**Fiscal and Economic Impact Narrative**

**Objective:** The objective of this narrative is to support the Statement of Need and Fiscal and Economic template that is required for rulemaking. This narrative will be attached to the fiscal form and be part of the public record.

**Overall:**

* The fiscal and economic impact analysis characterizes potential costs that may result from the proposed toxics criteria based on a fish consumption rate (FCR) of 175 grams per day (g/d) compared to the existing human health toxics criteria . The costs of complying with the existing toxics criteria will not be analyzed for this fiscal review.
* There are two main elements contained in this fiscal analysis: (1) Direct and Indirect impacts attributable to the criteria revisions, and (2) Impact of using different implementation tools

**Sources for Analysis:**

1. [*Cost of Compliance with Water Quality Criteria for Toxic Pollutants for Oregon Waters*](http://www.deq.state.or.us/wq/standards/docs/toxics/ORToxicsComplianceCost.pdf) *, SAIC (June 2008)—*The EPA contracted Science Applications International Corporation (SAIC) to develop a report that provided estimates of the potential incremental compliance actions and costs that may be associated with increasing the fish consumption rate associated with calculating human health toxics criteria. The report extrapolated compliance costs for both baseline criteria (i.e. the criteria in effect at that time: Table 20 and Table 33A) and incremental costs derived from criteria based on various higher fish consumption rates. This report constitutes the most current and relevant source of information the department has in regards to fiscal and economic impacts based on using a higher fish consumption rate. Discussions of the report’s limitations are acknowledged throughout the report.

Although there were various limitations associated with the report, it is the most current and relevant source of information the department has in regards to fiscal and economic impacts based on using a higher fish consumption rate.

Note that the SAIC report used the currently effective criteria at the time of the report to determine the base costs for compliance, which were primarily those criteria contained in Table 33A that are based upon a fish consumption rate of 17.5 g/d. Therefore, the report didn’t analyze the cost of attaining the criteria based on the currently effective FCR of 6.5 g/d. Although the currently effective toxics criteria are based on 6.5 g/day given EPA’s June 2010 disapproval of criteria based on 17.5 g/day, DEQ will use SAIC’s baseline cost estimates derived from a FCR of 17.5 g/day to estimate incremental costs of complying with the proposed FCR of 175 g/day.

2*.* [*Fiscal Impact and Implementation Advisory Committee (FIIAC) Memo*](http://www.deq.state.or.us/wq/standards/docs/toxics/FIIACMemoToEQCFinal.pdf)—The DEQ, EPA, and CTUIR convened a group of interested experts who could help to develop feasible implementation options resulting from a higher fish consumption rate and to provide input on the impacts these options may have on a wide range of permitted dischargers, the public, and other stakeholders throughout the state. The expertise of the group ranged from backgrounds in economics, business administration, public works, public health, water quality, and engineering. The FIIAC developed a memo which provides an overview of the charge of the FIIAC, summarizes discussions around costs, benefits and implementation ideas that were considered by the group, and highlights conclusions and concerns regarding the SAIC report.

3. *NPDES Implementation Issue Paper, ODEQ (October 2010)*—This issue paper was developed by DEQ staff to support the human health toxics rulemaking. The paper is comprised of various potential NPDES implementation tools that could be used in complying with more stringent toxics criteria. Each section describes the tool and includes information such as, policy evaluations, DEQ recommendations, alternatives considered, work group discussions and views, proposed rule language and a framework for implementation.

4. *Division 41 and 42 Issue Paper, ODEQ (October 2010)*—This issue paper was developed by DEQ staff to support the human health toxics rulemaking. The paper discusses potential approaches to revise rules in Divisions 41 and 42 to clarify DEQ’s regulatory authority to control nonpoint sources of pollution.

5. [*EPA National Recommended Water Quality Criteria Website*](http://www.epa.gov/waterscience/criteria/wqctable/)

6. [*Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*](http://www.epa.gov/waterscience/criteria/humanhealth/method/), EPA (2000). EPA 822-B-009-004.

7. Input from Rulemaking Workgroup members and DEQ staff

1. **Direct and Indirect Impacts Attributable to the Criteria Revisions**

The general public, small and large businesses, communities, and public agencies will likely be impacted by the proposed criteria changes either directly and indirectly. The establishment of criteria, by themselves, has no direct impact or effect. Rather, how the Department applies those criteria will affect Oregonians. Specifically, the Department may require modifications to wastewater discharge permits and the use of various implementation tools, and to certifications for sediment removal and fill activities and hydroelectric operations to comply with the revised criteria. The new criteria might result in more waters being listed as having impaired water quality. In addition, the revised criteria may alter the management practices required to control discharges from nonpoint sources, including those subject to Total Maximum Daily Loads (TMDLs) established for water quality limited waterbodies.

