

Health impact assessment for Seattle's Duwamish River Superfund cleanup plan

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- ☐ **Linn Gould** **Just Health Action**
- ☐ **BJ Cummings** **Duwamish River Cleanup Coalition/
Technical Advisory Group (DRCC/TAG)**
- ☐ **Funders** **Health Impact Project – a collaboration of
the Robert Wood Johnson Foundation and
The Pew Charitable Trusts**

**UW Rohm and Haas Professorship in
Public Health Sciences**



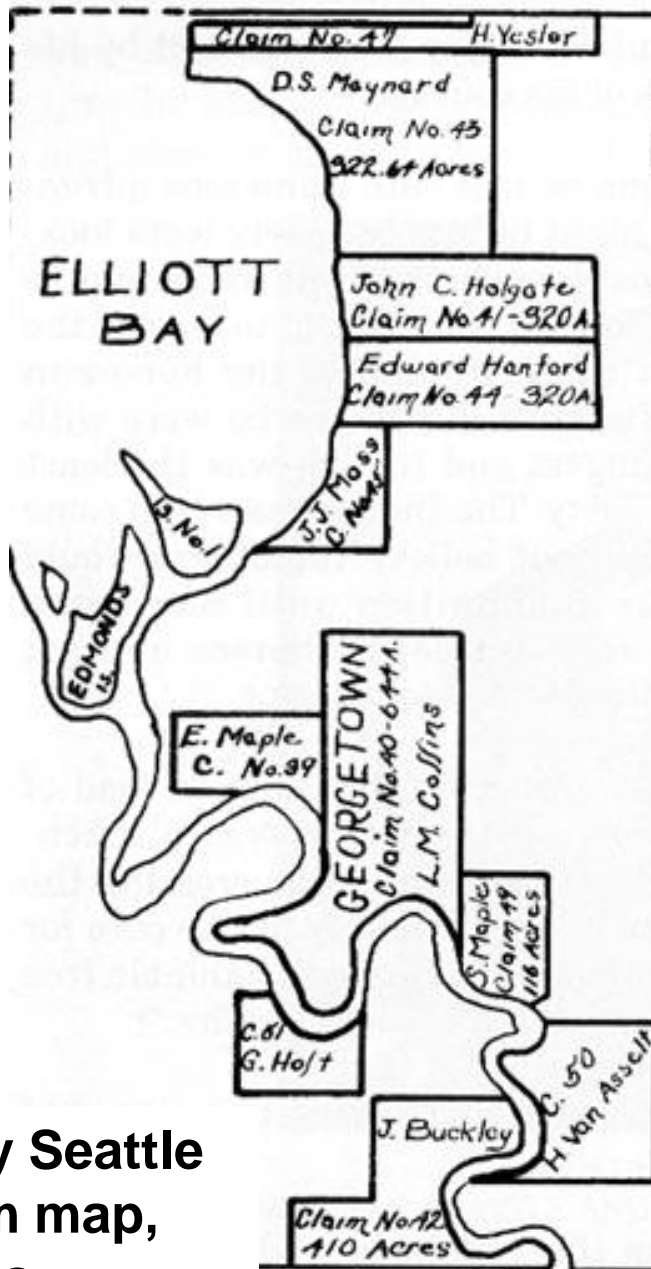
Puget
Sound

Seattle

Elliott
Bay

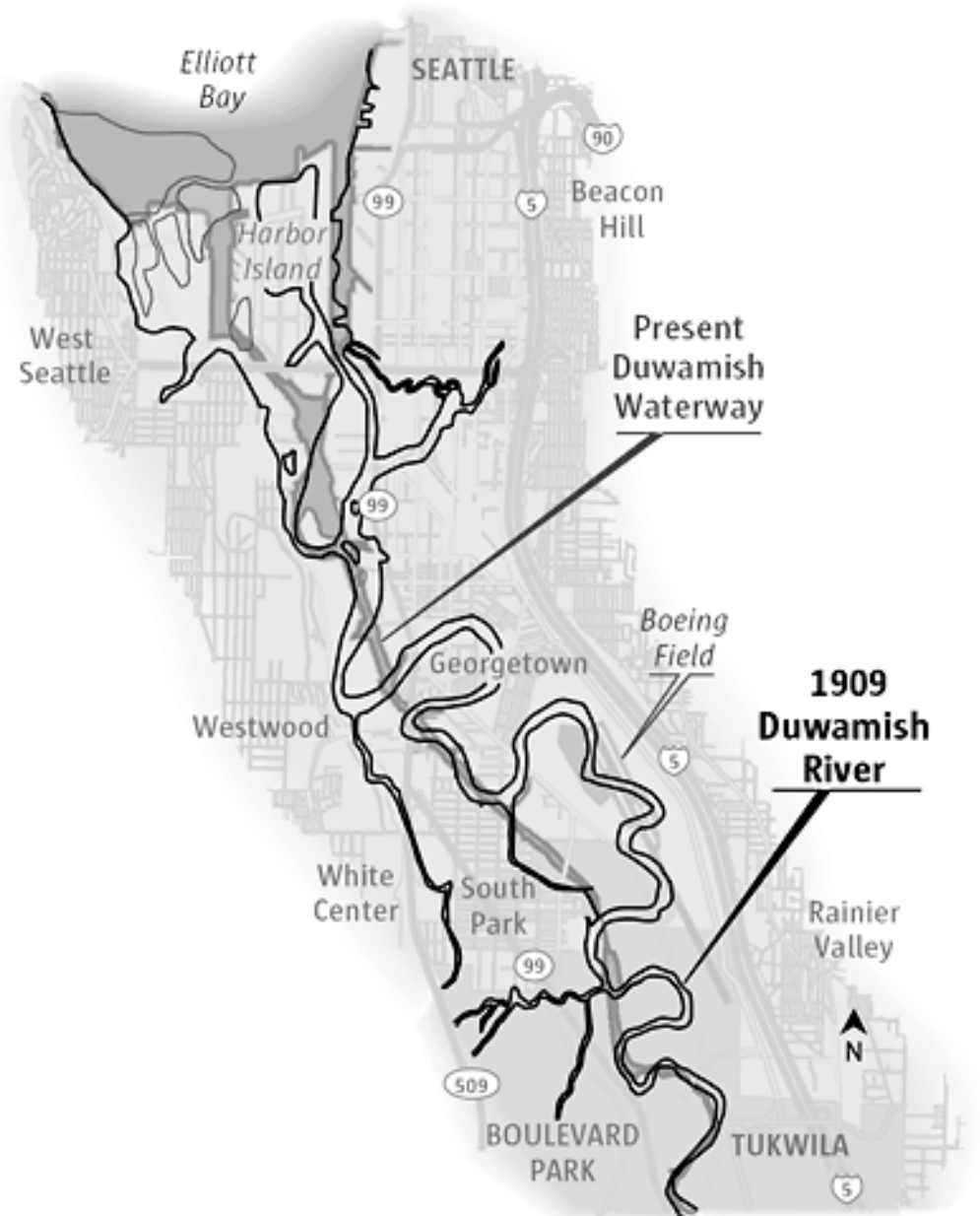
Duwamish
River

Lake Washington



**Early Seattle
claim map,
1850s**

HistoryLink file ID 2986



MARK NOWLIN / THE SEATTLE TIMES

Seattle Times Aug 12, 2007



Adapted from
Blomberg 2012;
Posted on
Duwamish Alive:
History



A River Lost? (2007) Photos: Paul Joseph Brown, *Seattle P-I*



A River Lost? (2007) Photo: Paul Joseph Brown, *Seattle Post-Intelligencer*



Posted by US EPA (Flickr)



Paul Joseph Brown, *Seattle P-I*



Tom Reese: *Choosing Hope: Reclaiming the Duwamish River*. On Blue Earth Alliance Blog.



Ingrid Taylar. *Flickr* (2011)



Duwamish Longhouse & Cultural Center



James Rasmussen, Duwamish Tribe, welcomes Snohomish Tribe members in **the Blue Heron Canoe**.
West Seattle Blog. June 24, 2011



Muckleshoot fishermen load salmon for weighing on Duwamish Waterway.
Photo: Phil Webber. *Seattle P-I*. Sept 27, 2002



Kayaking south from Duwamish River Park.
by Scott, CelebrateBig.com .Aug 2008



Spokane St Bridge on a Saturday morning.
by "oneshot , " GameFishin.com. June 24, 2011

