



Integrating Habitat Status and Trends and Stormwater/Water Quality Monitoring in SW Washington

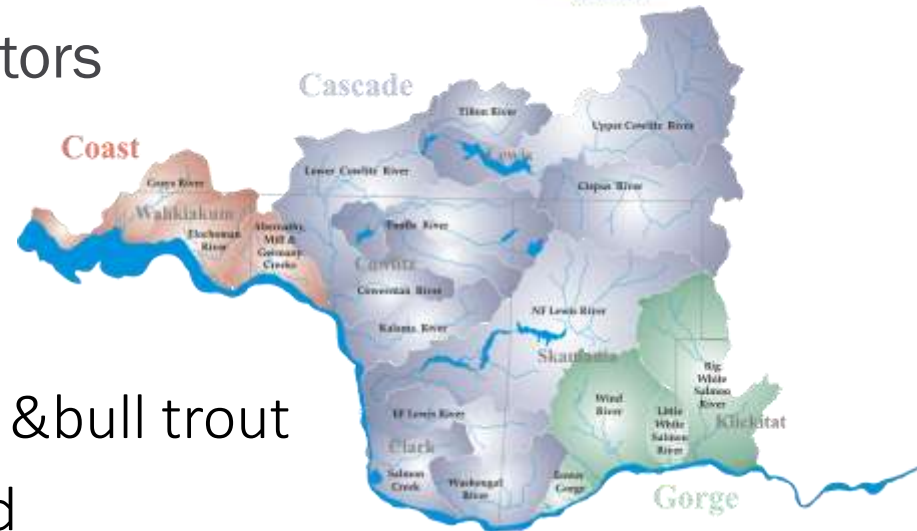


Columbia River Estuary Workshop
Wednesday, May 28, 2014



The Lower Columbia Region

- 5,704 square miles
- 7% of the state
- 525,000 people
- 5 counties, 21 cities, and 3 Tribes
- 7 Dams, 4 Hydroelectric Operators
- 2,280 river miles
- 17 major subbasins
- 74 distinct salmon populations
- Chinook, chum, steelhead, coho & bull trout are ESA listed as Threatened



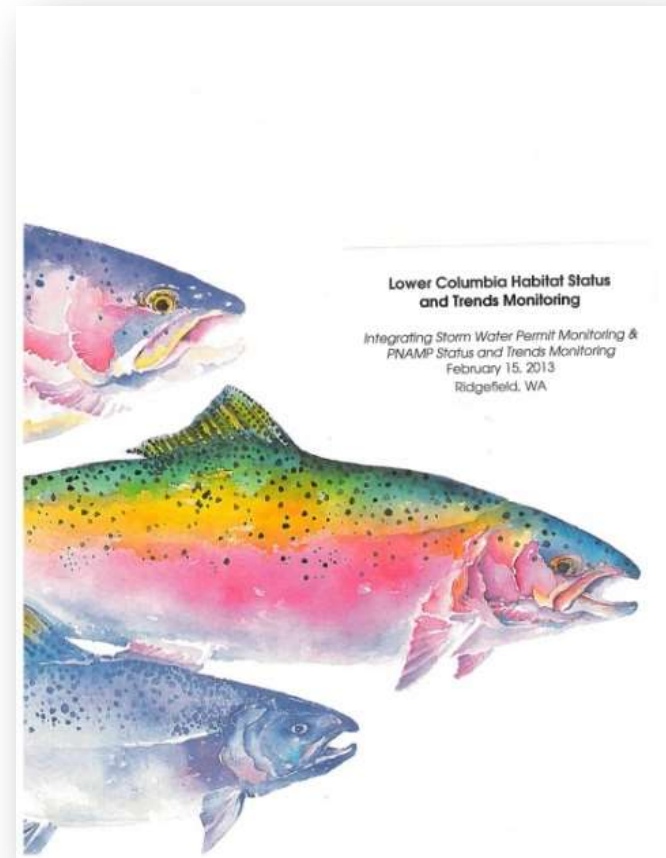
Inspiration

∞ Convergence of Status and Trends Monitoring

- Habitat Status and Trends
- Water Quality Status and Trends for Stormwater Impacts

∞ Opportunity for Efficiency

- Overlapping data needs



Collaboration

∞ Collaborative Effort

- City of Longview
 - Funded by a Grant from Department of Ecology
- Lower Columbia Fish Recovery Board (LCFRB)
- Pacific Northwest Aquatic Monitoring Partnership (PNAMP)
- Regional Monitoring Partners



Goals

- ☞ Develop a coordinated monitoring design that integrates status & trends monitoring for habitat & stormwater impacts
- ☞ Make recommendations for an appropriate suite of metrics used to address both needs



Approach

∞ Phased Approach:

- Phase 1: Develop a draft monitoring strategy and design
- Phase 2: Refine
- Phase 3: Pilot Study
- ? Phase 4: Refine?



