 Workshops** Library (Portal ID #1992)

### 2021 Workshops

Do you want to know if your critical areas and shoreline regulations are working as intended? Or how to effectively track special permit conditions and mitigation requirements?

Please join us for an in depth review of best practices, case studies, resources, and tools to enhance monitoring and adaptive management efforts for your critical areas and shorelines.

As a follow-up to our 2018 workshops, this 11-week webinar series features expert guest speakers, opportunities for peer-to-peer learning, information sharing, and individual technical assistance.

Earn AICP continuing education credits for your attendance!

Click on a link below to register. (Most sessions are 90 minutes. A couple sessions may go up to 2 hours.)

- [Adaptive Management Workshop 1 – How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to Monitoring and Adaptive Management](#)
- [Adaptive Management Workshop 2 – Setting the Stage: Successful adaptive management and critical areas monitoring program basics](#)
- [Adaptive Management Workshop 3 – Wetlands](#)
- [Adaptive Management Workshop 4 – Geologically Hazardous](#)
- [Adaptive Management Workshop 5 – Fish and Wildlife Habitat Conservation Areas](#)
- [Adaptive Management Workshop 6 – Frequently Flooded Areas](#)
- [Adaptive Management Workshop 7 – Critical Aquifer Recharge Areas \(CARAs\)](#)
- [Adaptive Management Workshop 8 – Shoreline](#)
- [Adaptive Management Workshop 9 – Permit Implementation Monitoring Tools](#)
- [Adaptive Management Workshop 10 – CAQ Performance Indicators](#)
- [Adaptive Management Workshop 11 – Adaptive Management Interactive Workshop](#)

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## 2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops



This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement PC-01J2230116-05251 through the Washington Department of Fish and Wildlife.

The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency or the Washington Department of Fish and Wildlife, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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## Workshop Wednesday Series Lineup

Register using Zoom.



**January 13 - 9:00 a.m. - 11:00 a.m.**  
How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to Monitoring and Adaptive Management



**February 24 - 9:00 a.m. - 11:00 a.m.**  
Critical Aquifer Recharge Areas (CARAs)



**January 20 - 9:00 a.m. - 11:00 a.m.**  
Setting the Stage: Successful adaptive management and critical areas monitoring program basics



**March 3 - 9:00 a.m. - 11:00 a.m.**  
Shorelines



**January 27 - 9:00 a.m. - 11:00 a.m.**  
Wetlands



**March 10 - 9:00 a.m. - 11:00 a.m.**  
Permit Implementation Monitoring Tools



**February 3 - 9:00 a.m. - 11:00 a.m.**  
Geologically Hazardous Areas



**March 17 - 9:00 a.m. - 11:00 a.m.**  
CAO Performance Indicators



**February 10 - 9:00 a.m. - 11:00 a.m.**  
Fish and Wildlife Habitat Conservation Areas



**March 24 - 9:00 a.m. - 11:00 a.m.**  
Adaptive Management Interactive Workshop



**February 17 - 9:00 a.m. - 11:00 a.m.**  
Frequently Flooded Areas

*Note: Workshop names may change but topic will stay the same.*

## Land Acknowledgment

Discover which tribal lands you reside text your zip code to (907) 312-5085.



## Meet Your Presenter

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**Charlene Andrade** is a senior planner for the Washington State Department of Commerce where she works with agencies, governments, and communities to integrate environmental science and planning with land use planning under the Growth Management Act, as well as works with the Puget Sound Partnership to progress recovery of the Puget Sound under land use planning and the GMA. Charlene also serves as the executive coordinator for the JBLM Sentinel Landscape (Conservation) Partnership for conserving working lands and endangered species. Charlene has extensive experience with resource agencies (USFWS, NOAA, DFW, DNR) as a habitat and species biologist, developing mitigation and adaptive management plans for large watershed level programs and recovery efforts. Charlene has a B.S. in Fish, Wildlife, and Conservation Biology from University of California.

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# Where We've Been & Where We're Going

Monitoring & Adaptive Management Workshops: Then, Now and Next

Charlene Andrade  
NEP Program Manager, Senior Planner

## 2018 Guidance & Original Workshops

- Revised the Critical Areas Guidance  
Added Monitoring & Adaptive Management
  - <https://www.commerce.wa.gov/serving-communities/growth-management/guidebooks-and-resources/>
- Conducted First Monitoring & Adaptive Management Workshop
  - <https://www.ezview.wa.gov/?alias=1949>
- Provided Case Studies from:
  - Kirkland, Island County, Bellingham, Bellevue, Thurston County, Tacoma, Clark County, Douglas County, Jefferson County, Yakima County

 Department of Commerce



Critical Areas Handbook  
Chapter 7  
Monitoring and Adaptive Management  
of Critical Areas Regulations

June 2018  
Brian Benlender, Director

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## Focus of Previous Workshop

- Monitoring & Adaptive Management of Permitting & Regulatory Programs
  - Regulations
  - Permits
  - Inspection
  - Enforcement
  - Compliance
  - Best Available Science
  - Best Management Practices
  - Assumes if you follow the process then you are successfully protecting critical areas

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## 2021 Workshops: Addressing the Needs from 2018

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- Determine what data to collect and how to set thresholds for corrective action
- How to change programs and policies based upon monitoring
- What are example actions that can be done immediately and automatically.
- Need for information on tools for monitoring and adaptive management
- What are the funding and support opportunities

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## 2021 Workshops: New Tools, New Resources, New Processes

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- Additional case studies of local communities who have initiated and progressed CA MAM programs
- New online tools and information are available
- More initiatives, funding, and programs are available

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# EPA's National Estuary Program Washington's Puget Sound Partnership



## CHARTING THE COURSE TO RECOVERY

2018-2022 ACTION AGENDA FOR PUGET SOUND  
2022-2026 ACTION AGENDA UPDATE  
IMPLEMENTATION STRATEGIES  
RESULTS-BASED MANAGEMENT

### NEP Coastal Watersheds Grant Program

- [Overview](#)
- [Press Release](#)
- [2020 Subaward Request for Proposals](#)
- [Eligible Geographic Areas Map and Project Mapper](#)
- [NEP Contacts \(XLSX\)](#)

- **(EPA):** Protect and restore the water quality and ecological integrity of estuaries of national significance.
- **(PSP)** Preserve and restore Puget Sound through strategic planning, funding, outreach, and collaboration.

