Agenda & Presentations

March 16, 2016

- Item 1: Consent Agenda
- Item 2: Director's Report
- Item 3: Salmon Recovery Management Report
  - Recently Completed Projects
- Item 4: Reports from Partners: COR, WSC, RFEGC, Agencies
- Item 5: Funding to be Allocated for Remainder of 15-17 Biennium
- Item 6: Projects that Implement the Board's Strategic Plan
- Item 7: The Nature Conservancy Strategic Vision & Salmon Recovery
- Item 8: Washington Administrative Code (WAC) – Public Hearing
- Item 9: Proposed New Sections to the WAC
- Item 10: Puget Sound Regional Presentation
- Item 11: Climate & Drought Impacts to Salmon & Recovery Projects

WASHINGTON STATE
Salmon Recovery Funding Board

Management Reports

RCO Director
Governor's Salmon Recovery Office
Salmon Grant Section

Agenda Items 2 & 3

March 16, 2016

SRFB

WASHINGTON STATE
Recreation and
Conservation Office

Director's Report

Kaleen Cottingham, Director
Recreation and Conservation Office

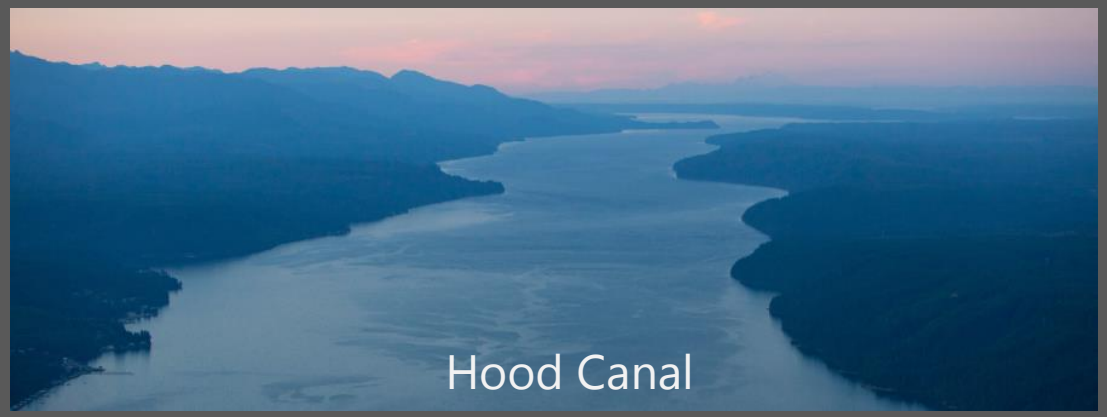
Agenda Item 2

March 16, 2016

RCO

Director's Report

- Location of September's Travel Meeting



- E-Billing Milestone
- <u>No Findings</u> in Recent PCSRF Audit
- Upcoming State Auditor's Office Accountability Audit

Legislative and Budget Update

- **RCO Agency Request Bills**
- **Salmon-Related Bills of Interest**
  - HB 2856: Office of Chehalis River basin flood risk reduction
  - EHB 2883: Requirements for state agency reports
  - SB 6171: Civil penalties for violating the open public meetings act
  - SB 6274: Columbia River recreational salmon and steelhead endorsement program
- **Changes to the Supplemental and/or Capital budgets that may affect salmon**

WASHINGTON STATE
Governor's Salmon Recovery Office

Governor's Salmon Recovery Office

Kaleen Cottingham, Director
Recreation and Conservation Office

Agenda Item 3

March 16, 2016

GSRO

Governor's Salmon Recovery Office

- GSRO Executive Coordinator Role
  - Temporary assignments
- Salmon Recovery Network (SRNet) Update
- Washington, D.C. Congressional Visit
- Monitoring Update Regarding Funding Shortfall
- Coordinated Grants Effort – Results Washington

Governor's Salmon Recovery Office

- Pacific Coastal Salmon Recovery Fund (PCSRF) draft application submitted to National Oceanic and Atmospheric Administration (NOAA) on March 4 due date

NOAA Priority 1	Habitat Projects and Hatchery Reform projects	$15,041,592
NOAA Priority 2	Monitoring Programs and projects	$4,222,723
NOAA Priority 3	Capacity to Regions and Lead Entities, Administration	$5,735,685
	2016 PCSRF Application Total	**$25,000,000**

Governor's Salmon Recovery Office

- State of the Salmon report
  - Recommendations for improving website
  - Gearing up for new stories/ ways of presenting data
- Habitat Work Schedule
  - Working to pull data into PSP 4-year work plans
- Monitoring Panel
  - Project Effectiveness
  - Adaptive Management Structure

WASHINGTON STATE
Salmon Recovery Funding Board

Salmon Section Report

Tara Galuska
Salmon Section Manager

Agenda Item 3

March 16, 2016

SRFB

Salmon Section Report

- 2016 Grant Round
  - Manual 18 published to RCO website
  - Application Workshop held March 8, 2016 with 65 participants
  - Review Panel kick-off meeting, March 15, 2015
  - 90 salmon applications submitted as of March 14, 2016

Questions?

WASHINGTON STATE
Recreation and Conservation Office

WASHINGTON STATE
RECREATION AND CONSERVATION OFFICE
Salmon Recovery Funding Board

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Governor's Salmon Recovery Office

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RECREATION AND CONSERVATION OFFICE
Salmon Recovery
Funding Board

Closed Salmon Projects

Agenda Item 3
March 16, 2016

Puget Sound Region

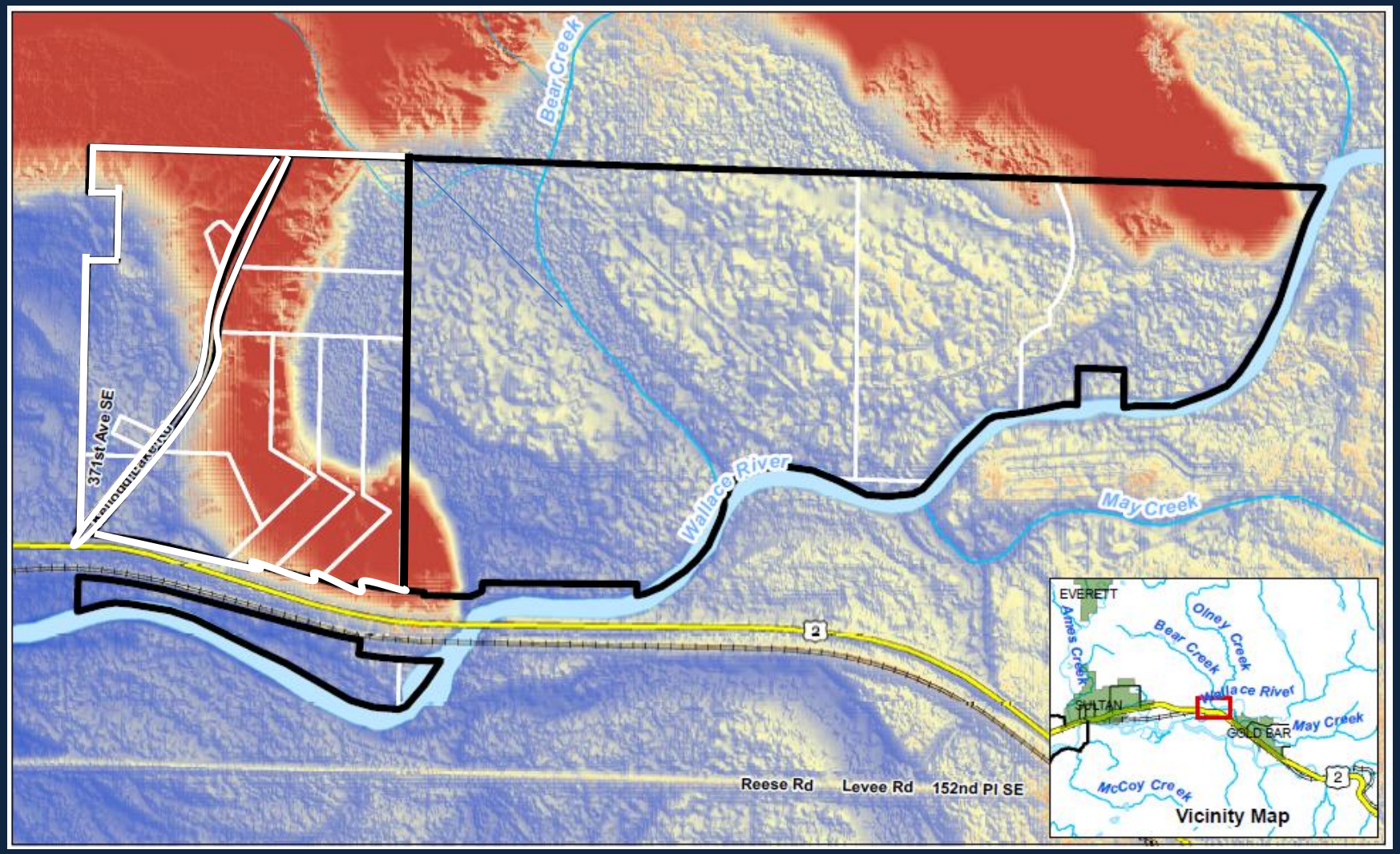
- **Project Name:** Lower Wallace River Conservation Area (13-1166)
- **Lead Entity:** Snohomish Watershed
- **Sponsor:** Forterra and Tulalip Tribes
- **Funding:**

PSAR	$ 61,411	(12%)
PCSRF	$188,589	(38%)
Match	$250,000	(50%)
Total	$ 500,000	

- **Description:** Conserved 121.7 acres including riparian, floodplain, and wetland habitats along approximately 1.3 miles of Lower Wallace River and 0.35 miles (both sides) of Bear Creek, near Goldbar. Tulalip Tribes now owns the property and intends to enhance the riparian habitat to support the high-quality spawning and rearing habitat for wild stocks of Chinook, coho, chum, and pink salmon and bull trout.

Lower Wallace River

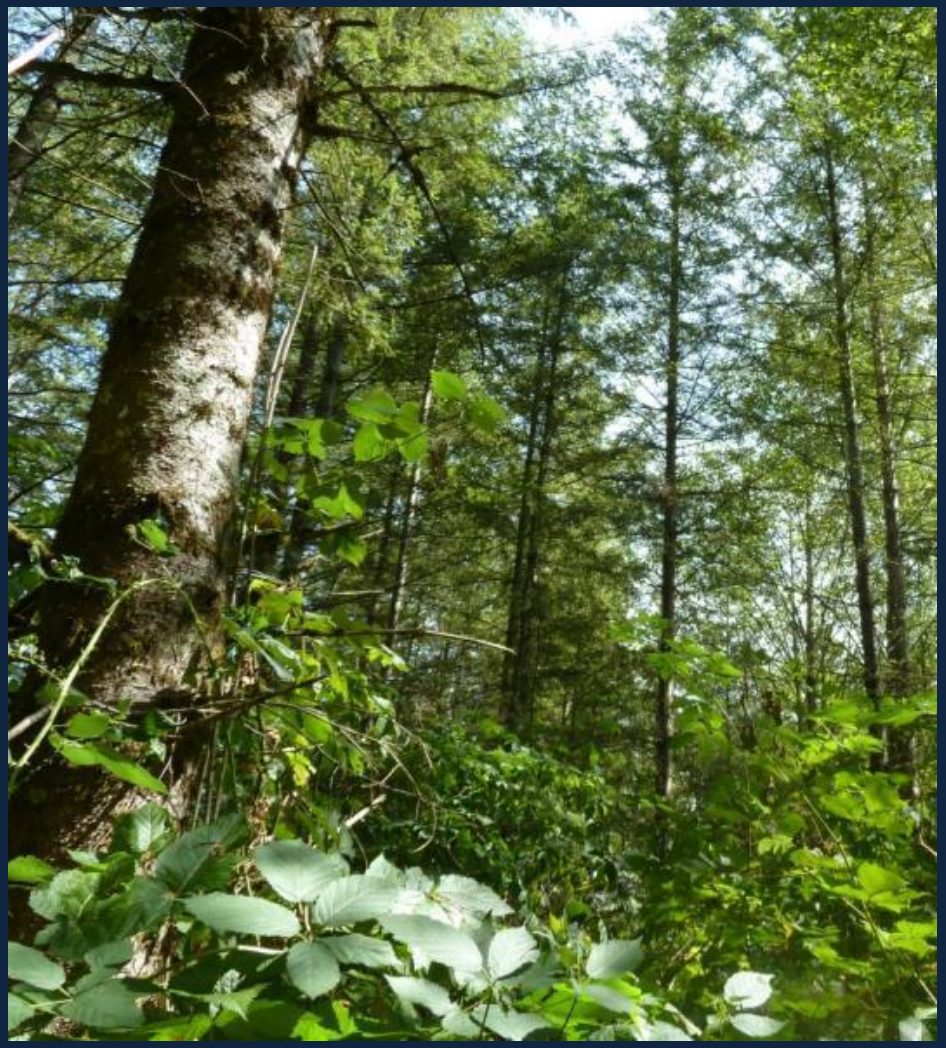
Lower Wallace River



Lower Wallace River

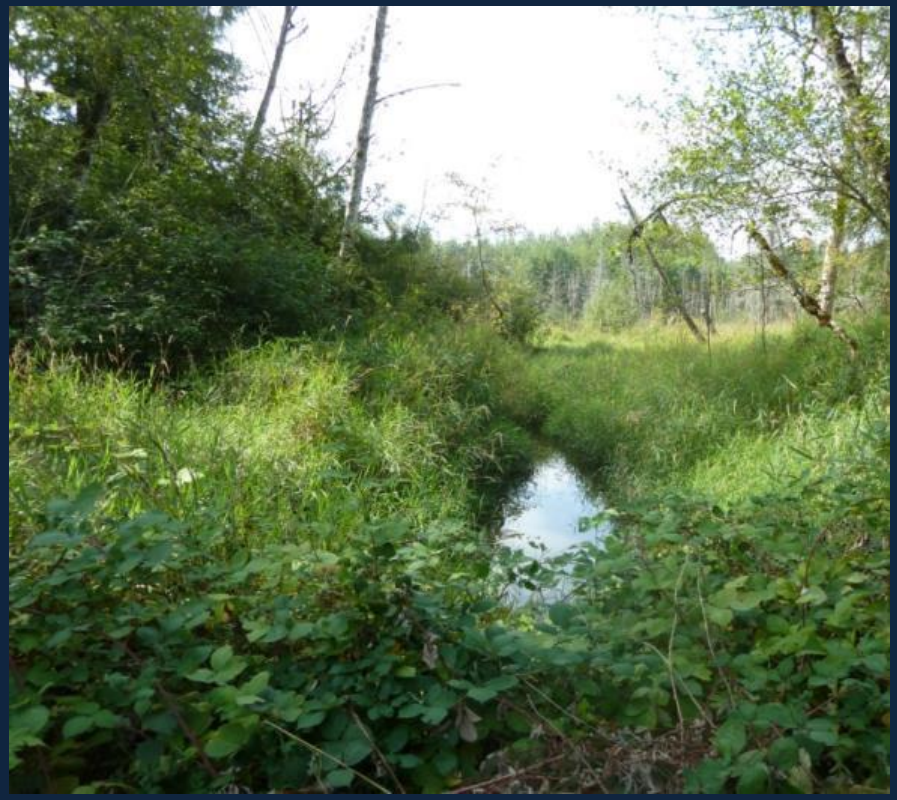
Lower Wallace River *Spawning Habitat*

Lower Wallace River *Riparian/Floodplain*

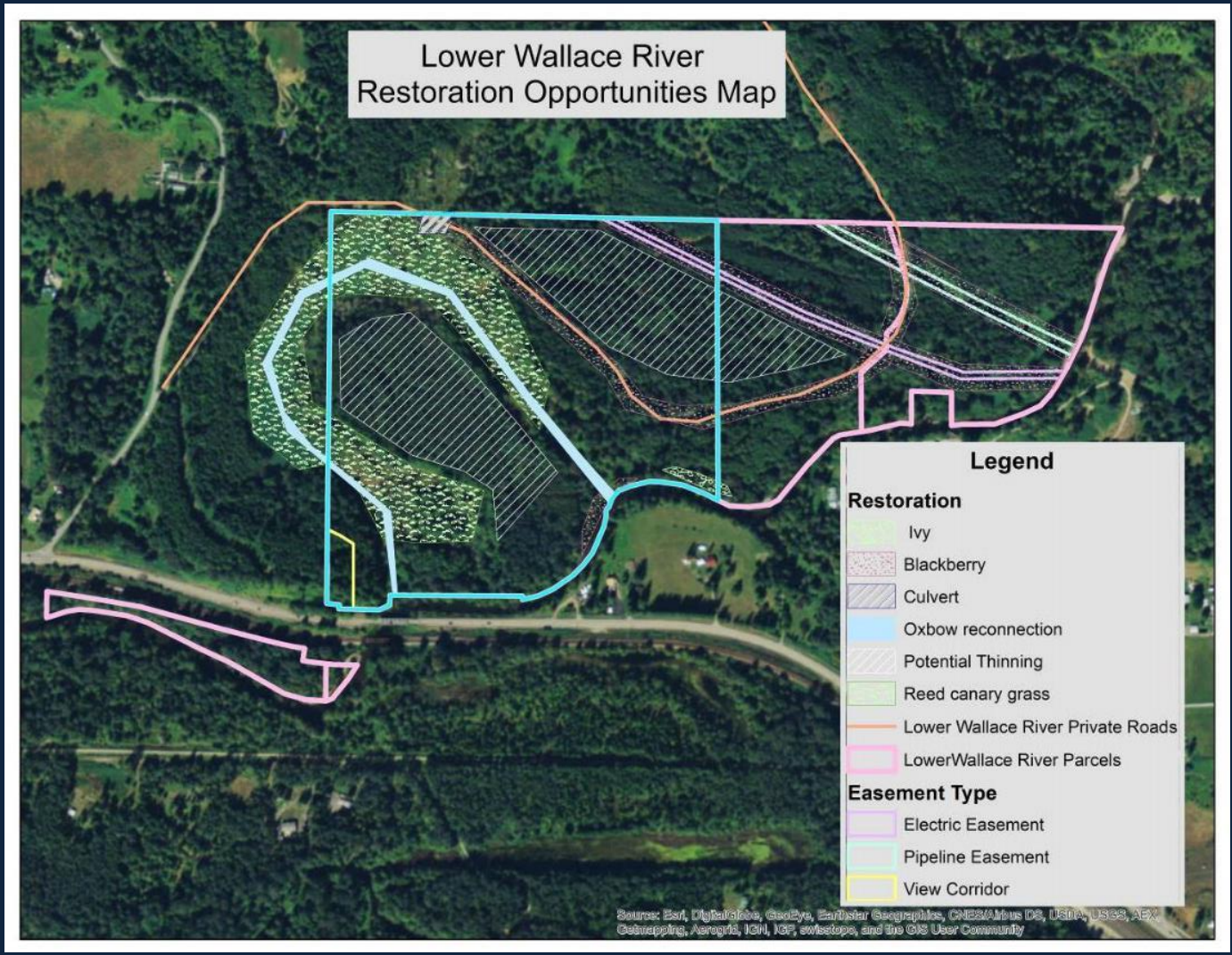


Bear Creek *Riparian/Rearing Habitat*

Lower Wallace River *Rearing/Wetlands*



Restoration Opportunities



Lower Wallace River *Partnership*

Morgan Ruff, Snohomish Lead Entity; Daryl Williams, Tulalip Tribes; Susan LaCroix, Forterra

Hood Canal Region

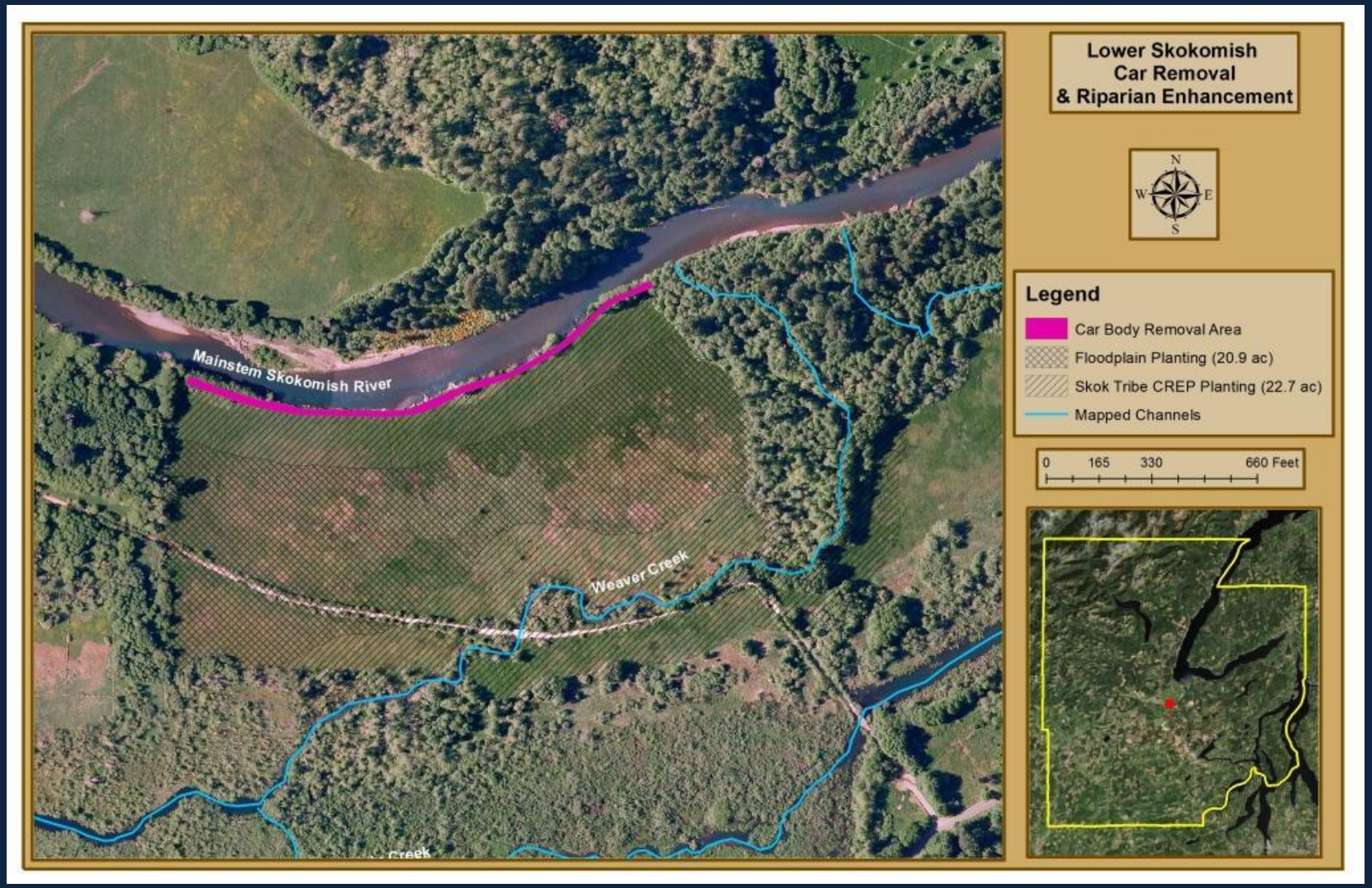
- **Project Name:** Skokomish Car Removal and Riparian Restoration (12-1368)
- **Lead Entity:** Hood Canal Coordinating Council
- **Sponsor:** Mason Conservation District
- **Funding:**

Salmon State	$127,754	(67%)
Match	$63,035	(33%)
Total	$190,788	

- **Description:** Removed car bodies along 1,600 feet of the Skokomish River and replanted 43.6 acres of former agriculture land.

Skokomish River

Skokomish River



Before Project

During Project

After Project

Puget Sound Region

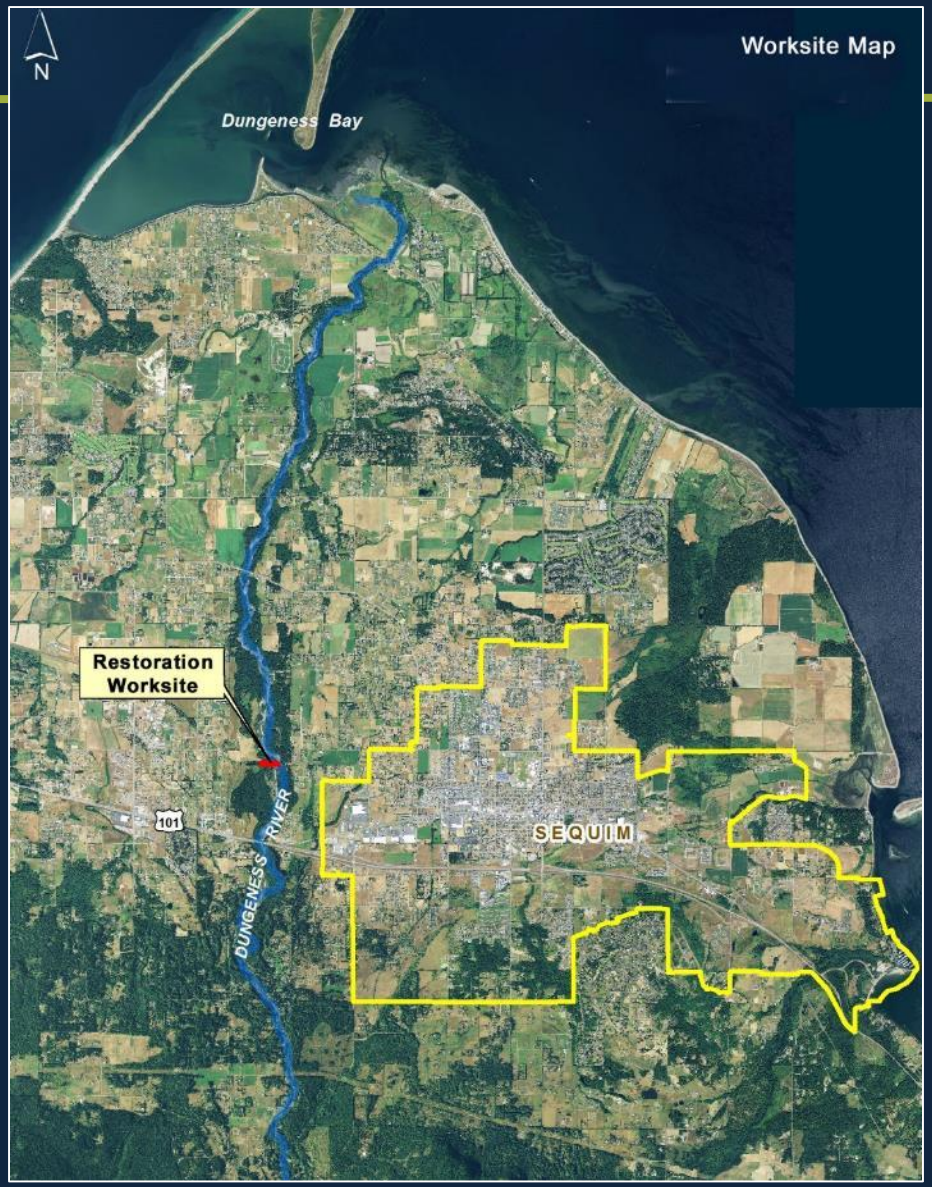
- **Project Name:** Dungeness River Railroad Reach Floodplain Restoration (15-1053)
- **Lead Entity:** North Olympic Peninsula
- **Sponsor:** Jamestown S'Klallam Tribe
- **Funding:**

PSAR	$ 1,530,000	(64%)
WWRP Trails	$ 52,000	(2%)
Match	$ 824,100	(34%)
Total	$ 2,406,100	

- **Description:** Replaced a 585' railroad trestle with a 750' pedestrian bridge. Removal of ~175 creosote logs and 165' of roadway fill. Connecting 15.5 acres of floodplain to the river, and allowing for channel migration.

Background

- Jamestown S'Klallam Tribe
- Dungeness River Railroad Bridge Park
- Sequim, Clallam Co
- Discovery Trail
- Flooding in February 2015 damaged the crossing

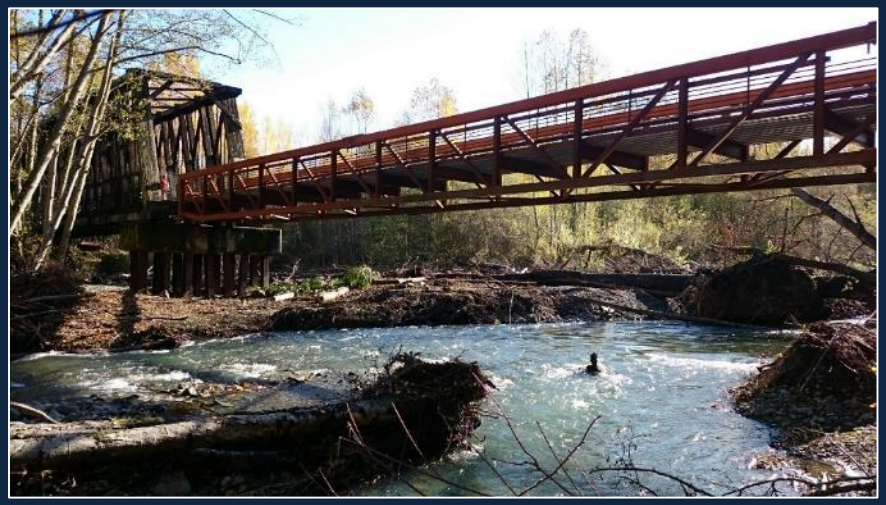


- Improved spawning habitat – Chinook, chum, pink and steelhead
- Improved rearing habitat – Chinook, chum, pink, steelhead, coho, cutthroat, and bull trout

Extend beyond
edge of CMZ
Remove Existing Trestle,
Replace with river-worthy,
salmon-friendly pedestrian bridge.
Edge of CMZ

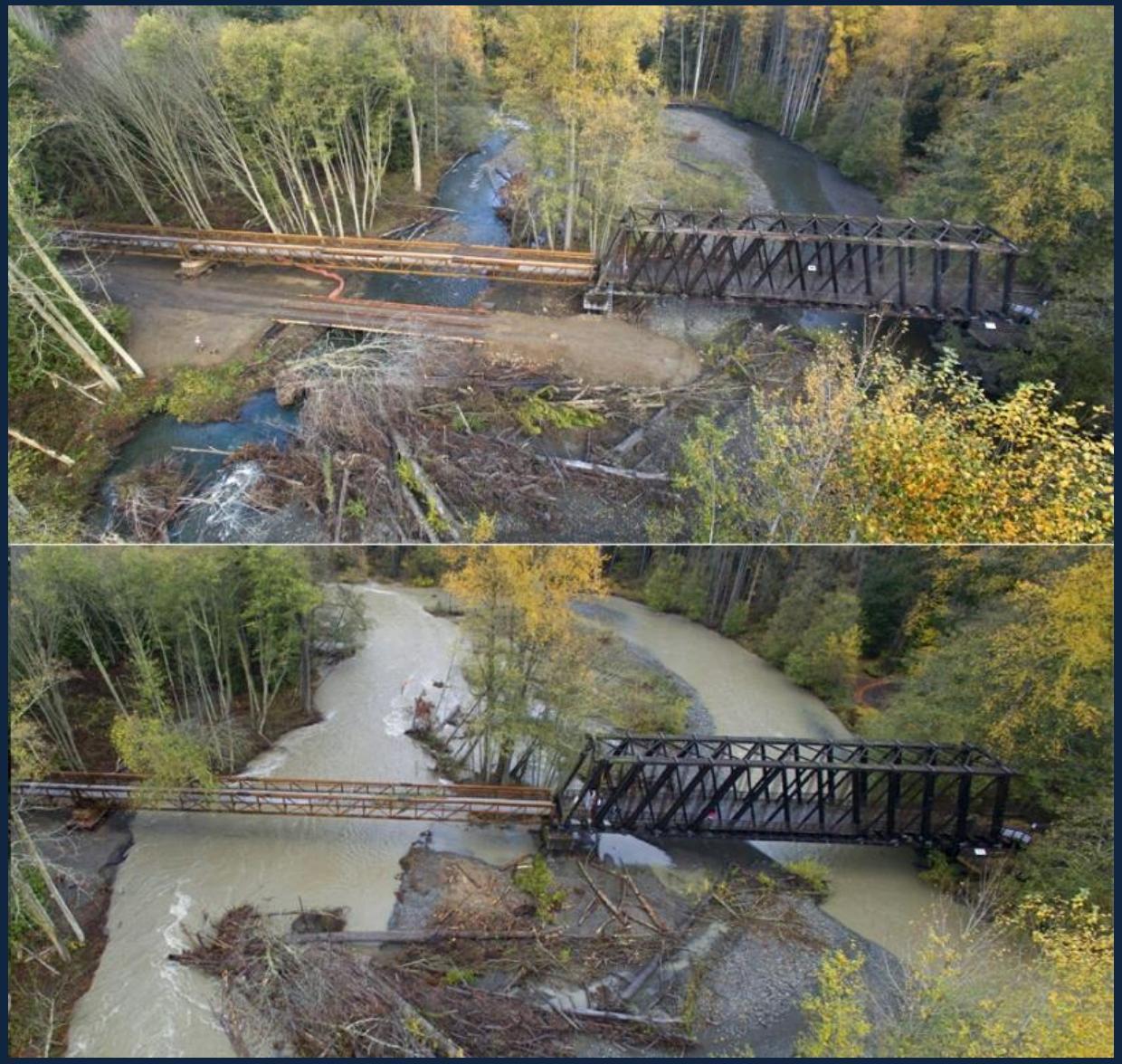
Bridge
Trestle

First flood! October 31: 1200 cfs



Construction moves along

Second flood! November 13: 3,850 cfs



Before and after flooding

Third flood! November 18: 5000 cfs

Cheryl Garland

Garland Frankfurth and Bob Anundson were among the first bicyclists to cross the newly opened trestle Thursday. A bystander helped the two remove a fallen tree from the pathway.

