

Risk Assessment – Tribal Exposure

NTTC

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EPA's mission is to protect human health and the environment.

<http://www.epa.gov/aboutepa/whatwedo.html>

- All Americans
- Best available scientific information
- Sustainable communities, ecosystem diversity....

Strategic goal 3

Cleaning Up Communities and Advancing Sustainable Development: Using all the tools at our disposal, the EPA will continue to make our communities safer and healthier. We are accelerating these efforts through our Superfund program to confront significant local environmental challenges.

Strengthening State, Tribal and International Partnerships: We will strengthen partnerships with states, tribes and the international community. Hand-in-hand with these partnership efforts and inclusive environmentalism, we will address pollution problems and protect human health.

The mission of the NTTC is to advance tribal toxics management policies and programs, etc.

“Raise any chemical risk management and pollution prevention concerns, interests, inquiries and information communicated to the NTTC by tribes, native Alaskan villages, and intertribal organizations to EPA and other federal agencies...”



*Kevin Paul
Swinomish
Bioaccumulative Toxics Project*

**Context of this talk: Contaminated sites, contaminated resources ,
risk assessment**

Context: CERCLA / NRDA



Baseline condition
Pre-release;
“but for” the release



Contamination;
Operations



Interim lost use



Remediation



Restoration, compensation
or “damages” for past and
future lost use



Recovery to
baseline; we are
“made whole.”

“Making Whole (CTUIR)”

Means ... Making the individual site clean enough to safely use in our traditional manner (as described in the Treaty and translated into the Exposure Scenario); restored enough in quality and quantity that the resources are sufficient to support those uses; and protected/sustained through administrative & educational means; and accessible (our access and use is returned to us). This includes capacity building to become long-term stewards of the land and resources.

It is official CTUIR policy:

“[to] pursue further clean-up where Tribal health, rights, and resources are not fully protected or restored”

“[that] [the Site’s] lands and resources should be restored to their pre-release environmental conditions, or equivalent to those that existed at the time of the Treaty of 1855.”



EXTREMELY Difficult Concept:

Baseline unrestricted resource quality and traditional resource use patterns?

OR

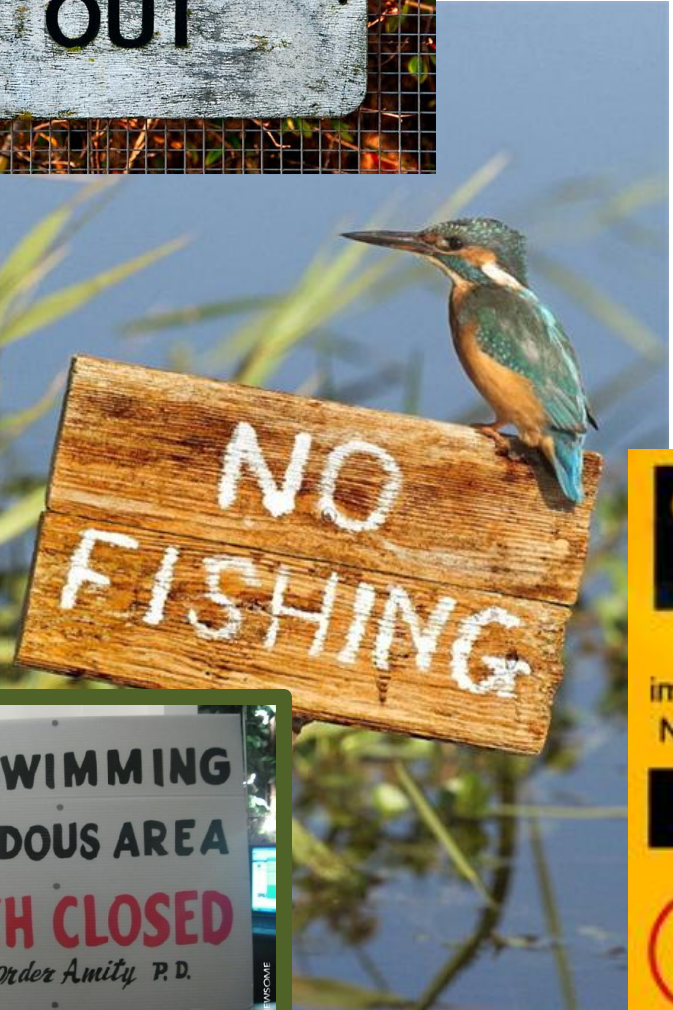
Hybrid part-traditional resource use?