## Explore Local Estuary Programs



- [Learn about each local program](#)
- [View their Comprehensive Conservation and Management Plans \(CCMPs\)](#)
- [See the NEPs on social media](#)
- [View State of the Bay reports](#)
- [Check out videos, virtual tours and photos](#)

## Puget Sound Partnership's Strategic Initiatives



- Regulatory Effectiveness
- Monitoring & Information Gaps
- Incentives and Behavior Change
- Regional Priorities & Activities

## PSP & NEP Program Assistance & Opportunities

NEP Funded Projects in Support of Monitoring & Adaptive Management for Critical Areas/Conservation Areas	
<b>Effectiveness Monitoring of shoreline, critical areas, and stormwater regulations: Measure, report, and validate the impact to ecologically sensitive lands that result from permitted and unpermitted development.</b>	Kitsap County
<b>Integrated Watershed Plan Adaptive Management &amp; Monitoring</b>	Hood Canal Coordinating Council
<b>Shoreline Restoration Effectiveness Monitoring</b>	Northwest Straits Foundation
<b>Improved Landowner Development Decisions to Protect Critical Areas and Manage Stormwater</b>	Kitsap County
<b>Shoreline Monitoring Toolbox: Data Analysis and Interpretation</b>	Washington Sea Grant
<b>North Sound Riparian Modeling and Monitoring</b>	Skagit River System Cooperative

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## Examples of Adaptive Management Actions that incorporate Recovery and Conservation

Use the Buildable Lands Analysis to identify and protect recovery and mitigation areas in support of critical areas and ecologically important lands

Designate mitigation/recovery areas as fish and wildlife habitat critical areas, and establish policies to protect them

Adaptive Management Programs and Recovery Programs are not required under GMA; they are also not Precluded and can come with support from other organizations

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## Funding Assistance: Other Programs

- Commerce
- State Agencies
- Federal
- Tribes
- Private Funding

[http://www.landscape.org/washington/programs/wa\\_programs/](http://www.landscape.org/washington/programs/wa_programs/)



### Key Topics



- Growth Management
- Governor's Smart Communities Awards Program
- GMA Laws and Rules
- GMA Periodic Update
- Growth Management Grants
- Growth Management Topics
- Guidebooks and Resources
- Civilian-Military Compatibility
- Defense Community Compatibility
- Regional Planners' Forums
- Sea-Tac Airport Effects Study
- Short Course on Local Planning
- Submitting Materials to the State for Review

Puget Sound National Estuary Program

## Data, Resources, and Technical Assistance

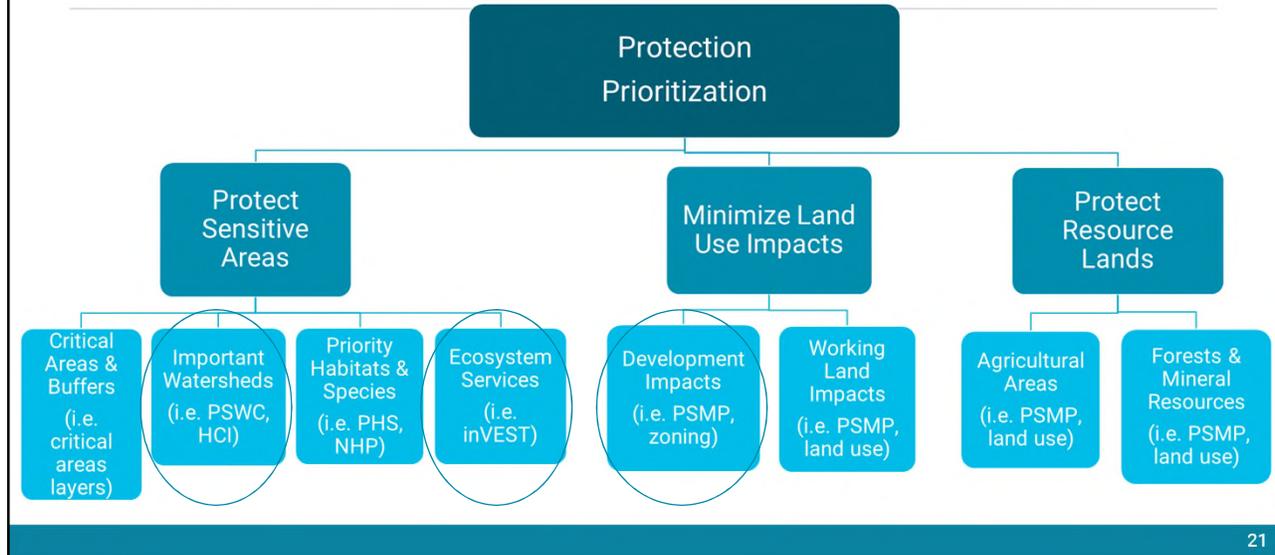


### CRITICAL AREAS CHECKLIST

A Technical Assistance Tool From Growth Management Services – updated April 2019

Name of city or county:	
Staff contact, phone, and e-mail address	
<p><b>INSTRUCTIONS</b></p> <p>This checklist is intended to help local governments update their development regulations, pursuant to the schedule in <b>RCW 36.70A.130(4)</b> (updated in 2012). <b>We strongly encourage but do not require jurisdictions to complete the checklist and return it to Growth Management Services (GMS), along with their updates.</b> This checklist may be used by all jurisdictions, including those local governments planning for resource lands and critical areas only. For general information on update requirements, refer to <a href="#">Keeping your Comprehensive Plan and Development Regulations Current: A Guide to the Periodic Update Process under the Growth Management Act, August, 2016</a> and <a href="#">WAC 365-196-610</a> (updated in 2015).</p> <p><b>Bold items are a GMA requirement or may be related requirements of other state or federal laws.</b></p> <p><b>Commerce WAC provisions are advisory</b> under Commerce's statutory mandate to provide technical assistance, RCW 43.330.120 which states that the Department of Commerce "...shall help local officials interpret and implement the different requirements of the act through workshops, model ordinances, and information</p>	<p><b>Contents</b></p> <p>Instructions.....1</p> <p>Overall Requirements.....2</p> <p>Wetlands.....3</p> <p>Critical Aquifer Recharge Areas.....4</p> <p>Frequently Flooded Areas.....5</p> <p>Geologically Hazardous Areas.....6</p>

## Tools for Monitoring & Adaptive Management



## Tools for Monitoring & Adaptive Management



## Wrap up & Next Steps

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- **We need your ideas for next steps**
  - Training on Permit effectiveness or ecological validation
  - Development of manuals for establishing adaptive management programs
  - Establishing or piloting adaptive management programs
  - Incorporating recovery and conservation into your programs
  - Developing software for adaptively managing critical areas