Back on track

THANK YOU - Questions?

WASHINGTON STATE
Salmon Recovery Funding Board

Funding to be Allocated for the Remainder of the 2015-17 Biennium

Kaleen Cottingham, Director
Recreation and Conservation Office

Agenda Item 5
March 16, 2016

SRFB

Overview

- Forecast of 2016 Pacific Coastal Salmon Recovery Fund (PCSRF) Award
- Available state funds
- Forecast of return funds
- Overview of decisions previously made by board or as part of PCSRF grant awards
- Funds available for 2016 board decisions
- Overview of pending board decisions

Funding Available for the 2015-17 Biennium

	State Fiscal Year 2015	Projected State Fiscal Year 2016
State Bond funds (includes Admin)	$11,058,133	$5,441,867
Return Funds Used/Available	$891,325	$1,830,000
PCSRF 2015-2016 (includes Admin)	$20,000,000	$20,000,000
State General Funds (Lead Entities)	$453,614	$453,614
Total Funds Available	**$32,403,072**	**$27,725,481**

Decisions Previously Made to Allocate Funding

	State Fiscal Year 2015	Projected State Fiscal Year 2016
Decisions Previously Made to Allocate Funding		
Capacity (Lead Entities and Regional Organizations)		
State General funds (Lead Entities)	$453,614	$453,614
PCSRF (Lead Entities)	$1,235,886	$1,235,886
PCSRF (Regional Organizations)	$2,878,685	$2,878,685

Decisions Previously Made to Allocate Funding

	State Fiscal Year 2015	Projected State Fiscal Year 2016
Decisions Previously Made to Allocate Funding		
Salmon Recovery Funding Board Activities	(Includes monitoring, administrative costs, hatchery reform)	
PCSRF Activities	$6,211,392	$6,111,392
PCSRF Review Panel	$200,900	$200,900
IMW Projects	$1,867,000	$2,000,000
RCO Admin (State and Federal)	$1,055,595	$824,205
Director-Approved Cost Increases	$500,000	---
Funds Available for 2015 Grant Round	$18,000,000	---
Projected Funds Available for 2016	**---**	**$14,020,799**

Proposals for Board Decision

	Projected State Fiscal Year 2016
Projected Funds Available for 2016	**$14,020,799**
Proposed Board Work Plan Priorities (Item 6)	$427,800
Director-Approved Cost Increases	$500,000
Project Funds Available for 2016 Grant Round	$13,092,999

Intensively Monitored Watersheds (IMWs) Monitoring Shortfall	
Total Needed	**$125,992**
Options:	
1 Use returned funds / grant round funds	
2 Use funds from the IMW projects amount	
3 Use funds from the project cost increase amount	

Questions?

WASHINGTON STATE
Governor's Salmon Recovery Office

Projects to Implement the Board's Strategic Plan

Kaleen Cottingham, Director
Recreation and Conservation Office

Agenda Item 6

March 16, 2016

GSRO

Deliverables that Build Momentum: Board Work Plan Activities

	Item	Board Work Plan Estimate	March 2016 Staff Proposal for Funding
1	Funding Strategy Exploration Phase 1	$90,000	$50,000
2	2017 Salmon Recovery Conference	$99,800	$99,800
3	SRFB-SRNet Communications Phase 3 • Communication Plan: $55,000 • Materials: $25,000 • State of Salmon in Washington: $30,000 • Video Update: $28,000	$180,000	$138,000
4	Allocation Subcommittee Facilitator	$10,000	$10,000
5	SRFB Retreat Facilitator	$5,000	$5,000
6	Assessment Pilot: Determining Restoration Needs & Priorities	Not Included	$25,000

Deliverables that Build Momentum: Activities Approved & Funded by NOAA

Item		Board Work Plan Estimate	March 2016 Staff Proposal for Funding
7	All-H and Hatchery Reform Communications Tools (Video)	Part of 2015 PCSRF Award	$50,000
8	Database Integration and Data Management	Part of 2015 PCSRF Award	$50,000

Board Decisions

1) Approving Items 1-6 as a package

   OR

   Approving Items 1-6 individually

   **Note: Items 7 and 8 are preauthorized through their inclusion in the 2016 Pacific Coastal Salmon Recovery Fund (PCSRF) application.*

2) How to fund the monitoring shortfall:
   - Option 1: Returned Funds
   - Option 2: Reducing the amount for IMW projects
   - Option 3: Reducing the amount available for director-approved cost increases.

Proposed Motions

1) Items 1-6
   - Move to approve funding for Items 1-6 as outlined in the board memo.

   - **Alternate*: Move to approve Items X, Y, Z as outlined in the board memo.

2) Intensively Monitored Watershed (IMW) Funding Shortfall
   - Move to approve funding to cover the budget shortfall of $125,992 for Intensively Monitored Watershed (IMW) contracts using funds from _____.

Questions?

WASHINGTON STATE
RECREATION AND CONSERVATION OFFICE
Governor's Salmon
Recovery Office

THE NATURE CONSERVANCY

SALMON RECOVERY EFFORTS IN PUGET SOUND AND BEYOND

MARCH 16, 2016

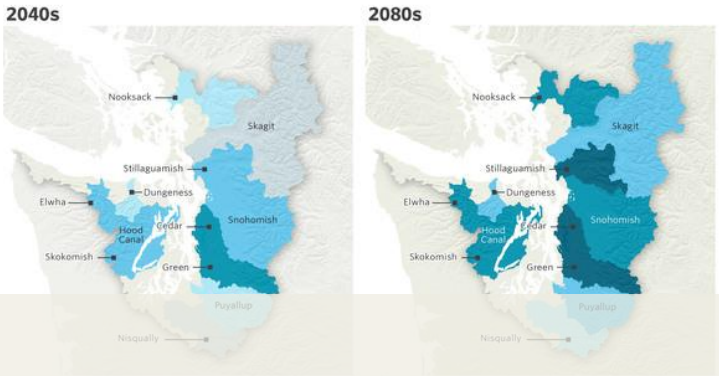
ACCELERATING ACTION FOR THE PLACE WE LOVE

CREATING LARGE-SCALE SOLUTIONS
TO LARGE-SCALE PROBLEMS
PHOTO CREDIT: MARLIN GREENE / ONE EARTH IMAGES

BREAKTHROUGH SCIENCE AND ANALYTICS

April 1st SNOWPACK

Most Puget Sound watersheds will be rain-dominant by the end of the 21st century, meaning more precipitation will fall as rain rather than snow, thereby reducing overall snowpack.



Data source: UW Climate Impacts Group. Maps show the projected April 1st snow water equivalent (SWE), for two time periods: the 2040s (2030-2059) and the 2080s (2070- 2099), based on a moderate greenhouse gas scenario (A1B) for snow dependent watersheds. Analysis units were the 12 major watersheds in Puget Sound where long-term streamflow observations were available.

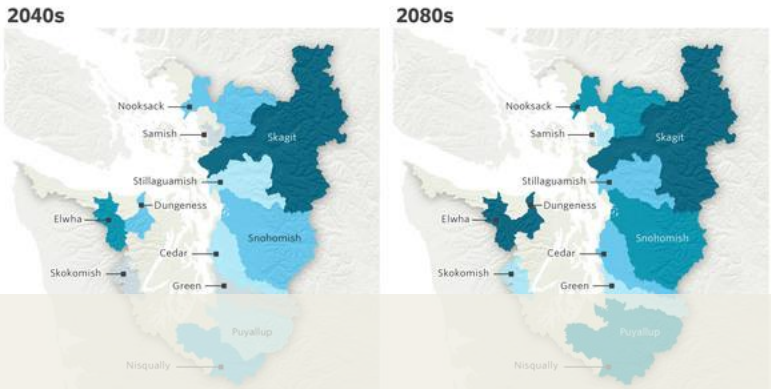
KEY

% Change in April 1st Snow Water Equivalent (SWE)

0 to -20% | -21 to -40% | -41 to -60% | -61 to -80% | -81 to -100%

MINIMUM FLOWS

Snowpack is projected to decline by the end of the 21st century. Most locations are projected to experience a 25-30% decline in average summer streamflow.



Data source: UW Climate Impacts Group. Maps show the projected [illegible] minimum 7-day streamflow volume with a [illegible] (2030-2059) and the 2080s (2070-2099), [illegible] watersheds in Puget Sound where long-term [illegible] can have a large impact on flows in [illegible] Green, White and Skokomish watersheds. Projections in peak flows only account for reduced snowpack; models do not include flow changes due to intensifying heavy precipitation.

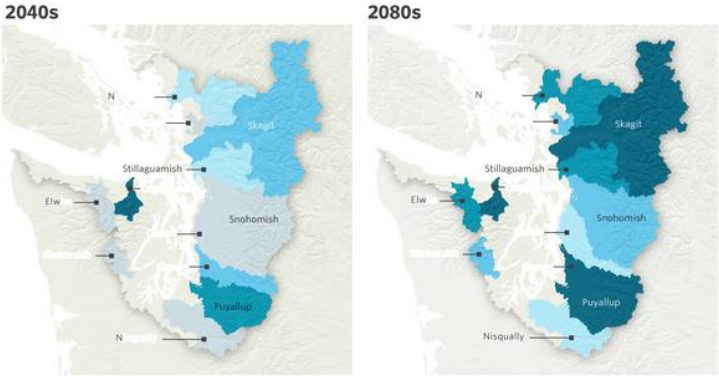
KEY

% Change in the Volume of the 10-year Low Flow

-16 to [illegible] | -21 to -25% | -26 to -30% | Greater than -30%

PEAK FLOWS

Warming will cause a greater proportion of winter precipitation to fall as rain rather than snow. Even assuming moderate 21st century greenhouse gas emissions, the streamflow volume of the 100-year flood is projected to increase by an average of 18-55% in 12 Puget Sound watersheds.



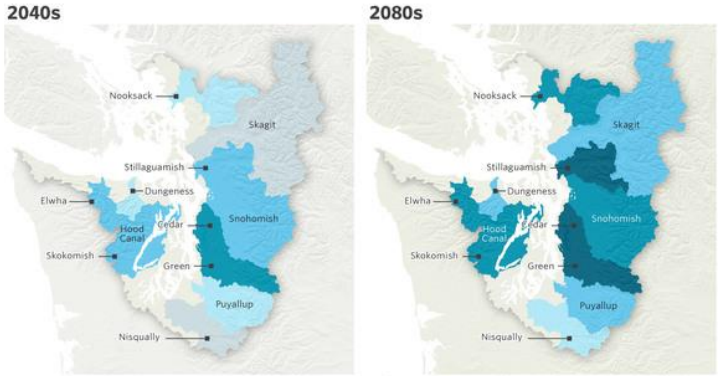
Data source: UW Climate Impacts Group. Maps show the projected change in the peak daily streamflow volume with a 100-year return interval (1% annual chance of exceedance) for two time periods: the 2040s (2030-2059) and the 2080s (2070-2099), based on a moderate greenhouse gas scenario (A1B). Analysis units were the 12 major watersheds in Puget Sound where long-term streamflow observations were available. Projections do not account for reservoir operations which can have a large impact on flows in the Skagit, Cedar, Green, White and Skokomish watersheds. Projections in peak flows only account for reduced snowpack; models do not include flow changes due to intensifying heavy precipitation.

KEY

% Change in the Volume of the 100-year Flood

5-15% | 16-20% | 21-25% | 26-30% | Greater than 30%

Most Puget Sound watersheds will be rain-dominant by the end of the 21st century, meaning more precipitation will fall as rain rather than snow, thereby reducing overall snowpack.



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KEY

% Change in April 1st Snow Water Equivalent (SWE)

0 to -20% | -21 to -40% | -41 to -60% | -61 to -80% | -81 to -100%

NAVIGATING TO SUCCESSES AT A NEW PACE

THE URGENCY OF LONG-TERM COMMITMENT

AMPLIFY & ACCELERATE

STEP 1. Implement Place-Based Integrated Planning

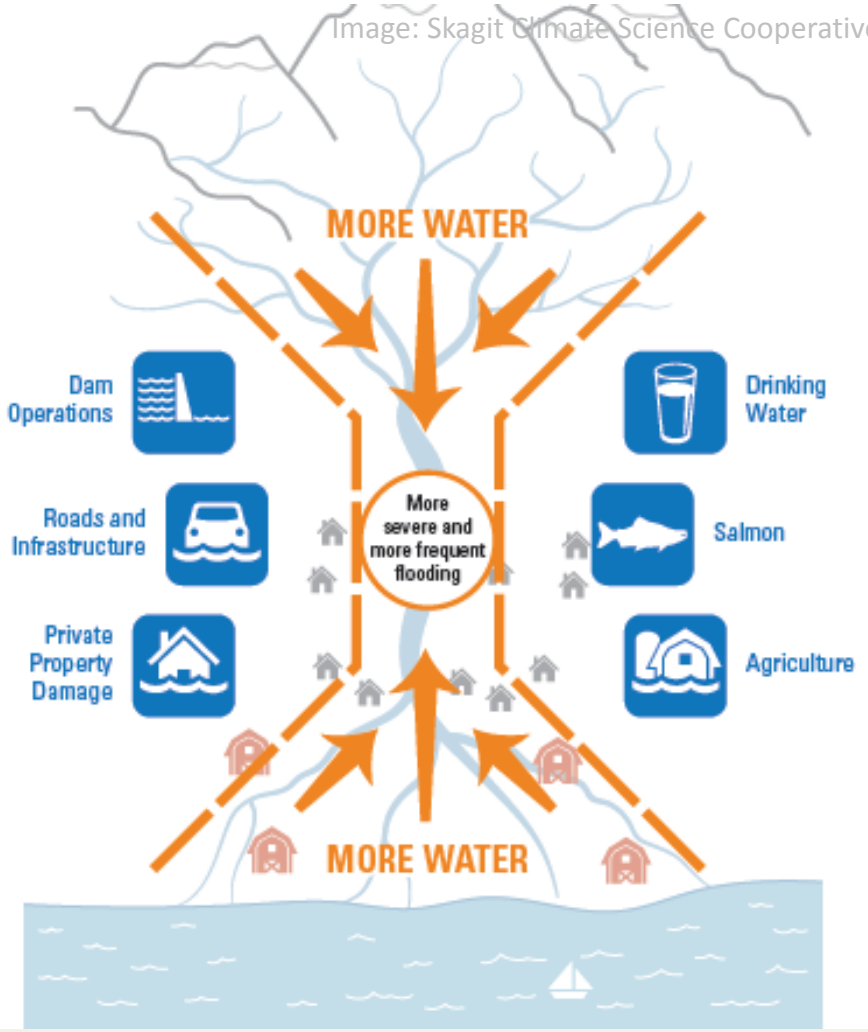
STEP 2. Craft a Locally Based Regional Vision and Work Plan

STEP 3. Match the Funding to the Need

STEP 4. Coordinate Investments

STEP 5. Build Technical and Permitting Capacity

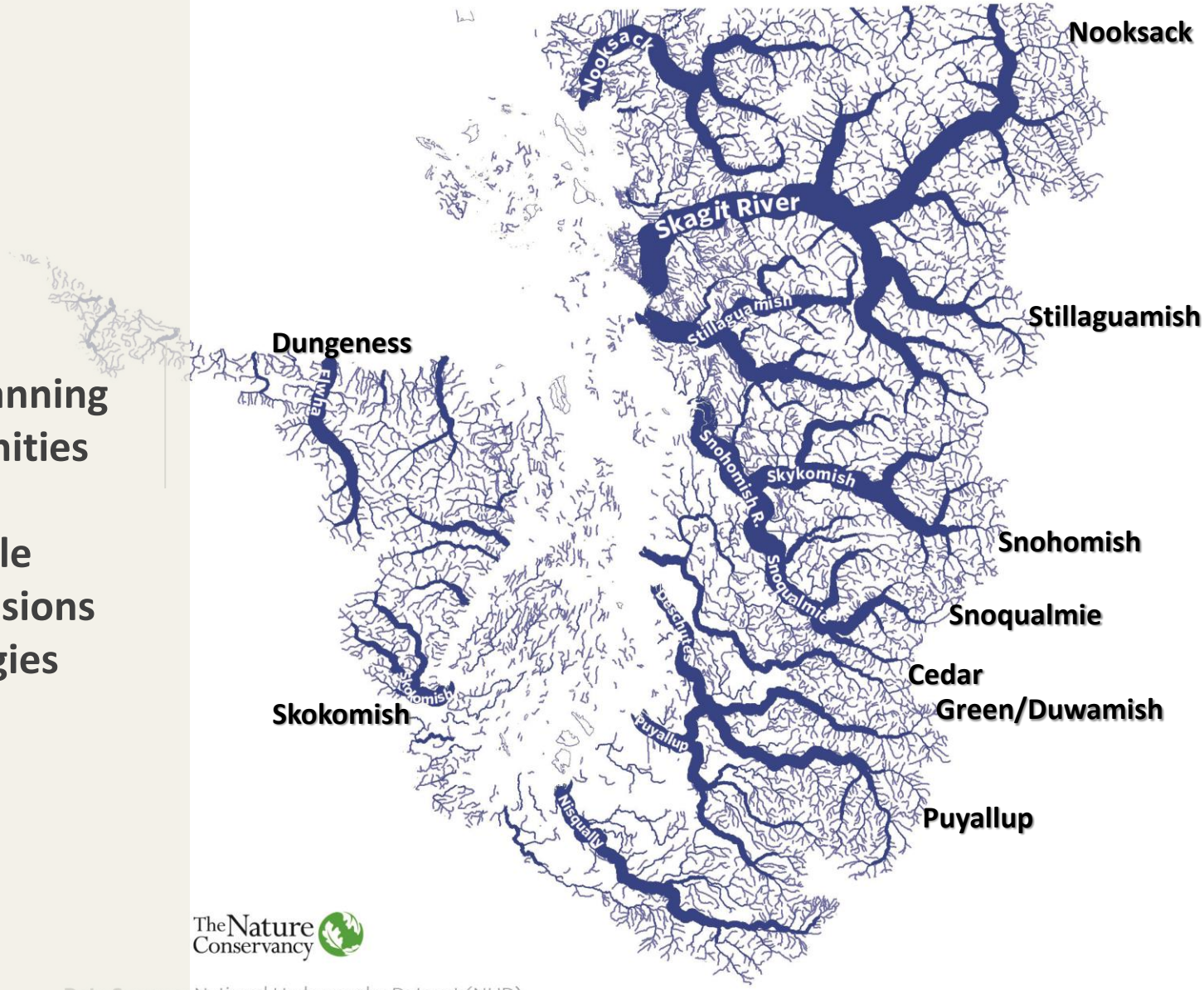
Image: Skagit Climate Science Cooperative



Nature Based Solutions in FRESH WATER SYSTEMS

Integrated Planning in 9 Communities

Basin-Scale Floodplain Visions and Strategies



The Nature Conservancy

Data Sources: National Hydrography Dataset (NHD)

Floodplains By Design:

INTEGRATED PLANNING Case Studies

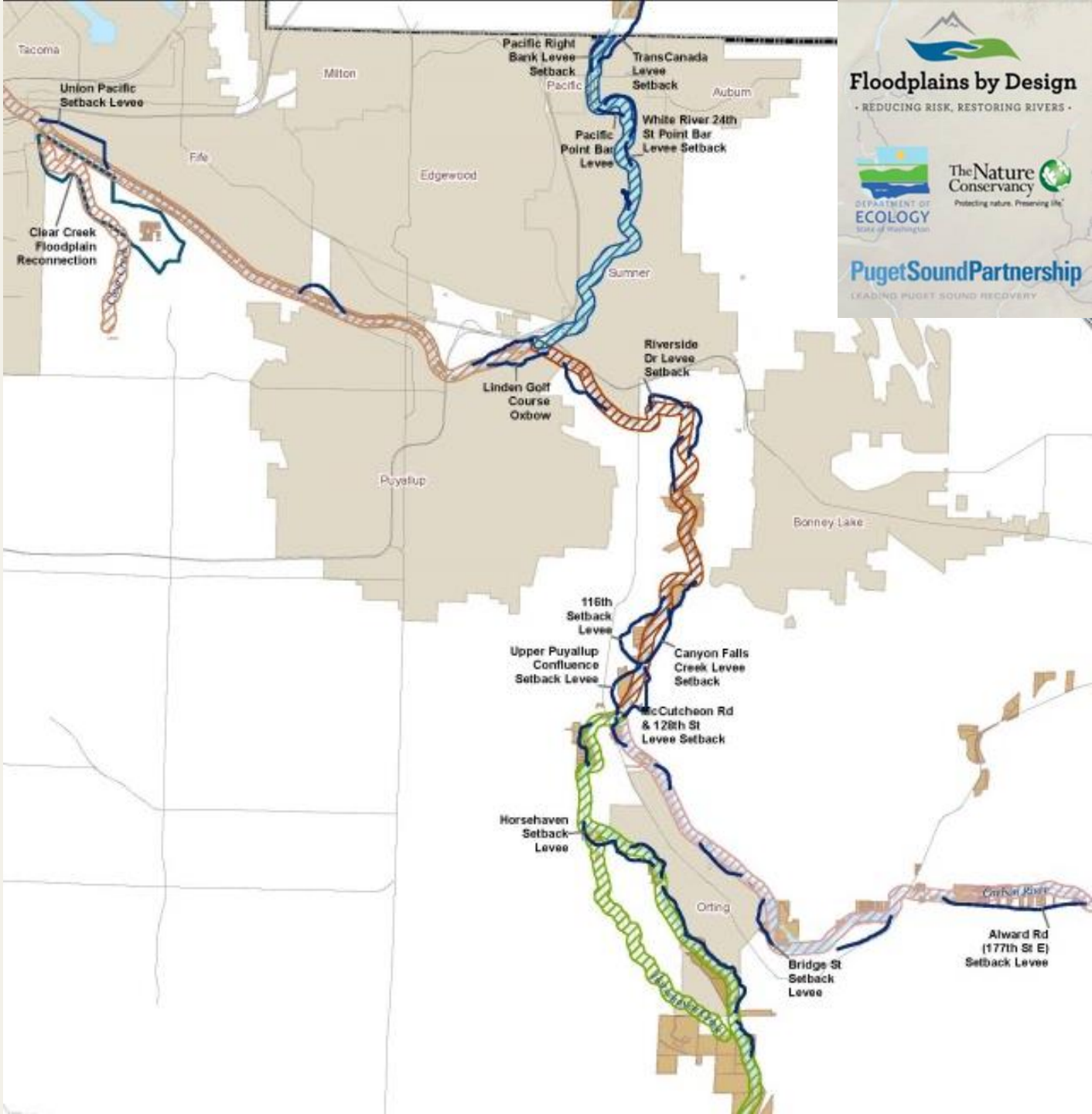
Cedar River Corridor Plan

Investing in the future. Over the last 15 years, King County Flood Control District has spent more than $25M in flood repairs and floodplain projects on this 22 mile stretch. With mobile home parks perilously close to a tightly confined river, it's risky and expensive to protect these homes. Over time, while offering extensive relocation services, King County has helped people get out of harms ways and develop plans to restore these areas that are high priority for salmon recovery. Local entities recognize the value of projects to themselves and the community and have committed at least $13 M for implementing them over the next 5 years.

Floodplains By Design:

INTEGRATED PLANNING Case Studies

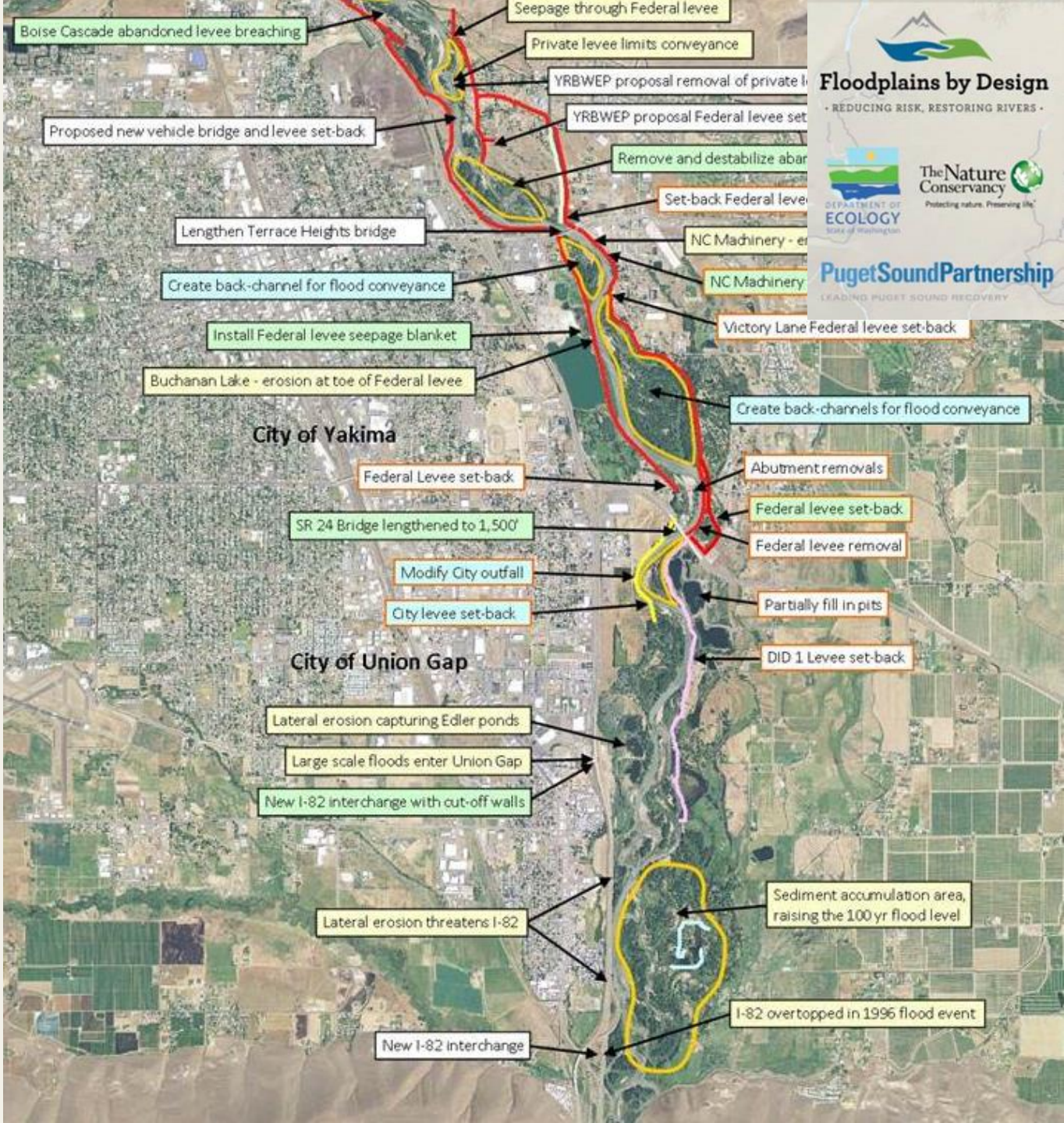
Puyallup Watershed Floodplain Reconnection Plan



Floodplains By Design:

PROJECT Case Studies

Yakima Gap to Gap

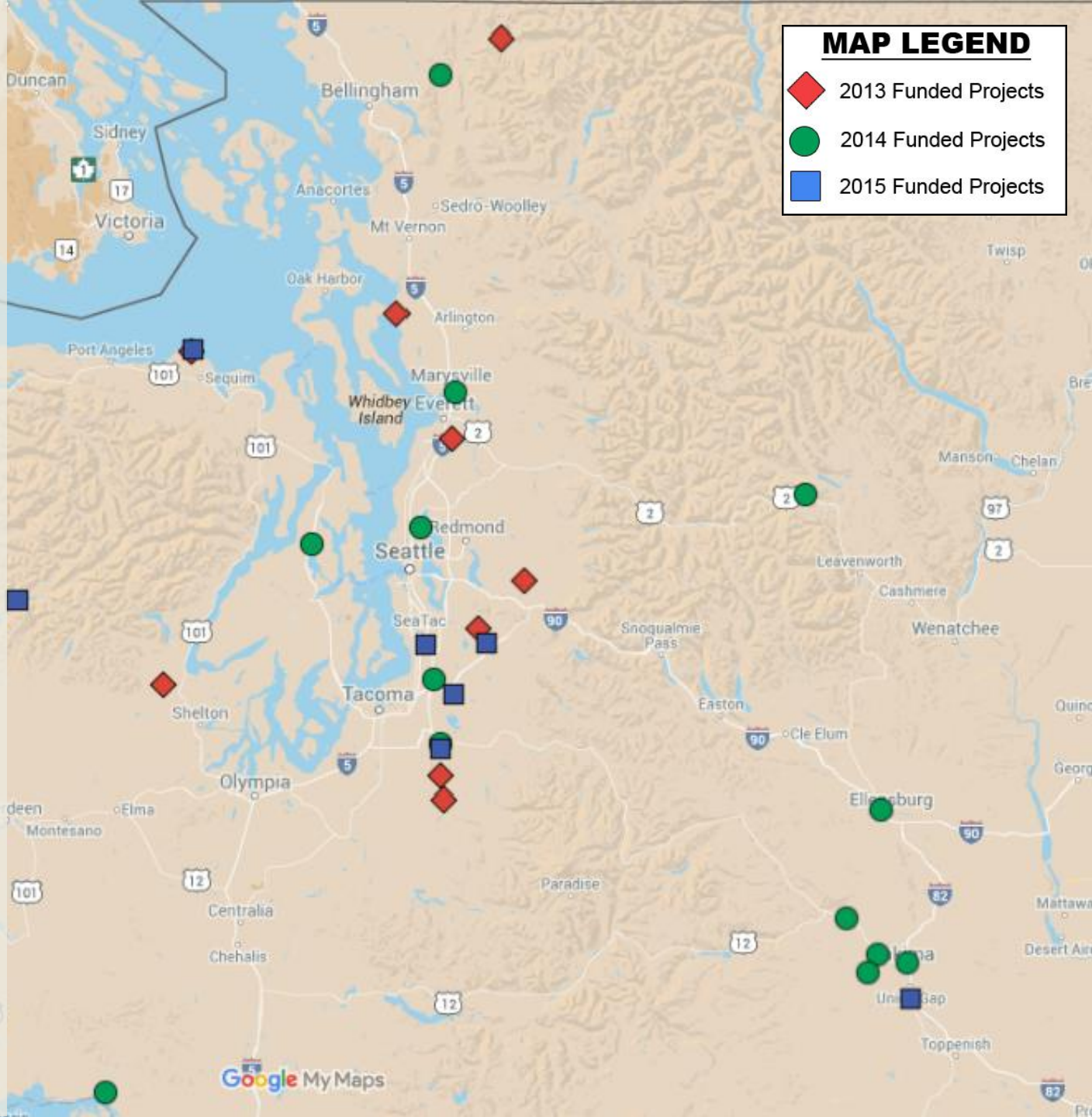


Floodplains By Design:

PROJECT Case Studies

Calistoga Reach Project / Orting

$80M Secured Over The Last Two Biennia



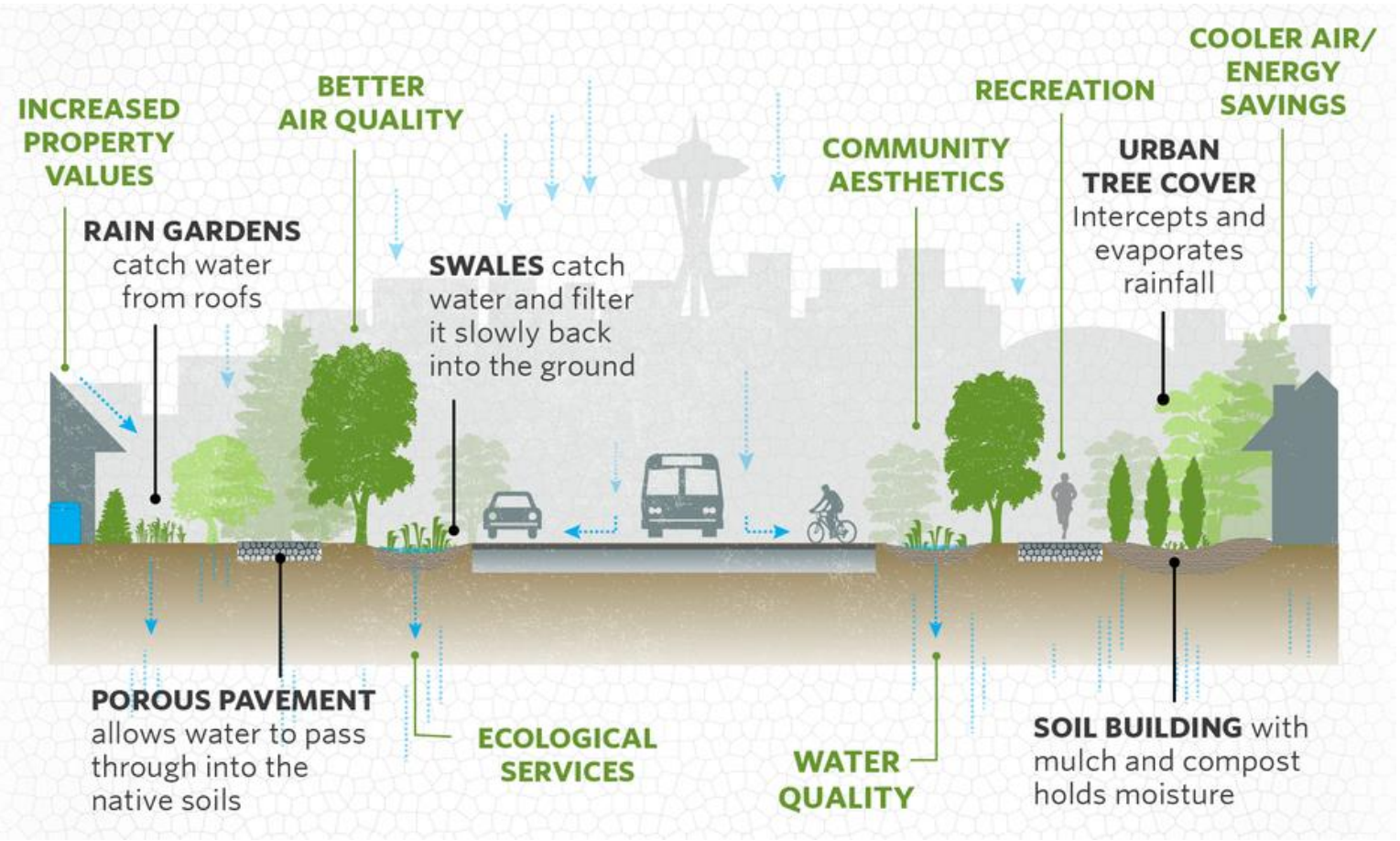
Floodplains by Design
• REDUCING RISK, RESTORING RIVERS •

The Nature Conservancy
Protecting nature. Preserving life.

