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

JANUARY 13, 2021

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

If you have questions type in the Q&A box

Chat is turned off

Click to see Closed Caption text

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

DEPARTMENT OF ECOLOGY
State of Washington

January 13, 2021
Visit Project Website for More Information


2021 Workshops

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

Please join us for an in-depth overview of past 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 2014 workshops, the 2021 adaptive series features expert presenter speakers, opportunities for peer-to-peer learning, information sharing, and individual technical assistance.

Earn GAC continuing education credits for your attendance!

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

- Adaptive Management Workshops - How to Store, Retrieve, and Analyze Critical Areas and Shorelines
- Adaptive Management Workshops - How to Track, Monitor, and Assess Critical Areas and Shorelines
- Adaptive Management Workshops - How to Manage Critical Areas and Shorelines

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.
Workshop Wednesday Series Lineup

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 4 - 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.
CAD 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

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.

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

• Conducted First Monitoring & Adaptive Management Workshop
  • [https://www.ezview.wa.gov/?alias=1949](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

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
2021 Workshops: Addressing the Needs from 2018

- 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


- 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
EPA’s National Estuary Program
Washington’s Puget Sound Partnership

- (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.

Puget Sound Partnership’s Strategic Initiatives

- Regulatory Effectiveness
- Monitoring & Information Gaps
- Incentives and Behavior Change
- Regional Priorities & Activities
PSP & NEP Program
 Assistance & Opportunities

<table>
<thead>
<tr>
<th>NEP Funded Projects in Support of Monitoring &amp; Adaptive Management for Critical Areas/Conservation Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Integrated Watershed Plan Adaptive Management &amp; Monitoring</td>
</tr>
<tr>
<td>Shoreline Restoration Effectiveness Monitoring</td>
</tr>
<tr>
<td>Improved Landowner Development Decisions to Protect Critical Areas and Manage Stormwater</td>
</tr>
<tr>
<td>Shoreline Monitoring Toolbox: Data Analysis and Interpretation</td>
</tr>
<tr>
<td>North Sound Riparian Modeling and Monitoring</td>
</tr>
</tbody>
</table>

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
Funding Assistance: Other Programs

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

http://www.landscope.org/washington/programs/wa_programs/

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

INSTRUCTIONS
This checklist is intended to help local governments update their development regulations, pursuant to the schedule in RCW 36.70A.130(4) (updated in 2012). We strongly encourage but do not require jurisdictions to complete the checklist and return it to Growth Management Services (GMS), along with their updates. 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 Creating your Comprehensive Plan and Development Regulations: Current A Guide to the Periodic Update Process under the Growth Management Act, August 2006, and WAC 365-126-050 (updated in 2005).

Bold items are a GMA requirement or may be related requirements of other state or federal laws.

Commerce WAC provisions are advisory 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 other means.”

Contents
Instructions........................1
Overall Requirements........2
Wetlands............................3
Critical Aquifer Recharge Areas........................4
Frequently Flooded Areas..................5
Geologically Hazardous Areas..................6

1/13/2021
Tools for Monitoring & Adaptive Management

Protection Prioritization

- Protect Sensitive Areas
  - Critical Areas & Buffers (i.e. critical areas layers)
  - Important Watersheds (i.e. PSWC, HCI)
  - Priority Habitats & Species (i.e. PHS, NHP)
  - Ecosystem Services (i.e. inVEST)
- Minimize Land Use Impacts
  - Development Impacts (i.e. PSMP, zoning)
- Protect Resource Lands
  - Working Land Impacts (i.e. PSMP, land use)
  - Agricultural Areas (i.e. PSMP, land use)
  - Forests & Mineral Resources (i.e. PSMP, land use)

Tools for Monitoring & Adaptive Management

Restoration Prioritization

- Restore Degraded Areas
  - Critical Areas & Buffers (i.e. critical areas layers)
  - Important Watersheds (i.e. PSWC, HCI)
  - Important Habitats (i.e. PHS, NHP)
  - Ecosystem Services (i.e. inVEST)
- Add to Existing Corridors
  - Wildlife Corridors
  - Open Space Corridors
- Restoration Constraints
  - Ownership & Land Use (i.e. parcels, land use)
  - Climate Impacts (i.e. NOAA SLR temp)
Wrap up & Next Steps

• 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

Q&A

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

Questions:

Question 1
Did you participate in the 2018 workshops?

Question 2
What do you hope to learn from this workshop?

