Island County

CRITICAL AREA MONITORING AND ADAPTIVE MANAGEMENT PROGRAMS

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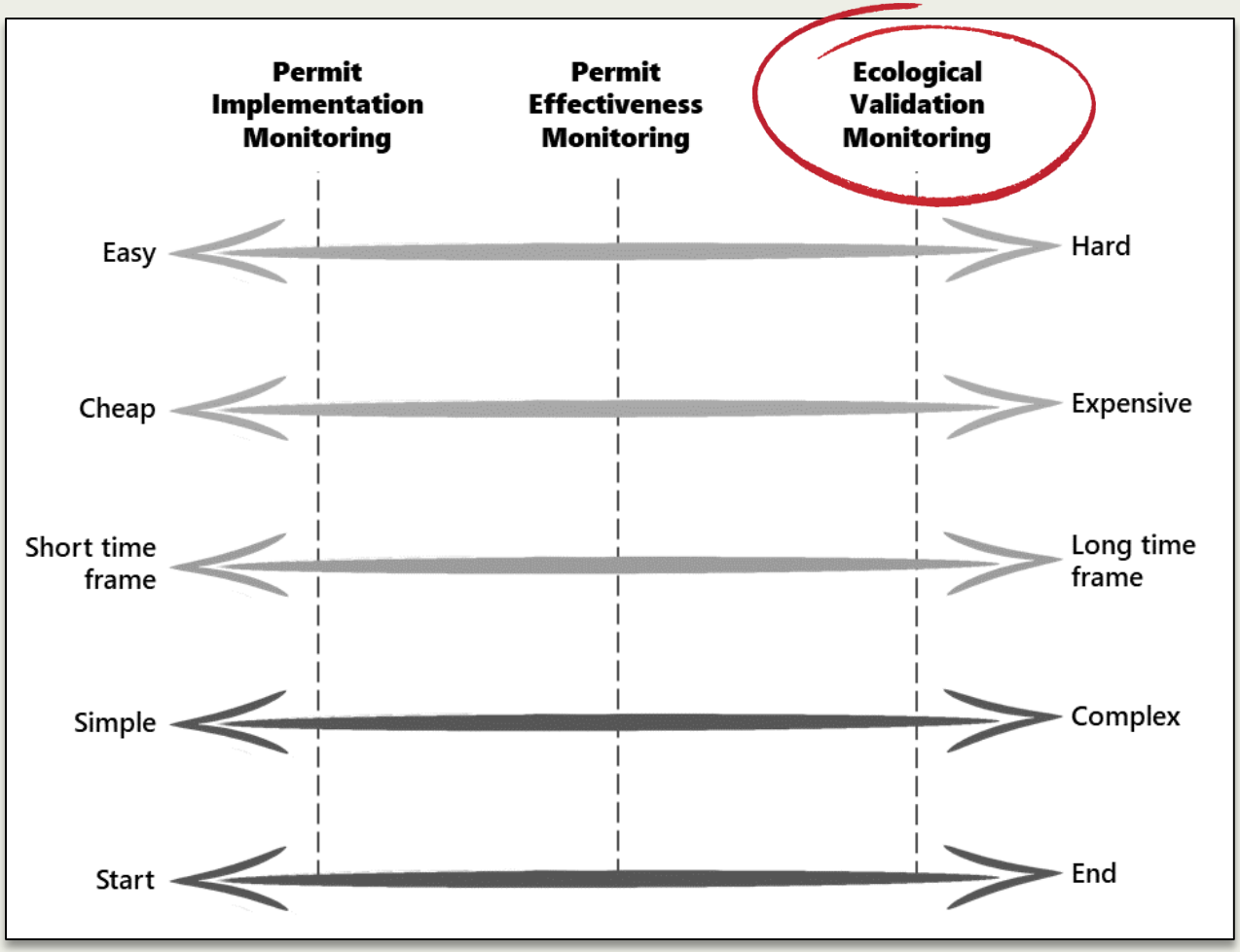
Overview – IC CA Monitoring

- Permit/implementation monitoring
- Surface Water Quality Monitoring Program (ICC 17.02) – FWHCAs
- Wetland Monitoring and Adaptive Management Program (ICC 17.02A) – Wetlands

Levels of Monitoring



Surface Water Quality Monitoring Program (SWMP)

- Commenced in 2006
- Establishes WQ baseline and trends
- Detects and responds to WQ impairments
- Initiates compliance assessment, source identification, and other adaptive management actions to address WQ impairments

Reasons for Monitoring

ICC 17.02.040.L.1:

Purpose. The primary focus of the county's water quality monitoring program is to **detect and respond to potential sources of contamination of surface water that are adversely affecting critical areas**. The sources of concern are primarily non-point source contaminants from uses allowed in the rural area of the county.