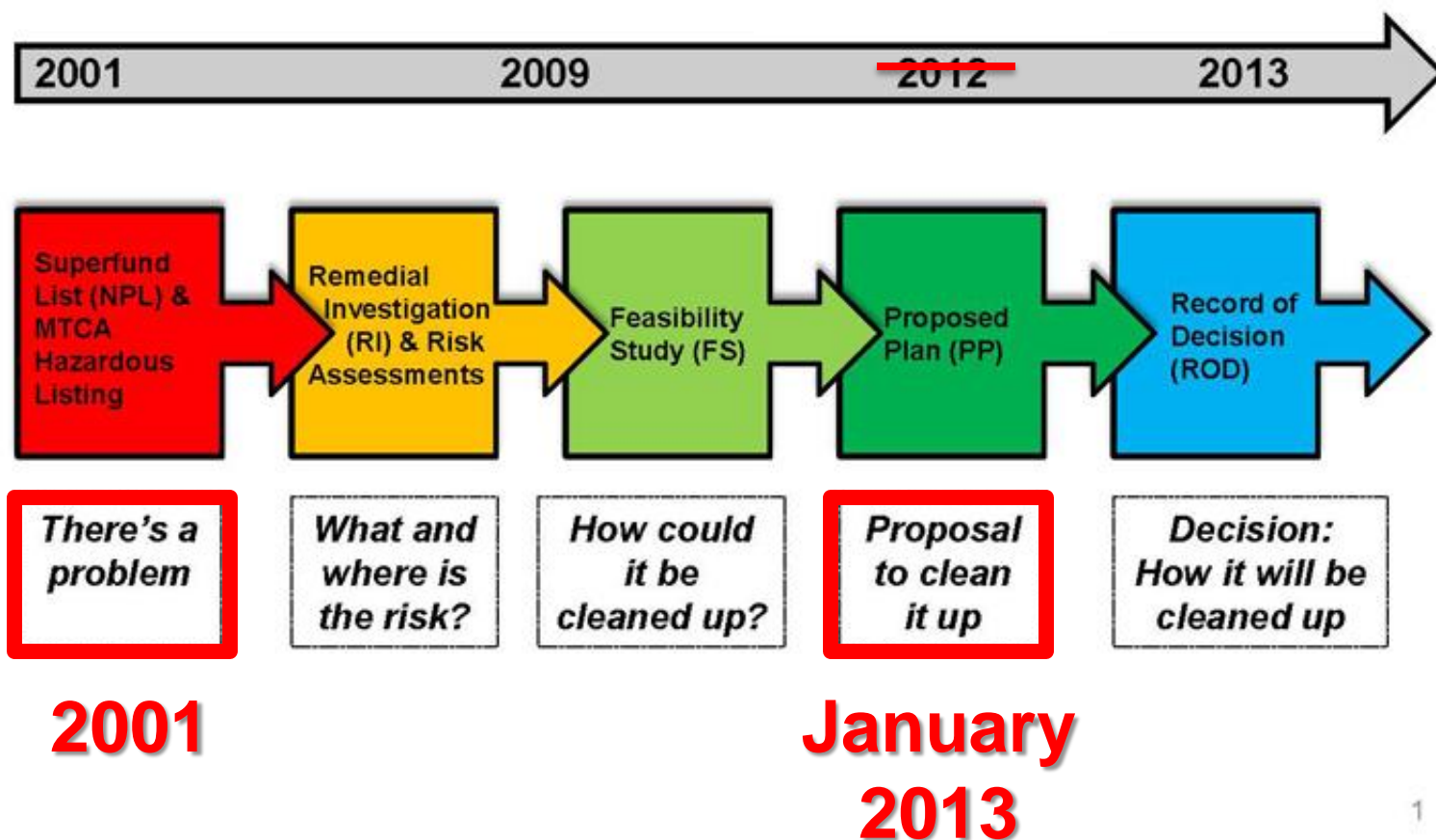


In 2001, EPA listed a 5.5 mile stretch of the Lower Duwamish Waterway as a Superfund site




Slide Credit:
Adapted from
BJ Cummings,
Duwamish River
Cleanup Coalition/
Technical Advisory
Group