DEPARTMENT OF ECOLOGY
State of Washington

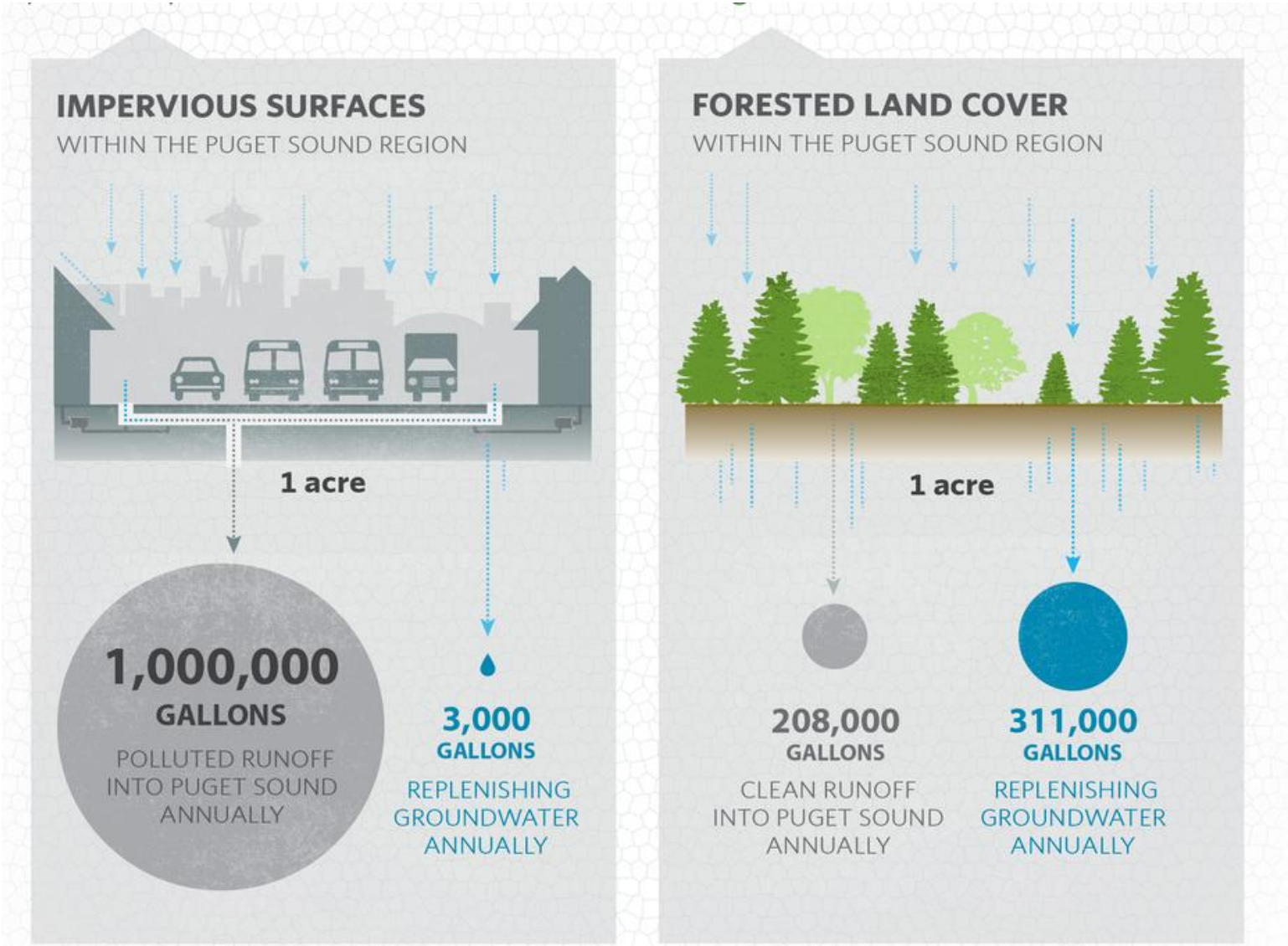
PugetSoundPartnership
LEADING PUGET SOUND RECOVERY

$14M secured for Regional Conservation Partnership Program (RCPP) in Last Two Years



Nature Based Solutions in CITIES

Cities Play A Starring Role In The Quality Of Water That Reaches Puget Sound

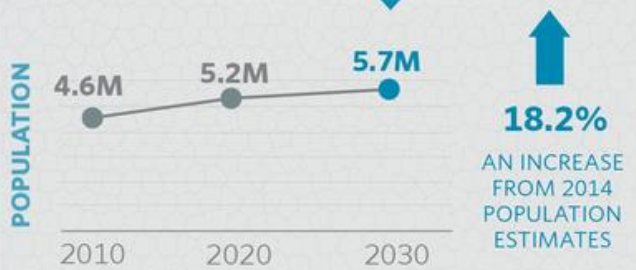


Data Sources: Puget Sound Fact Book - Parametrix (2010) Puget Sound Stormwater Retrofit Cost Estimate Appendix A, USGS Summary of Land Cover Trends Puget Lowland Ecoregion, WSDOT Hydraulics Manual - Runoff Coefficients for the Rational Method 10-year Frequency. All stormwater runoff volumes shown are estimates.

The Stormwater Problem

POPULATION GROWTH

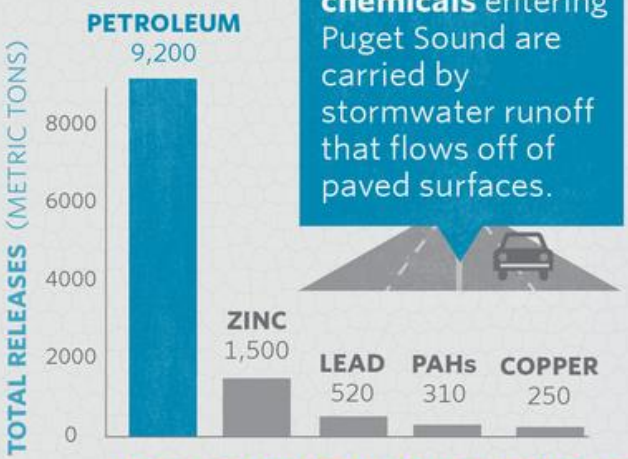
The Puget Sound region is **one of the most rapidly urbanizing** in the nation and is estimated to reach over **5.7 million** by 2030.



EXPECTED POPULATION GROWTH BY DECADE

POLLUTION

75% of the toxic chemicals entering Puget Sound are carried by stormwater runoff that flows off of paved surfaces.



LARGEST SOURCES OF TOXIC CHEMICALS IN PUGET SOUND ANNUALLY

TOXIC CHEMICALS	MAJOR SOURCES
PETROLEUM	OIL & GAS LEAKS FROM VEHICLES
ZINC	ROOF MATERIAL LEACHING, VEHICLE TIRE ABRASION
LEAD	ROOF MATERIAL LEACHING
TOTAL PAHs *polycyclic aromatic hydrocarbons*	WOODSTOVE & FIREPLACE COMBUSTION, VEHICLE EXHAUST
COPPER	PESTICIDES, COPPER FROM BRAKE PADS

IMPERVIOUS SURFACES

As population grows, natural land covers are converted to impervious surfaces such as roofs, roads, and sidewalks.

Data Sources: Office of Financial Management 2007 Population Projections, WA DOE- Control of Toxic Chemicals in Puget Sound Phase 3 Primary Sources of Selected Toxic Chemicals and Quantities Released in the Puget Sound Basin

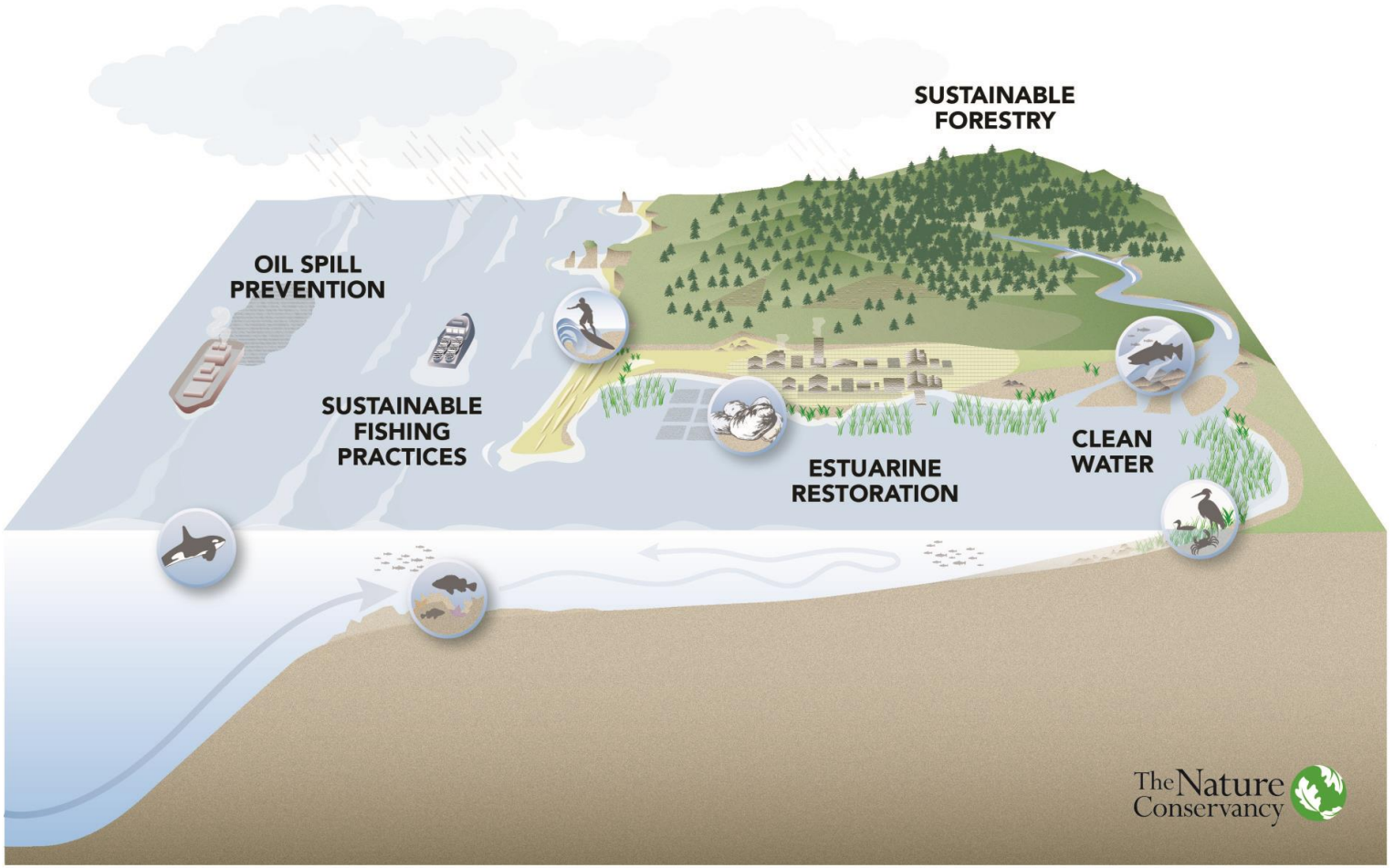
1 billion gallons of stormwater treated using green infrastructure

1 million trees planted/maintained to impact freshwater quality, sequester carbon and benefit underserved communities

Engaging private property owners to install 20,000 new raingardens

Increase regional investment by $200M annually in sustainable stormwater management, leveraged with private funding

Photo: MIG / SvR



The Nature Conservancy, Washington - Erica Sloniker

Nature Based Solutions in MARINE SYSTEMS

Broad coalition of community partners

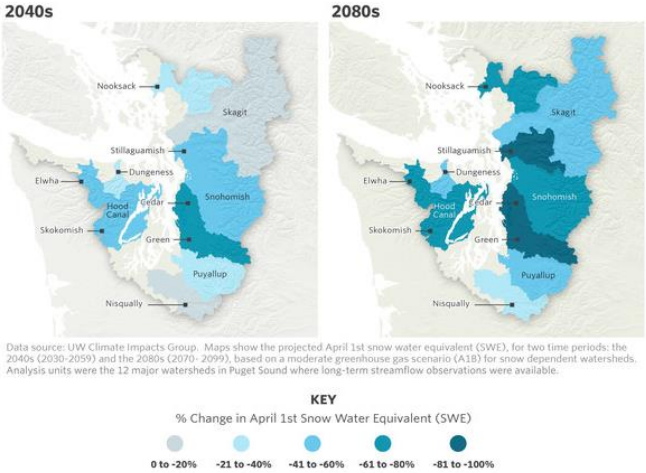
$11 million through the Washington Coastal Restoration Initiative (WCRI)

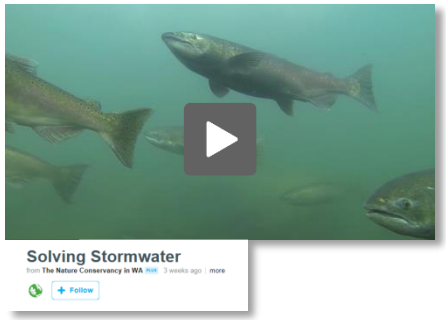
EMISSIONS REDUCTIONS

A new path to investing in Clean Water and Forest Health

New Tools for a United Front

TNC & Snohomish Lands Strategy
Snohomish Flood Risk Explorer Ap





TNC & WSU
5 Min Video of
Dr. Jennifer McIntyre's
Stormwater Research

TNC & UW
Synthesizing 40 Yrs of Research
On Benefits of Nature in Cities

Coming Soon:
TNC & Climate Impacts Group
Climate Impacts &
Innovation in Puget Sound

OUR MISSION IS TO CONSERVE THE LANDS AND WATERS UPON WHICH ALL LIFE DEPENDS
www.washingtonnature.org

CLIMATE

Spans Across Our Work

Washington Administrative Code: Public Hearing

Leslie Connelly,
Natural Resource Policy Specialist

Agenda Item 8
March 16, 2016

WASHINGTON STATE
RECREATION AND CONSERVATION OFFICE
Salmon Recovery
Funding Board

Summary

- Background information
- Public input
- Review of proposed amendments
- Options for consideration
- Public hearing
  - Written and oral testimony
- Board action

Background: Title 420 WAC

- Washington Administrative Code (WAC) are the administrative rules adopted by the board
- Govern how the board awards and administers grants
- Defines certain RCO procedures for administration

http://app.leg.wa.gov/WAC/default.aspx?cite=420

Board Authority

Salmon Recovery Act - Chapter 77.85 RCW

RCW 77.85.120 (1)(d)

"(1) The salmon recovery funding board is responsible for making grants and loans for salmon habitat projects and salmon recovery activities from amounts appropriated to the board for this purposes. To accomplish this purpose the board may:

(d) Adopt rules under chapter 34.05 RCW as necessary to carry out the purposes of this chapter."

Phased Update Process

- Phase I
  - Name change

Effective July 14, 2014

- Phase II
  - Update definitions
  - Modify grant program requirements
  - Reorganize sections
  - Revise public records procedures
  - Update references

Public Hearing Today

- Phase III
  - New sections

2016-2017

Phase II Formal and Informal Input

- Pre-proposal statement (CR-101)
- Informal Input
  - Board meetings
  - Washington Salmon Coalition
  - Regional Recovery Organizations
- Proposed rule making (CR-102)
- Written comment period
  - One written comment received
- Public hearing today, March 16, 2016

Phase II Purpose of Amendments

- Update definitions
- Add new definitions
- Modify grant program requirements
- Revise public records procedures
- Reorganize sections in chapters
- Update references

Chapter 420-04 General

WAC 420-04-010 Definitions

- Consistency
  - Project agreement
  - Salmon Recovery Act
- New definitions
  - Grants administration
  - Lead entities
  - Regions

WAC 420-04-015
Address

- Minor edits to contact information.

WAC 420-04-020
Organization and operations

- Title changed to "Duties of the board."
- Membership of the board linked to Salmon Recovery Act.
- Board authorities listed in one place.
- NEW: Board does not own or operation property or facilities.
- NEW: Board is not a public hearings board.

WAC 420-04-030
Manuals and waivers – Guidance

- Title changed to "Policies and procedures."
- Manual format changed to a generic publication.
- NEW: Director may refer petitions on procedures to the board.
- Clarifies process to petition the board for a waiver.

WAC 420-04-060
Delegated authority

- Title changed to "Director's authority."
- Director authorities listed in one place.
- **NEW:** Approve procedures except for the habitat project list.
- **NEW:** Enter into contracts and agreements.
- **NEW:** Issue certain waivers and amendments.
- **NEW:** Appoint technical and other committees.
- **NEW:** Administer other programs related to salmon recovery.

WAC 420-04-070
Compliance with Environmental Policy Act guidelines

- Title changed to "Compliance with the State Environmental Policy Act and other laws."
- Sponsors required to comply with laws.

WAC 420-04-080
Declaratory order – Petition requisites – Consideration – Disposition

- Title changed to "Petitions for declaratory order of a rule, order, or statute."
- More flexibility in the petition process.

WAC 420-04-085
Petitions for rule-making, amendment, or repeal

- Title changed to “Petitions for adoption, amendment, or repeal of a rule.”

WAC 420-04-100
Public access

- Title changed to “Public records.”
- Aligns with the Recreation and Conservation Funding Board and model rules from the Office of Attorney General.

WAC 420-04-040
Project selection

- Section repealed.
- Text added to WAC 420-12-020 Application requirements and the evaluation process.

WAC 420-04-050
Final decision

- Section repealed.
- Moved to WAC 420-12-045 Final decision.

Chapter 420-12
Grant Assistance Rules

WAC 420-12-010
Scope of chapter

- **NEW:** Director granted authority to apply rules to other programs administered by the office.

WAC 420-12-020 Application form

- Title changed to "Application requirements and the evaluation process."
- Incorporates WAC 420-04-040 Project selection.
- **NEW:** Adds state technical review process.
- **NEW:** Consider regional recovery plans in the evaluation process.
- **NEW:** Consider criteria in the Salmon Recovery Act.
- **NEW:** Office administers the evaluation process.
- **NEW:** Director presents funding recommendations to the board.

WAC 420-12-030
Deadlines – Applications and agreements

- Title changed to "Grant program deadlines."
- **NEW:** Exception to establish another deadline.
- **NEW:** Adds deadline for a project agreement.
- **NEW:** Director may extend deadlines under certain circumstances.

WAC 420-12-040
Eligible matching resources

- Match requirements clarified.
- Eligible sources of match identified.

WAC 420-12-045
Final decision

- New section replaces WAC 420-04-050 Final decision.
- Includes decisions on funding applications or changing funded projects.

WAC 420-12-050
Project agreement

- Consistency with the project agreement approved by the Assistant Attorney General.

WAC 420-12-060
Disbursement of funds

- Reimbursement process clarified to reflect current requirements.

WAC 420-12-070
Retroactive expenses and increased costs

- Title changed to "Retroactive, pre-agreement, and increased costs."
- Eligible costs clarified.
- **NEW:** Compliance with federal funding requirements.
- **NEW:** Board identifies pre-agreement costs.
- **NEW:** Guidance on cost increases.

WAC 420-12-075
Nonconformance and repayment

- Reference added to the terms in the project agreement.

WAC 420-12-080
Acquisition projects – Deed of right, conversions, leases and easements

- Title changed to "Acquisition project long-term obligations."
- Conversion of use language applied to all acquisition projects.
- Includes reference to project area.

WAC 420-12-085
Development projects – Conversion to other uses

- Title changed to "Restoration projects – Conversion to other uses."
- Includes reference to project area.
- New restoration project is the replacement for a conversion.

Options for Consideration

1. Adopt as written
2. Amend the proposal
   - Substantial changes require additional public process
     - Changes how a reasonable person would understand the rule
     - Subject differs
     - Effects differ
3. Postpone adoption
   - Can adopt within 180 days
4. Withdraw

Public Hearing Procedures

- Open public hearing
- Receive comments
- Close public hearing
- Consider written comments
- Move resolution
- Deliberate comments
- Consider options for adopting rules
- Call for a vote

Public Hearing

Title 420 WAC
Proposed Rule Making File #16-04-117

Board Action: Resolution 2016-01

Next Steps

- Distribute final Concise Explanatory Statement
- File final rule making
- Effective 31 days after filing

Washington Administrative Code Proposed New Sections

Leslie Connelly,
Natural Resource Policy Specialist

Agenda Item 9
March 16, 2016

WASHINGTON STATE
RECREATION AND CONSERVATION OFFICE
Salmon Recovery
Funding Board

Phased Update Process

- Phase I
  - Name change

Effective July 14, 2014

- Phase II
  - Update definitions
  - Modify grant program requirements
  - Add chapters
  - Revise public records procedures
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Public Hearing Today

- Phase III
  - New sections

2016-2017

Summary

- Why do we need new rules?
- Key issues to address
- Preliminary draft of new sections
- Request for direction

Why do we need new rules?

- Salmon Recovery Act amended
- Governor's *Statewide Strategy* issued
- Salmon recovery plans approved
- Document long-standing processes
- Consistency in program implementation
- Improve accountability

Key Issues to Address

- How to form a lead entity
- How to form a regional recovery organization
- Define roles and responsibilities
- Governor's Salmon Recovery Office duties

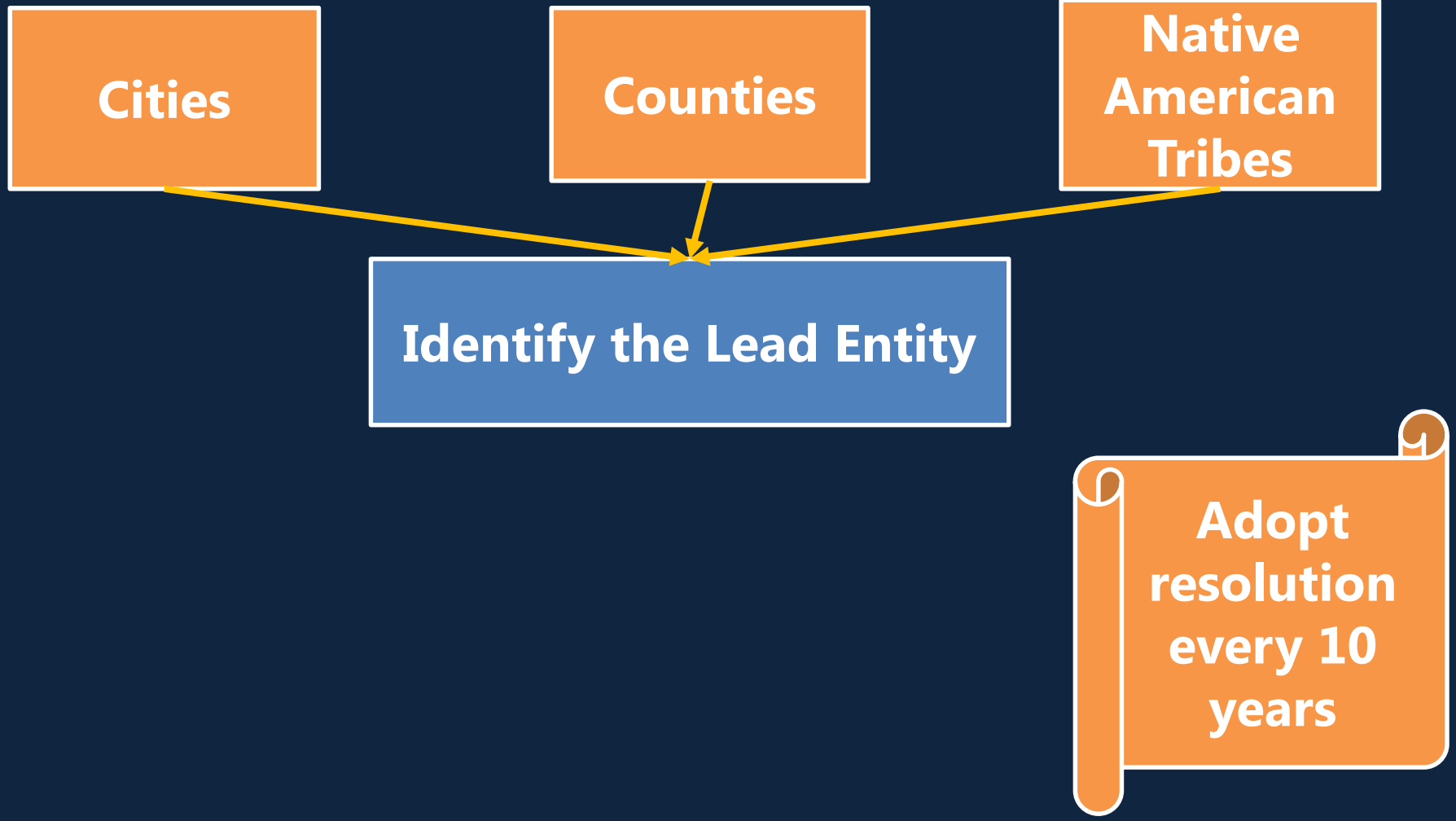
Forming a Lead Entity

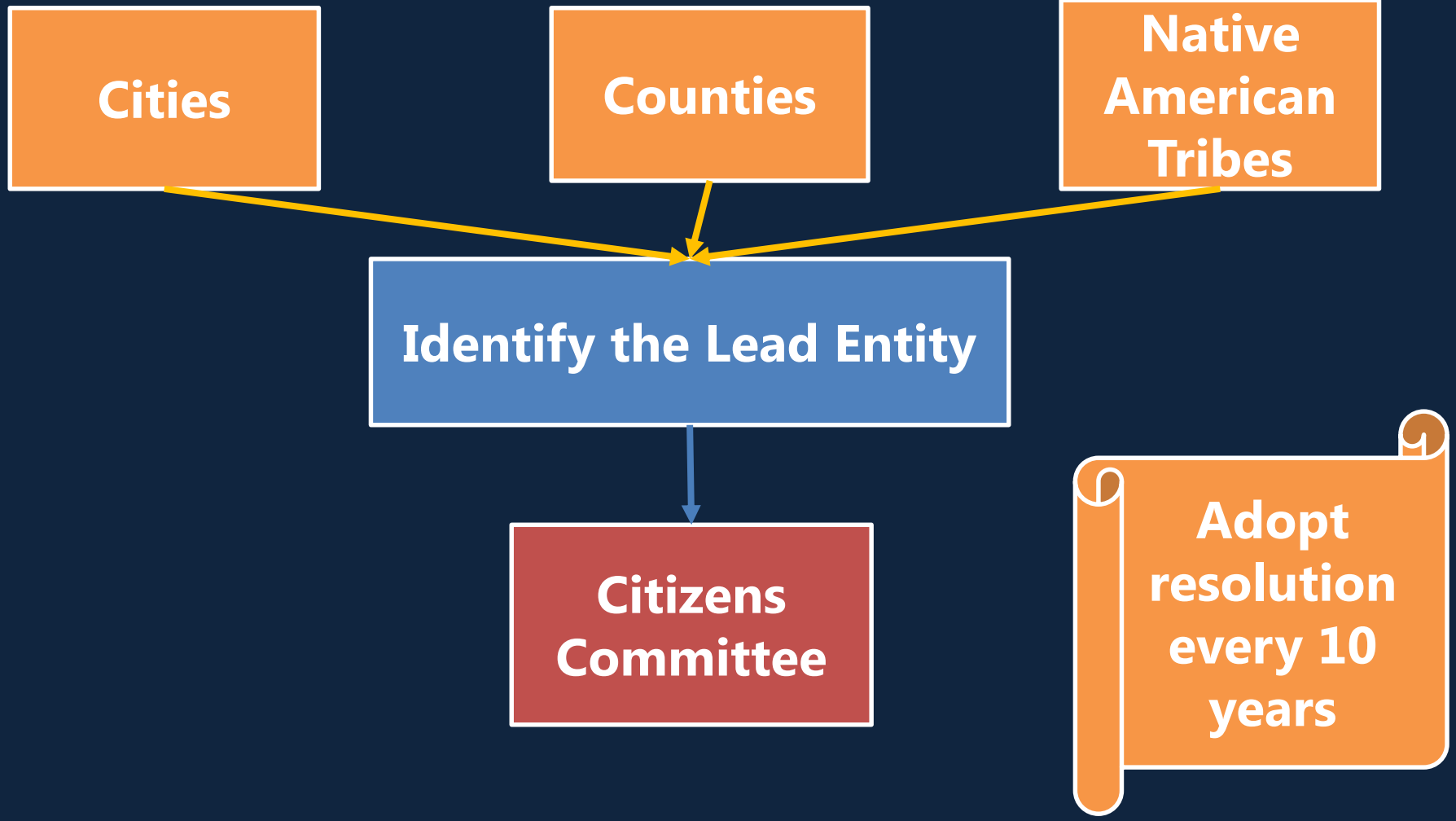
- Involve cities, counties, and Native American Tribes
- Reaffirm every ten years
- Lack of agreement or request to change
- Capacity grants and subcontracting