Every tribal member has the right to follow their heritage, by Treaty and by natural law, even if not everyone does so all the time. Which question needs to be answered for baseline?



Contemporary Fish Surveys

Asking people what they eat now simply measures the effectiveness of fish advisories. Almost every water body has mercury-based restrictions.



Choose Fish Low in MERCURY

Mercury in fish can harm your family. Even small amounts of mercury can damage a brain that is starting to form or grow. Pregnant women and children under 8 should only eat fish low in mercury.

Use this chart to quickly identify which fish are low and which fish are high in mercury. For detailed Safe Eating Guidelines you can download a brochure from our website at: www.state.ma.us/health/food.htm

Fish You Buy		Fish You Catch	
Atlantic Salmon	Shellfish	Atlantic Mackerel	Brook Trout
Low Mercury Level	High Mercury Level	Low Mercury Level	High Mercury Level
Bluefish, Haddock, Pollock, Cod	Striped Bass	Landlocked Salmon	Striped Bass
Low Mercury Level	High Mercury Level	Low Mercury Level	High Mercury Level
Shad 'White' Tuna	Lake Trout	Brown Trout	Lake Trout
High Mercury Level	Low Mercury Level	Low Mercury Level	High Mercury Level
Hallbut	Largemouth Bass	White Perch	
High Mercury Level	Low Mercury Level	Low Mercury Level	
Shark	Smallmouth Bass	Pickrel	
High Mercury Level	Low Mercury Level	Low Mercury Level	

CATCH AND RELEASE FISHING ONLY

All fish must be returned to the water immediately, without unnecessary injury. No baitfish or fish for bait are permitted.

Fish from these waters have high levels of chemical contaminants (PCBs) that may cause reproductive and developmental effects and cancer.

