

Instream Flow Restoration Programs, Problems, Successes



Washington
Department of
FISH and
WILDLIFE

Instream Flow Restoration Programs in Washington

- **Washington Water Acquisition Program.**
- **Irrigation Efficiencies Grants Program.**
- **Water Infrastructure and Conveyance Funding**
- **These programs are implemented to increase instream flow within 16 priority watersheds where flow has been identified as a primary limiting factor to salmonid production. The programs are backed by strong interest and support from local, state, federal and tribal governments and private entities.**

- **Yakima River Basin Water Enhancement Project**
- **Environmental Quality Incentives Program (EQIP)**
 - **Conserved water not required to be placed into State Trust**

Washington Water Acquisition Program

- Program is funded with state and federal funds. (BPA, SRFB, NFWF)
- Water acquired will be held permanently in public trust by the state.
- Water right holders may sell, lease, or donate all or part of their water.
- Program sponsors negotiate a price based on fair market value.

Washington Water Acquisition Program cont.

- No risk of relinquishing water placed in trust.
- Acquisitions, donations, and long term leases, have highest priority.
- The same portion of water is returned back at the end of the donation or lease period.

Stream Name	Acre Feet/yr	CFS	Lease or Purchase	Period of Time Lease is for	Funds Committed
Taneum	1520.55		Purchase		\$922,000.00
Teaway River	78.07		Lease	7/1-10/1/01	\$8,657.00
Yakima River	232		Lease	4/1-10/15/01	\$30,000.00
Teaway River	172.5	0.52	Donation	2003	\$0.00
Teaway River	346	1.10	Lease	2003-2007	\$38,710.00
Teaway River	39.2	0.20	Lease	2003	\$1,215.20
Teaway River	36	0.18	Lease	2003-2005	\$2,916.00
Teaway River	106.88	0.53	Lease	2003-2005	\$9,939.84
Teaway River	200	1.00	Lease	2003	\$5,400.00
Teaway River	44	0.22	Lease	2003-2005	\$3,564.00
Teaway River	72	0.36	Lease	2003	\$2,232.00
Teaway River	40	0.20	Lease	2003	\$1,240.00
Teaway River	73.2	0.37	Lease	2003	\$2,269.20
Teaway River	40	0.20	Lease	2003	\$1,240.00
Teaway River			Agreement not to divert	2003	\$8,000.00
Yakima River	638.3		Lease	6/14-9/30/01	129.25/AF
Teaway River	178.6		Lease	7/12-9/30/01	62.54/AF
Swauk Creek	24.43		Donation	7/12-9/30/01	\$0.00

Irrigation Efficiencies Grants Program

- Grants for local Conservation Districts provide financial assistance to improve irrigation efficiency on private land.
- Up to 85 percent of the cost of efficiency improvements can be funded.
- Individual projects may qualify for up to \$312,500.00. Hold down equation caps cost share to an equivalent 400K/CFS and 2K/acre.
- Measurable fish benefits must result.

Cont.

- Implemented in streams ranked as being of medium or high priority as identified within the Water Acquisition Program.
- Project must result in a net savings and a portion of the saved water (equivalent to funding) must be placed in public trust for instream flow.
- Water placed in trust must be protected through the primary reach.
- All projects funded must be metered and screened.
- Contract length must at least meet the expected life of BMP installed.
- Family farms have priority.

Application Efficiencies

Methods

- Flood
- Furrow-Rill
- Hand Lines
- Wheel lines
- Center Pivot
- LEPA (Low Pressure Precision Application)
- Drip

Conveyance Efficiencies

- **Open Ditch**
- **Lined ditch**
- **Jointed Pipe**
- **Sealed (non-pressurized) pipe**
- **Pressurized pipe**

Other Benefits

- **Fish Passage Barrier Removal**
- **Water Quality**
- **New Habitats and Access**
- **Improved Riparian Condition**

Conveyance and Infrastructure Grant from The State and Local Improvement Account – Referendum 38.