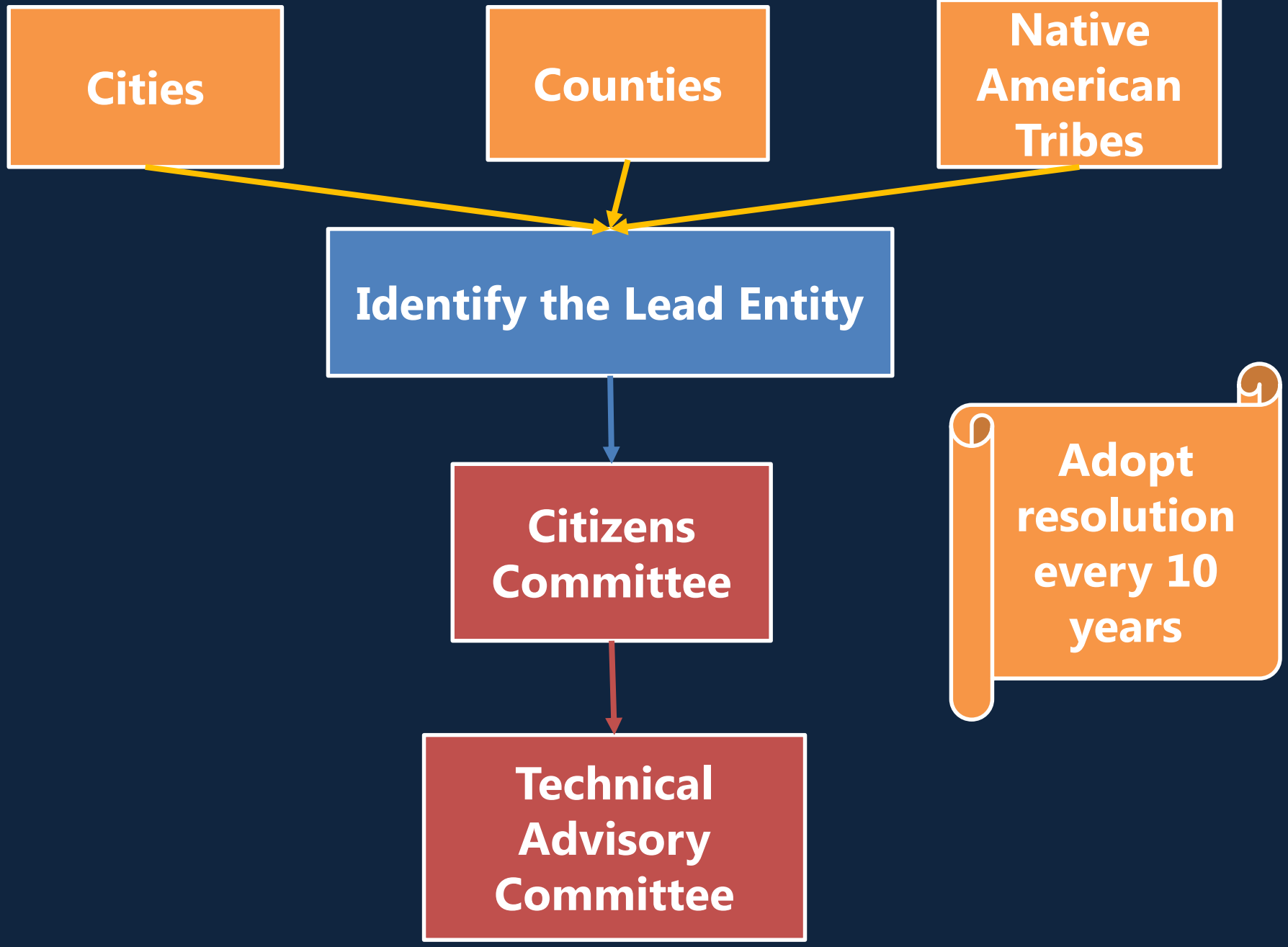
Cities

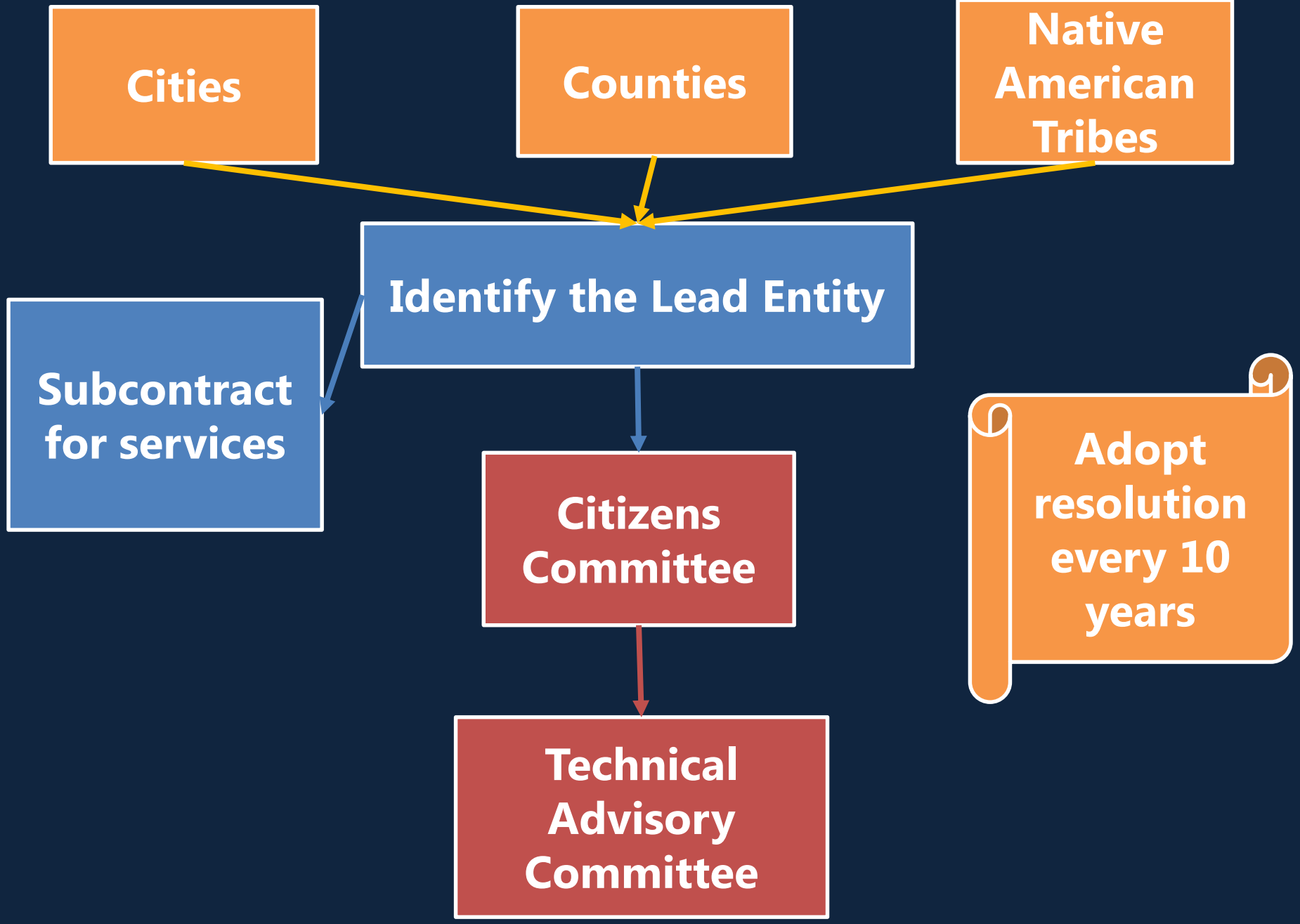
Counties

Native American Tribes


Cities
Counties
Native American Tribes
Identify the Lead Entity
Adopt resolution every 10 years


Cities
Counties
Native American Tribes
Identify the Lead Entity
Citizens Committee
Adopt resolution every 10 years


Cities
Counties
Native American Tribes
Identify the Lead Entity
Citizens Committee
Technical Advisory Committee
Adopt resolution every 10 years


Cities
Counties
Native American Tribes
Identify the Lead Entity
Subcontract for services
Citizens Committee
Technical Advisory Committee
Adopt resolution every 10 years

Duties of a Lead Entity

- Administer a local process
- Establish citizens committee
- Facilitate work of citizens committee
- Submit habitat project list
- Ensure projects are eligible for funding
- Work with regional salmon recovery organization
- Recruit local sponsors
- Community outreach

Duties of a Citizens Committee

- Develop a habitat project list
- Use statutory evaluation criteria
- Designate a technical advisory committee (optional)
  - Assist with evaluating projects
  - Review project performance

Regional Recovery Organizations

- Coordinate salmon recovery planning and implementation
- Work with the federal government
- Submit plans and amendments to GSRO
- Work with lead entities
- Advise on priority projects
- Lead entities may request to form a region
- Identifies 7 regional organizations

Duties of GSRO

- Coordinate the state's salmon recovery efforts
- Maintain statewide salmon recovery strategy
- Support regional organizations
- Maintain monitoring panel

Next Steps

- Work with stakeholders
- Prepare next iteration
- Brief board on progress

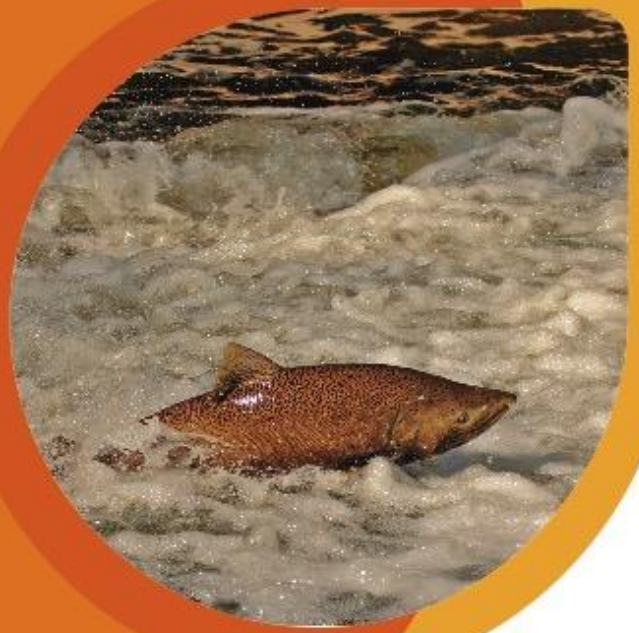
Options for Consideration

1. No action – we don’t need new rules
2. Back to drawing board – needs more work
3. Work with stakeholders on next draft

PUGET SOUND SALMON RECOVERY REGIONAL ORGANIZATION

UPDATE FOR THE SALMON RECOVERY FUNDING BOARD

Jeanette Dorner
Ecosystem and Salmon Recovery Director
Puget Sound Partnership
March 16, 2016



PRESENTATION OVERVIEW

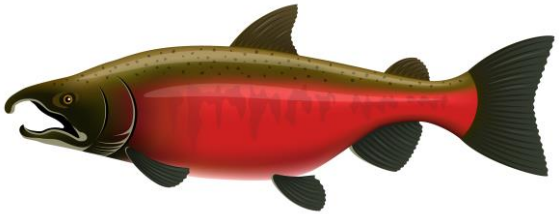
- History of the Puget Sound region and creation of the recovery plan
- Current status of the salmon
- Chinook Plan update and monitoring and adaptive management plan creation
- Steelhead Recovery Plan creation
- Action Agenda 2016

PUGETSOUND PARTNERSHIP

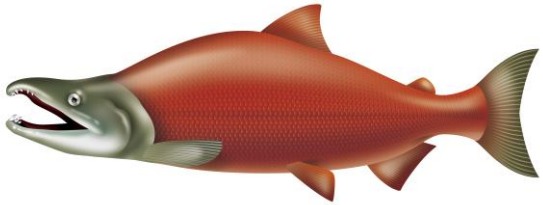
PUGET SOUND SALMON

- Chinook

- Steelhead



- Coho



- Sockeye

- Pink

- Chum

- **PUGET SOUND CHINOOK *(THREATENED, 1999)***
- **HOOD CANAL SUMMER CHUM *(THREATENED, 1999)***
- **PUGET SOUND STEELHEAD *(THREATENED, 2007)***

PUGETSOUND PARTNERSHIP

PUGET SOUND

- 12 Counties
- 110 cities
- 19 federally recognized tribes
- 7 Regional Fisheries Enhancement Groups
- 12 conservation districts
- Nonprofit environmental groups
- 4.1 million people

PUGETSOUND PARTNERSHIP

Guidance to watersheds:

- Identify Chinook population targets
- Identify actions to meet targets

No guidance to watersheds on:

- consistent format
- consistent language to describe the salmon populations and the habitat
- consistent measures of progress or quantitative targets for habitat

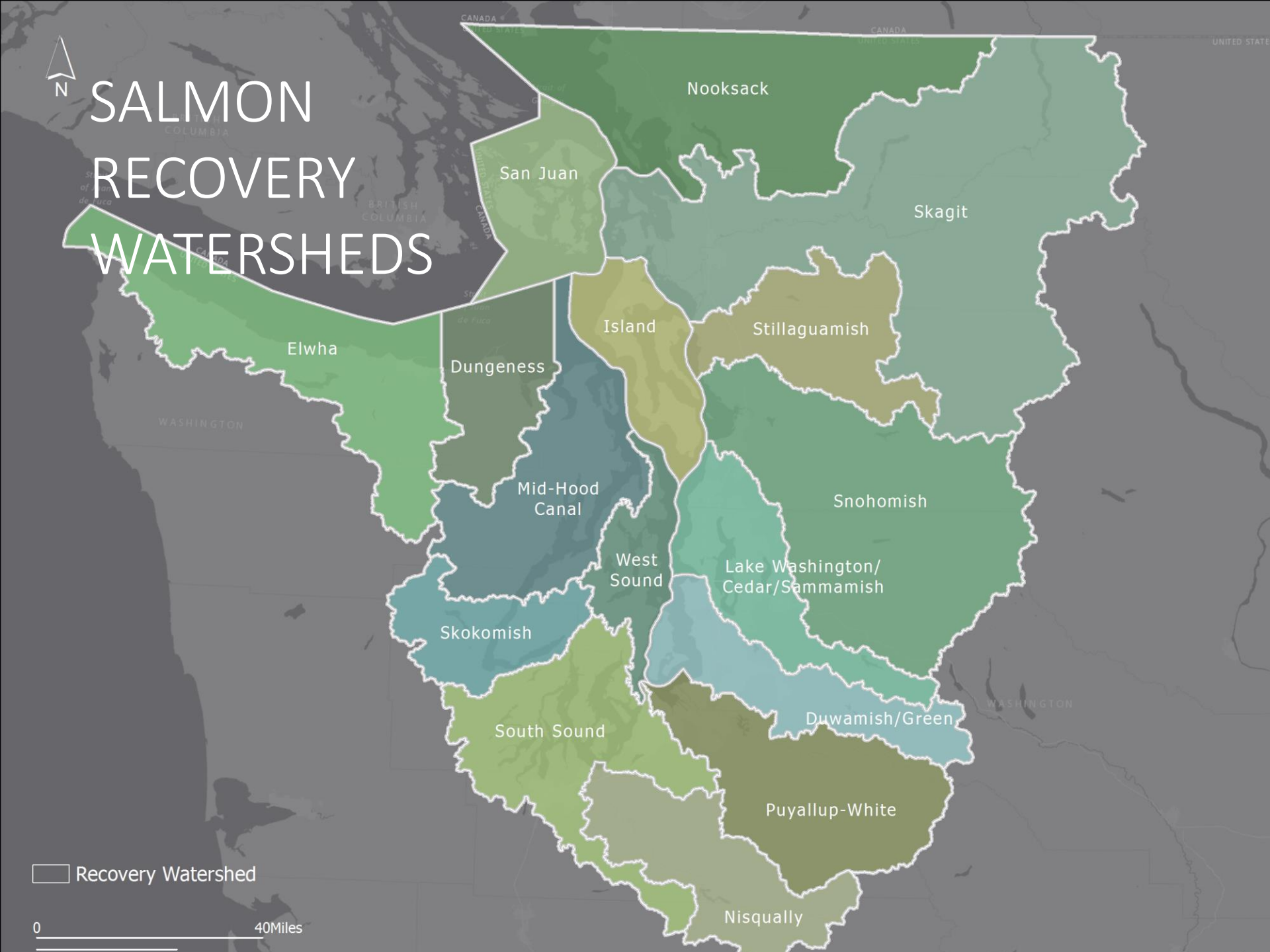
No resources provided to watersheds

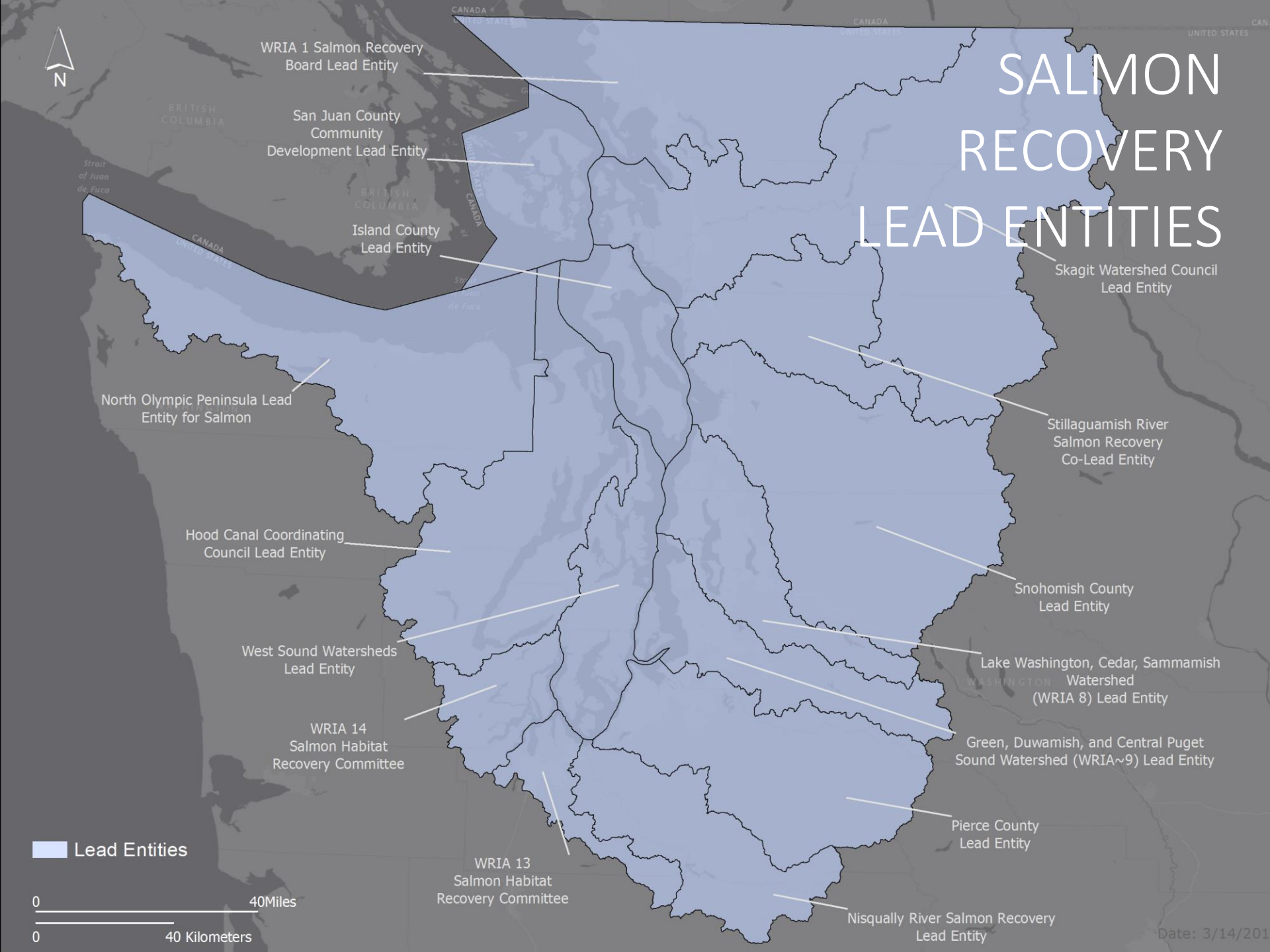
RESULT: Quality and content of 16 watershed recovery chapters varied widely

SHARED STRATEGY FOR PUGET SOUND
working with communities to restore salmon

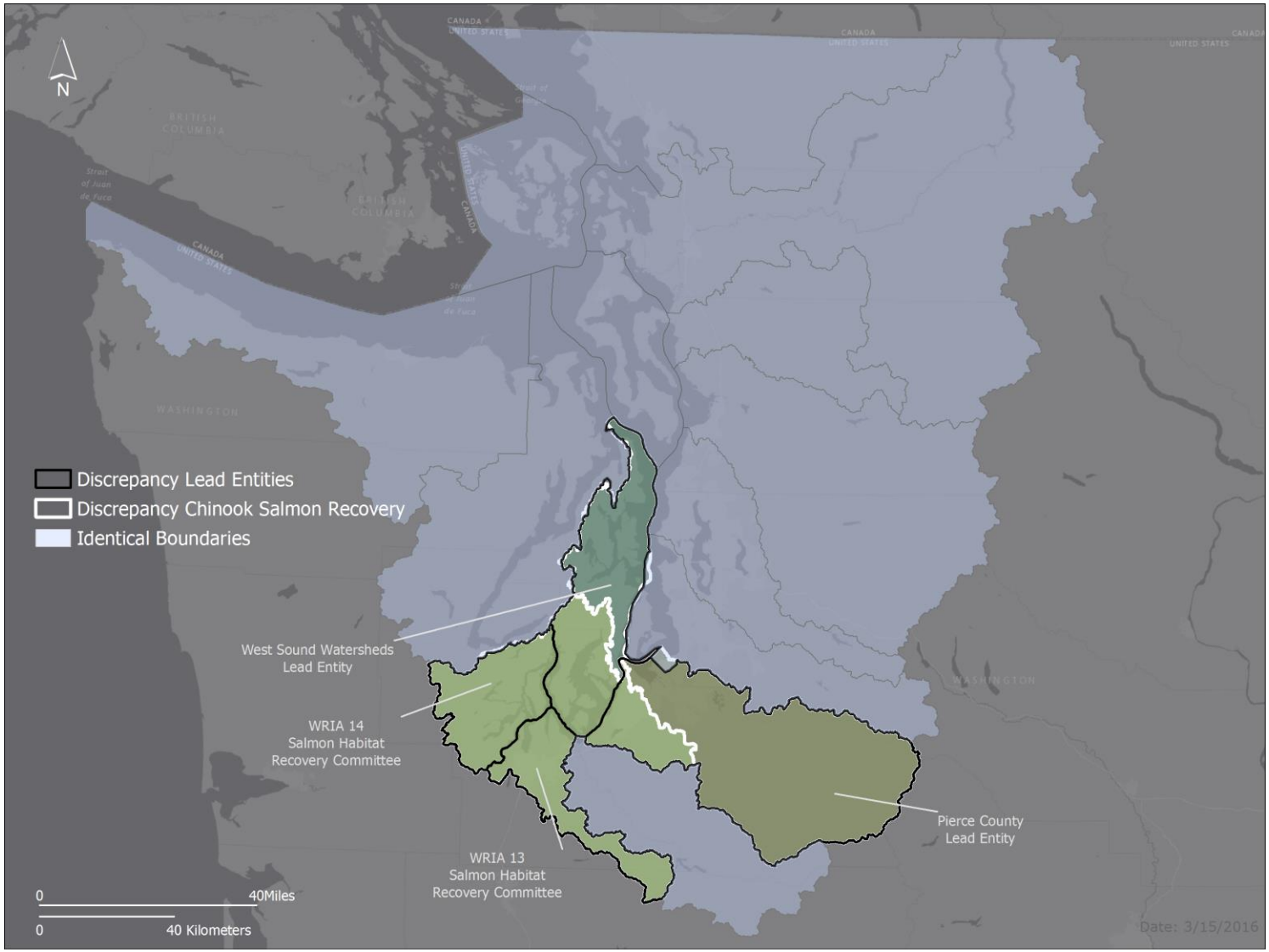
PUGETSOUND PARTNERSHIP

SALMON RECOVERY WATERSHEDS




SALMON RECOVERY LEAD ENTITIES
N
WRIA 1 Salmon Recovery Board Lead Entity
San Juan County Community Development Lead Entity
Island County Lead Entity
Skagit Watershed Council Lead Entity
North Olympic Peninsula Lead Entity for Salmon
Stillaguamish River Salmon Recovery Co-Lead Entity
Hood Canal Coordinating Council Lead Entity
Snohomish County Lead Entity
West Sound Watersheds Lead Entity
Lake Washington, Cedar, Sammamish Watershed (WRIA 8) Lead Entity
WRIA 14 Salmon Habitat Recovery Committee
Green, Duwamish, and Central Puget Sound Watershed (WRIA~9) Lead Entity
Pierce County Lead Entity
WRIA 13 Salmon Habitat Recovery Committee
Nisqually River Salmon Recovery Lead Entity
Lead Entities
0 40Miles
0 40 Kilometers
Date: 3/14/201

SALMON RECOVERY WATERSHEDS AND LEAD ENTITIES

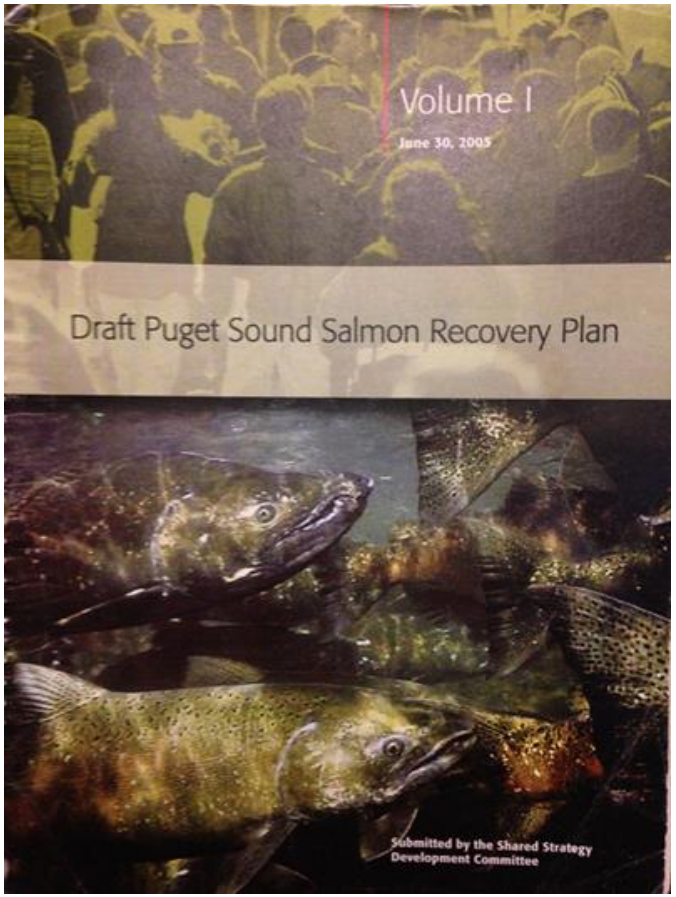


PUGETSOUND PARTNERSHIP

PUGET SOUND SALMON RECOVERY PLAN

PUGETSOUND PARTNERSHIP

PUGET SOUND SALMON RECOVERY PLAN SUBMITTED TO NOAA IN 2005



Approved in 2007, with supplemental section:

- Delisting criteria for 22 populations
  - All must improve
  - Some need to get to low-risk status
- Monitoring & adaptive management system required

PUGETSOUND PARTNERSHIP

PUGET SOUND SALMON RECOVERY COUNCIL

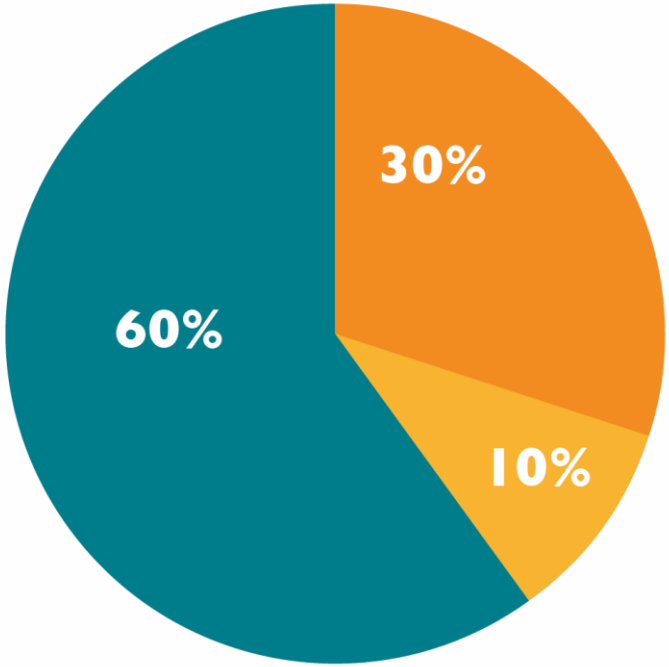
- Policy body
- Develops regional agreement
- Includes representatives of:
  - Each salmon recovery watershed
  - Non-profit environmental groups
  - Tribes
  - State agencies
  - Federal agencies
  - Business/Agriculture

PUGET SOUND FUNDING ALLOCATION FORMULA

USES NOAA DELISTING CRITERIA:

60%—FOR POPULATIONS THAT NEED TO GET TO LOW RISK:

- One or more Chinook populations
- One or more populations that need to get to low risk
- 5 % for Hood Canal Summer Chum

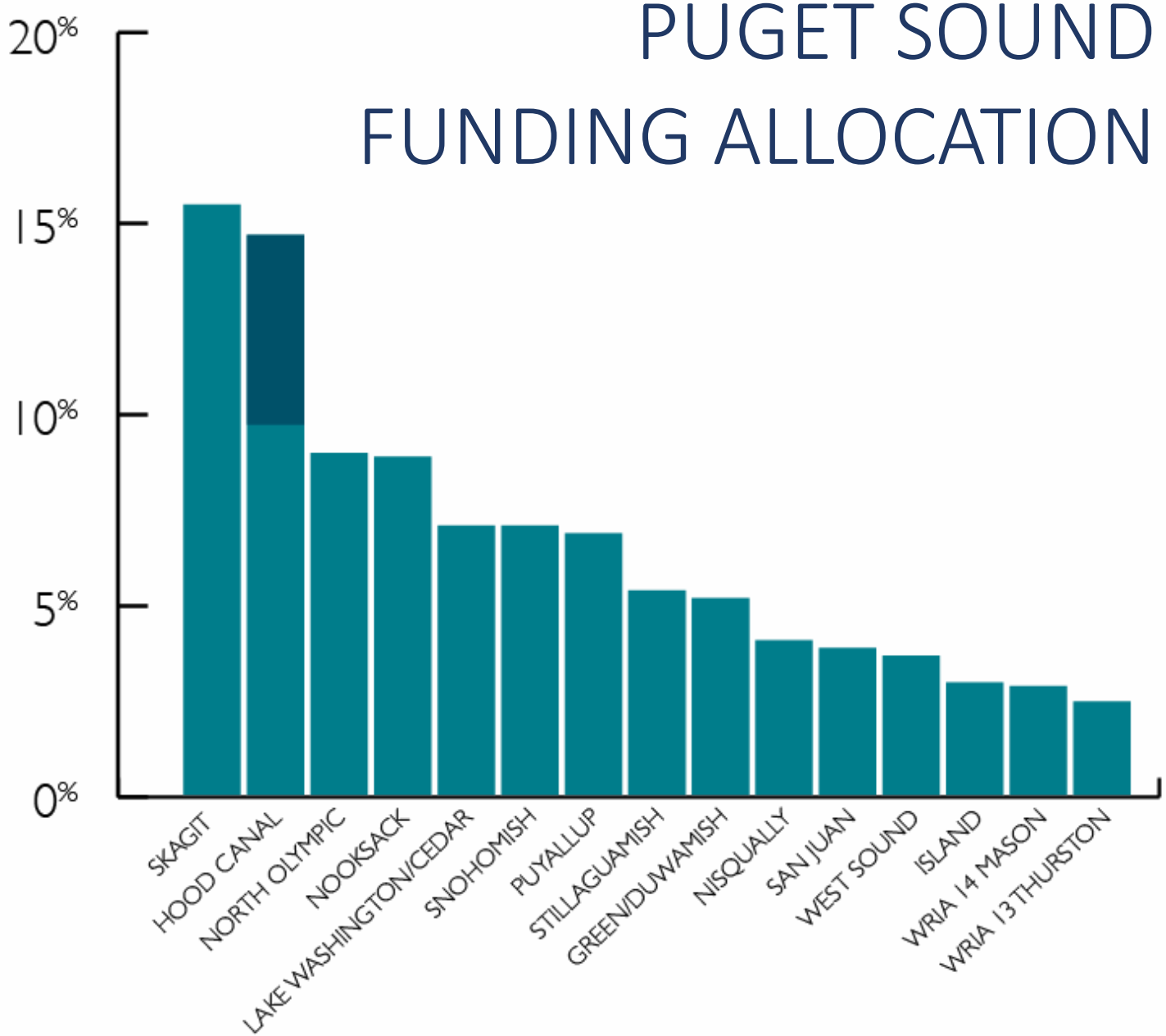


40%—FOR ALL 22 POPULATIONS THAT MUST IMPROVE:

- 30% —Lead Entities get equal amounts
- 10% — Larger watersheds get slightly more

PUGETSOUND PARTNERSHIP

PUGET SOUND FUNDING ALLOCATION



PUGETSOUND PARTNERSHIP

2007

SHARED STRATEGY
FOR PUGET SOUND
working with communities to restore salmon

→

PUGETSOUND
PARTNERSHIP

ACCELERATING IMPLEMENTATION OF RECOVERY ACTIONS

2007–2017: $199 MILLION

PSAR FUND
Puget Sound Acquisition and Restoration

- ✓ Nisqually estuary restoration
- ✓ Skokomish estuary restoration
- ✓ Qwuloolt restoration, Snohomish
- ✓ Fir Island restoration, Skagit estuary
- ✓ Port Susan restoration, Stillaguamish
- ✓ Dungeness River levee setbacks
- ✓ Puyallup River levee setbacks
- ✓ Cedar River floodplain restoration
- ✓ Nooksack River engineered log jams
- ✓ Revegetation of the Elwha lake beds
- ✓ Seahurst nearshore restoration
- ✓ Carpenter Creek estuary restoration

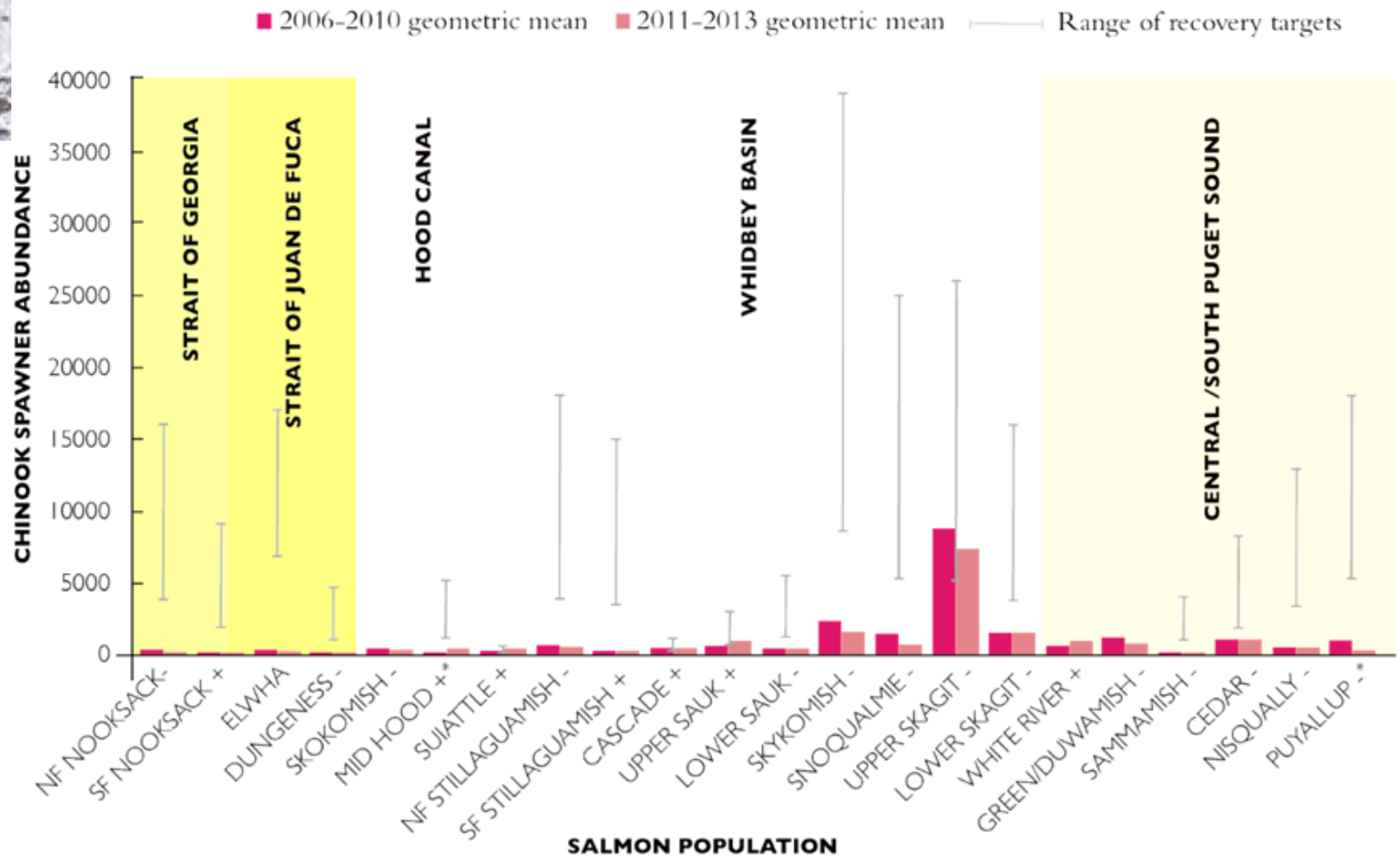
- Is it enough?
- Are we making progress?
- Is habitat loss ≥ habitat restoration?