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.
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?

- 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
Adaptive Management Feedback Loop

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
Best Available Science – WAC 365-195-920

Criteria to address inadequate scientific information

Precautionary or no risk approach

OR

Interim approach ➔ Effective Adaptive Management program

Steps to Develop a Monitoring and AM Program

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
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 noted 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.
Why Should We?

Photo Credits: Scott Kuhta

Q&A

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

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

Meet Your Presenter

Brian Cochrane 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.
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

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)?

- **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
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

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)
Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

Understand statistical power!

\[ \eta = \frac{2 \times \sigma^2 \left(Z_\beta + Z_{\alpha/2}\right)}{\text{difference}^2} \]

- Formula for difference in means
- Standard deviation of the outcome variable
- Desired power (typically .84 for 80% power)
- Level of statistical significance (typically 1.96)
- Sample size in each group (assumes equal sized groups)
- Effect size (the difference in means)

Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

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

**It**
- Focus on one function

**Simple**
- Find things that are common
- Consider surrogates
- Use bins/semi-quantitative data
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


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!


---

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%" 

![Sample Size and Statistical Power Table](https://www.hrwc.org/what-we-do/programs/chemistryandflow/washtenaw-results/)

![Swift Run - Total Phosphorus & Total Suspended Solids](https://www.hrwc.org/what-we-do/programs/chemistryandflow/washtenaw-results/)

Steps to Develop a Monitoring and AM Program

Step 3. Design the monitoring program

- **Consider surrogates**


More data means more cost!

Photo credit: Brian Cochrane, 2019
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 rainfall disturbances.

- Altered channel. <50% of the reach with riprap and/or channelization. Excess aggradation, braided channel. Dikes or levees restrict floodplain width. Intense human/animal activity causing considerable disturbances.

<table>
<thead>
<tr>
<th>Element</th>
<th>Present</th>
<th>No Action</th>
<th>Planned A</th>
<th>Planned B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel</td>
<td>4</td>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Hydrologic Alteration</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Condition (Left Bank)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Condition (Right Bank)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Condition (Average)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quantity Width (Left Bank)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quantity Width (Right Bank)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quantity Width (Average)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quantity Length (Left Bank)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quantity Length (Right Bank)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quantity Length (Average)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quality (Left Bank)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quality (Right Bank)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riparian Quality (Average)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canopy Cover (Check Cold or Warm)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Appearance</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrient Enrichment</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manure or Human Waste</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pools (Check High or Low)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barriers to Movement</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish Habitat Complexity</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Invertebrate Habitat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Invertebrate Community</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riffle Embeddedness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salinity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Score: 50

Number of elements scored: 11

Overall score: 4.5


More data means more cost!
Steps to Develop a Monitoring and AM Program

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

Q&A

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

Question:

What is your biggest barrier to establish a monitoring program?

Meet Your Presenter

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.
City of Kirkland
Shoreline Tracking
Christian Geitz, Planning Supervisor
City of Kirkland
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

STEP 1
DETERMINE THE REASONS FOR MONITORING
Beginning Round 2

STEP 2
ESTABLISH KEY OBJECTIVES AND STUDY

STEP 3
DESIGN THE MONITORING PROGRAM

STEP 4
DETERMINE THE MONITORING TIME FRAME

STEP 5
EVALUATE RESULTS AND RECOMMENDATIONS
Recently completed first round with 2019 Periodic Update
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
SUCCESSES AND/OR FAILURES

FUTURE PERIODIC REVIEW,
EDUCATION AND OUTREACH

ESTABLISH KEY OBJECTIVES AND STUDY QUESTIONS

STEP TWO

DATA COLLECTION
What are all the values, figures, and other possible data the City may want to collect?

GOALS
What are the short term and long-term goals the SMP codes are intended to achieve?

PURPOSE & INTENT
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?

ADMINISTRATION
Can code administrators apply the code and collect the data without being unnecessarily burdened?

BUILD CONSENSUS
Will the data be useful in future discussions with citizens, council, or commission members?
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

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>PERMIT #</th>
<th>DATE</th>
<th>APPLICANT NAME</th>
<th>PLANNER</th>
</tr>
</thead>
<tbody>
<tr>
<td>123 Fake Street</td>
<td>12345</td>
<td>01/01/2021</td>
<td>John Doe</td>
<td>Jane Smith</td>
</tr>
</tbody>
</table>

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
- 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?
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