Kittitas County Conservation District - \$284,028

Fogarty Ditch/Sorenson Creek – pumps and screens

Currier Creek– pump screen and one mile of PVC

Cherry & Caribou Creeks– . fish screening and fish passage facilities a mile of PVC pipe

Lyle Creek - modify or remove the diversion on Lyle Creek to accommodate fish passage and screening facilities

Irrigation Efficiencies Grants Program To-Date: June 05

Stream Name	County	Acre/ft	CFS	Cost	Trust Right	Years
Yakima River	Yakima	337	1.34	\$413,125.00	Yes	10
Caribou Creek	Kittitas	40.5	1.02	\$413,125.00	Yes	10
Yakima Rvr/	Kittitas	437.21	1.03	\$302,917.78	Yes	10
Teanaway River	Kittitas	60.793	0.249	\$64,254.00	Yes	10
Wilson Creek	Kittitas	595.65	2.43	\$120,000.00	Yes	10
Un-name Stream	Kittitas	371	1.4	\$155,975.00	Yes	10
Big Creek	Kittitas	112.65	.5	\$312,500.00	Yes	10
Big Creek	Kittitas	188	.8	\$312,500.00	Yes	10
Taneum Creek	Kittitas	125.33	1.39	\$312,500.00	Processing	20
Taneum Creek	Kittitas	125.33	.95	\$150,000.00	Processing	20
Taneum Creek	Kittitas	110.95	1	\$209,200	Processing	25
2005 Totals: 11 projects		1689	8.7	\$1,636,929.00	8 issued	

Where is the best location to acquire water and why?

- **Should instream flow prioritization based on biological and ecological priorities, or opportunities?**
- **How is instream flow restoration prioritized?**
- **Where is instream flow most limiting to salmonid production?**
- **What is most cost-effective approach with limited funding sources?**
- **Tributary flow improvement vs Lower Yakima River?**
- **Fish benefit? diversity and status**
- **Existing and/or expected future condition of various habitat parameters and lost opportunities?**
- **Where is opportunity? Is it where you want water?**
- **Other limiting factors?**

Who should water be purchased from?

- Irrigation districts?
- Senior Districts?
- Junior water right holders?
- Senior water right holders?
- Irrigation Districts – law requires district approval for leases or sales of water outside the district
- Junior irrigation districts and water right holders may have little or no water to lease, will extend in time or place if available.

Water Rights – What’s Important?

- Common Misconceptions?
- What is the water right?
- Are you sure you know what it is?
- Extent and validity review
- In general, prior beneficial use is required for the water to be “trustable”.
 - Western Water Law - “use it or lose it”?
 - Washington is a “wet” water state.

Water Rights-Continued

- **Water leased acquired must be measurable.**
- **Is the water there when you need it?**
- **Has the water right holder ever been prorated?**
- **How and when is the water used?**
- **Seniority compared to downstream users?**
- **Alternatives**
 - **“Bucketing” water**
 - **Wheeling Water**
 - **Drought year options**
 - **Split season leases or acquisitions**
 - **Pulses? Coordinated or rolling pulses? Frequency and magnitude? SOAC model?**

What do you get?

- Consumptive use and non-consumptive use
 - Washington Irrigation Guide
 - Crop type, soil type, evapo-transpiration
 - Evaporation
 - Stream or Reach Specific vs TWSA consumptive use
- Primary and or secondary reach?
 - How long is the reach over which the water can be protected as instream flow and how much water is really protected?

Is purchasing water rights always the best option?

