



Chapter 173-201A WAC

Small Business Economic Impact Statement for the Proposed Changes to Washington's Surface Water Quality Standards

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Water Quality Program

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Table of Contents

1. Regulatory Background	1
2. Purpose of the Analysis	2
3. Proposed Criteria and Designated Uses	2
4. Potentially Affected Sources.....	3
5. Overview of Impact Analysis	7
6. Industrial Sector Impacts	8
7. Municipal Sector Impacts	9
8. Agricultural Sector Impacts	9
9. Urban Sector Impacts.....	11
10. Hydromodifications	12
11. Cost Minimization Measures	12
12. Involvement in Rule Development	13
Appendix A - References.....	15
Appendix B – Example Federal and State Grant and Loan Programs.....	17

List of Exhibits

Exhibit ES-1. Comparison of 2003 WQS Revision and the 2006 Proposed Rule.....	3
Exhibit 2. Summary of Potentially Affected Facilities ¹	4
Exhibit 3. Summary of Land Adjacent to Waters Affected by Revised Criteria (miles)	5
Exhibit 4. Summary of Costs to Farmers for Planting Riparian Buffers Under 75%, 25%, and 10% Cost Share (2005\$).....	9
Exhibit 5. Potential Impacts on Farms Under 75%, 25%, and 10% Cost Share and No Land Rental Payments	10
Exhibit B-1. Example Federal and State Grant and Loan Programs for Agricultural BMPs	17

Acronyms and Abbreviations

BMPs	Best management practices
CREP	Conservation Reserve Enhancement Program
CSP	Conservation Security Program
CWA	Clean Water Act
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
GIS	Geographic information system
GMA	Growth Management Act
mgd	Million gallons per day
NPDES	National pollutant discharge elimination system
O&M	Operation and maintenance
POTW	Publicly owned treatment work
SEPA	State Environmental Policy Act
SMA	Shoreline Management Act
USDA	United States Department of Agriculture
WQS	Water quality standards

Small Business Economic Impact Statement for the Proposed Water Quality Standards for the State of Washington

The Washington State Department of Ecology (Ecology) is proposing revised aquatic life use designations applicable to waters of the state. This report provides an analysis of the potential incremental impacts on small businesses.

1. Regulatory Background

The Clean Water Act (CWA) directs states, with oversight by the Environmental Protection Agency (EPA), to adopt WQS to protect the public health and welfare, enhance the quality of water, and serve the purposes of the CWA. Under Section 303, states are required to hold public hearings once every three years for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. The results of this triennial review must be submitted to EPA, and EPA must approve or disapprove any new or revised standards. Section 303(c) also directs the EPA Administrator to promulgate WQS to supersede state standards that have been disapproved or in cases where the Administrator determines that a new or revised standard is needed, to meet CWA requirements.

On July 28, 2003, the state of Washington submitted revisions to its water quality standards (WQS) to EPA for review pursuant to CWA section 303(c)(2)(A). Certain of these revisions identified specific numeric temperature and dissolved oxygen (DO) criteria to protect critical life stages of salmonids, including criteria for salmonid rearing and spawning. On January 12, 2004, EPA approved some of the revised standards submitted by Washington, including provisions on recreational uses and bacteria criteria, freshwater water supply uses, nutrient criteria for lakes, radioactive substances, toxics and aesthetics, variance procedures, site-specific criteria, and use attainability analysis. However, EPA did not take action on a number of other provisions, including specific aquatic life use designations and their associated temperature criteria, because it needed additional time to complete an internal evaluation.

After reviewing the available fish distribution data, EPA Region 10 disapproved:

- The narrative spawning criteria of 13°C and 9°C for protection of salmonid and char spawning, respectively, because Ecology did not specify when or where the criteria are needed.
- Noncore rearing with a 17.5°C temperature criterion because they should be designated for core summer salmonid habitat with a temperature criterion of 16°C.
- Noncore rearing with a temperature criterion of 17.5°C or core rearing with a 16°C temperature criterion because they should be designated for char habitat with a 12°C temperature criterion.
- Rearing and migration only with a 17.5°C temperature criterion because they should be designated salmonid spawning, rearing, and migration with a 17.5°C temperature criterion.