It is difficult to make a direct comparison between the currently effective criteria and the proposed criteria and the subsequent associated fiscal and economic impacts. Part of the complication arises from the 2004 rulemaking which segregated criteria into two tables (one effective for permitting purposes in advance of EPA’s action and one *not* effective until EPA action). The result of this rulemaking was that dischargers were required to comply with more stringent human health criteria based on 17.5 g/day, while other CWA programs were based on 6.5 g/day (e.g. 303(d) list). For various reasons, EPA did not take action on DEQ’s 2004 toxics criteria until June 1, 2010, when the majority of human health criteria were disapproved based on EPA’s conclusion that the fish consumption rate was not protective of Oregon consumers. While the majority of the revised criteria were disapproved, EPA approved the withdrawal of values for eight toxics pollutants. Among the criteria disapproved were approximately 44 toxics that DEQ added as part of the 2004 rulemaking. Many of the new criteria values DEQ adopted were the result of criteria changing from totals of that chemical to individual species of that chemical group (e.g. PAHs, endosulfan, dichlorobenzenes). In addition, DEQ’s currently effective standards include approximately ten criteria values that do not rely on a fish consumption rate. Instead, criteria are derived, for example, from drinking water MCLs. Consequently, the criteria adopted in 2004 did not change and remained the same. The table below depicts a general comparison of current versus proposed criteria. Please refer to Table 1 in Appendix B for the full analysis.

|  |  |
| --- | --- |
| **Which Criteria are More Stringent?**  **Proposed vs. Current** | **\*Number** |
| Proposed | 48 |
| Current | 4 |
| Same | 10 |
| Mix\*\* | 6 |
| **TOTAL** | **68** |

\* Analysis only includes criteria that have both current and proposed criteria and does not include criteria that were either withdrawn or added

\*\* For example, a “water + org” proposed criterion for a chemical becomes less stringent, but then a new “org only” criterion was proposed.

Approximately 48% of the proposed human health pollutants have Quantification Limits (QLs) which are higher than the actual criterion. For that reason, there may be small quantities of pollutants in Oregon’s waterbodies that cannot be measured given limitations in analytical methodologies. For permitting purposes, the QL becomes the compliance point for dischargers. Consequently, if the criterion for any particular chemical becomes more stringent, but the QL remains higher than the criterion, there would be no effective change in the point of compliance. As laboratory methodologies improve, it is likely that QLs will begin to shift lower towards (or be lower than) the water quality criterion of these pollutants. While historically, the pace of change in laboratory methodologies has not been rapid, when methodologies improve, additional toxics listings and WQBELs established for dischargers may result.

* 1. **Identifying pollutants most likely to present challenges for sources**

**i. The SAIC Report**

The SAIC Report identified three pollutants where additional controls may be needed to achieve lower criteria: (1) arsenic; (2) Bis(2-ethylhexyl)phthalate; and (3) mercury. However, as part of the 2004 rule revision, Oregon withdrew its national CWA § 304(a) human health criterion for total mercury and replaced these criteria with a new fish tissue-based “organism only” human health criterion for methylmercury. DEQ does not have a current criterion for methylmercury, given EPA’s June 1, 2010 disapproval of the criterion based on 17.5 g/day, however a new criterion based on 175 g/day will be proposed as part of this toxics rulemaking. Consequently, until data on methylmercury are collected and analyzed, it is unclear what the state of compliance will be.

The revised criterion for arsenic, along with revised criteria for iron and manganese will be proposed in a separate rulemaking from this package and is anticipated to be adopted by the EQC in December 2010. Because DEQ is proposing a higher criterion for arsenic than what was reflected in the SAIC report, some of the compliance issues associated with arsenic may be minimized. The economic and fiscal impact of this separate rulemaking was analyzed as part of the separate rulemaking and will not be addressed here.

The current QL for Bis(2-ethylhexyl)phthalate is now higher than the proposed criteria, therefore the QL will become the effective compliance point.

**ii. Listings for pollutants and pollutants identified as “potential concern”**

Water column sampling, as well as fish tissue sampling and sediment analysis through work of DEQ staff, other state agencies, federal agencies, and other groups have indicated the presence of toxics in Oregon’s waterbodies. Overall, there are a total of 249 water body segments listed on the 2004/2006 Integrated Report for a toxic pollutant criterion.

* 27 of those, or 11%, are listed for mercury. (These listings are based on fish consumption advisories and therefore, are not likely to change due to the change in the water quality standard.)
* 107 of those, or 43%, are listed for arsenic, iron or manganese, and therefore, are not relevant for this analysis.
  + - Other most commonly listed pollutants are beryllium, dieldrin, DDT, PCBs, chlorpyrifos, and copper

For a complete list of waterbodies which exceed criteria for certain toxics, please see 303(d) listings in Appendix C. Also see Appendix C for a table depicting pollutants of potential concern.

Human health criteria based on a FCR of 175 g/day are anticipated to be adopted in June 2011. Consequently, the 2010 Integrated Report, once released, will only reflect 303(d) toxics listings based on water quality criteria from Table 20. However, beginning in 2012, the Integrated Report will reflect listings based on the revised criteria. Depending on monitoring results and the ability to quantify low concentrations of toxic pollutants (i.e. QLs that are lower than the criteria), there may be additional listings for toxics in the 2012 Integrated Report or reports thereafter. For some toxic pollutants, DEQ anticipates removing waterbodies in future 303(d) lists delists based on: (1) criteria that were recently approved by EPA in June 2010 to be withdrawn as water quality standards (i.e. beryllium, cadmium, chromium III and VI, lead, mercury, silver, and trichloroethane 1,1,1,) and (2) criteria changes to arsenic, iron, and manganese as proposed in a current rulemaking. However, it is difficult for DEQ to predict which other toxics could pose potential issues in the future, given the generally small amount of ambient and effluent monitoring data.