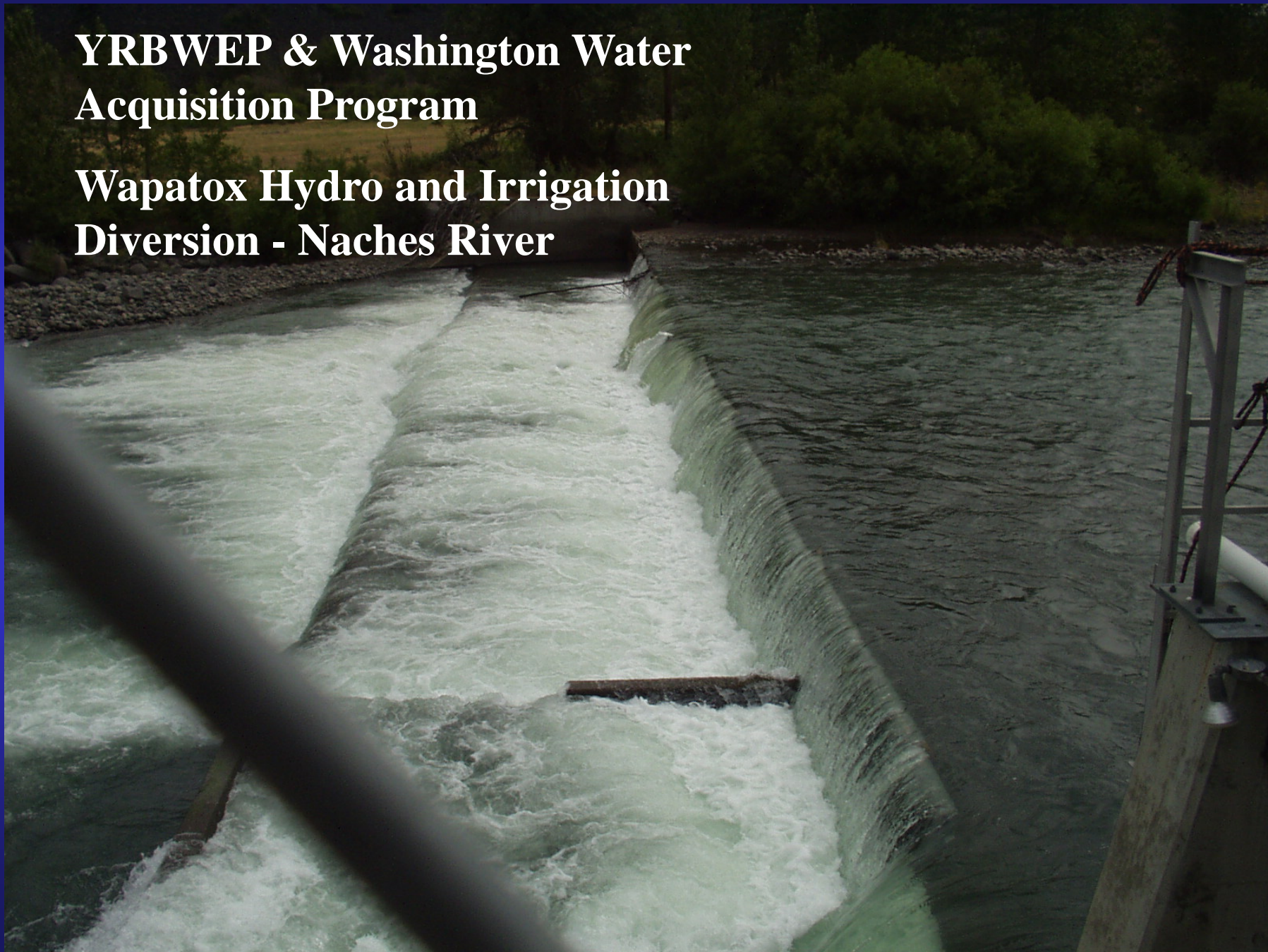
- Broker Temporary leases or water right sales to benefit fish?
- Move senior water right points of diversion further downstream?
- What about enforcement of trust water?
- Alternative water sources or points of diversion?
- Water conservation -What saves the most water?
 - **Conveyance/delivery losses vs Application system improvements?**
 - **Existing Application. System -Hand lines, Flood?**