Thus, Ecology is proposing to correct the inadequacies of its 2003 WQS revision identified by EPA Region 10. As a result of these designated use changes, more stringent dissolved oxygen (DO) criteria will also apply. Specifically, the minimum DO criterion would increase from 8.0 mg/L to 9.5 mg/L for waters designated for noncore rearing under the 2003 WQS revision that should be designated for either char or core summer salmonid habitat, and from 6.5 mg/L to 8.0 mg/L for waters designated for salmonid rearing and migration only under the 2003 WQS revision that should be designated for salmonid spawning, rearing, and migration.

2. Purpose of the Analysis

The Washington Administrative Procedures Act (RCW 19.85) requires that, before adopting a rule under chapter 34.05 RCW, state agencies prepare a small business economic impact statement to determine whether the proposed rule will have a disproportionate impact on the state's small businesses because of the size of those businesses. Among other requirements, the impact statement must compare the cost of compliance for small business with the cost of compliance for the ten percent of businesses that are the largest businesses required to comply with the proposed rules.

In 2003, Ecology adopted revisions to the state's water quality standards (WAC 173-201A) pursuant to state statutory authority under the Water Pollution Control Act (90.48 RCW), and the CWA as described above. However, EPA determined that the proposed use designations and associated temperature criteria for certain waters do not meet the requirements of the CWA because they do not provide adequate protection of core summer salmonid habitat, salmonid spawning, rearing and migration, and char habitat. Therefore, Ecology is proposing the minimum provisions that will meet EPA's approval: locations of state waters designated for salmonid spawning, rearing and migration, core summer salmonid habitat, spawning, and char use that will be subject to specific temperature and DO criteria.

The purpose of this report is to provide information on the potential incremental impacts to small businesses that may be associated with proposed provisions. The analysis reflects impacts that are above and beyond those associated with the 2003 WQS revision, and is based on existing sources of temperature and DO impairment, and publicly available data and information.

3. Proposed Criteria and Designated Uses

This analysis encompasses only those waters for which the 2006 proposal includes a more stringent criterion than contained in the 2003 standards revision. **Exhibit 1** provides a summary of these areas of discrepancy.

Exhibit ES-1. Comparison of 2003 WQS Revision and the 2006 Proposed Rule

2003 WQS Revision			Proposed Rule		
Designated Use	Temperature Criteria ¹	DO Criteria ²	Designated Use	Temperature Criteria ¹	DO Criteria ²
Char	12°C	9.5 mg/L	Char	12°C	9.5 mg/L
Salmonid Spawning, Core Rearing, and Migration	16°C	9.5 mg/L	Core Summer Salmonid Habitat	16°C	9.5 mg/L
Salmonid Spawning, Noncore Rearing, and Migration	17.5°C	8.0 mg/L	Salmonid Spawning, Rearing, and Migration	17.5°C	8.0 mg/L
Rearing and migration only	17.5°C	6.5 mg/L	Rearing and migration only	17.5°C	6.5 mg/L
Spawning (narrative)	13°C	NA	Spawning (location and date specified)	13°C	NA

NA = not applicable.

1. Criteria specified as 7-DADM temperatures.

2. Criteria specified as 1-day minimum DO concentrations.

2. Spawning criteria are to be specified where Ecology determines that temperature criteria established for a water body would likely not result in protection of spawning and incubation.

4. Potentially Affected Sources

The proposed rule does not include any specific requirements for businesses. However, the proposal establishes revised criteria for temperature and DO for several waters in the state and businesses that discharge to these waters may be affected directly or indirectly by these provisions.

Point Source Facilities

Exhibit 2 shows the individual NPDES-permitted facilities located within a 2,000-foot buffer of the affected stream segments. State geographic information system (GIS) files for NPDES permit holders do not include exact location information for the outfall of the discharge. A 2,000-foot buffer may over or underestimate facilities discharging to affected stream segments.

The exhibit does not include general permitted facilities. Data for these facilities are extremely limited, and flows from such facilities are usually negligible. In addition, few general permits currently contain requirements to monitor for temperature, DO, BOD, or nutrients, and none of them currently contain numeric effluent limits. Thus, there are no data available to evaluate the impact that the revised 2006 standards would have on general facilities. Note that, Ecology is beginning to require additional monitoring in a number of general permits. If such monitoring shows that the discharger has the potential to cause or contribute to an exceedance of the proposed criteria, the permits could be changed to include temperature or DO limits, or a general permitted facility may be given an individual permit with requirements for temperature or DO in the context of a TMDL.