**iii. Likely industrial sectors discharging pollutants**

Of the 19 facilities covered by major industrial NPDES permits, approximately nine are pulp and paper industries. Of the remaining 10 facilities, there are several smelting or refining industries, electronics and chemical manufacturing, and food processors. In a summary review of these 19 permits, effluent limits had been established for several toxics, as well as additional monitoring requirements for selected toxics. The table below contains a summary of current toxics effluent limits and requirements for monitoring for a selection of major industrials. Food processing permits did not appear to have effluent limits for toxics.

| **Category** | **Toxic Effluent Limits** | **Additional Toxics Monitoring** |
| --- | --- | --- |
| **Pulp & Paper Industry** | -arsenic (total), adsorbable organic halides (AOX), 2,3,7,8-TCDD, lead, and zinc | -Whole Effluent Toxicity, metals (including total arsenic), inorganic arsenic, cyanide, total phenols, volatile compounds, acidextractable compounds, and pesticides  - Priority Pollutant Scan - metals, cyanide, and total phenols  -Priority Pollutant Scan - organic toxic pollutants |
| **Primary Smeltering and/or Refining** | -benzo (a) pyrene, antimony, nickel, aluminum, free cyanide | PCBs |
| **Electronics** | -total chromium, total toxics organics (sum of the concentrations for approximately 14 toxic organic compounds) |  |

1. **Applicability and Potential Effect of Rulemaking Associated with NPDES Permits and §401 Water Quality Certifications**

Generally, the proposed human health criteria for toxics would be applicable to all individual and general permits. The degree to which these permits are in fact affected by the new and revised criteria will be determined by an analysis of ambient and effluent data. Analysis of monitoring data may indicate the need for WQBELs. Dischargers with WQBELs for toxics could have varying costs, ranging from minimal staff time involvement (e.g. employing intake credits) to installing various capital improvement measures to meet WQBELs.

Dischargers will not need to modify existing permits to immediately comply with new criteria at the time of EPA approval if that approval occurs during their permit cycle. However, at the time of permit renewal, new WQBELs would need to be developed, if needed, to meet revised water quality criteria.

The SAIC report indicated that some dischargers could have compliance issues in complying with current toxics criteria. The chart below indicates that the greatest proportional cost would be attributed to complying with the baseline standard (i.e. 17.5 g/day), rather than the incremental costs associated with a higher fish consumption rate. The highlighted cost range below indicates the incremental costs of complying with a FCR of 175 g/day, not taking into account inflow and infiltration (I&I)[[1]](#footnote-1) of arsenic, since the separate rulemaking for arsenic may mitigate these costs.



**i. Industrial Permits**

|  |  |  |
| --- | --- | --- |
| **Facility Type** | | **No.** |
| Major Industrial |  | 19 |
| Minor Industrial |  | 130 |
| **Total** |  | **149** |

Industrial permits have a complex process to determine monitoring requirements based on the industrial category and the potential for toxicity in the receiving waterbody. The monitoring requirements at a specific facility are determined based upon factors such as industrial category, pre-existing permit status, hazardous material present, new source performance standards or permit writer discretion. The discharger may also be required to conduct additional monitoring that is tied to the pollutants identified in a pretreatment program, 303(d) listed waters or ambient waters. As a result, conclusions about whether or not an industrial facility will likely be impacted by more stringent requirements are a site-specific analysis, and broad conclusions are difficult to reach.

*Small Business Impacts to Industrial Dischargers*

Preliminary research indicates that none of the 19 major industrials are small businesses (50 or less employees). DEQ is unaware of how many of the 130 minor industrial permit holders are small businesses, since DEQ does not track this level of information.

**ii. Stormwater Permits**

DEQ issues three different types of stormwater permits: individual Municipal Separate Storm Sewer System (MS4) permits, construction stormwater permits, and industrial stormwater permits. Because stormwater discharges are intermittent, DEQ does not apply the human health criteria (which are generally based on a 70 year exposure) to permits for these discharges and instead, uses the aquatic life criteria as the basis for stormwater permit requirements.  Therefore, DEQ would not anticipate any fiscal impact to permit holders or DEQ related to stormwater permits attributable to the proposed criteria.

**iii. General Permits for Activities Other than Stormwater**

The 1500A is the only general permit with requirements for toxic pollutants that have human health criteria that would require additional work to modify requirements based on the revised human health criteria. The 1500A permit covers petroleum hydrocarbon cleanup from groundwater or surface water. It expired on June 30, 2005. There are 20 facilities registered to the permit. There is an effluent limit for BETX, which is quantified based on an EPA approved test method to determine the total amount for benzene, ethylbenzene, toluene and xylene. There is an effluent limit of 0.025 mg/L (25 ug/L) for benzene. A 10:1 dilution is required for the mixing zone in the current permit. These effluent limits are met at the end of pipe by treating contaminated water with air stripping and/or activated carbon adsorption or equivalent in order to meet the permit limits. With a dilution of 10 and a revised criterion of 0.44 ug/L for benzene, the effluent limit at the end of pipe for benzene would have to meet 4.4 ug/L. Effluent limits would then need to be lowered. It is not known whether technology can consistently meet a lower effluent limit. This work would be completed as part of the general permit renewal.