DO NOT POSSESS, REMOVE OR EAT FISH FROM THIS WATER

NYS Department of Environmental Conservation
NYS Department of Health

Subsistence Hunting and Gathering

Restricted access
Institutional controls



**MONTANE
RESOURCES**

**RIPARIAN
RESOURCES**

**WETLANDS
RESOURCES**

DESERT RESOURCES

**AIR AND DUST
INHALATION**

GAME

PROCESSING

**DIRECT SOIL
EXPOSURE**

**CULTURAL
ACTIVITIES**

GARDEN PRODUCE

GAME MEAT

IRRIGATION

GROUNDWATER

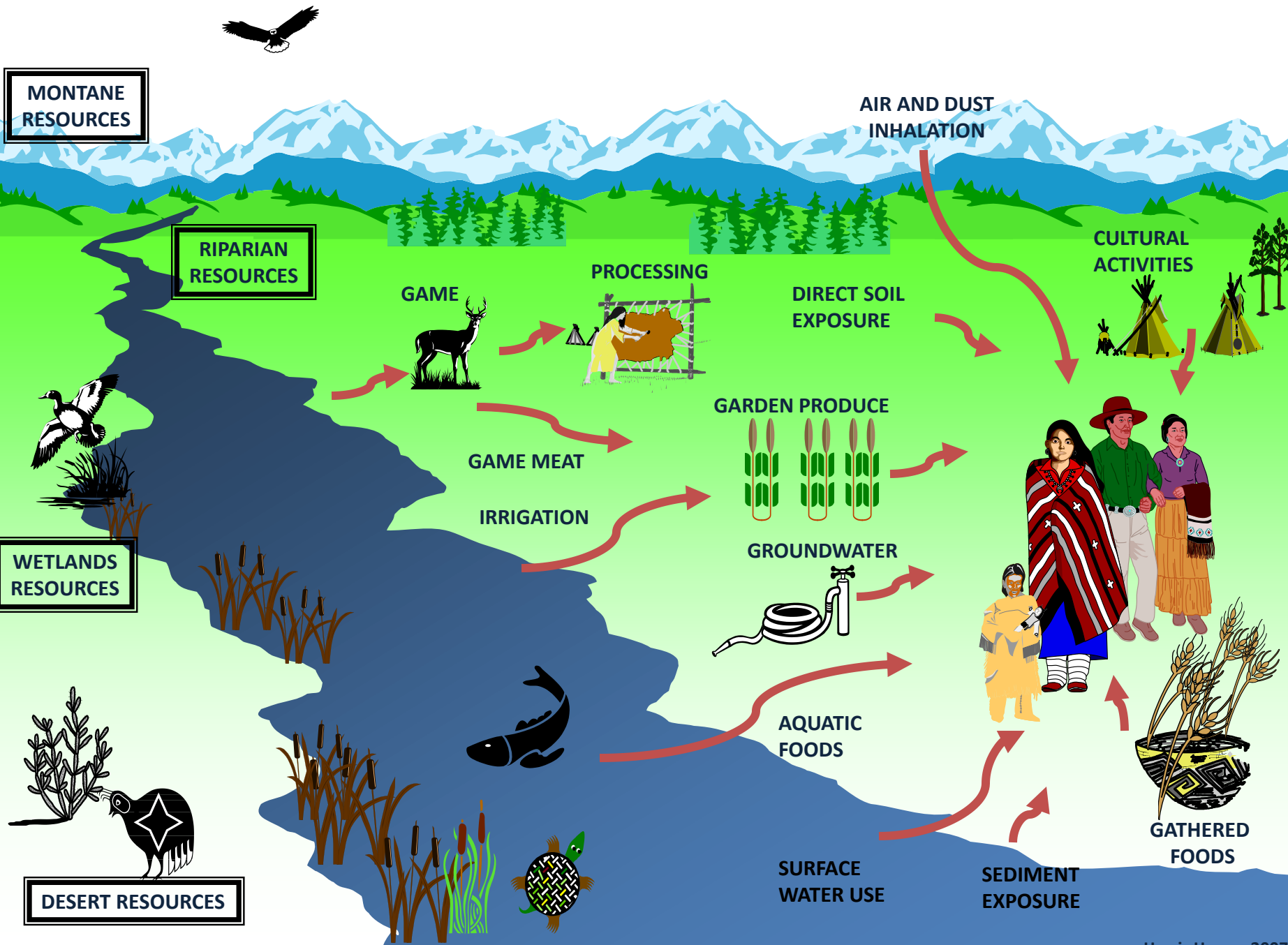
**AQUATIC
FOODS**



**GATHERED
FOODS**

**SURFACE
WATER USE**

**SEDIMENT
EXPOSURE**



Scenarios -- Hunting, Fishing, Gathering

Under BASELINE or UNRESTRICTED conditions,
Good resource quality (after remediation and restoration)
Tribes are buying back their land and restoring the resources.
Tribes encourage traditional practices and original healthier diets.



OSWER Directive 9355.7-19

Considering Reasonably Anticipated Future Land Use and Reducing Barriers to Reuse at EPA-lead Superfund Remedial Sites

“Regions should consult with the site's stakeholder community (i.e., local governments, community groups, the site's owners, individuals, states, tribes, etc.) to obtain input on future use options and to discuss how particular remedies may affect a site's future use options. .. Another opportunity to consider the reasonably anticipated future land use is during the Superfund site baseline risk assessment.”

“In many circumstances, Regions may find it helpful to thoroughly explain to the community, local governments, states, tribes and other stakeholders the process used for developing the Agency's assumptions regarding reasonably anticipated future land use, especially when they differ from the preferences or assumptions of the community or other stakeholders.”

Generally, EPA tells Tribes how clean a site will be, rather than asking how clean it should be. This is not consultation.

Contamination present



How much risk?



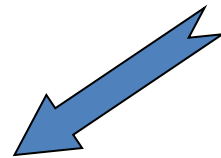
How much should you eat?

“EPA helping Tribes make healthy decisions”

**Here is what is in your fish;
you decide how much to eat**



Here is how much fish we eat



“Tribes helping EPA protect human health & environment”

You make sure it's safe

Executive Order 12898 of February 11, 1994

Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

3–302. *Human Health and Environmental Data Collection and Analysis.*

To the extent permitted by existing law, including the Privacy Act, as amended (5 U.S.C. section 552a): (a) each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income.

Sec. 4–4. *Subsistence Consumption of Fish and Wildlife.*

4–401. *Consumption Patterns.* *In order to assist in identifying the need for ensuring protection of populations with differential patterns of subsistence consumption of fish and wildlife, ...*

Tribes spend an inordinate amount of time arguing with EPA program managers, especially in Regions and at Superfund sites, about using subsistence consumption patterns and exposure scenarios. Success is spotty – tribes do not have the fiscal or technical resources to out-argue RPMs.