Exhibit 2. Summary of Potentially Affected Facilities¹

Standard Industrial Classification		Number of Facilities	
		Majors	Minors
Agriculture, Forestry, and Fishing			
161	Vegetables and Melons	-	1
921	Fish Hatcheries and Preserves	-	10
Construction			
1794	Excavation Work	-	1
Manufacturing			
2411	Logging	-	2
2491	Wood Preserving	-	2
Transportation and Public Utilities			
4212	Local Trucking Without Storage	-	1
4952	Sewerage Services (POTWs)	5	25
Services			
8711	Engineering Services	-	1
Public Administration			
9711	National Security	-	1
9999	Nonclassifiable Establishments	-	1
Total		5	45

Source: Based on Washington State GIS files of NPDES facilities and affected waters.

'-' = None.

1. Does not include general permits.

Ecology prepared an analysis of the potential costs of the rule (Ecology, 2006) which showed that the costs point source dischargers may incur reflect land application of all or a portion of the effluent. However, there is some uncertainty regarding the actual controls the point source dischargers would pursue for compliance the proposed temperature and DO criteria. Note that costs for cooling towers based on estimates in EPA's Technical Development document for its 316(b) Rule (EPA, 2002) are similar to those for land application. Thus, the cost estimates for the sample facilities reflect a range of technologies (Ecology, 2006).

Nonpoint Sources

Exhibit 3 summarizes the number of stream miles affected by the revised temperature and DO criteria, and the associated uses of adjacent land. Note most of the waters affected by the changes in temperature criteria are also affected by the changes in DO criteria; only those waters designated for rearing and migration under the 2003 WQS revision that are now designated for salmonid spawning, rearing, and migration are affected by a change in DO criteria and not also a change in temperature criteria.

Exhibit 3. Summary of Land Adjacent to Waters Affected by Revised Criteria (miles)

Land Cover	Temperature Criteria			Dissolved Oxygen Criteria		
	Char ¹	Core Summer Salmonid ²	Spawning ³	Char ⁴	Core Summer Salmonid ²	Salmonid SRM ⁵
Forest Land						
Deciduous Forest	42	1,081	547	0	1,393	0.01
Evergreen Forest	894	2,168	1,357	3.2	2,791	0.5
Mixed Forest	27	1,006	574	0.1	1,326	0.01
Agriculture						
Fallow Crops	0	6	3	0	7.2	0.01
Row Crops	0	8	14	0	14	1.7
Small Grains	0	80	35	0	129	0.01
Pasture/Hay	1	259	149	0.1	853	0.4
Orchards/Vineyards/Other	0	13	36	0	20	0.8
Urban						
Commercial/Industrial/Transportation	1	23	30	0.01	42	0.2
High Intensity Residential	0	0	0	0	0.1	0
Low Intensity Residential	0	58	69	0.04	94	0.8
Urban/Recreational Grasses	0	1	1	0	1.9	0
Other Potentially Plantable Land						
Grasslands/Herbaceous	28	84	66	0.2	105	0.1
Shrubland	28	239	182	0.2	273	1.1
Transitional	31	135	50	0.8	150	0
Unplantable Land						
Bare Rock/Sand/Clay	22	6	47	0.01	33	0.1
Emergent Herbaceous Wetlands	0	1	5	0	5.6	0
Open Water	47	148	689	0.2	958	3.0
Quarries/Strip Mines/Gravel Pits	0	0	1	0	0.4	0
Woody Wetlands	5	83	81	0.02	127	0
Total	1,126	5,383	3,933	4.9	8,325	8.6

Note: Totals may not add due to rounding.

Source: USGS (1999a), reflecting data from 1986 to 1996. Note that the reliability of the land cover data is greatest at the state or multi-state level (see USGS, 1999b).

1. Waters that Ecology designated for either noncore or core rearing in the 2003 WQS revision that should be designated for char habitat.

2. Waters that Ecology designated for noncore rearing in the 2003 WQS revision that should be designated for core summer salmonid habitat.

3. Waters for which the salmonid spawning criterion applies at specific locations and times of the year.

4. Waters that Ecology designated for noncore rearing in the 2003 revision that should be designated for char habitat.

5. Waters that Ecology designated for rearing and migration only in the 2003 revision that should be designated for salmonid spawning, rearing, and migration.

The TMDLs Ecology developed to meet existing temperature standards indicate that increased effective shade is most likely the most effective means of reducing stream temperatures, and the primary measure suggested for nonpoint source control is riparian buffers (Ecology, 2006). Thus, riparian buffers are also likely to be the primary nonpoint source measure implemented for compliance with the temperature standards of the proposed rule. In addition, riparian buffers also provide filtration and serve other functions that reduce nutrient loadings to water. Reduced loadings of nutrients and sediment (including organic matter) will result in reduced BOD, which will in turn lead to higher instream DO concentrations. Lower stream temperatures also contribute to higher DO levels, since oxygen is more soluble in lower temperature water.

