

EPA Strategic Plan 2006 - 2011
Measuring Success of Sub-objective 4.3.9:
Restore and Protect the Columbia River Basin.

“GOAL: By 2011, prevent water pollution, and improve and protect water quality and ecosystems in the Columbia River Basin to reduce risks to human health and the environment.”

Strategic Targets:

- “By 2011, protect, enhance, or restore 13,000 acres of wetland habitat and 3,000 acres of upland habitat in the Lower Columbia River watershed. (2005 Baseline: 96,770 acres of wetland and upland habitat available for protection, enhancement, or restoration.)
- ”By 2011, clean up 150 acres of known highly contaminated sediments. (Baseline: 400 acres of known highly contaminated sediments in the main-stem of the Columbia River and Lower Willamette River as of 2006.)
- ”By 2011, demonstrate a 10 percent reduction in mean concentration of contaminants of concern found in water and fish tissue. (Chemical-specific baselines will be available in 2006 from the following sources: Pesticide Stewardship Partnership (PSP) Studies for Oregon as of 2006ⁱ; Total Maximum Daily Load (TMDL) studies for Washingtonⁱⁱ; 2002 EPA Columbia River Basin Fish Contaminant Surveyⁱⁱⁱ; Lower Columbia River Estuary Partnership 2006 Monitoring Study^{iv}; and Washington Ecology's March 2005 Report: Concentrations of 303(d) Listed Pesticides, PCBs, PAHs, Measured with Passive Samplers Deployed in the Lower Columbia River.^v)”

Determination of baselines for Columbia River Strategic Targets

A baseline is required for each element in EPA’s Strategic Plan to serve as the method for tracking progress over the next five years. EPA Region 10 worked collaboratively with the States of OR, WA, ID, and the Lower Columbia River Estuary Partnership and Columbia River Tribes to develop a baseline that has broad support for each sub-objective.

Wetland and Upland Habitat

The baseline for protecting, enhancing and restoring 13,000 acres of wetland habitat and 3,000 acres of upland habitat in the Lower Columbia River watershed was determined by the Lower Columbia River Estuary Partnership, who identified 96,770 acres of wetland and upland habitat as “available” for protection, enhancement, or restoration.

Sediment

The baseline measurement for clean up of sediment was determined through an internal EPA database which found 400 acres of known highly contaminated sediments in the mainstem of the Columbia River and Lower Willamette River as of 2006. The majority of this acreage is a part of the Portland Harbor Superfund clean up work.

Contaminants of Concern (pesticides/toxics)

Determining the baseline measurements for reduction in the mean concentration of contaminants of concern found in water and fish tissue required extensive chemical-specific data and monitoring. EPA Region 10, the States, and the Lower Columbia River Estuary Partnership used the following process to develop the baseline for contaminants of concern:

1. Review available data and knowledge of candidate contaminants of concern

2. Identify what the baseline document will look like
3. Choose contaminants of concern
4. Choose approach for measuring success in meeting the “10% reduction” target
5. Choose sampling matrix (i.e., water column, fish tissue, etc.)
6. Choose locations to be measured
7. Identify specific data sets to use to determine baseline combination
8. Identify quantitative concentrations for each baseline combination

Although many monitoring efforts have been conducted within this river basin, few studies have addressed concentration of contaminants of concern in a consistent manner that can be applied to measuring reduction of concentration across the basin. The size and variation of the land use and geography make this monitoring effort complex.

A small number of contaminants of concern were selected, and reduction of those contaminants will be reported and measured against the baseline data. EPA, the States, and the Lower Columbia River Estuary Partnership chose from existing data sets of the contaminants to be used for the baseline. Priority contaminants include PCBs, DDT, and existing use pesticides such as Organophosphates.

The final baseline for this strategic target is in a table (below) which includes the selected contaminants for monitoring, the location for where baseline data was collected and where subsequent monitoring will occur, the baseline concentration and source of the baseline data as well as the type of sampling (fish tissue, water column, semi permeable membrane devices (SPMDs)) and the responsible party (see table below).

Choosing a contaminant location meant there must be historical data and the expectation of similar sampling data from the same location in the future (between now and 2011). Hence, if it is unlikely that a contaminant will be monitored at a given site, that contaminant/location should not be chosen as part of the baseline. The Columbia River basin includes land that has a variety of uses. Many different pesticides may be used throughout the year. Spraying is more frequent during certain seasons and this may require intense monitoring and poses a challenge to consistently monitoring reduction of contaminant concentrations.

