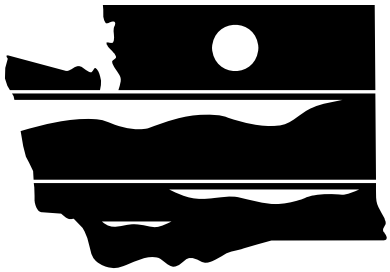

Walla Walla River
Chlorinated Pesticides and PCBs
Total Maximum Daily Load
(Water Cleanup Plan)

Submittal Report

February 2006
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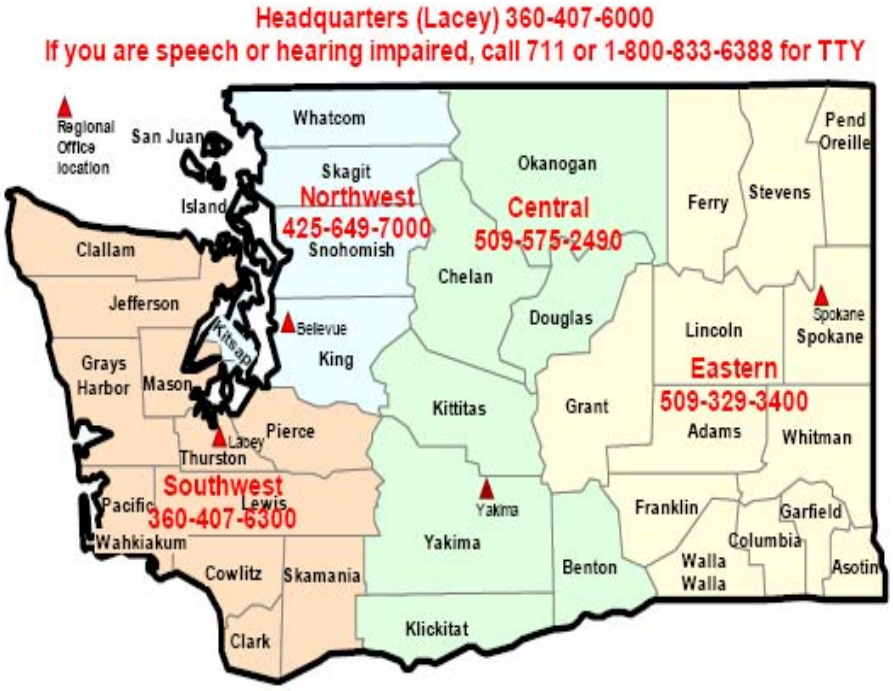

Map of Regions

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Introduction

The Washington State Department of Ecology (Ecology) is establishing a water quality clean-up plan or total maximum daily load (TMDL) for the Washington State portion of the Walla Walla basin that covers the pollution parameters of chlorinated pesticides and PCBs. This TMDL will address potential impairments of beneficial uses of the Walla Walla River and its tributaries in Washington State. Ecology does not have jurisdiction over the portion of the watershed in Oregon State that comprises roughly a quarter of the entire Walla Walla watershed. However, some load allocations are given in this TMDL for streams in Washington where the headwaters are in Oregon. Therefore, Ecology is mindful of the need to develop and foster strong and effective cross-border ties that will help coordinate implementation efforts and ensure water quality is protected across the basin.

Under the Clean Water Act, every state has its own water quality standards designed to protect, restore, and preserve water quality. Water quality standards consist of designated uses (such as cold-water biota and drinking water supply) and numeric standards to achieve those uses. When a water body fails to meet water quality standards after application of best management practices (BMPs) and required technology-based controls, the Clean Water Act requires that the state place the water body on a list of impaired water bodies and to prepare an analysis called a TMDL. BMPs usually apply to nonpoint sources and are defined in WAC 173-201A as 'physical, structural and/or managerial practices approved by the department that, when used singularly or in combination, prevent or reduce pollutant discharges.' Technology-based control typically applies to point sources and is the best technology available that is economically achievable and can be applied to facilities to reduce pollution discharges. The U.S. Environmental Protection Agency (EPA) has established regulations [40 Code of Federal Regulations (CFR) Part 130] and developed guidance for setting TMDLs (EPA, 1991). In June 2002, Washington State Department of Ecology developed its own guidance (which has been used in the writing of this document) for setting TMDLs.

The goal of a TMDL is to ensure that the impaired water body will attain water quality standards within a reasonable time period. A TMDL includes a written, quantitative assessment of the water quality problem and of the pollutant sources that cause the problem. The TMDL determines the amount of a given pollutant (called the loading capacity) that can be discharged to the water body and still meet water quality standards and, subsequently, allocates that load among the various sources. If the pollutant comes from a discrete source (referred to as a point source) such as an industrial facility's discharge pipe, that facility's share of the loading capacity is a wasteload allocation. If the pollution comes from a diffuse source (referred to as a nonpoint source) such as runoff from roads, parking lots, and fields, that share is a load allocation. However, each location that makes up the diffuse source does not receive an individual allocation. Load allocations are assigned to the broad nonpoint source.

The TMDL must also consider seasonal variations and include a margin of safety that takes into account any lack of knowledge about the causes of the water quality problem or its loading capacity. The sum of the individual allocations and the margin of safety must be equal to or less than the loading capacity.

The general purposes of this submittal document are to:

- Provide an analysis of chlorinated pesticides and PCB data from the Walla Walla River and tributaries from sampling performed by the Environmental Assessment Program (EAP) of the Washington State Department of Ecology from May 2002 through September 2003.
- Identify potential point and nonpoint sources of chlorinated pesticides and PCB pollution.
- Summarize ongoing and planned actions that will allow the Walla Walla River and its tributaries to meet state water quality standards.
- Summarize proposed monitoring activities to verify whether those standards are being met.
- Fulfill requirements of the federal Clean Water Act.

A detailed implementation plan (DIP) will be developed within one year after the TMDL approval by the Environmental Protection Agency (EAP) and will be based on the information presented in this document.

Background

Basin Description

The Walla Walla River is located in the southeast corner of Washington State (Figure 1). The river extends 61 miles from its headwaters in Oregon to its confluence with the Columbia River. The drainage basin covers approximately 1,760 square-miles. Approximately three-quarters (73 percent) of the drainage and the last 40 miles of the mainstem lie within Washington. In downstream order, the major Washington tributaries are Russell Creek, Reser Creek, Cottonwood Creek, Birch Creek, Yellowhawk Creek, Stone Creek, Garrison Creek, Cold Creek, Mill Creek, East Little Walla Walla River, West Little Walla Walla River, Dry Creek, Mud Creek, Pine Creek, the Touchet River, and the Gardena Creek.

Mill Creek flows from municipal watershed conditions in the Blue Mountains. Most of the city of Walla Walla's drinking water comes from a 36 square-mile protected portion of upper Mill Creek. Approximately 14 miles below the waterworks, part of its flow is diverted to Yellowhawk and Garrison creeks year round for irrigation purposes (Nicholson, pers. comm., 2005).

The two major permitted discharges in the basin are the Walla Walla Wastewater Treatment Plant (WWTP) that discharges to Mill Creek at river mile (R.M.) 5.4 and the College Place WWTP that discharges to Garrison Creek at R.M. 1.0. Yellowhawk, Garrison, and Mill creeks enter the Walla Walla River between R.M. 37.9 and 33.6. The drainage area of the greater Mill Creek watershed is 96 square-miles.

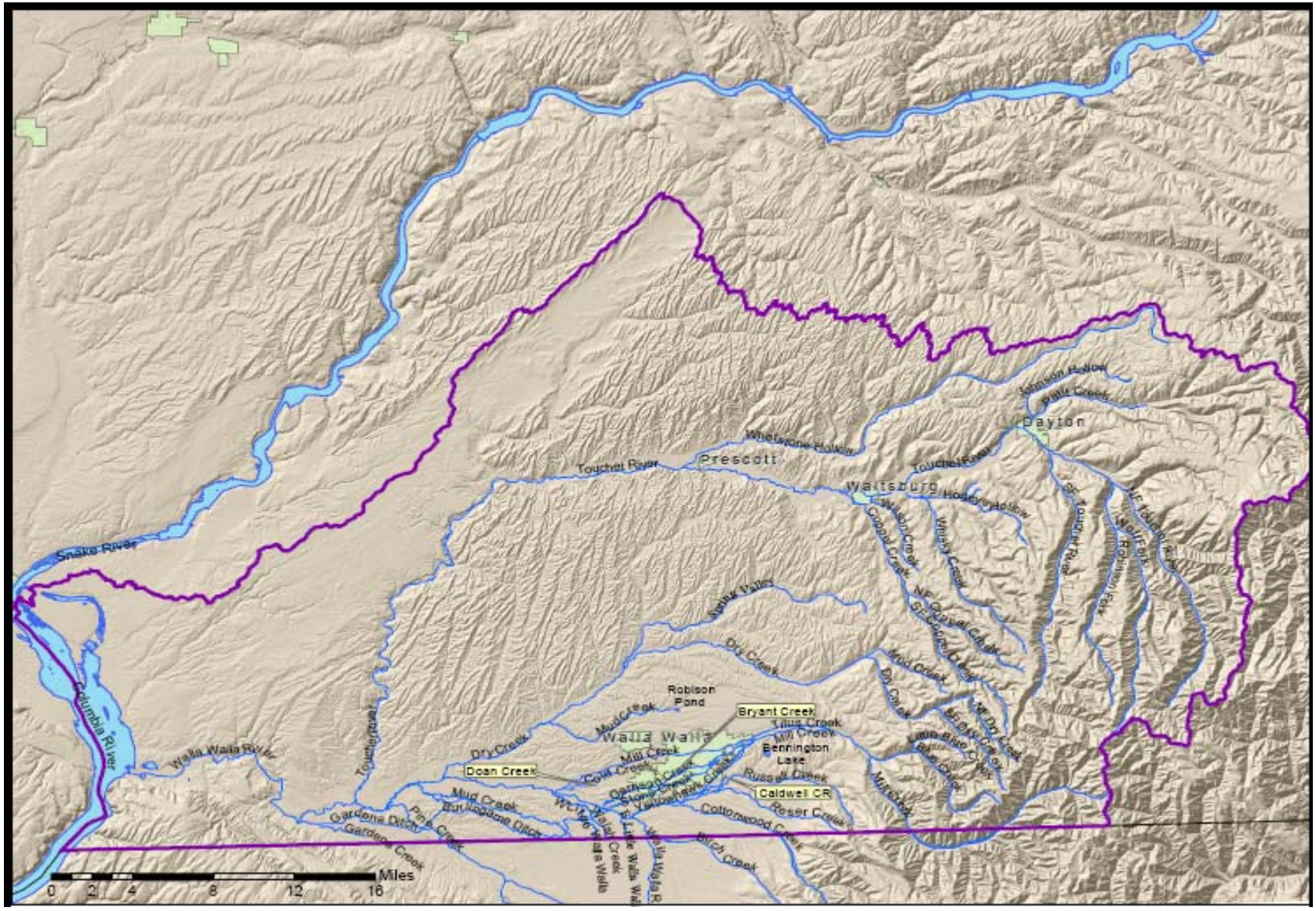

Figure 1. Water Resource Inventory Area (WRIA) 32

The Washington side of the Walla Walla basin has few urban areas. The Washington State Office of Financial Management's (OFM) most recent census results show there were approximately 56,700 people living in Walla Walla County in 2004. The major cities are Walla Walla and College Place, with a combined population of less than 40,000. Starting as early as the 1920s, the principal form of land use was production of small grains such as wheat and barley, and forage crops like alfalfa, and row crops (Mapes, 1969). Currently, wheat, pasture, potatoes, alfalfa seed, and hay are the largest percentage of the irrigated crops. Pasture makes up roughly a quarter of irrigated lands on the Washington side of the Walla Walla basin. Other crops include onions, peas, grapes, apples, asparagus, and barley. Roughly 25 percent of the total acreage in the Walla Walla basin is under the Conservation Reserve Program (CRP), and just less than 1 percent is under the Conservation Reserve Enhancement Program (CREP) (Walla Walla County and Walla Walla Basin Watershed Council, 2004). Figure 2 shows land use patterns as of the late 1980s/early 1990s. About 91 percent of land on the Washington side of the Walla Walla basin is privately owned with approximately 6 percent and 2 percent owned by federal and state entities respectively (Hashim and Stalmaster, 2004).

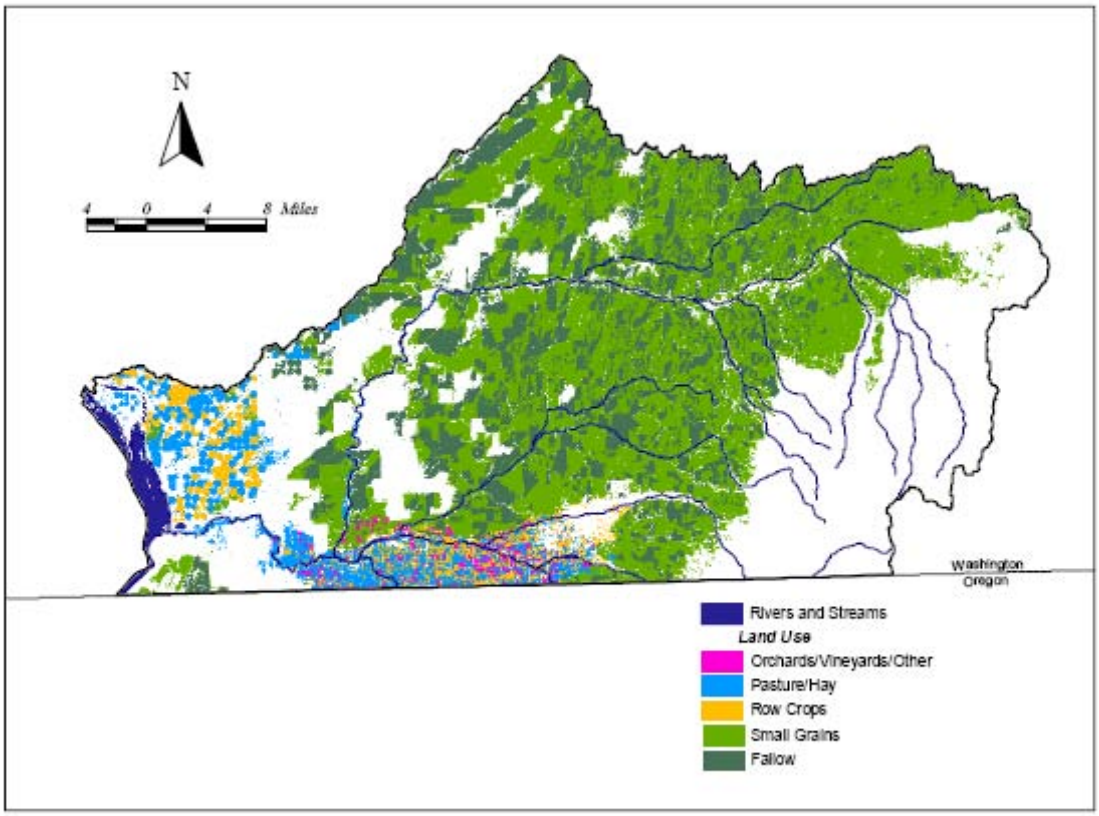

Figure 2. Land Use in the Walla Walla Basin, 1986-1996 data

The Walla Walla basin consists primarily of ridges and rolling hills interspersed with valleys. The ridges and hills are underlain by loessal (windblown silt) formations up to 250 feet thick, except to the west where the soils are sandy. The valley floors are underlain by floodplain alluvium ranging in grain size from gravel to silt. Beneath the floodplain alluvium are clay units as much as 500 feet thick. Most benches within the valleys and terraces on the valley sides are composed of sand and silt of the Touchet Beds deposited by catastrophic floods from Montana's

glacial Lake Missoula. The last flood series was between about 15,000 and 13,000 years ago. Under all the sediment, and exposed at the surface locally, are the Columbia River Basalts (CRB) which are thousands of feet of lava that erupted 17 to 6 million years ago. There are two major aquifers in the area. The basalts are the deep confined aquifer. The gravels are the shallow unconfined aquifer. In general, streams are in hydraulic continuity with the shallow gravel aquifer. In the Walla Walla Valley the clays serve to slow water movement between the shallow aquifer and the deep basalt aquifer (Newcomb, 1965, and Carson and Pogue, 1996). Folds and faults in the basalt can work as natural dams, creating impediments to groundwater flow, large differences in groundwater pressure, and fluctuations in water levels (HDR/EES Inc., 2005).

Elevation exerts significant control over climate in the Walla Walla basin, presenting temperature and precipitation gradients from west to east with the rise in elevation towards the Blue Mountains. Local climate varies from warm and semiarid in the western lowlands that lie in the rain shadow of the Cascade Mountains, to cool and relatively wet at higher elevations in the Blue Mountains. The average temperatures range from 20° to 25° F in the winter to 90° F to 95°F in the summer, with summer highs peaking in July and decreasing in late August. The lower west end of the basin averages less than 10 inches of precipitation per year (extremes can be as low as 4 inches), while the higher east end of the basin averages 40 to 60 inches of precipitation per year (HDR/EES Inc., 2005).

Although highly altered by grazing, prescribed burning, wildfires, and agriculture, remnants of the original grassland and shrub-steppe vegetation remain. However, the preliminary draft of the Walla Walla Watershed Plan (January 2005, section 3 pg. 4) states that most disturbed areas not under cultivation can be dominated by non-native invasive species such as cheat grass (*Bromus tectorum*), velvet grass (*Holcus lanatus*), yellow star thistle (*Centaurea solstitialis*), barnyard grass (*Echinochloa crusgalli*), tansy (*Tanacetum vulgar*), and rattlegrass (*Bromus brizaeformis*). Of these, *Bromus tectorum* and *Centaurea solstitialis* may currently be the most significant invasive species (Schirman, *pers. comm*., 2005). Riparian vegetation is limited in most areas throughout the basin, although considerable riparian enhancement has occurred through efforts by Walla Walla County and Columbia Conservation Districts. Areas of shrubs and grasses in the western lowlands gradually give way to the open woodlands and then transition into the upland coniferous forests of the Blue Mountains at higher elevations in the east (HDR/EES Inc., 2005).

Ecology's Chlorinated Pesticide and PCB Study

In 1996, the Walla Walla River was listed by the state of Washington under Section 303(d) of the Clean Water Act for non-attainment of the EPA human health criteria for 4,4'-DDE, 4,4'-DDD, dieldrin, chlordane, hexachlorobenzene, heptachlor epoxide, and PCB-1260 in edible fish tissue. The listings are based on sampling done by Ecology in 1993 (Davis *et al*., 1995). The 1996 303(d) listings were maintained on the 1998 and draft 2002/2004 lists (Table 3). Garrison Creek, a Walla Walla tributary, was also proposed for listing in 2002/2004 due to human health violations of standards for DDT compounds and hexachlorobenzene in water samples (White et al., 1998). Prior to Ecology's TMDL evaluation, toxaphene was absent from Washington's most recent toxin listings for the Walla Walla as it was previously unknown to violate water quality standards. However, Ecology's 2002-2003 TMDL evaluation found Pine Creek to have relatively high concentrations of toxaphene, and is shown in this report as impaired.

Chlorinated pesticides, their breakdown products, and polychlorinated biphenyls (PCBs) are no longer used in the United States, having been banned in the 1970s and 1980s for ecological concerns. They are now classed as probable human carcinogens by EPA. Chlorinated pesticides have a range of possible negative human health effects, including nervous system, digestive system, immune system, and reproductive system effects. They do not breakdown easily and bind strongly with the soil, and so often persist in the environment for many years. In the Walla Walla River watershed, the primary source of chlorinated pesticides is thought to be from soil erosion from agricultural lands and runoff from urban areas.

Like chlorinated pesticides, PCBs (Polychlorinated Biphenyls) also breakdown very slowly and persist in the environment. For this reason, both chlorinated pesticides and PCBs are commonly referred to as 'legacy pollutants'. PCBs do not burn easily, have been used widely as coolants and lubricants, and because they do not conduct electrical charges readily, they have been used as insulators in electrical transformers. PCBs can have severe human health effects, possibly causing stomach, liver and kidney damage, skin irritation, and thyroid gland injuries. They are also suspected to be probable human carcinogens. PCBs released into the air can enter the land or water by settling or from runoff in snow and rain. Both chlorinated pesticides and PCBs can build up in fish tissue and can reach levels much higher than those in the water, and can accumulate further in humans through fish consumption. Detailed profiles including use, regulations, environmental occurrence, and health effects have been prepared by the agency for Toxic Substances and Disease Registry (see Appendix F).

In 2002-2003, Ecology initiated a total maximum daily load (TMDL) evaluation of chlorinated pesticides and PCBs in the Walla Walla River and its tributaries. The evaluation was based on a field study that sampled concentrations of these pollutants in fish tissue and the water column, including sampling of the waste water treatment plant effluents for the cities of Walla Walla and College Place. The study area included the mainstem of the Walla Walla River and its tributaries from the Oregon border to the Columbia River. Tributary sampling was confined to sites at or near their mouths. Water sampling was done primarily on a quarterly basis: May-June, August-September, November-December of 2002, and November-December of 2003. Fish sampling was limited to resident mainstem species with upper river fish being analyzed separately from lower river fish (see the sampling section under *Technical Analysis* for further information).

The primary goals of the field study for the Walla Walla River chlorinated pesticide/PCB TMDL were to 1) quantify water column concentrations and loadings of 303(d) listed pesticides and PCBs in the Walla Walla mainstem, major tributaries, and significant point sources; 2) recommend numerical water quality targets that will result in fish meeting human health standards; and 3) propose load allocations to meet the targets. In pursuit of these goals, sufficient data were obtained to allow an assessment of human health risk from fish consumption. Benchmarks were established to gauge future improvements in water quality.

Historical application of chlorinated pesticides to soils and crops is the primary source of these chemicals in rivers and streams in agricultural areas like the Walla Walla basin. Because chlorinated pesticides bind strongly to soil particles, the chief means to meeting pesticide standards in the Walla Walla River and its tributaries is to reduce the amount of soil entering these water bodies. A report by Economic and Engineering Services, Inc. (EES, as cited from Kuttel, 2001; Pacific Groundwater Group, 1995; Saul et al., 2001) has concluded that erosion of fine sediment is a problem in the lower Walla Walla basin (EES, 2003). EES identified a number of sources of sediment including road-building and logging activities in the upper reaches of tributaries, recreational vehicle use, and urban runoff. They concluded, however, that "given the predominance of agricultural land use in the watershed, agricultural practices have been identified as the principal source of fine sediment." Historically, agricultural areas have been large contributors to the suspended sediment problem in some drainages in the Walla Walla. Studies conducted in the 1960s showed yields of suspended sediment were greatest in the highly cultivated Touchet River and Dry Creek drainage basins that were contributing up to 80 percent of the total sediment load to the Walla Walla River (Mapes, 1969). Soils in these two drainages consist of well-drained silty loams and very fine sandy loams that are highly susceptible to erosion from runoff. Recently, much work has been done in the area to address agricultural sources of the problem.

Total suspended solids (TSS) and turbidity are proposed as water quality indicators and surrogate numerical targets for chlorinated pesticides in the Walla Walla River and its tributaries. Setting water quality targets based on TSS and turbidity has the advantage of translating more directly into land use practices and being easier and less expensive to monitor than trace chemical concentrations. Additionally, TSS and turbidity levels in rivers and streams have a direct and quantifiable effect on the health of fish and other aquatic organisms as well as aesthetic values.

Applicable Criteria

The Washington State Water Quality Standards are published pursuant to Chapter 90.48 of the Revised Code of Washington (RCW). The authority to adopt rules, regulations, and standards as necessary to protect the environment is vested with the state Department of Ecology. Under Section 303(c)(3) of the federal Clean Water Act, the EPA Regional Administrator approves the water quality standards adopted by the state. Through adoption of these standards, Washington State has designated certain characteristic uses to be protected and the criteria necessary to protect these uses (WAC 173-201A).

Although the Washington State Water Quality Standards were revised and adopted by the state on July 1, 2003, the standards from November 1997 will be used for this TMDL. The new water quality standards will not take effect for projects that require federal action until EPA approves the new standards. TMDLs under development with field work completed will continue to use the 1997 version of the water quality standards, per Ecology document *Concise Explanatory Statement and Responsiveness Summary for the Adoption of Water Quality Standards, Chapter 173-201A WAC* published July 1, 2003. At the time of writing this report, revisions to the water use and criteria classes (WAC 173-201A-030) and toxic substances sections (WAC 173-201A-040) had not yet been approved, thus the 1997 standards are employed. However, the toxics criteria for this TMDL are not being revised and are still in effect in the same form they will be in after the revised standards are approved.

Under WAC 173-201A-030 (1997) the Walla Walla River drainage is a predominately a Class A system, although portions of the mainstem and Mill Creek are Class B. The characteristic beneficial uses of a Class A and Class B water bodies are described in WAC 173-201A-030 (2)(a) and (b) and WAC 173-201A-030 (3)(a) and(b) (1997) respectively as:

> *Characteristic uses shall include, but not be limited to, the following:*
> *(i) Water supply (domestic, industrial, agricultural).*
> *(ii) Stock watering.*
> *(iii) Fish and shellfish:*
> *Salmonid migration, rearing, spawning, and harvesting.*
> *Other fish migration, rearing, spawning, and harvesting.*
> *Clam, oyster, and mussel rearing, spawning, and harvesting.*
> *Crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing, spawning, and harvesting.*
> *(iv) Wildlife habitat.*
> *(v) Recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment).*
> *(vi) Commerce and navigation.*
>
> [WAC 173-201A-030(2)(b)and (3)(b)]

State law does not establish a ranking priority among the beneficial uses, but the individual waters are expected to support all uses within the classification.

Toxic Substances: Washington State Regulations

WAC 173-201A-030 (2) (vii) and (3) (vii) state the following with regard to toxic substances:

> *Toxic, radioactive, or deleterious material concentrations shall be below those which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department (see WAC 173-201A-040 and 173-201A-050).*

Toxics substances are further addressed in WAC 173-201A-040 as follows (selected sections):

> *(1) Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department.*
>
> *(2) The department shall employ or require chemical testing, acute and chronic toxicity testing, and biological assessments, as appropriate, to evaluate compliance with subsection (1) of this section and to ensure that aquatic communities and the existing and characteristic beneficial uses of waters are being fully protected.*
>
> *(5) Concentrations of toxic and other substances with toxic propensities not listed in Subsection (3) of this section shall be determined in consideration of USEPA Quality Criteria for Water, 1986, as revised, and other relevant information as appropriate. Human health-based water quality criteria used by the state are contained in 40 CFR 131.36 (known as the National Toxics Rule).*
>
> *(6) Risk-based criteria for carcinogenic substances shall be selected such that the upper-bound excess cancer risk is less than or equal to one in one million.*

Washington State water quality criteria that apply to 303(d) listed pesticides and PCBs in the Walla Walla drainage are shown in Table 1 [from sections (3) and (5) of WAC 173-201A-040]. The human health criteria are for a one in one million increased lifetime cancer risk from consumption of water and fish or fish only. A fish consumption rate of 6.5 grams per day and a water consumption rate of 2 liters per day are assumed. These criteria were promulgated for Washington in the EPA National Toxics Rule (40 CFR 131.36).

Table 1. Applicable Washington State Water Quality Criteria* for Chlorinated Pesticides and PCBs (ng/L; parts per trillion).

	Criteria for Protection of Aquatic Life			Criteria for Protection of Human Health	
Chemical	Freshwater Acute	Freshwater Chronic		Water and Fish Consumption	Fish Consumption
4,4'-DDT				0.59	0.59
4,4'-DDE				0.59	0.59
4,4'-DDD				0.83	0.84
DDT (and metabolites)	1,100	1.0			
Dieldrin	2,500	1.9		0.14	0.14
Heptachlor	520	3.8		0.21	0.21
Heptachlor epoxide				0.10	0.11
Hexachlorobenzene				0.75	0.77
Chlordane	2,400	4.3		0.57	0.59
Toxaphene	730	0.2		0.73	0.75
PCBs	2,000	14		0.17	0.17

*WAC 173-201A-040 (1997 version http://www.ecy.wa.gov/programs/wq/swqs/wac173201a-1997.pdf) EPA promulgated the human health criteria for Washington in 40 CFR 131.36

Toxic Substances: Oregon State Regulations

Approximately one quarter of the Walla Walla drainage lies in Oregon State and does not fall under Washington State Department of Ecology's jurisdiction. Beneficial uses and water quality standards for the surface waters of the state of Oregon are codified in the Oregon Administrative Rules (OAR) Chapter 340, Division 41. Beneficial uses for the Walla Walla River basin are given in OAR 340-041-0330 and are shown below

Beneficial Uses	Walla Walla River Mainstem from Confluence of North and South Forks to State Line	All Other Basin Streams
*Public domestic water supply	X	X
*Private domestic water supply	X	X
Industrial water supply	X	
Irrigation	X	X
Livestock watering	X	X
Anadromous fish passage	X	X
Salmonid fish rearing	X	X
Salmonid fish spawning	X	X
Resident fish & aquatic Life	X	X
Wildlife & hunting	X	X
Fishing	X	X
Boating	X	X
Water contact recreation	X	X
Aesthetic quality	X	X
Hydro power		X

*With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.

The newly adopted Oregon Administrative Rule (OAR) 340-041-0033 states the following with regard to toxic substances.

> *(1) Toxic substances may not be introduced above natural background levels in waters of the state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare of aquatic life, wildlife, or other designated beneficial uses.*
>
> *(2) Levels of toxic substances in waters of the state may not exceed the applicable criteria listed…*

The revised adopted toxics criteria in Oregon Administrative Rule (OAR) 340-0410-0033 are not Water Quality Standards as defined under the Clean Water Act as they have not received EPA approval. However, as of February 15, 2005, Oregon Department of Environmental Quality (DEQ) has chosen to use the new criteria to produce TMDLs where they are overly protective with regard to the 'applicable' water quality standards (Fitzpatrick, M. pers. comm., 2005). Where the 'old' criteria are more stringent these continue to be used for Oregon TMDLs until the new criteria are approved by the EPA. A complete list of the more stringent criteria can be found in Table 33A of Division 41 at http://www.deq.state.or.us/wq/wqrules/wqrules.htm. It should be noted that Table 33A values cannot yet be used for *listing* a water body as impaired because those standards are yet be approved by EPA. Table 2 shows the new more stringent Oregon State criteria for the toxins addressed in this submittal report. Figures in **bold** represent the 'old' criteria that continue to be employed in Oregon TMDLs where they are more stringent than the new criteria.

Table 2. Oregon State Water Quality Criteria* for Chlorinated Pesticides and PCBs (ng/L; parts per trillion figures in bold represent 'old' criteria still in use where they are more stringent).

	Criteria for Protection of Aquatic Life			Guidance Values for the Protection of Human Health	
Chemical	Freshwater Acute	Freshwater Chronic		Water and Fish Consumption	Fish Consumption
4,4'-DDT	1,100	1.0		**0.024**	**0.024**
4,4'-DDE				0.22	0.22
4,4'-DDD				0.31	0.31
Dieldrin	240	**1. 9**		0.052	0.052
Heptachlor	520	3.8		0.079	0.079
Heptachlor epoxide	520	3.8		0.039	0.039
Hexachlorobenzene				0.28	0.29
Chlordane	2,400	4.3		**0.46**	**0.48**
Toxaphene	730	0.2		0.28	0.28
PCBs	2,000	14		0.064	0.064

*OAR 340-041-0033 ('new' criteria) and OAR 340-041-0685 ('old' criteria).

Water Quality and Resource Impairments

Sampling conducted in 1993 indicated the Washington State's water quality standards had been violated in various water bodies of the Walla Walla drainage and these were then considered 'impaired.' Several of these water bodies were included on both the state's 1996 and 1998 Section 303(d) list for non-attainment of the EPA's human health criteria for 4,4'DDE; 4,4'DDD; dieldrin; chlordane; hexachlorobenzene; heptachlor epoxide; and PCB 1260 in edible fish tissue. Although sections of the Walla Walla and its tributaries were identified as being impaired for other factors (including, but not restricted to: pH; dissolved oxygen; and temperature), this report addresses only chlorinated pesticides and PCB's.

Although parts of the Oregon side of the Walla Walla drainage appear on the 303(d) list as impaired for temperature, there are currently no listed impairments for toxins (Butcher, 2005 *pers. comm.*). However, it is important to note that in order to meet the most stringent toxin target loads it may be necessary to address activities taking place in Oregon with the help of state and local authorities at a later date. Toxin impairments in the Walla Walla River watershed that are addressed in this TMDL are summarized in Table 3.

In 2002-2003, Ecology conducted a TMDL evaluation of the chlorinated pesticide and PCB problem in the Walla Walla River and its tributaries. This study found several additional exceedances previously not on the 1996 and 1998 303(d) lists. These are shown in Table 3 as 'other areas not meeting standards'. The deadline for the inclusion of new data in the 2004 303(d) list was 12/31/2003. Although water quality samples for the Walla Walla TMDL assessment had been collected by this time, the data had not yet been analyzed and so were not available for inclusion in the current 303(d) list.

Table 3. Walla Walla Sub basin (WRIA 32) Toxics 303(d) Listings and Impairments.

Water Body	Waterbody ID#(old)	Waterbody ID#(new)	Parameter	Medium	Township Range Section	1996 List	1998 List	2004 List	Other areas not meeting standards
Walla Walla River	WA-32-1010	QE90PI	4,4'-DDT	Tissue	07N 31E 25	No	No	40970	
Walla Walla River	WA-32-1010	QE90PI	4,4'-DDE	Tissue	07N 31E 25	Yes	Yes	8806	
Walla Walla River	WA-32-1010	QE90PI	Chlordane	Tissue	07N 31E 25	Yes	Yes	8804	
Walla Walla River	WA-32-1010	QE90PI	Dieldrin	Tissue	07N 31E 25	Yes	Yes	8805	
Walla Walla River	WA-32-1010	QE90PI	Heptachlor epoxide	Tissue	07N 31E 25	Yes	Yes	8808	
Walla Walla River	WA-32-1010	QE90PI	Hexachloro-benzene	Tissue	07N 31E 26	Yes	Yes	8809	
Walla Walla River	WA-32-1010	QE90PI	Total PCBs	Tissue	07N 31E 26	Yes	Yes	8810	

Water Body	Waterbody ID#(old)	Waterbody ID#(new)	Parameter	Medium	Township Range Section	1996 List	1998 List	2004 List	Other areas not meeting standards
Walla Walla River	WA-32-1010	QE90PI	4,4'-DDE	Tissue	07N 32E 35	No	No	14178	
Garrison Creek		DH35GB	4,4'-DDT	Water	06N 35E 3	No	No	14386	
Garrison Creek		DH35GB	4,4'-DDE	Water	06N 35E 3	No	No	40969	
Garrison Creek		DH35GB	4,4'-DDD	Water	06N 35E 3	No	No	40968	
Garrison Creek		DH35GB	Hexachloro-benzene	Water	06N 35E 3	No	No	14389	
Walla Walla River		QE90PI	Toxaphene	Tissue	07N 32E 21	No	No	No	X
Walla Walla River		QE90PI	4,4'-DDE	Tissue	07N 32E 21	No	No	No	X
Walla Walla River		QE90PI	4,4'-DDD	Tissue	07N 32E 21	No	No	No	X
Walla Walla River		QE90PI	Chlordane	Tissue	07N 32E 21	No	No	No	X
Walla Walla River		QE90PI	Dieldrin	Tissue	07N 32E 21	No	No	No	X
Walla Walla River		QE90PI	Heptachlor epoxide	Tissue	07N 32E 21	No	No	No	X
Walla Walla River		QE90PI	Hexachloro-benze	Tissue	07N 32E 21	No	No	No	X
Walla Walla River		QE90PI	PCBs	Tissue	07N 32E 21	No	No	No	X
Walla Walla River		QE90PI	4,4'-DDE	Water	07N 32E 36	No	No	No	X
Walla Walla River		QE90PI	Dieldrin	Water	07N 32E 36	No	No	No	X
Walla Walla River		QE90PI	Toxaphene	Water	07N 32E 36	No	No	No	X
Walla Walla River		QE90PI	PCBs	Water	07N 32E 36	No	No	No	X
Walla Walla River		QE90PI	4,4'-DDE	Tissue	07N 35 31	No	No	No	X
Walla Walla River		QE90PI	Dieldrin	Tissue	07N 35	No	No	No	X

Water Body	Waterbody ID#(old)	Waterbody ID#(new)	Parameter	Medium	Township Range Section	1996 List	1998 List	2004 List	Other areas not meeting standards
					31				
Walla Walla River		QE90PI	Chlordane	Tissue	07N 35 31	No	No	No	X
Walla Walla River		QE90PI	PCBs	Tissue	07N 35 31	No	No	No	X
Walla Walla River		QE90PI	Toxaphene	Tissue	07N 35 31	No	No	No	X
Walla Walla River		QE90PI	4,4'-DDE	Water	07N 35E 31	No	No	No	X
Walla Walla River		QE90PI	4,4'-DDT	Water	07N 35E 31	No	No	No	X
Walla Walla River		QE90PI	Dieldrin	Water	07N 35E 31	No	No	No	X
Walla Walla River		QE90PI	PCBs	Water	07N 35E 31	No	No	No	X
Walla Walla River		QE90PI	Chlordane	Water	07N 35E 31	No	No	No	X
Dry Creek		OT03FJ	Dieldrin	Water	07N 34E 29	No	No	No	X
Dry Creek		OT03FJ	Hexachloro-benzene	Water	07N 34E 29	No	No	No	X
East Walla Walla River		XO26DW	4,4'-DDE	Water	06N 35E 38	No	No	No	X
East Walla Walla River		XO26DW	Dieldrin	Water	06N 35E 38	No	No	No	X
East Walla Walla River		XO26DW	Heptachlor epoxide	Water	06N 35E 38	No	No	No	X
Gardena Creek			t-DDT	Water	06N 33E 8	No	No	No	X
Garrison Creek		DH35GB	t-DDT	Water	06N 35E 3	No	No	No	X
Garrison Creek		DH35GB	Dieldrin	Water	06N 35E 3	No	No	No	X
Garrison Creek		DH35GB	PCBs	Water	06N 35E 3	No	No	No	X
Garrison Creek		DH35GB	Chlordane	Water	06N 35E 3	No	No	No	X
Mill Creek		SS77BG	t-DDT	Water	07N 35E 38	No	No	No	X

Water Body	Waterbody ID#(old)	Waterbody ID#(new)	Parameter	Medium	Township Range Section	1996 List	1998 List	2004 List	Other areas not meeting standards
Mill Creek		SS77BG	4,4'-DDE	Water	07N 35E 38	No	No	No	X
Mill Creek		SS77BG	Dieldrin	Water	07N 35E 38	No	No	No	X
Mill Creek		SS77BG	Chlordane	Water	07N 35E 38	No	No	No	X
Mill Creek		SS77BG	PCBs	Water	07N 35E 38	No	No	No	X
Pine Creek		ZX47PC	Toxaphene	Water	06N 33E 1	No	No	No	X
Pine Creek		ZX47PC	4,4'-DDE	Water	06N 33E 1	No	No	No	X
Pine Creek		ZX47PC	4,4'-DDT	Water	06N 33E 1	No	No	No	X
Pine Creek		ZX47PC	Dieldrin	Water	06N 33E 1	No	No	No	X
Pine Creek		ZX47PC	Heptachlor epoxide	Water	06N 33E 1	No	No	No	X
Yellowhawk Creek		RK92TG	4,4'-DDE	Water	06N 35E 1	No	No	No	X
Yellowhawk Creek		RK92TG	4,4'-DDT	Water	06N 35E 1	No	No	No	X
Yellowhawk Creek		RK92TG	Dieldrin	Water	06N 35E 1	No	No	No	X
Yellowhawk Creek		RK92TG	PCBs	Water	06N 35E 1	No	No	No	X
Yellowhawk Creek		RK92TG	Chlordane	Water	06N 35E 1	No	No	No	X

Seasonal Variation

Ecology's TMDL evaluation of the Walla Walla watershed found a strong correlation between the levels of chlorinated pesticides and sediment loads in the water column. The correlation between PCBs and sediment loads was weaker. The TMDL evaluation and historical data both show that the period of highest stream flow and sediment load is January to June, which coincides with the times of highest chlorinated pesticide and PCB concentrations. Both chlorinated pesticides and PCBs are well known for their propensity to bind strongly with soil particles. This and knowledge of the historical pesticide application in the area, leads to the conclusion that the primary source of these chemicals in the Walla Walla River and its tributaries was probably soil erosion.