Forestry

Approximately 73 percent of the land cover adjacent to affected waters is forest land. Washington regulates forestry activities on state and private lands through the Washington Forest Practices Act (chapter 76.09 RCW) and the associated forest practices rules (Title 222 WAC). The Washington Forest Practices Board (the authority empowered to enforce forest practices rules) designed and adopted the forest practice rules, in part, to meet the requirements of the CWA and state water quality standards. The rules contain an array of best management practices (BMPs), including forest buffer requirements, to protect water quality, provide fish and wildlife habitat, protect capital improvements, and ensure that harvested areas are reforested. Thus, no additional practices would be required as a result of the proposed standards.

Agriculture

Agricultural and other plantable land make up the next largest land cover category (about 14 percent of the total). Riparian buffers may be needed on all agricultural and plantable land adjacent to affected waters to achieve the proposed standards. Note, however, that existing regulations in some counties require new agricultural operations to keep or plant riparian buffers (Ecology, 2003), and thus, some of these costs are attributable to baseline regulations.

Urban Development

Urban development accounts for approximately 2 percent of the land cover adjacent to affected waters. Business related storm water may affect water quality. Storm water management is related primarily to land use. The regulation of land use is governed by the state Environmental Policy Act (SEPA), the Shoreline Management Act (SMA), and the Growth Management Act (GMA), as well as local ordinances prohibiting development in floodplains. Current storm water practices represent the best available methods for managing urban storm water. Therefore, it is not likely that businesses will be required to implement any substantive changes to currently accepted storm water practices. However, riparian buffers may be needed to shade streams that run through urban areas to help reduce instream temperatures.

Hydromodifications

State data indicate that there are 146 dams within 500 feet of affected waters (Ecology, 2006). Fourteen of these dams are federally owned; the remainder is state or privately owned. Dam

modifications (e.g., reductions in storage capacity, relocating outlet) may be needed for those dams located upstream of affected waters to comply with the proposed standards. However, sufficient monitoring data are not available to assess the impact that each of these dams may have on downstream stream temperatures or DO concentrations. Given the lack of available data and the factors that influence which control actions should be implemented, it is not possible to estimate incremental control costs for dams associated with the proposed rule, although it is likely that controls necessary to meet the 2003 WQS revisions (i.e., baseline standards) would also result in compliance with the 2006 proposed standards (Ecology, 2006).

Water Withdrawals

The potential impact of the proposed rule on existing water rights is likely to be limited (Ecology, 2006). The state can purchase existing water rights from willing owners in order to enhance instream flows. In these instances, the water right owner makes the exchange voluntarily, which implies that the benefits for the owner equal or exceed the cost of giving up the water right.

5. Overview of Impact Analysis

A small business economic impact analysis is a distributional analysis. Distributional analyses provide information about the economic impacts of a selected option (who gains and who loses, and by how much), and how those impacts might differ throughout the affected area. Distributional analyses include economic impact analysis, and a variety of equity analyses; equity analyses evaluate the impacts on particular subpopulations, such as small businesses. U.S. EPA (2000) describes various methods of distributional analysis.

Washington administrative procedures (RCW 19.85.040) specify a particular comparison of business impacts -- cost of compliance for small businesses to the cost of compliance for the ten percent of businesses that are the largest businesses required to comply with the proposed rules using one or more of the following as a basis for comparison: cost per employee; cost per labor hour; cost per one hundred dollars of sales.

An economic impact analysis, such as the small business impact analysis, involves evaluation of the private or “out-of-pocket” costs of the regulation. The private or out-of-pocket costs for new pollution control measures will most likely equal the social or opportunity costs of these actions. However, not all private costs represent social costs (a real resource allocation that has an opportunity cost). For example, a transfer payment such as a tax is a private cost that is not a social cost. A tax merely transfers money from one entity to another, but does not represent an opportunity cost of real resources such as the labor and materials used to implement treatment controls. Similarly, there are social costs that do not have corresponding out-of-pocket expenses and, therefore, are not included in private cost estimates. For example, buffer costs that are offset by funding from a cost-sharing program do not represent incremental expenses to the farmer, and are not included in evaluating impacts on small farm businesses.

