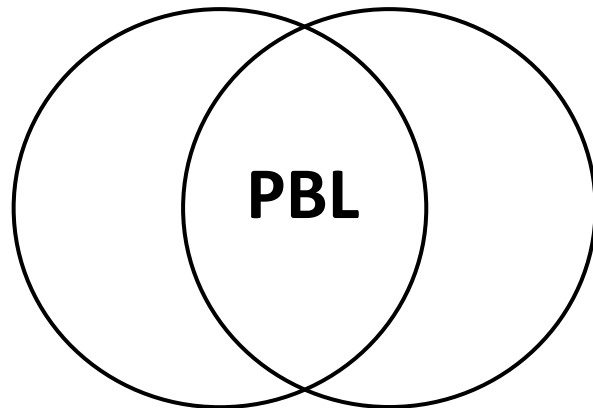




PBL for Watershed Systems Thinking

**Problem-Based Learning in the Classroom
to meet Watershed Management Goals**

Classroom Teachers
Academic standards for the
classroom that must be met



Resource Managers
Watershed systems challenges in
the community that must be met

Natural Systems

climate
water cycle
watershed / ecosystem integrity

Human Infrastructure

water supply
wastewater treatment
stormwater management

Key Program Elements

- 1. Focus on middle and high school students**
- 2. Support ongoing professional development for teachers**
- 3. Integrate extended units of instruction**
- 4. Design district-wide dissemination strategies**
- 5. Achieve economies of scale across WRIAs 7, 8, 9, 10**

Key Program Elements

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Goals

1. Establish an annual rhythm of PBL Curriculum Design Labs. (Summer, Fall, Winter, Spring)
2. Collaborate on curating and posting a Living Textbook.
3. Produce short videos on technical subjects for classroom inquiry.
4. Students design, track and report solutions to stakeholders.
5. Map impact online (household, classroom, community) <https://mywater.world>

Living Textbook - policy, plans, and performance data

Students need opportunities to read, interpret and act on real issues...

- **Puget Sound Partnership - Vital Signs**
- **Salmon and Orca recovery efforts led by local WRIA's / Tribal Treaty Rights**
- **EPA Superfund Site Cleanup Plan / Ecology Water Quality Plans**
- **Duwamish Valley Action Plan**
- **Our Green-Duwamish Strategy**
- **Duwamish Blueprint – Salmon Habitat in the Transition Zone**
- **Fish Consumption Advisory**
- **Regreen the Green**
- **City Stormwater Management Programs**

VIDEO CHANNEL

Short technical videos to
catalyze classroom inquiry



[What is the Economic Value of our Waters...](#)

by [peterdonaldson50](#) on November 8, 2018 at 4:03 AM

114 Views - 0 Comments



[Green Infrastructure Economy in Puget So...](#)

by [peterdonaldson50](#) on November 8, 2018 at 2:32 AM

116 Views - 0 Comments



[Pollutant Loading Assessment - Buildi...](#)

by [peterdonaldson50](#) on November 8, 2018 at 1:28 AM

116 Views - 0 Comments



[Equity Mapping in Our Watershed](#)

by [peterdonaldson50](#) on October 24, 2018 at 3:28 AM

236 Views - 0 Comments



[Re-Green the Green](#)

by [peterdonaldson50](#) on October 24, 2018 at 3:02 AM

174 Views - 0 Comments



[What Do Our Chinook Salmon Need?](#)

by [peterdonaldson50](#) on October 24, 2018 at 2:16 AM

143 Views - 0 Comments



[Microplastics and Me](#)



[Earthquake History of the Green](#)



[Howard Hanson Dam Engineering](#)