REGIONAL MONITORING & ADAPTIVE MANAGEMENT SYSTEM

PUGETSOUND PARTNERSHIP

Chinook

GETTING WORSE



NO

Interim targets are not met

COMMON FRAMEWORK FOR MONITORING & ADAPTIVE MANAGEMENT

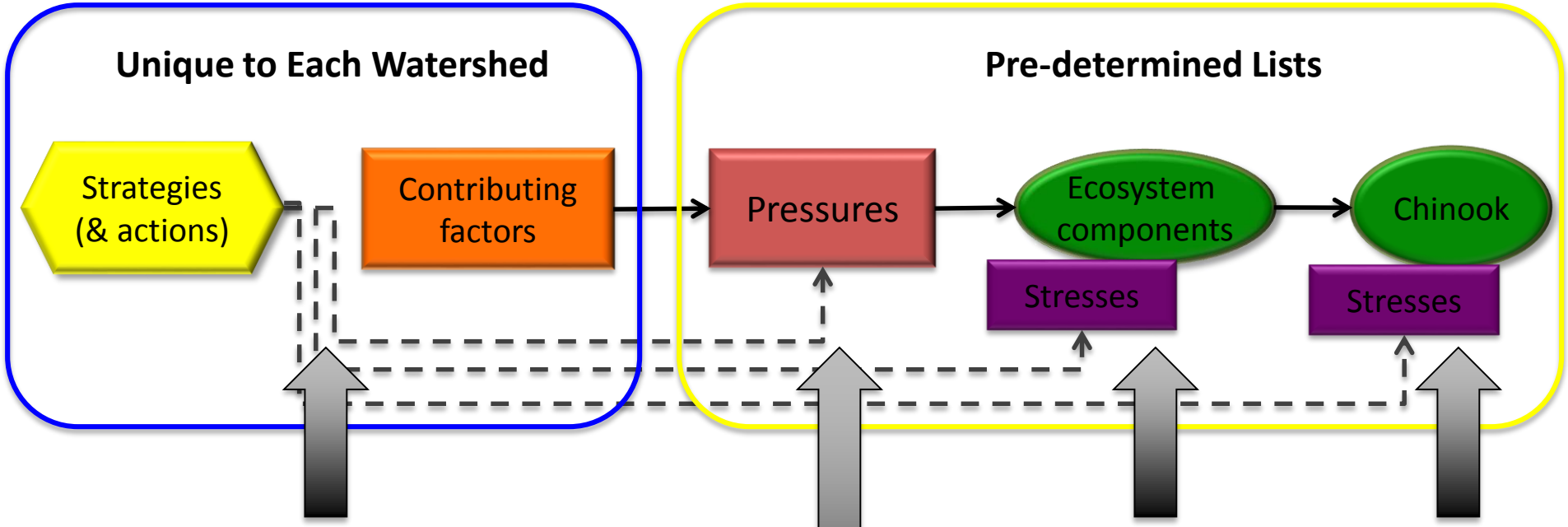
- Provide common terminology for:
  - salmon
  - habitat components
- Provide common way to describe hypotheses & strategies
- Enable comparisons
- Enable evaluation at multiple scales

CHINOOK PLAN ADAPTIVE MANAGEMENT

PHASE 1 — Watershed Chapters

- Common taxonomy
- Logic chains that tie strategies to desired outcomes
- I.D. local monitoring priorities
- Highlight strengths and gaps
- Strengthen relationships and collaboration
- Improve decisionmaking relationships

The Big Picture



Topically and Geographically Unique – Salmon Recovery Council will be reviewing for themes and consistency with LIO NTAs

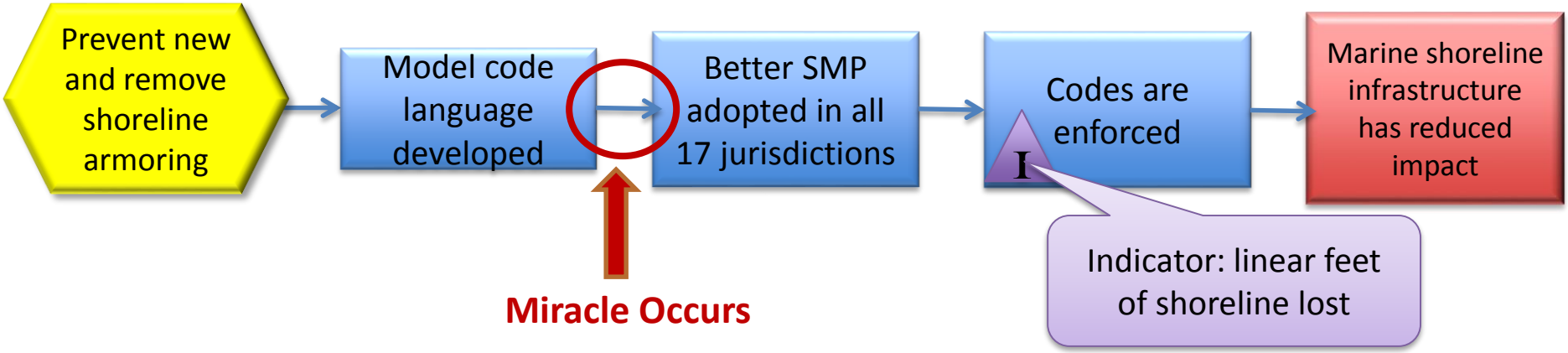
Consistent – can track regional status and trends through a roll up of information

Consistent – can be used as the basis for LIO frameworks. Other components to be added

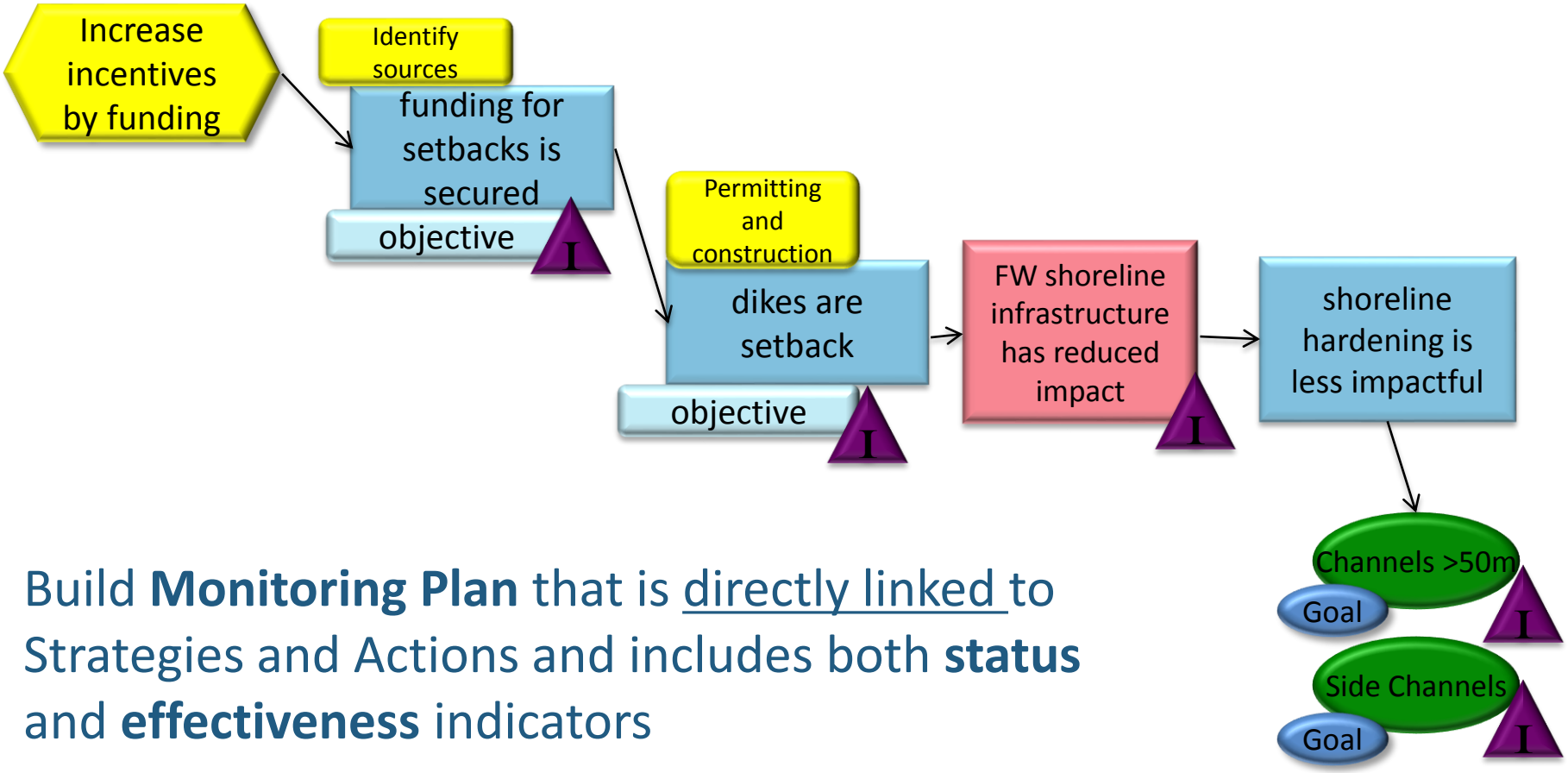
Results Chains Results Example

"We gained a refined and more specific chain of logic explaining how our *strategies* will lead to *results* (and improved Chinook viability)"

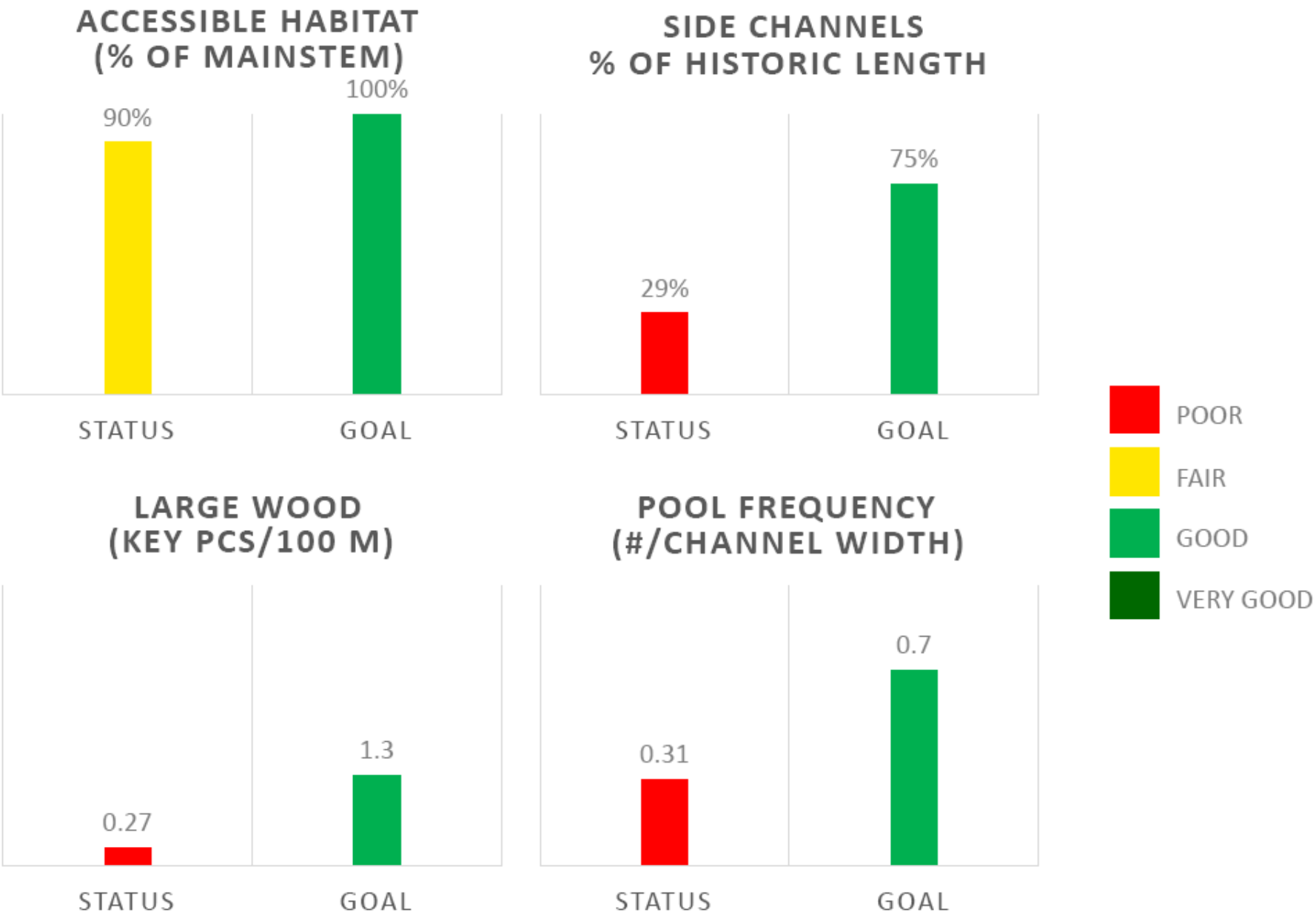
WRIA 9 example

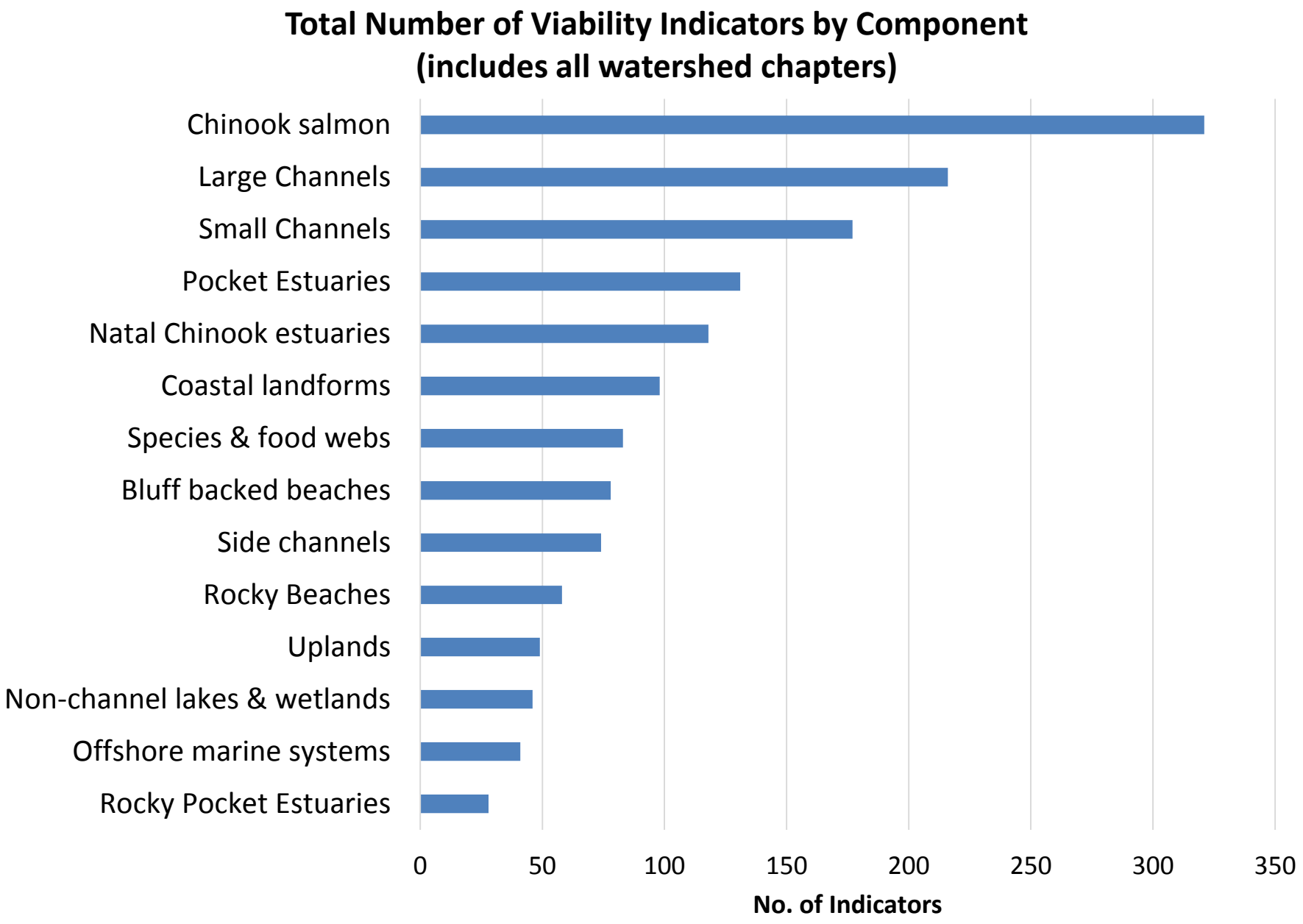


Results Chains Inform Monitoring Plan



Build **Monitoring Plan** that is <u>directly linked</u> to Strategies and Actions and includes both **status** and **effectiveness** indicators


ACCESSIBLE HABITAT
(% OF MAINSTEM)
90%
100%
STATUS
GOAL
SIDE CHANNELS
% OF HISTORIC LENGTH
29%
75%
STATUS
GOAL
LARGE WOOD
(KEY PCS/100 M)
0.27
1.3
STATUS
GOAL
POOL FREQUENCY
(#/CHANNEL WIDTH)
0.31
0.7
STATUS
GOAL
POOR
FAIR
GOOD
VERY GOOD


Total Number of Viability Indicators by Component
(includes all watershed chapters)
Chinook salmon
Large Channels
Small Channels
Pocket Estuaries
Natal Chinook estuaries
Coastal landforms
Species & food webs
Bluff backed beaches
Side channels
Rocky Beaches
Uplands
Non-channel lakes & wetlands
Offshore marine systems
Rocky Pocket Estuaries
0
50
100
150
200
250
300
350
No. of Indicators

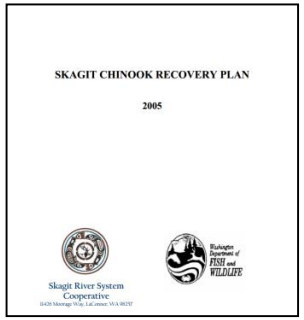
PUGET SOUND SALMON RECOVERY PLAN

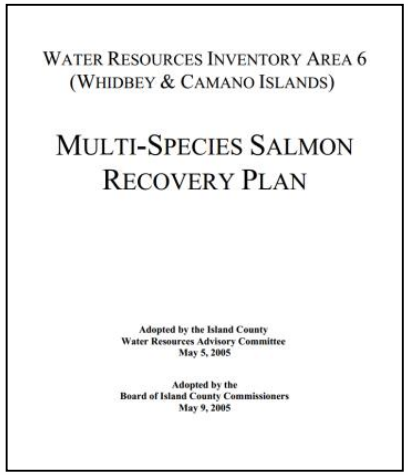
PUGETSOUND PARTNERSHIP

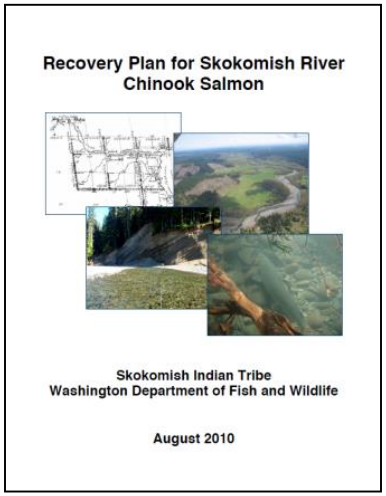
CHINOOK PLAN ADAPTIVE MANAGEMENT

PHASE 2 — Update Watershed Chapters

- Create common regional indicators and bins
- Apply the indicators and bins
- Fill gaps watersheds identified in Phase 1
- Complete M&AM plans







WATERSHED CHAPTER UPDATE STATUS

- $600,000 from state for 2015–17
- Supporting chapter updates & monitoring plans for:
  - WRIA 8 — Lake Washington/ Cedar/Sammamish
  - Skokomish watershed
- All other watershed chapters — some progress with limited technical and facilitation/coaching support

CHINOOK PLAN ADAPTIVE MANAGEMENT—PHASE 2

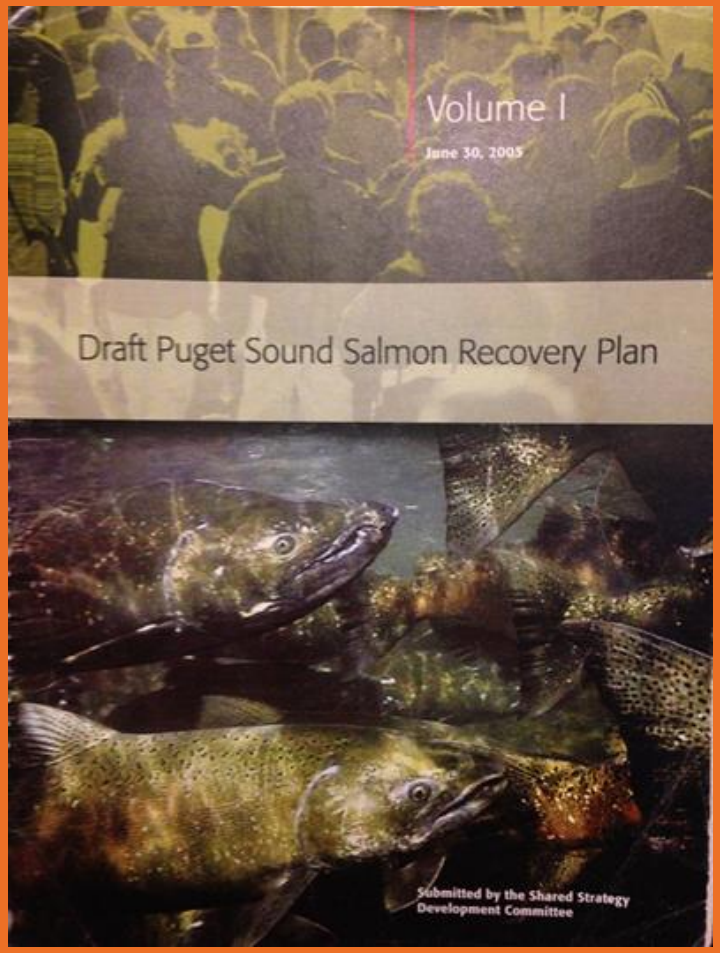
NEARSHORE CHAPTER

- Review:
  - nearshore chapter
  - nearshore content of watershed chapters
- Literature review, gap analysis
- I.d. watershed scale vs. regional scale strategies
- Update nearshore content – watershed & regional

CHINOOK PLAN ADAPTIVE MANAGEMENT—PHASE 2

REGIONAL CHAPTER

- **Summarize** content and strategies of watershed chapters
- **Identify** strategies to be addressed regionally
- **Integrate** the Salmon Recovery Plan with Action Agenda through **Chinook Salmon Vital Sign Implementation Strategy**

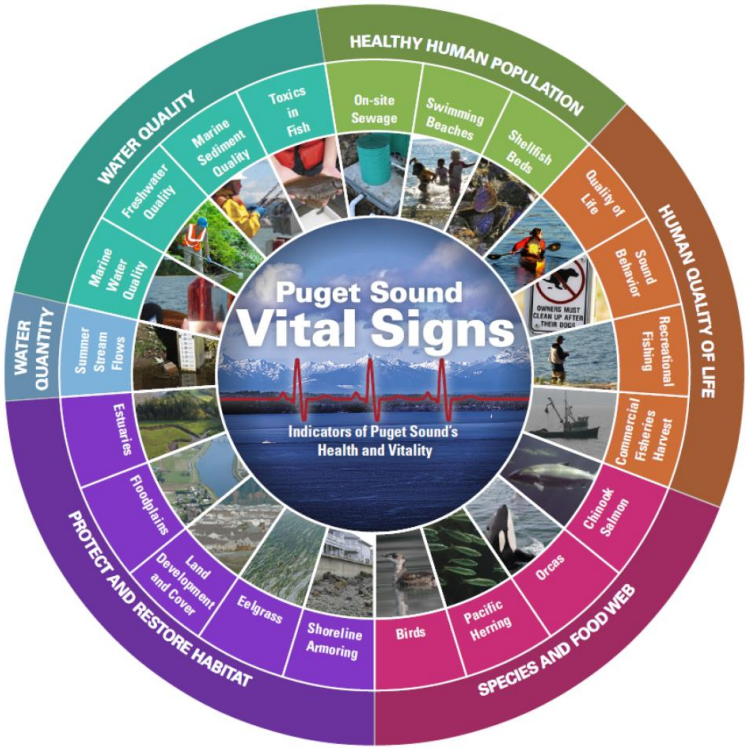


PUGETSOUND PARTNERSHIP

CHINOOK IMPLEMENTATION STRATEGY

PURPOSE

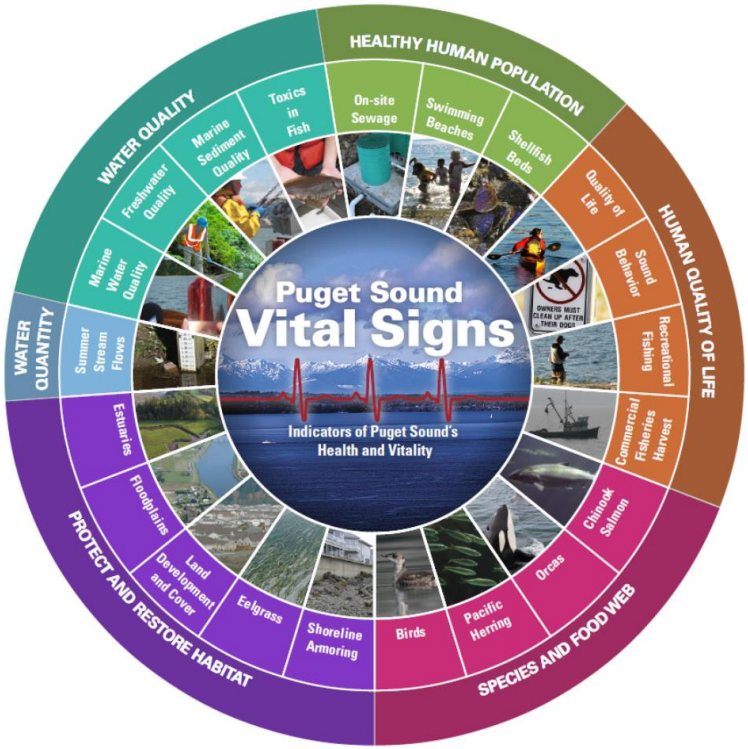
- Meet Vital Sign targets
- Use actions and approaches to achieve targets
- Specify parties and resources needed
- Indicate prominent barriers, pressures, synergies, tradeoffs / conflicts



CHINOOK IMPLEMENTATION STRATEGY

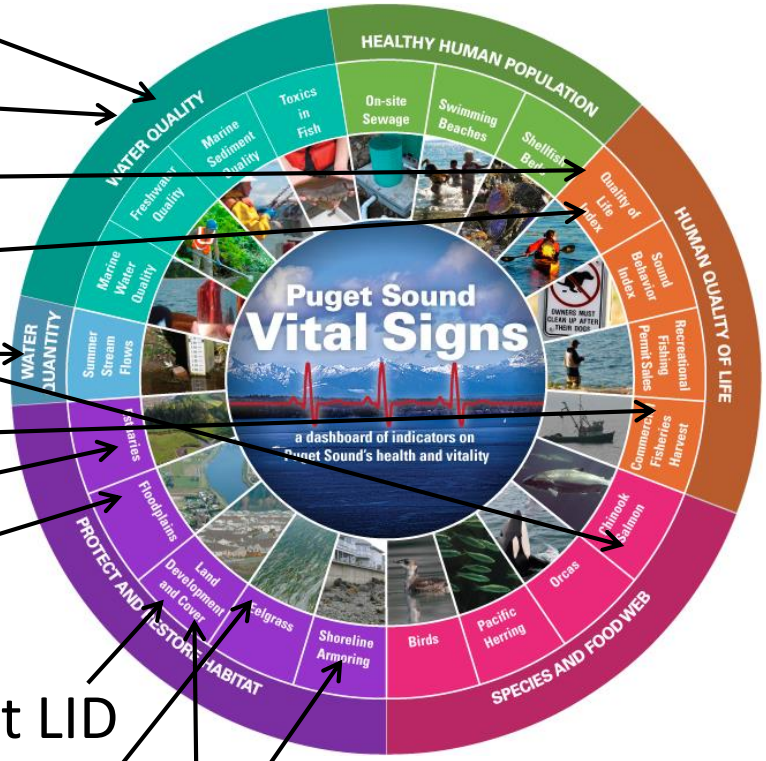
Chinook Vital Sign target:

Stop the overall decline and start seeing improvements in wild Chinook salmon abundance in two to four populations in each biogeographic region.