Regional Tribal subsistence exposure scenarios

- (1) Describe how resources would be used if uncontaminated and fairly undegraded. Not contemporary average. BASELINE**
 - (2) Describe eco-cultural zones (the environmental setting, EPA Ecoregion levels of PNV) and natural resource usage patterns;**
 - (3) Reconstruct the original local subsistence diet;**
 - (4) General and unique tribal exposure pathways such as hunting, gathering, making material items, fishing;**
 - (5) Identify direct exposure factors (activities and their frequency, duration and intensity, and resource use) in a CERCLA-style format for use in baseline risk assessment (absent restrictions).**
 - (6) Follows Rules of Evidence (Daubert, Frye, etc), peer-review, IRB, informed consent, confidentiality, research ethics.**
 - (7) Confirmatory interviews, not statistical surveys**
- CTUIR, Spokane, Wabanaki (Maine), Washoe, Elem, Quapaw, Swinomish (in prog)

CTUIR First Foods



Choosh



Choosh



Salmon



Huckleberry

Elk

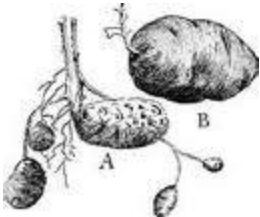


Chokecherry

Deer



Cous, roots



Bitterroot



Elements of an exposure scenario

1.

Ecology

2.

Traditional diet

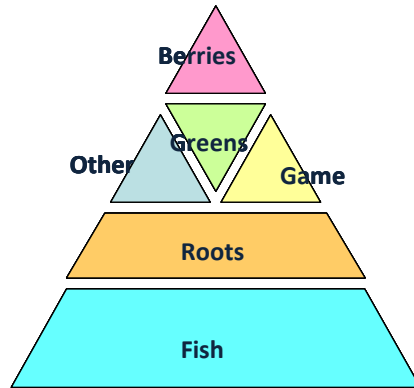
3.

Direct exposures

Walla Walla, Umatilla
(River peoples)



Staple foods in food groups
Calories-Vitamin-Mineral .



Calories, Nutritional content, Daily intake

First Foods

WATER

AQUATICS

- Salmon – chinook, coho, sockeye, steelhead
- Lamprey, Sturgeon
- Mussels
- Trout, Whitefish, Suckers

LAND MAMMALS

- Mule deer, Elk, Whitetail deer, bighorn, mountain goat, bison, moose

ROOTS

- Cous, Camas, Celery, Carrot, Bitterroot (also moss, greens)

BERRIES

- Chokecherry, Huckleberry

Exposure Factors

Daily soil ingestion rate based on terrain and activities;

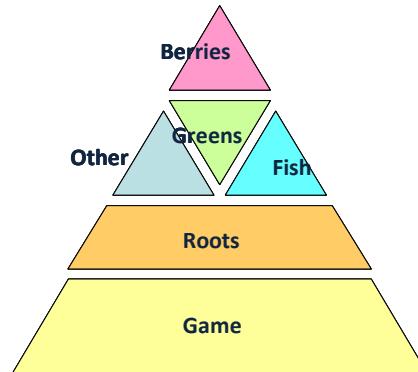
Daily water intake rate;

Daily inhalation rate

Residential (24/7/365/70), Self-sufficient.

Cayuse

(Upland peoples)



Representative Species in the 3 Maine Diets

Vegetation is the same for all scenarios

Examples:

- Cranberries
- Chestnuts
- Flag Root
- Fiddleheads
- Blueberries
- Cattails
- Mushrooms
- Maple Syrup and honey

All three diets include large and small game and fowl. The amount of game varies according to the amount of fish eaten so that [fish+game] calories remains about the same.

Inland - Non-Anadromous Waters



- Moose
- Muskrat
- Beaver
- Bear
- Partridge
- Turkey

- Fish = half resident;
half anadromous;
- Salmon
 - Pollock
 - Sturgeon
 - Herring
 - Alewives
 - Eels
 - Shad

- Clams
- Shellfish
- Wild Peas
- Marine fish
- Marine mammals



Inland – Anadromous Waters



Coastal Areas



Traditional resource management used prescribed burns to increase food and medicinal plants.