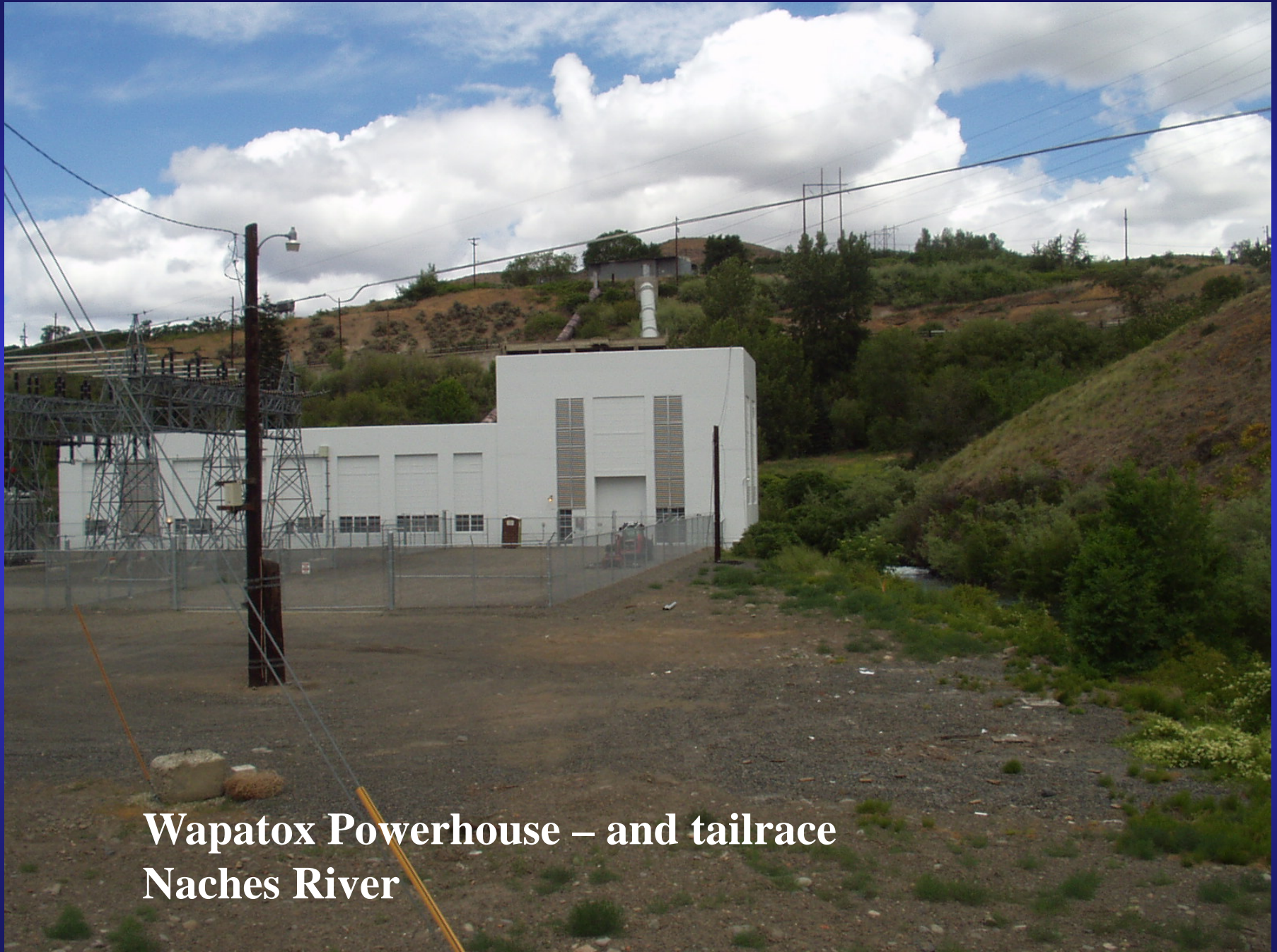
How much water is needed?

- What's measurable? Hydrological response $> 5\%$
- Biological response generally $>20\%$
- Interim flow targets?
 - Fish passage to existing habitat?
 - Adults up and smolts out, or perennial flow?
 - Short term targets may only involve passage flows, or may only be for specific time windows.
- Long Term Targets
 - Minimum instream flow target?
 - IFIM, PHABSIM Preference curves of various life history stages?

**YRBWEP & Washington Water
Acquisition Program**

**Wapatox Hydro and Irrigation
Diversion - Naches River**





**Wapatox Powerhouse – and tailrace
Naches River**

Naches River

Project provided 300cfs to bypass reach



Taneum Creek Projects

- Alternative stock water, wells 30+ cfs
- Hart K Acquisition – variable about 10% flow