Elevation can have a significant influence on climate in the Walla Walla Basin. Temperature and precipitation gradients exist from west to east with the rise in elevation towards the Blue Mountains (see figure 3).

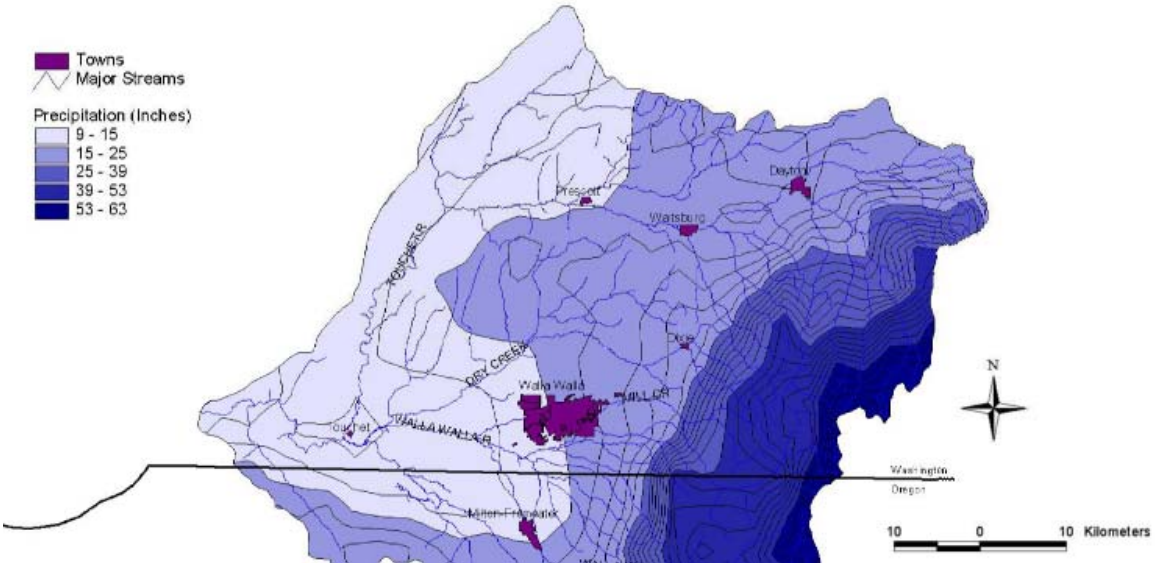

Figure 3 Isopluvial Map of the Walla Walla Watershed (HDR/EES, from the Walla Walla Watershed Plan, Exhibit 3-3, May 2005)

The majority of soil erosion in the Walla Walla basin occurs from precipitation in winter through early spring, flow is sustained though June from snowmelt (see figure 4). Infrequent storm events during winter months sometimes cause severe flooding from heavy rain that can contribute the highest suspended sediments to the water column (Mapes, 1969).

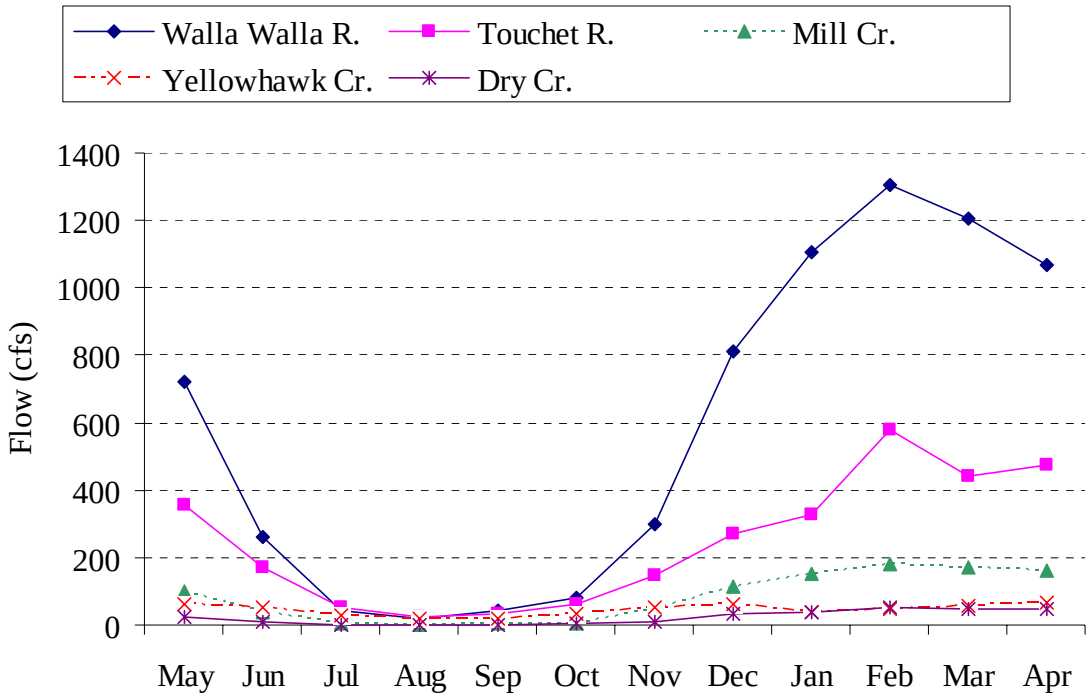

Figure 4. Typical flow patterns in the Walla Walla drainage (monthly averages from USGS data, 1951-2002 USGS gauge stations: 14018500; 14017500; 14015000; 14014000; 1401600).

Data collected in Ecology's TMDL evaluation showed marked seasonal variations in the level of pesticide/PCB contamination in the mainstem. The highest pesticide concentrations always coincided with high flow periods. Similarly the lowest concentrations almost always coincided with low flow periods. Runoff from agricultural land is highest during high flow periods which coincides with the high concentrations observed.

The highest PCB concentrations were similarly recorded during high flow months. Seasonal fluctuations in pesticide/PCB levels were also pronounced in the tributaries. Pesticides and PCBs increased substantially in the Walla Walla mainstem between the Oregon border and Detour Road. On average, concentrations increased by factors of two to four from the upper to middle river, with an eleven-fold increase for dieldrin. Except for toxaphene, concentrations generally decreased in the lower Walla Walla River (below Cummins Bridge). The reduced lower river concentrations are largely attributable to dilution by the Touchet River. The lower river averaged five times the toxaphene concentrations measured upstream.

Technical Analysis

This section summarizes the sampling and data analysis methods used in Ecology's 2002-2003 TMDL evaluation. Those seeking more detailed information should refer to the technical study (see Appendix A).

Sampling

Ecology's TMDL evaluation of chlorinated pesticides and PCBs in the Walla Walla drainage was based on water column, fish tissue, and wastewater treatment plant effluent sampling conducted from May 2002 to September 2003.

The purpose of the water sampling was to 1) identify possible or potential sources of contamination; 2) assess compliance with human health and aquatic life criteria; 3) test for relationships between chlorinated pesticides, TSS, and turbidity; and 4) calculate loadings to and within the river.

Concentrations of 303(d) listed pesticides and PCBs were sampled using semipermeable membrane devices (SPMDs) developed by the U.S. Geological Survey. A combination of laboratory calibration data and permeability/performance reference compounds (PRCs) spiked in deployed SPMDs were used in conjunction with field temperature to obtain an estimate of average concentrations.

An SPMD consists of a polyethylene tube filled with a lipid material called triolein. The rate at which SPMDs take up pesticides and PCBs has been determined in the laboratory. The rate varies with temperature, water flow, and the amount of biological growth on the membrane surface. Performance reference compounds (PRCs) are used to account for differences in these parameters between laboratory and field conditions. PRC compounds are spiked into an SPMD prior to deployment in a stream. The rate at which the PRCs are lost from the SPMD is proportional to the rate at which target compounds in the surrounding water are taken up by the SPMD. In other words, PRCs show how well the SPMD is performing compared to what was observed in the laboratory. The water column concentration determined from the SPMD is adjusted for the loss rate of the PRCs. A high rate of loss means the SPMD is sampling at a high rate, i.e., there is a high rate of movement of chemicals through the membrane. SPMDs provide a time-weighted average concentration for the chemicals of interest and measure only the dissolved ready bioavailable fraction. Ecology's study deployed SPMDs at ten sites (shown in Figure 4) on a quarterly basis for approximately one month each.
Deployments were timed to provide representative data over the range of runoff conditions that normally occur in the drainage. SPMD extracts were analyzed for the 303(d) listed pesticides and PCBs. This analysis was later expanded to include toxaphene, based on the examination of the chromatograms from the initial deployment in May. When chlorinated organic compounds are discharged to surface waters, they partition between dissolved and particulate fractions. Total pesticide/PCB concentrations in the Walla Walla drainage were mathematically estimated from the SPMD data. This is discussed in greater detail in *A Total Maximum Daily Load Evaluation for Chlorinated Pesticides and PCBs in the Walla Walla River* (see Appendix A).

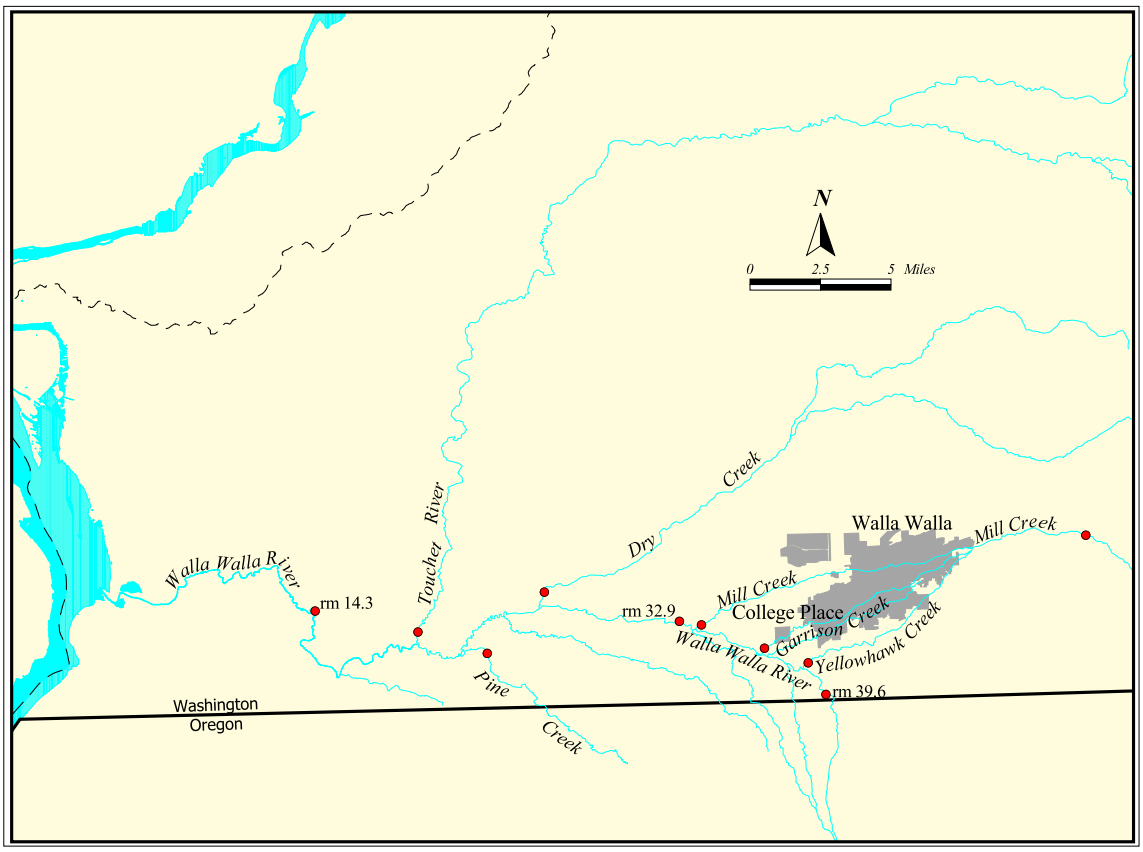

Figure 5. Water quality monitoring sites where SPMDs were deployed.

In addition to water sampling at the ten sites shown in Figure 4, wastewater treatment plants (WWTPs) at the cities of Walla Walla and College Place were evaluated separately as possible sources of chlorinated pesticides and PCBs. The Walla Walla plant discharges to Mill Creek and the College Place plant discharges to Garrison Creek (Figure 5). The other two WWTPs in the basin (Dayton and Waitsburg) are small discharges (< 1 million gallons per day) located over 40 miles up the Touchet River. As such, these plants are unlikely significant pesticide/PCB contributors to the Walla Walla River. Industries and other permitted facilities in the Walla Walla basin are not likely significant sources.

For the TMDL study, composite effluent samples were collected over a two-day period on a quarterly basis from the Walla Walla and College Place WWTPs. The locations of the effluent sampling sites are given in the TMDL technical report (see Appendix A). Sampling was done near the midpoint of the SPMD deployment period. Each sample was analyzed for chlorinated pesticides, PCBs, total suspended solids (TSS), and conductivity.

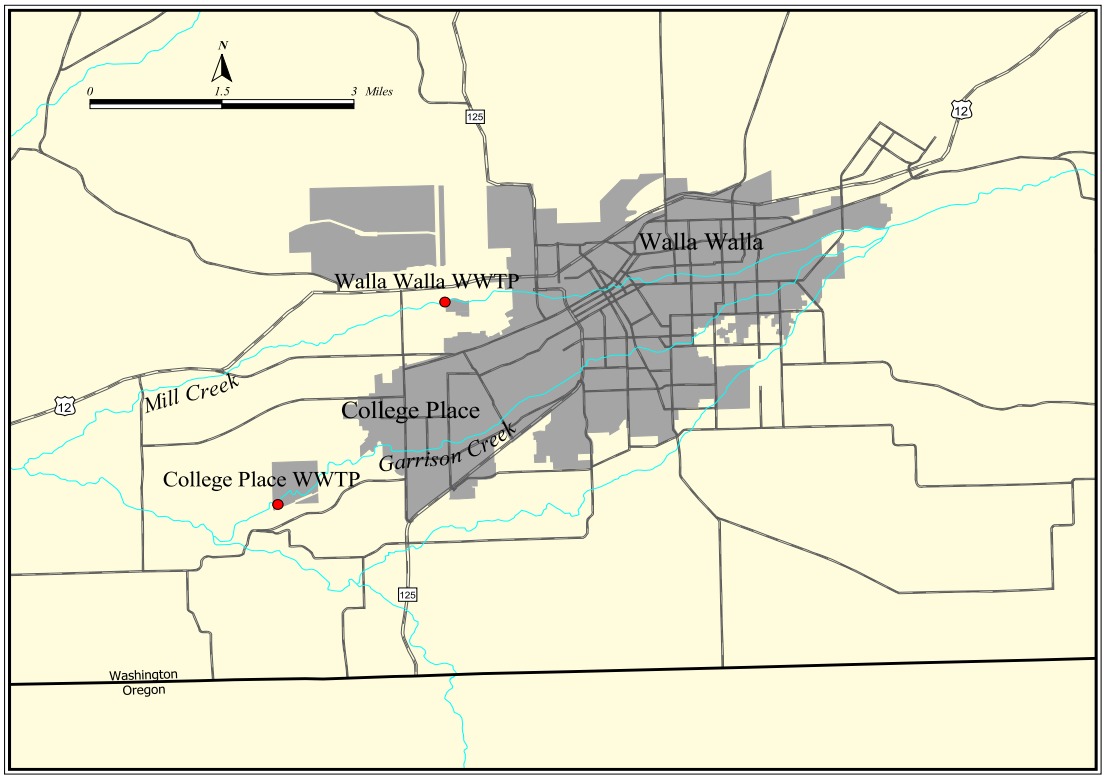

Figure 6. Location of Walla Walla and College Place WWTPs.

The purpose of collecting the fish tissue samples was to 1) determine the extent to which the pesticides and PCBs detected in 1992-93 continue to exceed 303(d) listing criteria, 2) assess appropriateness of applying EPA human health criteria to the Walla Walla River, and 3) provide data to the Washington Department of Health (WDOH) for a human health assessment. As noted previously, this analysis was limited to resident mainstem species, with upper river fish being analyzed separately from lower river fish using the Touchet River-Dry Creek reach as an approximate dividing line (Figure 6). The resident species most frequently consumed from the Walla Walla River are smallmouth bass (*Micropterus dolomieu*), channel catfish (*Ictalurus punctatus*), and carp (*Cyprinus carpio*). The fish tissue collection for the TMDL focused on these species. Some segments of the local population consume almost any fish they catch, therefore two other commonly encountered species, bridgelip suckers (*Catostomus columbianus*) and northern pike minnow (*Ptychocheilus oregonensis*; formerly known as northern squawfish) were also collected.

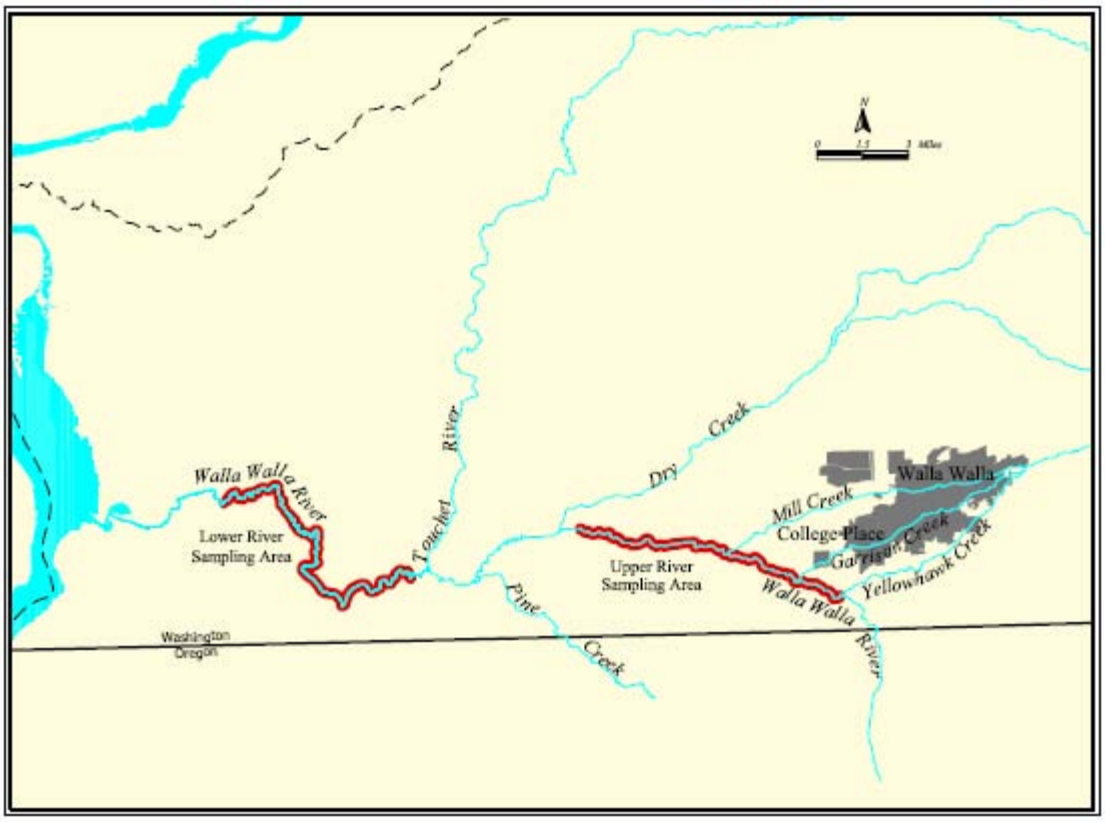

Figure 7. Location of fish samples.

Data on pesticides, PCBs, and other contaminants in migratory fish species that inhabit the Walla Walla River can be found in EPA's *Columbia River Basin Fish Contaminant Survey, 1996-1998* (2002b) or online at http://yosemite.epa.gov/r10/oea.nsf . The Touchet and nearby Dry Creek transport most of the sediment load discharged from the basin. Inputs of sediments and associated contaminants from these two tributaries, as well as Pine Creek, have the potential to result in substantially different water quality conditions in the lower river. Therefore, separate specimens for chemical analysis were obtained from the upper and lower river, using the Touchet River-Dry Creek reach as an approximate dividing line (see Figure 6). Samples close to the confluence with the Columbia River were avoided in an effort to obtain data representative of the Walla Walla River. The fish samples were collected in July and September 2002. Fillets were analyzed for 303(d) listed pesticides, PCBs (Aroclor-equivalents), and percent lipids.

Composite samples were used to obtain a cost efficient estimate of mean chemical concentrations. The target sample size was 20 fish of each species from each location, to be analyzed in composites of five fish each. At the request of the Confederated Tribes of the Umatilla Indian Reservations (CTUIR), several whole fish composites were included in the analysis.

Data Analysis

Historical application of chlorinated pesticides to soils and crops is the primary source of these chemicals in rivers and streams in agricultural areas like the Walla Walla basin (e.g., Risebrough and Jarman, 1984; Munn and Gruber, 1997). This reservoir of contamination is supplemented by current-day atmospheric deposition (e.g., Wania and Mackay, 1996). Once applied or air deposited, chlorinated pesticides bind to soil particles. The chief means to meeting pesticide standards in the Walla Walla River and its tributaries is to reduce the amount of soil entering these water bodies and maintain low TSS levels in the water column.

For chemical concentrations measured in the SPMD samples, pesticide concentrations in the Walla Walla drainage generally decreased in the following order: t-DDT (t = total) > t-chlordane > dieldrin >hexachlorobenzene > heptachlor epoxide. Toxaphene and PCBs were quantified less consistently than these other compounds, and concentrations were more variable. Upper Mill Creek and the upper Walla Walla River at the state line had the lowest concentrations of both pesticides and PCBs. The Touchet River also had a consistently low level of contamination relative to the Walla Walla River and other tributaries. On average, the highest t-DDT, t-chlordane, and dieldrin concentrations were found in Yellowhawk Creek, 3.7, 2.7, and 3.8 ng/L, respectively. Maximum t-DDT and dieldrin concentrations of 6.5 and 12 ng/L (parts per trillion) were recorded here. The maximum t-chlordane concentration however was in Garrison Creek at 6.4 ng/L. Dry Creek had the highest concentrations of hexachlorobenzene and heptachlor epoxide, averaging 1.5 and 0.6 ng/L. Large amounts of toxaphene were detected in Pine Creek, where concentrations up to approximately 40 ng/L were found. Creeks in the urbanized Mill Creek watershed had higher PCB concentrations than those that drained farming areas. The maximum t-PCB concentrations, 0.77 – 9.2 ng/L, were measured in Garrison Creek. Lower Mill Creek and Yellowhawk Creek had the second highest PCB levels, 0.54 – 1.1 ng/L for the two monitoring periods where PCBs were detected in these streams.

Regarding the fish tissue sampling, DDT compounds were present in the highest concentrations in the fillets, followed by PCBs/toxaphene, t-chlordane, dieldrin, hexachlorobenzene, and heptachlor epoxide, in that order. The relative amounts of these compounds generally mirrored what was found in the mainstem water column. The similar chemical profile among species suggests a common exposure history indicative of water quality conditions in the Walla Walla River. Average concentrations of t-DDT ranged from 30 – 657 ug/Kg (parts per billion). T-PCB and toxaphene concentrations averaged 8.9 – 238 ug/Kg and 16 – 56 ug/Kg, respectively. For most species, the average t-DDT concentrations were 105 ug/Kg or less, and the average PCB concentrations 48 ug/Kg or less. Total chlordane concentrations averaged 2.7 – 19 ug/Kg. Dieldrin, hexachlorobenzene, and heptachlor epoxide concentrations were 2.1ug/Kg or less. The highest pesticide/PCB concentrations were in carp, while the lowest were in smallmouth bass. Pesticide and PCB concentrations in whole suckers and pike minnow were typically two to three times higher than the average concentration found in fillets. For bass, the whole fish sample was five to ten times higher than fillets. This is usually interpreted as reflecting the higher lipid (fat) content in whole fish as chlorinated organic compounds are preferentially soluble in lipid.

The only compounds consistently detected in WWTP effluents were DDE, chlordane, and PCBs. Concentrations ranged from <0.066 – 0.11 ng/L for DDE, <0.066 – 0.20 ng/L for chlordane, and 0.53 – 2.5 ng/L for t-PCBs. Dieldrin was also detected in one or two samples from each plant at concentrations of 0.21 – 0.25 ng/L. The higher PCB and chlordane levels were found in College

Place effluent. Only PCBs were detected consistently in both plants, and the levels were not significantly different. DDE and dieldrin concentrations were similar in each effluent. Without further dilution, the average t-PCB concentration in the College Place and Walla Walla effluents would exceed the human health criterion of 0.17 ng/L by factors of approximately 7 and 5, respectively. The 0.14 ng/L dieldrin criterion was slightly exceeded at both plants, but by less than a factor of 2. Effluent concentrations of DDE, chlordane, and the other pesticides analyzed were always within human health criteria. For a full description of the results of Ecology's TMDL evaluation, refer to the TMDL technical report (Appendix A).

The National Research Council (2001) has suggested using statistical regression of a water quality indicator on one or more predictor variables as a simple and useful model for developing TMDLs. This study was able to correlate total DDT with TSS and set instream targets for TSS reduction to meet DDT criteria for aquatic life. TSS was, in turn, linked to the state turbidity standard and to fish habitat requirements. In the present study, pesticide, TSS, and turbidity data were obtained on 88 water samples from the Walla Walla drainage. These data were examined to determine how pesticide concentrations vary with TSS and turbidity. The analysis focused on 4,4'-DDE (a product of DDT breakdown) since this was the compound most consistently quantified in the samples. Other pesticides of concern are generally present at lower levels than DDE and exceed the limits of their criteria to a lesser degree. There was a strong positive correlation between DDE and TSS concentrations in all parts of the watershed. Land use changes directed at meeting DDE based target would also effectively address other problem pesticides identified in this report. However, because DDE occurs in association with its parent compound 4,4'-DDT and co-metabolite 4,4'-DDD, the target must be adjusted to account for the total amount of DDT compounds in the water column. The SPMD data show that the relative amounts of DDT, DDE, and DDD in the Walla Walla mainstem and tributaries are fairly constant, with DDE accounting for 50 ± 4 percent of the t-DDT (Figure 28). Therefore the DDE-based TSS target of 100 mg/L should be reduced to 50 mg/L to meet a t-DDT criterion (divide by a factor of 2). Additivity is appropriate since these compounds have the same or similar criteria and the same toxic endpoints and modes of action.

All four samples from the East Little Walla Walla River exceeded the DDE criterion at TSS concentrations between 6 - 38 mg/L (1 mg/L = 1 part/million), much lower than in other samples. DDT compounds, dieldrin, and heptachlor epoxide were all unusually high in the East Little Walla Walla, based on grab samples. DDE concentrations in Yellowhawk Creek were at or close to the criterion at TSS concentrations of 18 – 29 mg/L. Yellowhawk also had the highest t(total)-DDT, t-chlordane, and dieldrin concentrations in the SPMD samples. These results suggest DDT and other chlorinated pesticides were applied in these two watersheds at higher rates or for a longer period of time than elsewhere in the drainage. Since the other pesticides of concern are generally present at lower levels than DDE and exceed their criteria to a lesser degree, land use changes directed at meeting a DDE-based target would also effectively address these chemicals.

Turbidity is easier to monitor than TSS and because state standards for turbidity already exist, turbidity was selected as a surrogate measure of TSS where sampling *both* TSS and turbidity is not practical (Johnson, *pers comm*., 2005). The turbidity criteria are based on the relative change above background. For Class A waters (Chapter 173-201A-030-2 WAC): "Turbidity shall not

exceed 5 NTU[1] over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background is more than 50 NTU." For this TMDL background, turbidity for the Walla Walla River was based on turbidity measurements taken at the state line and for Yellowhawk Creek background was based on measurement taken from Mill Creek at Seven Mile Road. State water quality standards allow that it may be necessary to use background conditions of a neighboring or similar watershed as the reference condition. Also turbidity at these sites was low most of the year during the 2002-2003 TMDL evaluation; therefore, it was reasonable to use these data.

The criteria do not set a maximum acceptable turbidity level based on beneficial use considerations, but they do limit the effect of an identified source on raising the turbidity in the receiving water.

Background conditions are further defined in Washington's water quality standards as ". . . the biological, chemical, and physical conditions of the water body, outside the area of influence of the discharge under consideration" except in headwaters where ". . . it may be necessary to use the background conditions of a neighboring or similar watershed . . ." (Chapter 173-201A-020 WAC).

There is no long-term record on background turbidities in the Walla Walla River that can be used for a comparison to standards. The historical TSS data indicate that violations of the Class A turbidity standard are routine in the lower river. The turbidity data obtained for the upper and lower Walla Walla River in the present study were compared to the turbidity equivalent to a 5 NTU increase over the upper river. These results show that the river was in violation of 5 NTU allowable increase during most of the winter and spring of 2002-2003 (65 percent of samples). In light of chronic violations of the turbidity standard and the link between turbidity and TSS, a regression equation was developed for these two parameters in the Walla Walla drainage. The resulting equation was Turbidity = $0.80 \times TSS^{0.87}$ ($R^2 = 0.92$). This equation was used to calculate turbidity levels that corresponded to the TSS targets for t-DDT.

Because of the difficulty in measuring low levels of PCBs in surface waters, TSS and turbidity targets could not be derived specifically for PCBs in the Walla Walla River and its tributaries. However, PCBs, like chlorinated pesticides, have a strong affinity for soil particles, so it is thought that meeting the TSS/turbidity targets in the Walla Walla drainage will also reduce PCB concentrations in the river and its tributaries. The water quality targets proposed for pesticides would also hopefully result in the state human health criterion for PCBs being met. For further details, please refer to the TMDL technical report (see Appendix A). The concentration of PCBs detected in the effluent of the Walla Walla and College Place WWTPs exceeded human health criteria (see *Applicable Criteria*) and therefore Garrison Creek and Mill Creek were assigned specific wasteload and load allocations for PCBs. These are discussed further in the wasteload and load allocation section of this document.

[1] nephelometric turbidity units

Loading Capacity

Loading capacity is the maximum amount of a pollutant that can be delivered to a water body and still achieve water quality standards. Loading capacity can be calculated by multiplying streamflow by the pollutant water quality standard. EPA recommends using the long-term harmonic mean flow for carcinogens, since the adverse impacts are realized over a lifetime of exposure (EPA, 1991). The harmonic mean is preferable to the arithmetic mean (the 'average') for analysis of sets of numbers which are defined in relation to some unit, for example, speed (distance per unit time). The arithmetic mean overstates the amount of dilution available over the long-term, and it is long-term fish consumption that is ultimately of most importance in meeting human health criteria. The harmonic mean is always less than the arithmetic mean.
The harmonic mean is calculated by dividing the number of values by the sum of the reciprocal of each value**.** For most rivers and streams, the harmonic mean is one-to- three times the 7-day, 10-year low-flow (EPA, 1991).

As an example, loading capacities were calculated for the Walla Walla mainstem using the harmonic mean. Table 4 shows estimates of the Walla Walla River's loading capacity for chlorinated pesticides and PCBs, based on the harmonic mean calculated from the flow record for the lower river (USGS gage near Touchet, 1951 – 2002). The loading capacity for chlorinated pesticides ranges from 0.012 – 0.070 grams/day (1 gram = 0.035 ounces). For PCBs, the loading capacity is 0.014 grams/day.

Table 4. Loading Capacity for Chlorinated Pesticides and PCBs in the Lower Walla Walla River (@ 34 cubic feet per second- harmonic mean flow).

Chemical	Human Health Water Quality Criteria (ng/L)	Loading Capacity (grams/day)
4,4'-DDT	0.59	0.049
4,4'-DDE	0.59	0.049
4,4'-DDD	0.83	0.069
t-DDT	0.59*	0.049
Chlordane	0.57	0.047
Dieldrin	0.14	0.012
Hexachlorobenzene	0.75	0.062
Heptachlor Epoxide	0.10	0.008
Toxaphene	0.2**	0.017
Total PCBs	0.17	0.014

* In the Walla Walla DDT, DDE, and DDD are interrelated in that DDE and DDD occur chiefly as a result of the breakdown of DDT. There are no human health criteria for t-DDT, but because the individual breakdown compounds have the same modes of action and toxic endpoints in humans, this TMDL applied the DDT and DDE human health criteria of 0.59 ng/L to t-DDT.
** In the case of toxaphene, the chronic freshwater aquatic life criteria were used instead of the human health criteria as this is the most stringent standard.

Loading capacities based on the harmonic mean are appropriate for situations where contaminant concentrations vary inversely with flow, as in the case of discharge of WWTP effluent to a river. However, in the Walla Walla, the critical season for chlorinated pesticides, PCBs, and TSS is during the winter and spring when flows are elevated. Therefore, a different approach is needed to determine the loading capacity for TSS, which is being used as a surrogate water quality target in this TMDL**.** The 90th percentile high flow was used to assess loading capacity for TSS. The remaining ten percent was allocated for natural generation of sediment and turbidity. At the 90th percentile, TSS concentrations would be expected to exceed loading capacity no more than ten percent of the time. Estimated TSS loads during critical season, 90th percentile flows were compared to the loading capacity. The loading capacities at the TSS targets for the Walla Walla mainstem and the East Walla Walla River and Yellowhawk Creek are shown in Tables 5 and 6 respectively.

Table 5. Loading capacities for the Walla Walla mainstem and tributaries (except for the East Little Walla Walla River and Yellowhawk Creek) at the 50mg/L and 30mg/L TSS targets.

Water Body	Loading Capacity (lbs/day)	
	@ 50mg/L TSS Target	@ 30 mg/L TSS Target
Upper Walla Walla R.	120,000	69,000
Lower Walla Walla R.	450,000	270,000
Garrison Creek	4,320	2,592
West Little Walla Walla	1,566	940
Mill Creek	47,790	28,674
Dry Creek	19,440	11,664
Mud Creek	1,620	972
Pine Creek	16,470	9,882
Touchet River	202,500	121,500
Gardena Creek	2,160	1,296

The data collected in Ecology's technical evaluation found higher pesticide concentrations in the East Little Walla Walla River and Yellowhawk Creeks than in the rest of the Walla Walla drainage. Therefore, more stringent TSS targets are deemed necessary to achieve compliance with state water quality standards (see the load allocation section). TSS reductions down to 5mg/L are deemed necessary to achieve compliance with the toxics criteria.

Table 6. Loading Capacities for the East Little Walla Walla River and Yellowhawk Creek at the 30mg/L, 15mg/L and 5mg/L TSS targets.