Cleanup Planning Milestones

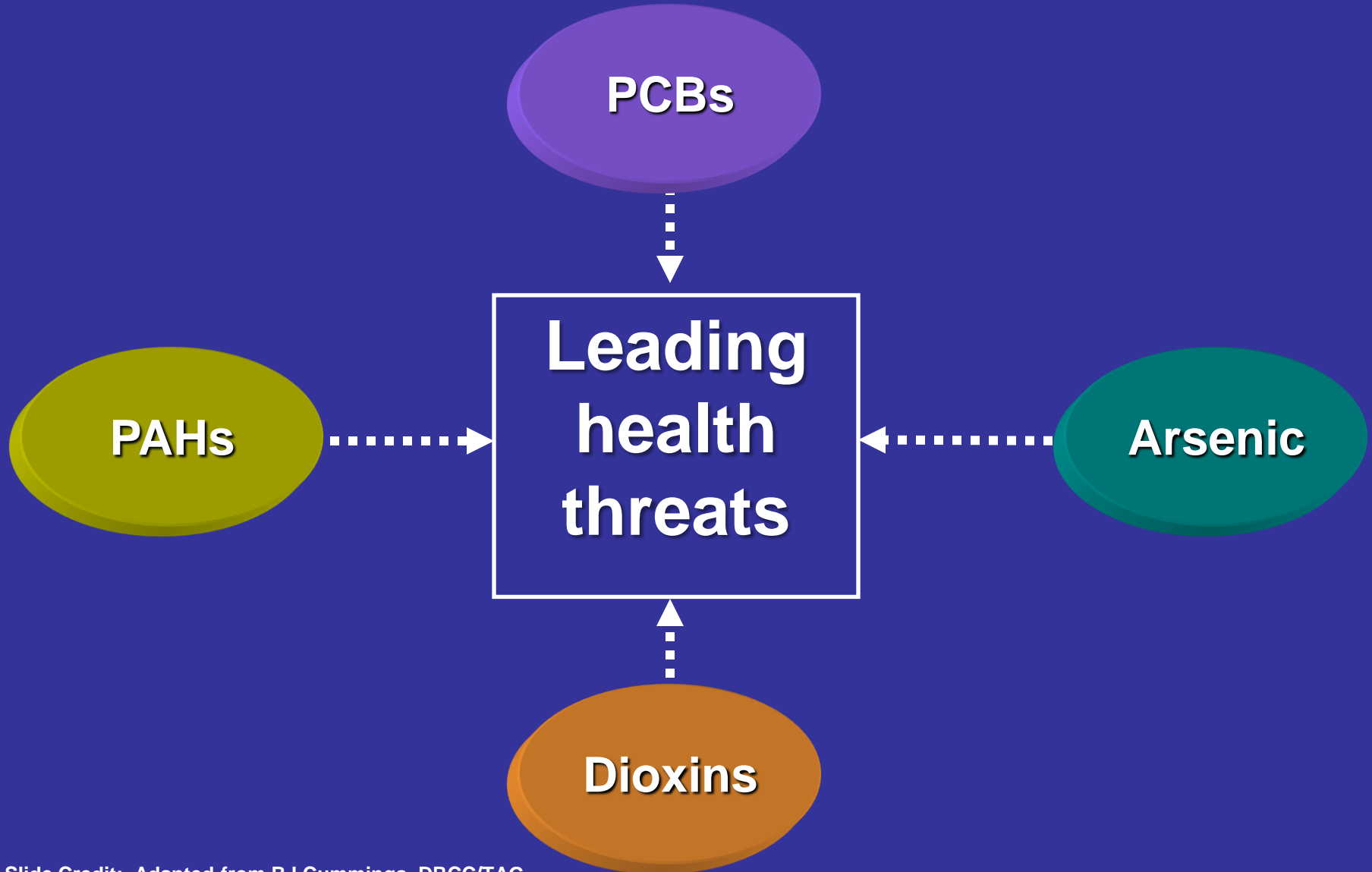


Pollutants Above Standards

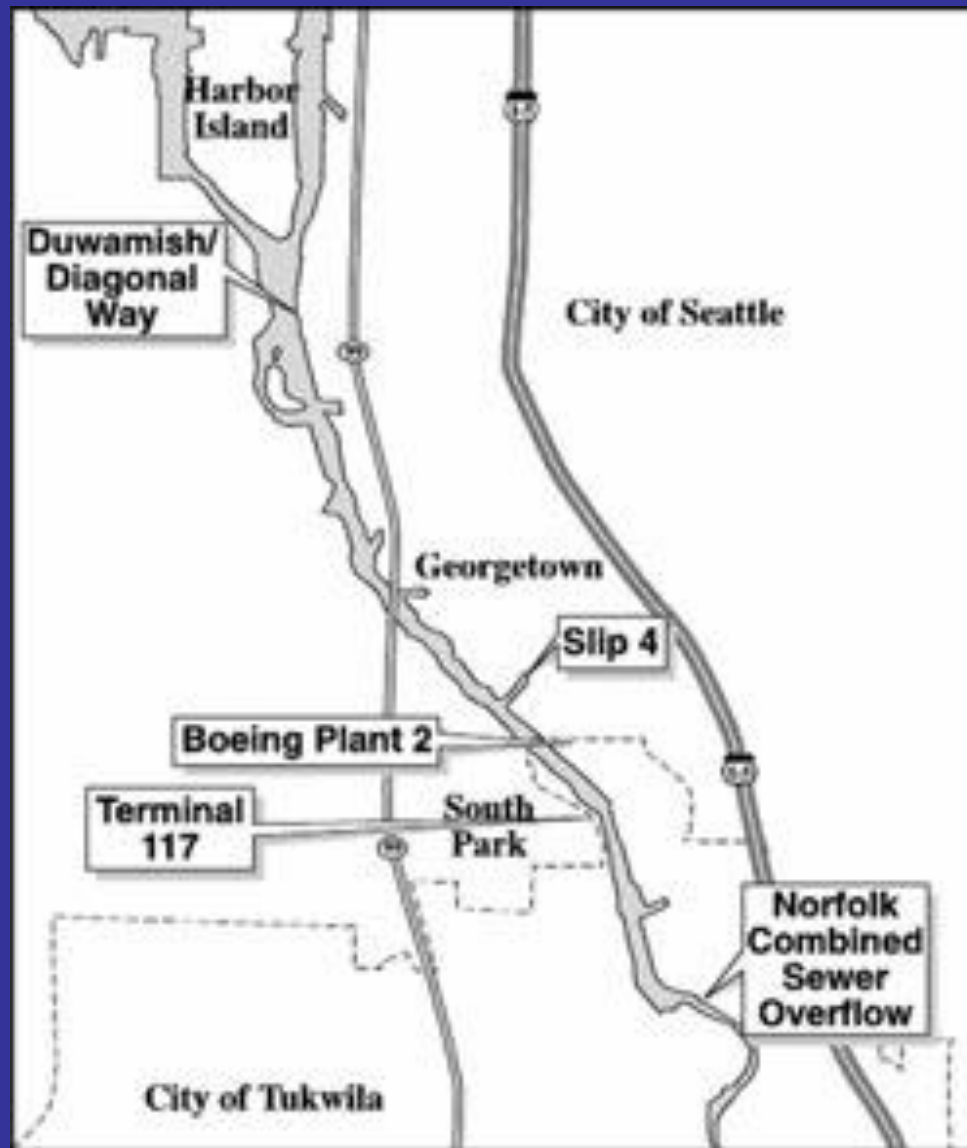


Lead	Phenol	Acenaphthene
Mercury	Pyrene	Acenaphthylene
Arsenic	Pentachlorophenol	1,2,4-trichlorobenzene
Cadium	Benz(a)anthracene	1,4-dichlorobenzene
Chromium	Benzo(a)pyrene	2,4-dimethylphenol
Copper	Benzo(b,k)fluoranthenes	2-methylnaphthalene
Silver	Benzo(ghi)perylene	Phenanthrene
Zinc	Benzoic acid	Indeno (1,2,3-cd)pyrene
PCBs	Benzyl acid	N-Nitrosodiphenylamine
Anthracene	Benyl alcohol	Dibenz(a,h)anthracene
Chrysene	Diethyl phthalate	Dibenzofuran
Fluorene	Hexachlorobenzene	
Fluorathene	Di-n-octyl phthalate	
Naphthalene	Butybenzyl phthalate	

Quantitative Health Risk Assmt



Early Action Cleanups



Cleanup: Four Objectives

- RAO 1: * Protect health of people who eat seafood**
- RAO 2: Protect health of people who have contact with sediments**
- RAO 3: Protect health of fish and wildlife**
- RAO 4: Protect health of benthic community**

*** RAO = Remedial Action Objective**

EPA' s Favored Plan (5C+)

57 acres: Dredge/Remove

47 acres: Cap/Cover

53 acres: Enhanced/Monitored Recovery

“Institutional Controls” =
prevent people from eating resident fish/shellfish

Coordinate with State and local
pollution source control efforts

EPA's Favored Plan

Total estimated cost:

- **\$290 million**
 - \$50K/year for institutional controls
 - Not including source controls
 - Not including shoreline restoration

Total estimated time

- **7 years (active)**
- **17 years “recovery”**

Principal Responsible Parties

- City of Seattle
- Port of Seattle
- King County
- Boeing

Other responsible parties

- Undetermined number of businesses

Cleanup: Four Objectives

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Post-Cleanup Health Risks

- Excess cancer risks will still reach **1 / 10,000** for some Tribal and Asian/PI fish consumers.

State law: cannot exceed 1 / 1,000,000

- Non-cancer risks will still reach **Hazard Quotient of 8**, for some Tribal children.

State and federal law: HQ cannot exceed 1

Institutional Controls



InvestigateWest 2011

- ❖ Warning signs
- ❖ Advisories
- ❖ Awareness
- ❖ Education
- ❖ Fish trading ?
- ❖ Transportation to other locations ?
- ❖ ???