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## Q&A

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TYPE YOUR QUESTIONS IN THE Q&A BOX IN YOUR TOOLBAR

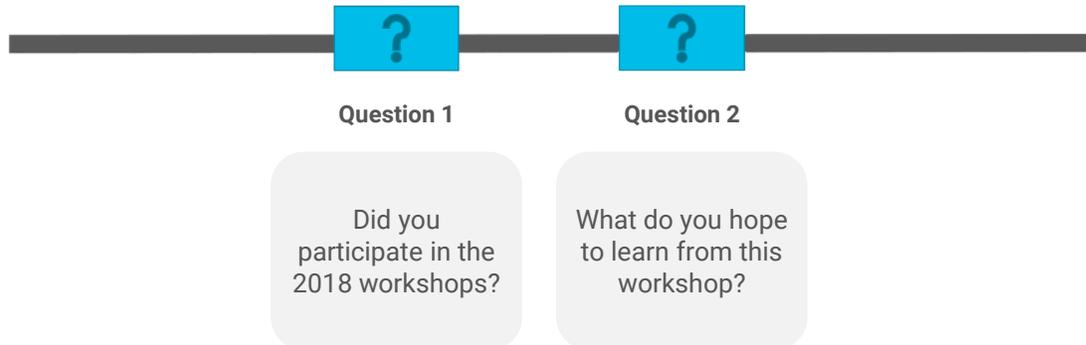


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## Poll



### Questions:



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## Meet Your Presenter



Scott Kuhta is a Senior Planner for the Washington Department of Commerce. He has worked for Growth Management Services (GMS) since the summer of 2014 after serving local government planning agencies for over 20 years, including Kootenai County, Spokane County and the City of Spokane Valley. He has worked in all aspects of planning, including comprehensive plans, floodplains, shorelines, code enforcement and current planning.

Scott's technical focus with GMS is water resources and critical areas and he is the agency liaison for the Voluntary Stewardship Program.

Scott has B.A. in Business Management from Gonzaga University and a Master's Degree in Urban and Regional Planning from Eastern Washington University.

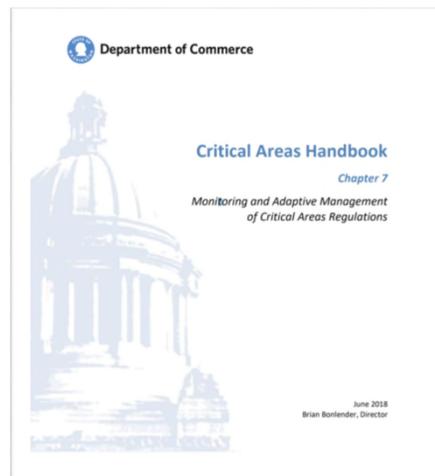
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# How to Successfully Protect Critical Areas

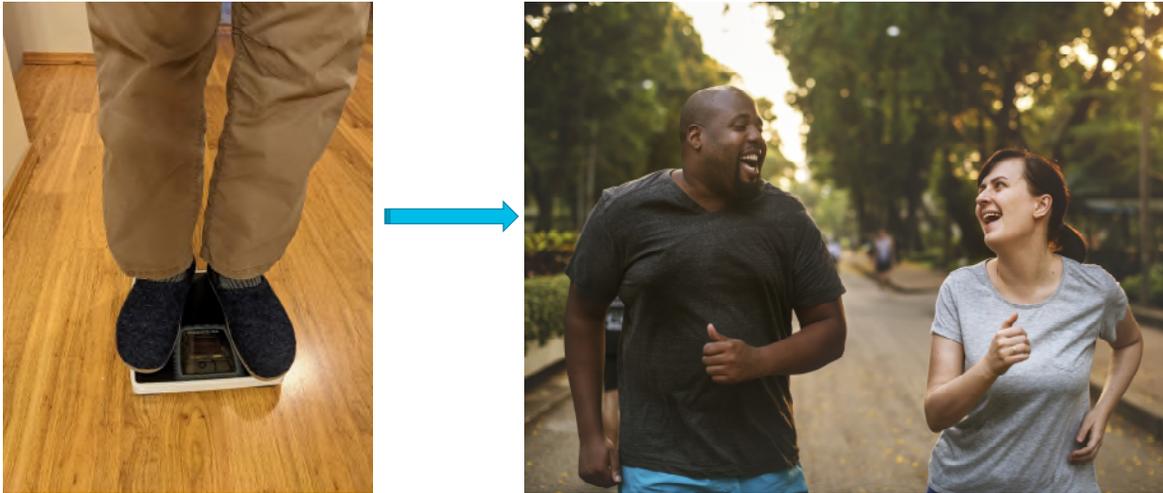
A Step-by-Step Introduction to Monitoring and Adaptive Management

Scott Kuhta, AICP  
Washington State Department of Commerce

## Commerce Critical Areas Handbook – Chapter 7



## What is Monitoring and Adaptive Management?



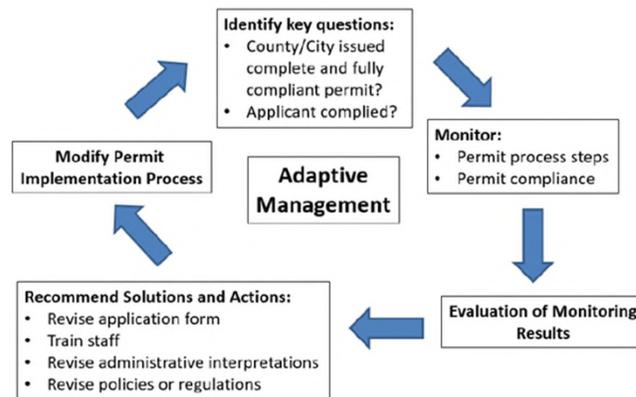
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## What is Monitoring and Adaptive Management?