Water Body	Loading Capacity (lbs/day)		
	@ 30 mg/L TSS Target	@ 15 mg/L TSS Target	@ 5 mg/L TSS Target
East Little Walla Walla	15,000	N/A*	380
Yellowhawk Creek	15,000	7,600	2,500

* The 15 mg/L TSS Target applies only to Yellowhawk Creek and is necessary to achieve compliance with Class A turbidity standards for the Mill Creek drainage.

The load reductions that appear to be needed in the mainstem lower river can be summarized in Table 7 as follows:

Table 7. Recommended load reductions in the mainstem Lower Walla Walla River.

Estimates of Loading Reductions Needed in the Mainstem Lower Walla Walla River To Meet Water Quality Targets and Goals for TSS			
Time Period	@ 50mg/L TSS Target	@ 30 mg/L TSS Target	@ 5 mg/L TSS Goal
January - June	74%	84%	97%
July - December	0%	20%	86%

Calculations indicate that no load reductions would be needed in Oregon in order for the Walla Walla River to meet either the 50 mg/L or 30 mg/L targets at the state line (see the load allocation section). TSS reductions on the Oregon side would be called for to attain a 5 mg/L goal. Under this goal scenario, very large TSS reductions would be needed basin-wide in both Washington and Oregon.

The Walla Walla and College Place wastewater treatment plants (WWTP) were evaluated as sources of chlorinated pesticides, PCBs, and TSS to Mill and Garrison creeks, respectively, where they discharge. The only compounds consistently detected in the final effluents were DDE, chlordane, and PCBs. Without further dilution, total PCB concentrations violated the human health criterion at both facilities. However, a comparison of loading estimates suggests that the WWTPs represent less than ten percent of the PCB load in the receiving waters and thus are not as important relative to nonpoint sources and background in these watersheds. Regardless these still represent point sources of PCBs; therefore, it is still necessary to set wasteload allocations for them in this TMDL. TSS concentrations in the effluents are limited through their NPDES permits. Discharge monitoring reports on file with Ecology show these facilities are not significant TSS sources.

Load and Wasteload Allocations

The ultimate goal of this water clean-up plan is the achievement of the human health water quality criteria as shown in Table 8 (with the exception of Toxaphene where the aquatic life criteria are used as they are most stringent). These criteria form the basis for the load and wasteload allocations to follow and are the focus of the remedial implementation targets and strategies employed in this TMDL

Table 8. Applicable Washington State Water Quality Criteria* for Chlorinated Pesticides and PCBs (ng/L; parts per trillion) as the basis for the load and wasteload allocations and TSS targets.

Chemical	Water and Fish Consumption
4,4'-DDT	0.59
4,4'-DDE	0.59
4,4'-DDD	0.83
Total DDT**	0.59
Dieldrin	0.14
Heptachlor	0.21
Heptachlor epoxide	0.10
Hexachlorobenzene	0.75
Chlordane	0.57
Toxaphene***	0.2
PCBs	0.17

*WAC 173-201A-040 (1997 version http://www.ecy.wa.gov/programs/wq/swqs/wac173201a-1997.pdf) EPA promulgated the human health criteria for Washington in 40 CFR 131.36

**In the Walla Walla DDT, DDE, and DDD are interrelated in that DDE and DDD occur chiefly as a result of the breakdown of DDT. There are no human health criteria for t-DDT, but because the individual breakdown compounds have the same modes of action and toxic endpoints in humans, this TMDL applied the DDT and DDE human health criteria of 0.59 ng/L to t-DDT.

*** The freshwater chronic aquatic life criteria are used as they are most stringent.

TSS targets of 50 mg/L and 5mg/L in the Walla Walla mainstem and its tributaries, and the East Little Walla Walla and Yellowhawk Creeks respectively are set to achieve compliance with Washington State human health criteria. The state's human health criteria for surface waters were issued to Washington by EPA in the National Toxics Rule (40CFR131.36). These criteria are the legally enforceable human health-based criteria used as control targets in TMDLs and other regulatory activities. In addition to the targets based on the human health-based criteria, this TMDL also provides water quality goals based on local fish consumption rates that can be used to inform future pollution control activities in the area. These goals address the higher risk/hazard that the tribes and other consumers incur as a result of their higher rates of fish consumption.

The secondary TSS target of 30 mg/L is set to achieve compliance with the state Class A turbidity standard in the Walla Walla River, East Little Walla Walla River and Yellowhawk Creek. Using an EPA approved procedure, a turbidity target of 15 NTU was calculated for the Walla Walla River downstream of the state line, which equates to a TSS target of 30mg/L. The load/wasteload allocations established here-in for TSS/turbidity were designed to control the following parameters: 4,4'-DDT, 4,4'-DDE, Chlordane, Dieldrin, Heptachlorepoxide, Hexachlorobenzene, and Toxaphene.

Load Allocation

Load allocations, which include a margin of safety, are the nonpoint source reductions that need to be achieved in each segment of the river for the loading capacity to be met. In this TMDL evaluation, TSS is proposed as a surrogate measure for chlorinated pesticides. Equivalent targets are provided for turbidity. Achieving the TSS/turbidity targets should also address the PCB listings in the drainage, with the exception of Yellowhawk, Garrison, and Mill creeks for which separate load allocations are made.

This TMDL evaluation did not attempt to differentiate between TSS loading from nonpoint sources and background TSS in Washington. Therefore, 100 percent of the TSS loading capacity is allocated to nonpoint TSS sources and background TSS. The load allocation for the lower Walla Walla River for the initial 50 mg/L target is 450,000 pounds per day. Nonpoint and background sources in Oregon contribute an unknown part of the TSS load to the East Little Walla Walla River, West Little Walla Walla River, Pine Creek, and Mud Creek via their upper watersheds. The entire TSS loading capacity of the Walla Walla River at the state line is allocated to nonpoint sources and background in Oregon. The river's load allocation at the state line for the initial 50 mg/L TSS target is 120,000 pounds per day. The TSS target of 50mg/L corresponds to the state's water quality standard (based on human health criteria) for a DDT concentration of 0.59 mg/L. The 30 mg/L target is based on meeting background turbidity for the water bodies. Table 9 shows the load allocations for the Walla Walla mainstem and its tributaries except for the East Little Walla Walla River and Yellowhawk Creek. Table 10 shows the load allocations for the East Little Walla Walla River and Yellowhawk Creek. Although these allocations will apply year round, Ecology's technical study has identified January to June as the critical period for compliance. The remedial activities suggested in this report are focused on achieving compliance during the critical season, but they are expected to show improvements year round.

Table 9. Load allocations for the Walla Walla mainstem and tributaries, except for the East Little Walla Walla River and Yellowhawk Creek.
(Detailed sample site locations are given in the TMDL technical report, see Appendix A.)

Location	Load Allocation (lbs/day)	
	@ 50 mg/L TSS Target	@ 30 mg/L TSS Target
Upper Walla Walla R. @ Peppers Bridge	120,000	69,000
Lower Walla Walla R. @ Cummins Bridge	450,000	270,000
Garrison Creek	4,320	2,592
West Little Walla Walla	1,566	940
Mill Creek	47,790	28,674
Dry Creek	19,440	11,664
Mud Creek	1,620	972
Pine Creek	16,470	9,882
Touchet River	202,500	121,500
Gardena Creek	2,160	1,296

Table 10. Load allocations for the East Little Walla Walla River and Yellowhawk Creek.
(Detailed sample site locations are given in the TMDL technical report, see Appendix A.)

Location	Load Allocation (lbs/day)		
	@ 30 mg/L TSS Target	@ 15 mg/L TSS Target	@ 5 mg/L TSS Target
East Little Walla Walla River	15,000	N/A*	380
Yellowhawk	15,000	7,600	2,500

* The 15mg/L Target applies only to Yellowhawk Creek and is necessary to achieve compliance with Class A turbidity standards for the Mill Creek drainage.

Washington State's human health criteria for DDT compounds and other toxins are based on an average lifetime fish consumption rate of 6.5 grams per day. Since it is believed that most tribal members consume fish at higher rates than the average fish consumer, state standards may not be adequately protective of tribal members and other individuals with high rates of fish consumption. Table 11 shows fish consumption rates for Columbia River Intertribal Fish Commission (CRITFC) member tribes – Umatilla Confederated Tribes, Yakama Nation, Warm Springs Tribe, and Nez Perce Tribe as determined in a CRITFC (1994) fish consumption study.

Table 11. Fish Consumption Rates of CRITFC Member Tribes and Approximate Fish Meals per Month.

Population	Fish Consumption Rate (g/day)	Approximate Fish Meals Per Month**
General Public – average consumer	6.5*	1
Tribal Members – average consumer	63	8
General Public – high consumer	142	19
Tribal Members – high consumer	389	51

* Washington State standard
**assuming 8 ounces (roughly 227 grams) per fish meal and 30 days per month

In order to address tribes' concerns Ecology decided to add additional TSS goals[2] that could be used in future pollution control activities to address the higher risk/hazard that the tribes and others incur as a result of their higher fish consumption rates. The EPA recently conducted a health risk assessment for people eating fish from the Columbia River basin (EPA, 2002). Using the values the EPA selected in that study, additional numerical TSS goals were developed to protect tribal members and members of the general public with high rates of fish consumption in the Walla Walla basin. Those seeking further detail on the EPA study and tribal members' consumption rates should refer to EPA 2002. Table 12 shows the t-DDT concentrations and their corresponding TSS targets and goals.

Table 12. TSS targets/goals and corresponding t-DDT concentrations for the protection of average and high fish consumers among the general public and tribal members.

TSS	Estimated Water Column t-DDT Concentration	Population Subgroup Addressed
50 mg/L Target	0.59 ng/L	**State Standard**: General Public –
30 mg/L Target	0.44 ng/L	**State Standard:** Turbidity*
5 mg/L Goal**	0.059 ng/L	Tribal Members – average fish consumer
2 mg/L Goal**	0.024 ng/L	General Public – high fish consumer
1 mg/L Goal**	0.012 ng/L	Tribal Members – high fish consumer

* The turbidity target was based on the state turbidity standard for Class A water bodies (Chapter 173-201A-030-2 WAC).

** These appear as 'targets' in Ecology's TMDL technical report. See footnote below.

Ecology's Walla Walla TMDL technical study found that monitoring data indicated an additional TSS target needed to be set for meeting the Class A turbidity standard in the Walla Walla River. Using an EPA approved procedure for the lower Yakima River TMDL, a turbidity target of 15 NTU was calculated for the Walla Walla River downstream of the state line, which equates to a TSS target of 30mg/L. The 30 mg/L target was added to the other TSS targets to ensure compliance with state turbidity standards. For further details on the derivation of the turbidity target and the regression equation used to calculate the corresponding TSS target refer to Ecology's Walla Walla chlorinated pesticides and PCBs TMDL technical study (Appendix A).

As shown, the approach adopted in this TMDL was specifically designed to not only meet the load allocations that address state toxicity standards, but also to address state turbidity standards. Additional goals are provided in the study that can be used to inform the development of future water quality targets that specifically address high fish consumers in the Walla Walla basin. Table 13 summarizes the calculated numerical water quality targets and goals for the Walla Walla River drainage - except for the East Little Walla Walla River and Yellowhawk Creek.

[2] In Ecology's Walla Walla chlorinated pesticide and PCBs TMDL technical report, these 'goals' appear as 'targets'. This report reserves the use of the term 'target' for those limits derived from State water quality standards. As the more stringent limits are not based on State standards they do not have the same regulatory significance, and are thus referred to as 'goals' here. Please see Ecology's response to the CTUIR's comments in Appendix H for further details.

Table 13. Water quality targets for the Walla Walla River drainage. (Excluding the East Walla Walla River and Yellowhawk Creek.)

TSS	Turbidity Target	Effect of Meeting the Target
50 mg/L Target	24 NTU	• achieves compliance with human health water quality criteria for chlorinated pesticides • addresses average fish consumers among the general public • provides a moderate level of habitat protection
30 mg/L Target	15 NTU	• achieves compliance with the Class A turbidity standard
5 mg/L Goal*	3 NTU	• addresses average tribal fish consumers • provides a high level of habitat protection
2 mg/L Goal*	1 NTU	• addresses high fish consumers among the general public
1 mg/L Goal*	<1 NTU	• addresses high fish consumers among tribal members

* These appear as 'targets' in Ecology's TMDL technical report. See footnote 2 on previous page.

The same approach used for the Walla Walla mainstem was used for the East Walla Walla River and Yellowhawk Creek. However, more stringent TSS/turbidity targets are recommended for the East Walla Walla River and Yellowhawk Creek specifically, because higher concentrations of the chemicals addressed in this report are found here relative to the rest of the Walla Walla drainage. Therefore, the 50mg/L TSS target employed for the Walla Walla mainstem is deemed not to be protective enough of water quality standards for these water bodies. The 30 mg/L TSS target is still applicable as it is necessary to ensure protection of state turbidity standards. However a more restrictive target is needed for Yellowhawk Creek to meet turbidity standards. Present survey data show that turbidity in Yellowhawk Creek should be at or below 8 NTU, which equates to a TSS concentration of 15mg/L.

A TSS 5 mg/L: 3 NTU turbidity target for the East Little Walla Walla River and Yellowhawk Creek should protect average fish consumers among the general public. The data collected indicate that TSS/turbidity levels that would address higher rates of fish consumption among the general public and tribal consumers approach zero for these two water bodies and so are not proposed as goals at this time. This effort would best be initiated after some water quality improvements have been realized, at which point the relationship between TSS, turbidity, and trace-level pesticide contamination may be more easily and accurately discerned. Those seeking more detail on how NTU and TSS targets were calculated for the East Walla Walla River and Yellowhawk Creek should refer to Ecology's Walla Walla TMDL technical study (Appendix A). Table 14 shows water quality targets recommended specifically for the East Little Walla Walla River and Yellowhawk Creek.

Table 14. Water Quality Targets for the East Walla Walla River and Yellowhawk Creek.

TSS	Turbidity Target	Effect of Meeting the Target
5 mg/L Target	3 NTU	• achieves compliance with human health water quality criteria for chlorinated pesticides • addresses average fish consumers among the general public • provides a high level of habitat protection
30 mg/L Target	15 NTU	• achieves compliance with the Class A turbidity standard (for mainstem Walla Walla) • provides a moderate level of habitat protection
15 mg/L Target (Yellowhawk Creek)	8 NTU (Yellowhawk Creek)	• achieves compliance with the Class A turbidity standard (for Mill Creek drainage)
Goals to protect consumers with high rates of fish consumption among the general public and tribe to be developed at a later date.		

In order to meet the water quality standards at issue in this TMDL, it is recommended that the targets be applied to the Walla Walla River and its tributaries at the state line and at the mouths of all tributaries to the mainstem in Washington. Each tributary is a natural water body with fisheries and aesthetic resource values deserving of protection, and the targets protect these values.

A phased approach should be adopted for meeting the targets, starting with the 30 mg/L:15 NTU target in the East Little Walla Walla River and Yellowhawk Creek and the 50 mg/L:24 NTU target in other parts of the drainage. The 50 mg/L:24 NTU target is overprotective for chlorinated pesticides in the Touchet River. The target retains its value for habitat protection and meeting the turbidity standard nonetheless. For the East Little Walla Walla River and Yellowhawk Creek, the ultimate 5 mg/L:3 NTU target is overprotective for habitat and turbidity, but appears necessary to meet pesticide standards. Initially, the targets should be applied directly to all irrigation returns and other potential or probable sources at the point they enter the mainstem or tributaries. This is the simplest and most equitable approach. The focus of remedial actions in this TMDL is largely on agricultural lands because firstly, most land use in the Walla Walla Basin is agricultural, and secondly, the chemicals addressed in this TMDL have historically been applied primarily in agricultural areas. In addition, it is impractical to set water quality targets tailored for each individual return. Monitoring data from the tributaries coupled with knowing where BMPs are and are not being implemented can guide later sampling efforts for irrigation returns. Once water quality improvements become realized and TSS/turbidity targets are progressively achieved, it may be appropriate to develop different targets for the returns.

The 2 mg/L:1 NTU and 1 mg/L:<1 NTU goals imply exceptional water quality conditions and would be difficult to achieve in an agricultural basin like the Walla Walla. Because they were extrapolated to equate to t-DDT concentrations below the detection limit, there is a substantial amount of uncertainty in their accuracy. Once erosion and TSS levels are reduced, sediments may possibly carry a lower amount of pesticides and so the goals (based on the current relationship be pesticides and TSS) may have to be reevaluated as shown in the Yakima toxin TMDL. The appropriateness of these values should be re-assessed once the more easily achieved targets are met.

Wasteload Allocation

Wasteload allocations are point source reductions needed in each segment of the river for the loading capacity to be met. This TMDL evaluation did not attempt to differentiate between TSS loading from point sources, nonpoint sources, and background in Oregon. No significant TSS point sources to the Walla Walla River and its tributaries are present or anticipated in Oregon. Therefore, wasteload allocations are zero.

No significant point sources of TSS are present or anticipated in the Washington portion of the Walla Walla watershed. Wasteload allocations are therefore zero here as well, with the exception of the Walla Walla and College Place WWTPs. National Pollutant Discharge Elimination System (NPDES) permits limit the amount of TSS that can be discharged by the College Place and Walla Walla WWTPs (wastewater treatment plants). The current limits state that the average monthly effluent concentrations for TSS "shall not exceed 15 mg/L or 15 percent of the respective monthly average influent concentrations, whichever is more stringent." Discharge monitoring reports on file with Ecology show that the Walla Walla and College Place WWTPs are insignificant sources of TSS to the receiving waters. Adjustments to the NPDES permits for these WWTPs are not necessary at this time, and TSS allocations should be consistent with permit load limits.

Wasteload and load allocations were assigned for PCBs in Garrison Creek and Mill Creek in light of the levels detected in the College Place and Walla Walla WWTP effluents. The wasteload allocations for PCBs identified in this report shall be added to the NPDES permits for the WWTPs of Walla Walla and College Place once the TMDL detailed implementation plan (DIP) is completed. Nonpoint sources coming into the WWTPs may be contributing to elevated PCB levels found in the WWTP effluent. Future remedial actions directed at nonpoint sources may help to alleviate the PCB problem in the WWTP's discharge. The WWTP wasteload allocations were calculated as the product of the human health water quality criterion and the NPDES permit limit for the average monthly effluent flow. The remaining loading capacity of these streams was allocated to nonpoint sources. (There is no natural background for PCBs.) In addition to Mill and Garrison creeks, Yellowhawk Creek[3] was also found to be impaired for PCBs and was therefore assigned a load allocation. However, because no point source has yet been identified in this tributary, no wasteload allocation for PCBs has been assigned. Further monitoring is needed to determine what (if any) point sources of PCBs exist on Yellowhawk Creek. If point sources are identified, they should be addressed through future NPDES or stormwater permits. The PCB wasteload and load allocations for Garrison Creek and Mill Creek, and the load allocation for Yellowhawk Creek are shown in Table 15 below.

[3] Yellowhawk was not assigned a PCB allocation in Ecology's Walla Walla toxics TMDL technical report as the TSS targets set to address chlorinated pesticides in the drainage were originally deemed sufficient to address the non-point PCB problem as well. However, the EPA expressed concern over this approach as the correlation between TSS and PCBs was weaker than that for chlorinated pesticides. Therefore Ecology made the decision to assign additional PCB allocations to all exceedances not already covered under those for Garrison and Mill Creeks. Evaluation of Ecology's 2002-2003 sampling data showed that the only remaining PCB exceedance that needed to be addressed was that for Yellowhawk Creek.

Table 15 Wasteload and Load allocations for PCBs in Garrison Creek, Mill Creek, and Yellowhawk Creek.

Wasteload and load allocations for PCBs (gm/day)	Garrison Creek	Mill Creek	Yellowhawk Creek
Wasteload allocation for WWTP	0.0011	0.0062	
Load allocation for nonpoint	0.0017	0.023	0.010
Loading capacity	0.0028	0.029	0.010

It is recommended that the Walla Walla and College Place WWTPs work closely with Ecology to develop practical and cost effective management plans to reduce PCB concentrations in their effluent. These plans should be professionally designed and include a detailed monitoring and management strategy for determining the sources of PCB contaminate in the WWTPs' service area and identifying possible remedial actions. In addition, such plans should include detailed WWTP effluent monitoring to assess whether implementation is successful. Ecology and representatives of the WWTPs have already held a preliminary meeting to begin to address issues related to the PCB problem and have committed to further meetings following publication of the submittal report. Through consultation with Ecology, it should be possible to set interim wasteload targets and determine an appropriate and cost effective effluent sampling strategy. Ecology will give technical and financial assistance wherever possible, to ensure the remedial strategies are effective in reducing PCB levels in accordance with the wasteload allocations assigned in this TMDL.

It is probable that urban stormwater runoff is an additional contributing source of chlorinated pesticides and PCBs in the basin. Although the sources of PCB impairment in Yellowhawk Creek have as yet not been identified, it is possible that stormwater runoff from the city of Walla Walla may be contributing to the problem. Because stormwater runoff was not specifically studied in Ecology's chlorinated pesticide and PCB TMDL evaluation study, sufficient data are not available with which to set allocations for stormwater runoff at this time. The detailed implementation plan (DIP) for this TMDL will include a monitoring plan that may help determine future stormwater allocations, and will identify those corrective measures necessary to address chlorinated pesticides and PCBs in storm water. Until data are available, Walla Walla County, Columbia County, and the cities of Walla Walla and College Place, should develop and implement programmatic activities to control sediment concentrations in their stormwater runoff. Specifically, it is recommended they adopt ordinances or other regulatory mechanisms to require stormwater runoff controls at construction sites and post-construction stormwater controls for development projects, train staff to review development site plans and perform site inspections, and adopt an operation and maintenance plan that incorporates practices to reduce suspended solids in runoff from their municipal operations.

These jurisdictions should refer to the *Stormwater Management Manual for Eastern Washington* (2004) and *Model Municipal Stormwater Program for Eastern Washington* (2003) and review their current stormwater management ordinances and municipal practices to determine whether they are adequately protective of surface water quality (see Appendix C and D). Where enhanced stormwater quality management needs are identified, specific recommendations will be provided by Ecology. These jurisdictions must also carry out any legally mandated responsibilities with regard to stormwater management, including adherence to the requirements of any future NPDES Permits issued to them. Moreover, they may possibly be required to seek coverage under the Eastern Washington Phase II NPDES Permit for Municipal Stormwater Discharges.

Stormwater permit holders should be in compliance with applicable quality assurance project plan (QAPP) as part of such compliance. Furthermore the permit holders may be required to submit a TMDL summary implementation report detailing the status and actions taken by the permit holder to implement the TMDL.

Margin of Safety

A margin of safety is required in a TMDL to account for uncertainty in understanding the relationship between pollutant discharges and water quality impacts. This TMDL evaluation incorporates several procedures and assumptions that confer a safety margin.

- Two methods were used to derive the TSS concentration on which the water quality targets were based, thereby increasing confidence in the appropriateness of the targets.
- The additive effects from the combined concentrations of DDT, DDE, and DDD were accounted for by basing the water quality targets on t-DDT. Basing targets on t-DDT rather than DDE, DDE, and DDT individually is more protective of water quality than what strict adherence to the individual criteria calls for.
- Although it was not feasible to set PCB allocations for all tributaries, a loading capacity for PCBs in the Walla Walla River was based on a conservative assumption for calculating flow (harmonic mean). The harmonic mean is preferable to the arithmetic mean here as the arithmetic mean overstates the amount of dilution available over the long-term, and it is long-term fish consumption that is ultimately of most importance in meeting human health criteria.
- A watershed drainage area approach to load and wasteload allocation should be protective of individual tributaries.
- A t-DDT target provides a wider margin of safety for other chlorinated pesticides, since these are generally present at lower concentrations relative to criteria.
- Ecology's TMDL evaluation found the levels of chlorinated pesticides, PCBs, and total suspended solids in the Walla Walla River are highest during winter and spring when the runoff is highest. Therefore, the loading capacity was calculated based on flows during this period, rather than the period of lowest flow as is often the case. In this way, the loading capacity set in this report should be most protective of water quality in the drainage.
- The 90^{th} percentile statistic was used in developing the turbidity target and assessing loading capacity. This approach implicitly allocates ten percent of the load to natural generation of suspended sediment and turbidity.
- The recommended approach of applying the water quality targets directly to tributaries and drains gives a wider margin of safety than requiring only the minimal water quality improvements needed to meet standards in the mainstem.
- A phased approach for implementing the targets/goals is proposed; the ultimate targets/goals are conservative.

Several sources of uncertainty could not be resolved with the information currently available.

- Because of difficulties in analyzing trace amounts of PCBs in surface water and a lack of information on sources, it is uncertain exactly how the decrease in PCB concentrations will track with the proposed water quality targets and at what point in the cleanup process standards will be achieved.
- As already described, there is uncertainty in the accuracy of the 2 mg/L:1 NTU and 1 mg/L:<1 NTU water quality goals, and the appropriateness of these values should be reassessed once the more easily achieved targets are met.
- Because estimated toxaphene concentrations exceeded t-DDT levels in Pine Creek, meeting water quality targets for TSS in this creek may not result in toxaphene meeting standards. Source investigation is recommended.

Finally, this study did not investigate the bottom sediments in the Columbia River backwater formed in the lower ten miles of the Walla Walla River by McNary Dam. This area is a likely sink for chlorinated pesticides and PCBs associated with particulates transported by the Walla Walla River and a potential source of contamination to fish. Sediment recovery will occur as upstream water quality targets are met, but the time for recovery is unknown.

Summary Implementation Strategy

Introduction

A summary implementation strategy (SIS) is needed to meet the requirements of a TMDL submittal for approval as outlined in the 1997 Memorandum of Agreement between the U.S. Environmental Protection Agency and the Washington State Department of Ecology. Its purpose is to present a clear, concise, and sequential concept of how the waters covered in the TMDL will achieve water quality standards. The SIS includes an outline of how a more detailed implementation plan will be developed, those implementation activities that are planned or already underway, a strategy for developing follow-up monitoring plans, a summary of public involvement methods, and potential funding needs and sources to make implementation of the plan a reality.

A TMDL advisory group was formed in early 2005 to guide the development of this report. At the time of writing this report, groups currently represented in the advisory group include: the Walla Walla County Watershed Planning Department, Walla Walla WRIA 32 Planning Unit, Gardena Farms Irrigation District; Walla Walla Watershed Alliance; Whitman College; Walla Walla Community College; Walla Walla County Planning Commission; the Walla Walla County Health Department; Confederated Tribes of the Umatilla Indian Reservations; Kooskoskie Commons; Washington State University Cooperative Extension program; city of College Place; and city of Walla Walla. The rest of the advisory group is made up of local private landowners representing a variety of interests from across the basin.

There are several other important organizations working in the Walla Walla region that are currently not serving on the advisory group but their assistance in the development of this TMDL is appreciated. These groups include Washington Department of Fish and Wildlife, Walla Walla County Conservation District, Columbia Conservation District, and the Natural Resource Conservation Service. Efforts have been made to encourage representatives of these groups to serve at future advisory group meetings. In addition, representatives from the Oregon Department of Environmental Quality and the Oregon based Walla Walla Watershed Basin Council have been contacted and encouraged to attend future advisory group meetings to foster cross-border relations and to ensure coordination of implementation activities across administrative boundaries. It is proposed that representatives from these groups will not serve as official advisory group members because of jurisdictional conflicts. There is currently a high level of cooperation and communication between advisory group participants, and their continued participation in the TMDL process and assistance in later implementation phases of the project is appreciated.

Implementation Overview

The strategy to implement the TMDL is based upon the continuation of the many existing efforts already underway throughout the watershed to reduce suspended sediment in project area waterways. Point sources will be addressed by adherence to discharge limits set in Ecology's NPDES permits. The nonpoint sources (load allocations) will be addressed by the use of BMPs and education. The principal focus of the TMDL will be to continue the implementation of seasonal and year-round BMPs to prevent the entry of sediment into area water bodies.

Additionally, continued monitoring of implementation activities and water quality is essential in assessing the progress of the TMDL.

The goal of this TMDL is to reduce chlorinated pesticides and PCBs in the Walla Walla River and its tributaries so that levels meet water quality standards. Table 16 shows the recommended interim and final timelines for the achievement of water quality targets/goals set in this report. The timelines shown are meant to represent number of years after completion of the detailed implementation plan (DIP).

Table 16. Timelines for the achievement of interim targets and state water quality standards

Number of Years from end of DIP	Walla Walla River Mainstem		East Walla Walla and Yellowhawk	
	TSS Target/Goal	Turbidity Target/Goal	TSS Target	Turbidity Target
5	50mg/L	24 NTU	30mg/L	15 NTU
10	30mg/L	15 NTU	15mg/L	8 NTU
15	5mg/L	3 NTU	5mg/L	3 NTU
20	2mg/L-1mg/L	1 to < 1 NTU	<5mg/L: developed later	

A detailed implementation plan (DIP) will be prepared within a year following EPA's approval of the TMDL submittal report. Ecology will work closely with the TMDL Advisory Group, and other local entities to implement the TMDL and develop the DIP. The DIP will identify specifically how, when, and where voluntary restoration activities will be implemented. A detailed monitoring plan will also be developed. Ecology and other entities will provide technical assistance and seek additional funding for these restoration activities and monitoring.

Implementation Activities

This report acknowledges and is appreciative of the many federal, state, local governmental, and non-governmental agencies that have already sponsored or implemented a variety of conservation activities that may have helped to partially alleviate the toxin problem addressed in this TMDL. However, the results of Ecology's TMDL evaluation indicate that further action is needed if state water quality standards are to be met. To this end, it is necessary to identify available resources and devise future implementation actions. Also, an effectiveness monitoring strategy needs to be planned as a key component of an adaptive management process essential to a successful TMDL. This section will discuss these issues in detail.

As stated earlier, Ecology's TMDL evaluation of chlorinated pesticides and PCBs in the Walla Walla River concluded that a reduction of total suspended solids (TSS) in the water column was the chief means to meeting water quality targets for these chemicals. A recent report by Economic and Engineering Services, Inc.(EES, 2003) identified a number of sources of sediment including road-building and logging activities in the upper reaches of tributaries, recreational vehicle use, and urban runoff. They concluded, however, that "given the predominance of agricultural land use in the watershed, agricultural practices have been identified as the principal source of fine sediment," a conclusion supported by Ecology's TMDL evaluation.

The preliminary draft of the Walla Walla Watershed Plan, January 2005 (Appendix B) shows a table of voluntary Watershed Planning management actions. Many of these actions would serve to reduce the TSS levels of toxins addressed in this TMDL and are reproduced here (Table 17). As stated in the Walla Walla Watershed Plan, no organization or person is required to take on a commitment without their consent. However, once an organization has formally agreed to implement actions identified in the plan, it is expected these commitments be honored; recognizing funding limitations. The watershed plan does not create any obligations for private businesses, citizens or landowners. However, there are actions identified for voluntary action in the private sector. Although the Watershed Planning and TMDL processes are fundamentally different, Ecology has and will continue to seek opportunities for collaboration and cooperation between the two processes. It should be noted that Ecology is required under the federal Clean Water Act to conduct TMDLs and ensure clean water.

Table 17. Summary of management goals for the Walla Walla chlorinated pesticides and PCBs TMDL.

Management Category	Project Type
1. Prevent/Mitigate Forest Practices Impacts Activities on forested lands can have significant impacts on water quality, particularly as they relate to forest practices, soil erosion and water temperature. Protection of forested headwater drainages is critical as a source of high quality water for downstream reaches, which support a variety of beneficial uses	
1a. Improve Forest Road/Trail Management	• Management of forest roads • Design of forest roads/culverts • Construction practices for forest roads • Erosion control for forest roads • Decommissioning of forest roads/trails • Road fill evaluation • Road density evaluation
1b. Improve timber Harvest Management	• Evaluation of unstable slopes • Timber harvest management plans • Road and timber harvest buffers • Restoration of riparian recreation areas • Soil compaction mitigation
1c. Other Watershed Actions	• Watershed assessments • Coordinated resource management plans • Water quality monitoring
2. Prevent/Mitigate Agricultural Impacts Nonpoint chlorinated pesticide and PCB sources are varied in the Walla Walla, but are primarily related to historically applied agricultural chemicals. Ongoing efforts by the Washington State Dept. of Ecology working with the Conservation Districts, NRCS, Irrigation Districts, and local water users to reduce nonpoint source impacts are already successfully addressing some of these problems.	
2a. Improve Irrigation Water Management	• Irrigation district system improvement • Irrigation scheduling and management • On-farm irrigation system Upgrades/conversion • On-farm sediment ponds • Off-farm sediment ponds
2b. Improve Cropland Management	• In-furrow residue placement • Row crop erosion control • Tillage management

Management Category	Project Type
2c. Reduce Impacts of Agricultural Chemicals	• Pesticide application training • Pesticide licensing programs • Row crop soil erosion controls • Irrigation water management • Deep percolation evaluations
2d. Address Livestock Impacts	• Maintain Technical/Financial Support to Confined Animal Feeding Operations (CAFO); NPDES Permitting of CAFOS • Voluntary fencing of streams and buffer strips near streams • Small landowner assistance programs • Application of public land grazing programs • Manure management • Support conservation district efforts regarding dairies
2e. Control Other Agricultural Impacts	• Roadside spraying evaluations • Aquatic weed control evaluations • Silt removal from canals/laterals • Canal weed control impacts • Pesticide residue monitoring in aquatic life • Agricultural soil monitoring for pesticides • Educational and assistance programs for small farm/ranches • Educational tours/demonstrations for commercial growers • Consider water quality impacts in routine operations and maintenance of irrigation canals
3. Prevent/Mitigate Stormwater Impacts Stormwater runoff from developed and urban areas and industrial sites contains pollutants that impact receiving waters. State and regional guidelines exist (e.g., Eastern Washington's Stormwater Guidelines) to identify appropriate stormwater management practices. Stormwater ordinances have been adopted by county governments and other municipalities in the Walla Walla River Basin.	
3a. Plan/Implement Municipal Stormwater Runoff Controls	• Municipal stormwater ordinances • Regional stormwater runoff control guidelines • Municipal stormwater control plans • Regional stormwater impact assessments • Urban/suburban land use awareness programs transportation/de-icing guidelines
3b. Plan/Implement Industrial Stormwater Runoff Control	• Industrial stormwater ordinances • Regional industrial stormwater guidelines • Industrial stormwater control plans • Regional stormwater impact assessments

Most forestry operations are likely to occur on lands on the Oregon side of the Walla Walla drainage as most forestry lands in the basin are located there. These are beyond the jurisdiction of the Washington State Department of Ecology. Ecology's TMDL evaluation concluded that activities on the Oregon side of the border were relatively minor contributors to the toxin problem in the Walla Wall basin. However, it may still be necessary to address these Oregon sources in order to meet the most stringent TMDL water quality targets/goals. It is anticipated that existing programs under the state's forest and fish regulations, DNR's Habitat Conservation Plan (HCP), and the federal government's Northwest Forest Plan will provide the regulatory framework needed in this regard.

There has been considerable attention in recent years to reducing water quality impacts from agriculture on the region's waterways. Existing permit programs and voluntary measures to address water quality concerns should continue to be used. Advisory agencies such as the Washington State University (WSU) Cooperative Extension, the Walla Walla County Conservation District, and the Columbia Conservation District are available to offer technical and financial assistance with landowners' efforts. The Walla Walla Watershed Plan suggests that total sediment loading can be reduced by 85 percent by using no-till practices instead of historical cropping practices involving significant tillage operations. In recent years, irrigators have made great strides towards reduced suspended sediment and pesticide levels in area waterbodies, and will continue to implement best management practices (BMPs) in these areas to meet TMDL targets. This plan recommends that planning decisions be focused toward land practices that decrease susceptibility to erosion.

Because stormwater runoff was not specifically studied in Ecology's chlorinated pesticide and PCB TMDL evaluation study, sufficient data are not available with which to set allocations for stormwater runoff at this time. Until data are available, Walla Walla County, Columbia County, and the cities of Walla Walla and College Place must carry out any legally mandated responsibilities with regard to stormwater management, including adherence to the requirements of any future NPDES permits issued to them. These jurisdictions should refer to the *Stormwater Management Manual for Eastern Washington* (2004) and *Model Municipal Stormwater Program for Eastern Washington* (2003) and review their stormwater management ordinances and municipal practices to determine whether they are adequately protective of surface water quality (see Appendix C and D respectively). Where enhanced stormwater quality management needs are identified, specific recommendations will be provided by Ecology, possibly including a requirement to seek coverage under the Eastern Washington Phase II NPDES Permit for Municipal Stormwater Discharges.

Because urban and suburban household materials are potential sources of nonpoint pollution, educational programs focused on the proper use and disposal of household hazardous materials should be advertised and offered to the public. These programs should increase urban and suburban residents' awareness about how household hazardous materials should be used and the implications of misuse. Household hazardous materials are herbicides, pesticides, and cleaning agents, as well as automotive and light industrial fluids that are commonly present in the home or on a farm.

The following items were identified by the Walla Walla TMDL advisory group which will be looked at during the development of the Detailed Implementation Plan (DIP):

Several TMDL program implementation topics have emerged that warrant emphasis in the water quality strategy for the TMDL implementation plan. It is the desire of several members of the TMDL Advisory Committee that these site specific issues be discussed in more detail during the Detailed Implementation Plan (DIP) development. Further public input will be sought to help prepare this plan. The plan will identify how, when, and where voluntary restoration activities will be implemented.