**If you can't get the water to the fish,
can you get the fish to the water?**

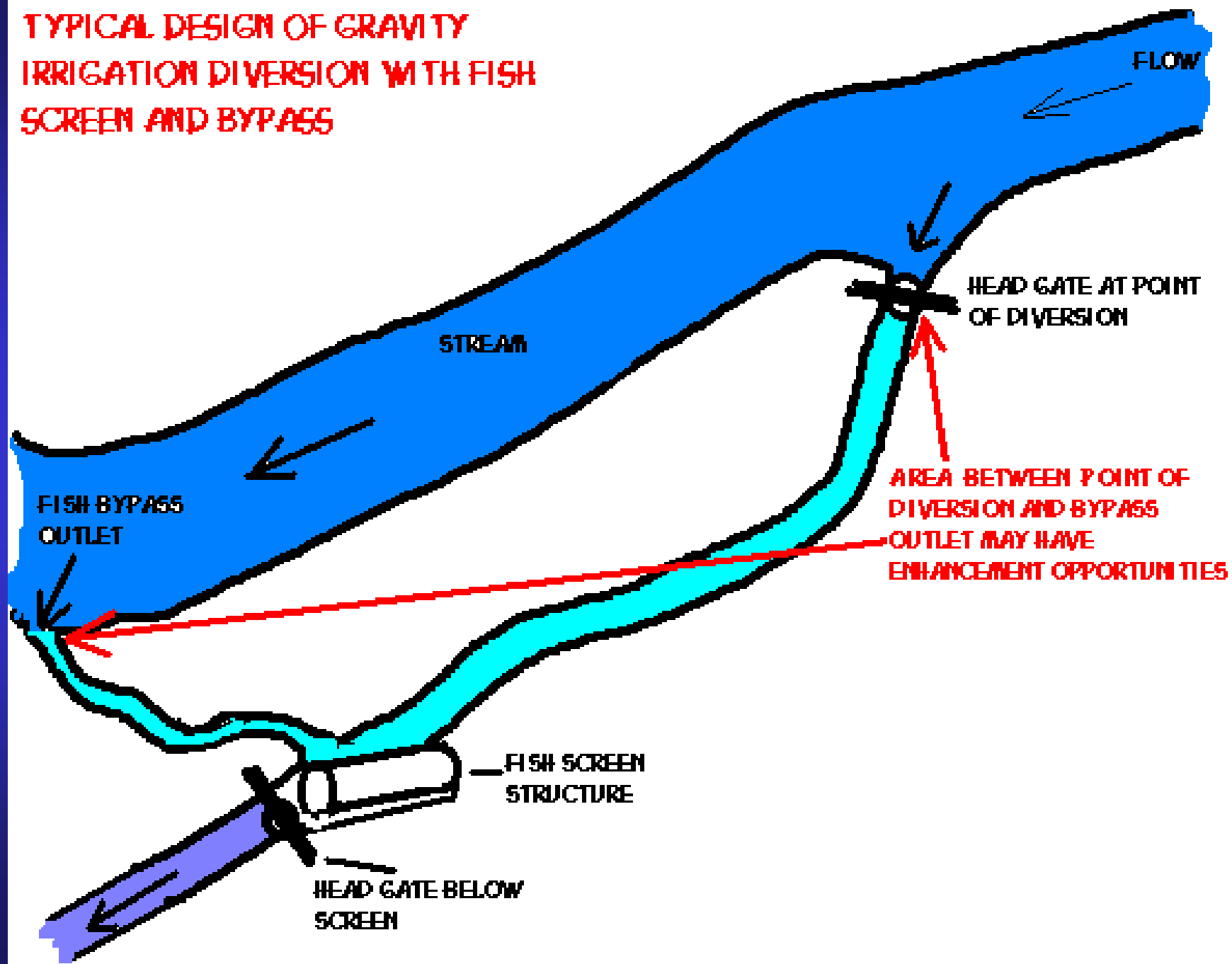
Managing Water Diversions to Provide Fish Habitat

- **It may be desirable to use and manage diversions as off-channel fish habitat.**
- **Lining conveyance ditches may not always provide the greatest benefits to fish.**
- **The diversion may also provide habitat for predators.**
- **Stranding (start up and shut down).**
- **Water quality (herbicides or pesticides).**
- **Riparian management.**
- **Operation and maintenance.**

Diversion Canal and forebay As Fish Habitat (Cont.)