Chinook M&AM ⟷ Action Agenda/LIOs

- Improve and protect water quality
- Decommission roads
- Protection in agricultural lands
- Hatchery management
- Instream flow rules enacted
- Harvest management
- Restore/protect estuaries
- Floodplain reconnection
- Remove impervious surface/implement LID
- Promote incentives on private nearshore
- Prevent new and remove shoreline armoring
- Incorporate best available science in SMP/CAO



PROCESS: PHASE 1

SYNTHESIZE WATERSHED CHAPTERS

- Identify common themes:
  - Goals
  - Strategies
  - Actions
  - Monitoring needs
  - Gaps
- Requests for regional help
- Crosswalk with Action Agenda sub-strategies

PUGETSOUND PARTNERSHIP

PROCESS: PHASE 2

REGIONAL IMPLEMENTATION STRATEGY

- Build from Phase 1 M&AM watershed products
- Create regional strategies & actions
- Identify science and monitoring needs
- Identify gaps
- Answer key policy questions

STEELHEAD RECOVERY PLAN DEVELOPMENT

LIFE CYCLE MODEL

- Funded by NOAA, led by WDFW/NWIFC
- Two-stage model evaluating restoration alternatives
- Will inform recovery plan strategy development

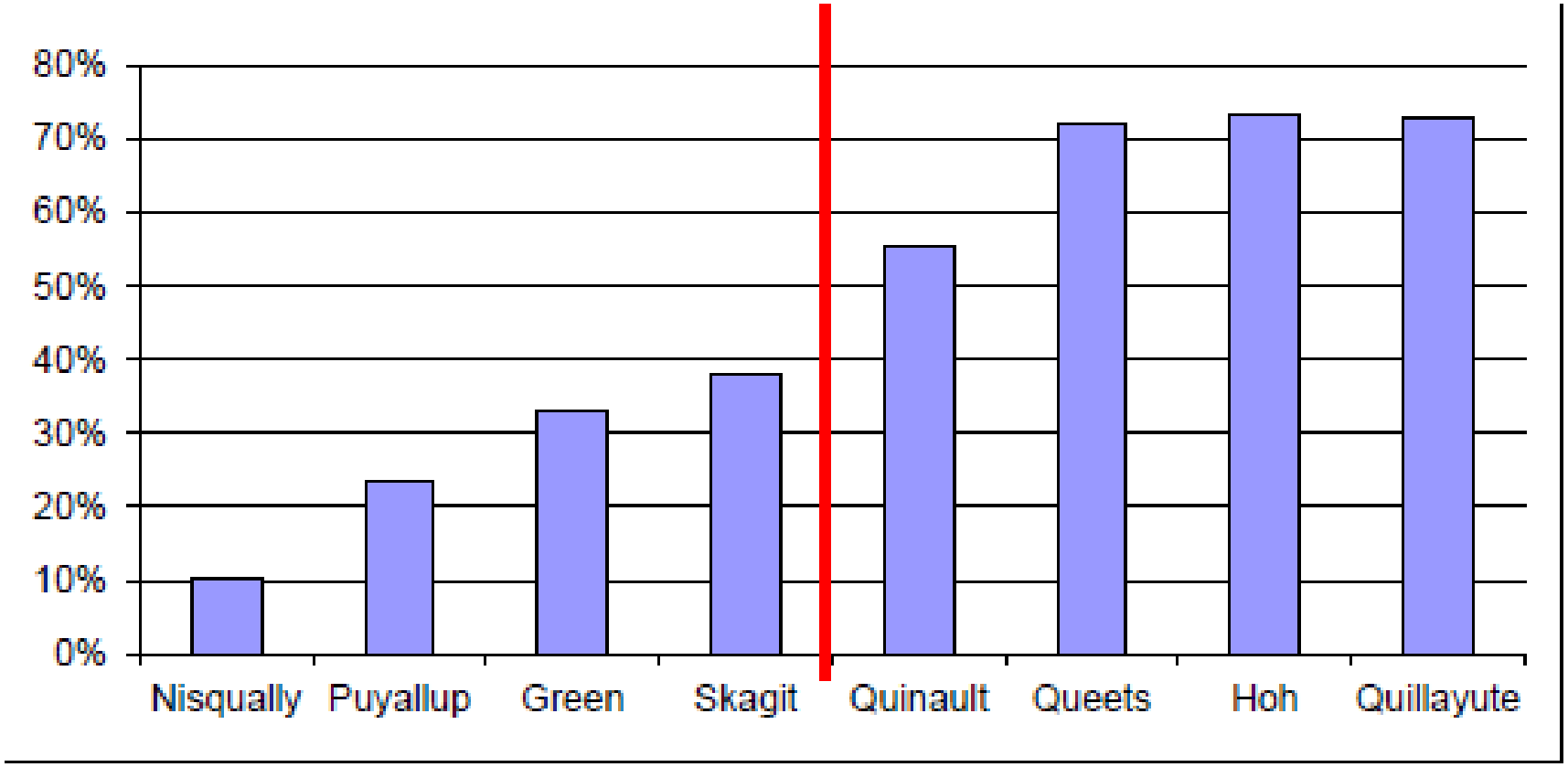
STEELHEAD RECOVERY PLAN DEVELOPMENT

WATERSHED TEMPLATE

- Basis and framework for watershed chapters
- Not simply an outline
- Aligned with process/content of Chinook chapter updates
- Future need: funding

STEELHEAD RECOVERY MARINE SURVIVAL

- Juvenile steelhead mortality = major factor
- Where? Why? State-funded research



2016 Action Agenda update

- Just completed solicitation, review and ranking of Near Term Actions
- 364 total NTA's in the lists:
  - 205 Habitat
  - 119 Stormwater
  - 40 Shellfish
- 5 are SRFB projects approved in 2015

PUGETSOUND PARTNERSHIP

2016 Action Agenda update

- 5 Near Term Actions – 2015 SRFB projects

  1 - Beach Lake Acquisition and Restoration (NOPLE)

  37 - South Prairie Creek Floodplain (Puyallup)

  66 - Kristoferson Creek Fish Passage (Island)

  171 - Chambers Creek Dam acquisition and design (Puyallup/Chambers)

  185 - Stillaguamish River Knotweed

PUGETSOUND PARTNERSHIP

2016 Action Agenda update

All other active SRFB projects in Puget Sound are included by reference in the Action Agenda as supplemental information

PUGETSOUND PARTNERSHIP

Climate Change and Salmon in Washington State: An Overview

Lara Whitely Binder
Climate Impacts Group
College of the Environment | University of Washington

Salmon Recovery Funding Board
March 16, 2016

COLLEGE OF THE ENVIRONMENT
UNIVERSITY of WASHINGTON

The UW Climate Impacts Group

Science for climate resilience

Working since 1995 to….

- Produce scientific information that is both useful to and used by decision makers
- Conduct decision-relevant climate research
- Support the interpretation and application of climate science in decision making

CLIMATE IMPACTS GROUP

COLLEGE OF THE ENVIRONMENT
UNIVERSITY of WASHINGTON

Northwest Climate Science Center

Direct and indirect impacts of climate on salmon

- Stream temperature
- Streamflow volume
- Sediment
- Food availability, quality
- Predation
- Disease
- Ocean conditions
- Habitat quality, connectivity
- Reservoir management
- Floodplain management
- Community responses to sea level rise
- Changes in land cover
- Toxics

Key Climate Impact "Drivers"

Substantial warming

Increasing heavy rainfall

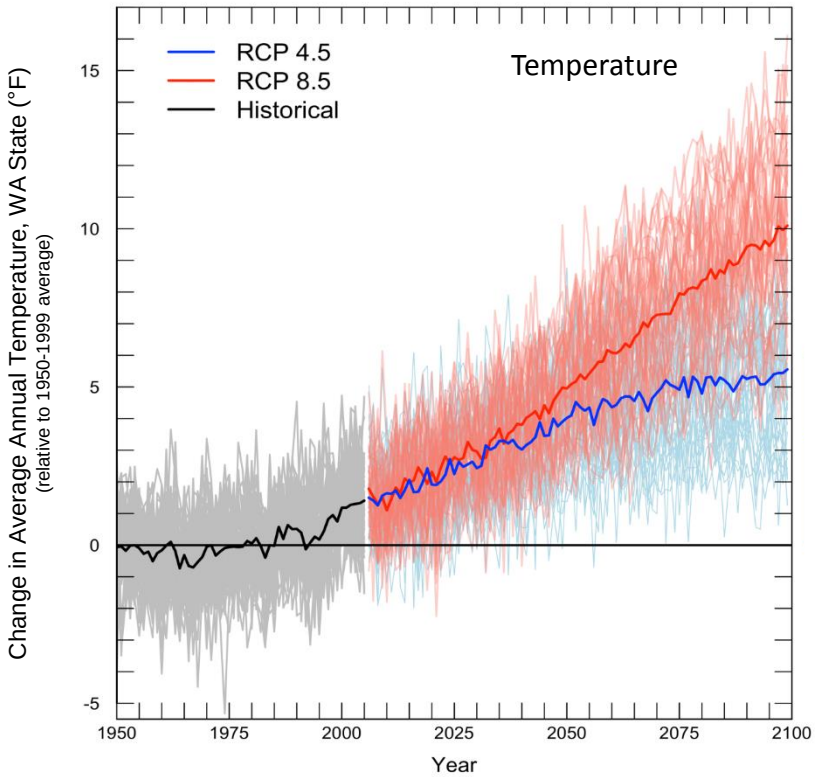
Changes in hydrology (snow, streamflow)

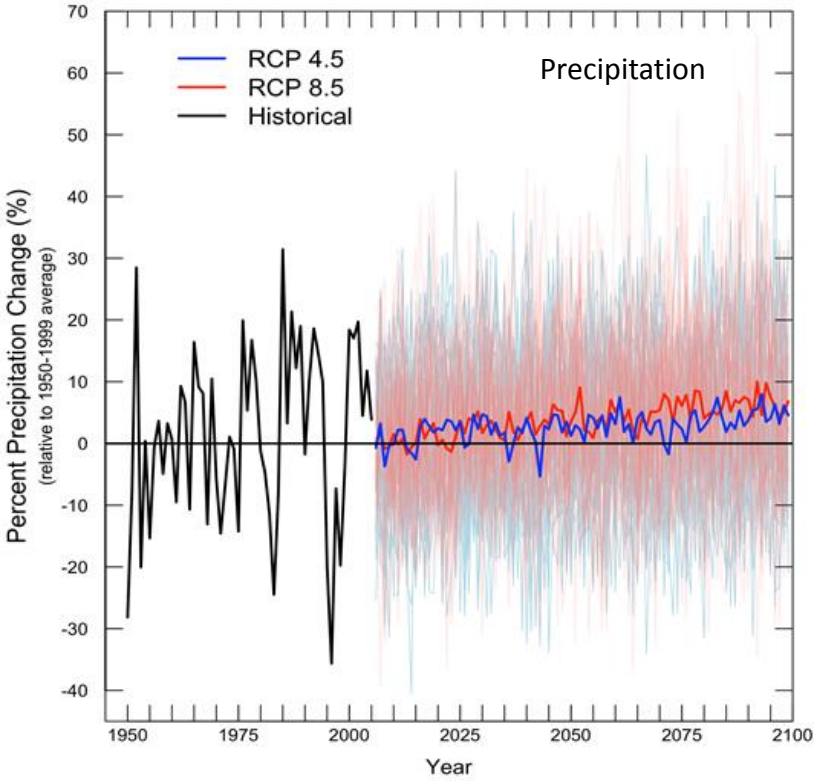
Sea level rise

Changes in ocean conditions

Natural variability

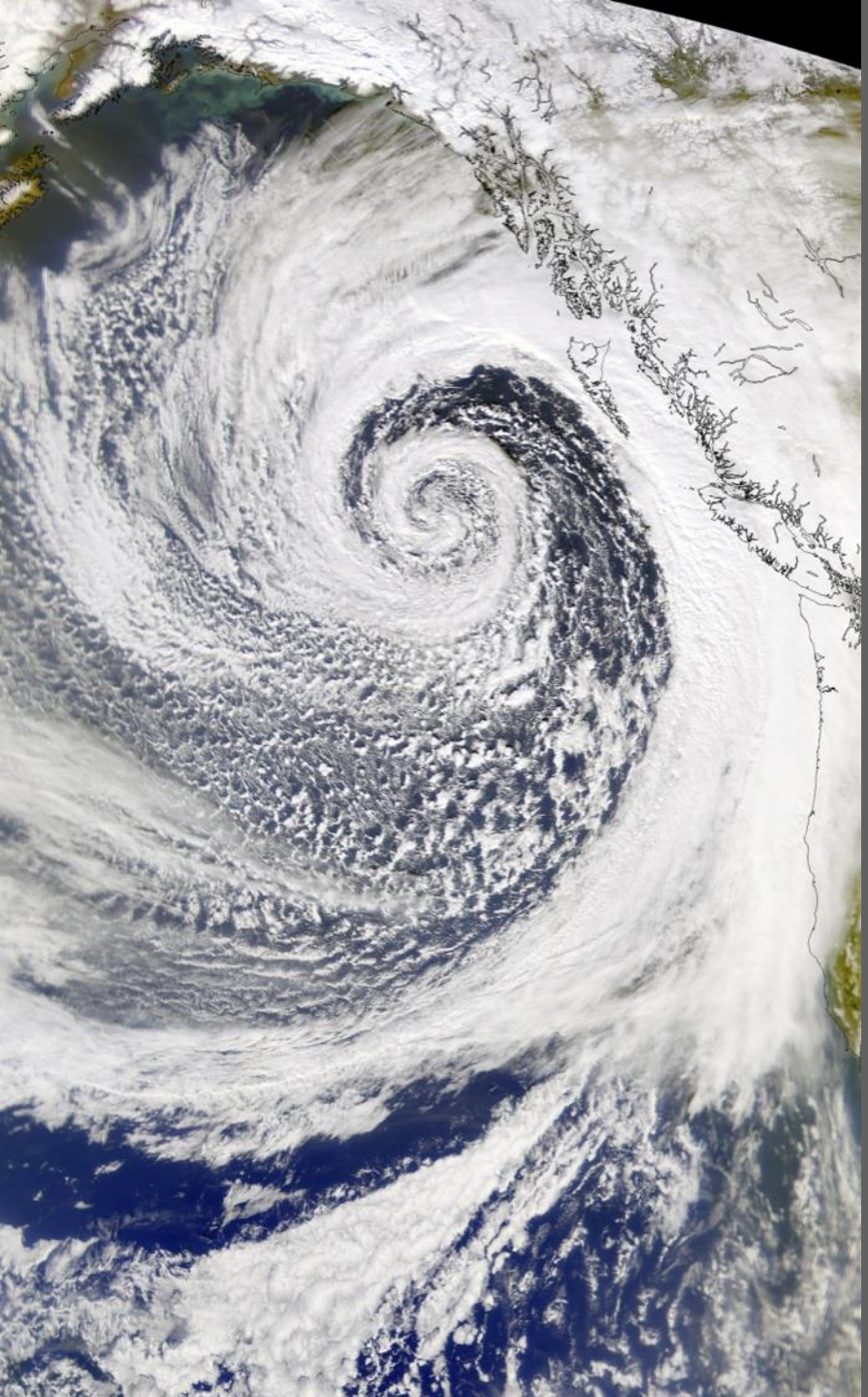
All scenarios show warming but changes in precipitation are mixed





Warming (WA): 2050s *(relative to 1950-1999)*	
Low emissions *RCP 4.5*	+4.3°F *(2.0-6.7°F)*
High emissions *RCP 8.5*	+5.8°F *(3.1-8.5°F)*

Precipitation change (WA): 2050s *(relative to 1950-1999)*	
Low emissions *RCP 4.5*	-4.3 to +10.1%
High emissions *RCP 8.5*	-4.7 to +13.5%



Increased frequency, intensity of extremes

For the Puget Sound region, 2080s:

Heaviest 24-hour rain events become **+22% more intense** (*range:* +5 to +34%) for a high greenhouse gas scenario

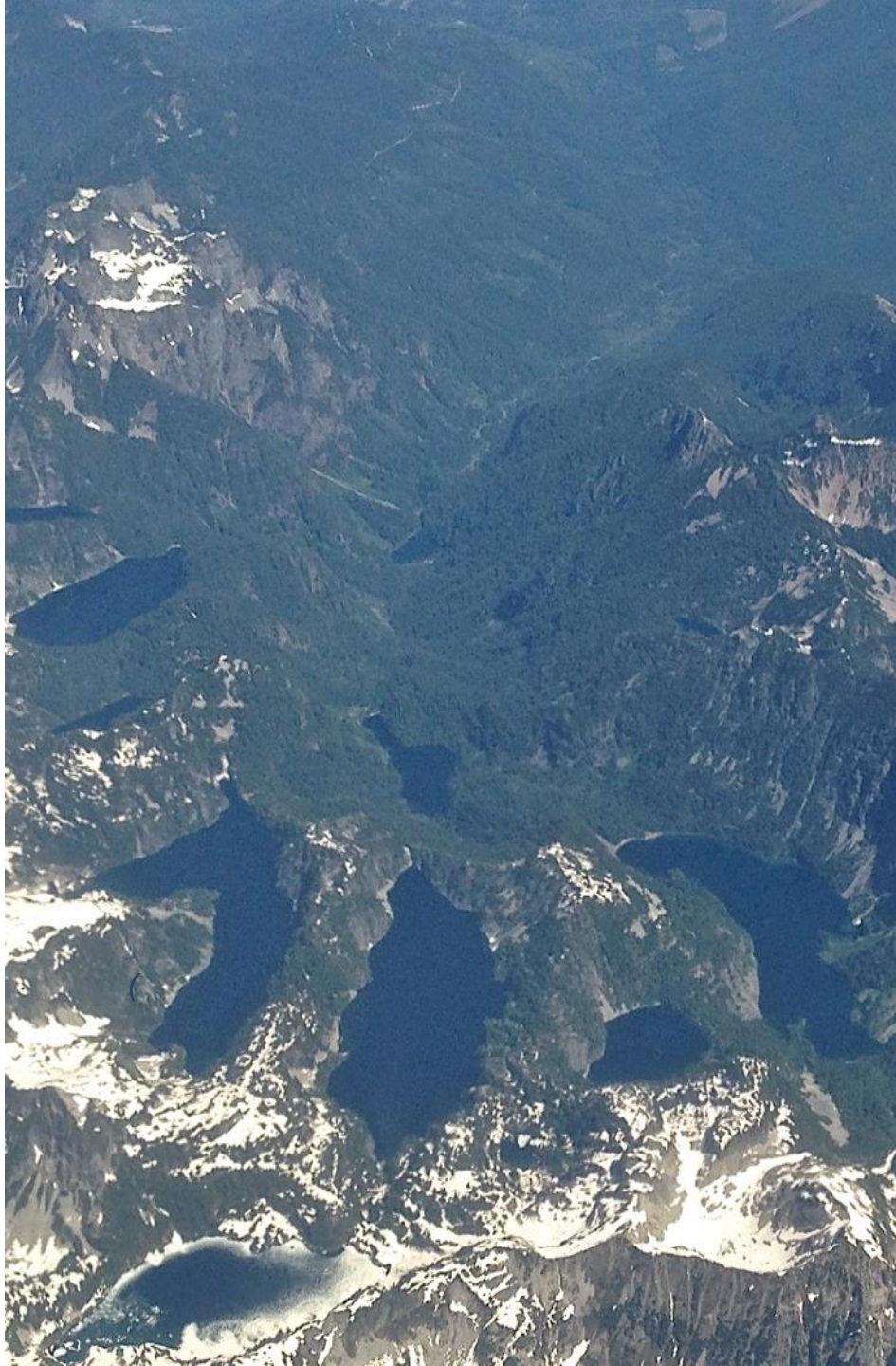
Temperature of the hottest days (top 1%) **increases +9.8°F** *(range: 5.3 to +15.3°F)* for a high greenhouse gas scenario

Mauger et al. 2015

Our primary mechanism for storing water – snow – is sensitive to warming.

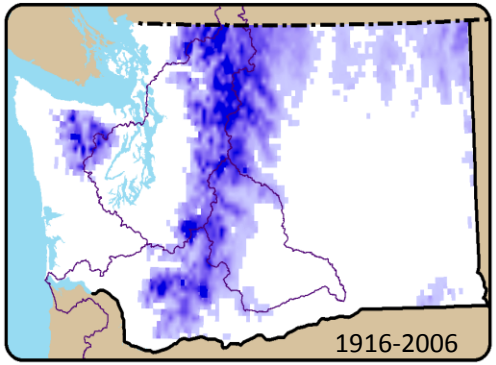
The Cascade and Olympic Mountains have the highest fraction of “warm snow” (snow falling between 27-32°F) in the continental U.S.

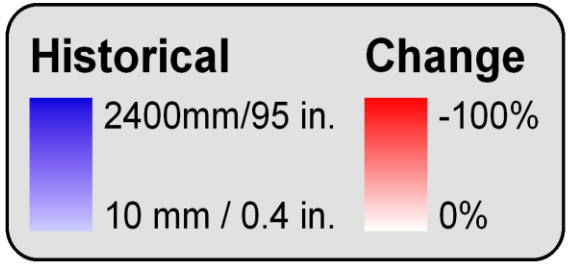
(Mote et al. 2008)



All Scenarios Indicate Less Snow

Historical



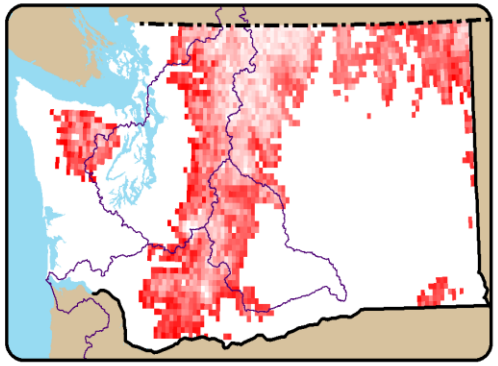


Apr. 1 Snow Water Equivalent

Medium Emissions Scenario

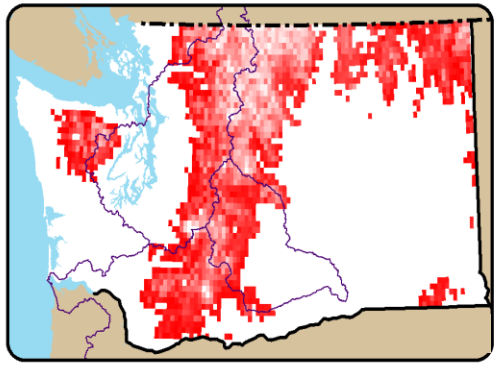
A1B

2020s



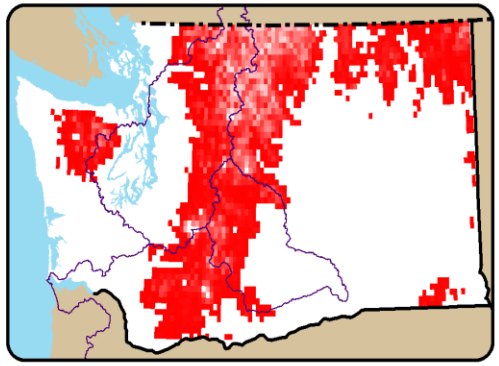
WA State: - 29%

2040s



WA State: - 44%
Puget Sound: -29%

2080s

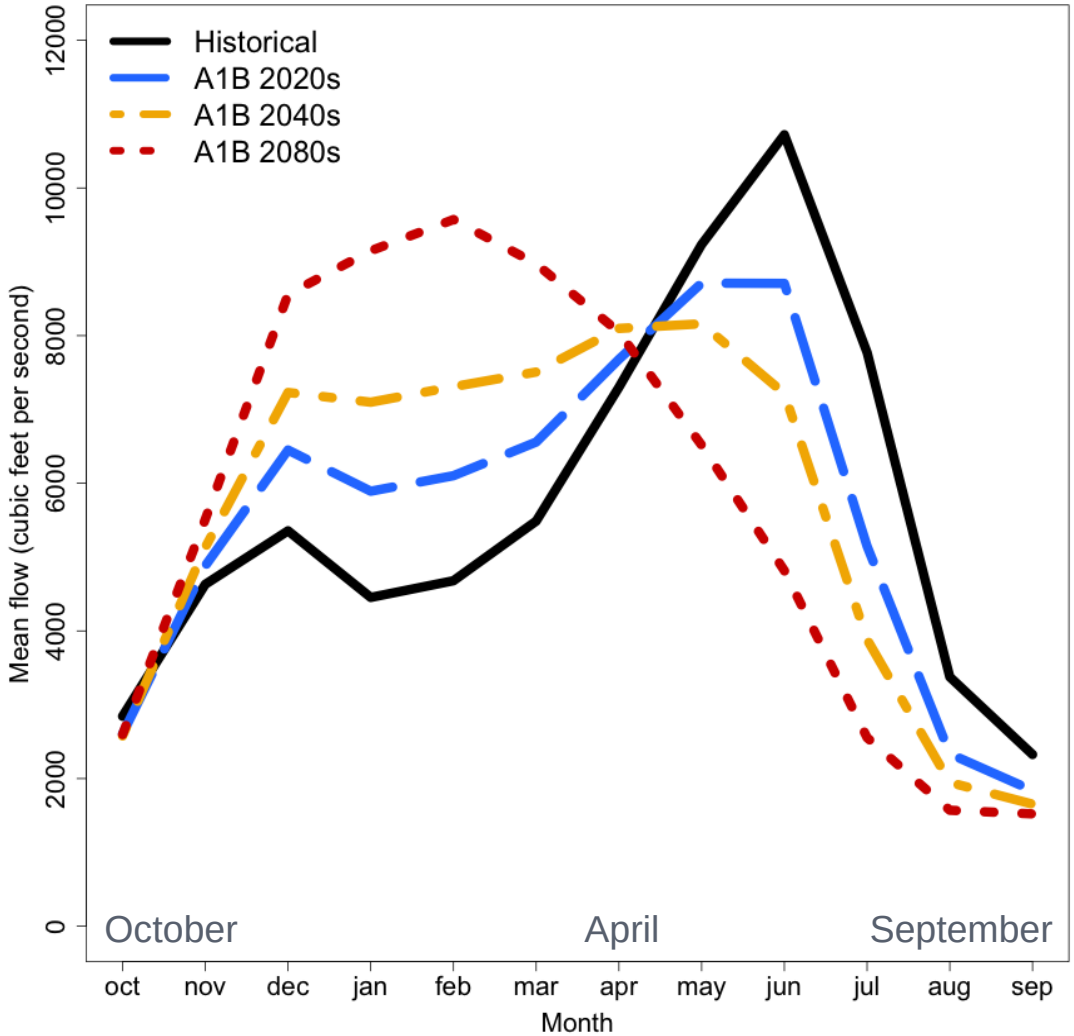


WA State: - 65%
Puget Sound: -55%

Elsner et al. 2010; Mauger et al. 2015

Earlier Peak Flows, Lower Summer Flows

Rain-snow mix watershed - Yakima Basin



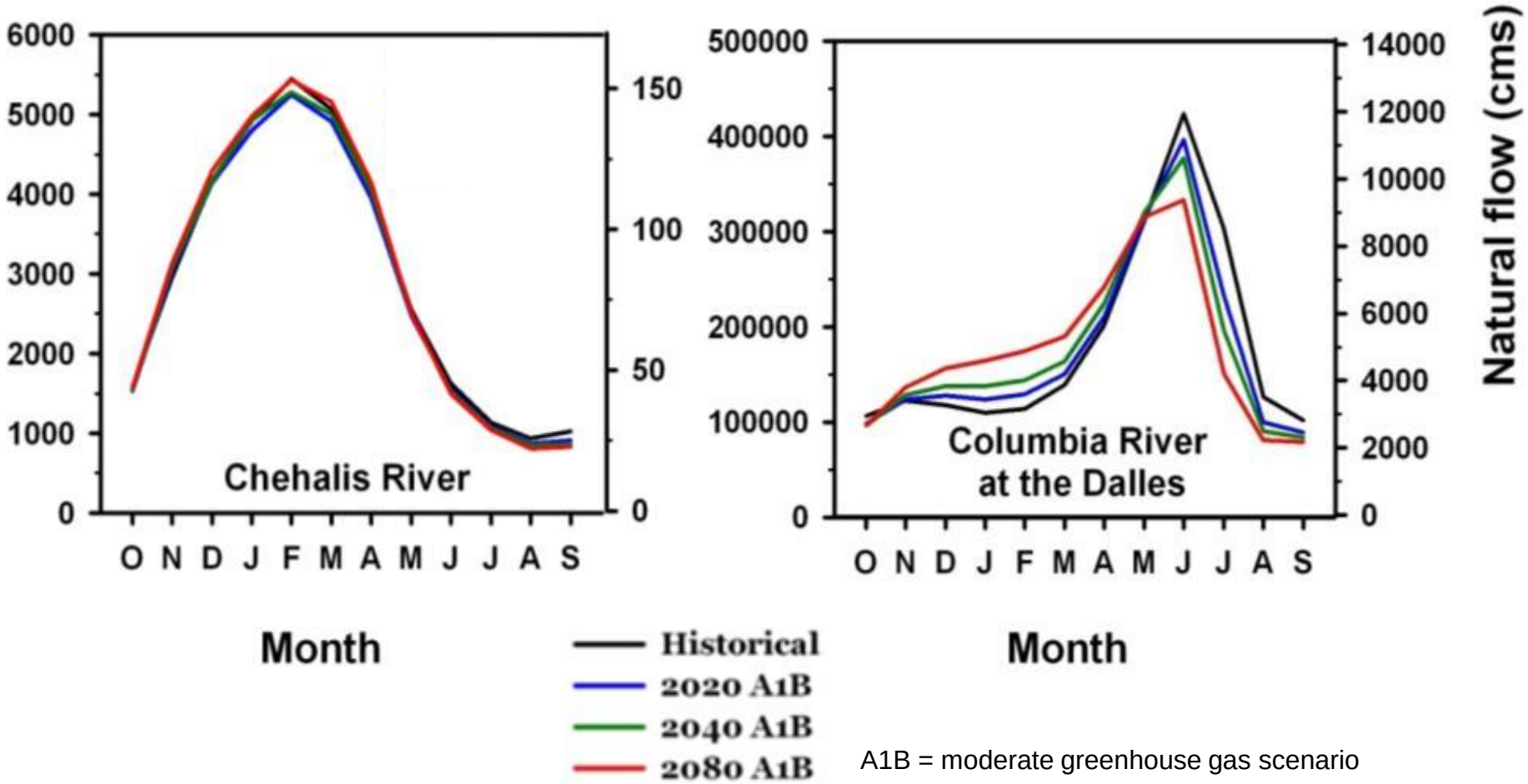
Naturalized flows (flows without the influence of dams)

Does not include atmospheric river events

Elsner et al. 2010

Rain Dominant

Snowmelt Dominant



A1B = moderate greenhouse gas scenario

Analysis does not include extreme precipitation events, reservoirs

Elsner et al. 2010

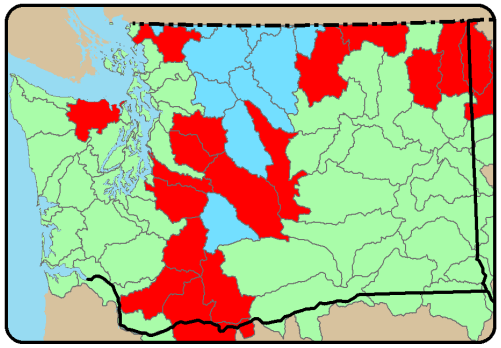
Basin Transformations: *Shifting from Snow to Rain*

Watershed Classification

Ratio of April 1 SWE to October - March Precipitation

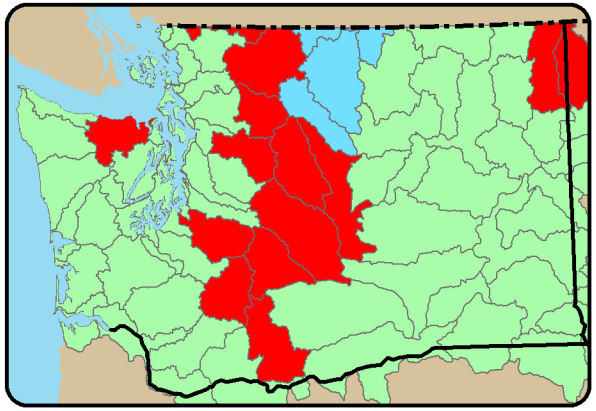
- < 0.1 Rain dominant
- 0.1 - 0.4 Transition
- > 0.4 Snow dominant

Historical

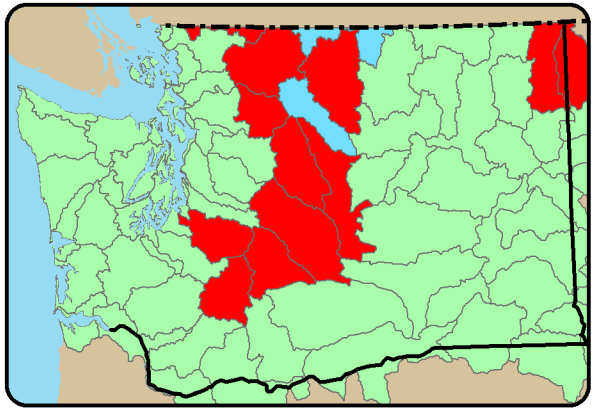


A1B

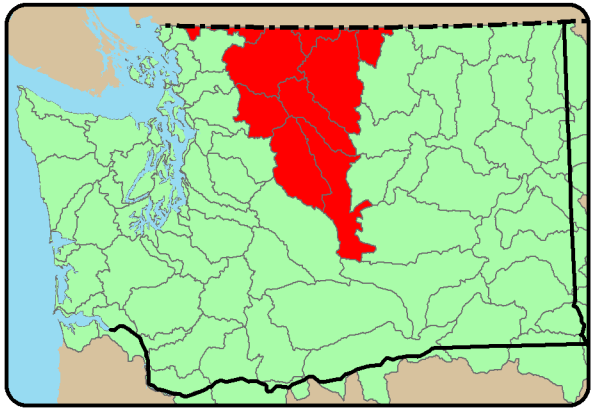
2020s



2040s



2080s



Mantua et al. 2010

Increasing flood risk

For the Skagit, 2040s:*

- the historical 100-year event becomes a 22-year event
- the historical 30-year event becomes an 7-year event

For the Snohomish, 2040s:*

- the historical 100-year event becomes a 30-year event
- the historical 10-year event becomes an 5-year event

* Naturalized flows (no dams)

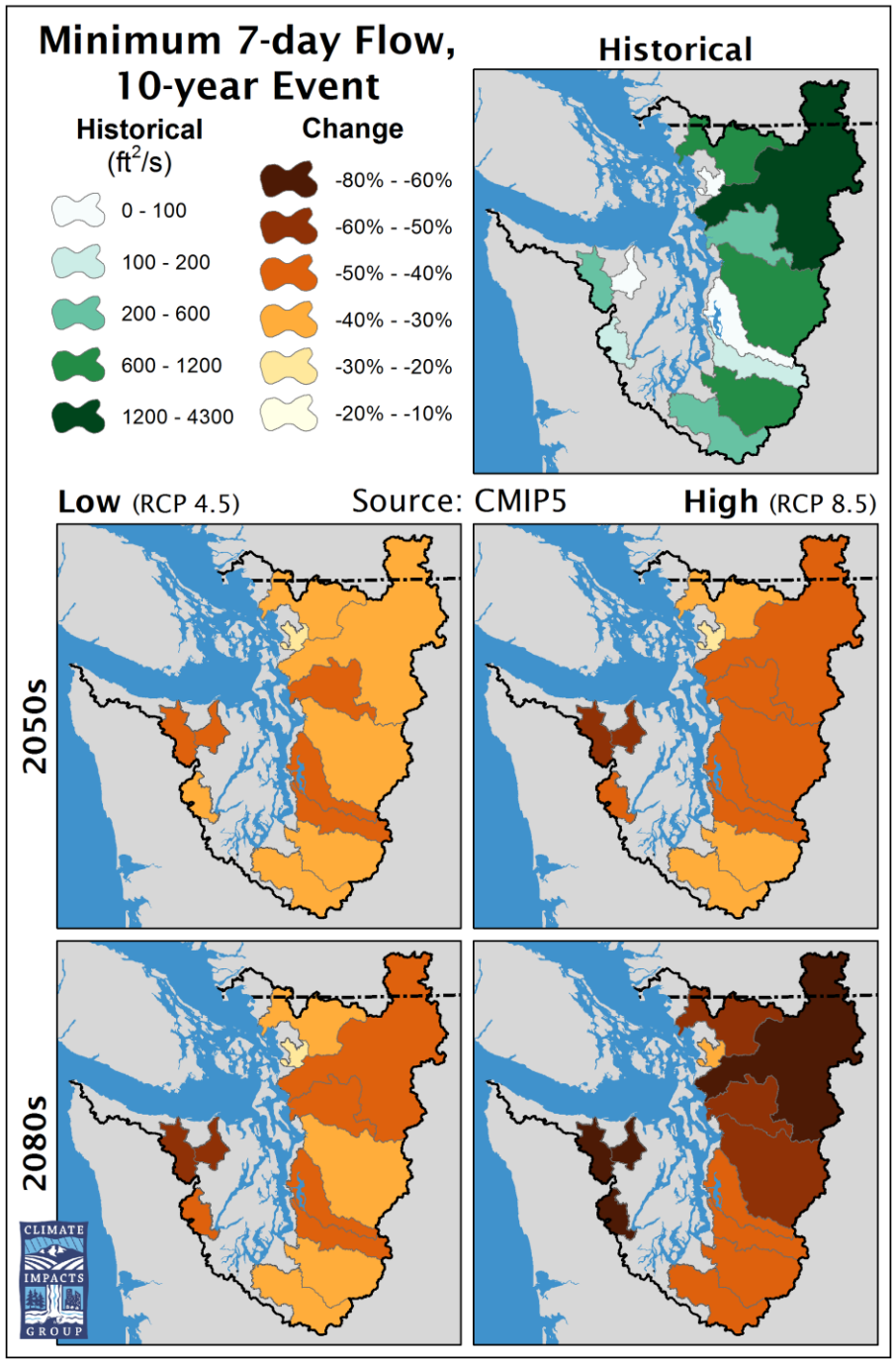
Photo source: Seattle Times

Lower Summer Streamflows

Change in 7Q10 flows (average and range) for a moderate (A1B) greenhouse gas scenario, 2080s:

Nooksack R.:	−27%	*(−38 to −13%)*
Samish R.:	−18%	*(−26 to −7%)*
Skagit R.:	−51%	*(−65 to −38%)*
Stillaguamish R.:	−22%	*(−32 to −7%)*
Snohomish R.:	−26%	*(−33 to −17%)*
Cedar R.:	−25%	*(−32 to −13%)*
Green R.:	−16%	*(−21 to −7%)*
Nisqually R.:	−27%	*(−35 to −17%)*
Puyallup R.:	−27%	*(−39 to −16%)*
Skokomish R.:	−18%	*(−22 to −8%)*
Dungeness R.:	−35%	*(−45 to −27%)*
Elwha R.:	−39%	*(−49 to −27%)*

Map: Results are only shown for watersheds for which at least 8 out of the 10 models agree on the direction of change.