Actions recommended in the DIP are intended to be specific enough to clearly identify the actions and results; yet general enough to permit some flexibility in carrying them out. It is recognized that some actions will require further investigation prior to full implementation. Additionally it is recognized that some actions can be carried out only if funding is provided by the State Legislature or other funding agencies, and that funding decisions will be made over a period of months or years following plan adoption.

The following concepts will be looked at in further detail during the Detailed Implementation Plan development: addressing the correlation between TSS and Turbidity to toxins in the Touchet River basin and the Dry Creek basin; identifying historic background levels for turbidity in the Walla Walla watershed and various tributaries, including identification of additional sampling sites including soil testing and streambed sediment loads; identifying additional sampling methods; identification of geographic source differences for toxin contamination including possible atmospheric deposition. As long as TSS continues to be the surrogate measure of chlorinated pesticides periodic validation of the current formulas should be made.

Many local interests in the Walla Walla Basin are involved with TMDL planning and implementation. During the development of the DIP, in areas where soils contributing to turbidity are found to have high levels of pollutant present, special emphasis on helping to relieve the problem will be employed. Ecology will continue to work closely with these basin interests to address outstanding issues.

Table 18 lists the possible entities that may use the general implementation actions to meet the targets in this TMDL. The information listed in the table is part of an overall strategy and will likely change as personnel and monetary resources are better defined during the development of the DIP.

*Note: Please refer to the list of acronyms and abbreviations (**Appendix G**) for further assistance with **Table 18.***

Table 18. Organization of TMDL entities and their contributions.

Entity	Responsibilities to be met
TMDL advisory group	Review progress of implementation strategy
Ecology	Manage the TMDL process, provide guidance and support to other agencies
Homeowners with waterfront property	Avoid actions that will cause streambank destabilization or erosion or will otherwise add sediment to area waterways
Irrigation Entities (Districts and Companies)	Where possible improve irrigation efficiencies, upgrade diversions and, where appropriate, implement BMPs to prevent entry of suspended sediment into area waterways
Irrigators	Implement appropriate BMPs to prevent entry of sediment-laden agricultural return flows into area waterways
Columbia Conservation District (CCD) and Walla Walla County Conservation District (WWCCD) and Ecology	Continue to fund agricultural BMP implementation: controlling agricultural runoff, reducing suspended sediment in drains and tributaries, preventing streambank destabilization and erosion.
CCD, WWCCD, WSU Cooperative Extension, Kooskooskie Commons	Extend outreach efforts and technical assistance to agricultural producers (irrigators, livestock managers, others) in the watershed
CCD and WWCCD	Continue to monitor water quality of the watershed's surface water (as possible, given funding availability)
Walla Walla and Columbia County governments, and Walla Walla, College Place, Waitsburg and Dayton City governments.	Administration of stormwater discharge, Critical Area Ordinances and shoreline master programs
Walla Walla and Columbia County governments and WSDOT	Continue to maintain roads and roadside ditches to prevent entry of sediment into area waterways
Private and state timber owners	Implement forest management practices as required by Forests and Fish rules
Ranchers	Implement livestock management BMPs to prevent streambank destabilization and erosion
US Forest Service (USFS)	Implement forest management practices as required by the Memorandum of Agreement with Ecology
Ecology	Review if interim targets have been met after deadlines reached, and if not, devise an alternative action plan
Ecology,TMDL advisory group	Evaluate if the water quality samples at points of compliance meet the interim and final targets

Entity	Responsibilities to be met
Ecology, TMDL advisory group.	If interim target was not met, develop new action plans to meet target
Ecology, WWCCD and CCD, TMDL advisory group	Determine changes in monitoring sites, tests, or frequency are needed
Ecology, WWCCD, CCD, WSU cooperative extension, Kooskooskie Commons, TMDL advisory group	Review program and frequency for accuracy
Ecology, TMDL advisory group	Review if final TMDL targets have been met, and if not, identify new timeline and BMPs needed.
Cities, Walla Walla and Columbia county governments, and WSDOT	Identify and implement stormwater management plans with any Stormwater Permits issued by the Department of Ecology and/or refer to Ecology's eastern Washington stormwater manual for guidance on general stormwater management
Walla Walla and College Place WWTPs	Monitor and maintain chlorinated pesticides and PCBs wasteload set in NPDES permits and the TMDL

Reasonable Assurances

The ultimate goal of this TMDL is to meet the chronic aquatic toxicity and human health criteria for chlorinated pesticides and PCBs. Maintaining the TMDL goals will be required once compliance has been achieved. Improved water quality will be achieved through the combined efforts of all basin stakeholders. Local involvement and commitment to chlorinated pesticide and PCB problems in the Walla Walla River watershed are substantial and are evidenced by the dedication of the people and organizations involved in the development of this plan. To support this TMDL, Ecology will work cooperatively with all basin stakeholders to promote the implementation of activities contained in this plan.

This water cleanup plan, its TMDL targets, and the associated implementation activities listed in the plan are not in themselves enforceable. However, Ecology is obligated to implement the approved TMDL. Organizations and their commitments under laws, rules, and programs to resolve chlorinated pesticide and PCB problems in the watershed are described below.

Washington State Department of Ecology: Ecology has been delegated authority under the federal Clean Water Act by the U.S. EPA to establish water quality standards, administer the NPDES wastewater permitting program, and enforce water quality regulations under Chapter 90.48 RCW. Ecology responds to complaints, conducts inspections, and issues NPDES permits as part of its responsibilities under state and federal laws and regulations. In cooperation with conservation districts, Ecology will pursue implementation of BMPs for agricultural and other land uses and may use formal enforcement, including fines, if voluntary compliance is unsuccessful.

The Ecology/Conservation District MOA: Ecology has a Memorandum of Agreement (MOA) with conservation districts, signed in 1988, that allows Ecology to refer agriculture-related water quality complaints to the conservation districts for resolution of the problems. (However, Ecology will investigate and seek resolution of all complaints that appear to need immediate action.) Conservation Districts have authority under Chapter 89.08 RCW to develop farm plans to protect water quality and provide animal waste management information, education, and technical assistance to residents on a voluntary basis. When a complaint is referred to a conservation district by Ecology, the conservation districts will meet with the owner/operator of the property where the violation occurred, assist the owner/operator in the development of a water quality management plan, provide technical assistance to complete the plan and monitor plan implementation, notify Ecology regarding the owner/operator's willingness to correct the problem and successful implementation of the water quality management plan, and annually submit to Ecology a formal summary of progress on referred water quality violations. While Ecology maintains lead enforcement responsibility for resolution of the referred complaints, this MOA expedites and streamlines correction of agricultural water quality violations.

The TMDL Advisory Group: A TMDL advisory group was formed to direct and support development of the *Walla Walla River Chlorinated Pesticides and PCBs Total Maximum Daily Load Submittal Report.* In such capacity, the advisory group may make suggestions for modifications to the TMDL report. The majority of members of the advisory group are key community members with interests in compliance, and who promote the success of implementation. The group is a highly functional group and is dedicated to meeting the goals of the TMDL.

State of Oregon DEQ: Since approximately a quarter of the Walla Walla basin lies in Oregon, the implementation work underway in Oregon has the potential to positively affect water quality in the Washington portion of the river. As is the case in Washington, the water quality standards program in Oregon is a joint effort between the Department of Environmental Quality (DEQ) and the EPA. DEQ is responsible for developing and enforcing water quality standards that protect beneficial uses such as drinking water, coldwater fisheries, industrial water supply, recreation, and agricultural water supply. The EPA develops regulations, policies, and guidance to help Oregon implement the program and to ensure that Oregon's adopted standards are consistent with the requirements of the Clean Water Act and relevant regulations. The EPA has authority to review and approve or disapprove state standards and, where necessary, to promulgate federal water quality rules. DEQ has the authority and the responsibility to ensure that TMDLs are completed and submitted to EPA. Although no TMDLs are being developed for chlorinated pesticides and PCBs in Oregon, a TMDL is in progress for temperature. It is thought that many of the actions recommended to reduce temperature problems (e.g., riparian restoration and re-vegetation) may also help to reduce sediment loads from soil erosion.

*Regulatory Programs***:** there are a number of local, state, and federal regulatory programs that are already in existence which can be expected to help reduce the chlorinated pesticide and PCB problem in the Walla Walla River and its tributaries. Local regulatory programs include: land use planning/permitting and its associated programs, including Critical Areas Ordinances and Shoreline Master Programs which are administered by county and city governments**.**

> State regulatory programs: Discharge permits, including stormwater discharge, impact water quality through management of erosion and suspended sediment and other pollutants. Ecology recently completed a stormwater management manual for eastern

Washington which is designed to guide local authorities as to how best to meet new stormwater discharge regulations. More specifically, Ecology is in the process of developing general stormwater discharge permits for various cities in the Walla Walla basin. When these are finalized, they will help regulate the stormwater component of the chlorinated pesticide and PCB problem. Other state regulatory programs include wetland protection programs, the implementation of forest practices that minimize water quality impacts under RCW 76.09, the enforcement of Shoreline Management legislation and general environmental review under the SEPA.

Federal regulatory programs: The Safe Drinking Water Act (SDWA) contains provisions related to surface and groundwater quality including required monitoring of public water systems and requirements for development of Wellhead Protection Plans.

A unique settlement agreement was reached in 2000 between the three largest irrigation districts (Walla Walla River, Hudson's Bay Improvement and Gardena Farms) and the USFWS. This agreement (and its extension signed in 2001) dictated increased instream flows to be maintained in the Walla Walla River. These efforts are intended to improve temperature conditions and increase habitat connectivity and may help reduce sediment loads in turn reducing levels of toxins in the water column though this is yet to be determined. A bi-state habitat conservation plan (HCP) is being developed as a follow up on activity to the settlement agreement, and includes other parties such as the city of Walla Walla

Non-Regulatory Programs: In addition to the regulatory programs in place, there are local, state, and federal non-regulatory programs that may also have beneficial impacts on the chlorinated pesticide and PCB problem. Local non-regulatory programs include conservation district, Natural Resource Conservation Service (NRCS), and WSU Cooperative Extension Programs designed to reduce erosion and sediment loading to surface waters, improve water quality monitoring, or vegetate riparian areas. Conservation districts have authority under Chapter 89.08 RCW to develop farm plans to protect water quality and provide animal waste management information, education, and technical assistance to residents on a voluntary basis. Also, county governments are involved in water quality improvements in a variety of programs including, but not limited to, applying for state grants on behalf of landowners.

State non regulatory programs: State management of several funding programs is designed to assist various parties in improving water quality. These programs include the Centennial Clean Water Fund, Washington State Water Pollution Control Fund, Clean Water Act Section 319 Nonpoint Source Fund, and participation in Conversation Reserve Enhancement Program (CREP) (state obligation ten percent). The Washington Department Fish and Wildlife (WDFW) manages the Watershed Recovery Project that involves collecting information about land use practices and water quality within watersheds. The information is collected into a usable format to assist watershed managers to prioritize improvements programs. Also there are various forestry easement programs described in the Department of Natural Resources (DNR) Forest Practices Rules (WAC 222).

Federal Non-Regulatory Programs: The U.S. Department of Agriculture (USDA) - Natural Resources Conservation Service (NRCS) and USDA Farm Service Agency (FSA) administers programs such as the Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program CREP, the Continuous Conservation Reserve Program (CCRP), the Environmental Quality Incentives Program (EQIP), the Wildlife Habitat Incentives Program (WHIP), the Grassland Reserve Program (GRP), and the Wetlands Reserve Program (WRP).

Comprehensive Irrigation District Management Plan (CIDMP): The executive committee of the Irrigation Districts' Guideline development process, in collaboration with CTUIR and various other stakeholders, recently completed a manual (Comprehensive Irrigation District Management Plan) that sets up a voluntary and incentive-based process for improving irrigation district operations in response to the Endangered Species Act and the Clean Water Act. Specifically, the manual describes an innovative and assertive approach to water quality problem assessment, monitoring, outreach, BMP implementation, and adaptive management. Many of the activities outlined in this manual may have potential beneficial impacts on the sediment load and toxin problem in the Walla Walla River.

The United States Forest Service(USFS)/Ecology MOA: In 2000, the USFS – Region 6 and Ecology signed a Memorandum of Agreement (MOA) addressing protection of water quality on federal forest lands in Washington State. As part of the required actions under this MOA, the USFS is actively working to maintain and improve roads that may cause the entry of sediment into area waterways. The USFS has also developed several programs to restore damaged riparian areas and to educate the public regarding respect for rivers and riparian areas. All of these efforts will directly support this TMDL and help to ensure its success.

Besides the general assurances listed above, there are a host of specific water quality enhancement activities already completed or underway in the Walla Walla basin that are helping to meet TMDL chlorinated pesticide and PCB targets. These activities are summarized in Table19.

Table 19. Miscellaneous existing projects related to water quality improvement in WRIA 32. (Taken from the preliminary draft of the Walla Walla Watershed Plan, January 2005 – see Appendix B.)

Project	Lead Agency	Duration	Comments
Couse Creek riparian enhancement (OR)	CTUIR (BPA funded)	1996-1998	
Stream flow enhancement	WWRID, GFID,HBIC, USFWS	1999-2002	
Upland restoration planning	NRCS, WDFW	Ongoing	
Implementation of conservation tillage	Landowners/Conservation Districts/NRCS/WSU Extension	Ongoing	
Installation of other on-farm BMPs	Landowners, WWCCD, CCD, NRCS, WSU Extension	Ongoing	Included installation of terraces, sediment basins, and vegetated filter strips; enrollment of landowners in CRP & CREP

Project	Lead Agency	Duration	Comments
Riparian buffer restoration (CREP & others)	Landowners, NRCS, CTUIR (BPA funds), FSA & Conservation Dists.	Ongoing	Areas like the South Fork Patit and Blue Creek
Various riparian and instream restoration projects	Landowners, NRCS, and Tri-state Steelheaders	Ongoing	
College Place stream restoration &	City of College Place	1998-2001	Along Garrison Creek
Treatment wetland/WWTP Improvements	City of College Place	Ongoing	
Walla Walla WWTP improvements	City of Walla Walla	1999-2000	Various improvements
Dayton WWTP improvements	City of Dayton	1999-2000	
Waitsburg WWTP improvements	City of Waitsburg	2001-2001	Various improvements and new construction
Household hazardous waste collection	Ecology, Landowners, City and County Agencies	Ongoing	
Livestock removal	Landowners, NRCS	Ongoing	Remove direct stream access for livestock and reduce total livestock presence
Irrigation efficiency	Landowners and City/County Agencies	Ongoing	
Forest practices	Landowners and City/County/State Agencies	Ongoing	Reduces upland erosion
Increasing industrial chemical control and accountability	Ecology, Landowners, Business, City and County Agencies	Ongoing	

Adaptive Management

Adaptive management has been defined in state law as "reliance on scientific methods to test the results of actions taken so that the management and related policy can be changed promptly and appropriately" (RCW 79.09.020). It may be described as a cycle that occurs in four stages: (i) identification of information needs, (ii) information acquisition and assessment (monitor), (iii) evaluation and decision-making (evaluate), and (iv) management action or response (respond). Oftentimes, the first and fourth stages can be considered as one, since part of the response to newly evaluated data may be to identify new information needs. Thus, the key stages of the adaptive management cycle are to "monitor", "evaluate", and "respond." Adaptive management is a continuing attempt to reduce the risk arising from the uncertainty associated with information used to develop the management actions. Generally speaking, each stage of the cycle has an associated uncertainty that should decrease through each completed cycle of the process.

This is one perspective to applying adaptive management. An alternative way to look at adaptive management is to consider it as "experimental management" wherein the management actions taken are used to test key hypotheses and assumptions used to develop the management actions. There are subtle differences in application, but conceptually they are similar in that adaptive

management attempts to address uncertainty in information. In this TMDL, adaptive management specifically refers to a process whereby the advisory group and Ecology devise new implementation strategies in the event that monitoring shows targets are not being met. A feedback loop is implemented consisting of the following three steps.

Step 1. The water quality improvement plan and associated action items are implemented. Programs and on-site BMPs are evaluated for technical adequacy of design and installation.

Step 2. The effectiveness of the water quality improvement plan in achieving the goal and objectives is evaluated by comparison to water quality monitoring data. If the goal and objectives are achieved, the implementation efforts are adequate as designed, installed, and maintained. If not, the plan is modified and objectively reevaluated.

Step 3. Project success and accomplishments should be publicized and reported to continue project implementation and support.

Where new (not previously identified) sources of suspended sediment bearing chlorinated pesticides and PCBs are discovered, they will be remedied through the appropriate jurisdiction. If or when planned implementation activities are not producing expected or required results, Ecology or other entities may choose to conduct additional studies to identify the significant sources of toxin input to the river system. If the causes can be determined, additional implementation measures may be needed. If the shortfall does not have an apparent cause (e.g., everyone is implementing required BMPs and all potential sources have been addressed, but targets are not being met), then more studies may be required. Conversely, should water quality standards be met prior to achieving the specific target allocations outlined here, the purpose of this TMDL shall be satisfied. Re-evaluation of the status of this TMDL will be conducted every five years. For non-federal forested areas, the agreements in the forests and fish report incorporate adaptive management as needed to ultimately meet state water quality standards. The USFS also has a policy of adaptive management.

Regular monitoring is essential to ensure successful implementation of an adaptive management strategy. The monitoring strategy is discussed in detail below.

Monitoring Strategy

The EPA calls for a monitoring plan for TMDLs where implementation will be phased over time. The monitoring is conducted to provide assurance that the control measures will meet the TMDL targets and achieve water quality standards. Long-term monitoring will be important to ensure fulfillment of the Walla Walla River TMDL for chlorinated pesticides and PCBs. Ecology is the lead agency for monitoring the implementation activities and will coordinate with the appropriate watershed entities to accomplish these efforts.

A distinction should be made here between implementation monitoring and effectiveness monitoring. Implementation monitoring can begin at any time and is usually more dispersed and on a larger scale than effectiveness monitoring. Because the cost of sampling toxin concentrations directly on the scale required in this phase of monitoring will probably be prohibitive, TSS and/or turbidity will be used here as surrogate measures of toxicity. The goal of

implementation monitoring is to pinpoint the most significant sources of contamination. Effectiveness monitoring is conducted five years after completion of the detailed implementation plan (DIP) and its primary purpose is to determine whether implementation activities have been put into effect and whether the water body is in compliance with state water quality standards. Unlike implementation monitoring, effectiveness monitoring typically requires assessing toxin concentrations directly using SPMDs and fish tissue samples.

A TMDL must include monitoring to measure achievement of targets and water quality standards. NPDES permits require point sources to regularly monitor their discharge effluent. Monitoring data from the Walla Walla and College Place WWTPs will be included with data collected as part of a general monitoring strategy for watershed. The goal of monitoring would be to determine if BMPs are effective in reducing TSS loading to the Walla Walla River and bringing the river into compliance with standards. Objectives should include 1) obtaining accurate and representative data on TSS and turbidity in the mainstem Walla Walla River and major tributary sources of TSS, 2) using the data to assess progress toward meeting water quality targets, 3) re-surveying fish and the water column to verify that human health standards for chlorinated pesticides and PCBs are being met, 4) re-assessing the accuracy of the 2 mg/L:1 NTU and 1 mg/L:<1 NTU targets for the mainstem, and 5) developing water quality targets to protect high fish consumers in the East Little Walla Walla River and in Yellowhawk Creek.

The Walla Walla Watershed Planning Unit developed a sediment model using the SWAT (Soil Water Assessment Tool) model in their efforts to assess the positive impact of alternative agricultural BMPs implemented in the basin (EES., 2003). The model was used to analyze the erosion and sediment characteristics of the basin as impacted by historical and current (or projected) agricultural practices. Both the planning unit and Ecology have access to this model and it could be further developed to conduct a basin wide modeling study or to focus on specific drainage areas within the basin. In addition, the model could be used to help evaluate the stream loading associated with other water quality parameters individually or as affected by sediments.

Water quality monitoring should begin with collecting one year of baseline data on TSS and turbidity at the ten sites listed below. Sampling should be conducted at least twice weekly, similar to what is being done for effectiveness monitoring in the Yakima TMDL. In order to obtain representative and comparable data, depth integrating sampling procedures should be used. Streamflow should be measured.

The following sampling sites are suggested for TMDL effectiveness monitoring:

1. Walla Walla River @ state line
2. Yellowhawk Creek
3. East Little Walla Walla River
4. Garrison Creek
5. Mill Creek
6. Dry Creek
7. Pine Creek
8. Touchet River
9. Gardena Creek
10. Lower Walla Walla River @ Cummins Bridge

Once BMPs have been implemented, twice-weekly samples would be collected from January through June, the critical period for TSS loading. The pre- and post-data for January-June would be tested for significant differences and the 90th percentile values compared to the numerical targets. January-June monitoring would continue on a yearly or less frequent basis, depending on results of the comparisons and pace at which land use changes proceed in the watershed. Monitoring in July-December would be phased in as appropriate to assess progress in meeting the more restrictive targets or to acquire more background data.

As the water quality targets for TSS and turbidity are progressively achieved, chlorinated pesticides and PCBs should be analyzed periodically in resident mainstem fish species and the water column. PCBs should also be analyzed in fish samples from Mill and Garrison creeks. Sample size for fish should be appropriate for making a statistical comparison with criteria used to assess compliance with human health standards and WDOH should be consulted on the sampling design. Water column sampling and analysis should employ low-level techniques. Water samples should be focused on the mainstem and include the East Little Walla Walla River and Yellowhawk Creek. TSS and turbidity samples should be collected in conjunction with the pesticide sampling.

A quality assurance project plan (QAPP) should be prepared for whatever monitoring is conducted. The QAPP should follow Ecology guidelines (Lombard and Kirchmer, 2004) paying particular attention to consistency in sampling and analytical methods.

In addition to the effectiveness monitoring detailed above, it is recommended that follow-up monitoring work be done to answer key questions not answered in the TMDL chlorinated pesticide and PCB evaluation:

- Chlorinated pesticides and PCBs should be analyzed in sediment samples from the Columbia River backwater in the lower Walla Walla River and an assessment made of potential for uptake of these chemicals by fish and of ecological risk. The rate of sediment deposition should be measured and results used to predict time to recovery under various cleanup scenarios for the upstream watershed.
- An effort should be made to determine if there are remediable PCB sources in the Mill Creek watershed. More intensive sampling of Mill and Garrison creeks may help determine if and where localized sources exist. Other potential sources in the watershed include agricultural, food processing, chemical, scrap, and waste sites.
- It is recommended that as part of a PCB management strategy the WWTPs of Walla Walla and College Place monitor the output of dischargers in their service areas to determine possible contributors of PCBs to their systems. This strategy should also include WWTP effluent sampling to ascertain whether remedial activities are successful in reducing PCB load. Ecology will provide technical assistance wherever possible.
- Additional water sampling is required along Yellowhawk Creek in order to identify possible sources of PCBs. The sampling strategy will be developed in the Detailed Implementation Plan (DIP). No point sources were identified along the Yellowhawk during the TMDL technical study, but if such sources are later identified they will be addressed in NPDES or stormwater permits and monitored regularly to assess compliance with water quality standards.

- The stormwater systems of the cities of Walla Walla and College Place should be sampled for both chlorinated pesticides and PCBs to ascertain how much if any these are contributing to the problem - information which can be incorporated in future stormwater discharge permits.
- Sampling should be conducted to locate toxaphene sources in the Pine Creek drainage. Because of the analytical challenges presented by toxaphene, some kind of pre-concentration technique may be required to obtain useful data.

Funding

Potential funding sources available through Ecology's water quality grants program include the Centennial Clean Water Fund, Section 319 grants under the federal Clean Water Act, and the State Revolving Fund (SRF) grants. In addition to Ecology's funding programs, there are many other funding sources available for watershed planning and implementation, point and nonpoint source pollution management, fish and wildlife habitat enhancement, stream restoration, and education. Public sources of funding include federal and state government programs, which can offer financial as well as technical assistance. Private sources of funding include private foundations, which most often fund nonprofit organizations with tax-exempt status. Forming partnerships with other government agencies, nonprofit organizations, and private businesses can often be the most effective approach to maximize funding opportunities. Ecology will work with public entities and local interest groups to prepare appropriate scopes of work, to implement this TMDL, and to assist with applying for grant opportunities as they arise.

The NRCS directs its Environmental Quality Incentives Program (EQIP). EQIP provides technical, educational, and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program is implemented through conservation plans that include structural, vegetative, and land management practices. Contracts are five to ten years long. The USDA FSA administers the Conservation Reserve Enhancement Program (CREP) and Conservation Reserve Program (CRP), both of which the NRCS has technical responsibility over. These are both voluntary cost share programs designed to restore and enhance habitat and increase bank stability along waterways on private lands. A cropping history is needed to be eligible for CRP but not for CREP. Marginal pasture lands are also eligible. The NRCS provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. These programs offer payments for annual rental, signing, cost share, practice, and maintenance in exchange for removing land from production and grazing, under 10-15 year contracts. Additionally, the NRCS can initiate funding under Public Law 83-566, the Watershed Protection and Flood Prevention Act. This federal law can fund watershed projects that include watershed protection, water quality improvements, soil erosion reduction, irrigation water management, sedimentation control, and fish and wildlife habitat enhancement.

The Walla Walla County and Columbia conservation districts provide cost-share programs to irrigators and ranchers for riparian restoration, farm programs, and irrigation conversion programs - all of which could help reduce sediment loads in the Walla Walla River and its tributaries. These conservation districts could also help to provide polyacrylamide (PAM) to farmers that when applied to the soil helps to reduce soil erosion. Cost-share can and should be sought by all cooperating groups, but it should be recognized that implementation of BMPs (with or without cost share) requires that individual landowners make an investment in the practice.

Because much of the Walla Walla basin is considered critical ESA habitat for bulltrout and summer steelhead, state and federal funding is available for endangered fish species projects, which will probably help support implementation under this TMDL. The Walla Walla Watershed Planning Unit will have access to funding for projects that will further help ameliorate the conditions responsible for the chlorinated pesticide and PCB problem in the area.

CTUIR is involved with a number of habitat, hatchery, harvest, and hydrosystem restoration actions that will ultimately result in increased fish production in the Walla Walla and increased tribal consumption of Walla Walla fish. CTUIR's involvement in the sub basin provides additional opportunities for funding including but not limited to cost-matching from non-federal rate payer Bonneville Power Administration, EPA tribal gap, and Bureau of Indian Affairs money. These resources may be available to assist in on-the-ground science such as fish collections and toxins sampling, and are already in place to develop and implement habitat restoration projects that may ultimately result in decreased chlorinated pesticide levels.

Summary of Public Involvement

Public involvement is vital in any TMDL. Nonpoint TMDLs are successful only when the watershed landowners and other residents are involved, since they are the closet to and most knowledgeable of the watershed resources. Ecology's *TMDL Evaluation of Chlorinated Pesticides and PCBs in the Walla Walla River, published in October of 2004*, was subjected to public review and comment. Much of the material in this submittal report is based on that publication. In early 2005, a TMDL advisory group was founded to discuss issues and make recommendations to Ecology in the development of this TMDL. Ecology also maintains a mailing list of interested parties so that information is readily available to other agencies and the public on matters concerning the TMDL process. The submittal report is opened to public review and comment before submittal to the EPA.

The Walla Walla basin has a host of local, state, federal and tribal agencies, and non-governmental organizations involved in conservation activities associated with the mainstem and its tributaries. Many private landowners in the area are also intimately involved with these conservation efforts. Ecology will continue to take steps to try and ensure participation and cooperation from *all* the great diversity of interested parties in this TMDL.

Involving stakeholders in the basin is the key to executing management strategies and actions. Examples of organizations to contact in targeted outreach efforts during implementation include:

- County Conservation Districts and Farm Bureaus.
- Walla Walla Backyard Stream Team.
- Washington State University Cooperative Extension.
- Confederated Tribes of the Umatilla Indian Reservation (CTUIR).
- Agricultural commodity groups and trade associations.
- Environmental organizations (Blue Mountain Land Trust, CELP, American Rivers) and civic organizations.
- Walla Walla Watershed Alliance, Kooskooskie Commons and Native Creek Society.
- Walla Walla County Watershed Planning Department.
- County Commissions and City Councils.
- Tri-State Steelheaders and other hunting, fishing and outdoor recreation interest groups.
- Irrigation districts and organized ditch irrigators.
- Agri-businesses and timber companies.
- Economic development organizations.
- Colleges (Walla Walla Community College, Whitman College and Walla Walla College); and individual landowners.
- Government agencies such DOH, WDFW, USDA-NRCS, USFS, and ODEQ and ODFW
- Walla Walla Basin Watershed Council (in Oregon).
- Oregon State University Cooperative Extension.

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Appendix A

A Total Maximum Daily Load Evaluation for Chlorinated Pesticides and PCBs in the Walla Walla River

By Art Johnson, Brandee Era-Miller, Randy Coots, and Steve Golding

October 2004
Publication No 04-03-032

This report is available on the Department of Ecology home page on the World Wide Web at http://www.ecy.wa.gov/biblio/0403032.html

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Refer to Publication Number 04-03-032

Appendix B

Walla Walla Watershed Plan
Preliminary Draft

By HDR/EES, Inc.

January 2005

This report is available on the Walla Walla Watershed Planning home page on the World Wide Web at http://www.wallawallawatershed.org/wsplanning.html#documents

For a printed copy of this report, contact:
HDR/EES, Inc.
2805 St. Andrews Loop, Suite A
Pasco, Washington 99301

Appendix C

Stormwater Management Manual for Eastern Washington

Prepared By: The Washington State Department of Ecology's Water Quality Program

September 2004
Publication No. 04-10-076

This report is available on the Department of Ecology home page on the World Wide Web at http://www.ecy.wa.gov/biblio/0410076.html

If you have a credit card, you can order printed copies of the manual and the manual on CD at the following Internet address:
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Appendix D

Model Municipal Stormwater Management for Eastern Washington

Prepared By: The Washington State Department of Ecology's Water Quality Program

September 2003
Publication No. 03-10-076

This report is available on the Department of Ecology home page on the World Wide Web at http://www.ecy.wa.gov/biblio/0310076.html

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Appendix E

Upper Yakima River Basin Suspended Sediment, Turbidity and Organochlorine Pesticide Total Maximum Daily Load, Submittal report.

Prepared By: Jane Creech and Joe Joy

August 2002
Publication No. 02-10-047

This report is available on the Department of Ecology home page on the World Wide Web at http://www.ecy.wa.gov/biblio/0210047.html

If you have a credit card, you can order printed copies of the manual and the manual on CD at the following Internet address:
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Appendix F

By Congressional mandate, the **Agency for Toxic Substances and Disease Registry (ATSDR)** produces "toxicological profiles" for hazardous substances found at National Priorities List (NPL) sites. These hazardous substances are ranked based on frequency of occurrence at NPL sites, toxicity, and potential for human exposure.

Further information:

- **ATSDR ToxProfiles 2004™** CD-ROM - The toxicological profiles are also available as a complete set on CD-ROM.
- **Public Health Statements (PHS)** - The PHS are a series of summaries about hazardous substances taken from Chapter One of their respective ATSDR Toxicological Profiles.
- **ATSDR ToxFAQs™** - The ToxFAQs™ are a series of 2-page fact sheets about hazardous substances.

To request a copy of the ToxProfiles™ CD-ROM, PHS, or ToxFAQsTM call 404-498-0261 or email your request to atsdric@cdc.gov.

For more information on the above listed publications, write

Division of Toxicology, Agency for Toxic Substances and Disease Registry
1600 Clifton Road, Mailstop F-32, Atlanta, GA 30333

For more information 24 hours/day

You may call the ATSDR toll free number at 1-888-42-ATSDR (1-888-422-8737) to get 24-hour recorded information about Division of Toxicology programs. This phone number includes options to be transferred to ATSDR personnel for technical assistance.

ATSDR Internet home page via World Wide Web: http://www.atsdr.cdc.gov

The profiles, public health statements, ToxFAQs™ and other information are available on the Internet.

Appendix G

Acronyms and Abbreviations

AKART	All Known and Reasonable Technology
BMP	Best Management Practice
CAO	Critical Areas Ordinance
CAFO	Contained Animal Feeding Operation
CCD	Columbia Conservation District
CD	Conservation District
CIDMP	Comprehensive Irrigation District Management Plan
CRB	Columbia River Basalts
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CTUIR	Confederated Tribes of the Umatilla Indian Tribes
CWA	Clean Water Act (Federal)
DEQ/ODEQ	Oregon Department of Environmental Quality
DOE/Ecology	Washington State Department of Ecology
DOH	Washington State Department of Health
DDD	Dichlorodiphenyl Dichloroethane
DDE	Dichlorodiphenyl Dichloroethylene
DDT	Dichlorodiphenyl Trichloroethylene
EES	Economic and Engineering Services, Inc.
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	Endangered Species Act (Federal)
GPS	Global Positioning System
HCP	Habitat Conservation Plan
MOA	Memorandum of Agreement
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NTR	National Toxics Rule
NTU	Nephelometric Turbidity Unit
ODFW	Oregon Department of Fish and Wildlife
OFM	Washington State Office of Financial Management
PCB	Polychlorinated Biphenyl
PNW	Pacific Northwest
RCW	Revised Code of Washington
RM	River Mile

SPMD	Semipermeable Membrane Device
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USFS	U.S. Forest Service
USGS	U.S. Geologic Survey
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WRIA 32	Water Resource Inventory Area (Walla Walla Basin)
WSU	Washington State University
WWCCD/WWCD	Walla Walla County Conservation District
WWTP	Wastewater Treatment Plant
mg/L	milligrams per liter (parts per million)
ug/L	micrograms per liter (parts per billion)
ng/L	nanogram per liter (parts per trillion)
ug/Kg	micrograms per kilogram (parts per billion)

Appendix H

Responsiveness Summary

(Note: Due to editing, page numbers in the final draft of the submittal report may differ from those cited in the comments.)

1) Comment:

Gray, Donovan (ECY ERO)

From: Fishella, Philip J NWW [Philip.J.Fishella@nww01.usace.army.mil]
Sent: Friday, September 23, 2005 3:56 PM
To: Gray, Donovan (ECY ERO)
Subject: Walla Walla River TMDL Comment

I have read the submittal report draft and believe that the Walla Walla River Water Cleanup Plan is based on biologically sound principles. I work as a water quality and sediment specialist on the Lower Snake River. However I have gained a personal perspective on the problems because I have waded, floated and fished the Walla Walla and Touchet Rivers. In doing so it is very apparent that a primary concern should be the erosion and resultant runoff in these riparian areas. I feel that the TMDL goals will not be met in the desired time frameworks without effective non regulatory type resource plans for farms and property owners on these river banks. Although some riparian improvements have been made it will take large scale riparian revegetation and buffering adjacent to these stream banks to achieve the desired water quality targets. Education is important however incentives must be forthcoming to continue Conservation Reserve and Enhancement Programs and to implement sound watershed agricultural practices

1.1) Response:

Ecology agrees that maintaining and restoring riparian areas will be very important to the success of this TMDL. We are aware of and appreciate the work the local community has already accomplished with regard to water quality improvements. Ecology is committed to working cooperatively and collaboratively with the local community to implement sound watershed agricultural practices and partner with existing programs such as CRP and CREP to achieve the necessary water quality improvements. Ecology will continue to educate the local community about water quality issues and seek funding to help both educational and riparian restoration efforts.

2) Comment:

October 3, 2005

Public input has been requested regarding the report generated by the Department of Ecology (DOE), State of Washington, entitled *Walla Walla River Chlorinated Pesticides and PCBs Total Maximum Daily Load (Water Cleanup Plan) of September 2005*.
This report was preceded by the reference report, *TMDL Evaluation for Chlorinated Pesticides and PCBs in the Walla Walla River DRAFT document of 6-25-04*

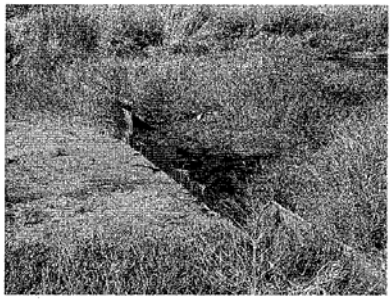
I would like to offer some comments in response to the implication in the report that a permitted limit for PCBs should be placed on the Walla Walla Wastewater Treatment Plant (WWTP). I believe a limit would be futile and a waste of good resources for the following reasons:

Bias in data due to lack of consideration of flow

- First of all, an overview of the tributary flows into the Walla Walla River needs to be considered to help get an understanding of the drainage, particularly that of Mill Creek. Utilizing flow data for the past **fifty years**, the report states graphically in figure 3 on page 17 that **Mill Creek makes up less than 14 percent of the Walla Walla River flow** during peak flow times (February) of the year. The discharge from the **Walla Walla Wastewater Treatment Plant is only 4.6 percent of the flow into Mill Creek** during this time. The WWTP, therefore, is an insignificant flow into the river.

- The Walla Walla WWTP is only permitted to discharge to Mill Creek from December through April, or for only five months per year. Due to overallocation, **Mill Creek is dry for over four months per year**. According to the Water Cleanup Plan above, on page 33 under Table 14, a best management practice (BMP) to help remedy the introduction of PCBs into the drainage is to enact "possible remedial actions, such as pretreatment and/or re-use." The Walla Walla WWTP already produces a Class A reclaim water that is used by two irrigation districts for most of the year, and the City has implemented an Industrial Pretreatment Program.