May 24

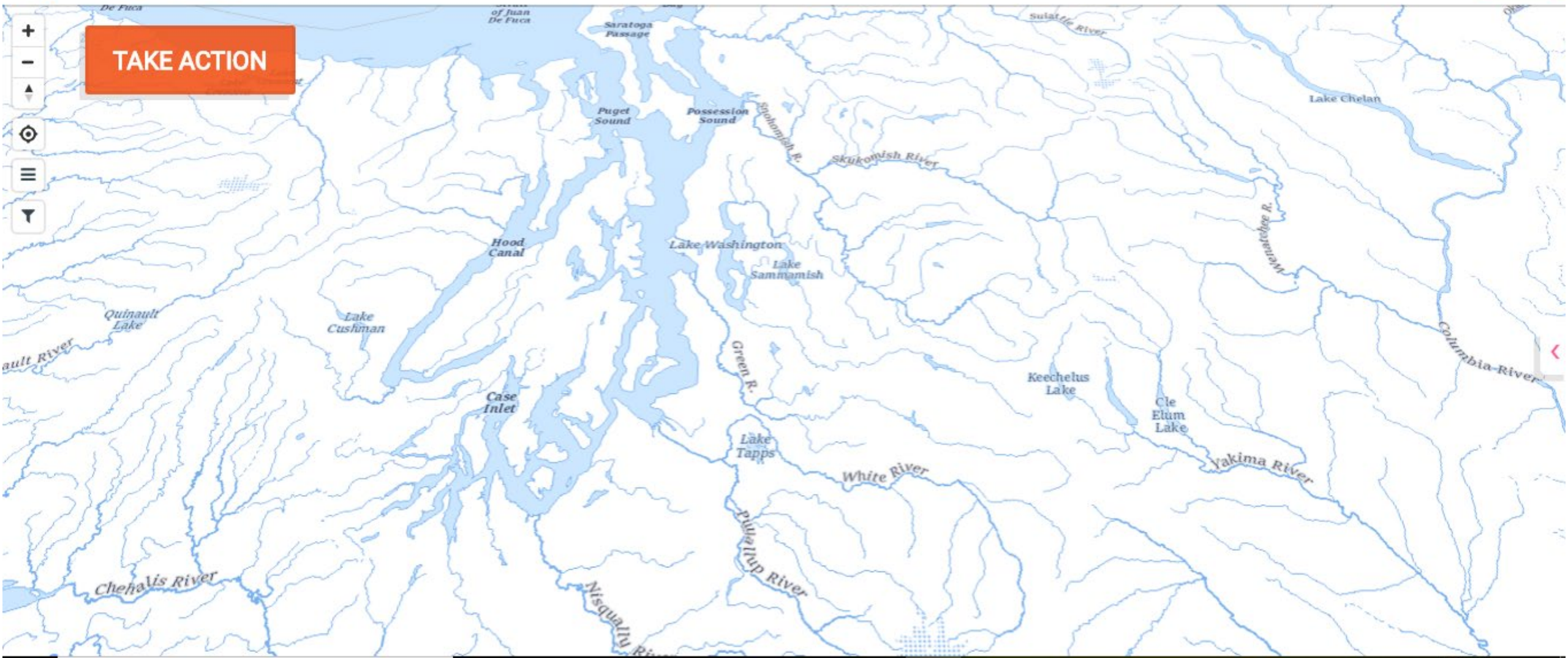
Auburn Performing Arts Center

My Watershed

MAP LAYERS | COMMUNITY | CLASSROOM PROJECT

SIGN IN

TAKE ACTION



My Watershed

MAP LAYERS | COMMUNITY | CLASSROOM PROJECT

SIGN IN

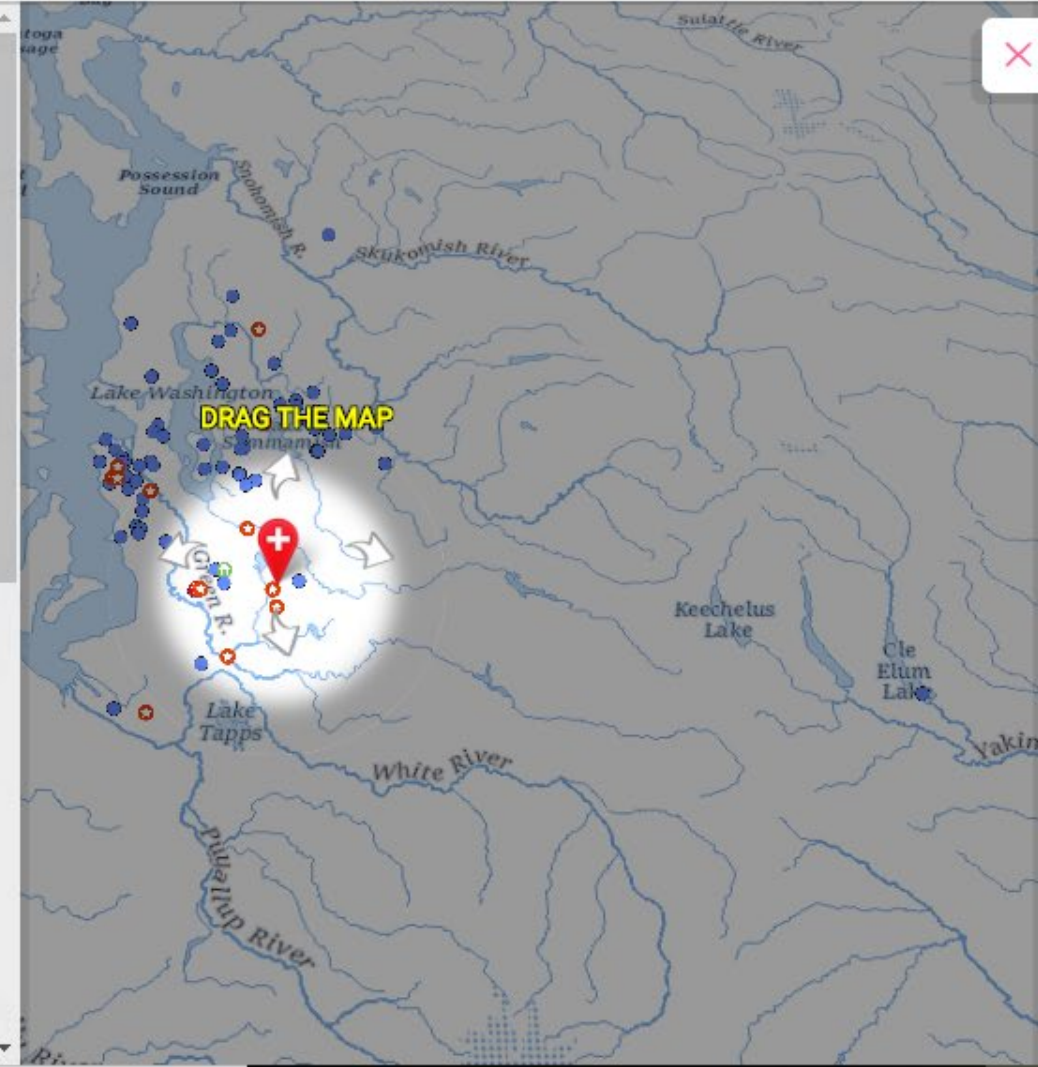
Map Layers:

Basemaps

- Topography ?
- Hillshade ?
- Hydrography** ✓ ?
- Bathymetry ?
- Satellite View ?
- 1936 Aerial View ?
- Simple Canvas ?

Map Layers

- Featured Sites** ✓ ?
- Featured Projects** ✓ ?
- Stewardship Actions** ✓ ?
- WRIA 7 Streams ?
- WRIA 8 Streams ?
- WRIA 9 Streams ?
- WRIA 10 Streams ?



- FEATURED PROJECT
- CONSERVE WATER
- PREVENT STORMWATER POLLUTION
- THINK - TOILET, SHOWER, SINK
- CONSERVE ENERGY
- WASTE LESS
- COMMUTE LOW CARBON
- EAT LOCAL ORGANIC
- RESTORE SALMON HABITAT

Alignment with the WRIA 9 Salmon Habitat Plan

Chapter 3.0 - Impacts on Salmonid Habitat in WRIA 9: History, Factors of Decline, and Policy Recommendations

Personal Actions in Daily Life

WRIA 9 Salmon Habitat Plan - Policy ES1:

Support vigorous education/information efforts to promote greater awareness of the watershed, its resources—including salmon—and how people depend on and affect those resources. School districts are encouraged to include watershed concepts and salmon recovery into school curricula, where feasible, and include watershed stewardship as a community service opportunity.

Policy ES3: Increase the number of volunteer stewardship events, better promote the events, and strive to retain volunteers over time for salmon restoration/protection projects on public lands.

Policy ES4: Develop, continue, expand, and improve programs to encourage positive personal action in daily life (such as residential stormwater BMP's)

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Current Program Development....