- Determine whether exemptions (e.g. Ag) and permitted uses are adversely affecting Critical Areas (ICC 17.02.040.L)

Key Questions & Objectives

- Are permitted and exempt uses (e.g. ag) adversely affecting critical areas?
- Are water quality standards being exceeded?
- What are the sources of surface water contamination?
- Are exceedences attributable to non-compliance with CAO?
- Are site-specific modifications to BMPs or legislative changes to the CAO need to address WQ impairments?

Program Design

1. Baseline WQ monitoring
2. Initiate adaptive management actions where WQ exceedences are identified

Sampling Parameters

Water Quality Parameter	Water Quality Standard	Water Quality Threshold	Water Quality Trend
Dissolved oxygen	>8.0 mg/L	>9.5 mg/L	—
Fecal coliform	<200 colonies/100 ml	<100 colonies/100 ml	—
Nitrate	<10 mg/L	<5 mg/L	—
pH	6.5 to 8.5	6.7 to 8.3	—
Phosphorus	—	0.0350 mg/L (for lakes)	—
Temperature	<18°C	< 17.5°C	—
Turbidity	<10 NTU over background when background is 50 or less, or a 20% increase when background is >50	<5 NTU over background when background is 50 or less, or a 10% increase when background is >50	—

Adaptive Management Actions

1. Compliance Assessment/Source Identification
2. Education
3. Enforcement
4. Site specific changes to BMPs (existing and ongoing Ag)
5. Modification of CAO

Results and Recommendations

Results of baseline WQ monitoring include:

- Identification of WQ exceedences
- Identification of priority watersheds
- Data to inform where to focus source identification/compliance activities

Monitoring Time Frame

- Continuous
- Baseline monitoring => Source Identification
- To be continued….

Wetland Monitoring and Adaptive Management Program (WMP)

Wetland Monitoring and Adaptive Management Program (WMP)

- Adopted in 2008 – CAO update, ICC 17.02A
- Assesses and monitors changes in wetland "health"
- Initiates compliance assessment when thresholds of decline are met
- Resolves non-compliant uses or initiates legislative changes to CAO

Reasons for Monitoring

ICC 17.02A.080.A:

Purpose. The primary purpose of the county's wetland monitoring program will be to determine the overall health of a wetland. To do so, the county will track both chemical indicators through measuring **water quality** and biological indicators by sampling **wetland vegetation**. These measures will be used to evaluate the effectiveness of county regulations.

- Evaluate effectiveness of CAO regulations in protecting wetland health.

Key Questions & Objectives

- **What is the status of wetland health in Island County?**
  - Objective: Determine wetland health through baseline sampling.
- **Is it changing?**

Objective: Track wetland health through monitoring.

- **Is Island County's CAO effectively protecting wetlands?**

Objective: Evaluate effectiveness of CAO regulations through compliance assessment where declines are found.

Program Design

1) Baseline monitoring (2008 – 2012)
2) Monitoring to assess change (2013 – 2017)
3) Initiate adaptive management actions where thresholds of decline are met

Sample Size

- Appx. 60 wetlands total
- Appx. 15 per monitoring year

Sampling Parameters

Vegetation (herbaceous)	Water Quality
• Percent cover non-native species • Percent cover native species • Species richness	• Dissolved oxygen • Fecal coliform • Nitrate • pH • Phosphorus • Temperature • Turbidity • Conductivity • Hardness

Sampling Parameters

Six land use contributing area types:

Contributing Area Category	Dominant Land Use in Contributing Area	Buffer Width and Degree of Intrusion
1	Forested	>100 ft forested
2	Forested	Slight buffer intrusion (75-100 ft)
3	Forested	Moderate to intense intrusion (0-75ft forested buffer)
4	Ag or Developed	> 100 ft
5	Ag or Developed	75-100 ft
6	Ag or Developed	Moderate to intense intrusion (0-75ft forested buffer)