*Small Business Impacts to Entities Covered Under General Permits*

It is unknown how many of the 20 facilities holding 1500A permits are small businesses (50 or less employees). DEQ does not track this kind of information.

**iv. Local Government**

**Domestic Permits/Publicly Owned Treatment Works (POTWs)**

|  |  |
| --- | --- |
| **Facility Type** | **No.** |
| Major Domestic | 49 |
| Minor Domestic | 154 |
| **Total** | **203** |

The proposed toxics rulemaking would directly impact all major domestic facilities (i.e. POTWs) that monitor for toxics. Generally, minor domestic sources (a domestic facility of less than one million gallons per day (MGD)) have much reduced monitoring, and, subsequently, permitting requirements than major domestic sources. The permit writer must conduct a Reasonable Potential Analysis (RPA) for toxic pollutants for major domestic sources (i.e. average dry weather design flow of at least 1 MGD). For minor sources, a permit writer may conduct a RPA for all listed toxic pollutants if there is a potential of water quality degradation due to non-typical factors such as significant industrial discharge, lack of available assimilative capacity or an incompatible treatment system.

Generally, it is unlikely that minor municipal dischargers would incur significant costs for compliance with either the baseline or proposed revised toxics criteria. Major domestic sources could incur costs. Costs will depend on compliance tools available for each individual circumstance.

*Other Local Government*

Toxic pollutant source reduction strategies could directly affect local governments in the form of specific ordinances to reduce urban sources of pollutants, as may be required through a TMDL analysis or to address stormwater not covered by MS4s. It is unknown how many could be impacted at this time.

**v. 401 Certifications**

The majority of activities for which DEQ issues Clean Water Act section 401 certifications would not be impacted by the proposed changes to the water quality criteria since the parameters of interest are typically conventional pollutants (e.g., dissolved oxygen, turbidity, temperature, etc.). However, there may be an impact to applicants (e.g. U.S. Corps of Engineers, Port of Portland) who propose sediment removal and fill projects, since some toxic pollutants that may be contained in the sediments can be released or moved into waterbodies through movement of soil. Additional testing of the sediment may be required to assure that projects do not exceed water quality criteria for toxics and, if needed, mitigation measures may be required to reduce the impact of project.

1. **Monitoring costs based on priority pollutant scans and other required monitoring**

Generally, the costs of monitoring for dischargers could increase. If there is reasonable potential for a discharge to cause or contribute to an exceedance of applicable water quality standards, more discharge monitoring may be needed which would increase analytical costs. Additionally, there could be a slight increase in the number of monitoring sites and/or frequency of sampling due to implementation tools used to stay in compliance (e.g. to sufficiently characterize ambient conditions for variances, or monitoring data needed to meet a background allowance provision). Other potential analytical costs related to new QLs, analyzing individual species of pollutants, and costs for methyl mercury analysis are discussed under Fiscal and Economic Impacts to DEQ (See section III). Analytical costs described there would also be similar to costs possibly incurred by dischargers.

With more stringent toxics criteria, there could be additional waterbody listings for toxic pollutants and an increase in the subsequent number of TMDLs developed to meet toxics load allocations. Designated Management Agencies that may be identified as part of the TMDL include ODA, ODF, BLM, USFS, municipalities, and irrigation districts and they may need additional resources in order to conduct additional monitoring for toxics listings as well as for TMDL implementation tracking and BMP effectiveness monitoring. These monitoring costs may not be realized until sometime after the approval of the next Integrated Report, which would reflect any new listings based on the proposed toxics criteria.

1. **Indirect Effects**
   * 1. **Potential Indirect Effects Associated with Municipalities**
        1. Pretreatment

Some businesses do not directly discharge to a waterbody but rather, discharge to a municipal collection system under a municipality’s pretreatment program. These businesses may be subject to additional requirements from the municipality. Currently, 23 POTWs have pretreatment programs that place requirements upon businesses discharging to their collection systems. All 23 POTWs have set local limits for metals with only one pretreatment POTW having additional limits for: pentachlorophenol, chlorobenzene, chloroform, trichloroethylene, acrylontrile, 1,2-dichloroethane, 2,4-dinitrotoluene, nitrobenzene, and chlordane.

It is possible that POTWs unable to meet effluent limits contained in the NPDES permit may explore pretreatment requirements for indirect dischargers with known pollutants of concern. However, it is unknown at this time whether POTWs in addition to the 23 with existing pretreatment programs will develop their own pretreatment programs or set local limits for additional toxic pollutants based on more stringent criteria. It is also unknown what the associated costs could be for the indirect discharger with pretreatment requirements. For example, a POTW may not be able to accommodate business or industrial waste streams given new effluent limits for toxic pollutants. Consequently, some businesses and industries would need to disconnect from the sewer system and manage their wastewater on site. The types of businesses that would likely be most affected by local limits imposed by the municipality would be high tech producers, platers, dental offices, and photo processors (ACWA Memo, March 4, 2008).