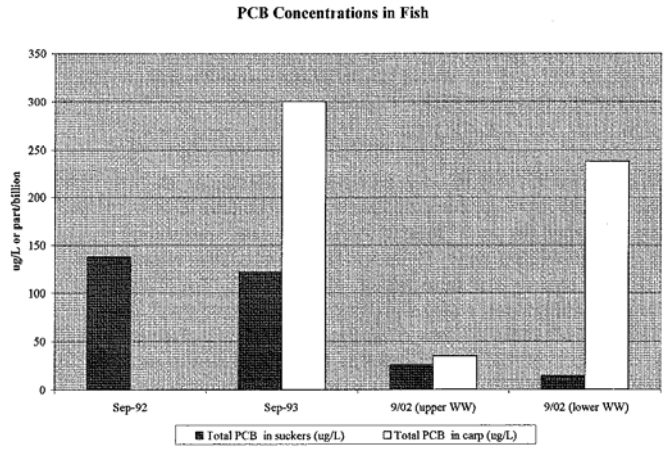
Mill Creek flow in September at Walla Walla WWTP



- Mill Creek will never again be a pristine body of water since the Army Corp of Engineers inserted the five-mile-long baffle system running through the City of Walla Walla.
- The *Draft* states more than once that the WWTPs are an insignificant contributor to the pesticides and PCBs present in the water. As is indicated in Table 25 on page 92, the estimated contribution of **PCB loading by the Walla Walla WWTP to the total downstream load is only 3 percent**.

Bias in data of Human Health Criteria limits due to inappropriate fish species

- Original fish (fillet) study (ref. 0203068.pdf) was done on **carp and suckers**, both bottom feeders (near sediment) and **not considered a fish for consumption** (p. 15 of TMDL Technical Study, Quality Assurance Project Plan). Even the levels of PCBs in these aquatic species has dropped substantially in the past ten years, as is illustrated by the chart below.



In February of the testing period, samples taken at the Walla Walla WWTP averaged about 0.7ng/L (parts per trillion or ppt) in total PCBs. This low level is **only 0.14 percent of the maximum allowable concentration level (MCL) established by the EPA for drinking water** of 500 ppt.

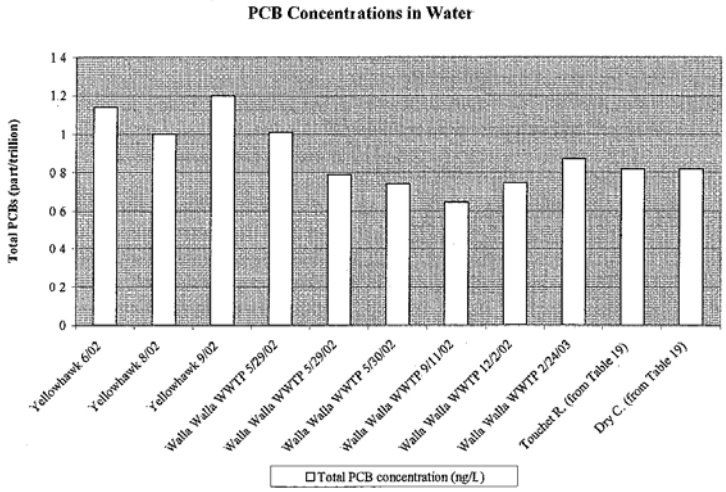
- In the (242 page draft) reference document entitled *Big Spring Creek PCB Ecological and Human Health Risk Assessments* of 1/19/05 published by the Montana Fish, Wildlife, and Parks Department;
    - From the executive summary (ES-3), "PCBs were not detected in any (surface water) samples, except those of the hatchery. PCBs were detected in samples from the aeration canal at 0.000015 ppb and the raceway at 0.0007ug/L (ppb). Detected concentrations are far below both the EPA's

drinking water MCL of 0.5ug/L and MDEQ surface water criterion of 0.014ug/L for protection of aquatic life and of 0.0017ug/L for protection of human health." According to this document, the criterion for the protection of human health in Montana is ten times higher then the value used by DOE in its calculations. I assume they chose to use a different risk factor. This appears to be an acceptable practice according to Footnote "C" of the EPA document "Current National Recommended Water Quality Criteria."

- From section one, page 1-6, only the "edible" portion of fish (in this report, brown and rainbow trout) were used to evaluate human health risk.
- PCB sources (section 1.4, page 1-7) were assumed to be paint historically applied to hatcheries in the creek, the current problem stemming from paint peeling off and being deposited in the sediments downstream. DOE should consider whether a similar painting program occurred in the development of the Mill Creek baffle system and accompanying channels of Garrison and Yellowhawk Creeks where concentrations of PCBs have been identified.

- Costs associated with monitoring PCBs at this level (less than one part per trillion) are excessive and not economical considering point source contributions that are a relatively insignificant amount as compared to non-point sources. Standard available labs are not able to achieve this level of analysis (< 1 0ppt). Here are a few:
  - Analytical Resources, Tukwila, WA - $190/analysis to MDL of 10ppt
  - Laucks, Seattle, WA - $135/analysis to MDL of 500ppt
  - Energy Labs, Billings, MT - $120 to MDL of 500ppt
  - AXYS, Sidney BC - $950 to MDL of 0.02ppt
  - Analytica Group, Denver, CO - $275 to MDL of 910ppt

- In my opinion, most of the contaminant levels in the WWTP effluent are actually just passed through the plant after it enters the collection system through inflow and infiltration from Mill Creek that has elevated levels.



- From the above chart, it can be clearly seen (and statistically calculated) from samples of other water bodies in the drainage that the concentrations in the Walla Walla WWTP is not any greater than **these background levels.**

- In Appendix D-5 of the *Draft*, the field blank is actually a higher value for PCB-4 then the concentrations of the Touchet and (lower) Walla Walla Rivers.

- Cleanup is being initiated at the wrong point. The *Draft* states that PCBs are volatile in warmer climates. Typically they are volatilized in their original location and carried by air currents to cooler climates where they are redeposited (p. 91). Focus should be placed on the sources of these compounds and not on the cleanup of after-the-fact redeposition. The fact that PCBs continue to be present in current businesses (like being present in newspaper ink, another ubiquitous product) emphasizes all the more the misdirection of cleaning up the WWTP versus removing sources of PCBs.

Thank you for your consideration of this important issue. Straining at a gnat and swallowing a camel is no way to produce a cleaner and healthier environment. We need to use good science and common sense. Applying unreasonable limits would overburden taxpayers, giving them less value for their dollars. Permitting the Walla Walla WWTP is like implicating the WWTP for discharging PCBs at levels more than 500 times below national drinking water standards because during the four months the WWTP discharges to Mill Creek, local people will be consuming enormous quantities of suckers.

Sincerely,

Bill Slovensky

2.1) Response: *First Page, First Bullet*

Flow information was used in the calculation of the allocations recommended in the Walla Walla toxics TMDL technical report. In addition to the data on general flow conditions (see technical report pages 45-46), flow data was also obtained from WWTP records (see technical report, page 36, under *Effluent Samples*). Pages 101-102 of the technical report describe in detail how flow was used in the calculation of the loading capacities, load and wasteload allocations. We agree that the Walla Walla WWTP discharge to Mill Creek is relatively insignificant. The submittal report (p.27, 3rd paragraph, 3rd sentence) states "the WWTPs represent less than ten percent of the PCB load in the receiving waters and thus are not as important relative to nonpoint sources". In addition p.32, final paragraph, 3rd sentence (same document) states "Nonpoint sources coming into the WWTPs may be contributing to elevate PCB levels found in the WWTP effluent." However, effluent samples taken by Ecology of the WWTPs' effluent did show PCB concentrations were in exceedance of state and federal water quality standards. Ecology is required under the federal Clean Water Act and RCW 90.48 to address water quality impairments to waters of the state. In the case of point source discharges such as WWTPs this is done in the form of wasteload allocations in a TMDL. RCW 90.48. requires that point source dischargers of pollutants into waters of the state use all known, available and reasonable methods of prevention, control, and treatment (AKART) to reduce pollutant concentrations to within acceptable limits, regardless of whether the facility in question is the source of the pollutant or merely the conduit.

2.2) Response: *First Page, Second Bullet*

At the time the phrase referenced in the bullet was written, the Walla Walla WWTP was still in the process of developing a water re-use program. This phrase has now been removed from the text to reflect the latest developments.

2.3) Response: *Second Page, First Bullet*

The toxics TMDL submittal report does not imply or state that Ecology's intention is to restore Mill Creek to a 'pristine' state. The toxin reductions required in the report are those necessary to meet state and federal water quality standards, but will not completely eliminate these toxins.

2.4) Response: *Second Page, Second Bullet*

See response to **2.1)** *First Page, First Bullet*

2.5) Response: *Second Page, Third Bullet*

We agree that carp and suckers are not consumed by a large segment of the local population. However, the human health criteria and water quality targets in the TMDL are intended to make it safe to eat all fish species caught in the river. The technical study analyzed carp and suckers, in addition to pike minnow, carp, catfish, and smallmouth bass. These are the predominant resident fish species that presently exist in the river. Migratory species like steelhead were not analyzed because the results would primarily reflect residues accumulated elsewhere. The selection of

water quality targets that will bring the river into compliance with pesticide and PCB standards was based on water quality criteria established by EPA, not on the levels of contamination in the Walla Walla fish and analyzed for the technical study. While there is some evidence that pesticide concentrations have decreased over time, the comparison shown by Mr. Slovensky to illustrate a decrease in PCB concentrations in suckers is not appropriate because the older data are for whole fish samples and the newer data are for fillet samples and are therefore not comparable.

2.6) Response: *Second Page, Fourth Bullet, First Point*

From the information cited by Mr. Slovensky it does appear that the Montana human health criteria are based on a less protective risk factor than Ecology's criteria. In the National Toxics Rule, EPA gave the states leeway to select either a 10^{-5} (one in one hundred thousand) or 10^{-6} (one in one million) risk level; Washington chose 10^{-6}.

2.7) Response: *Third Page, First Point*

See response to **2.5)** *Second Page, Third Bullet*

2.8) Response: *Third Page, Second Point*

Ecology remains committed to encouraging the use of applicable BMPs and/or AKART to address *all* sources of PCBs in the Walla Walla Basin. Specific strategies for addressing various contaminant sources will be addressed in the Detailed Implementation Plan to be compiled in collaboration with the Walla Walla TMDL advisory group. As part of this process the advisory group may choose to investigate potential PCB contaminated paint in the baffle system and accompanying channels. However, known PCB point sources such as the effluent from the Walla Walla and College Place WWTPs are *required* under state and federal legislation to receive a wasteload allocation.

2.9) Response: *Third Page, First Bullet*

See response to **2.1)** *First Page, First Bullet* and **2.8)** *Third Page, Second Point.* We agree that PCB congener analysis is expensive, but costs could be lowered if a simple data report is requested vs. an exhaustive data package.

2.10) Response: *Third Page, Second Bullet*

See response to **2.1)** *First Page, First Bullet*

2.11) Response: *Fourth Page, First Bullet*

The chart plots data for creeks that have significant urban and/or agricultural land use, so would not be considered "background" in the sense of being uncontaminated. We agree that the levels in WWTP effluent appear to be generally similar to or slightly less than the other sites shown in this comparison.

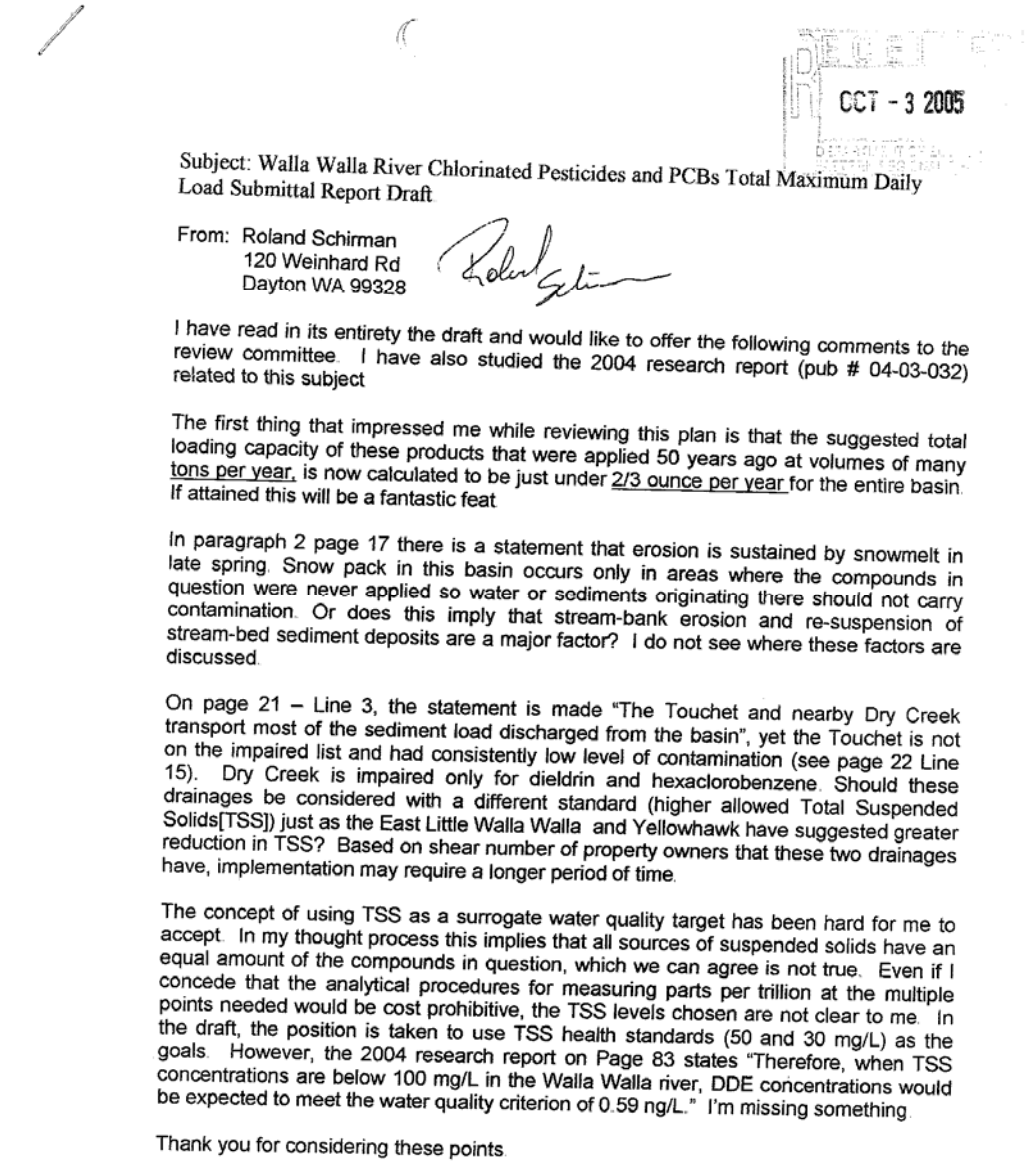
2.12) Response: *Fourth Page, Second Bullet*

As described in the Walla Walla toxics TMDL technical report, PCB-4 (a specific PCB compound not found in environment) was spiked into these samples prior to analysis and thus should not be used to compare PCB levels among waterbodies.

2.13) Response: *Fourth Page, Third Bullet*

See response to **2.1)** *First Page, First Bullet* and **2.8)** *Third Page, Second Point.*

3) Comment:



OCT - 3 2005

Subject: Walla Walla River Chlorinated Pesticides and PCBs Total Maximum Daily Load Submittal Report Draft

From: Roland Schirman
120 Weinhard Rd
Dayton WA 99328

I have read in its entirety the draft and would like to offer the following comments to the review committee. I have also studied the 2004 research report (pub # 04-03-032) related to this subject

The first thing that impressed me while reviewing this plan is that the suggested total loading capacity of these products that were applied 50 years ago at volumes of many tons per year, is now calculated to be just under 2/3 ounce per year for the entire basin. If attained this will be a fantastic feat

In paragraph 2 page 17 there is a statement that erosion is sustained by snowmelt in late spring. Snow pack in this basin occurs only in areas where the compounds in question were never applied so water or sediments originating there should not carry contamination. Or does this imply that stream-bank erosion and re-suspension of stream-bed sediment deposits are a major factor? I do not see where these factors are discussed.

On page 21 – Line 3, the statement is made "The Touchet and nearby Dry Creek transport most of the sediment load discharged from the basin", yet the Touchet is not on the impaired list and had consistently low level of contamination (see page 22 Line 15). Dry Creek is impaired only for dieldrin and hexaclorobenzene. Should these drainages be considered with a different standard (higher allowed Total Suspended Solids[TSS]) just as the East Little Walla Walla and Yellowhawk have suggested greater reduction in TSS? Based on shear number of property owners that these two drainages have, implementation may require a longer period of time.

The concept of using TSS as a surrogate water quality target has been hard for me to accept. In my thought process this implies that all sources of suspended solids have an equal amount of the compounds in question, which we can agree is not true. Even if I concede that the analytical procedures for measuring parts per trillion at the multiple points needed would be cost prohibitive, the TSS levels chosen are not clear to me. In the draft, the position is taken to use TSS health standards (50 and 30 mg/L) as the goals. However, the 2004 research report on Page 83 states "Therefore, when TSS concentrations are below 100 mg/L in the Walla Walla river, DDE concentrations would be expected to meet the water quality criterion of 0.59 ng/L." I'm missing something.

Thank you for considering these points.

3.1) Response: *Second Paragraph*

The chlorinated pesticides and PCBs and associated sediment reductions prescribed in the submittal report are those calculated as necessary to achieve compliance with state and federal water quality standards. Page 97 of the Walla Walla chlorinated pesticides and PCBs TMDL technical report summarizes the success that has been achieved in the suspended solids/DDT TMDL for the Yakima River. The TSS and turbidity targets in the Yakima TMDL were similar to those proposed for the Walla Walla River. Page 106 of the technical report also cites a sediment loading study by Economic and Engineering Services, Inc. that concludes it is feasible to reduce sediment loading in the Walla Walla basin by 85%.

3.2) Response: *Third Paragraph*

The statement referred to was only intended to help describe the general conditions in the basin. The sentence now reads 'flow is sustained though June from snowmelt'. The Walla Walla toxics TMDL technical report reviews historical data on pesticide levels in deposits of streambed sediments collected in the Walla Walla River and tributary mouths (Table 3). The concentrations were low to non-detectable. A USGS study referenced in the technical report (Mapes, 1969) found that most of the eroded soil in the Walla Walla basin consists of fine silt and clay that is kept in suspension by turbulence and transported out of the system.

3.3) Response: *Fourth Paragraph*

The Walla Walla TMDL toxics technical report acknowledges that the TSS target is overprotective for chlorinated pesticides in the Touchet but points out that the more stringent target remains pertinent for the Touchet in order to meet turbidity standards in the mainstem, as well as for protection of fish and wildlife (page 96). Dry Creek also had at least one exceedance each for DDT, PCBs, chlordane, and heptachlor epoxide and is a significant source of turbidity to the mainstem. Each of these pesticide/PCB exceedances represents a one month average concentration. There is currently no information to suggest a "higher allowed TSS" target would be appropriate for Dry Creek.

3.4) Response: *Fifth Paragraph, First Three Sentences*

We agree that all sources of suspended solids do not have equal amounts of the compounds in question. However, as described in the technical report, it is clear that the Walla Walla and its tributaries have significant water quality problems that include chlorinated pesticides, PCBs, TSS, and turbidity to varying degrees depending on location. These streams must meet water quality standards for these parameters, and others not addressed in this report, in order for water quality to be improved. A range of beneficial uses are affected including sport fishing, fish and wildlife habitat, and aesthetic values (see pages 87-94 of the technical report). The technical study showed that once TSS levels in the mainstem are reduced below 50 mg/L one would expect the river to be in compliance with pesticide standards. This presumes a basin-wide approach to the problem, which is appropriate given the range of impaired uses and sources.

3.5) Response: *Fifth Paragraph, Final Sentences*

The distinction here is that 100 mg/L TSS predicts DDE violations, while the TSS target of 50 mg/L takes into account the total DDT concentration (i.e., DDT plus its breakdown products DDE and DDD). The 30 mg/L target is based solely on meeting turbidity standards.

4.) Comment:

From: Columbia Conservation District
202 South Second
Dayton, WA. 99328

Subject: Walla Walla River Chlorinated Pesticides and PCBs Total Maximum Daily Load Submittal Report Draft

The District Board of Supervisors has reviewed comments from staff and Mr. Roland Schirman in regards to the referenced report and agree with their concerns. District staff and Mr. Schirman have been active members of the Walla Walla Basin Watershed Planning process over the past few years and have kept us advised of ongoing efforts and concerns, one of which is that these two efforts were not better coordinated. We understand that this referenced report is a separate activity completed by DOE staff, reviewed and commented on by a technical and citizen advisory committee and then put out for public review and comment.

We agree with Mr. Schirman's statement of a fantastic feat if reducing the total loading capacity of products from impacts of many tons per year application is now to be calculated at just under 2/3 ounce per year, is this a reasonable and achievable goal?.

Page 17, paragraph 2 the statement that erosion is sustained by snowmelt in late spring. Snow pack in this basin occurs only in areas where the compounds in question were never applied, so water flows or sediments originating there should not carry contamination. On a basin wide approach does this imply that stream-bank erosion and re-suspension of streambed sediment deposits are a major factor? Where these factors discussed?

Page 21, line 3 the statement "The Touchet and nearby Dry Creek transport most of the sediment load discharged from the basin", yet the Touchet is not on the impaired list and had consistently low levels of contamination (page 22, line 15). Dry Creek is impaired only for dieldrin and hexaclorobenzene. Should these drainages be considered with a different standard (higher allowed Total Suspended Solids [TSS]) as the East Little Walla Walla and Yellowhawk have suggested greater reduction in TSS? The shear number of property owners associated with these two drainages may require an expanded implementation timeframe.

The concept of using TSS as a surrogate water quality target implies that all sources of suspended solids have an equal amount of the compounds in question, which we should agree is not true. If we concede that the analytical procedures for measuring parts per trillion at the required multiple sites would be cost prohibitive, the TSS levels chosen are not clear. In the draft report the position is taken to use TSS health standards (50 and 30 mg/L) as the goals. However, the 2004 research report on Page 83 states "Therefore, when TSS concentrations are below 100 mg/L in the Walla Walla River, DDE concentrations would be expected to meet the water quality criterion of 0.59 ng/L." What have we missed?
Thank you for your consideration and response to our questions.

4.1) Response:

See responses to **Comment 3** above.

5.) Comment:

WALLA WALLA COUNTY WATERSHED PLANNING

310 W. Poplar -Suite 201 -Walla Walla, WA 99362-2865
Telephone (509) 524-2645 • FAX (509) 527-1892

October 14, 2005

Jay Manning, Director
Washington State Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Dear Director Manning:

The Walla Walla Watershed has been involved in the Total Maximum Daily Load (TMDL) process to develop water clean-up plans for the basin. TMDL advisory committee members have been meeting frequently to review the Toxics Submittal Report that is currently available for public review and comment through October 21, 2005. Many of the TMDL advisory committee members serve in dual capacities as members of both the TMDL advisory committee and the WRIA 32 Planning Unit. While there are significant differences between TMDLs under the Clean Water Act (CWA) and Watershed Planning under the Watershed Management Act (WMA), there are major substantive similarities.

In addition, the emerging Walla Walla Water Management Initiative will provide opportunities to develop innovative water management strategies and agreements in the basin that will improve both instream flow and water quality. We appreciate the collaborative nature of the Water Management partnership with Ecology and would like to extend this dynamic to the TMDL process, with the intent of addressing load allocations and state water quality requirements in part through Water Management Initiative demonstration projects.

We would like the opportunity to review and comment on the science used to generate the Toxics Submittal Report recommendations, but the TMDL studies were only recently made available and the current timeline for the Toxics Submittal Report is pressing. We would therefore request a [60] day extension of the October 21st deadline to make time for a more thorough and collaborative review of the data, methodology, and toxic targets.

We appreciate the opportunity to partner with Ecology on the TMDL and Water Management Initiatives and look forward to working collaboratively with you and your staff to improve the environmental, economic, and community health of the basin.

Sincerely,

Cathy Schaeffer
Watershed Planning Director
cschaeffer@co.walla-walla.wa.us

Elena Escalante
Watershed Planning Coordinator
eescalante@co.walla-walla.wa.us

c.c. Diane Pastore, WDOE
Dave Peeler, WDOE
James Bellatty, WDOE
Donovan Gray, WDOE

5.1) Response:

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
TTY 711 or 800-833-6388 (for the speech or hearing impaired)

October 25, 2005

Cathy Schaeffer
Watershed Planning Director
Walla Walla County
310 W. Poplar Suite 201
Walla Walla, WA 99362-2865

Elena Escalante
Watershed Planning Coordinator
Walla Walla County
310 W Poplar, Suite 201
Walla Walla, WA 99362-2865

Dear Mses Schaeffer and Escalante:

Thank you for sharing with me the advisory committee's concerns over the science behind the Walla Walla Toxics Total Maximum Daily Load (TMDL) Submittal Report and its request for extension of the public comment period. I understand that, via conference call, you had a constructive dialogue with several staff from the Water Quality Program and Hedia Adelsman on October 19. As a result, a 30-day extension for public review and comment has been provided. The public comment will end on November 23, 2005. In addition, an advisory committee meeting is proposed for November 10, 2005 to discuss the use of the detailed implementation plan in addressing site-specific issues and to add appropriate language in the Submittal Report.

I recognize there is great potential for integrating and coordinating the implementation phase of the TMDL with the emerging Walla Walla Management Initiative. Innovative water management actions will improve both instream flows and water quality. The TMDL detailed implementation plan will be developed by the advisory group and others in the basin and will build on the collaborative work currently being accomplished.

It is exciting to see the Walla Walla Community continuing to take steps forward to improve the environment and economy of the basin. I look forward to a productive partnership. Please feel free to contact Donavon Gray at (509) 329-3458 or Hedia Adelsman at (360) 407-6222.

Sincerely,

Jay J. Manning
Director

cc: Dave Peeler
Donovan Gray
Rene-Marc Mangin
Hedia Adelsman

5.2) Response: *Following negotiations with the Walla Walla Watershed Planning Department, Ecology agreed to add language to the submittal report that covered the outstanding issues that the TMDL advisory group felt needed addressing. This language appears in its entirety (as shown below) in the submittal report on pages 42 and 45 (the page numbers referred to below have changed due to subsequent editing) with minor additions as approved by the Walla Walla Watershed Planning Department. Ecology's additions are shown in bold.*

Additional TMDL language for PCB/Chlorinated Pesticides Submittal Report

Page 39 – prior to table

As stated in the Walla Walla Watershed Plan, no organization or person is required to take on a commitment without their consent. However, once an organization has formally agreed to implement actions identified in the plan, it is expected these commitments be honored; recognizing funding limitations. The watershed plan does not create any obligations for private businesses, citizens or landowners. However, there are actions identified for *voluntary* action in the private sector. **Although the Watershed Planning and TMDL processes are fundamentally different, Ecology has and will continue to seek opportunities for collaboration and cooperation between the two processes. It should be noted that Ecology is required under the federal Clean Water Act to conduct TMDLs and ensure clean water.**

To be included on page 41– end of page

The following items were identified by the Walla Walla TMDL advisory group which will be looked at during the development of the Detailed Implementation Plan (DIP): Several TMDL program implementation topics have emerged that warrant emphasis in the water quality strategy for the TMDL implementation plan. It is the desire of several members of the TMDL Advisory Committee that these site specific issues be discussed in more detail during the Detailed Implementation Plan (DIP) development. Further public input will be sought to help prepare this plan. The plan will identify how, when, and where voluntary restoration activities will be implemented.

Actions recommended in the DIP are intended to be specific enough to clearly identify the actions and results; yet general enough to permit some flexibility in carrying them out. It is recognized that some actions will require further investigation prior to full implementation. Additionally it is recognized that some actions can be carried out only if funding is provided by the state legislature or other funding agencies, and that funding decisions will be made over a period of months or years following plan adoption.

The following concepts will be looked at in further detail during the Detailed Implementation Plan development: addressing the correlation between TSS and Turbidity to toxins in the Touchet River basin and the Dry Creek basin; identifying historic background levels for turbidity in the Walla Walla watershed and various tributaries, including identification of additional sampling sites including soil testing and streambed sediment loads; identifying additional sampling methods; identification of geographic source differences for toxin contamination including possible atmospheric deposition. As long as TSS continues to be the surrogate measure of chlorinated pesticides periodic validation of the current formulas should be made.

Many local interests in the Walla Walla Basin are involved with TMDL planning and implementation. During the development of the DIP, in areas where soils contributing to turbidity are found to have high levels of pollutant present, special emphasis on helping to relieve the problem will be employed. Ecology will continue to work closely with these basin interests to address outstanding issues.

6.) Comment:

OCT 24 2005

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
OREGON OPERATIONS OFFICE
811 S.W. 6th Avenue
Portland, Oregon 97204

Reply To
Attn Of: OOO

October 20, 2005

Mr. Donovan Gray
Washington Dept of Ecology
4601 N Monroe Street,
Spokane, WA 99205

Dear Mr. Gray:

The following are the Environmental Protection Agency's (EPA) comments on the draft Walla Walla River Chlorinated Pesticides and PCBs Total Maximum Daily Load (TMDL) Submittal Report released for public comment on September 19, 2005.

This draft document presents TMDLs for the Walla Walla Subbasin and the analysis utilized in developing the TMDLs. In general, EPA finds the information presented in the TMDL to be presented in a clear and complete format and inclusive of all the statutory and regulatory components required of TMDLs. The following comments provide some suggestions on minor changes which would clarify the TMDL.

EPA wishes to acknowledge the work that went into the presentation in the TMDL. In developing this TMDL, Ecology did a good job of presenting a complicated array of information and compiling it so that quantitative loading capacity could be established.

Following are comments on specific elements of the TMDL:

TMDL

p. 9 – Applicable Criteria;
Second paragraph; second sentence:
It would be more accurate to say that the standard will not take effect until EPA approves it. Endangered Species Act (ESA) consultation with NOAA Fisheries and USFWS does not always occur, especially for human health related portions of the standards. Those agencies do not approve the standards they just consult on them. The relevant toxics criteria for this TMDL are not being revised and are still in effect in the same form they will be in after the revised standards are approved. It would be helpful to mention this.

1

Third paragraph; "It should be noted that the adoption of the revised state water quality standards will not change the chlorinated pesticide and PCB standards in the Walla Walla watershed, which are based on the human health criteria."
The underlined "standards" should be changed to "criteria". Also not all of these criteria are based on the human health criteria (i.e. Toxaphene). It may be best to simply state that the Washington toxics criteria will remain unchanged under the revised standards.

Fourth paragraph:
Though the Walla Walla River and most of the tributaries that are being addressed are Class A streams, portions of Mill Creek being addressed under the TMDL are Class B. Fortunately the language of the water quality standard is the same for both. The citation should be changed to WAC 173-201A-030 (2) (a) and (b) and (3) (a) and (b).

p. 10 - First paragraph:
Similar to the comment above the citation here should be revised to WAC 173-201A-030 (2) (vii) and (3) (vii).

p.11 - Footnote to Table 1:
The link given in this footnote directs the reader to the state water quality standards, which contain the aquatic life criteria, but not the human health criteria listed in Table 1. As mentioned in the previous paragraph, EPA promulgated the human health criteria for Washington in 40 CFR 131.36. It would be good to add this information to the footnote.

p. 12 – Good, concise explanation of the Oregon water quality standards.

p. 17 – Seasonal Variation; First paragraph; First sentence:
Though a strong correlation between chlorinated pesticides and water column sediment was found in the data analysis, the correlation for PCBs was much weaker. This first sentence should be edited to reflect this.

p. 26 - Load Capacity; Table 6:
Attainment of the toxics criteria in Yellowjacket Creek requires TSS reductions down to 5 mg/l. This should be stated in the text, as well as the reduction level needed for East Fork Little Walla Walla to meet the toxics criteria.

p. 28 - Load and Wasteload Allocations; First two paragraphs:
These paragraphs only address the streams listed in Table 5. This should be made clear in the text and language added discussing the East Fork Little Walla Walla and Yellowjacket Creek.

Load Allocations; Second paragraph:
This paragraph discusses background conditions. Since these contaminants do not exist in nature it is unclear what is meant by background. It would be good to explain this in the text.

p. 29 - First paragraph:

Toxaphene is not listed among the pollutants that will be addressed by the allocations, yet there is no separate allocation listed for this contaminant. There needs to be an explanation of how it will be addressed.

p. 31 – Second full paragraph:
In addition to the Walla Walla River, Pine Creek, Mill Creek, Gardena Creek and the East Fork Little Walla Walla River are impaired streams that enter into Washington from Oregon. This statement should be expanded or generalized to include all these waters. A similar comment applies to the first paragraph under the Wasteload Allocation section on page 32.

p. 35 – Margin of Safety; Last bullet:
The target of a TMDL is to attain the state's water quality criteria. Therefore, the fact that these criteria are themselves conservative cannot provide a margin of safety for attaining the TMDL target.

CONCLUSION

We commend you for the efforts you have made to date and look forward to the submittal of the final TMDLs in the near future. If you have any questions regarding comments on the draft TMDLs, please contact me at (503)326-3280.

Sincerely,

Helen Rueda
TMDL Project Manager

Cc:
Christine Psyk, EPA
Laurie Mann, EPA

6.1) Response: *p.9* Change made. 2nd Paragraph, 2nd sentence now reads – "…until the EPA approves the new standards" 2nd paragraph, final sentence now reads – "However, the toxics criteria for this TMDL are not being revised and are still in effect in the same form they will be in after the revised standards are approved".

6.2) Response: *3rd Paragraph* – The final sentence of paragraph 2 already states that which was said in paragraph 3. Paragraph 3 was therefore redundant and deleted from the text.

6.3) Response: *4th Paragraph* – changes made

6.4) Response: *p.10, 1st paragraph* – change made

6.5) Response: *p.11* – addition made

6.6) Response: *p.17 1st paragraph, 1st sentence* - sentence now reads – "…the levels of chlorinated pesticides and sediment load in the water column. The correlation between PCBs and sediment loads was weaker".

6.7) Response: *Pg 26 final paragraph, last sentence* - sentence added-"TSS reductions down to 5mg/L are deemed necessary to achieve compliance with toxics criteria"

6.8) Response: *Pg.27-28 first two paragraphs* - First sentence (page 29 second paragraph) now reads-"TSS targets of 50mg/L and 5mg/L in the mainstem Walla Walla and tributaries, and the East Little Walla Walla and Yellowhawk Creeks respectively are set to achieve…." p.30 first paragraph, and p.33 discuss why more stringent TSS targets were deemed necessary in the East Little Walla Walla and Yellowhawk Creeks.

6.9) Response: *Load allocation, 2nd paragraph* – The use of the term 'background' in this paragraph refers to TSS background levels and not contaminant background levels. The central premise of this report is that soils are the chief vector for legacy chlorinated pesticides and PCBs entering the water column in the Walla Walla basin, hence its mention here. Although no natural 'background' levels exist for chlorinated pesticides and PCBs (as these are manmade compounds), some degree of *sediment* loading can be expected hence the term 'background'. The first sentence of this paragraph has been revised to better clarify that the word 'background' refers to TSS.

6.10) Response: *p. 29 1st paragraph* – Toxaphene was added to list of contaminants in the final paragraph before the *Load Allocation* section. As the first paragraph on page 29 does not list any contaminants specifically, it is unclear what this comment is referring to. The *Load Allocation* section (p. 28) of the report states that the Washington state water quality criteria are the ultimate basis for the sediment allocations and TSS targets. We believe the report explains clearly under the *Technical Analysis* and *Loading Capacity* sections how the criteria were employed in calculating these. In addition these methods are explained in further detail in the Walla Walla chlorinated pesticides and PCBs TMDL technical report. The applicable toxaphene criteria are listed in Table 1, of the submittal report.

6.11) Response: *Pg 31 3rd second full paragraph* (now pg. 34 first paragraph) - sentence amended to-"…the Walla Walla River and its tributaries at the ….". p.32, 1st paragraph, 3rd sentence (now pg. 35 first paragraph) under the *Wasteload Allocation* section: sentence amended to-"…to the Walla Walla River and its tributaries are present…"

6.12) Response: *p.35 last bullet* - bullet removed.

7.) Comment:

To those it may concern,

I am junior Environmental Chemistry major at Whitman College in Walla Walla Washington. Over the last several months I have been researching Polychlorinated Biphenyls in an attempt to understand their health effects, where they come from, and if they need to be eliminated, what types of solutions are available for their removal. My research has put me at odds with the Submittal Draft Report of the TMDL issued for the Walla Walla River and specifically Mill Creek. My biggest concern is the level of reduction that is called for in the report, 0.17 ppb.

To begin with, it has come to my attention that there are only two laboratories in North America capable of measuring such minute concentrations of PCBs. The fact that only two laboratories have this technical capability makes me skeptical of the validity of the evidence supporting the 0.17 ppb baseline. Perhaps it is possible to measure such low concentrations of PCBs, but I would like to see a record of the sampling technique, and the precautions that were taken in the field and in the lab to minimize error. At the following website, http://www.caslab.com/congeners.php, Colombia Analytical Services has posted an article on the different congeners of PCBs. In this article, it is noted that PCB Aroclors and Congeners are generally determined using Gas Chromatography / Electron Capture Detection following EPA Method 8082. This website advocated taking the following precautions to minimize error and increase sensitivity:

1. Make hardware modifications to optimize the operating conditions of the instrument.
2. Introduce a larger quantity of sample into the instrument.
3. Remove interferences before testing the sample using Gel Permeation Chromatography such as elemental Mercury to precipitate Sulfur among similar techniques.
4. It was even recommended that new glassware was purchased for the test!!!