Thus, in addition to the incremental control costs estimated in the cost-benefit analysis for the potentially affected source sectors (Ecology, 2006), any private costs (e.g., taxes) that these

entities experience are relevant in an impact analysis. The rule does not subject businesses to any new taxes or fees. However, since private entities can deduct the cost of pollution control equipment from income as a cost of business, private compliance costs may be lower than the estimated social costs.¹ For agricultural producers, there may also be reductions in property taxes paid on land used for buffers rather than production (Ecology, 2003). To the extent that such assessed property value reductions occur, the result is a shift in tax burden to other property owners.

Another key difference between social and private costs is the effect of state and federal grant and loan programs that reduce the private or out-of-pocket costs for conservation measures such as riparian buffers or pollution control equipment. These programs typically offer financial and technical assistance in the form of grants or low-interest loans to install or implement structural or managerial practices to reduce pollution. For example, Ecology provides grants and low-interest loans to certain public and private entities through the Centennial Clean Water Fund, State Water Pollution Control Revolving Loan Fund, and Section 319 Nonpoint Source Fund (Ecology, 2005). Under this program, for instance, a local sewer district could use a low interest loan to pay capital costs for a treatment plant upgrade, with the effect of reducing debt repayment costs, and therefore, costs that could be passed through to local small businesses.

6. Industrial Sector Impacts

Analysis of the potential costs of the proposed rule (Ecology, 2006) indicates that minor industrial facilities may require incremental controls. However, only 1 out of 20 minor industrial facilities with individual NPDES permits located on waters affected by the proposed rule is considered a small business (i.e., an entity that is owned and operated independently from all other businesses, and has fifty or fewer employees): Brooks Manufacturing (WA0030805). This facility is in the sample Ecology evaluated in the cost-benefit analysis (Ecology, 2006).

Reporting and recordkeeping requirements for these facilities would not likely increase beyond what is already required for holders of individual NPDES permits. The permit for Brooks Manufacturing indicates that the facility may only discharge storm water. In addition, the permit does not mention temperature, DO, BOD, nitrogen, or phosphorus, which suggests that the facility is not likely to incur control costs. Therefore, there are not likely to be disproportionate impacts on small industrial dischargers.

It is also unlikely that the proposed rule will result in an impact on general permitted facilities. Currently general permits do not include temperature or DO limits. However, if general permitted facilities receive individual permits with requirements for temperature or DO in the future, the potential compliance cost could be disproportionate in terms of cost per employee or cost per \$100 of sales compared to compliance costs for the largest affected businesses.

¹ This is true for industrial producers as well as farms, as farms can generally include expenses for conservation practices that are consistent with a farm plan or USDA area conservation plan (Durst and Monke, 2001). Farm households that file individual tax forms (i.e., as sole proprietors) can also deduct losses from the farm operation (including approved conservation expenses) from nonfarm income for the purpose of calculating taxes owed (Durst, 2005).

7. Municipal Sector Impacts

Analysis of the potential cost of the proposed rule (Ecology, 2006) indicates that municipal wastewater facilities may incur control costs associated with the proposed rule. Municipal facilities are not small businesses, however, they could pass their control costs onto consumers (e.g., households and indirect commercial and industrial dischargers) through rate increases. Although it is not possible to predict which dischargers to each facility would be affected and by how much, potential rate increases could represent a disproportionate cost per employee or cost per \$100 of sales for small businesses compared to the largest businesses.

8. Agricultural Sector Impacts

The cost to farmers of installing riparian buffers that may be necessary for compliance with the proposed rule is equal to the installation cost minus any cost share plus any reduction in net revenues minus any land rental payments (i.e., government payments for taking land out of production). Several programs provide grants or low-interest loans for agricultural BMPs including riparian buffers (Appendix B). As the exhibit shows, in some cases agricultural operators may be able to receive grants for a majority of installation costs for forest buffers (75 percent, 87.5 percent, or 90 percent of costs, depending on the program and the farmer's circumstances), in addition to receiving incentive and maintenance payments (under CREP). In other cases, operators may be able to receive low-interest loans.

State and federal agencies also encourage pollution control efforts by providing technical and financial assistance to producers to implement structural and practice BMPs. To the degree that agricultural BMPs are voluntary, with implementation efforts focused on technical assistance and financial incentives, the potential for impacts on both large and small agricultural producers is minimal.

Thus, the unit costs of implementing riparian buffers described in the analysis of the proposed rule (Ecology, 2006) may be less for farmers. **Exhibit 4** summarizes unit costs for various cost shares.