*Small Business Impacts to Indirect Dischargers*

DEQ surveyed the five largest pretreatment programs and determined that out of total number of 285 significant industrial users, approximately 130 users[[2]](#footnote-2) were small businesses. DEQ does not have any data that would lead to any conclusions about how many of these businesses would likely be impacted by the proposed revised criteria.

* + - 1. Costs passed on to municipal ratepayers

Indirect impacts to the general consumer may involve rate increases to water and sewer bills to offset compliance strategies, monitoring, etc. utilized by POTWs. Depending on the costs of the compliance strategies, rate adjustments would vary.

* + 1. **Potential Indirect Effects Associated with Industrial Sources**

For consumers of industrial goods, various compliance strategy costs to produce goods could be passed on to consumers in the form of increased prices. Higher costs for goods and services could drive consumers to other lower-cost competitor products which are not affected by more stringent water quality compliance responsibilities.

1. **Implications for other sources (direct and indirect implementation)**

SAIC report states that existing regulatory programs are currently not fully implemented for nonpoint sources. As a result, it is not possible to determine the additional controls that are required to be in compliance above what would be required if the current regulations are fully implemented. Precise fiscal and economic impact from the rulemaking therefore cannot be determined. DEQ has determined that this proposed rulemaking will not have a significant fiscal and economic effect on the following sectors of nonpoint sources of pollution.

* + 1. **Agriculture**

*Source of Information: SAIC Report, Fiscal Impact Analyses from AgWQMA Rule making, Kevin Masterson (Agency Toxics Coordinator)*

* + - 1. Relevant pollutants

The List of relevant Pollutants for nonpoint sources (Appendix A) shows pollutants on Table 40 that are applicable to agriculture. The relevant pollutants to agriculture include a couple of current use pesticides, but most of them are legacy pesticides.

* + - 1. Changes in agricultural activities and conservation practices

In Oregon, agricultural activities are subject to AgWQMA rules that prohibit pollution. . AgWQMA Plans and Rules are the mechanisms used for agriculture to meet water quality standards and where applicable, TMDL load allocations. There is a possibility that AgWQM Area plans and rules will need to be revised in order to meet the proposed amendment to the toxics water quality standards in some areas.

* + - 1. Types and Numbers of small business

According to Oregon Farm Bureau, 97% of Oregon farms and ranches fall under the category of small businesses based on the definition of small businesses being 50 or less FTEs.

*Impacts on small businesses and general public*

Agricultural activities are already subject to AgWQM AreaPlans and Rules that prohibit pollution. Because these plans and rules already require and provide the mechanism for agriculture to meet the water quality standards and TMDL load allocations, DEQ has determined that this proposed rulemaking does not have direct fiscal impacts or effects on small businesses and general public. If AgWQM Area Rules need to be revised in order to comply with the proposed toxics WQS, there could be increased costs for some private landowners to comply with the rules including one-time costs for capital improvements. These changes, however, will take years to be implemented.

*Impacts on State Agencies*

Oregon Department of Agriculture[[3]](#footnote-3)

*Fish Consumption Rate*

Existing Agricultural Water Quality Management Area Plans and Rules are expected to be adequate to achieve TMDL load allocations and meet water quality standards on agricultural lands. The plans rely on both voluntary and regulatory approaches to implement management measures that prevent pollution by controlling upland erosion and sediment transport, restoring and maintaining riparian vegetation, appropriately utilizing nutrients, and addressing other agricultural activities as needed to protect surface and ground waters. The plans rely on, and the rules are generally limited to, available and technically feasible conservation practices. The cost of these practices were considered in adopting current area plans and rules.

*Impacts on Small Business*

If additional practices must be developed or requirements otherwise increase or are better defined, there may be increased costs of production or land management to farmers and landowners on rural lands who operate as small businesses.

*OAR 340-041-0061(12)*

The proposed rule describes how DEQ would communicate through the EQC to ODA if DEQ believed that an area plan was not adequate to achieve a water quality standard. Currently, all waters of the state on agricultural lands are addressed with one of 39 area plans and area rules to implement them. The area plans are designed to achieve water quality standards and meet TMDL load allocations. Because ORS 568.930 currently provides for the EQC to petition ODA for changes to the area plans, no additional cost from this proposed rule is anticipated. If DEQ determines any of the area plans are inadequate, in some aspect, there could be additional cost to ODA, and possibly to landowners, if the area plans must be modified.

The proposed rule also clarifies that DEQ has the authority to require a landowner to change their activities if found to be causing or contributing to a water quality standards violation. The rule reflects current DEQ practice of first referring the landowner to ODA to resolve the issue. Because this rule clarifies existing interagency practice to address pollution from agricultural activities, no additional cost to ODA or landowners is anticipated.

*OAR 340-042-0080(2)*

This proposed rule explains that area plans and rules must be adequate to prevent and control water pollution from agricultural activities and soil erosion as provided by ORS 568.900 to 933 and 561.191. The rule allows the DEQ to request the EQC to petition ODA to modify an area plan if it believes the plan to be inadequate. Because the ability of the EQC to petition ODA is provided in law and is currently available to the EQC to resolve any perceived plan deficiencies, no additional cost is anticipated by this proposed rule change.