If such precautions were taken by the Columbia Analytical Services, I am curious to learn what precautions were taken in the sampling and testing of the data used in the TMDL. There is no room for error in sample collection of PCBs when baseline concentrations should yield 0.17 ppb or less. It is therefore very hard to trust figures at such a low concentration.

Secondly page 43 of the water cleanup plan states, "The ultimate goal of this TMDL is to meet the chronic aquatic toxicity and human health criteria for chlorinated pesticides." I am pleased that this is the ultimate goal of the project and I agree that it should be the goal, but I am also skeptical about how these criteria were established. There are 209 different congeners of PCBs in the environment. "The more highly chlorinated congeners are most fat soluble and most stable in the environment – meaning that they are not as prone to dissociation or degradation and therefore are persistent and may remain in the environment for many years." (The Institute of Food Science and Technology http://www.ifst.org/hottop22.htmDioxins and PCBs in Good) This reference notes that certain congeners of PCBs are present in the environment in higher concentrations than other PCBs due to their stability.

According to a government document on the Biologic and Toxic Effects of PCBs, (http://wlapwww.gov.bc.ca/wat/wq/BCguidelines/pcbs/pcbs-04.htm) there are certain congeners that are considered the most toxic of the 209 possibilities. #77, #126, and #169 have been deemed the most toxic. These three congeners are coplanar PCBs that

lack bulky ortho-chloro substituents that restrict free rotation of the phenyl-phenyl bond. This information was uncovered in a study relating Dioxin 2,3,7,8-TCDD, one of the most potent synthetic environmental toxicants, to other organic toxicants. PCB congeners have very similar structures that make them very potent mimics of 2,3,7,8-TCDD. At the same website mentioned above, a study is reported conducted by McFarland and Clarke (1989) on the environmental significance of PCB congeners, 36 PCB congeners were considered to be of environmental significance based on three factors. 1. Potential toxicity 2. Frequency of occurrence in environmental samples 3. Relative abundance in animal tissue. Clearly, not all 209 congeners of PCB's are deemed relevant, therefore my question is why is the human health criteria and the 0.17 ppb baseline concentration of PCBs based on the arithmetic mean of all 209 congeners?

Lastly, though I am originally from Denver Colorado, I am concerned with what this Water Cleanup plan will mean for the citizens of Walla Walla. In my research I came across a few methods for reducing the concentrations of PCBs. In several instances, the best method was dredging. The Hudson River project is one example where dredging has been used as the best management plan for the river. Dredging however has a high environmental impact. It churns soil increasing turbidity, rids the river basin of important nutrients, and alters the water flow disturbing habitats for aquatic species. I can not imagine the reactions from citizens in the Walla Walla basin when a dredging truck drives through their backyard. In addition, levels of PCBs are not concentrated enough to call for such a solution even during high flow periods, so what are the other options?

The one other source I found for PCB removal involves an activated Carbon system. Activated carbons are widely used for the adsorption of many organic compounds. Results from the physical attraction which holds molecules of the absorbate at the surface of a solid by the surface tension of the solid. Activated carbon is produced from carbonaceous materials such as coal, coconuts, wood and petroleum coke. (http://www.carbtrol.com/pcb_removal.pdf) Unfortunately, activated carbon systems have only been used for small scale projects rather than large scale projects, such as the plan for the Walla Walla Treatment plant in Walla Walla. I think it is unuseefull to set limits which can not be met, and having a plan of action is important.

I think that understanding the impact of which PCBs are most prominent, longest lasting, and most toxic is an important factor to take into consideration before implementing imposed standards. I urge you to consider these comments in your implementation of the TMDL in the Walla Walla River Basin.

Megan McConville

7.1) Response: *Second Paragraph, First Sentence*

There are at least four laboratories (see table below) in North America certified to analyze low-level PCB congeners by EPA Method 1668 (High Resolution GC/MS).

LabName	City	ContactPhone	EMailAddress
Axys Analytical Services Ltd	Sidney, BC	(250) 655-5800	dfyles@axys.com
Pace Analytical Services, Inc.	Minneapolis, MN	(612) 607-1700	cgaylord@pacelabs.com
Pacific Rim Laboratories, Inc.	Surrey, BC	(604) 532-8711	dave@pacificrimlabs.com
STL Sacramento	West Sacramento, CA	(916) 374-4308	lstafford@stl-inc.com

EPA considers the analytical method to be accurate below 1 ppt.

7.2) Response: *Second Paragraph, Second Sentence*

The Walla Walla toxics submittal report, Page 10, final paragraph states: "Washington state water quality criteria that apply to 303 (d) listed pesticides and PCBs in the Walla Walla drainage…… were promulgated for Washington in the EPA National Toxics Rule (40 CFR 131.36)." Supporting information on how EPA derived human health criteria for PCBs and other chemicals can be found at: http://www.epa.gov/waterscience/criteria/humanhealth/

7.3) Response: *Second Paragraph, Third Sentence*

Field procedures, analytical methods, and data quality relevant to PCBs are described on pages 21- 43 of the Walla Walla toxics TMDL technical report. Details of the analytical methods used for PCBs can be found at http://www.epa.gov/sw-846/main.htm and http://synectics.net/resources/.

7.4) Response: *Third Paragraph, First and Second Sentence*

See response to **7.2)** *Second Paragraph, Second Sentence* above

7.5) Response: *Fourth Paragraph, Final Sentence*

See response **7.2)** *Second Paragraph, Second Sentence* above and also response to Mr. Putnam **9.5)** 5. The PCB human health criteria are based on the commercial mixtures of PCBs used in the laboratory studies that established animal carcinogenicity.

7.6) Response: *Page Two, Final Two Paragraphs*

Ecology is mandated under the federal Clean Water Act and RCW 90.48 to address water quality impairments of waters of Washington state. Ecology's sampling of the effluent from the Walla Walla and College Place WWTPs found PCB levels to exceed state and federal water quality standards, which resulted in these two facilities being assigned wasteload allocations. Under WAC 173-201A-510 these facilities have 10 years to achieve full compliance with PCB limits following adoption in their NPDES permits, during which time Ecology is committed to working cooperatively and collaboratively with the WWTPs to develop strategies to address these impairments. Ecology does not recommend any dredging as a remedial action for PCB clean-up in the Walla Walla River.

8.) Comment:

Gray, Donovan (ECY ERO)

From: Frank Nicholson [fnicholson@ci.walla-walla.wa.us]
Sent: Friday, October 21, 2005 4:52 PM
To: Gray, Donovan (ECY ERO)
Cc: Gray, Donovan (ECY ERO); Anderson, Jerry (ECY ERO); Mallery, Scott; William.Slovensky@omiinc.com; omiwal@omiinc.com; mcconvmb@whitman.edu; esvelt@aol.com
Subject: Public comment TMDL, Walla Walla

Here are my public comments to the "*Walla Walla River Chlorinated Pesticides and PCBs Total Maximum Daily Load (Water Cleanup Plan)*"

1. The plan should be based on fish people actually eat such as trout or bass, not carp or suckers

2. The plan gives the City of Walla Walla a discharge limit base on 0.17 ng/l. (0.17 x 10^{-12}). This below the background level of local rivers. The test is expensive, approximately $1,000 and only two labs in North America can measure to this low level. We also believe this sets the lowest limit for a wastewater PCB plant discharge in the United States

3. The biggest contributor of wastewater to the plant is the Walla Walla State Penitentiary. This institution unfortunately has a legacy of very poor environmental practices. This facility is regulated under a State Permit for industrial pre-treatment. Dept of Ecology should first test all industrial pretreatment permit holders for PCB's before burdening the City with $1,000 test for PCB levels below river backgrounds.

4. The City has just developed industrial pretreatment standards using EPA and Ecology standards and spreadsheets. The standards have been three years in the making, and do not have any PCB limits. We assume the standards should be rewritten to include PCB's

5. EPA guidance documents recommend a minimum limit be at least 10 times the blank level

6. Page 33 indicates that the City consider reuse. The plant already produces Class A reclaimed water for two irrigation districts seven months of the year. The plant just had a 25 million dollar upgrade to Class A.

7. Page 35 indicated the margin of safety was based on conservative assumption for calculating flow (harmonic mean). The harmonic mean is low for this area because many streams are totally de-watered in summer, during the irrigation season. The report also states the problems occurs during high winter flows during sediment transfer. It is not appropriate to use low harmonic mean flows when problems occurs during high winter flows. Use winter flow numbers to calculate load capacity!

8. The plant only discharges to the river December - April, during high flows. The load capacity of the river system needs to evaluated when the problem is occurring.

9. Processes such as newspaper recycling produce PCB congeners that are not considered dangerous. The report should follow the European example and test only for dangerous congeners.

10. The City has asked for the original PCB data at the meeting 10-3-05. The City has asked the data

12/20/2005

be delivered to Larry Esvelt, PhD the city consulting engineer As of 10-20-2005, two days before the closing of comments the data has not been turned over

11. Because the raw data was not provided in a timely manner, and there are serious questions raised about Q C, we request the data be provided and a two month time extension be granted

Frank Nicholson, P E
City of Walla Walla

8.1) Response: (1) The water quality criteria on which the plan is based apply to a range of fish species, not just carp or suckers. The same criteria and TMDL targets would apply regardless of the type of fish collected during the technical study. Also see response to Mr. Slovensky's comments **2.5)** *Second Page, Third Bullet.*

8.2) Response: (2) See response to Ms. McConville **7.1)** *Second Paragraph, First Sentence*. There are at least four laboratories in North America certified to analyze PCB congeners. EPA considers the analytical method to be accurate below 1 ppt. We agree that it is expensive. Cost per sample is in the range of $600 - $800 for a water sample, but could be lower if a simple data report is requested vs. an exhaustive data package.

8.3) Response: (3) The samples collected by Ecology of the effluent from the Walla Walla and College Place WWTPs showed that PCB concentrations exceeded Washington water quality standards and therefore these facilities were assigned wasteload allocations. Ecology is mandated under the Clean Water Act and RCW 90.48 to ensure water quality impairments are addressed. The Walla Walla penitentiary is currently regulated under a temporary state waste discharge permit. The permit contains no PCB limit at this time as no information currently exists to substantiate such action. However if it is determined that a PCB impairment exists appropriate limits may be added to the permit in future. RCW 90.48. requires that point source discharges of pollutants into waters of the state use AKART to reduce pollutant concentrations to within acceptable limits, regardless of whether the facility in question is the source of the pollutant or merely the conduit. PCBs are *manmade* highly persistent carcinogenic toxins. There are no 'background' levels for these compounds as they do not occur naturally in the environment.

8.4) Response: (4) The current NPDES permits for the College Place and Walla Walla WWTPs do not specifically contain any limits for PCBs, because the wasteload allocation assigned in the TMDL submittal report has not yet been approved by EPA. Once the draft of the TMDL submittal report has been finalized it will be sent to EPA for additional review and approval. Once EPA approves the final draft of the report the PCB wasteload allocations will be adopted into the current NPDES permits. It is expected that the cities of College Place and Walla Walla will adjust their pretreatment standards in accordance with the Walla Walla toxics TMDL and any permit changes.

8.5) Response: (5) The chemical data in the technical report accounted for the method blank in keeping with requirements of the EPA methods used in the analyses. This is discussed in further detail in response to Dr. Esvelt's comments **17.2)** 3a, 3f , 3g and 4 below.

8.6) Response: (6) See response to Mr. Slovenky's comment **2.2)** *First Page, Second Bullet.*

8.7) Response: (7) The technical report included an example calculation of loading capacity for pesticides and PCBs in the Walla Walla mainstem, using the harmonic mean flow for the period of record (page 101 of the chlorinated pesticides and PCBs toxic report). This is a typical approach for determining loading capacity in TMDLs. The report estimated loading capacities for TSS based on the 90^{th} percentile flow. Loading capacities for PCBs were also calculated for Mill Creek and Garrison Creek, taking into account the time period when WWTP effluent is discharged to these creeks; the former used the harmonic mean for December through April, and the latter used the harmonic mean for the entire year.

8.8) Response: (8) The wasteload allocation for the Walla Walla treatment plant was based on the harmonic mean for Mill Creek for December through April.

8.9) Response: (9) See responses to Ms. McConville's comments **7.5)** *Fourth Paragraph, Final sentence.* Washington state's chlorinated pesticide and PCB water quality criteria are promulgated by the EPA National Toxics Rule. The load and wasteload allocation assigned in this report were calculated as those necessary to achieve compliance with these criteria.

8.10) Response: (10) and (11) The public comment period was extended an additional 30 days, and the relevant data was turned over to Dr. Esvelt as requested. See responses to Dr. Esvelt's comments for further information.

9.) Comment:

Gray, Donovan (ECY ERO)

From: Bill Putnam [cocpww@hscis.net]
Sent: Monday, November 07, 2005 6:07 AM
To: Gray, Donovan (ECY ERO)
Subject: Public comment on toxics TMDL

The following are my comments on the Walla Walla River Chlorinated Pesticides and PCBs TMDL

1. The PCB discharge limit for the College Place WWTP is set at .0011ppt while drinking water limits are at 500ppt this allows legal influent levels at an amount far beyond our effluent limits.
2. The ability to test for PCBs at the allowable levels is limited to only two laboratories in North America. The accuracy of testing to less than 1ppt is questionable at best.
3. The cost per test at the set limits is prohibitive at $950 to $1000 per test. The requirement for testing plant effluent alone is bad enough, yet we will also be required to test the output of our dischargers and the stormwater at as yet unknown intervals.
4. The use of carp and suckers as a model for human fish consumption is far from a realistic base to use for exposure levels.
5. The levels are based on the total of all PCB congeners rather than being limited to only those congeners that are proven to be hazardous to health.
6. EPA recommends that minimum limits should be at least ten times the levels in the blanks used in testing.

Bill Putnam
Environmental Systems Director
City of College Place

9.1) Response: (1) The wasteload allocation for the College Place WWTP effluent is based on the human health water quality criterion for PCBs. This criterion is much lower than drinking water limits because fish bioaccumulate PCBs to levels tens of thousands of times higher than in the surrounding water. Also, drinking water limits take into account the economic impact of the regulation.

9.2) Response: (2) See response to Ms. McConville **7.1)** *Second Paragraph, First Sentence.* There are at least four laboratories in North America certified to analyze PCB congeners. EPA considers the analytical method to be accurate below 1 ppt. Also see response to Mr. Slovensky's comments **2.9)** *Third Page, First Bullet* and response to Mr. Nicholson's comment **8.2)** #2.

9.3) Response: (3) See response to Mr. Nicholson's comment **8.2)** #2.

9.4) Response: (4) The technical study analyzed carp and suckers, in addition to pike minnow, carp, catfish, and smallmouth bass. These are the predominant resident fish species that presently exist in the river. Migratory species like steelhead were not analyzed because the results would primarily reflect residues accumulated elsewhere. The selection of water quality targets that will bring the river into compliance with pesticide and PCB standards was based on water quality criteria established by EPA, and analyzed for the technical study. See also response to Mr. Nichloson's comment **8.2)** #1 and response to Mr. Slovensky's comments **2.5)** *Second Page, Third Bullet.*

9.5) Response: (5) The EPA human health criteria at issue in the TMDL are based on total PCBs. The animal exposure data from which the criteria were derived were obtained using commercial Aroclor mixtures which contain congeners with a wide range of toxicities. EPA recommends summing congeners when assessing compliance with water quality criteria. See also responses to Ms. McConville's comments **7.2)** *Second Paragraph, Second Sentence and* **7.5)** *Fourth Paragraph, Final Sentence.*

9.6) Response: (6) The chemical data in the technical report accounted for the method blank in keeping with requirements of the EPA methods used in the analyses. See also response to Mr. Nicholson **8.5)** 5.

10.) Comment:

Louis E. Riley
566 Cummins Road
Touchet, WA 99360
Phone (509) 394-2373

October 31, 2005

Our comments on the plan to help clean up the Walla Walla River are as follows:

1 Continue to reduce surface run off by using proven changes in farming practices

2 Install air monitors in order to detect chemical drift into air, and consequently streams
We would like to bring to the attention of the public and agencies the fact that we for many years, since at least the 1960's, have had chemical damage to our crops and property --- documented by WSDA Pesticide Branch We used to observe spray planes applying chemicals right over the streams, but now see evidence of drift from across the streams The drift comes from both aerial and ground spraying, and we would be glad to show the spotting We would also welcome monitors on our Touchet River and Dry Creek properties in order to substantiate harmful drifting onto water, air, crops, and people Fine particles damage our bodies as well as the streams

3 Building of reservoirs high up on all possible streams (small to large) would also help contain flooding and run-off, and waters could be released in a timely manner in order to maintain river flows We know that natural recharging rather than allowing run-off helps clean the water and lower its temperature Plus, irrigation can be a part of the recharging process We hope we do not become dependent on foreign food like we are on energy

4 Recycle the waters of municipal sewage systems, storm run-off, industrial plants, e . so they will go back into the streams in a usable state

We believe that actions taken, including the above, will result in cleaner water and air, and healthier food and fish

Sincerely,

Louis E. Riley Janice Riley

Louis E Riley Janice Riley

10.1) Response: (1) Many of the Best Management Practices (BMPs) that are recommended in the report have been employed by farming communities across the state including the Walla Walla drainage to good effect. Ecology acknowledges the positive conservation work accomplished by local entities through the implementation of BMPs, and encourages more of the same.

10.2) Response: (2) The chlorinated pesticides (e.g. DDT) addressed in this report are legacy pollutants in the sense that they were banned during the 1960's, 1970's and 1980's, and no longer see large scale agricultural use in the USA. However, these chemicals have a propensity to bond with soil particles, and breakdown very slowly. Current application is not considered a threat to water quality in the area, but the erosion of contaminated soils in areas where chlorinated pesticides were previously applied is indeed considered a problem.

10.3) Response: (3) Although we acknowledge that water quantity may have an effect on water quality impairments, flow issues are beyond the scope of this TMDL document. Ecology's Water Resource Program and Shorelines and Environmental Assistance Program in collaboration with local community entities like Watershed Planning Units is/are responsible for managing water quantity related issues across the state. Every effort is made to facilitate cross-program communication and cooperation to ensure best management of the state's water resources.

10.4) Response: (4) Land use in the Walla Walla drainage is predominately agricultural, and as such point source pollution dischargers are not abundant. In this TMDL the only point-source polluters identified as contributors to the chlorinated pesticides and PCB problem in the Walla Walla are the wastewater treatment plants (WWTPs) for the cities of Walla Walla and College Place. Analysis of effluent samples collected from these facilities showed PCB concentrations were above state water quality criteria and therefore they were assigned wasteload allocations. See also response to Mr. Slovensky's comment **2.2)** *First Page, Second Bullet.* Stormwater runoff from urban environments such as the cities of Walla Walla and College Place was not sampled during Ecology's study of the Walla Walla area, and it was not possible to assign allocations to this potential source. However, local authorities' responsibilities under current federal and legislation and local ordinances are mentioned in the report and local authorities are encouraged and expected to abide by said regulations.

(Note – the first letter from the Confederated Tribes of the Umatilla Indian Reservation was received a few days prior to the start of the public comment period, but because we believe it provides important detail to the comments received later in the second letter, we decided to include the first letter):

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation
Department of Natural Resources
ADMINISTRATION
P.O. Box 638
73239 Confederated Way
Pendleton, Oregon 97801
Area code 541 Phone 276-3447 FAX 276-3317

September 13, 2005

Donovan Grey
Washington Department of Ecology
4601 N. Monroe Street
Spokane, WA 99205-1295

Dear Mr. Grey;

The Washington State Department of Ecology (WDOE) is engaged in much needed and greatly appreciated efforts to complete a Total Maximum Daily Load (TMDL) and corresponding restoration, monitoring, and evaluation activities for Walla Walla Subbasin (WRIA 32) toxins such as heavy metals and persistent pesticides. The Water Commission of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) is concerned with two aspects of the draft TMDL submittal document that is currently under preparation. While CTUIR staff have participated in the Walla Walla TMDL advisory committee, these concerns remain unaddressed. Specifically, 1) CTUIR staff have noted that the most recent draft of the TMDL does not include regulated water quality recovery targets that are protective of average tribal fish consumers, and 2) the draft submittal document is based on proxy or surrogate standards for performance that are not reasonably certain to be protective of fish or human health.

In June WDOE informed the CTUIR that WDOE would change the language used in the early draft TMDL for water quality recovery targets calculated to be protective of tribal fish consumers. We were informed that this change was made based up on legal advice from WDOE attorneys. WDOE has changed the wording for these recovery targets from the word "target" to the word "goal". Since that time staff representatives of the CTUIR have requested an explanation of what legal significance there is to this change. Also we have asked for explanation of what if any difference there is in WDOE's commitment to implement water quality "goals" that will protect tribal fish consumer health vs. targets that will only protect people who consume no more fish than 6.5 g/day (a little less than 1 meal per month, Washington's current fish consumption rate). While we have received a response stating that WDOE will use the "goal" protective of tribal members to measure the success of the TMDL, we have not received answers to these two questions.

Second, as a technical issue, the toxins TMDL relies heavily on the relationship between sediment loading (total suspended solids - TSS) and DDE (a breakdown product of DDT). Scientists with WDOE studied the relationship between DDE and TSS during the research phase of the TMDL. WDOE showed clearly that DDE and TSS were highly correlated in the Walla Walla subbasin, as they are in many places. However, WDOE has demonstrated no direct relationship between TSS and other toxins, and has failed to establish a well supported cause - effect relationship between DDE and TSS. There is no evidence that a reduction in TSS will result in decreased loadings of pesticides other than DDE, or in other toxic compounds. Nor is there any site-specific evidence that a reduction in TSS will result in a reduction of fish tissue-DDE levels.

The problems with this approach are multifarious. First, DDE may persist in biological pools for long periods, and may therefore persist at unacceptable levels with only small terrestrial inputs. Second, while the TSS targets included in the TMDL may be sufficient to reduce DDE levels, they may not be sufficient to address other compounds. Third, while the relationship between TSS and DDE may be strong in some tributaries, it may be week in others where DDE is either more, or less, concentrated than in the Walla Walla mainstem where the proxy relationship was calculated. These geographic disparities may result in TSS-proxy standards that are under-protective of fish or people.

While the TSS targets may be useful in many ways, and the use of a TSS proxy may be appropriate in the context of monitoring (due to the expense associated with regularly monitoring toxins directly), this proxy may have poor power or resolution in a management or legal setting. A simple way of avoiding the complications in the use of the TSS proxy standard would be to reserve the TSS targets for the monitoring component of the TMDL, and base the toxin goals and targets solely on fish, sediment, or water total maximum daily loads. It would be a simple matter to convert the TMDL targets and goals to fish standards, and this shift in policy would eliminate stakeholder conflicts, while opening doors for exploring the utility of TSS-toxin relationships further. The tribe does recognize that the draft submittal document does contain some toxin-specific numeric allocations for a few Walla Walla waters.

It is the CTUIR's intention to work with WDOE to resolve these problems as efficiently as possible so that WDOE can proceed with the public comment period soon. However before the CTUIR can support this draft TMDL we need to resolve the three problems discussed above. Specifically we need an answer to the questions 1) what *legal* significance does WDOE believe there is to changing TMDL recovery targets for tribal fish consumers to the word "goal" and 2) is WDOE committed to implementing TMDL recovery targets that will protect tribal fish consumers at tribal rates of fish consumption? 3) The CTUIR also requests that the Walla Walla TMDL include TMDL water quality recovery targets for the Mainstem Walla Walla and tributaries based upon toxin levels in fish, sediments and surface water. Specifically the tribe requests TMDL load allocations for toxins be based on numeric, toxin-specific targets for specific mainstem reaches and tributaries.

If you have any questions, please feel free to contact me or my staff, Jesse Schwartz at 541-276-4109 or Kathleen Feehan at 541-276-3449, to resolve these issues. If technical or policy support is needed to revise the submittal document, we are happy to assist. I look forward to the Walla Walla TMDLs completion- and our work together to restore the water quality of the Walla Walla.

Sincerely,

Eric Quaempts, Director
Department of Natural Resources

cc: Melissa Gildersleeve, Department of Ecology
Helen Rueda, EPA

11.) Comment:

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation
Department of Natural Resources
ADMINISTRATION
P.O. Box 638
73239 Confederated Way
Pendleton, Oregon 97801
Area code 541 Phone 276-3447 FAX 276-3317

November 15, 2005

Donovan Grey
Washington Department of Ecology
4601 N. Monroe Street
Spokane, WA 99205-1295

Dear Mr. Grey;

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) want to commend the Washington State Department of Ecology (WDOE) for developing this Total Maximum Daily Load (TMDL) for Chlorinated Pesticides and PCBs. While there is still much work to do, this effort begins a much needed process of restoring water quality in the Walla Walla Basin. As WDOE is aware, the CTUIR have made tremendous investments in restoring water and salmon to the Walla Walla River and its tributaries. This reflects our commitment to a healthy Walla Walla system and our dedication to restoring tribal fisheries throughout our ceded lands.

We appreciate WDOE's including toxic-specific allocations in the TMDL by tying the allocations directly to the appropriate human health criteria. We believe that this improves the TMDL and we appreciate your willingness to work with us on this issue.

We believe our participation throughout this TMDL process has drawn attention to the fact Washington's water quality criteria for toxics do not protect tribal fish-consumers. It appears however WDOE felt constrained in committing to TMDL recovery targets that would protect tribal fish- consumers.

In June, WDOE informed the CTUIR that WDOE would change the wording used in the early draft TMDL for water quality recovery targets based upon legal advice from WDOE attorneys. WDOE has changed the wording from recovery "target" to recovery "goal". We have since requested an explanation of what legal significance there is to this change and what, if any, difference there is in WDOE's commitment to implement water quality "goals" vs. "targets." While we have jointly discussed the need to clarify this language, we have not received answers to these two questions. We are therefore left to assume that WDOE has in fact distanced itself from commitment to TMDL implementation sufficient to protect the health of tribal fish-consumers.

This problem clearly highlights the need for Washington to revise its water quality criteria for toxic pollutants at the earliest possible opportunity. Tribal people must be able to practice their treaty right to fish and to eat the fish that they catch throughout their ceded lands, including waters in Washington State. Washington water quality criteria for toxic pollutants must protect tribal fish-consumers. We have discussed this need with Governor Gregoire and with Director Manning and we are eager to begin our work with Washington to make this needed change in state water quality criteria.

We look forward to the Walla Walla TMDL completion and to our work together to restore the water quality of the Walla Walla.

Sincerely,

Eric J. ~~Quaempts~~,
Director of Natural Resources

cc: Melissa Gildersleeve, Department of Ecology
Helen Rueda, EPA
Jannine Jennings, EPA

11.1) Response: *Sep 16th letter, First Page, Second Paragraph, and Nov18th letter, Final Two Paragraphs*

Ecology greatly appreciates the efforts that the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) staff have put into the chlorinated pesticides and PCBs TMDL project over the past few years, and believe that the interest, insight, and information provided by your tribe has been vital in developing a successful TMDL project. The targets in the TMDL are based on the water quality criteria in standards and federal rule (40CFR131.36), and are the water quality standards-based load allocations that would form the basis of a legal agreement with the USEPA. The goals in the TMDL are based on site-specific considerations (in this case the larger amounts of fish consumed by the Umatilla Tribe and the subsequent higher risk the tribe incurs) and are not part of the water quality standards-based load allocation agreed upon with the USEPA. Because our toxic criteria in our standards and the federal rules serve as the legal foundation for our Clean Water Act regulatory actions we cannot use a numeric criterion that is not in our standards. Ecology is committed to working with the other Pacific Northwest (PNW) states and the USEPA to reduce toxics in water and fish to levels protective of the different groups that use or could use these resources. This includes tribal consumers. The early planning stages of this effort are now focused on the Columbia River. In the specific case of the Umatilla tribe and the Walla Walla River, Ecology will begin the toxics reduction program by working with local groups and the tribe to develop and implement Best Management Practices (BMPs) or other control strategies to reach the reductions identified as targets in the TMDL. Once these targets are met, Ecology will continue to work toward meeting the more stringent TSS goals. However as these goals are not based on state water quality standards they can have no regulatory significance, hence the use of the word 'goal'. Ecology's intent in this TMDL program is to focus state resources on actions that will lead to reductions in toxics in the water and sediments, and subsequently to reductions in toxics in the fishery resources and other aquatic life in the river system.

11.2) Response: *Sep 16th letter, Second Page, First Paragraph*

All of the pesticides in question have an affinity for soil particles. As stated in the chlorinated pesticides and PCBs TMDL technical report (page 86): “Since the other pesticides of concern are generally present at lower levels than DDE and exceed their criteria to a lesser degree, land use changes directed at meeting a DDE-based target would also effectively address these chemicals.” We cannot envision any other outcome than a reduction in pesticide levels in Walla Walla as TSS levels are brought under control. However, "site-specific evidence” for water quality improvements will require BMP implementation and effectiveness monitoring as described in the submittal report.

11.3) Response: *Sep 16th letter, Second Page, Second Paragraph*

It is not clear what “biological pools” this comment refers to. Aquatic animals and plants would be expected to come into equilibrium with the DDT concentration in the ambient water and thus would not constitute a source in the usual sense of the word. We agree that small terrestrial inputs of DDT compounds may cause unacceptable levels in the receiving waters. While many examples exist of significant reductions in fish tissue concentrations following source control of DDT, only time will tell what level of cleanup can be achieved in the Walla Walla River. The 2nd comment in this paragraph was addressed in Ecology’s reply to the preceding paragraph. We agree the relationship between TSS and DDE determined for the mainstem may not hold for other areas. The technical report does however include an analysis that suggests the TSS target for the mainstem would be effective in meeting human health criteria for DDT compounds in most tributaries (chlorinated pesticides and PCBs TMDL technical report, pages 84-85). A site-specific TSS target was developed for two of the most contaminated tributaries, Yellowhawk Creek and the East Little Walla Walla River. At the request of the TMDL advisory group, additional language was added to submittal report on pages 42 and 45 that describes further efforts to address this issue. These will be dealt with during the development of the Detailed Implementation Plan in collaboration with the TMDL advisory group.

11.4) Response: *Sep 16th letter, Second Page, Third Paragraph, and Nov 18th letter, Final Two Paragraphs*

As a result of subsequent negotiations with CTUIR staff, Ecology has added text to the *Load and Wasteload Allocation* section of the toxics submittal report (page) that addresses this concern. The TSS targets represent Ecology’s adaptive management tool for assessing the success of BMP implementation and therefore will remain where they are in the text.

12.) Comment:

Gray, Donovan (ECY ERO)

From: Larry Bishop [bishopl@wwics.com]
Sent: Tuesday, November 22, 2005 3:53 PM
To: Gray, Donovan (ECY ERO)
Subject: RE: Advisory Group Meeting (?)

Yes, please do so. Larry

-----Original Message-----
From: Gray, Donovan (ECY ERO) [mailto:DOGR461@ECY.WA.GOV]
Sent: Tuesday, November 22, 2005 3:27 PM
To: Larry Bishop
Subject: RE: Advisory Group Meeting (?)

Thanks for your comments Larry. Would you like your e-mail to be included as part of the formal comments to the Submittal Report?

Donovan Gray

-----Original Message-----
From: Larry Bishop [mailto:bishopl@wwics.com]
Sent: Tuesday, November 22, 2005 3:22 PM
To: Gray, Donovan (ECY ERO)
Subject: RE: Advisory Group Meeting (?)

Donovan,
I have attended only a couple of your meetings for which I am truly sorry. I have read through the Report and my only concern is that agriculture can not stand any more economic hits at this time. Most farmers are not going to be able at this time to spend much money outside the parameters of their immediate needs at this time. I would suggest that one thing that would aid implementation of this plan would be to aid farmers and landowners directly to minimized runoff. Ecology should really get behind CRP, CREP, EQUIP, and any other type of conservation farming that is around. People will respond much better to aid than to threats as you well know.
Thanks, Larry Bishop

12.1) Response:

We feel federal and state programs such as the Conservation Reserve Program (CRP), Conservation Reserve Enhanced Program (CREP), Environmental Quality Incentives Program (EQIP), and other existing conservation programs serve both the producer and environment equally well. We financially support conservation efforts through grant programs, such as the Centennial Clean Water Fund (CCWF) and Environmental Protection Agency (EPA) Section 319 Funds. These grant programs are applied for and administered by local entities. We have committed to work with local agencies, communities and private landowners to attain clean water goals outlined in the TMDL. However, Ecology retains the right to pursue enforcement action under the Clean Water Act and RCW 90.48 when such action is deemed appropriate.

13.) Comment:

NOV 2 2 2005

Donovan Gray
Water Quality Program
WA Dept. of Ecology - Eastern Regional Office
4601 N. Monroe Street
Spokane, WA 99205-1295

November 21, 2005

Dear Donovan

First, We would like to thank the Department for the time extension on submitting comments on the Walla Walla River Chlorinated Pesticide and PCBs TMDL submittal report. Several of us that have served with you as advisory committee members have very strong concerns and have met trying to help each other better understand the current draft and be able to offer constructive comments to make the TMDL an achievable product.

When we agreed to become members of the advisory committee for the Department of Ecology TMDL establishment process, we took on a vested interest in seeing that the community we represent is adequately protected from harmful components in the water sources of the Walla Walla River System. In like manner, we are obliged to protect our constituents from unneeded regulation, due to an inaccurate assessment of the problem, or over zealous regulators. The advice we give must be based on the study, analysis and discussion of points that we think are pertinent to the process. As a group, we have serious concerns about the draft submittal report and the implications of the DOE proposed monitoring standards.

We in no way want to discredit your or Art Johnson's effort, but in our reading, the following seem to be unanswered questions:

Although we are trying to direct our comments toward the submittal report we keep coming back to the technical report and struggle with understanding the data presented. We concede that if less than 1 part per trillion is to be the recognized level of attainment, sampling and analytical methods utilized to measure this level may vary from those used when higher levels are being measured. We have attempted to review literature describing the SPMD design and function using primarily the on-line USGS SPMD Technology Tutorial (3rd Edition) and the Journal article by Ellis etal published in the Environmental Toxicology and Chemistry vol 14 pp 1875-1884. Both of these publications fail to make statements that support their use in developing regulatory policy. As non-specialists in this field of analytical chemistry we are having difficulty in understanding what the degree of binding/release of these compounds with the suspended soil particles in the water has and the levels measured by the device. This may have been an acceptable method for demonstrating presence but does it truly reflect what is biologically available to fish? The Ellis article suggests it does not.

If we accept the methodology used in the technical report and Total Suspended Solids are used as a surrogate measure, do we have a high enough level of statistical significance in the data to accept the suggested values? The value shown in Figure 25 of the technical report shows an R^2 value of 0.73 was obtained only when selected data were used and a value of 0.45 when all data were included. This does not seem to be a strong enough correlation to defend the predicted relationship.

An additional major concern to us is a need to narrow the identity of the source of the pollutant(s) so that targeted efforts can be made in reaching the desired standard. We do not find reference in the draft document that this has or will be done. Our discussion underscored the need to understand the contribution that previous use on specific agricultural lands, urban usage, streambed sediment and atmospheric deposition from outside the watershed make to the observed levels. Once these are defined, steps can be taken to narrow the geographic zone(s) and apply the appropriate reduction measures. We do not find reference to any such measures as part of the proposal.

Although we have no scientific measurement to support our personal observations, we do not feel that the level of reduction projected beyond year 10 could ever be attained. Our visual observation during high flow events is that re-suspension of streambed sediments caused by the flow turbulence will raise the turbidity above these levels even with no addition from other non-point sources. Again the question of the role of these sediments needs to be defined.

We want to restate that we question the validity of using turbidity as a surrogate measure of chlorinated pesticides and PCB's. To invoke single basin-wide turbidity standards without consideration for differing levels of pollutants in the various soils of the drainage is unacceptable. It also appears that the suggested standards exceed that required by the WAC's pertaining to turbidity, which dictate that turbidity standards for state waters are to be based on background turbidity levels. These backgrounds and standards have yet to be established for the reaches in the Walla Walla River system. We do not wish to be exposed to legal challenge if we support a plan that could be perceived as an attempt to regulate beyond the scope of the law.

We recognize the importance of improving and protecting our environment, and want to be a part of that effort. But we also believe that process and procedure is important and the input we have provided in this letter speaks to valid concerns.

We thank you for asking us to be part of the process and considering our input.

Sincerely,

Greg Farrens

Robert A Hutchens

Jack Myrick

Roland Schirman

13.1) Response: *First Page, Second Paragraph, Second Sentence*

Ecology is mandated under the Clean Water Act and RCW 90.48 to address water quality impairments. Washington state standards are derived from the National Toxics Rule, and they represent levels deemed necessary to protect human health and aquatic life from the harmful effects of these known or suspected carcinogenic substances. TMDLs do not add any further

regulation than already exists under this legislation. TMDLs evaluate water quality and devise a plan to improve water quality that may result in changes to permit limits. TMDLs focus and coordinate programs and groups already working on water quality issues to restore the water body to a healthy condition.

13.2) Response: *First Page, Third Paragraph, Second to Fourth Sentences*

TMDLs are not a regulatory policy. Please see response above. Semipermeable membrane devices (SPMDs) have been shown to give results that are comparable to other low-level sampling methods. Studies in support of this conclusion are:

Ellis et al. 1995. Evaluation of Lipid-Containing Semipermeable Membrane Devices (SPMDs) for Monitoring Organochlorine Contaminants in the Upper Mississippi River. Environ. Toxicol. Chem. 14:1875-1884.