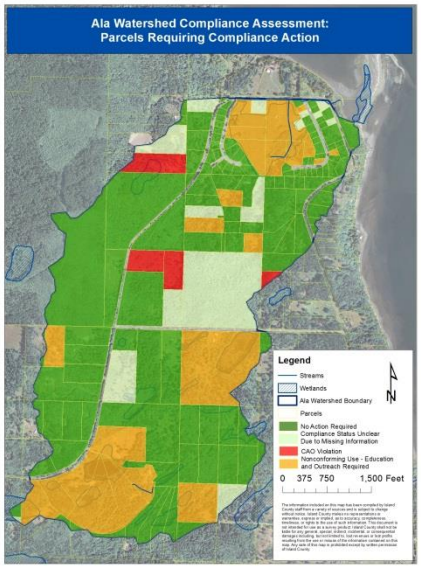
Thresholds for Adaptive Management

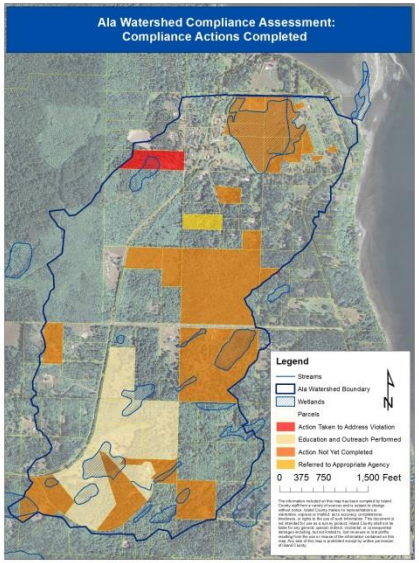
ICC 17.02A.080.B.5:

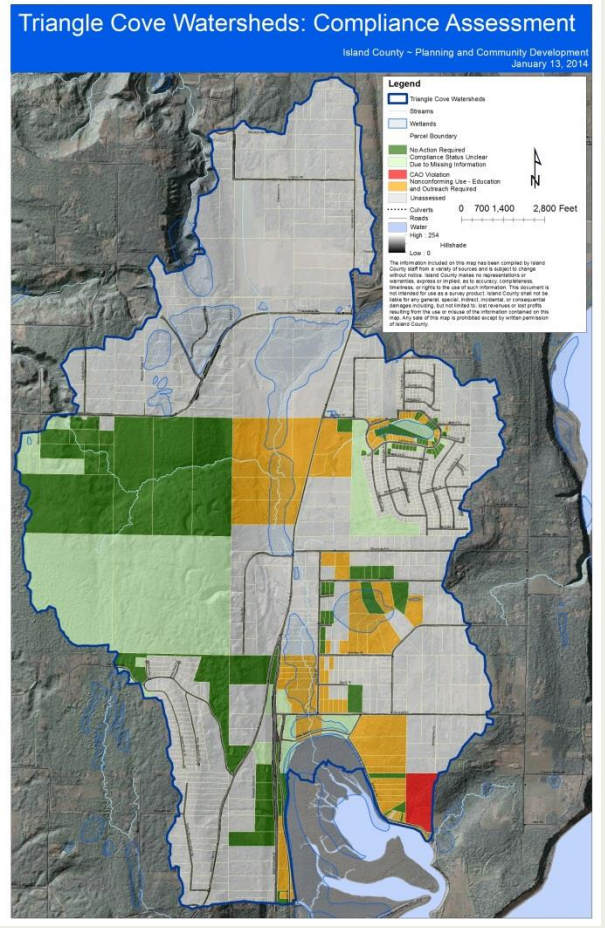
- > 10% increase in % cover non-native species
- > 10% change in species richness
- "Significant elevation of water quality contaminants"

Adaptive Management Actions

1. Compliance assessment/Source Identification
2. Education/voluntary compliance
3. Enforcement
4. Modification of CAO regulations







Monitoring Time Frame

- Change is analyzed at five-year intervals.
- 2008 – 2012: baseline data
- 2013 – 2017: monitoring
- 2018 – 2022 ?

Results and Recommendations

ICC 17.02A.080.G:

Produce reports including all baseline monitoring data, summary statistics, an assessment of the accuracy and completeness of the data, and a description of data collection issues, if any, identified during the reporting period as well as the following additional information:

- **A description of any identified trends and all compliance assessments and source identification actions taken during the reporting period.**
- A description of educational outreach actions as well as enforcement actions taken during the reporting period.
- A discussion of wetland monitoring priorities for the next reporting period.
- A description of enforcement actions relating to wetlands.
- **A summary characterization of wetland health and the effectiveness of CAO regulations in implementing comprehensive plan goals and policies for wetlands.**

Status of the WMP

- Completed 5 years of baseline data collection
- Concluded 5 years of monitoring in 2017
- On-hold to assess need for revisions to the WMP

Challenges to Implementation

- Staff turn-over
- Inconsistencies in data collection
- Inconsistent access (permission from private landowners)
- Environmental conditions
  - Seasonally-dry wetlands a challenge for WQ sampling
  - Some wetlands with little herbaceous vegetation
  - Changes in hydrology
  - Natural change vs. change related to land use

- **Time and resource-intensive program with limited staff and resources.**

Future Monitoring Recommendations

- Modify WMP
  - Watershed approach
  - Focus on SWMP and incorporate wetland compliance in priority watersheds
  - High Resolution Change Detection (vegetation)

Questions?