The proposed rule also allows DEQ to assign load allocations to specific agricultural sources or sectors. As with TMDLs generally, the cost of compliance can be shifted from one type of source to another through assignment of load allocations. Any specific load allocation would be achieved through an area plan and implementation of area rules. Since plans and rules are currently designed to meet load allocations by implementing available conservation practices, any increase in specific load allocation could result in additional cost to the agricultural producers in that source or sector. Until an individual source or sector has been identified in this way, it is not possible to estimate any additional cost compared to current requirements to prevent and control pollution.

*Implementation Ready TMDL*

* *TMDL Development*

DEQ proposes to develop TMDLs with improved spatial scale and source assessment. The potential benefit would be to better inform ODA, other agricultural agencies, and landowners more specifically where water quality problems exist and restoration projects or management changes would be most beneficial. There would likely be no direct cost savings because the amount of work to be done is large compared to the resources available. However, the investments in time and effort could, potentially yield better water quality results.

DEQ proposes to include timelines and associated milestones in TMDLs. A potential benefit of this would be to allow area plans to set clear objectives and work effectively and measurably toward the identified milestones. Costs could potentially be increased to ODA and landowners if timelines are accelerated beyond the current implementation rate. Until individual TMDL timelines and milestones are created, it is not possible to estimate potential additional costs.

* *TMDL Implementation*

DEQ proposes to further clarify TMDLs goals by working collaboratively with ODA to identify surrogates to water quality standards and evaluate measures to effectively achieve the surrogates. A benefit could be realized by using surrogates that are easily applied by landowners and reported as progress in implementation. No additional cost is anticipated, however landowners and local agencies may be able to work more effectively toward agreed upon water quality goals.

* + 1. **Forestry**

*Source of Information: SAIC Report, Kevin Masterson (Agency Toxics Coordinator)*

* + - 1. Relevant pollutants
      2. The List of relevant Pollutants for nonpoint sources (Appendix A) shows applicable pollutants on Table 40 for forestry. These pollutants include a couple of current use pesticides. Changes in forest activities and conservation practices
      3. Forest activities are subject to Forest Practices Act and rules to meet the water quality standards and TMDL load allocations. Because these rules already require and provide the mechanism for forestry to meet the water quality standards and TMDL load allocations, the agency does not expect significant fiscal or economic impacts on forest lands. Types and Numbers of small business

According to information provided by OSWA, there are over 100,000 small businesses that own forest land in Oregon.  Approximately 70,000 families own 10 to 5,000 acres and these ownerships are organized in various small business structures. In addition, there are 70,000 more families that own between 2 to 10 acres of forestlands and some of these fall under the small business category.

*Impacts on small businesses and general public*

Forest activities are subject to Forest Practices Act and rules in order to meet water quality standards and TMDL load allocations. Because of these requirements that are currently in place, DEQ has determined that this proposed rulemaking does not have direct fiscal impacts or effects on small businesses and general public. If FPA Rules need to be revised in order to comply with the proposed changes to the toxics WQS, and if those changes result in restrictions to timber harvest or other forest management activities that reduce growth and yield, there could be, in some cases, increased costs for private landowners to comply with the rules. The outcomes of these rule changes are difficult to predict and also will take years to be implemented.

*Impacts on state agencies*

Where toxics TMDLs are developed due to proposed lower criteria, ODF may need additional staff resources for administrative and technical assistance.

* + 1. **Non-Permitted Urban Sources**

*Source of Information: SAIC Report, Kevin Masterson (Agency Toxics Coordinator)*

* + - 1. Relevant pollutants

Appendix A, the List of relevant Pollutants for nonpoint sources, indicates the pollutant on Table 40 that are applicable to urban areas.

* + - 1. Changes in urban BMPs

For non-MS4 communities and facilities without NPDES requirements, TMDLs are the main driver for developing water quality management plans. Since TMDLs already require local governments and counties as designated management agencies to develop and implement TMDL implementation plans, the agency does not expect significant fiscal or economic impacts for urban sources as a result of this rulemaking process.

* + - 1. Types and Numbers of small businesses affected

If new ordinances and codes are required in order to meet TMDL load allocations that are based on the proposed revised toxics WQS, there could be an indirect fiscal impact to all small businesses that are within the boundary of the TMDLs.

*Potential Impacts on small businesses and general public*

Urban stormwater and other water quality parameters in urban areas are subject to TMDLs. DEQ has determined that this proposed rulemaking does not have additional fiscal impacts or effects on small businesses and general public. If new ordinances and codes are required in order to meet TMDL load allocations that are based on the proposed revised toxics WQS, there could be an indirect fiscal impact to small businesses and general public to implement additional control measures.

*Impacts on other state agencies*

The department does not expect other state agencies to experience significant fiscal or economic impacts.

* + 1. **Land & Air sources**

*Source of Information: SAIC Report, Kevin Masterson (Agency Toxics Coordinator)*

* + - 1. Relevant pollutants

The List of relevant Pollutants for nonpoint sources (Appendix A) shows which pollutants are naturally occurring or could potentially be air deposited on Table 40.