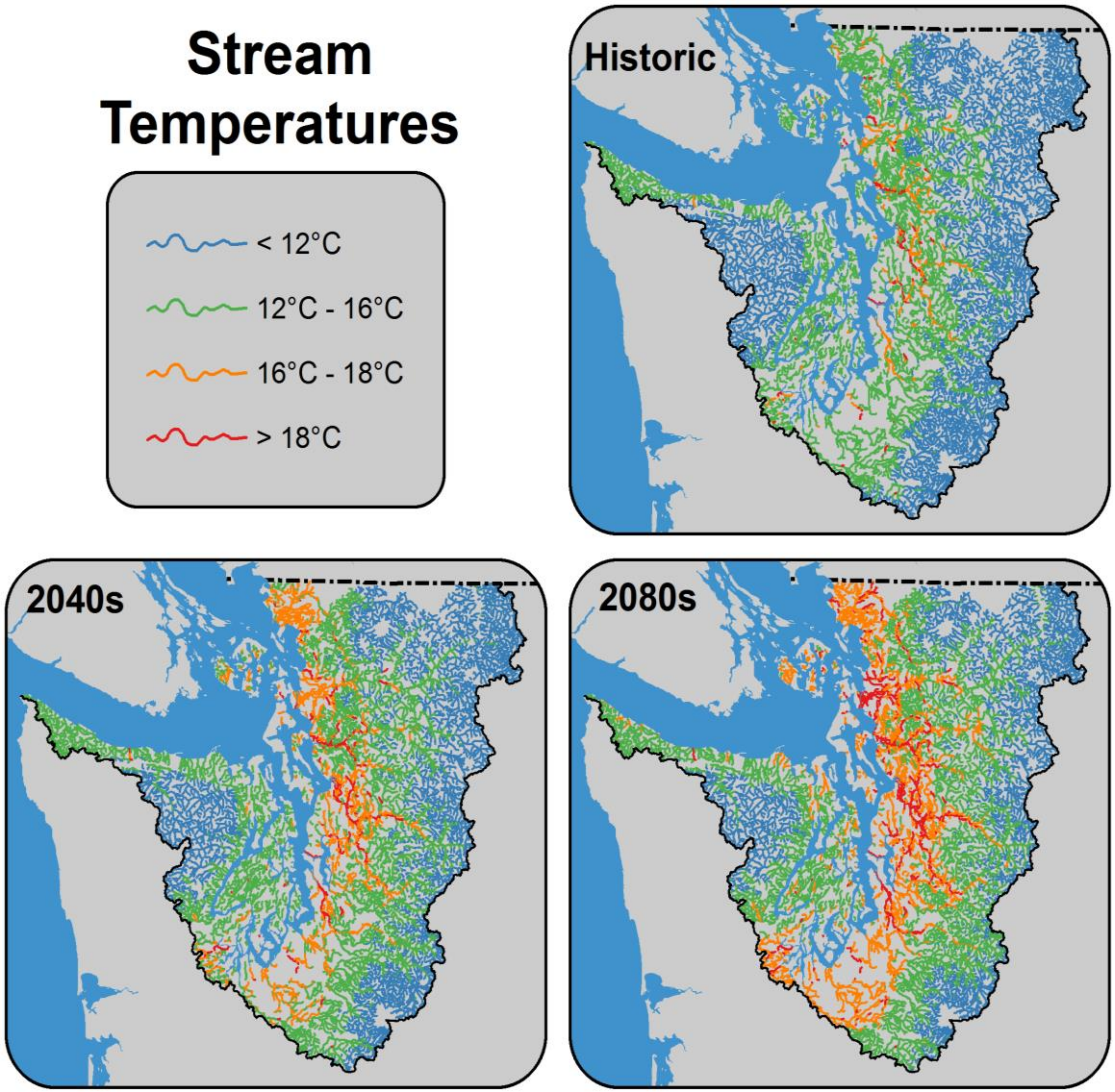


Mauger et al. 2015

Warmer Streams

By the 2080s, in Puget Sound, for a moderate (A1B) greenhouse gas scenario:

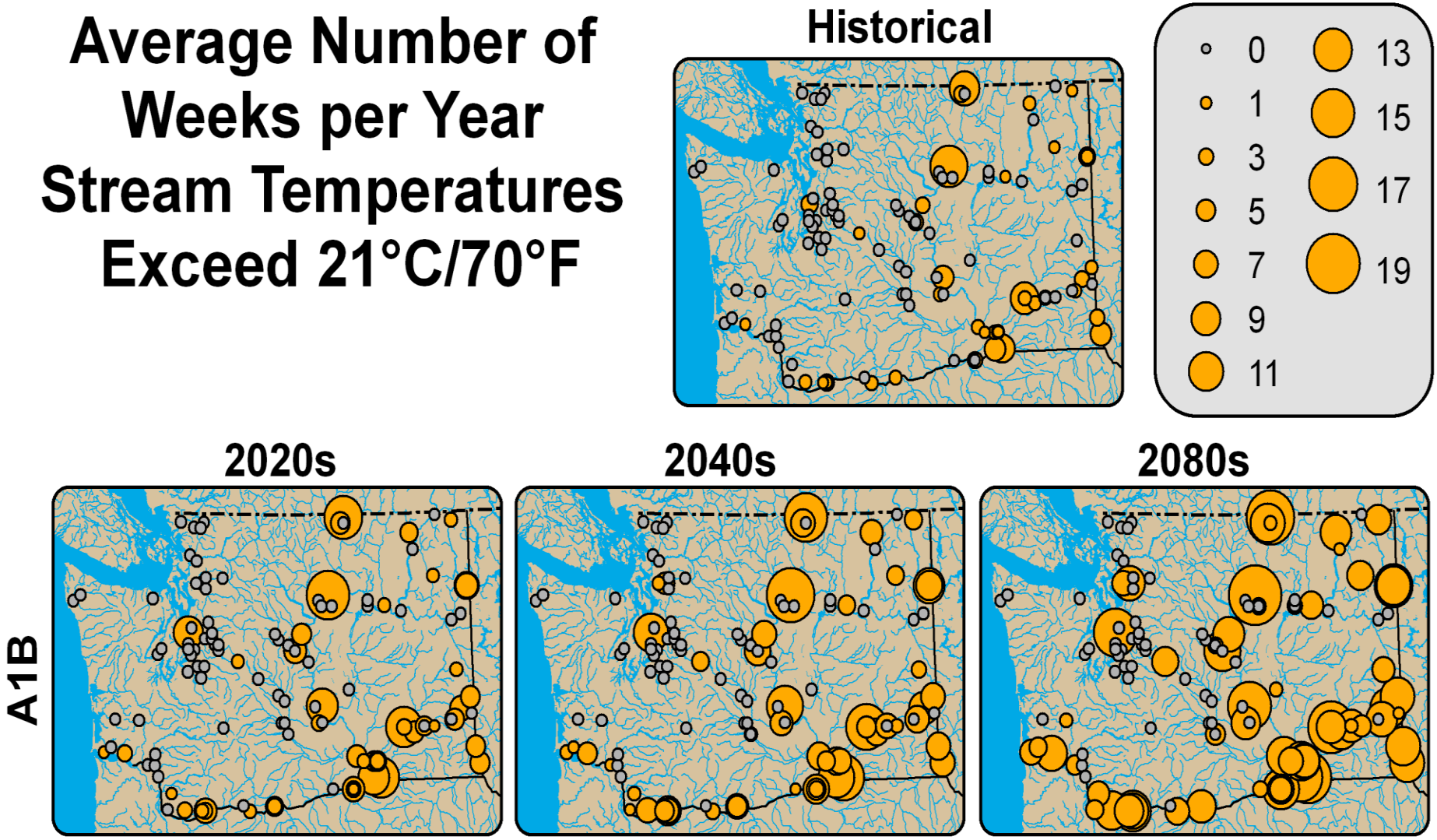
- Stream temperatures increase by +4.0°F to +4.5°F, on average
- Number of river miles exceeding thermal tolerances increases by >1,000 mi. for salmon, and >2,800 mi. for char



Does not include influence of groundwater, reservoir operations

Data source: NorWeST, Figure source: Climate Impacts Group

Average Number of Weeks per Year Stream Temperatures Exceed 21°C/70°F



Source: Mantua et al. 2010

Increased fire risk could affect habitat quality

Area burned by fire in the Columbia River Basin is projected to triple by 2040s, relative to median for 1916-2006. *(Littell et al. 2010, 2012)*

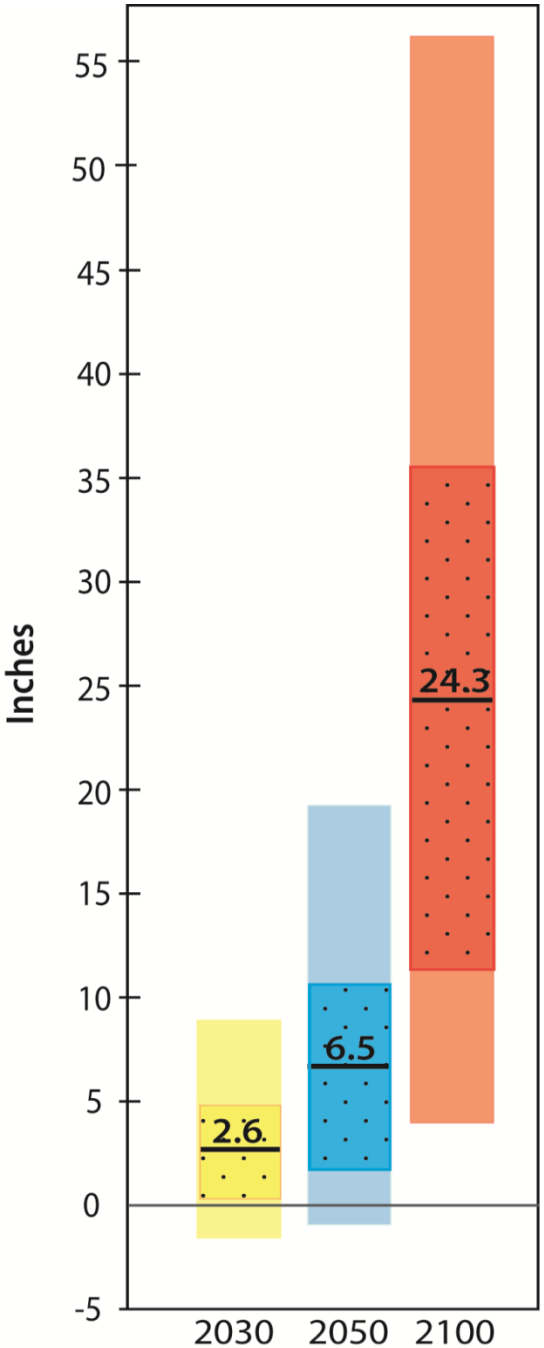
Western WA fire risk also increases

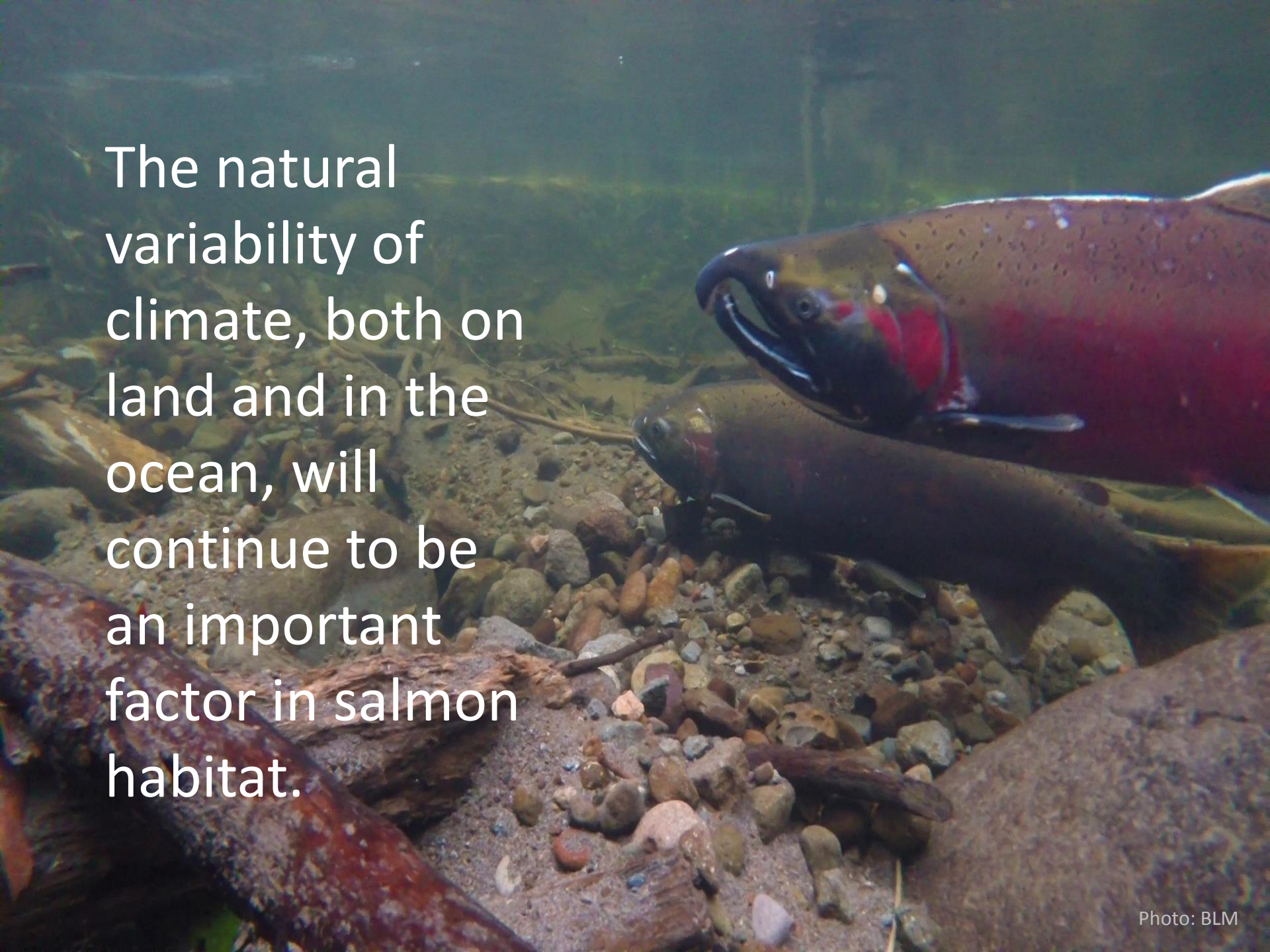
Stream temperature, sediment/nutrient loading rates affected

An aerial photo of the Paradise Fire shows smoke rising near the Queets River Sunday in the Olympic National Park. (U.S. Forest Service)

Sea Level Rise Projected in All Scenarios by 2100

Projected Range, Seattle *Relative to 2000 (NRC 2012)*	
2030	+2.6 in. *(range: -1.5 to +8.8 in.)*
2050	+6.5 in *(range: - 1.0 to +18.8 in)*
2100	+24.3 *(range: +3.9 to +56.3 in)*

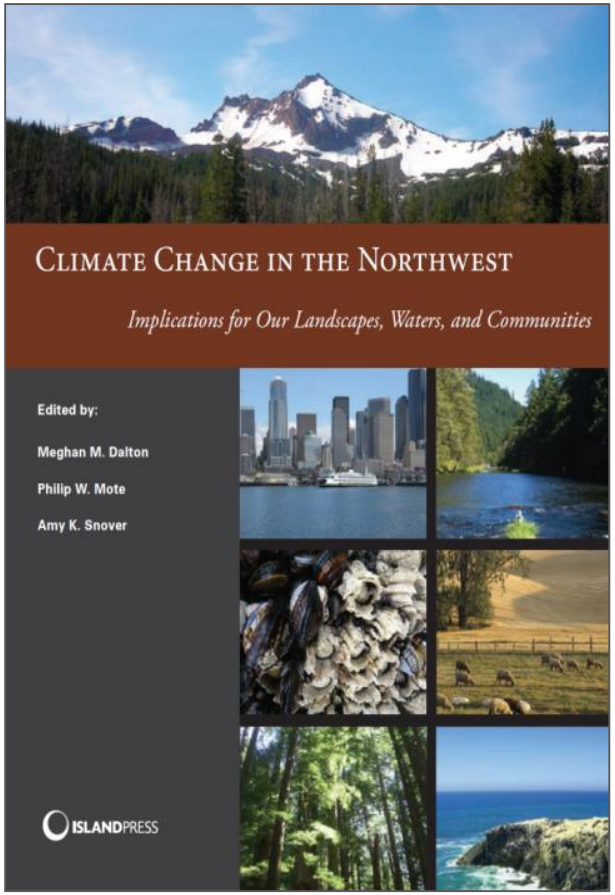



The natural variability of climate, both on land and in the ocean, will continue to be an important factor in salmon habitat.
Photo: BLM

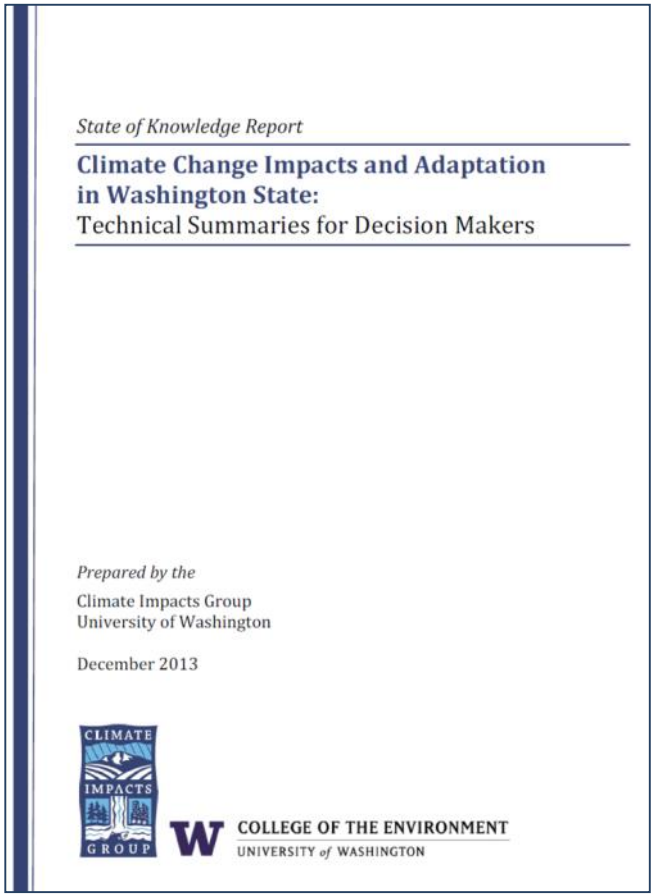
Key Points

- Salmon are affected by climate in all life stages, but the specifics of those impacts will vary by location and life history
- On the freshwater side, changes in streamflow volume and warmer summer stream temperatures are major challenges
- On the marine side, lots of unknowns – changes in upwelling? changes in food availability? Impacts of ocean acidification?
- Efforts to restore salmon habitat can provide critical time for adaptation
- The need, knowledge, and tools for preparing for climate change exist today.

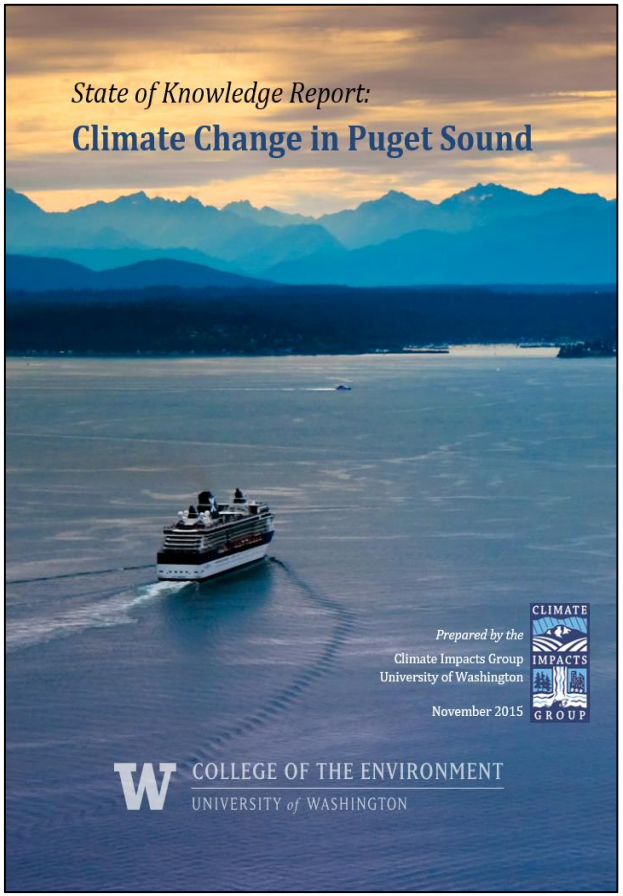
For More Details…



Dalton et al. 2013



Snover et al. 2013



Mauger et al. 2015

Available for download at https://cig.uw.edu/

The Climate Impacts Group

www.cig.uw.edu
cig@uw.edu

CLIMATE IMPACTS GROUP

COLLEGE OF THE ENVIRONMENT
UNIVERSITY of WASHINGTON

Northwest Climate Science Center

When do we expect winter 2015 to be "the new normal"(for winter)?

Dec-Feb 2015 was +5.6°F above average

	Low emissions (RCP 4.5)	High emissions (RCP 8.5)
Minimum (earliest):	**2045**	**2040**
10th percentile:	2049	2041
25th percentile:	2055	2048
50th percentile:	**2061**	**2056**
75th percentile:	2075	2061
90th percentile:	2088	2080
Maximum (latest):	>2099	2084

Natural variability not included here!

All results are for the PNW, relative to the average for 1970-1999. Based on evaluation of 40 climate model scenarios. The year listed for each model is the year when the future 30-year average is 5.6°F warmer than the average for 1970-1999 (i.e.: when will the conditions we saw this year be "the new normal").

SLR will shift coastal habitat types

NWF (2007) evaluation of impacts to coastal habitat at 11 locations in Washington and Oregon from 27.3" of sea level rise:

- 65% loss of estuarine beaches
- 61% loss of tidal swamps
- 44% loss of tidal flats
- 52% conversion of brackish marsh to tidal flats, transitional marsh, and salt marsh

Loss could affect availability of this habitat for spawning, juvenile rearing, migratory and over-wintering stopovers, commercial shellfish production

National Wildlife Federation (2007), Sea-level Rise and Coastal Habitats in the Pacific Northwest
An Analysis for Puget Sound, Southwestern Washington, and Northwestern Oregon

Responding to the Challenge of Climate Change at WDFW

earth is heating up
fish and wildlife in trouble
got to do something

Lynn Helbrecht
Climate Change/State Wildlife Action Plan Coordinator
Washington Department of Fish and Wildlife

For Today:

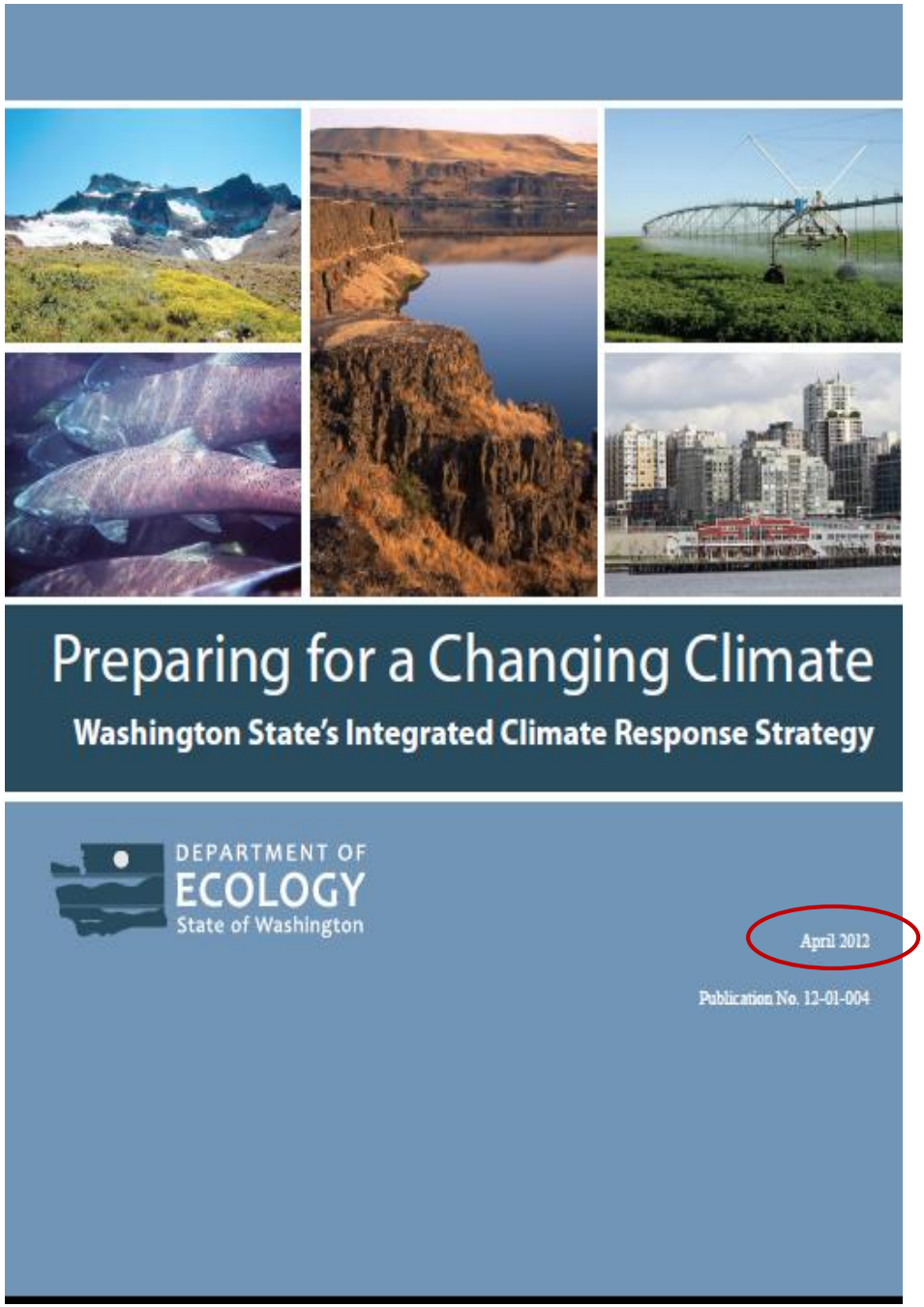
1. Brief overview of WDFW's approach
2. Lessons learned – how to integrate climate into our work?

Lynn Helbrecht

Climate Change/State Wildlife Action Plan Coordinator

Washington Department of Fish and Wildlife

WDFW lead a stakeholder advisory group to develop recommendations for fish, wildlife and plants for the **Washington State Integrated Climate response Strategy.**



Prepared in response to 2009 state legislation – the Climate Leadership Act

Summary of
Climate Change Effects
on Major Habitat Types
in Washington State
Marine And Coastal Habit
Summary of
Climate Change Effects
on Major Habitat Types
in Washington State
Shrub-Steppe and Grassland H
Produced by the Washington Department
and the National Wildlife Fed
July, 2011
NATIONAL WILDLIFE FEDERATION
Summary of
Climate Change Effects
on Major Habitat Types
in Washington State
Freshwater Aquatic and Riparia
Summary of
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on Major Habitat Types
in Washington State
Forest, Alpine, and Western Prairie Habitats
Produced by the Washington Department of Fish and Wildlife,
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July, 2011
NATIONAL WILDLIFE FEDERATION
FISH and WILDLIFE

Washington's Climate Change Response Strategy

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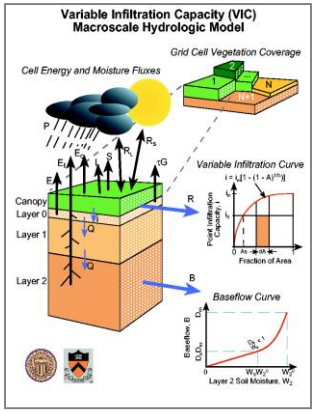
WDFW: responding to the challenge of climate change

SCIENCE
Assessing changes expected to fish, wildlife and their habitats from climate change

EDUCATION
Building our capacity to respond

INTEGRATION
integrating adaptation into core work

COLLABORATION
With agencies, tribes, conservation partners



WDFW Strategic Goals for Climate Change

- Practice conservation at landscape scales in response to a changing climate
- Develop capacity: provide tools, resources, and training
- Be leaders in promoting awareness of impacts on fish and wildlife.
- Explicitly consider risks of climate change in capital investments and planning.

What have we learned so far?

Lesson #1

A lack of tools or data is not the problem!

Identify decisions or actions that are vulnerable to climate change *FIRST,* and *THEN* secure the necessary data to inform the decision.