Duwamish Superfund HIA

- ❖ **Examine short-term and long-term health impacts of the proposed cleanup and institutional controls, and related actions.**

- ❖ **Recommendations:**

- Maximize benefits
- Minimize undesirable, unintended impacts
- Reduce inequities

Residents

- South Park
- Georgetown

Tribes

- Duwamish
- Suquamish
(Muckleshoot)

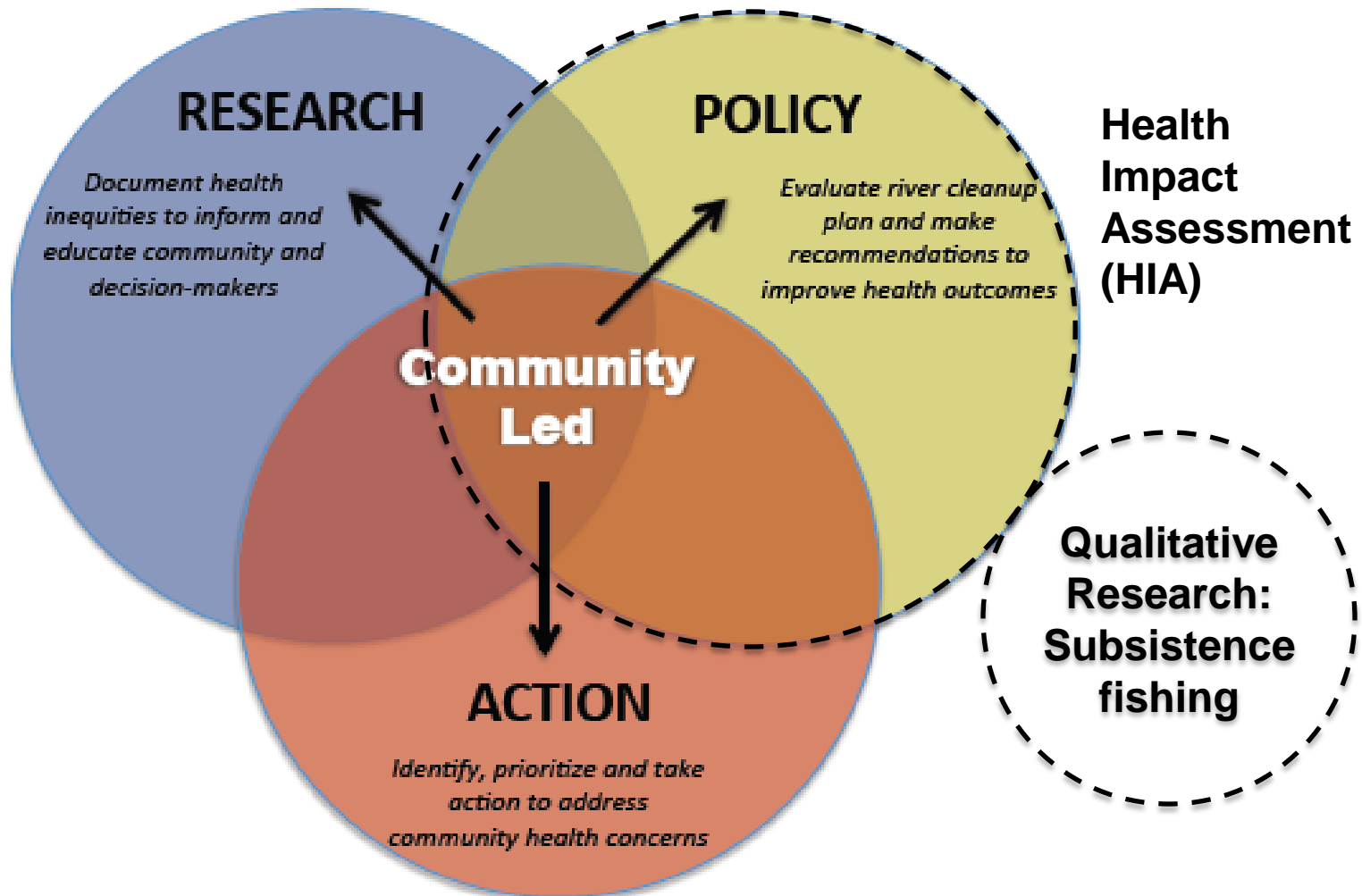
Subsistence fishers (non-Tribal)

Duwamish Valley Healthy Communities Project

Improving environmental and human health through

- *community-based research*
- *promoting protective and equitable policies*
- *taking action!*

**Cumulative
Health
Impacts
Analysis
(CHIA)**



**Community Action for a Renewed
Environment (CARE)**

Challenges

- ❖ **Confusion, skepticism and polarization**
- ❖ **Complexity – organization**
- ❖ **Complexity – scope of assessment**
- ❖ **Budget**
- ❖ **Information gaps and uncertainty**

**Residents
Community
Advisory
Committee**

**Tribal
Community
Advisory
Committee**

**Fishing
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Community

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**Decision
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**Technical
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"HIA 101"



Liaison Committee

Actions	Associated Benefits& Burdens	Long term consequences	Health
<p>Construction</p> <ul style="list-style-type: none"> • Air quality • Time • Sequencing • Disruption of community • Fish tissue spikes <p>Institutional Controls</p> <ul style="list-style-type: none"> • Outreach • Advisories <p>Source control</p> <p>Air</p> <p>Recontamination</p> <p>Water</p> <p>Restoration</p> <p>Public Involvement</p>	<p>SHORT/INTERIM</p> <ul style="list-style-type: none"> • Property values • Public costs • Fish tissue concentrations • Duwamish business • Job creation • Fish consumption • Recreation 	<p>Gentrification</p> <p>Treaty rights</p> <p>Economic Revitalization</p> <p>Cultural traditions</p> <p>Food security</p> <p>Habitat for people</p> <p>VOICE =</p>	<p>Nutrition</p> <p>Obesity</p> <p>HEALTH</p>

Resident CAC

Exercise 1: How could the river cleanup impact or change our community?