* + - 1. Changes in air source control

DEQ made a policy decision to limit the scope of the toxics water quality standards rulemaking to divisions under water program. The actual regulatory mechanism for addressing TMDL allocations through other media programs still needs to be defined and described.  Since DEQ has all along had the authority to assign load allocations to air sources, the current rulemaking process does not have any fiscal or economic impact.

*Types and Numbers of small businesses affected*

Fiscal analysis for air sources will be determined if air rules need to be revised or established in order to implement TMDL load allocations.

*Impacts on small businesses and general public*

Air sources are already subject to TMDLs under current rules. DEQ has determined that this proposed rulemaking does not have direct fiscal impacts or effects on small businesses and general public.

**3. Impacts on state agencies**

The department does not expect other state agencies to experience significant fiscal or economic impacts.

**e. Potential increase in number of listings and need for TMDL development**

*Source of information: SAIC Report, draft 2010 303(d) list (if available)*

* + 1. Analysis to identify likelihood of additional listings

For some of the pollutants that were evaluated for the SAIC report, the percent of the data that exceeded the criteria increased with higher fish consumption rate.

* + 1. Implications/costs for entities (Indirect effect/cost)

See previous section, *Implications for Other Sources* for the potential impacts on sources.

**f. Benefits attributable to revision and implementation of human health criteria for toxics**

*Source of information: FIIAC memo, SAIC Report*

DEQ did not have the financial resources to conduct a quantitative analysis of the direct and indirect potential benefits associated with an increased fish consumption rate, however, the FIIAC committee members along with representatives from the Oregon Environmental Council and CTUIR agreed that while economic benefits can be difficult to analyze, it is important to describe potential benefits, at the very least, in a qualitative manner. A key outcome of revised water quality standards based on a higher fish consumption rate would not only benefit consumers of fish, but also achieve more stringent water quality criteria by reducing toxic contamination in waterways. The level of benefits achieved will depend on the degree to which pollution reduction is accomplished. Benefits associated with toxics rulemaking were discussed in the FIIAC memo and are summarized below:

**Table 1: Potential Benefits of Raising the Fish Consumption Rate and Meeting the Standards**

|  |  |
| --- | --- |
| ***Benefit*** | ***Examples*** |
| Human Health | -safe drinking water;  -avoided costs from environmentally attributable diseases;  -reduced risk for those who do eat fish;  -recreational – reduced risk from water contact |
| Environmental | -water reuse opportunities from cleaner effluent;  -business—cleaner intake water for downstream industries;  -ecosystem health;  - tourism;  -amenity/aesthetic/property values;  -avoided costs to industries and utilities;  -fewer contaminants;  -fishing – tribal, commercial, recreational and subsistence;  -improve other species in the food chain: birds, etc.;  -higher quality water supply |
| Cultural | -enable religious/ceremonial activities;  -children;  -healthy fish – icon of the Northwest  -local, and sustainable food options |

**Table 2: Potential Benefits of Specific Implementation Strategies**

|  |  |
| --- | --- |
| **Strategy** | **Potential Benefit** |
| Toxic Reductions | -Reduced human health impacts;  -innovative possibilities used to reach more efficient systems when not fearful of litigation stemming from strict liability regulatory framework;  -costs of litigation reduced;  -reduced O&M;  -reduced hazardous waste removal costs; |
| Stormwater Control | -Co-benefits for toxics reductions and control of other important stressors that affect fish health such as sedimentation and warm water temperatures |
| Infiltration and Inflow (I&I) | -Reduce quantity of water and toxics entering plant, reducing operating costs |

**II. Impact to Dischargers Utilizing Different Implementation Tools**

Many pollutants are ubiquitous in the environment because they occur naturally or result from a variety of human activities. In Oregon, background pollutant levels in waterbodies may already exceed water quality criteria and can contaminate a facility’s wastewater through the facility’s intake water (or in the case of municipal wastewater treatment facilities, some contaminants may be present in the drinking water). Intake credits, background pollutant allowances, and variances are implementation tools that can be used to address background contaminants.

In addition, there are numerous end-of-pipe treatment technologies that could be used to reduce toxic pollutants in wastewater effluents. Some technologies are proven and are commonly in use and others, while conceivably may be able to be used to treat to lower levels, may not yet be proven for wide-scale use. In the latter case for some treatment technologies, there is a lack of performance data available to show that advanced treatment technologies will result in effluent concentrations necessary to comply with requirements that would result from the revised criteria. In some cases, pretreatment of effluent would be necessary before use of removal technologies. Additional full scale process testing would need to be performed before the technology could be used on a commercial basis. In addition, some of the residuals (e.g. brines, spent resin) associated with some of the technologies may be considered hazardous, since pollutants removed from wastewater can be concentrated to very high levels. Consequently, disposal options may be limited and costly. Ongoing operation and maintenance costs can also be significant for some of the treatment technologies. For more information on specific treatment technologies, including advantages, disadvantages, and some limited costs, please refer to Appendix C in the SAIC Report.

Because there may not be feasible treatment technologies to remove low concentrations of toxic pollutants or parallel concerns regarding residual management, some dischargers may pursue other implementation tools to comply with revised criteria. Some of the following tools are new (or revised), while other tools already exist in DEQ regulations. Generally, these tools would still be protective of human health and the environment, yet provide a lower cost alternative to complying with water quality standards than costs associated with removal technologies.