- System to evaluate performance
- Monitoring answers key questions
  - Permits issued consistently?
  - Staff adequately trained?
  - Applicants complying with regulations and permit conditions?
- Adaptive Management (AM) helps deal with complex/dynamic systems
  - Uncertainty concerning effect of policies and regulations on functioning ecosystems
  - Provides feedback loop to determine necessary change

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## Adaptive Management Feedback Loop



Conceptual representation of how implementation monitoring can be used to improve the permit process

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## Regulatory Context

- GMA and Critical Areas
  - Monitoring and Adaptive Management not required in GMA (except VSP)
  - No Net Loss of functions and values of the ecosystem... (WAC 365-196-830)
- Shoreline Master Programs
  - No Net Loss (NNL) of ecology functions necessary to sustain shoreline natural resources.
- How to maintain NNL while allowing new development?
- Critical Areas within shoreline jurisdiction are regulated in the SMP upon Ecology approval

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## Best Available Science – WAC 365-195-920

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Criteria to address inadequate scientific information

Precautionary or no risk approach

OR

Interim approach → Effective Adaptive Management program

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## Steps to Develop a Monitoring and AM Program

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- Step 1. Determine the reasons for monitoring
- Step 2. Establish key objectives and study questions
- Step 3. Design the monitoring program
- Step 4. Determine the monitoring time frame
- Step 5. Evaluate results and make recommendations

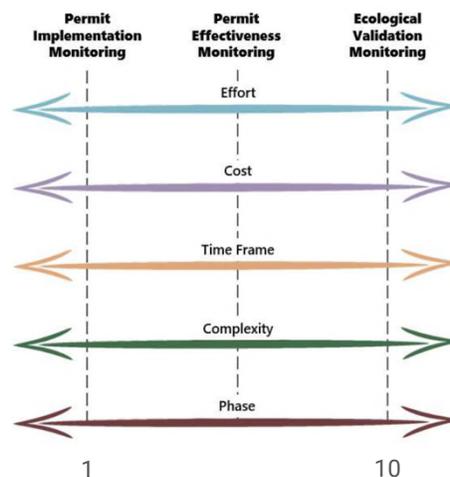
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## Levels of Monitoring

- **Permit Implementation Monitoring**
  - Are permits issued consistent with the regulations?
  - Are projects as built comply with all of the conditions noted in the permit. Data is about individual permits?
- **Permit Effectiveness Monitoring**
  - Continues to ask the two permit implementation monitoring questions notes above over a longer period of time - are projects continuing to meet permit requirements.
- **Ecological Validation Monitoring**
  - Are critical areas functions and values are being protected?
  - Are we are achieving no net loss of the ecosystem?
  - Typically conducted regionally or at a watershed level as part of a scientific study.

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## Levels of Monitoring



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## Why Should We?

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Photo Credits: Scott Kuhta

## Q&A

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TYPE YOUR QUESTIONS IN THE Q&A BOX IN YOUR TOOLBAR



## Poll

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### Question:

?

Does your jurisdiction monitor critical areas and/or Shorelines permit process or regulations?

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## Meet Your Presenter

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**Brian Cochran** is the Habitat and Monitoring Coordinator for the Commission. He graduated from UC Davis with a Wildlife and Fisheries bachelor's degree and has since worked in the natural resources field for Idaho Fish and Game, private consultants in California, Idaho Department of Environmental Quality, US Army Yakima Training Center, and Yakima County's Flood Control and Stormwater programs. Brian brings his habitat monitoring and restoration experience to the Conservation Reserve Enhancement Program (CREP), and coordinates salmon restoration efforts, Geographic Information Systems (GIS), and stormwater activities.

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# Monitoring is Monitoring

A deeper dive into developing a monitoring program.

Brian Cochrane, Habitat and Monitoring Coordinator

Washington State Conservation Commission

## Steps to Develop a Monitoring and AM Program

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Monitoring is monitoring ....

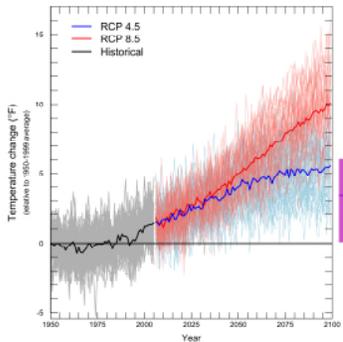
Step 1. Determine the reasons for monitoring

- a) Regulatory requirement?
- b) Implementation monitoring?
- c) Permit Effectiveness?
- d) Ecological validation?

## Steps to Develop a Monitoring and AM Program

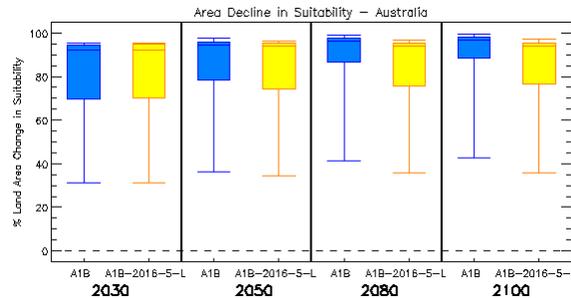
Step 4. Determine the monitoring time frame (and spatial extent)

### • Over what time frame (and at what frequency)?



<https://cig.uw.edu/learn/climate-change/>

vs.



[https://www.researchgate.net/publication/255991495\\_Climate\\_observations\\_projects\\_and\\_impacts](https://www.researchgate.net/publication/255991495_Climate_observations_projects_and_impacts)

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## Steps to Develop a Monitoring and AM Program

Step 4. Determine the monitoring time frame (companion question ...)

### • At what time frame?

#### From the world of flow:

- **Biology (4B3) – lowest 4 day average every three years**
- **Toxics/dilution (7Q10) – lowest 7-day average every 10 years**
- **Changes in annual pattern (mean monthly)**
- **Habitat availability (5 flows 5x apart)**
- **Average flow for period of record (annual)**
- **Flood control (peak flow frequency)**



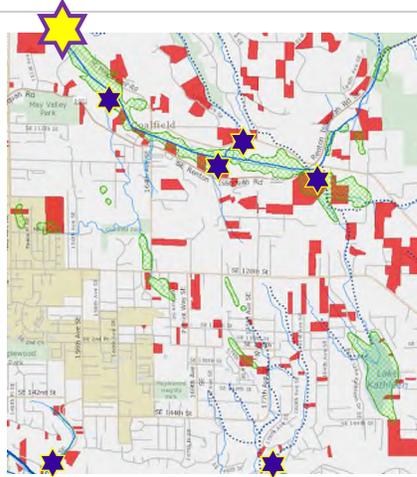
Photo credit: Bill Horton, 1980

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## Steps to Develop a Monitoring and AM Program

Step 4. Determine the monitoring time frame (and spatial extent)

- **At what spatial extent?**



King County iMap in <https://www.watershedco.com/blog/can-i-use-this-wetland-inventory-map-for-my-project>

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## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

- **100% observation means no statistics!!**
- **If you can't measure everything, you need to know how to measure enough ... (and enter the world of stats)**

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## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

**Understand  
statistical  
power!**

Standard deviation  
of the outcome  
variable

Desired power (typically  
.84 for 80% power)