Good things	Bad things
During cleanup:	During cleanup:
After cleanup:	After cleanup:

During cleanup – good things

- Lead EPA
- Healthy practices in river- voice
- Opportunity to develop parks
- Communities to get together and plan
- Opportunity to work on zoning issues
- More awareness in community to work together
- More people involved
- Rebuilding roads
- Begin env restoration
- Bring hope for future
- Voice and impact in positive way – empowering
- Local Jobs and economic impacts

THEMES

- Community Cohesion/ empowerment/ Involvement/pride/voice in process
- Economic opportunities
- Improved infrastructure and land use (parks, roads)

After cleanup – good things

- Kids and pets can play comfortably along river – less concern
- Contaminants won't be brought into our homes
- Increase of neighborhood livability
- Better access to river/ open space
- Env restoration
- More people come to south Park and GT to enjoy themselves.
- More seniors live here
- Healthier environment and equity
- More aesthetically pleasing
- Pride in community – “we live in a beautiful neighborhood”
- Community ownership
- Industry standards may change for epa and businesses along river – higher stewardship
- Return of the wildlife.
- Recreational fishers – increased usability for recreation

THEMES

- Improved access to river (parks, opens space, habitat)
- Vibrant neighborhood (diverse people and ages)
- Better industry practices
- Cleaner environment
- Health equity
- Diversity (economic, SES, age, gender, race)

During cleanup – bad things

- A lot of people don't trust the process
- Airborne dust/air quality
- Disruption
- Leaking of contaminated mud up into clean sand
- More traffic from workers
- More noise
- Tribal fishing
- Redistribution of contamination during dredging
- Timing of cleanup activities during spawning/mating
- No collaboration from the polluters – resistance
- Access to river will be limited/ restricted.
- Displacement of marine population – destroying worksheds, no voice

THEMES

- Fear of exposure to more contamination
- Construction disruption (traffic, air, noise, fishing, access to river, wildlife impact, recreation, displacement, business)