Phase 1 Tasks

Draft Monitoring Strategy

∞ Develop 2-3 monitoring scenarios

∞ Conduct trade-off analysis

Most Benefit, Best Cost

Low Cost, ? Benefit

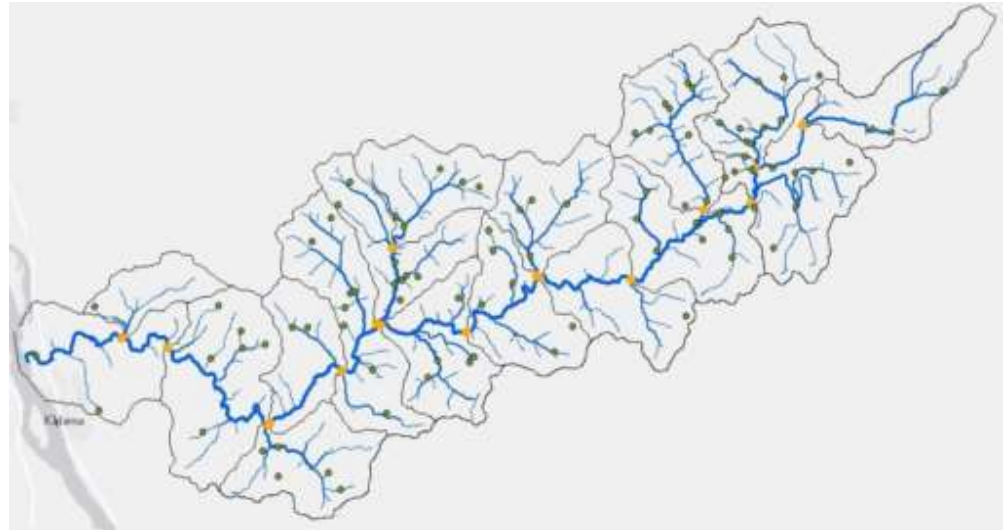
High Cost, ? Benefit



Monitoring Scenarios

Spatial Component

- ☞ Pseudo-probability design
- ☞ Spatial stratification
- ☞ Nested sampling



Monitoring Scenarios

Spatial Component

∞ Water Quality/Quantity

Target Populations:

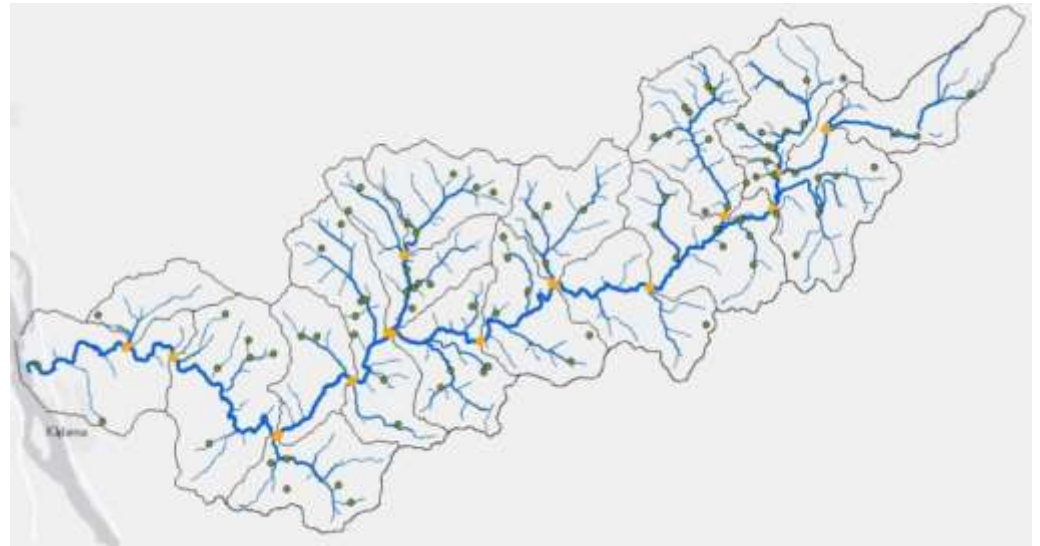
Sub-watersheds

(defined in Recovery Plan)

∞ Habitat Target

Populations:

Stream reaches



Sampling Component Metrics

∞ Water Quality

- Basics
- Nutrients and Bacteria
- Metals in Sediments
- Flow
- Macroinvertebrates

∞ Habitat

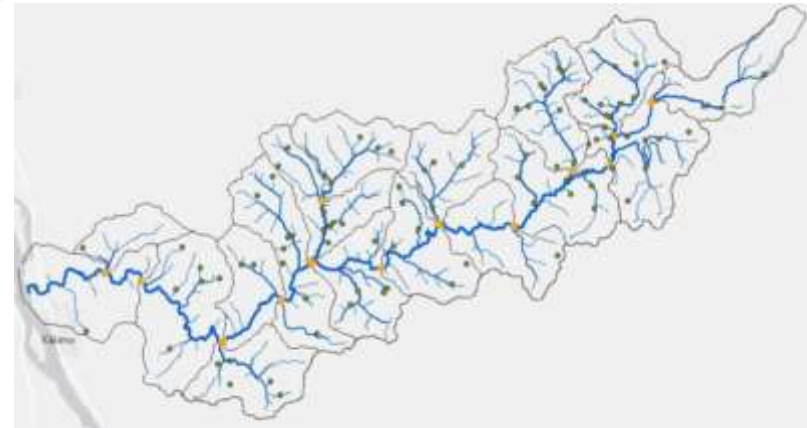
- Channel Morphology
- Large Wood
- Substrates
- Flow
- Basic Water Quality
- Macroinvertebrates