Level of statistical  
significance (typically  
1.96)

$$\eta = 2 \times \frac{\sigma^2 (Z_\beta + Z_{\alpha/2})^2}{\text{difference}^2}$$

Sample size in  
each group  
(assumes  
equal sized  
groups)

Effect size (the  
difference in  
means)

Formula for difference in means

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## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

*Keep*

*It*

*Simple*

*S(you know)*

- **Find things to measure that have low variability**
- **Focus on one function**
- **Find things that are common**
- **Consider surrogates**
- **Use bins/semi-quantitative data**

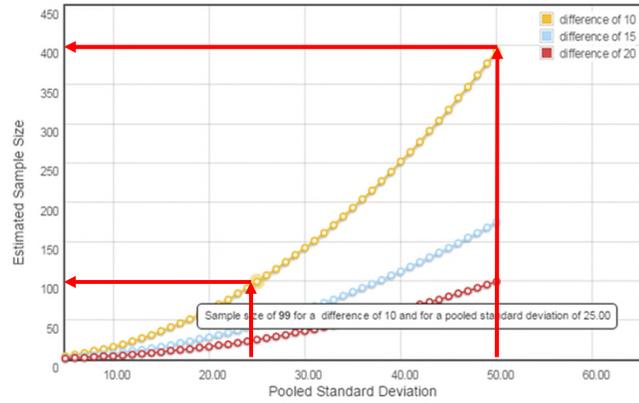
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## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

- **Find things to measure that have low variability**

Noisy variables need more data



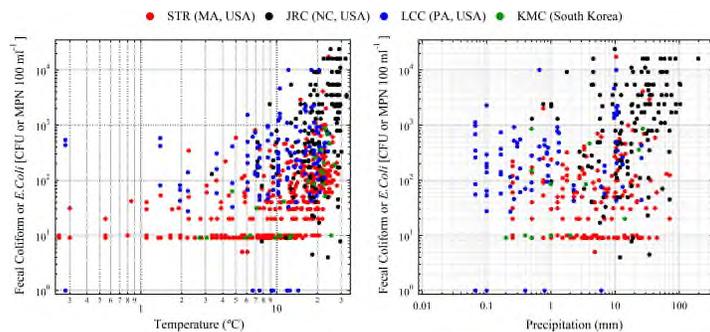
<http://statulator.com/SampleSize/ss2M.html>

More data means more cost!

## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

- **Find things to measure that have low variability**



Kyung Hwa Cho, Yakov A. Pachepsky, Minjeong Kim, JongCheol Pyo, Mi-Hyun Park, Young Mo Kim, Jung-Woo Kim, Joon Ha Kim. Modeling seasonal variability of fecal coliform in natural surface waters using the modified SWAT, Journal of Hydrology, Volume 535, 2016, Pages 377-385, <https://www.sciencedirect.com/science/article/abs/pii/S0022169416300245>

Noisy variables need more data

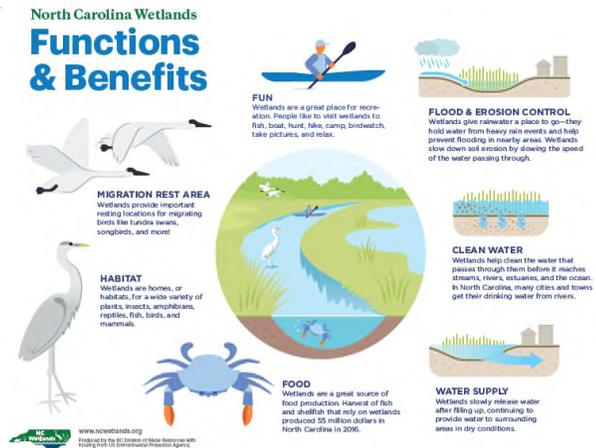
More data means more cost!

## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

- **Focus on one function**

More data means more cost!

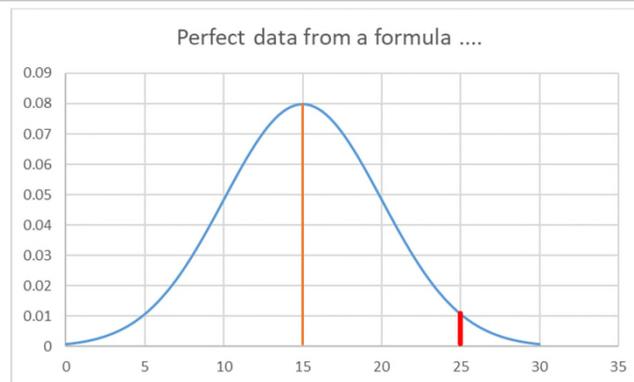


<http://www.ncwetlands.org/learn/functions-benefits/>

## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

- **Find things that are common (or ask the question differently)**



The p-value is the probability that a sample mean is the same or greater than 25, when the population mean is, in fact, 15.

## Steps to Develop a Monitoring and AM Program

### Step 3. Design the monitoring program

- **Find things that are common (or ask the question differently)**

“With 1000 participants, we have a greater than 80% chance of detecting a true doubling in the rate of an adverse event from 5% to 10%, but we have far less confidence (only a 17% chance) in detecting a doubling from 1% to 2%”

### Statistical Power (%) to Detect a Doubling of Adverse Event Rates in Clinical Studies of Drugs, by Sample Size

Sample Size	From 5% to 10%, %	From 1% to 2%, %	From 0.1% to 0.2%, %
1 000	82	17	5
5 000	>99	80	7
10 000	>99	>98	17
50 000	>99	>99	79

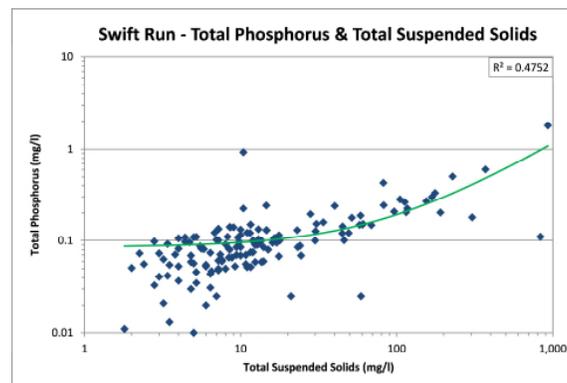
Berlin, J. A., Glasser, S. C., & Ellenberg, S. S. (2008). Adverse event detection in drug development: recommendations and obligations beyond phase 3. *American journal of public health*, 98(8), 1366–1371. <https://doi.org/10.2105/AJPH.2007.124537>