- An operational protocol should be developed for each diversion and should include:**
 - 1) notifying fish and wildlife authorities before changes in operation or applying herbicides etc.**
 - 2) salvaging or bypassing fish from a ditch prior to start up/shut down, or herbicide application.**
 - 3) ensuring all gates and valves are closed during maintenance so no possibility of leakage into the riverine environment occurs.**
 - 4) a maintenance plan for riparian vegetation and LWD.**

**TYPICAL DESIGN OF GRAVITY
IRRIGATION DIVERSION WITH FISH
SCREEN AND BYPASS**



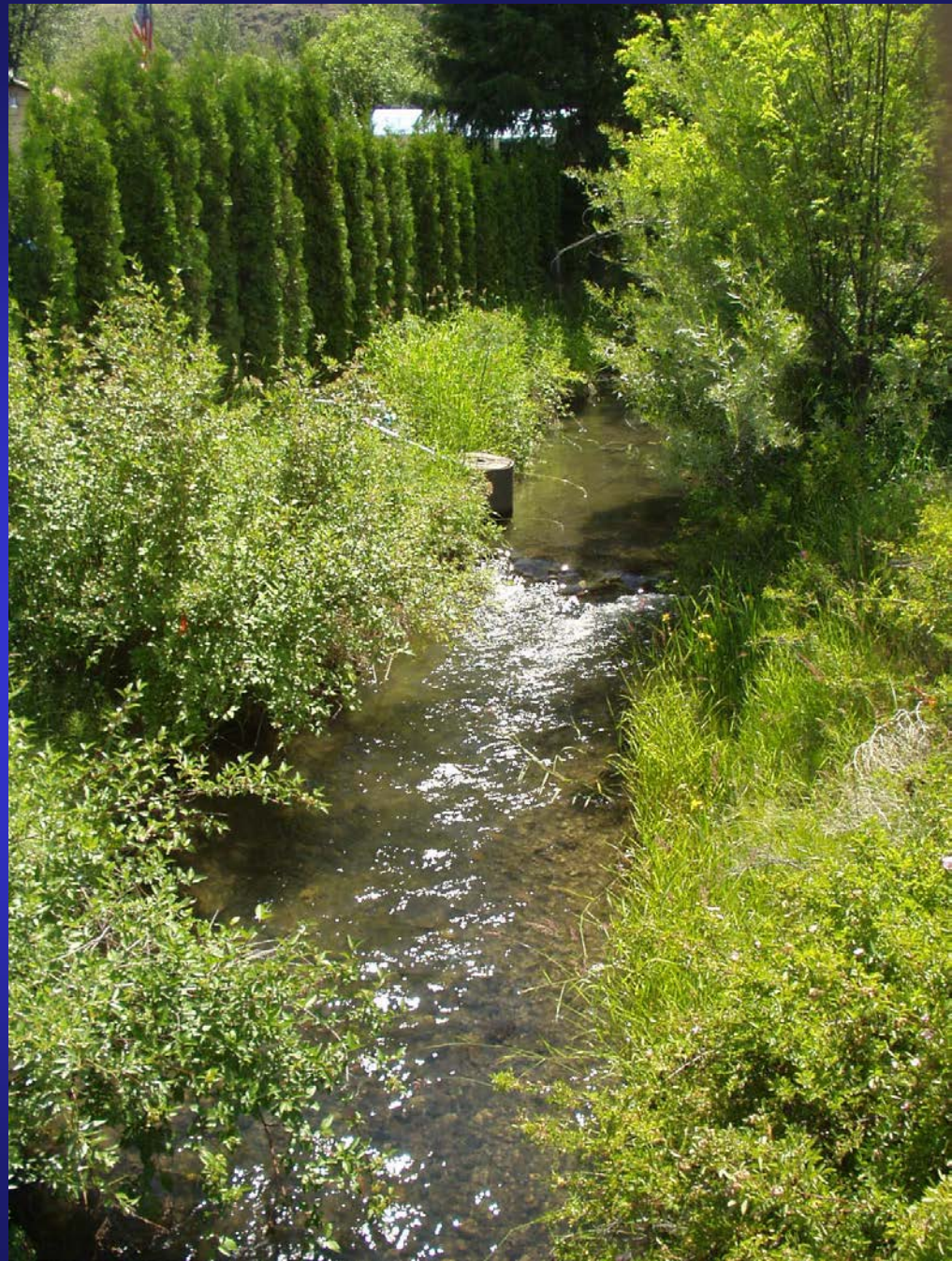
Congdon Irrigation Canal – Diversion from Naches River

Habitat?