Finally, quantitative concentrations for each baseline were chosen. Success in meeting the 10% reduction target will be measured in the average reduction for each contaminant at each location.

How will toxic reductions be achieved?

Reduction in the mean concentration of contaminants of concern will be achieved through a variety of activities implemented by EPA and the States, specifically:

- Washington will be contributing to the target reduction by the implementation of two Water Quality Improvement Projects/Total Maximum Daily Loads (TMDLs), specifically the Yakima River TMDL and Walla Walla TMDL. To find out more about Washington’s Water Quality Improvement Projects (TMDLs), please visit the following site:
http://www.ecy.wa.gov/programs/wq/links/wq_assessments.html
- Oregon will be contributing to the target reduction by the implementation of the [Pesticide Stewardship Partnership \(PSP\)](#) for the Walla Walla basin. To find out more about Oregon’s PSPs, please visit <http://www.deq.state.or.us/news/prDisplay.asp?docID=2299> or contact Kevin Masterson at (503) 229-5983 ext 260.

- Idaho is committed to toxics reduction and sees value in the regional Columbia River Toxics Reduction effort. Idaho has been participating in the work efforts on the Columbia River baseline and as a part of that did an inventory of data for the Snake River Basin. With the exception of ongoing Superfund work effort in Blackbird mine and Couer d'Alene, there is a lack of widespread toxics data in Idaho sufficient to establish a suitable project baseline for the present five-year plan. Current information about Idaho toxics contamination either shows: 1) low levels, 2) is old data (>10 years), 3) or data not well coupled with current or planned cleanup efforts. (See the [summary table of toxics data for Idaho](#).) Elevated mercury levels in fish is getting a lot of attention, and there are known problem areas in Idaho, but there is hesitancy to use fish tissue as a yardstick as it is unlikely to show near term improvement. The absence of an Idaho project in the table below is hopefully temporary and may be corrected through additional monitoring efforts to better establish Idaho baselines, identify toxics hotspots, and develop cleanup plans.
- EPA will be contributing to reductions in the Columbia River mainstem. Currently, the mainstem is a placeholder in the table until EPA identifies specific activities that will contribute to reduction of contaminants of concern; these activities will be outlined in an implementation plan.

Tribal Involvement

EPA held an initial conference call with tribal government staff in May 2006 to discuss the possible inclusion of the Columbia River Basin into EPA's 2006 – 2011 Strategic Plan. During this meeting, EPA received valuable feedback and insight from the Tribes in attendance regarding the proposed focus and draft strategic targets for the Columbia River Basin priority. EPA was able to use this information while finalizing the goal and strategic targets used in the 2006-2011 Strategic Plan.

EPA had a second conference call with tribal government staff in January 2007. Staff from the Confederated Tribes of the Colville Reservation, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes and Bands of the Yakama Nation, Spokane Tribe of Indians, and Columbia River Inter-Tribal Fish Commission were in attendance at the second meeting. The conference call gave EPA a chance to apprise Tribes of the progress on the Columbia River Basin Strategy and EPA's vision for the future. EPA also shared the final strategic targets used for the Columbia River Basin priority and the proposed baselines for the strategic targets. Tribes provided EPA with comments and perspectives that will assist EPA in finalizing the baseline measures.

Columbia River: Baseline for Pesticide/Toxics Strategic Target

Contaminant Name	Location	Sampling Matrix	Median Baseline Concentration	Year & Source(s) of Baseline Data	Responsible Party*
Chlorpyrophos	Oregon: West Prong, Little Walla Walla River, N. of Stateline Road	Water column	0.245 µg/l ¹	Pesticide Stewardship Partnership documentation	OR DEQ
Azinphos methyl			0.029 µg/l		
DDT	Washington: Walla Walla River, RM 14.3	Water Column (measured with SPMD)	1.3 ppt ²	2002-2003 Walla Walla TMDL Evaluation, Dept. of Ecology publication 04-03-032	WA Ecology
	Washington: Yakima River, RM 18-30	Fish Tissue	92 µg/Kg, wet ³	2006 Yakima River Fish Tissue Study (preliminary data for TMDL report)	WA Ecology
PCBs	Mainstem Columbia: Columbia below Longview, RM 54	Water column (measured with SPMD)	0.25 ppt ⁴	2003-2004 Lower Columbia Report, Dept. of Ecology publication 05-03-006	EPA R10 ⁵
DDT			0.36 ppt ⁶		
PCBs	Mainstem Columbia: Multnomah Channel, RM 86	Water column (measured with SPMD)	2.6 ppt ⁴	2003-2004 Lower Columbia Report, Dept. of Ecology publication 05-03-006	EPA R10 ⁵
DDT			1.4 ppt ⁶		