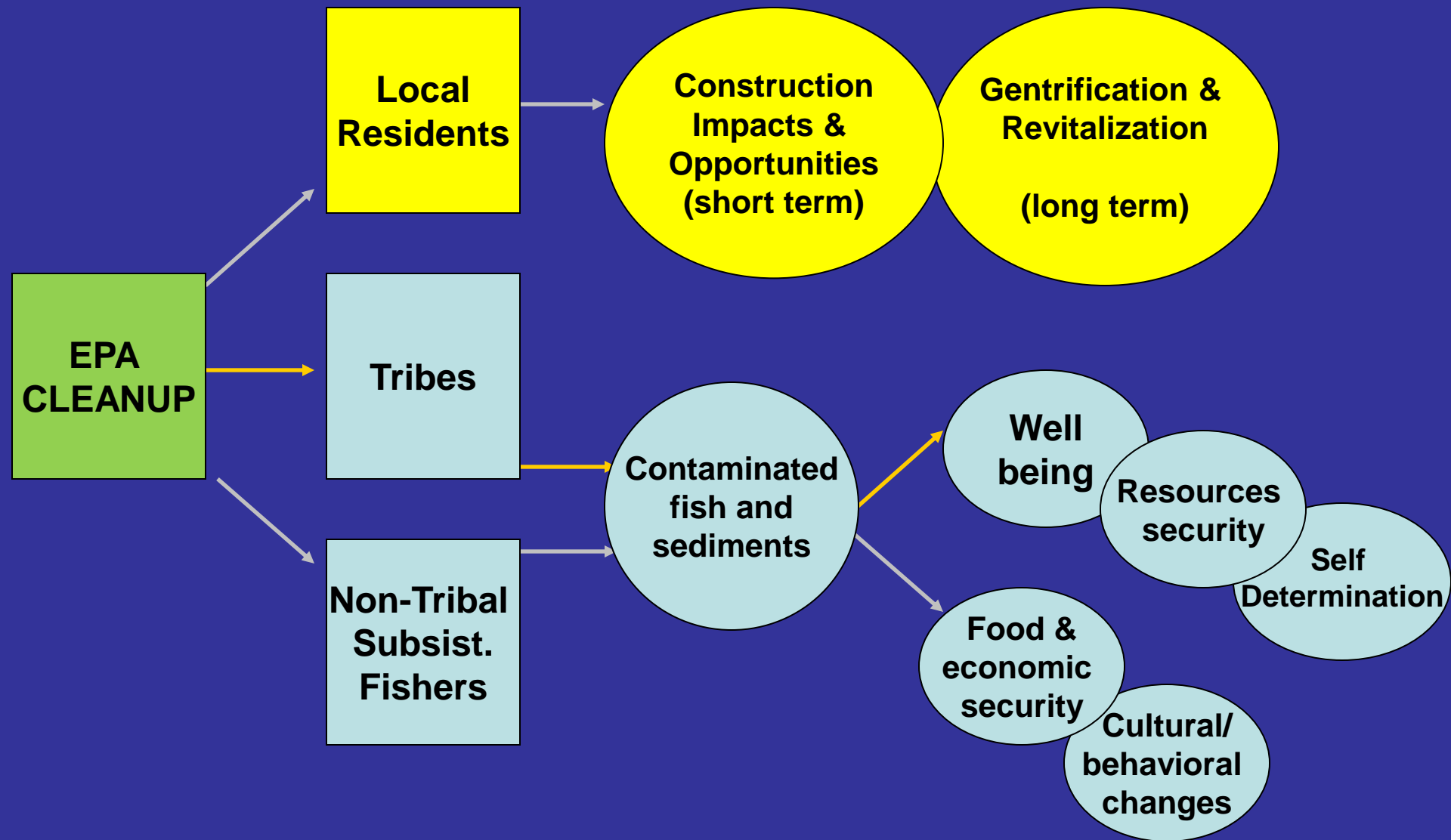
After cleanup – bad things

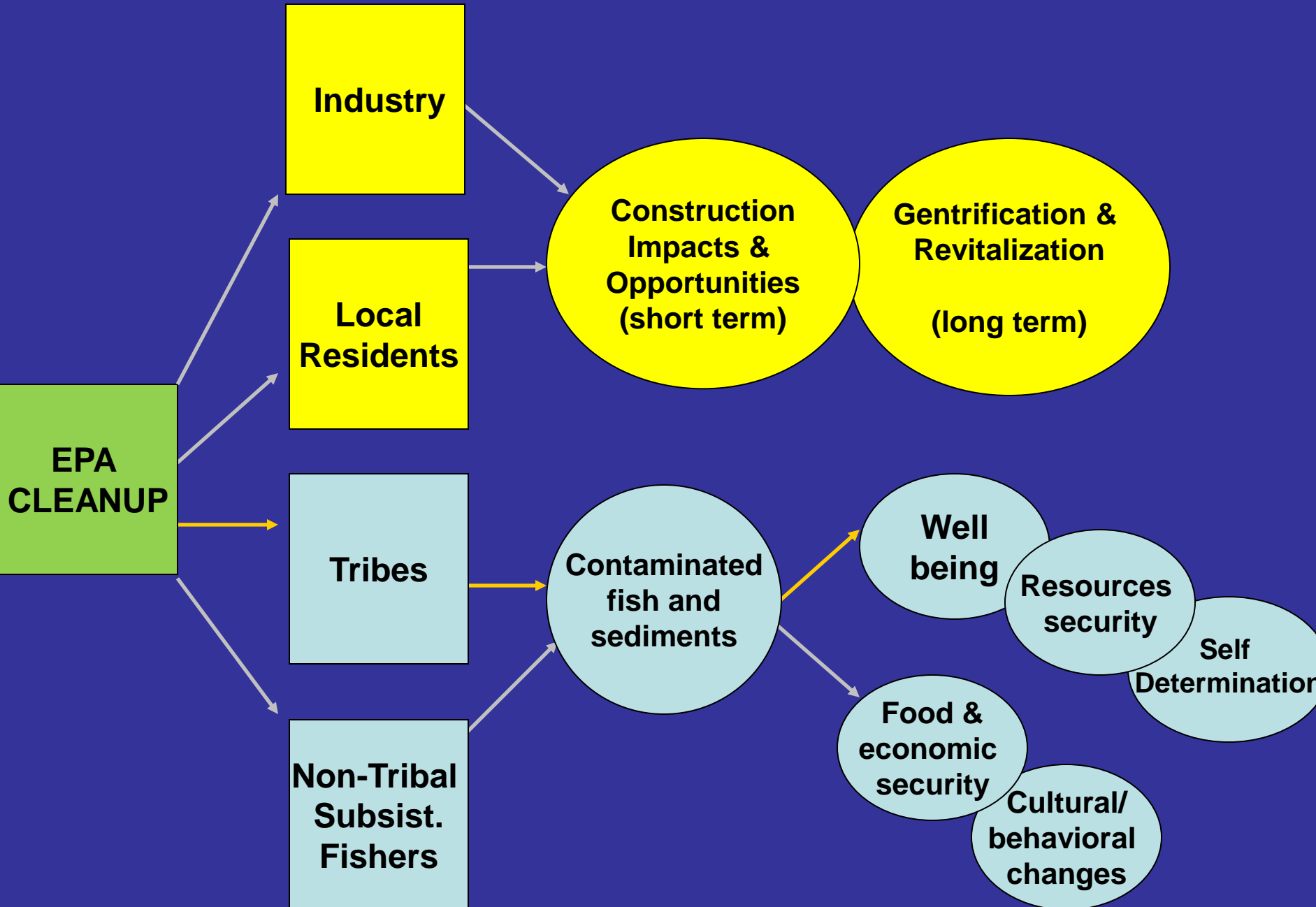
- Air might be polluted because of sediment recontamination
- They will stop at the river and not address our other concerns
- Adjacent areas that might recontaminate the river or not support the river cause its not clean
- Recontamination from every person
- Gentrification – increased taxes, rent
- Inappropriate over -development – lighting, density
- Contaminated soil might have to go to another community like ours
- Perception or the reality of a cleaner river. “it looks nice but..”
- KC annexation

THEMES

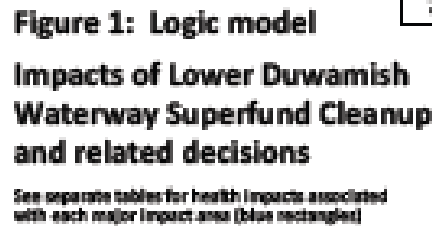
- Recontamination (industry and individuals)
- Residual contamination
 - perception
 - reality
- Gentrification (residents and businesses – inappropriate development
- Long term accountability