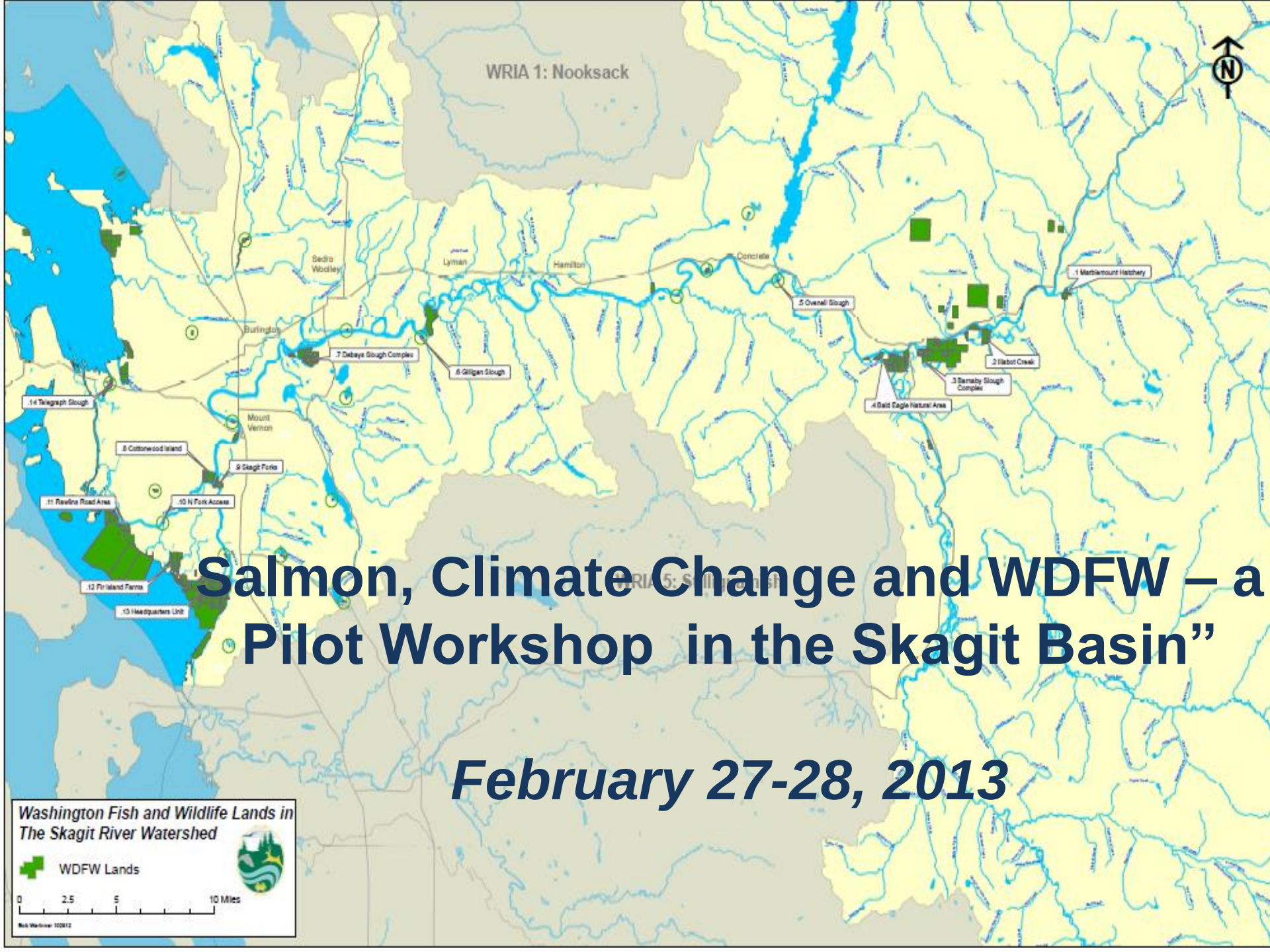
Two ways to look at it:

1. How will climate change affect the fish and wildlife resources we manage? *(top down)*
   - *WDFW mission: To preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities.*

2. What decisions do we make – and how will climate change affect those decisions? *(bottom up)*

Climate-sensitive actions at WDFW

- **Acquisition** of new lands for habitat – will they help build resilience to climate change?
- **Restoration projects** – will our investment continue to provide expected benefits over time?
- **Technical assistance and grants**– are we providing appropriate guidance for marine and riparian areas?
- **Species management and recovery** for climate sensitive species – have we addressed climate?
- **Hydraulic Permitting** – are we adequately considering the risk of changes in peak flow?
- **Infrastructure;** culverts, bridges, roads and hatcheries



Salmon, Climate Change and WDFW – a Pilot Workshop in the Skagit Basin"

February 27-28, 2013

GOALS:

1. Identify WDFW decisions and activities in the Skagit that are vulnerable to climate change.
2. Identify science needs and adaptation options to make those activities more resilient.

Six Wall Charts/Small Groups:

- Harvest Management
- Fish Passage
- Habitat Restoration
- Habitat Acquisition
- Hatcheries
- Hydraulic Permit Approvals

HARVEST MANAGEMENT

Climate Sensitive Decisions	Why is this decision vulnerable?	What is the risk of not addressing climate?

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2. Monitoring	• Increased variability = increased uncertainty = reduced harvest or increased monetary effort. • May need to increase partnerships (share data)	HIGH
3. Determining directed harvest (salmon, all fish, shellfish species, stock, hatchery vs wild fish)	• Overharvest vulnerable species. • Missed harvest opportunity with non-vulnerable species.	VERY HIGH
4. Recovery goals balanced with harvest goals	• Overestimating productivity sets unrealistic goals. • Habitat capacity changes, changing balance relationships	VERY HIGH

Climate Sensitive Decision	Adaptation Option	Policy Implications	Science or Information Needs *(why and rank?)*	Stakeholders

Climate Sensitive Decision	Adaptation Option	Policy Implications	Science or Information Needs	Stakeholders
1. Models	• Capture climate change dynamics in models, new distributions, stock structure. • Test models with new base periods reflecting climate change. • Use shorter, more recent data sets.	Tribal agreement PFMC/PST agreement Budgets	• Provide guidance on climate change base periods, data sets. • Identify gaps and suggest research and monitoring to address. • Inventory exiting models and which parameters/data sets may be most vulnerable. • Examine model performance.	All recreational and commercial harvesters.

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3. Determining directed harvest	• Put most vulnerable populations on high priority list for monitoring. • Begin planning for climate change now, with other managers, including adapting to increased uncertainty. • Develop additional selective harvest tools, lower by catch tools.	Agreement among fishery managers, state, tribal, federal, PEMC. Legislation?	• Identify highest vulnerability populations. • Improved monitoring for most vulnerable species. Both productivity and harvest impacts. • Projections of climate change impacts, species that will do well and species that won't? • Review HGMPs for climate change. • Evaluate methods for incorporating uncertainty.	Harvesters, NGOs, Salmon Recovery Boards, Other Hs.
4. and 5. Develop Yield models, balance recovery goals with	Building more long term uncertainty into population models (that inform harvest decisions), [precautionary yield models]. **		** More understanding of productivity dynamics of "other" species, the ones we don't focus on.	

HARVEST MANAGEMENT

CLIMATE SENSITIVE DECISIONS

- ***Yield models*** were seen as sensitive because they are based on historical data and on previous and static conditions. They tend to over-predict recruits per spawner, which can lead to overharvest, and may lead to false assumptions regarding percent hatchery fish among harvestable adults. The risk of not addressing these climate sensitivities was seen as very high, particularly for certain river systems and species.
- ***Monitoring*** was also seen as having high sensitivity, because of increased biological and ecological variability and increased uncertainty, which was seen as possibly leading to reduced harvest or increased effort. May also lead to a need to increase partnerships in terms of data sharing.
- ***Determining directed harvest*** (for salmon, other fish species and shellfish) was seen as having a very high climate sensitivity, because of the possibility of overharvest of vulnerable species and missed harvest opportunity with non-vulnerable species.
- ***Balancing recovery goals with harvest goals*** was seen as highly sensitive because variability from climate change may lead to overestimating productivity and setting unrealistic goals. As habitat capacity changes, it will change the balance of relationships between species.

ADAPTATION OPTIONS

- Capture climate change dynamics in models, project new distributions and stock structure.
- Test models with new base periods reflecting climate change and use shorter, more recent data sets.
- Develop Yield models that balance recovery goals with harvest goals. Build more long term uncertainty into population models that inform harvest decisions (precautionary yield models; see science needs)
- For determining directed harvest, put most vulnerable populations on high priority list for monitoring.
- Begin planning for climate change now, with other managers, including adapting to increased uncertainty.
- Develop additional selective harvest tools and lower bycatch tools.

CONSIDERATIONS

- Tribal agreement
- PFMC/PST agreement
- Budgets

SCIENCE NEEDS

- Provide guidance on climate change base periods, data sets.
- Identify gaps and suggest research and monitoring to address.
- Inventory existing models and which parameters/data sets may be most vulnerable.
- Examine model performance.
- Identify most vulnerable populations and why.
- Improved monitoring for most vulnerable species, for both productivity and harvest impacts.
- Projections of climate change impacts- species that will do well and species that won't?
- Review HGMPs for climate change.
- Evaluate methods for incorporating uncertainty.

HATCHERIES

CLIMATE SENSITIVE DECISIONS

- ***Flow management*** Not enough river flow may increase hatchery costs since we would need to rely on more well water. Also changes in water temperature might affect growth rates.
- ***Release dates*** of hatchery reared fish were also seen as sensitive because they are timed to maximize survival and physical condition. If timing in the establishment of food resources in receiving waters is changing, then we may need to change release time of hatchery fish. Decisions for release dates are a year out so it requires a lot of planning and advance information.
- ***Brood stock collection is also potentially vulnerable*** – Climate affects ocean survival and may affect return timing for fish, which can have cascading effects on broodstock abundance and collection. The group viewed a changing climate as very likely to change the biological baseline for hatchery programs over time, which the group saw as having a potentially large effect on hatchery program operation and maintenance. This sensitivity was seen as especially likely to impact our success for species of low abundance, if ocean survival falls. Flow changes might also affect our ability to get fish for broodstock.
- ***Disease Issues*** (in hatcheries and post release) are sensitive to climate because warmer temperatures or other variables affected by climate may affect the frequency of diseases. We may need to shift to a different water source.

ADAPTATION OPTIONS

- Evaluate how we manipulate flows to the hatchery relative to future changes. We could do a cost/benefit analysis based on changing surface flow into the hatchery, changing flows from wells using pumps, recirculation strategies and opportunities to find different water sources
- Vary release dates relative to stream flows. Develop a manual that guides hatchery facility managers to how change or reaching particular thresholds might trigger different action.
- Conduct a hatchery vulnerability assessment - what characteristics will make some hatcheries more vulnerable to climate change than others? We could target our adaption response to those facilities.
- Hatcheries – with new dollars from Jobs Bill [facilities updates] can we integrate climate change, and integrate into HGMPs? (Hatchery Genetic Management Plans)
- Provide an example of a hatchery built & operated for climate change resilience

CONSIDERATIONS

- Smolt to adult recruit (SAR) projections or outcomes – tie into harvest management
- If the costs of altering flow goes up or availability of water for the hatchery changes, then we need to tee up a discussion.
- Water rights might be an issue if flow availability changes.
- Engage the Hatchery Scientific Review Group
- Fishery management and co-management need to be considered.

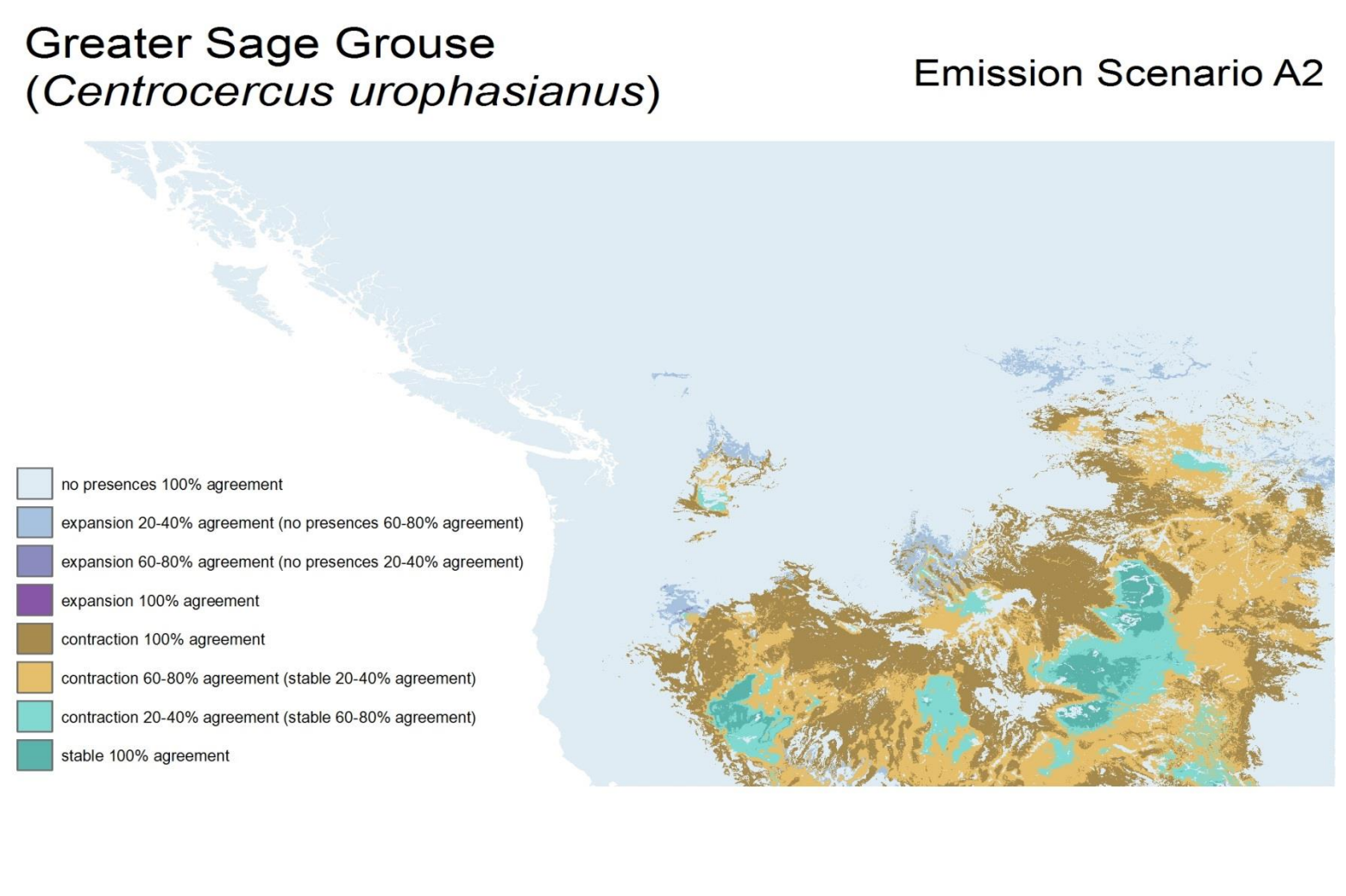
SCIENCE NEEDS

- For release dates – need to understand the freshwater ecological consequences of altering the juvenile fish size at time of release. Need more monitoring to understand how release dates are working.
- For flow management, need information and monitoring data on flows and water temperature.
- Need a better understanding on diseases associated with different water sources.
- Need models to help us understand ground water flow (specific to wells if we expect changes to groundwater.)
- Need to better understand flood window (seasonality; for example, do not put fish in pond until Dec 15). Flood can affect the whole facility. Location of facility can affect maintenance.
-

Lesson #2

The “inquiry” – asking the climate question is a critical step. Providing guidance and tools to do this in a structured, systematic manner is key.

Lesson #3: We need to think about climate change in the context of existing stressors



State Wildlife Action Plan – addressing climate change for 268 Species of Greatest Conservation Need

- Which species are most vulnerable and why?
- For highly vulnerable species, how will climate change exacerbate existing stressors?
- When is climate a significant risk factor?
- Which conservation actions help to mitigate climate risk?

Table 5-1: SGCN – Preliminary Climate Watch List

SGCN with moderate-high or high vulnerability and high confidence.

MAMMALS	American Pika Cascade Red Fox Keen's Myotis Killer Whale Lynx Northern Bog Lemming Olympic Marmot Pacific Marten Wolverine Woodland Caribou
BIRDS	Spruce Grouse White-tailed Ptarmigan
AMPHIBIANS	Cascade Torrent Salamander Olympic Torrent Salamander Tiger Salamander
FISHES	Bull Trout Coastal Recovery Unit and Mid-Columbia Recovery Uniit Hood Canal Summer Chum ESU Lower Columbia Chinook ESU Lower Columbia Coho ESU Lower Columbia and Middle Columbia Steelhead DPS Pacific Cod (Salish Sea Population) Pacific Herring Puget Sound Chinook ESU Puget Sound Steelhead DPS Snake River Chinook – Spring/summer ESU Snake River Basin Steelhead DPS Surf Smelt Upper Columbia Spring Chinook ESU Upper Columbia Steelhead DPS
INVERTEBRATES	Caddisfly ((Goereilla baumanni) Northern Forestfly Rainier Roachfly Olympia Oyster

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Northern Bog Lemming

Excerpt from the State Wildlife Action Plan

	STRESSOR DESCRIPTION	ACTION NEEDED
1	Lack of data on current status and distribution.	Determine distribution and population status.
2	Habitat disturbance by road-building.	Identify and protect sites.
3	Habitat disturbance by grazing.	Identify and protect sites from excessive grazing.
4	Snow compaction by snowmobiles.	Explore this conflict with stakeholders.

Lesson #4: Successful adaptation to climate change means doing more of what we already do (selectively), NOT a wholesale new approach

Climate change information should help us target existing efforts.

For example, we spend millions of dollars to restore salmon habitat.

How could we use a climate change lens to strategically target those resources?

Slide credit: Tim Beechie, NW Fisheries Science Center

Salmon Restoration and Climate Change

(from Beechie et al, 2012)

		CLIMATE IMPACTS			
CATEGORY	**COMMON TECHNIQUE**	**Ameliorates temperature increase**	**Ameliorates base flow decrease**	**Ameliorates peak flow increase**	**Increases salmon resilience**
Longitudinal Connectivity (Barrier removal)	Removal or breaching of dam				
	Barrier or culvert removal				

Salmon Restoration and Climate Change

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CATEGORY	COMMON TECHNIQUE	Ameliorates temperature increase	Ameliorates base flow decrease	Ameliorates peak flow increase	Increases salmon resilience
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Longitudinal Connectivity (Barrier removal)	Removal or breaching of dam	●	●	○	●
	Barrier or culvert removal	○	○	○	●
Lateral connectivity (floodplain reconnection)	Levee removal	●	○	●	●
	Reconnection of floodplain features (channels, ponds)	●	○	●	●
	Creation of new floodplain habitats	●	○	●	●

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	Reconnection of floodplain features (channels, ponds)	●	○	●	●
	Creation of new floodplain habitats	●	○	●	●
Vertical Connectivity (incised channel restoration)	Reintroduce beaver (dams increase sediment storage)	●	●	●	●
	Remove cattle (restored vegetation stores sediment)	●	●	●	○
	Install grade controls	●	●	●	○

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Vertical Connectivity (incised channel restoration)	Reintroduce beaver (dams increase sediment storage)	●	●	●	●
	Remove cattle (restored vegetation stores sediment)	●	●	●	○
	Install grade controls	●	●	●	○
Stream Flow Regimes	Restoration of natural flood regime	●	●	○	○
	Reduce water withdrawals	●	●	○	○
	Disconnect road drainage from streams	○	○	●	○

Incorporating Future Climate Projections into Culvert Design

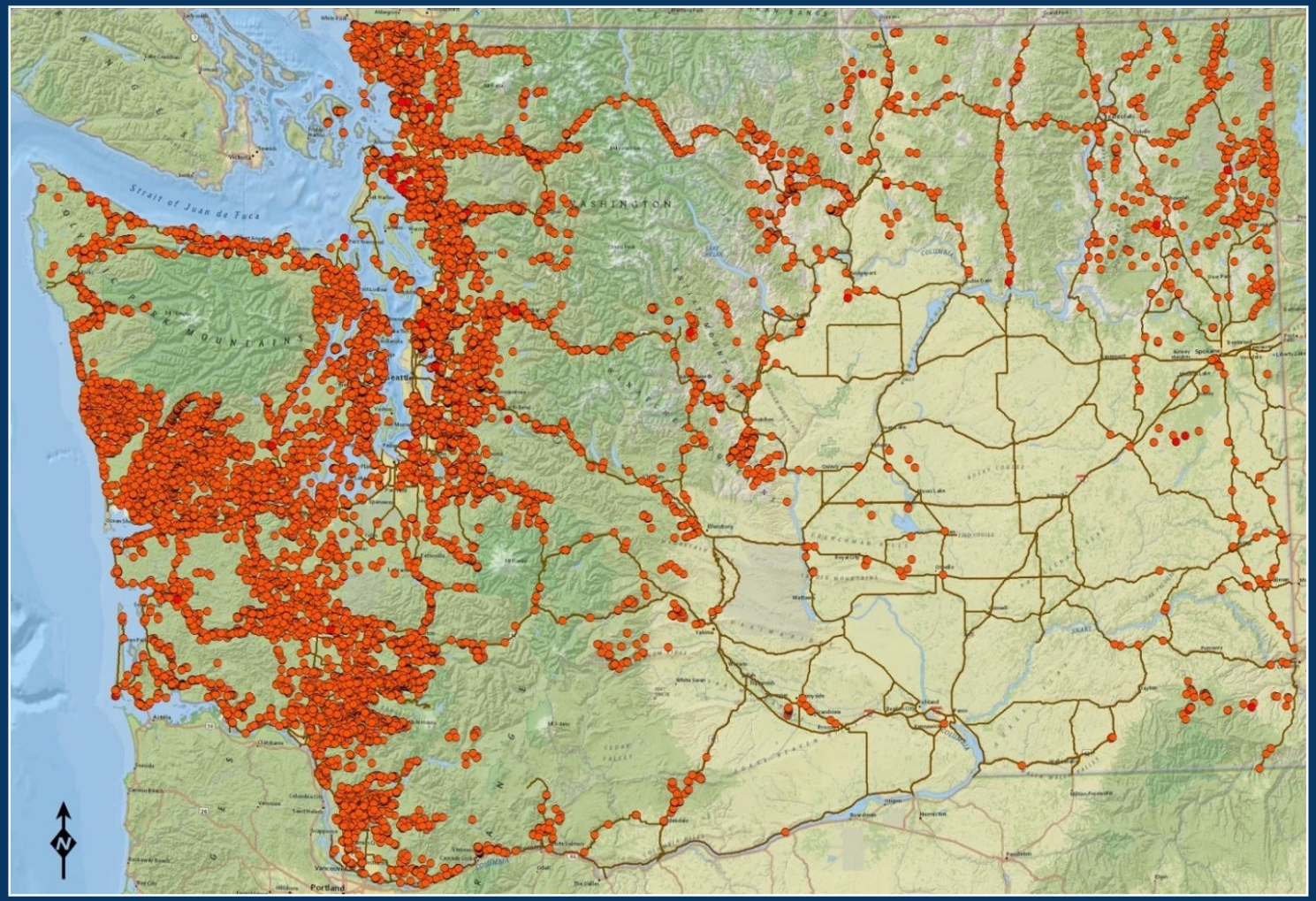
Jane Atha and George Wilhere

Washington Department of Fish and Wildlife

Known culvert barriers in Washington

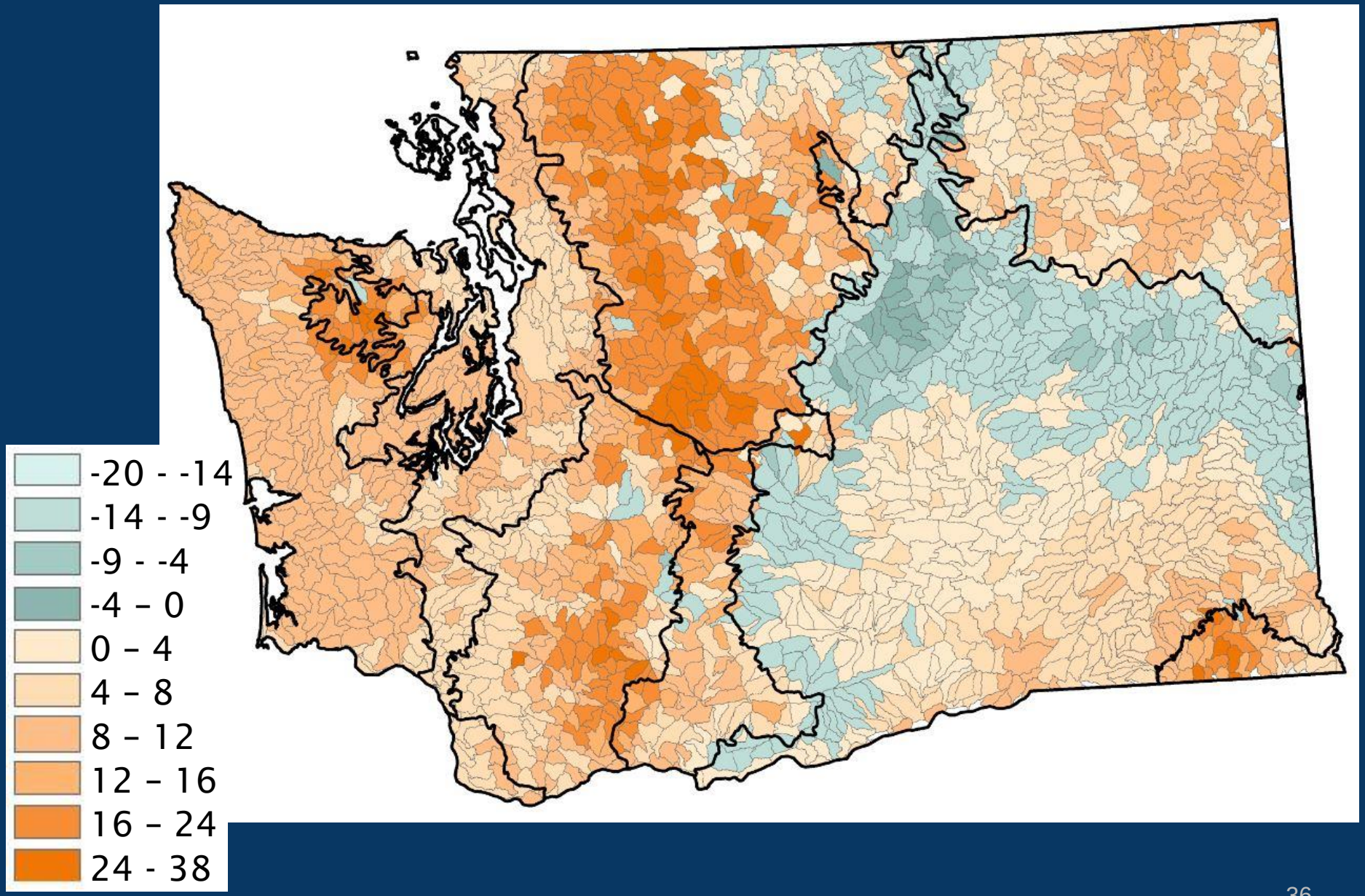
14,000 known culvert barriers in database

35,000 estimated culvert barriers state-wide



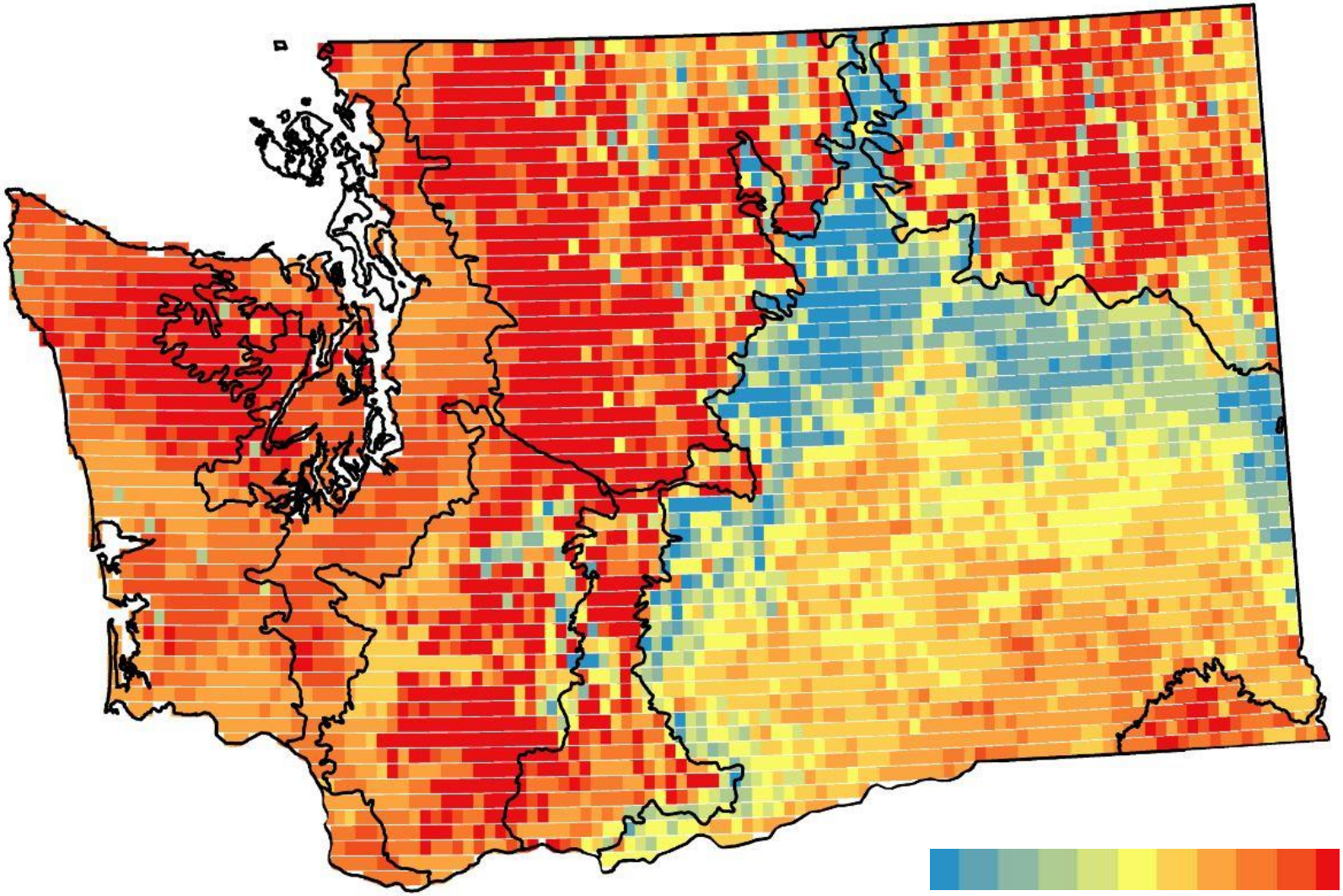
$25 to $100 billion to replace ~25,000 culverts

Mean % Change BFW: 2070 - 2099



Implications of Climate Change for Future Culvert Function

Culverts Installed Today Likely to be too Narrow



Number of models projecting >BFW: 0 10

Lesson #5

Even if it makes sense to address climate change in our work, and even if staff believe it to be important, it doesn't happen automatically.

We need to create an institutional framework to require appropriate action.

Draft Agency Policy for Climate Change

1. **PURPOSE AND SCOPE**

   Provide guidance for explicitly assessing and addressing risks to agency investments due to current and potential future impacts of climate change.

2. **DEFINITIONS**

3. **PRINCIPLES FOR ADDRESSING CLIMATE CHANGE**

4. **POLICY**

   It is the policy of WDFW to manage its assets so as to better understand, mitigate and adapt to climate change. WDFW will assess the risks that climate change poses to climate-sensitive investments in the activity areas described below, and modify projects as necessary to minimize those risks.

   A. Strategic Planning
   B. Habitat Acquisition and Restoration
   C. Agency Facilities and Infrastructure
   D. Technical Assistance and Resource Planning
   E. Grants
   F. Leadership
   G. Regulatory Processes
   H. Reducing Greenhouse Gas Emissions

5. **PROCEDURES**

DRAFT

Principles for climate-smart conservation
– adapted from Stein et al, 2014

1. **Invest in needed capacity.**

   Climate change is a unique challenge that requires investing in new training, tools, and science to enable WDFW to effectively address climate change impacts.

2. **Embrace forward looking goals.**

   Conservation goals focus on future, rather than past climatic and ecological conditions; strategies take a long view, but account for near term conservation challenges and needed transition strategies.

3. **Consider broader landscape context.**

   On the ground actions are designed in the context of broader geographic scales to account for likely shifts in species distributions, to sustain ecological processes and to promote collaboration.

4. **Manage for interactions of multiple stressors**

   Impacts from changing climate are often first felt through their effect on ecological disturbance (wildfire, flooding, insect and disease). Managing ecosystems for resilience to these forces is a wise place to focus resource action.

5. **Adopt strategies robust to uncertainty.**

   Strategies and actions ideally provide benefit across a range of possible future conditions to account for uncertainties in future climatic conditions and in ecological and human responses to climate shifts.

6. **Account for climate influence on project success.**

   Considers how foreseeable climate impacts may compromise project success; generally avoids investing in efforts likely to be undermined by climate-related changes, unless part of an intentional strategy.

7. **Employ agile and informed management.**

   Conservation planning and resource management are capable of dynamic adjustment to accommodate uncertainty, take advantage of new knowledge and cope with rapid shifts in climatic, ecological, and socioeconomic conditions.

8. **Safeguard people and nature.**

   Strategies and actions ideally enhance the capacity of ecosystems to reduce climate vulnerabilities for people as well as wildlife, and to sustain the benefits natural ecosystems provide to both.

THANK YOU!

QUESTIONS?

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