* All work is dependent on continued availability of funds.

¹ Baseline data is from 2006 monitoring results associated with DEQ's Walla Walla Basin Pesticide Stewardship Partnership. The baseline concentrations are median concentrations found from Spring 2006 monitoring in the Basin. The detection frequency baseline is the fraction of sampling events where detections were observed.

² Baseline data is from the Walla Walla TMDL Evaluation (Technical Report) 04-03-032 (page 47). The sampling location is the lower Walla Walla River Site (RM 14.3) above Columbia River influences. Sampling was done with Semipermeable Membrane Devices (SPMDs). Measurements are in ng/L (ppt) dissolved. The concentration is an annual average (data is from May and June 2002, August and September 2002, November and December 2002, and February and March 2003). DDT is measured as total DDT, the sum of 4,4'-DDT, 4,4'-DDE, and 4,4'-DDD.

³ This preliminary data is from the Dept. of Ecology's Yakima River Fish Tissue study (as of 1/03/07). This study will be part of the Yakima River TMDL report. Samples were collected on 10/11/06 between Benton City (about RM 30) and Horn Rapids Dam (RM 18) in the Lower Yakima River. Each sample is a composite of skin-on fillets from five individual Largescale Suckers. Three samples were averaged to determine the baseline concentration. DDT is measured as total DDT, the sum of 4,4'-DDT, 4,4'-DDE, and 4,4'-DDD.

⁴ PCBs are total PCBs (sum of aroclors). Samples were taken from Aug.-Sept. 2003.

⁵ During 2007, EPA Region 10 will draft an implementation plan for achieving the 10% reduction goal. Pending completion of this plan, these Columbia River mainstem baselines are considered placeholders.

⁶ DDT is measured as total DDT, the sum of 4,4'-DDT, 4,4'-DDE, and 4,4'-DDD. Samples were taken from Aug.-Sept. 2003.

ⁱ Hood River Watershed, DEQ 2006, Mill Creek Watershed, DEQ 2006, Walla Walla Watershed, DEQ 2006 (pending), Pudding River Watershed, DEQ 2006 (pending), and Clackamas River, Watershed DEQ 2006 (pending).

ⁱⁱ Water Cleanup Plans (TMDLs) by Watershed/Ecology Region, <http://www.ecy.wa.gov/programs/wq/tmdl/watershed/index.html> (updated April 2005); Yakima River Pesticide TMDL, Okanogan River DDT and PCB TMDL, Wenatchee River, Mission Creek, and Lake Chelan PCB and Pesticide TMDL, Walla Walla Pesticide and PCB TMDL, and Palouse River Pesticide and PCB TMDL.

ⁱⁱⁱ U.S. Environmental Protection Agency. 2002. *Columbia River Basin Fish Contaminant Survey: 1996-1998* (EPA, 910-R-02-006). Seattle, Washington: Region 10, Risk Evaluation Unit: <http://yosemite.epa.gov/R10/OEA.NSF/webpage/Columbia+River+Basin+Fish+Contaminant+Survey>.

^{iv} Fixed Station and Seasonal Monitoring of Conventional and Toxic Contaminants on the Lower Columbia River Estuary Partnership (LCREP) Internet site: http://www.lcrep.org/eco_water_qual.htm#fixed.

^vJohnson, A. and D. Norton. March 2005. *Concentrations of 303(d) Listed Pesticides, PCBs, and PAHs Measured with Passive Samplers Deployed in the Lower Columbia River*, Ecology Publication No. 05-03-006. Olympia WA., Washington State Department of Ecology: <http://www.ecy.wa.gov/pubs/0503006.pdf>.