Priority areas for HIA



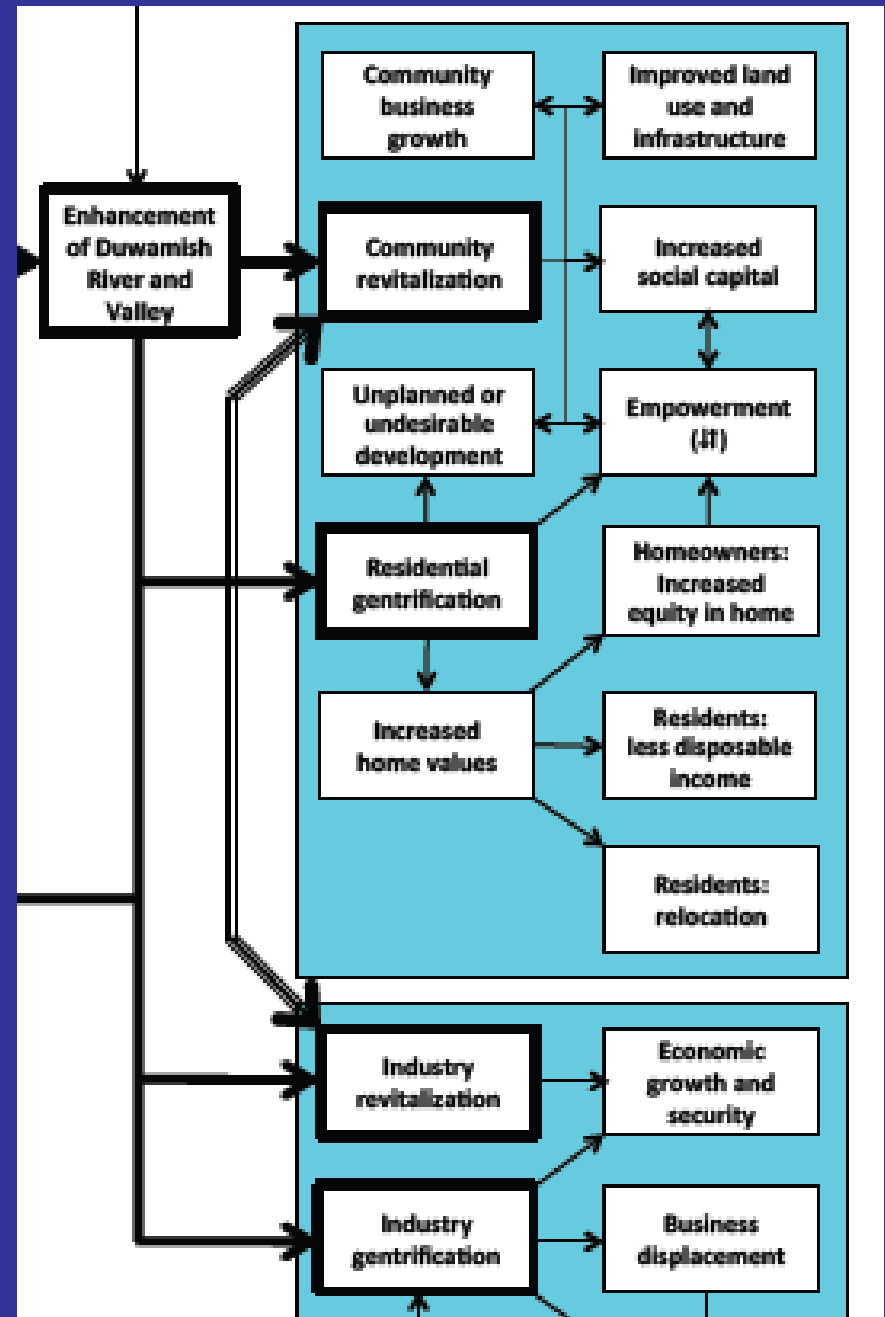


Scoping: Logic model



Resident impacts

- ❖ Short-term: construction impacts and opportunities
- ❖ Long-term: revitalization and gentrification



Residents: Research questions

4b. Research questions: Community revitalization and gentrification

Research Questions	Evidence
<ul style="list-style-type: none"> • Is community gentrification currently happening in Georgetown, South Park and the Duwamish Valley, and how is it manifesting? (Note, we include community-based and community-serving commercial businesses in our definition of "community") • What factors are currently driving community gentrification in SP/GT/DV? • How will river cleanup affect gentrification in SP/GT/DV? • What is known about the impacts of gentrification on health? • How can gentrification be managed to maximize benefits and minimize impacts for the community (aka, community revitalization or equitable development)? 	<ul style="list-style-type: none"> • Real estate records • US census • Rental vs ownership (neighborhood data) • Kennedy (policylink) • CDC • Other HIAs • Search for other gentrified communities • Green impact zones • Tax policies • Housing policies
<ul style="list-style-type: none"> • How is the GT/SP/DV community currently revitalizing or developing, and is it equitable? • What is known about the relationship between community revitalization and health? • How can cleanup activities facilitate or impair community revitalization efforts? 	<ul style="list-style-type: none"> • Change in commerce • Improved infrastructure • Community initiatives • CDC • Policylink • White/grey literature

Challenges

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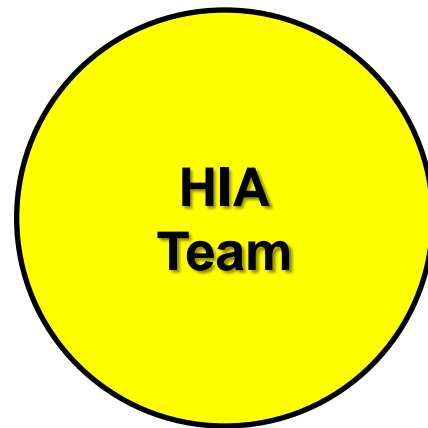
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Information gaps and uncertainty

- ❖ Subsistence fishing populations:
Who are they, and why do they do whatever it is that they do?
- ❖ What is "health," particularly from the perspective of impacted Tribes?
- ❖ Institutional controls:
Would the proposed ideas work?
What would work?
- ❖ ...and more

Prevention and Wellness Across the Life Span

APHA 140TH ANNUAL MEETING & EXPO
OCT 27-31, 2012 SAN FRANCISCO, CA



Infancy



Teen Years



Retirement

4392.0 Valuing and leveraging local knowledge: promoting equitable community partnerships to improve environmental public health

Tuesday, October 30, 2012: 4:30 PM - 6:00 PM

MCC West, 2004

267935 A three pronged collaborative approach to improving health in an environmental justice community

Tuesday, October 30, 2012 : 5:30 PM - 5:50 PM

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