Exhibit 4. Summary of Costs to Farmers for Planting Riparian Buffers Under 75%, 25%, and 10% Cost Share (2005\$)

Component	75% Cost Share	25% Cost Share	10% Cost Share
Total Upfront Costs (\$/acre)	\$1,363	\$1,363	\$1,363
Upfront Costs less Cost Share (\$/acre)	\$341	\$1,022	\$1,226
Annualized Upfront Costs (\$/acre/yr) ¹	\$32	\$96	\$116

Detail may not sum to totals because of independent rounding.

1. Represents total upfront costs annualized using a private interest rate of 7 percent [based on interest rates for conventional mortgages for 1998-2004 from FRB (2005)] and a 20-year loan term.

In the case that farmers install riparian buffers along all lands adjacent to affected waters under less than full funding (e.g., a 75 percent cost share), actual impacts will vary with farm size, location, riparian acreage, and type of foregone production, if any. Data for the specific farms that may ultimately be affected by the rule are not available. However, average farm data and

“model” farm assumptions can be used to evaluate the potential for disproportionate impacts on small farms.

Washington administrative procedures (RCW 19.85.020) define a small business as one with fewer than 50 employees. According to the 2002 Census of Agriculture (USDA, 2004), the average number of employees per farm was 50 or fewer for all farms with less than \$1 million in sales, while farms with more than \$1 million in sales had 99 employees on average in 2002. The largest ten percent of farms in Washington included those with \$250,000 or more in sales. Thus, small farms are those with less than \$1 million in sales, on average, in 2002, and the ten percent of businesses that are the largest farms that may be required to comply with the proposed rule are those with \$250,000 or more in sales (i.e., there is some overlap in these two categories).

Exhibit 5 summarizes the potential impact in terms of private costs per one hundred dollars of sales, and private costs per employee, for small agricultural producers and the largest ten percent of agricultural producers in Washington. The estimates reflect the assumption that the amount of land that would be planted in riparian buffers is proportional to the farm size. Specifically, the estimates reflect a square-shaped “model” farm (i.e., with four boundaries, where length is equal to width) with a stream that is parallel to one of the boundaries. For example, the average size for small business farms is 347 acres, or 15.1 million square feet (sf). A square-shaped model farm would be 3,886 feet on a side. Assuming that a stream runs through the farm parallel to one boundary and the farmer plants a 100-foot-wide buffer on both sides (Ecology, 2006), a total of 777,000 sf (3,886 x 200), or 18 acres, would be planted to buffers.

Exhibit 5. Potential Impacts on Farms Under 75%, 25%, and 10% Cost Share and No Land Rental Payments

Item	Small business farms	Largest 10% of all farms
Number of farms	35,006	3,702
Average farm size (acres)	347	2,088
Average # workers per farm (with hired labor) ¹	13	48
Average sales (\$ per farm)	\$60,623	\$1,222,305
Estimated number of acres planted in buffers ²	18	44
Net cash farm income less government payments (average \$ per acre)	\$25	\$143
75% cost share		
Cost/acre/year for buffer implementation ³	\$32	\$32
Cost/acre/year (implementation plus opportunity cost) ⁴	\$57	\$175
Total cost/farm to plant buffers	\$1,014	\$7,684
Cost per \$100 of sales	\$1.67	\$0.63
Cost per employee	\$75	\$160
25% cost share		
Cost/acre/year for buffer implementation (25% cost share) ³	\$96	\$96
Cost/acre/year (implementation plus opportunity cost; 25% cost share) ⁴	\$121	\$240
Total cost/farm to plant buffers	\$2,161	\$10,500
Cost per \$100 of sales	\$3.56	\$0.86
Cost per employee	\$161	\$219

Exhibit 5. Potential Impacts on Farms Under 75%, 25%, and 10% Cost Share and No Land Rental Payments

Item	Small business farms	Largest 10% of all farms
10% cost share		
Cost/acre/year for buffer implementation ³	\$116	\$116
Cost/acre/year (implementation plus opportunity cost) ⁴	\$140	\$259
Total cost/farm to plant buffers	\$2,505	\$11,345
Cost per \$100 of sales	\$4.13	\$0.93
Cost per employee	\$186	\$237

Source: USDA, 2004 (number of farms, average farm size, average number of workers per farm, average sales, net cash farm income less government payments per acre.)