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## Steps to Develop a Monitoring and AM Program

### Step 3. Design the monitoring program

- **Consider surrogates**



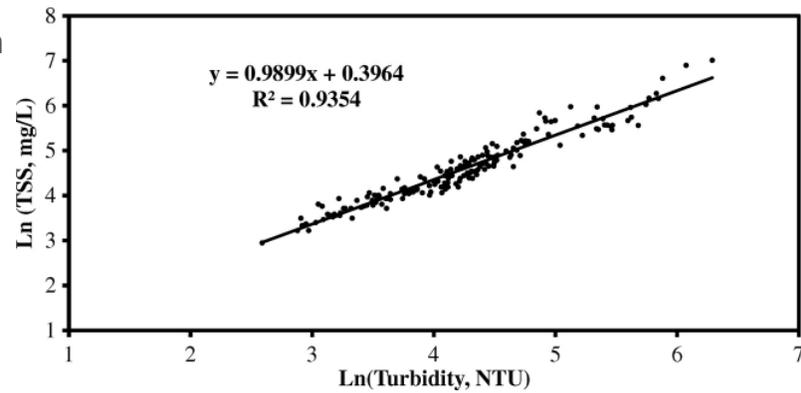
<https://www.hrc.org/what-we-do/programs/chemistryandflow/washtenaw-results/>

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## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

- **Consider surrogates**



Al-Yaseri, I., Morgan, S. & Retzlaff, W. (2013). Using turbidity to determine total suspended solids in stormwater runoff from green roofs. *Journal of Environmental Engineering*, 139(6). <https://ascelibrary.org/doi/full/10.1061/%28ASCE%29EE.1943-7870.0000685>

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## Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

- **Use bins/semi-quantitative data**



Photo credit: Brian Cochrane, 2019

More data means more cost!

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## Steps to Develop a Monitoring and AM Program

### Step 3. Design the monitoring program

- Use bins/semi-quantitative data

Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levees are set back to provide access to an adequate flood plain. Human/animal activity causing minor disturbances.	Altered channel. <50% of the reach with riprap and/or channelization. Excess aggradation, braided channel. Dikes or levees restrict flood plain width. Intense human/animal activity causing considerable disturbances.	Channel is actively cutting or widening. >50% of the reach w channelization. Dike prevent access to the Visual access to the : preserved.		
8	7	6	5	4

Bjorkland, R., Pringle, C.M. & Newton, B. A Stream Visual Assessment Protocol (SVAP) for Riparian Landowners. Environ Monit Assess 68, 99–125 (2001). <https://doi.org/10.1023/A:1010743124570>

More data means more cost!

## Steps to Develop a Monitoring and AM Program

### Step 3. Design the monitoring program

- Use bins/semi-quantitative data

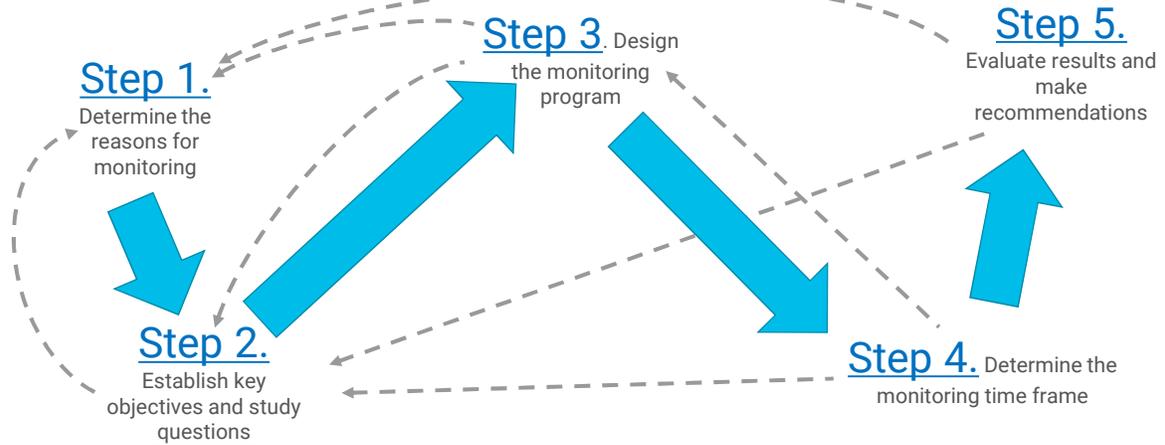
Element	Score			
	Present	No Action	Planned A	Planned B
Channel Condition	4			
Hydrologic Alteration	9			
Bank Condition (Left Bank)	7			
Bank Condition (Right Bank)	7			
Bank Condition (Average)	7			
Riparian Quantity Width (Left Bank)				
Riparian Quantity Width (Right Bank)				
Riparian Quantity Width (Average)				
Riparian Quantity Length (Left Bank)				
Riparian Quantity Length (Right Bank)				
Riparian Quantity Length (Average)				
Riparian Quality (Left Bank)	7			
Riparian Quality (Right Bank)	7			
Riparian Quality (Average)	7			
Canopy Cover (Check Cold or Warm)				
Water Appearance	1			
Nutrient Enrichment	8			
Manure or Human Waste	9			
Pools (Check High or Low)				
Barriers to Movement	2			
Fish Habitat Complexity	1			
Aquatic Invertebrate Habitat	1			
Aquatic Invertebrate Community	1			
Riffle Embeddedness	Not Scored			
Salinity	Not Scored			
Sum of all elements scored:	50			
Number of elements scored:	11			
Overall score:	4.5			

Stream Condition <b>B</b>	
Present:	4.5 Poor
No Action:	
Planned A:	
Planned B:	

**B** Stream Conditions in red are below planning criteria.

## Steps to Develop a Monitoring and AM Program

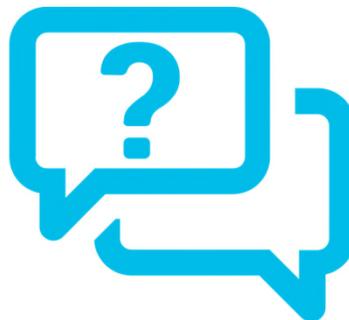
Step 5. Evaluate results and make recommendations



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## Q&A

TYPE YOUR QUESTIONS IN THE Q&A BOX IN YOUR TOOLBAR



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## Poll

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### Question:



What is your biggest barrier to establish a monitoring program?