Hyne, R. et al. 2004. Comparison of Time-Integrated Pesticide Concentrations Determined from Field-Deployed Passive Samplers with Daily River-Water Extractions. Environ. Toxicol. Chem. 23(9): 2090-2098.

Rantalainen et al. 1998. Lipid-Containing Semipermeable Membrane Devices (SPMDs) as Concentrators of Toxic Chemicals in the Lower Fraser River, British Columbia. Chemosphere 37: 1119-1138.

Other low-level sampling methods were not used in the Walla Walla because they require using complex extraction devices in the field and give a measurement that represents only a single point in time vs. the month long deployment period for SPMDs. The SPMD data collected for the TMDL were used in conjunction with conventional sampling of whole water grab samples, fish tissue, and WWTP effluent samples to identify and rank sources. SPMDs are particularly well suited to this task because they provide extremely low detection limits and give good reproducibility because of their standardized design. The water quality targets and load allocations in the TMDL were based on the conventional sampling data, with the exception that the SPMD data were used to establish the ratio between DDT and its breakdown products DDE and DDD. The SPMD extracts were analyzed by EPA methods.

13.3) Response: *First Page, Third Paragraph, Final Sentences*

Binding is primarily a function of the organic carbon content of the particles. SPMDs measure the dissolved fraction which is available for uptake by plants and animals. This is one of the major advantages of their use over whole water samples. The EPA recommends using the dissolved rather than total water concentration to assess bioaccumulation of pesticides and PCBs in fish:

EPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. EAP/822/B-98/005.

It is true that SPMD data cannot be directly compared to fish tissue data because 1) there is no metabolic breakdown or excretion, 2) the SPMD uptakes rates are faster and their capacity greater, and 3) SPMDs seldom reach steady state concentrations. However when published bioaccumulation data are used in conjunction with SPMD data to predict fish tissue concentrations, the predicted and measured concentrations usually agree.

13.4) Response: *First Page, Fourth Paragraph*

The coefficient of determination or R^2 of 0.73 was for all mainstem data. The Walla Walla toxics technical report does state on page 84 that the R^2 of all the combined data (0.45) alone would not be able to predict DDE violations Therefore a quantile plot was used to confirm that a DDE-based TSS target was accurate and reasonable (page 84-86) across the watershed.

13.5) Response: *Second Page, First Paragraph*

The purpose of the Walla Walla TMDL submittal report is to give an overview of the chlorinated pesticides and PCBs problem in the Walla Walla Basin and recommend broad strategies to achieve compliance with state and federal water quality criteria. Ecology acknowledges that further monitoring and land use assessments are needed to find locations contributing to the problem. However, this level of detail is more appropriate in the Detailed Implementation Plan (DIP) to be developed later in collaboration with the Walla Walla TMDL advisory group. Language detailing the need for additional monitoring has been added to pages 42 and 45 at the request of the Walla Walla TMDL advisory group.

13.6) Response: *Second Page, Second Paragraph*

The TSS load reductions allocated in this report are those Ecology has deemed necessary to achieve compliance with state and federal chlorinated pesticide and PCB water quality standards. The turbidity-based targets were calculated from all relevant data, following nationally recognized procedures, and are based on the 90^{th} percentile of background turbidities recorded at the established background turbidity location. The 90^{th} percentile is the turbidity exceeded by 10% of the samples. This EPA-approved approach allows for seasonal variation and natural generation of suspended sediment and turbidity. Adaptive management is an integral part of TMDL implementation. In the event that management strategies outline in the submittal report are not successful, alternative approaches will be developed in conjunction with the TMDL advisory group and implemented.

13.7) Response: *Second Page, Third Paragraph, First Sentence*

As noted on page 26 of the Walla Walla toxics technical report, the National Academy of Sciences has recommended the approach of using the relationship between a water quality indicator (pesticides in this case) and one or more predictor variables (TSS and turbidity in this case) as a ”simple and useful model for developing TMDLs”. The TSS and turbidity targets were developed as tools to be used in monitoring progress toward achieving water quality standards. As described in the technical report (page 83), “Setting water quality targets based on TSS and turbidity has the advantage of translating more directly to land use practices and being easier and less expensive to monitor than trace chemical concentrations. Additionally, TSS and turbidity levels in river and streams have a direct and quantifiable effect on the health of fish and other aquatic organisms, as well as aesthetic values.” The ultimate objective of this TMDL is to meet state pesticide/PCB criteria and turbidity standards. The technical study determined that the turbidity targets are necessary in order to achieve state water quality criteria in Washington Administrative code 173-201A. The TSS goals are necessary to protect people who consume large amounts of fish.

13.8) Response: *Second Page, Third Paragraph, Remaining Sentences*

Washington state water quality standards define background as "the biological, chemical, and physical conditions of a waterbody, outside the area of influence of the discharge under consideration." Background for the Walla Walla River was established during the technical study at the state line to reflect minimal human influences on water quality. The turbidity targets are based on samples taken from this location. TMDL targets are the amount of pollution that needs to be reduced to meet existing state standards.

14.) Comment:

Donovan Gray
Water Quality Program
WA Department of Ecology-Eastern Regional Office
4601 N Monroe Street
Spokane, WA 99205-1295

November 20, 2005

NOV 2 2 2005

Donovan,

On behalf of the Walla Walla County Farm Bureau, I would like to comment on the draft Walla Walla River Chlorinated Pesticide and PCB TMDL Submittal Report.

As we read and study the draft report, it seems to us that the data collection for the background of the report lacks objectivity. It is noted on page 19 that the background science was collected , not at random, but "timed", yet it is claimed to be representative of runoff conditions. Our experience with scientific studies is that random sampling is necessary for credible results in any experiment. We, therefore, must go on record as disagreeing with the methods used to establish the background data for the recommendations and implementation plans that are suggested as part of the submittal report.

A second concern we have with the strategy of the submittal report is that of using turbidity levels as a measure of success of reducing chlorinated pesticides and PCB's in the river system. Though it may be practical to associate toxins levels with turbidity when soils in a reach are established to have significant levels of toxins, it is not a measure that should be applied basin-wide without regard of soil born toxins levels. To suggest a basin-wide turbidity regulation to solve a toxins problem, which may be isolated in small areas or reaches of the basin, is not a reasonable approach.

Finally, though we certainly agree that we need to protect our precious water resources in the Walla Walla River drainage, it is important to be aware of the impact that such an effort may have on different segments of the population of the watershed. To address this concern, we would like the report to include an assessment of the impact this effort could have on the basin agricultural industry.

Thank you for the opportunity for comment on the plan. We believe our comments, and others like ours, are a vital part of keeping self-government in our country functioning as it should.

Sincerely,

Keith Farrens
President
Walla Walla County Farm Bureau

14.1) Response:

Please see previous responses to **13.** Mr. Greg Farrens, Mr. Robert Hutchens, Mr. Jack Myrick, and Dr. Roland Schirman. Several efforts were made to obtain representative data. Sampling for the TMDL technical study occurred from May 2002 until September 2003. During this time, fish tissue samples were collected, grab samples from the river and tributaries were taken, samples from the treatment plants were taken, and devices put into the water collected data for 30 days. In addition, any available historic data was sought. Monitoring will continue to be an important part of the efforts to reduce chlorinated pesticides in the watershed.

The majority of the implementation activities or best management practices (BMPs) recommended in the report were taken from the Walla Walla Watershed Plan. These BMPs have already been applied by farming communities across the state including the Walla Walla drainage to good effect. The Submittal Report acknowledges watershed residents' efforts to improve water quality through the implementation of BMPs and encourages more of the same.

There are no natural sources of chlorinated pesticides or PCBs, but these man-made compounds do bind to soil particles. The turbidity targets in the TMDL are necessary to meet current state water quality standards and do not result in new regulations. The submittal report assigned TSS load allocations to 10 tributaries in addition to two for the upper and lower Walla Walla mainstem. Data collected during Ecology's 2002-2003 study suggests that the pesticide problem is not isolated, but extends to varying degrees across the Walla Walla Basin (with the exception of the Touchet River drainage where the chemicals in question were not widely used historically). Refinement of the TSS targets may occur as a result of further monitoring during implementation.

Financial assistance is needed to help watershed residents improve water quality. Some funding sources the agricultural industry may use to apply BMPs are mentioned on page 51 of the Submittal Report. Since TMDLs are neither a general permit nor a rule, economic impact statements are not a requirement. Economic impact statements, cost-benefit analyses, or economic analyses mandated by the Regulatory Fairness Act [Revised Code of Washington (RCW) 19.85] and Administrative Procedure Act (RCW 34.05) apply only to rules. In addition, the TMDL does not propose a specific course of action for a specific location.

15.) Comment:

COLUMBIA BLUE MOUNTAIN COUNTIES FARM BUREAU

Member of WASHINGTON STATE FARM BUREAU AND AMERICAN FARM BUREAU FERDERATION

207 North Third, Dayton WA 99328

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NOV 2 2 2005

November 21, 2005

Donovan Gray
Water Quality Program
WA Department of Ecology-Eastern Regional Office
4601 N. Monroe Street
Spokane, WA 99205-1295

Re: Walla Walla River Chlorinated Pesticides and PCB TMDL Submittal Report

Donovan,

We recognize that the Washington State Department of Ecology is charged with the task of monitoring and improving the quality of surface waters of the Walla Walla River basin. Since part of our constituency is in that watershed, I offer the following comments concerning the draft of the Walla Walla River Chlorinated Pesticide and PCB TMDL Submittal Report.

It is our belief that the assessment portion of the report lacks credibility because the time frame for data collection for the report was only one year. Data collected over such a short period cannot accurately determine an average of stream flows and pollutant levels for the basin. Any effort to choose sampling times to reflect a "normal" year (as suggested on page 19 of the report) clearly discredits the authenticity of the science behind the report conclusions.

Furthermore, DOE has suggested solutions to the problem of toxics (chlorinated pesticides& PCB's) revolving solely around reducing turbidity levels in the basin streams. Though there may be a correlation between turbidity levels and toxics presence, this may only be a valid comparison where soil levels of toxics are significant. More background data collection should be done before suggesting solutions to the toxics problem. Once the background information for the cleanup work is refined, we feel that areas without significant toxic problems can focus on solving turbidity problems with goals based on background levels of turbidity, as the law states it should be done.

The impact of this effort could well alter the entire dryland agriculture industry of the Walla Walla River basin. We feel that because this potential exists, an economic and social impact assessment should be part of this report.

Finally, we do concur with many of the proposed implementation strategies listed in the draft document. We do believe that education, motivation, and voluntary programs should comprise the core of the solution(s) to the problems. Thank you for accepting our input to this complex process.

Sincerely,

Eric Thorn

Eric Thorn
President, Columbia/Blue Mountain Counties Farm Bureau

15.1) Response: *Second Paragraph*

The time frame for technical studies conducted by Ecology is typically one year. Because a large number of samples were analyzed and the range of flows that occurred during the study included the normal range of flows, Ecology considers the study to be credible.

15.2) Response: *Third Paragraph*

The correlation between turbidity and toxics was demonstrated in the technical study suggests that reducing turbidity levels will decrease toxic concentrations. Ecology acknowledges that further monitoring and land use assessments are needed to find areas contributing to the problem. Language detailing the need for additional monitoring has been added to pages 42 and 45 at the request of the Walla Walla TMDL advisory group. Many of the strategies to reduce chlorinated pesticides and PCBs would also reduce turbidity levels. The TSS targets represent the minimum reductions necessary to meet state standards.

15.3) Response: *Fourth Paragraph*

Financial assistance is needed to help watershed residents improve water quality. Some funding sources the agricultural industry may use to apply BMPs are mentioned on page 51 of the Submittal Report. Since TMDLs are neither a general permit nor a rule, economic impact statements are not a requirement. Economic impact statements, cost-benefit analyses, or economic analyses mandated by the Regulatory Fairness Act [Revised Code of Washington (RCW) 19.85] and Administrative Procedure Act (RCW 34.05) apply only to rules. In addition, the TMDL does not propose a specific course of action for a specific location.

15.4) Response: *Fifth Paragraph*

Thank you for supporting the implementation strategy

16.) Comment:

WALLA WALLA COUNTY
WATERSHED PLANNING

310 W. Poplar -Suite 201 -Walla Walla, WA 99362-2865
Telephone (509) 524-2645 • FAX (509) 527-1892

November 23, 2005

Donovan Gray
Department of Ecology
4601 N. Monroe Street
Spokane, WA 99205-1295

RE: Walla Walla River Chlorinated Pesticides and PCBs TMDL Submittal Report

Dear Donovan:

Thank you for the opportunity to review and comment on the *Walla Walla River Chlorinated Pesticides and PCBs Total Maximum Daily Load Submittal Report*. As a member of the TMDL Advisory Committee and in my capacity as Watershed Planning Coordinator in the Walla Walla County Watershed Planning Department, I appreciate Ecology's commitment to working with the local interests to develop water cleanup plans that address toxin pollution and its sources in the Walla Walla Basin. I also thank Ecology for approving our recent request for an extension to the public comment period.

As you are aware, watershed planning work as part of the Watershed Management Act and through other processes, including Subbasin Planning and Habitat Conservation Planning, has been on-going for several years in the basin. The Walla Walla Watershed Plan for WRIA 32 was recently approved in June, 2005 and serves as a testament to the dedication and hard work that local interests have in addressing issues surrounding water quality, water quantity and instream flow, and habitat. Recognizing that much work has already been completed, it is important that Ecology continue to build upon this work and local agencies, including Oregon state representatives and the WRIA 32 Planning Unit, should continue to be included in future TMDL efforts.

Attached are additional comments for your consideration. Thank you.

Sincerely,

Elena Escalante
Watershed Planning Coordinator

Enclosure. Comments on the Walla Walla River Chlorinated Pesticides and PCB Submittal Report

Walla Walla County Watershed Planning Department
Walla Walla River Chlorinated Pesticides and PCBs TMDL Submittal Report Comments (September 2005 version)

Pg	COMMENT
4	Change the title of Figure 1 to **"Water Resource Inventory Area (WRIA) 32"**. Figure 1 is not a map of the Walla Walla Basin, or even the WA portion of the basin as it includes a portion that drains into the Columbia/ Snake River. The figure is a map of WRIA 32.
5	Last Paragraph, 3rd sentence: Delete the last part of the sentence after alkaline that reads **"that may increase the tendency of the chlorinated pesticides and PCBs addressed in this study to bind with soil particles in these areas"**. This statement is an assumption – the introduction should be objective.
6	Last Paragraph, 2nd sentence: Replace "However, the preliminary draft of the Walla Walla Watershed Plan (January 2005, section 3, pg. 4) states that most disturbed areas not under cultivation **"are"** with **"can be".**
6	Last Paragraph, 3rd sentence, citing the Watershed Plan: Add the following language to the sentence "Riparian vegetation is limited in most areas throughout the basin, **although considerable riparian enhancement has occurred through efforts by Walla Walla County and Columbia Conservation Districts".**
8	First Paragraph, last sentence: Delete **"sufficient"** – this is subject to interpretation.
8	Second Paragraph, 2nd sentence: Replace **"the key"** with **"one means"**
8	Second Paragrah, 3rd sentence: Regarding the citation to EES report, please add the following sentence " A report by Economic and Engineering Services, Inc. (EES) **(as cited from Kuttel, 2001; Pacific Groundwater Group, 1995; Saul et al, 2001)**. See page 1-3 of Technical Memorandum WRIA 32 – Water Quality, Task 1 Erosion and Sediment Modeling for the Walla Walla Basin, Final Draft Report, June 2003.
17	Include precipitation data and its relationship to topography in this section.
17	Last Paragraph, last sentence: Is runoff from agricultural lands highest during high flow periods, or during the highest precipitation periods? The highest periods of precipitation are from October through March. Please clarify this statement as high flow may be sustained from upper watershed/mountain snowmelt.
22	First Paragraph, last sentence: Replace **"The key"** with **"One means"**
35	Sixth bullet: Replace **"runoff"** with **" discharge or flow"**
36	Add bullets to describe other sources of uncertainty; i.e. the degree to which snowmelt and precipitation influence the turbidity, adequate background turbidity and suspended sediment data, the potential for sediment to be redistributed to the water column during high flow periods.
36	It would be appropriate to include other sources of uncertainty such as the relationship between TSS as a pesticide surrogate as evidenced by the low pesticide concentrations but high TSS levels in the Touchet River. This should be a consideration in determining the loading capacity of the Touchet River as well.
37	First Paragraph, Second Sentence: Add to end of sentence - .. "will achieve water quality standards through **ongoing voluntary activities and supporting regulations**."
37	Second Paragraph: Add "members from the WRIA 32 Planning Unit" as participants.
38	Third Paragraph, 2nd paragraph: Delete sentence and replace with "Ecology will work closely with the TMDL Advisory Committee, and other local entities to implement the TMDL and develop the DIP.
38	Last Paragraph, first sentence: Delete **"was key"** with **"one means"**
39	First Paragraph: Add voluntary to sentence "The prelimunary draft of the Walla Walla Watershed Plan, January 2005 (Appendix B) shows a table of suggested **voluntary** management actions.
41	First Paragraph: Please explain first paragraph - "Most forestry operations are likely to occur on lands on the Oregon side of the Walla Walla

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Walla Walla River Chlorinated Pesticides and PCBs TMDL Submittal Report Comments (September 2005 version)

	drainage and are thus beyond the jurisdiction of the Washington State Department of Ecology." How was this determined?
41	Second Paragraph: After third sentence, add sentence – **"In recent years, irrigators have made great strides toward reduced suspended sediment and pesticide levels in area waterbodies, and will continue to implement best management practices (BMPs) in these areas to meet TMDL targets."**
41	Second Paragraph, last sentence: Delete **"…during the critical period of January to June". The Water Quality Technical reports identify October – March as the critical period for precipitation."**
43	Second Paragraph, first sentence: Replace **"are not in themselves enforceable"** with "This water cleanup plan, its TMDL targets, and the associated implementation activities listed in the plan are **"voluntary"**.
45	Third Paragraph, first sentence: Delete **"and more gradual fluctuations"** from sentence.
49	Second Paragraph, third sentence: Replace **"land use changes"** with **"BMPs"**
49	Fourth and Last Paragraph: Delete the recommended sampling sites and refer to the DIP for further development of the water quality monitoring. It may be better to develop the monitoring locations based upon the Fecal Coliform and other TMDL parameters – in order to have consistent sampling locations.
50	First paragraph: Replace **"land use changes"** to BMPs or replace with **"improvements to water quality"**.
50	First paragraph, Last Sentence: add **"or to acquire more background data"** to the end of the sentence.
51	First Paragraph under 'Funding' section: Add language to end of paragraph – **"Ecology will work with public entities and local interest groups to prepare appropriate scopes of work, to implement this TMDL, and to assist with applying for grant opportunities as they arise"**.
51	As part of the Monitoring Strategy section – identify if sampling will be done at the same sites from the original technical study.
	GENERAL COMMENTS
	Criteria used in water quality standards should protect designated uses while reflecting what is naturally attainable in the region. Certain criteria such as turbidity are strongly influenced by natural processes (e.g., hydrology, soil erodibility) and reference background levels. This should be considered as part of the margin of error discussion.
	Background levels for turbidity need to be better defined in the Walla Walla watershed. More information is needed to set background levels of turbidity, as well as toxin levels, as a basis for determining compliance with current standards.
	It is recommended that the 303(d) listings be addressed for each particular subbasin. There are geographic source differences for the toxins and these differences should be considered equally among all tributaries.
	TMDL development is encouraged to include consideration of water quality strategies (current and future) identified by the WRIA 32 Planning Unit.

November 23, 2005 Page 2 of 2

16.1) Response: Pg 4: Change made

16.2) Response: Pg 5: Change made

16.3) Response: Pg 6, First Comment: Change made

16.4) Response: Pg 6, Second Comment: Addition made

16.5) Response: Pg 8, First Comment: The sample size in Ecology's 2002-2003 water quality study met Washington Department of Health requirements. In addition the study methods, analysis and conclusions were subjected to extensive internal peer review and EPA review and found sound.

16.6) Response: Pg 8, Second Comment: Changed to 'the chief means'. The technical report found that the legacy chemicals addressed in this TMDL have bound with soil particles and are entering surface waters primarily through soil erosion from adjacent lands (where the chemicals were historically applied). The positive correlation between suspended sediments and toxic chemeicals is the foundqation for this conclusion. While other measures can and ought to be taken, reducing the amount of soil entering surface waters is certainly the most important step to take.

16.7) Response: Pg 8, Third Comment: Addition made

16.8) Response: Pg 17, First Comment: Addition made

16.9) Response: Pg 17, Second Comment: See response to Dr. Schirman's comments **3.2)** *Third Paragraph.* Change made to the text for clarification.

16.10) Response: Pg 22: See response to Pg 8, Second Comment.

16.11) Response: Pg 35: See response to Dr. Schirman's comments **3.2)** *Third Paragraph.*

16.12) Response: Pg 36, First Comment: See response to **16.6)** Pg 8, Second Comment and **16.9)** Pg 17, Second Comment above. Background turbidity was assessed following standard Ecology procedure. Also see response to Mr. Farrens, Mr. Hutchens, Mr.Myrick, and Dr. Schirman, **13.7)** and **13.8)** *Second Page, Third Paragraph.* Sufficient turbidity and suspended sediment data were obtained to obtain the conclusions in the submittal report. No significant stream bottom sediment sinks were identified during Ecology's 2002-2003 study with the exception of the Columbia River backwater in the lower Walla Walla River mainstem. This area is addressed on page 50, first bullet of the submittal report.

16.13) Response: Pg 36, Second Comment: The data collected for this TMDL study show that there is a statistically significant positive relationship between Total Suspended Sediments (TSS) and chlorinated pesticides. Those areas such as the Touchet River drainage which did not see historically high levels of pesticide application would not be expected to see high levels of chlorinated pesticides in the water column. However, even those waterbodies that do not show exceedances for chlorinated pesticides may still require TSS reductions to meet water quality criteria for turbidity – as is the case for the Touchet River.

16.14) Response: Pg 37, First Comment: The paragraph in question defines the summary implementation strategy and is standard language used in all TMDLs. A description of the implementation strategy to be used follows this paragraph. Ecology acknowledges and is appreciative of the voluntary implementation of water quality remedial projects that have already taken place in the Walla Walla River drainage. The data collected in this study indicates that much work remains to be done to achieve compliance with state water quality standards. Ecology will continue to seek collaborative and cooperative solutions to water quality impairments in the drainage by offering technical and financial assistance. However, under RCW 90.48 and the federal Clean Water Act Ecology is responsible for ensuring clean water and retains the right to pursue enforcement actions where appropriate.

16.15) Response: Pg 37, Second Comment: Addition made

16.16) Response: Pg 38, First Comment: Change made

16.17) Response: Pg 38, Second Comment: See response to Pg 8, Second Comment above.

16.18) Response: Pg 39: Change made

16.19) Response: Pg 41, First Comment: Most private and public forestry lands in the Walla Walla drainage are situated in Oregon, hence Oregon can reasonably be expected to see more forestry related activities. In addition, forestry activities are restricted in the Mill Creek headwaters since it is a designated municipal watershed. The text of the report has been clarified.

16.20) Response: Pg 41, Second Comment: Addition made

16.21) Response: Pg 41, Third Comment: Change made

16.22) Response: Pg 43: TMDLs are required for water bodies included on the 303(d) list and therefore are not voluntary. Targets are required parts of submittal reports and represent the amount that pollutants must be reduced in order to meet water quality standards. As such targets are not voluntary. See also response under **16.14)** Pg 37, First Comment above.

16.23) Response: Pg 45: Change made

16.24) Response: Pg 49, First Comment: Change made

16.25) Response: Pg 49, Second Comment: These areas have been identified as potential sample sites for evaluating whether or not the TMDL targets are being met. In order to determine if the TMDL targets are being met, monitoring should be conducted at sites comparable to those used in the technical study. The suggested sampling sites in question would represent comparable sampling locations. However, there is no obligation on Ecology or the TMDL advisory group to use these sample sites should they decide otherwise later. Also this does not preclude the inclusion of additional sample sites should it be deemed necessary.

16.26) Response: Pg 50, First Comment: Change made

16.27) Response: Pg 50, Second Comment: Addition made

16.28) Response: Pg 51, First Comment: Addition made

16.29) Response: Pg 51, Second Comment: The scope and purpose of future monitoring projects has yet to be determined, so it is not possible to say at this stage where the additional sampling sites will be located. This is something that will have to be determined when planning individual studies. See also **16.25)** response to Pg 49, Second Comment above.

16.30) Response: None of the chemical compounds that are addressed in this TMDL occur naturally in the environment, and as such no natural background exists for them. All the chemicals addressed in this report are known or presumed carcinogens, persistent in the environment, and bioaccumulate in animal tissue and therefore represent serious threats to human and aquatic life. In order to reflect the amount of turbidity that occurs naturally, human influences must be minimal to none existent. In this study, background was set at state line to include only that turbidity that is the result of processes within the study area. This background turbidity level was included in the calculation of TSS targets. Because background levels of

turbidity were assessed during the study and factored into the targets, naturally occurring levels of turbidity are not included in the margin of safety discussion.

16.31) Response: Turbidity background levels were determined using an approved procedure, in accordance with state legislation that has been used in similar TMDLs. The methods applied in this TMDL have been subjected to internal peer review and EPA review and found sound. Also see Ecology's responses to the Columbia Blue Mountain Farm Bureau's comment **15.2)** *Third Paragraph* and response to Mr. Farrens, Mr. Hutchens, Mr. Myrick, and Dr. Schirman comment **13.6), 13.7)** and **13.8)** *Second Page, Second Paragraph and Third Paragraph.*

16.32) Response: All 303(d) listings on the Washington side of the watershed are addressed in this TMDL. Each major tributary has been given a load allocation to achieve, so implementation activities can be customized based on the sources of chlorinated pesticides and/or PCBs found in each tributary. The report recommends that priority areas for remedial work be identified during the development of the Detailed Implementation Plan (DIP).

16.33) Response: This report has referenced and drawn extensively from the WRIA 32 Planning Unit Plan. Ecology is committed to continuing to work cooperatively and collaboratively with the Watershed Planning group as far as possible to achieve compliance with the water quality criteria.

17.) Comment:

NOV 2 8 2005

Water Quality & Treatment / Wastewater Treatment: Studies, Design, Operation / Industrial Wastewater Management

ESVELT ENVIRONMENTAL ENGINEERING
7605 EAST HODIN DRIVE, SPOKANE, WA 99212-1816
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November 25, 2005

MEMORANDUM TO: Washington Department of Ecology
ATTENTION: Donovan Gray, TMDL Lead

COMMENTS ON: Walla Walla River Chlorinated Pesticides and PCBs TOTAL Maximum Daily Load (Water Cleanup Plan): Submittal Report – DRAFT

By: Larry A. Esvelt PhD PE DEE

On Behalf of: City of Walla Walla

LARRY A. ESVELT STATE OF WASHINGTON 9311 REGISTERED PROFESSIONAL ENGINEER Expires 10/2007 11/23/05

Comment No.	Comment
1.	▪ We appreciate the opportunity to review and comment on the Draft TMDL. ▪ We also appreciate the efforts of the Department of Ecology in meeting with concerned parties, including the City of Walla Walla, regarding the potential impacts of the TMDL, if imposed, on the City. ▪ Further, we appreciate that the DOE has made available test data for discharges from the Cities of Walla Walla and College Place for examination. ▪ And finally, we appreciate the extension in time for comments that was granted, to allow evaluation of the test data.
2.	▪ According to the Total Maximum Daily Load Evaluation, the procedure for establishment of PCB content of the Walla Walla river and tributaries was from testing membrane collectors (SPMD) and fish tissue, both by method EPA SW-8082. Results were as Arochlor equivalent concentration. ▪ Testing of wastewater effluents was by method EPA 1668A, for PCB congeners, with total PCB content estimated by summation of the congener positive results. ▪ **We question the establishment of effluent limits for wastewater treatment plant effluent PCBs when the testing procedures did not conform to the testing procedures for the receiving waters.**
3	PCB testing results from AXYS Laboratory were reported for the Walla Walla and College Place wastewater treatment plants as and average of PCB congener test results for the four sampling periods, as shown on Table 1. ▪ Column 1 shows the dates of sampling. ▪ Column 2 shows the results as shown in the report and on the test sheets. ▪ Column 3 is a summation of all of the positive congener test results (e.g., those results as reported greater than the Detection Level, DL). ▪ Column 4 is a summation of the congener positive test results minus the test result for that congener in the blank analyzed with samples from that date.

Comments (11-23-05) LAE.doc

	▪ Column 5 is a summation of the congener positive test results minus five times (5x) the test result for that congener in the blank analyzed with samples from that date. ▪ Column 6 is a summation of the congener positive test results minus the average test result for that congener in all of the blanks analyzed. ▪ Column 7 is a summation of the congener positive test results minus five times (5x) the average test result for that congener in all of the blanks analyzed.
3a.	There was no detailed description of the procedure used to determine the total of congeners to be reported. Total of the congener concentrations reported were consistently higher than the values reported.
3b.	There is a large difference between the reported and calculated concentrations of total PCB congeners between the replicate samples collected at the Walla Walla WWTP on 5/29/2002. This indicates that the test procedure may have a low level of accuracy, even though it appears to have a high level of precision, with DLs reported to the thousandths of pg/l.
3c.	There appears to be an error in calculation of the test result reported for College Place WWTP for 12/2/2002. This is the only test result reported higher than the total of congener positive test results reported.
3d.	There appears to be a significant decline in the PCB total congeners for Walla Walla through the period of sampling. There is no explanation for this.
3e.	There also appears to be a significant decline in the PCB total congeners for College Place through the period of sampling. There is no explanation of this.
3f.	Using the Region 10 EPA recommended procedure for calculating concentrations by subtracting 5x the blank result for each congener results in much lower total PCB results than the reported values.
3g.	Since the EPA recommends subtracting 5x the average of blanks, it would appear that the values in the last column (column 7) of the table are those that should be used.
4.	Walla Walla WWTP does not discharge to Mill Creek during the summer months, and did not in 2002. The effective the discharge from the Walla Walla WWTP to the creek was approximately 303 pg/l for the two samples collected during the discharge period (average of 12/3/2002 and 2/24/2003 samples with 5x average of all blanks subtracted, column 7 of Table 1).
5.	The report states that (p. 93, p. xiii) "A comparison of loading estimates suggests that the WWTPs (Walla Walla and College Place) represent less than 5% of the PCB load in the receiving waters and thus are insignificant relative to nonpoint sources and background in these watersheds."
6.	Generally, congeners of PCB consisting of monochlorobiphenyl and dichlorobiphenyl compounds are considered less of a toxic risk than the more highly chlorinated biphenyl compounds.
6a.	European regulating agencies do not consider the lower chlorinated biphenyls in their regulation of PCBs.
6b.	Lower chlorinated biphenyls occur in inks and other commercial products in low concentrations considered "PCB Free" by EPA (≤ 50 ppm).

6c	Toxic Equivalent Factors (TEFs) have been generated for various congeners. All congeners for which TEFs have been developed are Tetra biphenyls or greater. From the figures it appears that the total concentration of PCBs for both Walla Walla and College Place consist of at least half Penta and above.
6d.	Toxic Equivalent Quantities (TEQ) were calculated for each of the samples analyzed by multiplication of the Concentration of the PCB congener found and the TEF. These values were included in the data provided, from Axys Labs. There is no current procedure in the regulations for consideration of TEQ to indicate the need for removal of additional PCBs from sources.
7.	Figures 1 and 2 show the total congeners by number of chlorines per bi-phenyl for Walla Walla and College Place treatment plants.
7a.	Figure 1 shows the reduction among congeners in the Walla Walla WWTP effluent through the sampling period by numbers of chlorines per biphenyl.
7b.	Figure 2 shows the reduction among congeners in the College Place WWTP effluent through the sampling period by numbers of chlorines per biphenyl.
8.	River flows for the TMDL are based on "Harmonic Mean" of the flows of record. This leads to indications of high toxicities during the low flow period. Walla Walla discharges only during the high flow period of the year.
9.	There are currently no documented treatment procedures for removing PCBs from water, or wastewater. The treatment systems employed by Walla Walla and College Place are biological, giving the maximum opportunity for the PCBs to attach to the solids in the treatment facility. PCBs are attracted to solids according to literature.
10.	The sources of PCBs to the wastewater collection systems needs to be assessed, and since the DOE is the administrator of State Discharge Permits for dischargers to the systems, it would appear that the DOE should provide an assessment if any of the dischargers to the system have PCBs in their discharge.

SUMMARY

- The use of different procedures for determination of PCB in the receiving water and the wastewater streams indicate that the data are not comparable, and should not be used to develop limitations on the dischargers.
- The statistical variation in the PCB tests do not appear to give confidence that the accuracy is high, even though the precision of the tests appears to be quite high. The significant variation between the replicate samples from Walla Walla is excessive.
- The procedure for determination of the applicable concentration is not clear, and is different from the total of congeners and from the total of congeners minus the blank concentrations, and significantly different from the total congeners minus 5x the blank concentrations as recommended by EPA Region 10.
- Sources of PCBs to the wastewater collection systems needs to be assessed in order to determine cost effective means for reduction of PCBs in the treated effluent.
- There is currently no demonstrated treatment process that will remove PCBs from effluents.

- The TMDL report specifically states that " A comparison of loading estimates suggests that the WWTPs contribute les than 5% of the receiving water load (of PCBs) and thus are insignificant relative to nonpoint sources and background in these watersheds."

CONCLUSION

Based on the these factors:

- differences in methods analysis,
- apparent statistical differences among tests,
- apparent inaccuracy of tests,
- insignificance of the treatment plant discharges compared to other sources of PCBs,
- lack of knowledge regarding the source of PCBs in the collection systems,
- lack of a demonstrated treatment process for removal of PCBs beyond biological treatment, and
- current and future reuse of the Walla Walla effluent during low flow periods in Mill Creek,

it is recommended that further limitation on PCBs in the treated effluents NOT be included in the TMDL.

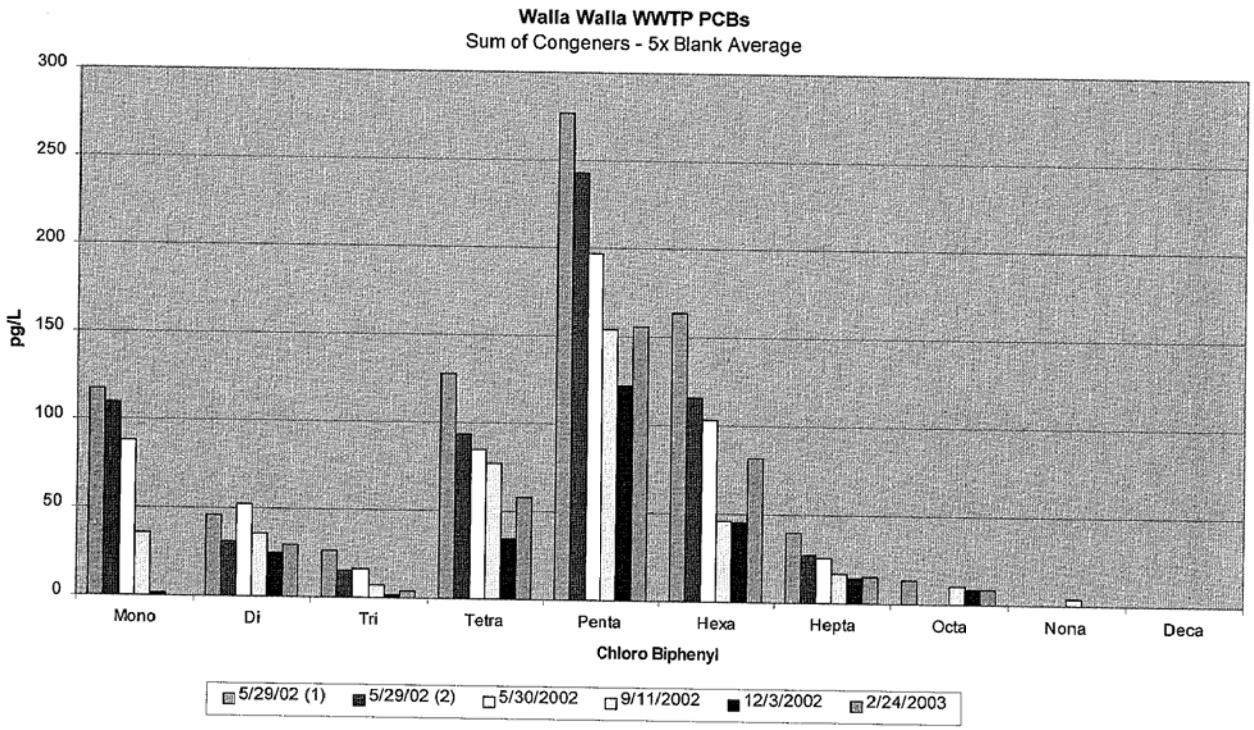
It is recommended that DOE continue to pursue information on the sources of PCBs entering the collection systems, and that the sources be regulated to reduce the impact on the streams.

TABLE 1. Wastewater Treatment Plant PCB test results. Based on analysis of Congener test results from Axys Laboratory. Results presented in picograms per liter (pg/l = ng/l x 1000).