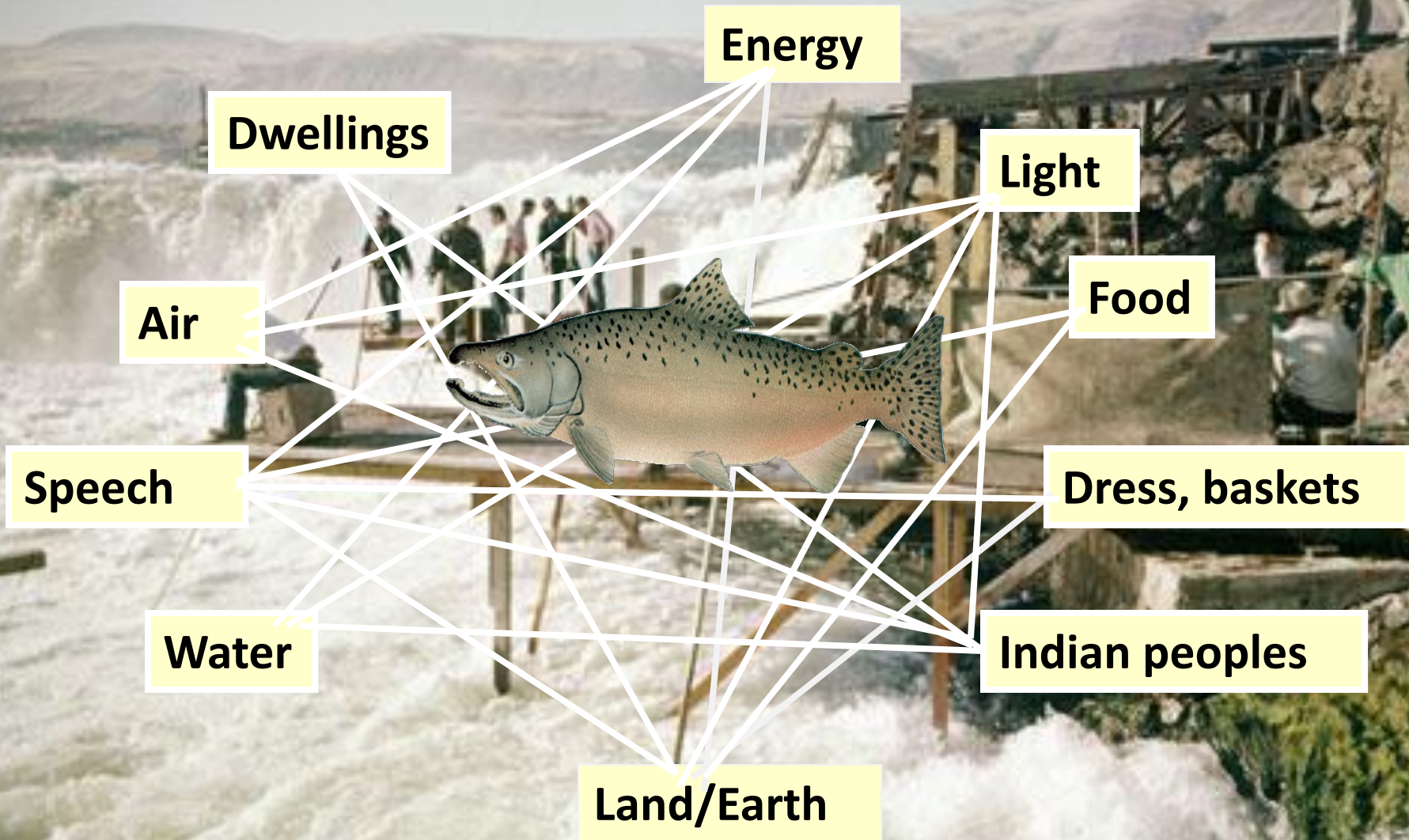
Today's equivalent is transmission line rights of way with early-successional plant communities, more browse for game, better berries.

These areas are not remote areas; they are subsistence grocery stores without re-entry time limitations.