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## Meet Your Presenter

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**Christian Geitz** is a Planning Supervisor with the City of Kirkland where he manages a variety of staff in the current planning division and the code enforcement program. For over 12 years, Christian has focused primarily on current planning project review, developing a focus on Shoreline Master Program administration, permitting, and inspection. He recently completed the Periodic Update for the Kirkland Shoreline Master Program and associated Critical Area Ordinance amendments. Christian holds a Master of Public Administration degree from Seattle University and a Bachelor of Arts in Geography and a Bachelor of Arts in Urban Studies from the University of Washington.

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# City of Kirkland Shoreline Tracking

Christian Geitz, Planning Supervisor  
City of Kirkland



**S H O R E L I N E T R A C K I N G**

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M O N I T O R I N G   A N D   A D A P T I V E   M A N A G E M E N T

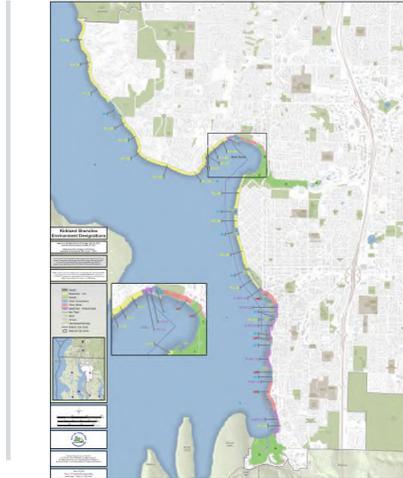
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## KIRKLAND IN CONTEXT



### KIRKLAND

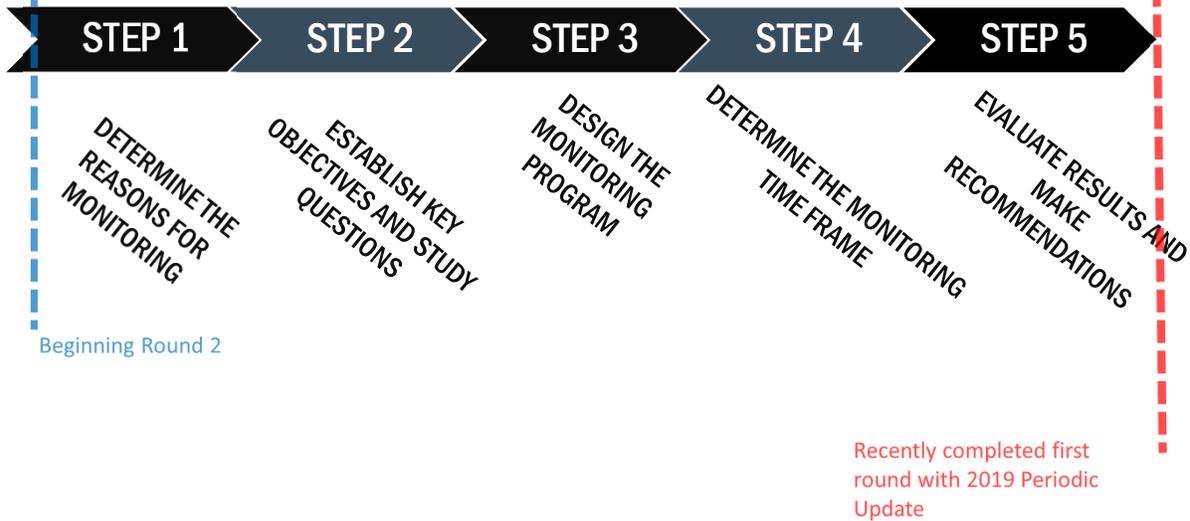
- Population - 90,660
- 10 miles of shoreline along the eastern shore of Lake Washington
- Shoreline Master Program adopted August 2010
- Periodic Update completed adopted September 2020
- Half of the shoreline is designated Low Density Residential
- Majority of developed property have hard armoring/bulkheads



### PLANNING AND BUILDING DEPARTMENT

- Building Division
  - Permit Review
    - Structural
    - Electrical
  - Inspection
- Planning Division
  - Long Range
    - Comp Plan
    - Zoning Code Amendment
    - Other Long Range Projects
  - Current Planning
    - Land Use Review
    - Building Permit Review
- Code Enforcement

## MONITORING AND ADAPTIVE MANAGEMENT



## REASONS FOR MONITORING

**STEP ONE**

- SHORELINE MASTER PROGRAM  
AUGUST 2010, PERIODIC UPDATE 2020
- NO NET LOSS OF ECOLOGICAL FUNCTION,  
ECOLOGICAL IMPROVEMENT GOALS
- DEVELOP USEABLE DATA TO TRACK  
SUCCESES AND/OR FAILURES
- FUTURE PERIODIC REVIEW,  
EDUCATION AND OUTREACH

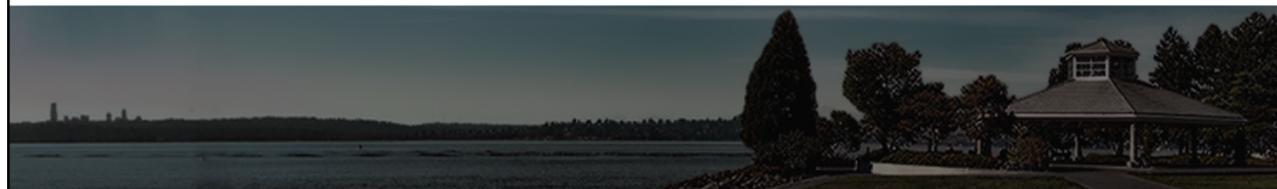



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## ESTABLISH KEY OBJECTIVES AND STUDY QUESTIONS

**STEP TWO**





<p><b>DATA COLLECTION</b></p> <p>What are all the values, figures, and other possible data the City may want to collect?</p>	<p><b>GOALS</b></p> <p>What are the short term and long-term goals the SMP codes are intended to achieve?</p>	<p><b>PURPOSE &amp; INTENT</b></p> <p>Do the figures being collected capture the required information to show whether or not the City is maintaining ecological function and following the purpose and intent of the SMP?</p>	<p><b>ADMINISTRATION</b></p> <p>Can code administrators apply the code and collect the data without being unnecessarily burdened?</p>	<p><b>BUILD CONSENSUS</b></p> <p>Will the data be useful in future discussions with citizens, council, or commission members?</p>
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**DESIGN THE MONITORING PROGRAM  
STEP THREE**



- Spreadsheet Tracking: Excel
  - Simple
  - Effective
  - Accessible
  - Short Term or Long Term data collection
  - Easily Modified
- Permit Tracking Software Development (EnerGov)
  - Developed reviews and holds for specific project types
  - Reporting capabilities
  - Fee, security, inspection, and plan tracking