1	2	3	4	5	6	7
Sample Date	Reported Test Results	Sum of all positive results - reported data	Sum of results minus same date blank test results*	Sum of results minus 5x same date blanks	Sum of results minus all blank test results*	Sum of results minus 5x all blank results
Walla Walla	WWTP					
5/29/2002	1,010	1,522	1,349	740	1,370	812
5/29/2002 (Rep)	791	1,320	1,148	596	1,169	635
5/30/2002	743	1,257	1,082	531	1,101	566
9/11/2002	647	1,022	872	532	854	386
12/2/2002	748	858	796	562	687	252
2/24/2002	870	972	909	689	791	353
College Place	WWTP					
5/29/2002	2,300	2,785	2,598	1,924	2,616	1,999
5/30/2002	2,670	3,166	2,971	2,281	2,989	2,341
9/11/2002	925	1,284	1,133	815	1,109	624
12/2/2002	1,190	860	796	562	687	252
2/24/2002	527	654	593	369	490	176

* Sum of all positive congener test results reported for lab blanks (lab blanks were analyzed with data from tests performed on samples from May 2002 (2), September 2002, and combined testing for samples from December 2002 and February 2003). Total congener test results for blanks were: May 2002: 193 and 99 pg/l; September 2002: 154 pg/l; December 2002 and February 2003: 66 pg/l; Average of positive congeners in all blanks: 184 pg/l. A total of 176 congeners had positive results from testing of blanks.

FIGURE 1. Sum of Congeners by Number of Chlorines per Biphenyl – Walla Walla WWTP
Sum of Congeners minus 5x average of blanks for each congener.



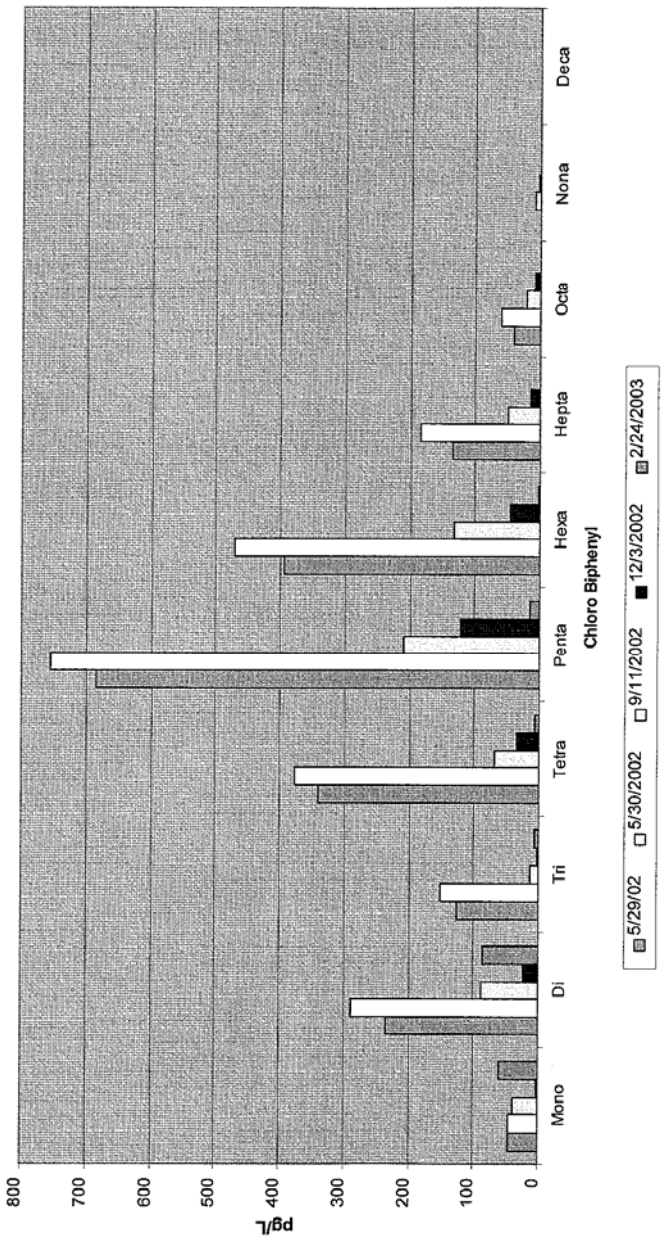


FIGURE 2. Sum of Congeners by Number of Chlorines per Biphenyl – College Place WWTP
Sum of Congeners minus 5x average of blanks for each congener.

17.1) Response - 2: The WWTP wasteload allocations for PCBs were based on treatment plant flow and the human health water quality criterion. It is true that different methods were used to sample and analyze the receiving waters. The wasteload allocations for the WWTPs were determined by comparing PCB levels detected in the effluent with state water quality criteria. The receiving water PCB data were used only to put the WWTP PCB contribution in perspective and were not used in the calculation of the WWTP wasteload allocations. Furthermore, the

WWTP and receiving water PCB loads differed by an order of magnitude or more. Therefore the fact that different methods were used in their measurement does not seem to be a significant concern.

17.2) Response 3a, 3f, 3g, 4: The calculation procedures for total PCBs are detailed in EPA Method 1668A. The complete text of the method can be found at http://synectics.net/resources/ and http://www.epa.gov/sw-846/main.htm. Environmental chemical data are normally not blank corrected therefore the Department of Ecology does not blank correct. With regard to the 5x rule: the general concept is that if the concentration in a sample is greater than 5 times the method blank, then it is assumed that most of the chemical is native to the sample, no more than 20% being due to blank contamination. In that instance the data are reported without blank correcting. If the method blank is higher, then the reporting limit must be raised. PCB congener data are usually not blank corrected. Blank correcting can be done, but only if large numbers of blanks are analyzed in conjunction with each sample set. Section 17.6.1.4.4 of EPA Method 1668A for analyzing PCB congeners states that: "Blank-corrected results may be reported in addition to reporting of separate results for samples (Section 17.6.1.4.1) and blanks (Section 17.6.1.4.2). The recommended procedure for blank correction (Reference 20) is that a result is significantly above the blank level, and the level in the blank may be subtracted, if the result is greater than the mean plus 2 standard deviations of results of analyses of 10 or more blanks for a sample medium." The analyses conducted for the Walla Walla WWTPs followed the usual procedure of having a single method blank with each set of samples. Therefore the procedures to blank correct and calculate total PCB concentrations for the WWTP effluent samples are not appropriate in this case.

17.3) Response 3b: The conclusion about low accuracy appears to stem from inappropriately blank correcting the data. Total PCB concentrations during this sampling event were in reasonable agreement. Two side-by-side samples were prepared over a two-day period by compositing subsamples of the effluent; one of the samples was split. The split results were 0.79 and 0.74 ng/L, for an average of 0.76 ng/L. The other sample had 1.0 ng/L. The result used in the technical report was the average of the latter two values, 0.88 ng/L. Considering these measurements were being made at the sub-parts per trillion level and that the TMDL technical study extended over a one-year period, consistent results were obtained for both WWTPs. Total PCBs ranged from 0.75 – 0.88 ng/L in the Walla Walla effluent and 0.53 – 2.5 ng/L in the College Place effluent. College Place was experiencing an upset for part of the study and this may have contributed to the wider variation. Also see responses to **17.2)** 3a, 3f, 3g,4.

17.4) Response 3c: Unclear what error is being referred to here, unless it stems from blank correcting the data. The laboratory reported a total PCB concentration of 1290 pg/L. The TMDL technical report shows a value of 1.3 ng/L (1,290/1,000 = 1.290 ng/L rounded to 1.3 ng/L).

17.5) Response 3d: The Walla Walla total PCB concentrations shown in the technical report - 0.88 ng/L (May 02), 0.65 ng/L (Sept. 05) 0.75 ng/L (Dec. 05) 0.87 ng/L (Feb. 05) - do not appear to decrease significantly.

17.6) Response 3e: The College Place total PCB concentrations shown in the technical report were 2.5 ng/L (May 02), 0.92 ng/L (Sept. 05) 1.3 ng/L (Dec. 05) 0.53 ng/L (Feb. 05). College Place experienced some upsets during 2002 which may have caused this variation.

17.7) Response 5: See responses to Mr. Slovensky's comments **2.1)** *First Page, First Bullet.*

17.8) Response 6., 6a, 6b, 6c, 6d, 7, 7a, 7b: See responses to 3a above and Ms McConville's comments **7.5)** *Fourth Paragraph, Final sentence, and Mr. Nicholsn's comment* **8.9)** *#9* . Washington state's chlorinated pesticide and PCB water quality criteria are promulgated by the EPA National Toxics Rule. The load and wasteload allocation assigned in this report were calculated as those necessary to achieve compliance with these criteria.

17.9) Response 8: We agree it would be inaccurate to assess the potential impact of Walla Walla WWTP by comparison to the loading capacity of the mainstem, which was calculated in the technical report using the harmonic mean for the period of record. However, as described on page 102, the loading capacity for PCBs in Mill Creek and assessment of the relative impact of Walla Walla WWTP was based on the harmonic mean flow in Mill Creek for December through April.

17.10) Response 9: See responses to Mr. Slovensky's comments **2.9)** and **2.10)** *Third Page, First and Second Bullet*; Ms McConville's comments **7.1)** *Second Paragraph, First Sentence and* **7.6)** *Second Page, Final Two Paragraphs,* Mr. Nicholson's comment **8.2)** #2, and Mr. Putnam's comment **9.2)** #2.

17.11) Response 10: See responses to Mr. Slovensky's comment **2.1)** *First Page, First Bullet,* and **2.7)** *Third Page, Second Point,* and Mr. Nicholson's comment **8.3)** #3.

17.12) Response: *Summary, Fourth Bullet***:** The Walla Walla WWTP will most likely have pretreatment authority in 2007, making assessment of the wastewater collection system the responsibility of the WWTP. We agree that an assessment of the collection system would be good initial step in addressing the PCB problem.

18.) Comment:

WASHINGTON FARM BUREAU

P.O. Box 2009
Olympia, WA 98507
360-357-9975

November 23, 2005

Washington Department of Ecology
Water Quality Program
4601 N. Monroe St.
Spokane, WA 99205-1295

RE: Comments On Draft Walla Walla River Chlorinated Pesticides and PCB Total Maximum Daily Load Submittal Report (Water Cleanup Plan)

On behalf of Washington Farm Bureau, Columbia/Blue Mountains Farm Bureau and Walla Walla County Farm Bureau, I am providing the following comments related to the Draft Walla Walla River Chlorinated Pesticides and PCB Total Maximum Daily Load Submittal Report (Plan).

First, we want to thank you for your obvious hard work on this document.

We do have a number of concerns related to the basis for action. According to the document, sampling was limited to a one-year (2002-2003) sample cycle. We are concerned that a single year of representative data is not sufficient to show a clear water quality problem. To provide statistical validity, **we strongly believe additional testing and background level information must be obtained prior to moving forward with a regulatory structure of this magnitude.**

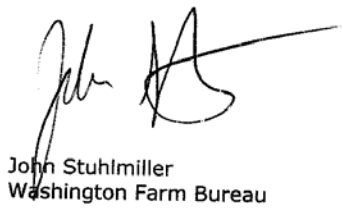
While we appreciate the Department's cost conscious testing methods and approaches, we further suggest that more investigative work is needed to better assess the specific location of land based sources of chlorinated pesticides and PCB's. It appears from the draft Plan that all of agriculture is treated as a possible contaminant source based on the one-year water sampling study and fish tissue sampling using a composite method of data analysis. This is troubling, since the very act of mixing samples into composites precludes specificity as to locations of potential concern. Thus the conclusions drawn must be area wide and not target specific. **We believe more study is necessary to determine the exact nature of the problem, the relative risk level, and the levels of pollutants in excess of background.**

We are also concerned that by simply choosing the least cost alternative for sampling (turbidity), we run the risk of excessive regulatory restrictions without solid evidence of water quality threats. Before we can support the extensive list of

agricultural practice changes recommended in table 16, we want the agency to do a bit more homework to ensure that there is a problem, isolate areas of concern, and then work cooperatively with landowners to find solutions.

Again, thank you for the opportunity to comment on the draft Plan.

Sincerely,



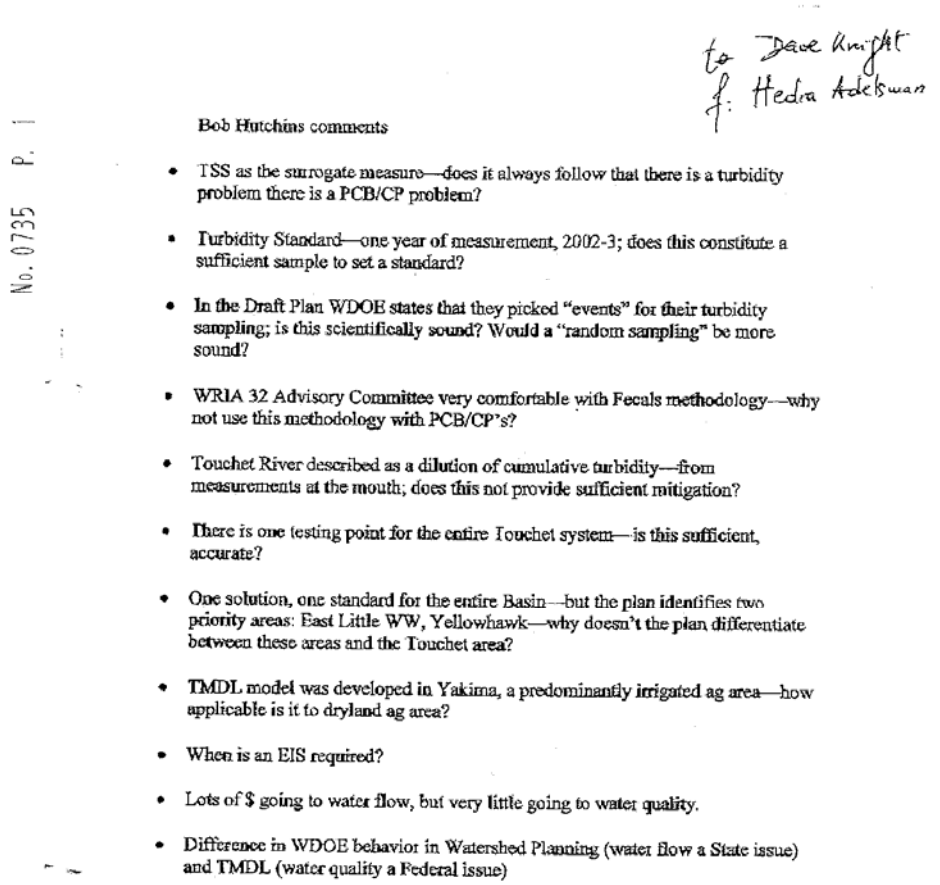
John Stuhlmiller
Washington Farm Bureau

18.1) Response: *Second Paragraph* -See response to Columbia Blue Mountain Farm Bureau's comments **15.1)** *Second Paragraph.* Data Ecology collected during the 2002-2003 sampling period show there is a significant chlorinated pesticides and PCBs water quality problem that needs to be addressed. Data suggest that the problem is too large to be an anomaly.

18.2) Response: *Third Paragraph* - See previous responses to **1.1)** Mr. Fishella's comments, Dr. Schirman's comments, **3.1)** *Second Paragraph and* **3.4)** *Fifth Paragraph*, **10.1)** Louis Riley and Janice Riley's comments #1, **12.1)** Mr. Bishop's comments, Mr. Farrens, Mr. Hutchens, Mr. Myrick, and Dr.Schirman's comments **13.1)** *First Page, Second Paragraph, Second Sentence,* **13.6)** *Second Page, Second Paragraph,* **13.7)** *Second Page, Third Paragraph,* **14.1)** Keith Farrens comments, and Columbia Blue Mountain Farm Bureau's comments **15.1)** *Second Paragraph.*

18.3) Response: *Fourth Paragraph* - Fish tissue samples have been analyzed on three separate occasions over a recent 10-year period - 1992, 1993, and 2002 - and all of these investigations found impaired levels of chlorinated pesticides and PCBs.

19.) Comment: (Note: The following comments were received shortly after the close of the public comment period, but because we feel they elucidate Mr. Hutchens' previous comments and raise some additional important points, we include them here.)



to Dave Knight
f: Hedia Adelsman

No. 0735 P. 1

Bob Hutchins comments

- TSS as the surrogate measure—does it always follow that there is a turbidity problem there is a PCB/CP problem?
- Turbidity Standard—one year of measurement, 2002-3; does this constitute a sufficient sample to set a standard?
- In the Draft Plan WDOE states that they picked "events" for their turbidity sampling; is this scientifically sound? Would a "random sampling" be more sound?
- WRIA 32 Advisory Committee very comfortable with Fecals methodology—why not use this methodology with PCB/CP's?
- Touchet River described as a dilution of cumulative turbidity—from measurements at the mouth; does this not provide sufficient mitigation?
- There is one testing point for the entire Touchet system—is this sufficient, accurate?
- One solution, one standard for the entire Basin—but the plan identifies two priority areas: East Little WW, Yellowhawk—why doesn't the plan differentiate between these areas and the Touchet area?
- TMDL model was developed in Yakima, a predominantly irrigated ag area—how applicable is it to dryland ag area?
- When is an EIS required?
- Lots of $ going to water flow, but very little going to water quality.
- Difference in WDOE behavior in Watershed Planning (water flow a State issue) and TMDL (water quality a Federal issue)

19.1) Response: (1) No. Turbidity can be elevated without a violation of PCB or CP standards, if none of the constituents causing the turbidity contain PCBs or CPs.

19.2) Response: (2) The TMDL did not set a standard for turbidity; that standard already exists. The turbidity standard has been part of the state's surface water quality standards for decades and can be found at WAC 173-201A-030(1) and (2) [for Class AA and Class A waters]. The state's turbidity standard is not an absolute value, but sets a maximum allowable change in turbidity based on an estimate of background turbidity levels. This was the basis for setting the TSS targets for turbidity compliance in the Walla Walla TMDL. The TMDL also recommends TSS targets that can be used as surrogates to track changes in chlorinated pesticide levels.

19.3) Response: (3) See answer to Keith Farrens, **14.1)** Walla Walla County Farm Bureau regarding random vs. timed sampling.

19.4) Response: (4) The PCB/Chlorinated Pesticide study was designed to collect the necessary information needed to develop a TMDL, but still stay within a reasonable budget. The costs of laboratory analyses for PCBs and chlorinated pesticides are much higher than for fecal coliform. It would have been prohibitively expensive to conduct fecal coliform like sampling for the toxics TMDL. The focus of the toxics TMDL was on the Walla Walla mainstem because that was the waterbody on the 303(d) list. The Touchet was not on the 303(d) list for pesticides or PCBs.

19.5) Response: (5) The large volume of water that the Touchet River contributes to the Walla Walla mainstem has a cumulative dilution effect on the mainstem. However, data collect on the Touchet River indicates that the river is impaired for turbidity. All streams must meet water quality standards to protect beneficial uses, therefore the Touchet River still needs to meet TSS targets for turbidity compliance.

19.6) Response: (6) Yes. One monitoring station at the mouth of the Touchet River is sufficient to make a determination as to whether the Touchet is a source of chlorinated pesticides, PCBs, TSS, and turbidity to the Walla Walla River. One site is not sufficient to determine what parts of the Touchet watershed are contributing to the problem.

19.7) Response: (7) More restrictive targets were recommended for the East Little Walla Walla River and Yellowhawk Creek because pesticide levels were clearly much higher than in other tributaries. The technical report acknowledges that the basin-wide TSS/turbidity targets are overprotective for pesticides in the Touchet, but maintains that it is appropriate to apply them here because of the Touchet's role in turbidity exceedances in the mainstem and for protection of fish and wildlife habitat (page 96). These streams need to meet water quality standards for turbidity as well as for PCBs and chlorinated pesticides.

19.8) (8) Both watersheds showed a relationship between TSS, turbidity, and pesticides. The correlation exists irrespective of farming methods. The type of agriculture being practiced factors into remedies for the problem.

19.9) (9) Since TMDLs must be approved by a federal agency, they do not meet the definition of action under SEPA [Washington Administartive Code (WAC) 197.11.704(2)(b)(3)]; therefore there is no responsibility to complete an environmental impact statement. TMDLs are also not considered to be a major federal action requiring NEPA analysis, as defined by EPA's implementing regulation for the NEPA program at 40 CFR Part 6; therefore NEPA analyses are no completed for TMDLs. However, individual projects constructed to implement the TMDL may require SEPA/NEPA review. In other words, an environmental impact statement is not required since a specific course of action has not been proposed for a specific location.

19.10) (10) It is true that the Walla Walla Watershed Planning Unit and various other entities focused on flow related issues have received more financial assistance than the TMDL advisory group and other entities working on water quality issues to date. Water quantity has often received more attention than quality across Eastern Washington due to the relatively arid conditions experienced there and the need to meet growing agricultural and urban needs. However, it should be also noted that the Walla Walla Watershed Planning Unit has been in existence far longer than the TMDL advisory group, and is further along towards project implementation than the TMDL process is. It is hoped that as the TMDL process moves closer towards project implementation there will be a rise in the number of water quality specific projects funded. Recently the Walla Walla Water Management Initiative began with the aim to

foster more cooperative and collaborative water management in the area, and water quality concerns will play an important role in this process.

19.11) Response: (11) The Watershed Planning process is mandated by Washington state law, as a means to achieve locally driven management of water resources. Water quantity is the focus of such groups although water quality concerns are sometimes considered (See response to comment **19.10)** # 10 above). Ecology is delegated authority to manage the federally mandated TMDL process. As such Ecology is required to ensure that water quality impairments are addressed and is responsible for achieving compliance with state and federal water quality criteria. Therefore, unlike in the Watershed planning process, Ecology retains control and decision making authority for setting TMDLs. However, Ecology recognizes that local knowledge and support of the process are essential for success and strives to get public involvement and input through entities like the TMDL advisory groups. Ecology is committed to working cooperatively and collaboratively with local communities and other entities to achieve water quality improvements.

Appendix I

Public Participation Materials

News Release

FOR IMMEDIATE RELEASE – Sept. 19, 2005
05-234

Public may review plan for cleaning up Walla Walla River

SPOKANE — The public has until Oct. 12 to comment on a plan to clean up pesticides and PCBs in the Washington portion of the Walla Walla River watershed before the plan goes to the U.S. Environmental Protection Agency for final approval.

In 1996, the Walla Walla River was identified as violating federal water-quality standards for PCBs and pesticides such as DDT and its breakdown products.

These chemicals can harm human health as they are recognized as known or probable human carcinogens. They were banned in the U.S. in the 1970s and 1980s, but they often persist in the environment for many years and are sometimes called "legacy pollutants."

The Washington Department of Ecology (Ecology) monitored water quality from May 2002 through September 2003 to gather data for the water cleanup plan, often called a total maximum daily load (TMDL) report.

The plan identifies the extent of the problem, possible sources of the pollution, and potential solutions. The plan also sets target dates for meeting clean water standards.

"The main route for pesticides to reach the water is through the erosion of agricultural soil," said study author Art Johnson. "If we can limit erosion, we can limit the amount of pesticides in the water. Working with farmers, conservation districts and others, we can make a big difference."

PCBs are human-made, chlorinated chemical compounds that were used in a variety of commercial and industrial applications until they were banned by the U.S. Environmental Protection Agency.

"The solution to these problems will include projects already under way, thanks to the many local, state and federal agencies and organizations already working to minimize runoff," said Jim Bellatty who manages Ecology's water quality program in Spokane.

About one-quarter of the watershed is in Oregon. Ecology will continue to work closely with the relevant authorities in Oregon to ensure water quality is protected across the basin.

Members of the public can access the water cleanup plan at this Web site: http://www.ecy.wa.gov/biblio/0510079.html, or by picking up a copy at the Walla Walla and Columbia County conservation districts, the county commissioners offices, the Walla Walla Public Library and the Dayton Memorial Library.

Office of Communication and Education; P O Box 47600; Olympia, Washington 98504-7600

If you have trouble receiving this fax or have a change in your fax number, please call (360) 407-7006

Written comments must be received by Oct. 21. Send comments to Donovan Gray, 4601 N. Monroe St., Spokane, WA 99205 or via e-mail at dogr461@ecy.wa.gov.

A brochure is available with guidance on how to submit effective comments at this Web site: http://www.ecy.wa.gov/pubs/0410039.pdf

###

Contact: Jani Gilbert, public information manager, 509-329-3495, or pager, 509-622-3073

For more information:

Ecology's Web site: http://www.ecy.wa.gov

Broadcast version

The public has until October 12th to review a plan to clean up the Washington portion of the Walla Walla River watershed.

The watershed violates state and federal water-quality standards for PCBs, and pesticides such as D-D-T. The state Department of Ecology is required to write a plan to clean up the pollution.

The plan also sets targets for meeting water-quality standards.

The public can comment on the plan before it is submitted to the E-P-A for final approval. Call Ecology for details.

News Release

FOR IMMEDIATE RELEASE – Oct. 26, 2005
05-264

Public-comment period extended for Walla Walla River plan

SPOKANE — The time period has been extended to Nov. 23 for the public to comment on a plan to clean up pesticides and PCBs in the Washington portion of the Walla Walla River watershed.

The original comment period was to end on Oct. 21, but county officials and a local advisory committee that is working with the Department of Ecology (Ecology), requested the extension to allow more time to comment on the document.

After the public comment period, the Department of Ecology (Ecology) will review and respond to all comments, make changes to the plan as appropriate, and submit it to the U.S Environmental Protection Agency for final approval.

The plan identifies the extent of the problem, possible sources of the pollution, and potential solutions. The plan also sets target dates for meeting clean water standards. The water cleanup plan often is called a total maximum daily load (TMDL) report.

Members of the public can access the water cleanup plan at this Web site: http://www.ecy.wa.gov/biblio/0510079.html, or by picking up a copy at the Walla Walla and Columbia County conservation districts, the county commissioners offices, the Walla Walla Public Library and the Dayton Memorial Library.

Written comments must be received by Nov. 23, 2005. Send comments to Donovan Gray, 4601 N. Monroe St., Spokane, WA 99205 or via e-mail at dogr461@ecy.wa.gov.

A brochure is available with guidance on how to submit effective comments at this Web site: http://www.ecy.wa.gov/pubs/0410039.pdf .

###

Contact: Jani Gilbert, public information manager, 509-329-3495, or pager, 509-622-3073

Ecology's Web site: http://www.ecy.wa.gov

Broadcast version

The public comment period has been extended to November 23rd on a plan to clean up the Washington portion of the Walla Walla River watershed.

Office of Communication and Education; P.O. Box 47600; Olympia, Washington 98504-7600 ♻ *printed on recycled paper*
If you have trouble receiving this fax or have a change in your fax number, please call (360) 407-7006.

The watershed violates state and federal water-quality standards for P-C-Bs, and pesticides such as D-D-T The Department of Ecology is required to write a plan to clean up the pollution.

The plan also sets targets for meeting water-quality standards.

The comment period was extended by one month at the request of local advisory committee members and county officials. Call Ecology for details.

FILE COPY

September 15, 2005

To Whom It May Concern:

This letter is to notify you that the Walla Walla toxics TMDL draft submittal report is now ready for public comment.

The public comment period will officially start on Monday, September 19, 2005 and run until October 21, 2005. Ecology will issue a press release to the media and advertisements announcing the public comment period will appear once in the classified sections of the Walla Walla Union-Bulletin (Monday, September 19, 2005) the Waitsburg Times (Thursday, September 22, 2005), and in the Dayton Chronicle (Wednesday 21, 2005).

Electronic copies of the draft are available on Ecology's website at: http://www.ecy.wa.gov/biblio/0510079.html. Hard copies will also be available for viewing at Walla Walla and Columbia Co. Conservation Districts, County Commissioners offices, the Walla Walla Public Library and the Dayton Memorial Library. If you would like a hard copy forwarded to you, please feel free to contact me.

Written comments must be received by the close of business (5pm) on October 21, 2005. Comments can be sent to my attention at 4601 N. Monroe St, Spokane, WA 99205 or via e-mail at dogr461@ecy.wa.gov. These comments will be responded to in writing and changes made to the draft as necessary. The comments will also be included as an appendix to the submittal report that will be forwarded to the EPA for review.

Enclosed is a brochure we have available that may assist you in making comments. It is available on the web at http://www.ecy.wa.gov/pubs/0410039.pdf

In addition, as always, you are welcome to contact me via mail, e-mail, or phone to discuss the toxics TMDL or any other issues related to the TMDL process in the Walla Walla.

Sincerely,

Donovan Gray
Water Quality Program

DG:dw

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P.O. Box 1506
Walla Walla WA 99362

City of Waitsburg
P.O. Box 35
Waitsburg WA 99361

City of Prescott
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Prescott WA 99348

Columbia Co Health Dist
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Columbia Co Commissioners
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Dayton WA 99328

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Milton-Freewater OR 97862

Cross country co-op program runs at Seaport Invitational

Six varsity boys and five varsity girls competed in the Seaport Invitational in Clarkston Saturday, September 17, and the field from 12 schools – most of them large – resulted in local runners finishing back in the pack. A highlight of the day was Preston Hall runner Josh Smith winning the Middle School Boys race.

The team runs Saturday in Connell with the race beginning at 11:30 a.m. Next Tuesday, the team journeys to Pomeroy for a meet at 4 p.m.

Coach Joanna Lanning was satisfied with her team's performance in the Seaport Invitational, especially in ew of the big schools that were there. Lanning pointed out Smith's win out of 65 middle school boys.

For the Co-op, Tyler Stevens of Dayton was 36th with a time of 18:37, and Coy Fletcher, Dayton, was 49th in 20:09. Waitsburg's Matt Leid was 60th in 21:40, Willy Whipple, Dayton, was 64th in 21:58, Garrett Warren, Dayton, was 65th in 22:00, and Chris Carpenter, Waitsburg, was 73rd in 23:59. Seth Clark of Grangeville, Id., won the 78-runner field in 15:59.

Top Co-op finisher in the 54-runner girls' varsity field was Marci Jo Lanning, Waitsburg, who finished 32nd in 23:11. Tressa Robins, Dayton, was 51st in 27:19, Kami Stringham, Waitsburg, was 52nd in 27:34, Bernice Galicia, Dayton, was 53rd in 31:17, and Cassie Steinhoff, Dayton, w 54th in 31:20. Yara Nouisser of Pullman won in 19:22.

In the middle school boy's competitio aitsburg's Josh Smith helped the team's third-place finish with a first in 8:35. Clarkston won with 44 points and Pullman was second with 64. Waitsburg scored 72 points.

Other finishers were Michael Montgomery, Waitsburg, 8th, 8:55; Wyatt Withers, Waitsburg, 17th, 9:25; Andy Dingle, Waitsburg, 41st, 9:49; Philip Koch, Waitsburg, 44th, 9:52; Nicolas Carpenter, Waitsburg, 45th, 9:53; Eric Lienhard, Waitsburg, 46th, 9:54; Brandon Briggs, Waitsburg, 47th, 9:55; Brandon Stone, Waitsburg, 53rd, 11:49.

Maya Garcia and Kaitlyn Stringham of Waitsburg finished in the top ten among the 28 competitors in the Middle School Girls race. Garcia was third with a time of 10:04 and Stringham was fifth in 10:25. Mary Alice Potolicchio was 21st in 11:45.

LEGAL NOTICES

BEFORE THE WALLA WALLA COUNTY WATER CONSERVANCY BOARD

WALLA WALLA COUNTY, WASHINGTON

Notice of Application to change/transfer place of use under Certificate of Water Right #G3-25118C

TAKE NOTICE: That on July13, 2005, Columbia School District filed application number WALL-05-04 with the Walla Walla County Water Conservancy Board to change/transfer the place of use under Certificate of Water Right # G3-25118C

That said right, under priority date of November 1, 1976, authorizes the withdrawal of 200 gallons per minute and 160 acre-feet per year to be used as follows; 70 acre feet per year, from January 1 to December 31, each year, for the irrigation of 15 acres; 90 acre feet per year, continuously, for com-

Rally

(Continued from Page 8)

Bartlow said "Josh Wilson, Tre Abernathy and Jeff Hofer all will start both ways this weekend," he said. Dakota Hopkins played hard on special teams, too, he added.

After both teams battled to a draw in the first quarter, Waitsburg capped a 37-yard drive with a three-yard touchdown pass from Trey Cole to Jeff Hofer. Cole booted the extra point for a 7-0 lead.

Enterprise replied with a pair of touchdowns, quarterback Andy Wallace finding Kyle Stewart on a 71-yard pass and, just before halftime, Wallace hit Brandon Nobles on a 29-yard score. The

Public Comment Period on The Walla Walla River Watershed Summary Implementation Strategy for Chlorinated Pesticides and PCBs

The Washington State Department of Ecology (Ecology) and a local advisory group have been working on an implementation strategy to reduce chlorinated pesticides and PCBs in the Walla Walla River watershed. The "Summary Implementation Strategy" is a required step as we develop a water quality improvement plan (also known as a total maximum daily load or TMDL) process. The plan includes actions that may be used by local entities and agencies to meet the chlorinated pesticides and PCB water-quality standards.

The public is invited to review the plan and submit written comments to Donovan Gray, Department of Ecology, 4601 N Monroe St, Spokane, WA 99205 or by e-mail to dogr461@ecy.wa.gov. **Written comments must be received by October 21st 2005.**

Copies of the report are available at:

Columbia Conservation District, 202 S. Second St. Dayton

Columbia Co. Commissioners Office, 341 E. Main St. Dayton

Dayton Memorial Library, 111 S. 3rd St. Dayton

Walla Walla Co. Conservation District, 1501 Business One Circle, Suite 101 Walla Walla

Walla Walla Co. Commissioners Office, County Courthouse, Second Floor Room 203, 315 W. Main St. Walla Walla

Walla Walla Public Library, 238 E. Alder St. Walla Walla

on the internet at www.ecy.wa.gov/biblio/0510079.html

or contact Donovan Gray at (509) 329-3458

For information about this project please visit:

www.ecy.wa.gov/programs/wq/tmdl/watershed/wallawalla/index.html

Guidance on providing comments can be located at:

www.ecy.wa.gov/biblio/0410054.html

Your comments please!

WASHINGTON STATE DEPARTMENT OF ECOLOGY

September 21, 2005, Dayton Chronicle, Page Seven

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vided by statute. Said sale will be made without warranty, expressed or implied, regarding title, possession, encumbrances on 10-21-2005. The defaults referred to in Paragraph III must be cured by 10-10-2005, (11 days before the sale date) to cause a discontinuance of the sale. The sale will be discontinued and terminated if at any time before 10-10-2005 (11 days before the sale) the default as set forth in Paragraph III is cured and the Trustee's fees and costs are paid. The sale may be terminated and discontinued any time after 10-10-2005, (11 days before the sale date) and before the sale, by the Grantor or his successor-in-interest or by the holder of any recorded junior lien or encumbrance by paying the

DAYTON, WA 99328, by both first class and certified mail on 06-15-2005, proof of which is in the possession of the Trustee; and the Grantor or the Grantor's successor-in-interest was personally served with said written Notice of Default, or the written Notice of Default

ant to RCW 61.24.130. Failure to bring such a lawsuit may result in a waiver of any proper grounds for invalidating the Trustee's sale.

X.

NOTICE OF OCCUPANTS OR TENANTS: The purchaser at the trustee's sale is entitled to

98121 BY: DENNIS CANLAS, ASSISTANT SECRETARY TA 731113B PUB: 9/21, 10/1.

Published September 21, 2005, October 12, 2005.

Dayton Chronicle.
3550_____38,41

Public Comment Period on
The Walla Walla River Watershed Summary Implementation Strategy For Chlorinated Pesticides and PCBs

The Washington State Department of Ecology (Ecology) and a local advisory group have been working on an implementation strategy to reduce chlorinated pesticides and PCBs in the Walla Walla River watershed. The "Summary Implementation Strategy" is a required step as we develop a water quality improvement plan (also known as a total maximum daily load or TMDL) process. The plan includes actions that may be used by local entities and agencies to meet the chlorinated pesticides and PCB water-quality standards.

The public is invited to review the plan and submit written comments to Donovan Gray, Department of Ecology, 4601 N Monroe St, Spokane, WA 99205 or by e-mail to dogr461@ecy.wa.gov. **Written comments must be received by October 21st 2005.**

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Dayton Memorial Library, 111 S. 3rd St. Dayton
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Walla Walla Co. Commissioners Office, County Courthouse, Second Floor Room 203, 315 W. Main St. Walla Walla
Walla Walla Public Library, 238 E. Alder St. Walla Walla
on the internet at www.ecy.wa.gov/biblio/0510079..html
or contact Donovan Gray at (509) 329-3458

For information about this project please visit:
www.ecy.wa.gov/programs/wq/tmdl/watershed/wallawalla/index.html

Guidance on providing comments can be located at:
www.ecy.wa.gov/biblio/0410054.html

Your comments please!

WASHINGTON STATE DEPARTMENT OF ECOLOGY

DC 9-21-05

Walla Walla Union-Bulletin, Monday, September 19, 2005

Walla Walla Union-Bulletin

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Public Comment Period on
The Walla Walla River Watershed
Summary Implementation Strategy
For Chlorinated Pesticides and PCBs

The Washington State Department of Ecology (Ecology) and a local advisory group have been working on an implementation strategy to reduce chlorinated pesticides and PCBs in the Walla Walla River watershed. The "Summary Implementation Strategy" is a required step as we develop a water quality improvement plan (also known as a total maximum daily load or TMDL) process. The plan includes actions that may be used by local entities and agencies to meet the chlorinated pesticides and PCB water-quality standards.

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Guidance on providing comments can be located at:
www.ecy.wa.gov/biblio/0410054.html

Your comments please!
WASHINGTON STATE DEPARTMENT OF ECOLOGY

Real Estate 16

Location Location Location
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Lots & Acreages 18

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