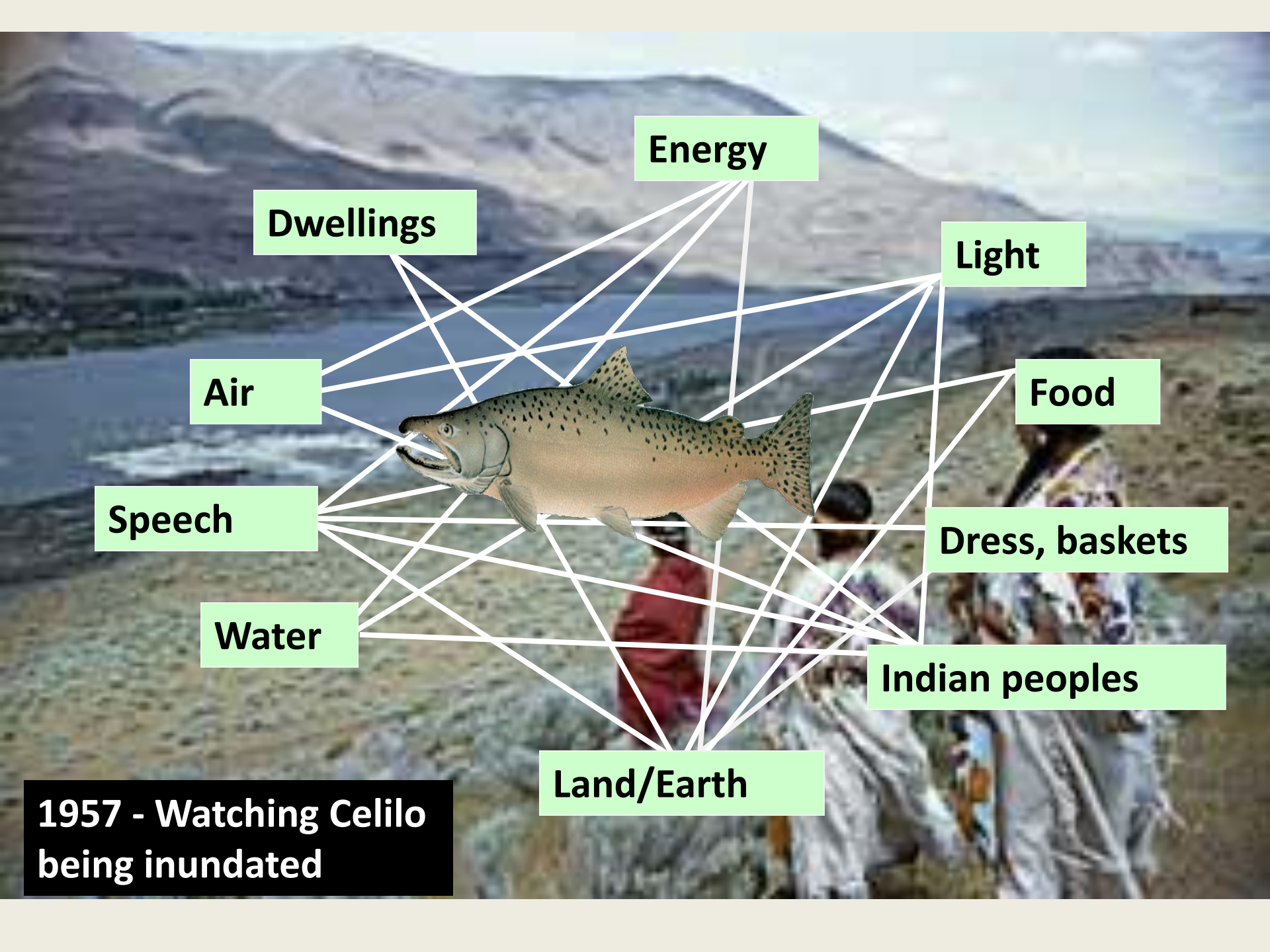
Pesticide registration needs to incorporate traditional environmental knowledge.



Tamánwit (natural law - CTUIR)



Celilo Falls, 1956



Energy

Dwellings

Light

Air

Food

Speech

Dress, baskets

Water

Indian peoples

Land/Earth

1957 - Watching Celilo being inundated



NEED:

Tribal Resource Use Directive

Needs to explicitly apply to CERCLA, FIFRA, and other regulations

Regional RPMs (remedial project managers) need to be accountable for using tribal exposure scenarios in baseline risk assessments and in developing cleanup goals.

National Remedy Review Board needs to be required to determine whether there are any tribal interests at NPL sites before approving remedies.

EO 12898 was not adequate; OSWER Land Use Directive was not adequate; EJ guidance is not adequate. No real accountability yet.