ADDRESS	PERMIT # OR DATE	APPLICANT NAME	PLANNER	# OF TREES REMOVED	# TREES RETAINED	# OF TREES PLANTED	NATIVE VEGETATION (SQ FT) WITHIN SHORELINE SETBACK				REMOVAL OF LAWNS	REMOVAL OF ORNAMENTAL	REMOVAL OF INVASIVE	AQUATIC VEGETATION	MITIGATION FOR TREE REMOVAL	MITI #3.59
							SHRUBS	GROUND COVER	LAWN	COVER						
1733 HOLMES POINT DR NE	SHR14-02059	ULLERY	CPG													
855 NE JUANITA LANE	85F14-05649	ROUTH	CPG	0		2										
25 WAVERLY WAY	SHR14-02265	COX WAVERLY BEACH PARK PHASE	CPG		4	14	130	440			540					
3215 HOLMES POINT DR NE	SHR14-02413	DAVIDSON	STL													
827 LAKE WASHINGTON BLVD	SHR14-02434	LERZ	STL													
621 LAKE WASHINGTON BLVD	SHR14-02478	LERZ	STL													
811 LAKE WASHINGTON BLVD	SHR15-00055	GAW	SBG													
623 LAKE WASHINGTON BLVD	SHR15-00075	RICKY ENGI/ BEACH HOUSE RESTAU	CPG													
555 LAKE WASHINGTON BLVD	SHR15-00665	PORTER/PARKSIDE CONDOS	STL	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
43 Lake Ave W	SHR15-00257	Investment Holding LLC - Cheen LAMB	STL	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1126 38TH LANE NE	SHR15-01189	DUGLIO PIER REPAIR	STL													
859 10TH ST W	85F15-01053	REUSSER NSFR	CPG	0	3	3	622	415	1192	500						
81 LAKE AVE WEST	SHR15-01314	ADHA BOATLIFT REPLACEMENT	STL													
1166 CHAMPAGNE PT RD NE	SHR15-01357	DUGLIO BOATLIFT REPAIR	CPG													
AARINA PARK PIER	SHR15-01508	MARINA PARK PIER EMERGENCY RE	CPG													
891 20th St. W.	SHR15-01228	SaM/Jones	DMG													
3848 82nd Ave.	85F14-07641	LAUER	STL	0		3	474	316	2696							
5 LAKESHORE PLAZA	SHR15-01902	MARINA PARK BOAT LAUNCH ADD	CPG													
259 NE JUANITA DR	SHR15-01023	ANDERMO	CPG													
331 NE JUANITA DR	SHR15-01287	EVANS	CPG			3	877	585		1462						
457 NE Woodland Cove Drive	SHR15-01964	Troy Hussing / Woodland Cove H NAC	ADZ			1										
75 Lake Ave W	SHR15-02059	Wern/Freek	ADZ													
532 NE Juanita Drive	85F15-01963	BAHMAN	STL													
206 20th SWINT LANE	85E15-05017	FELTON/JESSE	CPG			1	164	336	1360	500						

**DETERMINE THE MONITORING TIME FRAME  
STEP FOUR**



- Programmatic – Ongoing
- Interim internal check-ins
- Eight-year review – Reporting out to Council, Commissions, or Public groups



EVALUATE RESULTS & MAKE RECOMMENDATIONS  
STEP FIVE



- Interim check-in points
  - What have we found?
- Periodic Update reporting
  - Work Program – Recurring needed?
  - Long Range and Current Planning coordination
- Recommendations
  - Review Code Administration
  - Update Tracking as needed
  - Code Amendments – minor 2019 updates
  - Report results
  - Establish new goals for Kirkland Shoreline



**INWATER**

- Over 30,000 SF of solid decking removed.
- 63 piles removed
- 500 SF of over water structures removed

**IN THE RIPARIAN AREA**

- 516 feet of bulkhead removed, replaced with soft shorelines
- 10,000 SF of lawn removed and replaced with native plantings
- structures removed from shoreline setback
- 158 Native Trees Planted
- Over half an acre of native vegetation planted

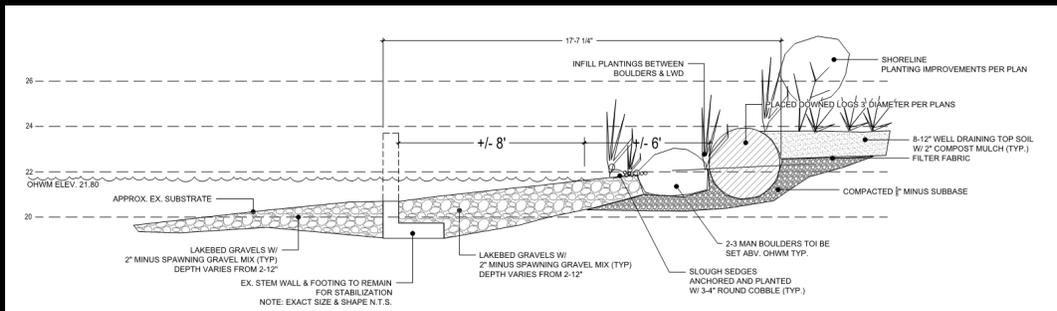
ADMINISTRATIVE RECOMMENDATIONS  
INTERNAL STAFF REVIEW



Are we achieving the key objectives and study questions?

Have we installed any roadblocks to educating the public on the benefits of a healthy shoreline?

What internal steps are working or could be improved in order to maximize compliance with the purpose and intent of the Shoreline Policies and Goals?



- Are our permit processes helping or hindering the recording of this data?
- Are there any ways to incentivize additional shoreline enhancements?
- Are there any roadblocks for homeowners to propose voluntary shoreline enhancement plans?

# Q&A

TYPE YOUR QUESTIONS IN THE Q&A BOX IN YOUR TOOLBAR



# Thank You

**Charlene Andrade**  
NEP PROGRAM MANAGER / SENIOR PLANNER  
Charlene.Andrade@commerce.wa.gov

**Brian Cochrane**  
HABITAT AND MONITORING COORDINATOR  
bcochrane@scc.wa.gov

**Scott Kuhta, AICP**  
SENIOR PLANNER  
Scott.kuhta@commerce.wa.gov  
509-795-6884

**Christian Geitz**  
PLANNING SUPERVISOR, CITY OF KIRKLAND  
cgeitz@kirklandwa.gov  
425-587-3246