Sampling Component

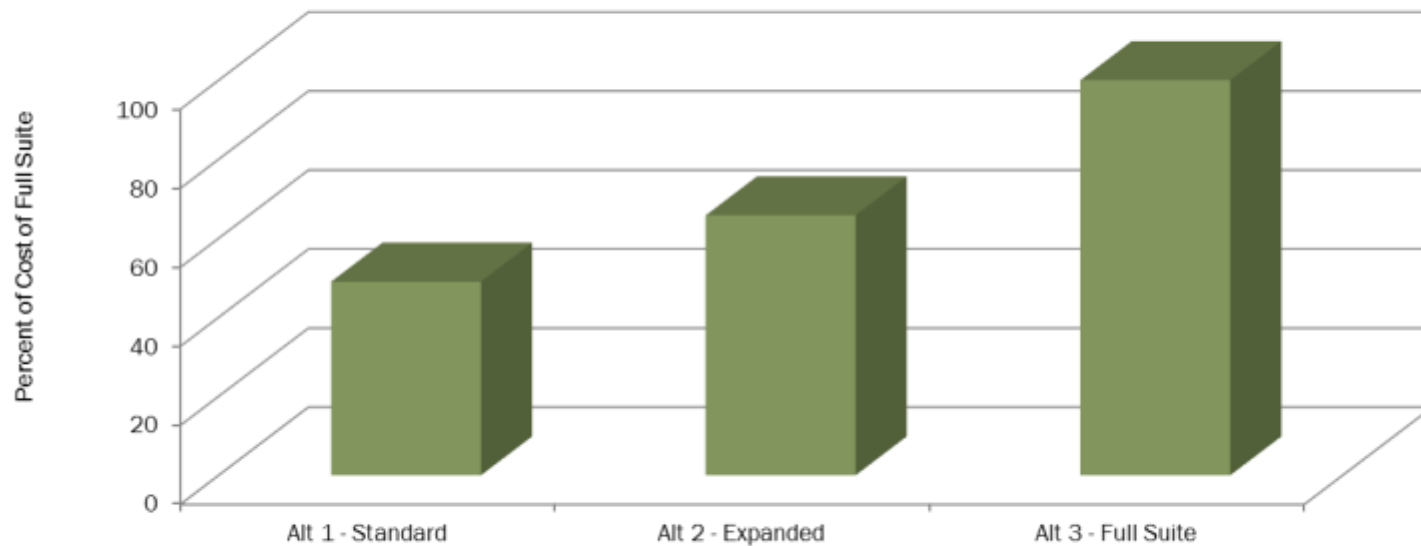
Level of Effort

Site Type	Monitoring Entity	
	Stormwater Permittees	ISTM Partners
Water Quality (WQ)	Full WQ Protocol / Basic Habitat Protocol	Full WQ Protocol / Full Habitat Protocol
Habitat	No Sampling	Basic WQ Protocol / Full Habitat Protocol



Trade-off Analysis

Comparison of Cost per Site for Water Qa/Qx Laboratory Analysis



*Numbers shown indicate the percentage of the cost per site of each alternative as compared to full suite of metrics (Alternative 3).



Phase 1

Recommended Draft Design Strategy

Summary

- Spatial Component
 - Pseudorandom design
 - Nested site allocation
- Sampling Component
 - Standard set of metrics
 - Relevant level of effort



Phase 2 Tasks

- ∞ **Stage I** – Refine the monitoring design developed in Phase 1
 - Invite broader participation by OR and Federal agencies
- ∞ **Stage II** – Develop an Implementation Plan



Phase 2

∞ Refinement

- SMART questions and objectives
- Necessary metrics
- Appropriate strata
- Incorporate Oregon partners

∞ Implementation Plan

- How do we get enough samples to make regional assessment?
- Frequency/Temporal scale on which to base trends?
- How will we store and share data?
- Quality Assurance Project Plan



Lessons Learned

- ☞ Be SMART. Focus on the questions we wish to address
- ☞ Be Inclusive
- ☞ Set priorities in recognition that resources are limited
- ☞ Recognize that an integrated monitoring program will not be perfect
- ☞ The ability to share data is essential
- ☞ Regulatory processes are not conveniently packaged into a grant funding cycle



Questions?

FOR MORE INFORMATION

☞ <http://www.lcfrb.gen.wa.us/HSTM%20page.htm>

☞ <http://www.pnamp.org/project/4585>

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