1. Reflects only those farms with hired labor.
2. Number of acres planted in buffers is for a hypothetical, average-sized farm that is square-shaped and has a single stream running parallel to one boundary, both sides of which would be planted to 100-foot-wide buffers.
3. Unit cost less cost share annualized using a private interest rate of 7 percent [based on interest rates for conventional mortgages for 1998-2004 from FRB (2005)] and a 20-year loan term.
4. Opportunity cost is based on net cash farm income per acre less government payments (e.g., conservation payments, land rental). Does not reflect potential annual grants for the "model farm" for land rental (to offset opportunity costs) or maintenance, or upfront incentives; these types of payments are available from cost-share programs that encourage buffer implementation, such as CREP.

As the exhibit indicates, this hypothetical example for a small business farm and a farm among the largest ten percent of farms in the state indicates that pretax costs per \$100 of sales would be higher for the model small business farm. The ratio of costs per \$100 of sales ranges from about 2.7 (\$1.67/\$0.63) under the 75 percent cost share assumption, to about 4.5 (\$4.13/\$0.93) under the 10 percent cost share assumption. While the example indicates a higher cost per employee for the average of the largest farms, the more appropriate measure of impact on the affected businesses is the cost per sales measure.

Based on this hypothetical example, there is a potential for disproportionate impacts on small agricultural operators. However, any impacts on small business farms could be reduced through one or more of the following actions:

- Increasing cost-share funding to small business farms (note that EQIP already provides for limited-resource farmers to receive cost-share grants that amount to a higher percentage of BMP costs.)
- Giving higher priority for small business farms in the process of awarding grant or loan funds.
- Improving loan terms for small business farms (e.g., lower interest rates, longer terms).

9. Urban Sector Impacts

Some riparian buffers may be needed on urban land (Ecology, 2006). To the extent that buffers are paid for by local governments or the state (i.e., because they are located on public land), there would not be disproportionate impacts on small businesses since the cost to plant buffers would be paid for by tax revenues and spread over many entities.

To the extent that buffers are needed on privately owned land, such as land owned by a land developer leasing or selling property to residential or commercial customers, disproportionate impacts on small businesses are possible but unlikely. Land developers themselves would likely pass on any costs to the final lessee or buyer of the land, and net costs may be zero or negative due to the amenity value of riparian buffers [e.g., Palone and Todd (1998) suggest that riparian buffers improve the value of remaining lots such that the total value of developed land may increase.] Although the final lessee or buyer of developed land could be a small business, the decision to lease or buy land is voluntary, and if the market for land is relatively competitive, then the choice of a small business to lease or purchase land that is more expensive due to the existence of a riparian buffer suggests that the marginal benefits for that business equal or exceed the marginal costs attributable to the buffer.

10. Hydromodifications

There is potential for impacts on businesses that own dams or as a result of costs passed through to small businesses served by dams that may need controls (e.g., hydroelectric power). However, without information to determine which dams may need controls as a result of the proposed rule or the nature of the controls needed, it is not possible to determine whether any impacts would disproportionately affect small businesses compared to the largest businesses. It is also likely that controls necessary to meet the 2003 WQS revisions (i.e., baseline standards) would also result in compliance with the 2006 proposed standards (Ecology, 2006), such that there is no incremental impact of the proposed rule.

11. Cost Minimization Measures

Ecology is adopting these rules because the EPA disapproved a portion of the 2003 water quality standards. This rule addresses only those provisions EPA disapproved, through specific use changes on certain water bodies in the state. The following is a list of methods used to reduce costs to small business from 2003 Water Quality standards revisions. These methods also pertain to this corrective rule:

- 173-201A-020: The revised definition of AKART (all known, available, and reasonable methods of prevention, control, and treatment) has been broadened to include stormwater management manuals.
- 173-201A-200(1)(c) and 200(1)(d): Ecology designed the revised temperature and DO criteria to avoid unnecessary impact on human economic activities and to allow for reasonable implementation.
 - Are naturally exceeded in extreme climatic years, and will make permitting or modeling more accurate and effective.
- 173-201A-260: This section contains provisions for applying criteria in general, including allowing the natural condition of a water body to be an alternative criterion, and numeric criteria do not apply to human-created waters for the removal or containment of pollution, such as private farm ponds that did not incorporate natural water bodies.