Kelly-Lowry Ditch Naches River

Habitat?



**Old Union Canal
Naches River**

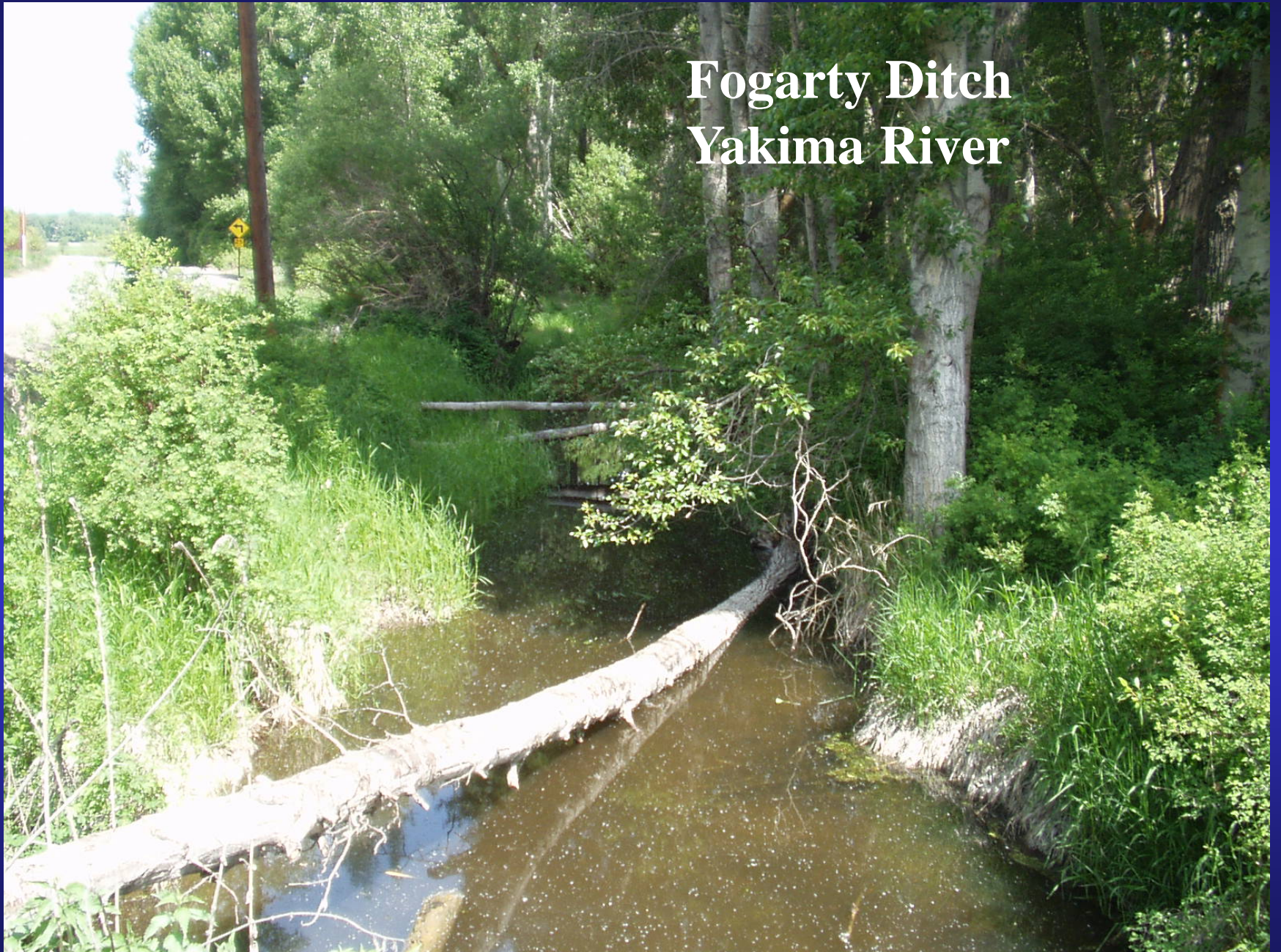
How about this?



Fruitvale Canal Naches River



Fogarty Ditch Yakima River



Chapman-Nelson Irrigation Ditch between headgate and fish screen