16 Teachers - Kent, Auburn, Highline, Seattle and Tukwila

Curriculum Coordinators - Kent, Auburn, Highline and Enumclaw

1. Chief Sealth High School (Seattle) 9th grade Language Arts: ***My River Story***
2. Kent 6th Grade Integrated: ***Stormwater Pollution Solutions***
3. Kent 7th Grade Science: ***Toxins in Salmon***
4. Auburn 6th Grade Science: ***Toxins in Salmon***
5. Auburn 7th Grade Science: ***Watershed Geography / Fish Passage at Howard Hanson Dam***
6. Auburn 8th Grade Science: ***Watershed Ecological Integrity***
7. Auburn 9th Grade Biology: ***How can human actions in Auburn impact Orcas in Puget Sound?***
8. Highline 10th Grade Chemistry: ***Toxics Impact on Salmon's Sense of Smell***
9. Highline Big Picture School Sustainable Cities Internship: ***How Sustainable is My City?***
10. Tukwila 10th Grade Chemistry: (new team forming)

Near Term Action

2018-2022 Puget Sound Action Plan

Regional Priority: CHIN7.1 - Protect and/or restore critical habitat for salmon populations.

Desired Outcome for CHIN7.1 Habitats critical to salmon life history types are prioritized for protection and restoration actions to maintain/regain key habitat functions for salmon (such as juvenile rearing habitat, predation, refuge, etc.).

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Desired Outcome for CHIN7.1 Habitats critical to salmon life history types are prioritized for protection and restoration actions to maintain/regain key habitat functions for salmon (such as juvenile rearing habitat, predation, refuge, etc.).

1. Curriculum pathways ***align academic standards with the Vital Signs.***
2. Expand strategic justification beyond ecosystem connectivity and commercial viability to shaping a ***new stewardship ethic.***
3. Most of the broad demographic we wish to educate ***send their children to public school.***
4. Well-informed youth can have significant impact on ***behavior change at home*** and can nudge policymakers to prioritize the future.

How can we build a shared cost model
to support the maturation of
this program over time?

One Teacher Fellow plus 10 peers in One School District

\$2,000 12-month stipend for one Teacher Fellow @ \$2,000 stipend

\$5,000 Professional development for peer network (10 peers @ \$500 sub/stipend)

\$7,000 Unit expense

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\$7,000 Unit expense

Four Teacher Fellows plus 20 peers in One School District

\$8,000 Team of 4 Fellows from one school district @ \$2,000 stipends

\$10,000 Professional development for peer network (20 peers @ \$500 sub/stipend)

\$18,000 Unit expense

One Teacher Fellow plus 10 peers in One School District

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20 Teacher Fellows plus 100 peers from Five School Districts

\$40,000 20 Fellows @ \$2,000 stipends

\$50,000 Professional development for peer network (100 peers @ \$500 sub/stipend)

\$90,000 Mature Program

\$99,600 Program Coordination

\$189,600

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\$189,600

\$30,000 from each participating WRIA

\$30,000-\$90,000 in grants, donations and sponsorships

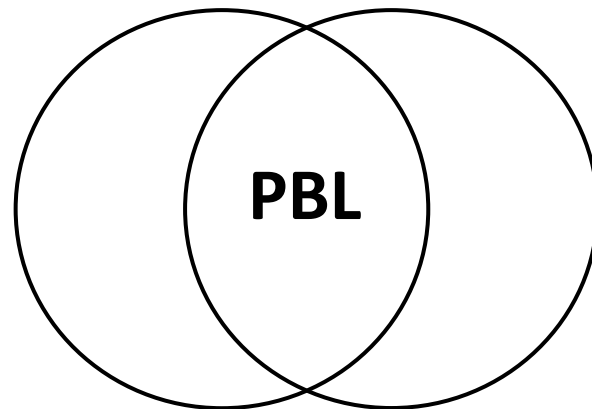
\$10,000-\$20,000 in-kind from partners



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**Problem-Based Learning in the Classroom
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Academic standards for the
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BUDGET Estimates

Program Coordination Expense

\$45,000 Collective impact coordination, coaching, communications, grant writing

\$18,000 Intern Program Coordination, green jobs, workforce development

\$9,000 Intern Stipends (6 Interns x \$1,500)

\$5,000 Curriculum Materials curation and printing

\$3,600 Website Management – Living Textbook, Curriculum, Case Studies, Video posting

\$12,000 Community Impact Mapping Website (design, content, admin)

\$2,000 Watershed Symposium – Education Track (subs/registration fees \$200x10 Teachers)

\$5,000 Video Production – “SustainabilityTALKS - Experts in the Classroom”

\$99,600