- 173-201A-320(6)(c): Allows nonpoint source programs and general permits to use adaptive management, avoid over-use of control measures, and phase in requirements over time.
- 173-201A-450: A water quality offset occurs where a project proponent implements or finances the implementation of controls for point or nonpoint sources otherwise under the control of other entities to reduce the levels of pollution for the expressed purpose of creating sufficient assimilative capacity to allow new or expanded discharges. The goal of water quality offsets is to reduce the pollution levels of a water body sufficiently enough that a proponent's actions are not causing or further contributing to a violation of the requirements of this chapter and result in a net environmental benefit.
- 173-201A-510(5): Some dams cannot meet water quality standards. This allows Ecology to issue a water quality certification for re-licensing of the dam through a compliance schedule, rather than disapproving the certification.

In addition, existing programs partially offset some of the impacts on landowners. In the case of agriculture, CREP provides lease payments for some agricultural land set aside into buffers. EPA also allows states substantial discretion in applying controls for nonpoint source pollution such that hardship situations can be readily avoided in implementation actions.

12. Involvement in Rule Development

Ecology has tried to make businesses an active participant in the development of the original 2003 rule revisions to the surface water quality standards and to this corrective rule. Outreach has included working extensively with our water quality partnership which includes key association and also making individual calls to these key associations explaining the EPA disapproval and Ecology's actions to issue a corrective rule. Efforts will continue to include business representation on technical and policy workgroups, presentations at trade and association meetings, special face-to-face issues with individual business sectors concerned about specific parts of the rule, multiple public hearings, and notification of the proposal and opportunities to participate to a mailing list of over 6,000 interested and affected persons.

Appendix A - References

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Appendix B – Example Federal and State Grant and Loan Programs

Exhibit B-1. Example Federal and State Grant and Loan Programs for Agricultural BMPs

Program	Description	Applicability to Small Operators
Environmental Quality Incentives Program (EQIP)	<ul style="list-style-type: none"> • Federal program with funding priorities established by local committees and reflective of local environmental goals • Cost-share grants for a portion of the costs of certain conservation practices • Incentive payments for up to three years (USDA, 2005a) 	<ul style="list-style-type: none"> • Limited-resource producers can receive a greater proportion of cost-share funding (90% of eligible costs); other operators can receive 75% of eligible costs • A given operator may receive at most \$450,000 in one year (USDA, 2005a), which means small operators could receive proportionally more funds compared to other business costs
Conservation Reserve Enhancement Program (CREP)	<ul style="list-style-type: none"> • Joint federal and state program • Offers cost-share grants and incentives to encourage farmers and ranchers to enroll in contracts of 10 to 15 years duration to remove lands from agricultural production (USDA, 1998) • In Washington, funds include \$250 million for riparian forest buffers; primary goals include reducing water temperature, reducing sediment pollution from agricultural lands, stabilizing stream banks along critical salmon streams, and restoring stream hydraulic and geomorphic conditions • Offers grants for up to 87.5% of installation costs, plus one-time incentive and annual maintenance and land rental payments (payments for taking land out of production) 	<ul style="list-style-type: none"> • Funds appear to be equally available to small and large producers
Conservation Security Program	<ul style="list-style-type: none"> • Administered by USDA's Natural Resources Conservation Service • Supports ongoing stewardship of private agricultural lands by providing payments for maintaining and enhancing natural resources • Only applicable to one watershed in Washington (USDA, 2006) • Payments determined by tier of participation, conservation treatments completed, and acres enrolled: Tier I contracts are 5 years with maximum payment of \$20,000/year; Tier II contracts are 5 to 10 years with maximum payment of \$35,000/year; Tier III contracts are 5 to 10 years with maximum payment of \$45,000/year (USDA, 2005b) 	<ul style="list-style-type: none"> • Provides equitable access to benefits to all producers, regardless of size of operation, crops produced, or geographic location
Centennial Clean Water Fund, State Revolving Loan Fund, and Section 319 Nonpoint Source Fund	<ul style="list-style-type: none"> • Administered by Ecology's Water Quality Program • Offer loans and grants to reduce nonpoint sources of water pollution, including funding for agricultural BMPs such as forest buffers (Ecology, 2005) • Grants are provided for up to 75% of project costs, and low-interest loans (at 30% or 60% of market rates depending on the loan term) are provided for 	<ul style="list-style-type: none"> • Funds appear to be equally available to small and large producers

Exhibit B-1. Example Federal and State Grant and Loan Programs for Agricultural BMPs

Program	Description	Applicability to Small Operators
	up to 100% of project costs (Ecology, 2005)	

Sources: USDA (1998; 2005a; 2005b; 2006) and Ecology (2005).