**i. New Implementation Tools**

1. Variances with pollution reduction plan

DEQ is proposing to revise its current water quality standards regulation to include variances with a pollution reduction plan as an implementation pathway. Variances provide a mechanism for achieving water quality improvements when underlying water quality standards cannot be met in the short term. This provision may only be allowed under limited circumstances. Variances are applicable to all types of pollutants, although DEQ anticipates that variances for toxic pollutants will be the majority of variance requests and approvals.

If a discharger is unable to comply with a water quality standard because, for example, there are no feasible or affordable treatment technologies available, variances could be pursued as a lower cost alternative, while remaining in compliance. Despite lower anticipated net costs, there would still be incremental costs associated with variance requests and approvals for dischargers using this implementation tool. Potential costs include costs to sources to prepare and support an application (e.g. collecting water quality data, conducting an economic analysis, literature review for feasible pollutant removal technologies, etc); developing a pollution reduction plan, including potential offset strategies and implementing actions contained in the plan.

The SAIC Report estimates that one-time expenditures associated with variance applications could range from $1.43 M to $7.05 M (total statewide) with a FCR based on 17.5 g/day; incremental variance-related expenditures could range from $0.59 M to $2.68 M (total statewide) under revised criteria.

It is anticipated that the majority of upfront costs would be at the time of the initial variance request. Discharger costs associated with a renewal of a variance would be significantly less, as most of the information required for a request would be an update of existing information gathered from the initial request.

2. Intake credits

Intake credits will be implemented at the time DEQ’s permit writer is determining whether a particular facility has the reasonable potential to cause or contribute to an exceedance of the water quality standards. Where the conditions meet the requirements in the regulation, the permit writer would conclude that the facility does not need additional water quality based requirements in their limit. Without this provision the facility could have been subject to water quality based requirements and incurred the associated costs with meeting effluent limits or other requirements. As a result, where this implementation tool could be employed, the facility would avoid significant costs that would otherwise be incurred. DEQ expects that minimal input (in the form of additional monitoring data, etc.) would be needed from dischargers to facilitate the use of this tool.

3. Background pollutant allowance

The background pollutant allowance allows a discharger to discharge effluent that is up to 3% higher than the background pollutant concentration of a water body that approaches or exceeds an applicable human health criterion (mass cannot be increased). The availability of this tool would very likely offset costs that would be incurred by dischargers if they were required to install expensive treatment technologies to reduce pollutant.

DEQ anticipates that some dischargers may need to adjust treatment processes to keep mass of pollutant at or below upstream mass. Costs for this adjustment would vary depending on the process needed. Dischargers may also need to adjust treatment processes to keep pollutant concentration to no greater than 3% of upstream concentration.

Based upon the review of current industrial permits, it is estimated that 32 minor and four major facilities have the potential to be impacted by background pollutants if present at high levels upstream of their facilities.  These facilities typically employ significant quantities of surface water in their processes that result in evaporative loss and an increase in pollutant concentration.

**ii. Existing Tools/Mechanisms**

Generally, there should be no additional costs for administering these tools, unless there is a significant increase in the use of these tools.

1. Compliance schedules

A compliance schedule can be used to implement newly applicable water quality-based effluent limits that the permittee is unable to meet upon issuance of the permit. Although the schedule must ensure that the limits are achieved as soon as possible, it allows the permittee additional time to comply with criteria. DEQ anticipates that the use of this tool will mitigate some of the costs to sources who would otherwise need to immediately comply with effluent limits upon permit renewal

2. General Permits

General permits may be used as an alternative to address background pollutants. Typically, DEQ develops an individual NPDES permit to regulate the discharge of a single effluent stream derived from multiple industrial activities. If this effluent stream from a facility was separated into individual streams, many of these individual industrial activities could qualify for a general permit. Because general permits do not have many of the pollutant monitoring and reasonable potential analysis requirements that individual permits have, it could be more cost effective for dischargers to separate processes and comply with general permit conditions, rather than conduct compliance actions to meet effluent limits resulting from a mixed waste stream.

3. Use Attainability Analysis (UAA)

Federal water quality standards regulations allow states to remove or revise a designated use which is not an existing use if the State can demonstrate that attaining the designated use is not feasible based on one of six reasons. The objective of the UAA is to replace a use with a use that is determined to be attainable. In some cases, Oregon has established designated uses for waterbodies that may not be attainable (e.g. drinking water designated use for irrigation dominated water bodies). By setting appropriate and attainable designated use goals, resources can be allocated where they are more likely to accomplish the desired environmental result. Although there are costs involved to develop a UAA, appropriate designations of water bodies may be less costly than actions needed to comply with more stringent water quality standards based on more sensitive designated uses. In cases where changes in designated uses are deemed to be appropriate, such an action could result in applicable standards that are less costly to meet.

4. Possibility of trading with upstream sources to meet WQBEL

Upstream trading allows a permittee to reduce loading from an upstream source of the same pollutant in order to create the assimilative capacity they need to meet water quality standards. This option could allow a permittee to achieve toxics reductions more cost effectively than meeting effluent WQBELs, as long as there are other sources upstream discharging the same pollutant of concern.

DEQ does not know of any precedence for toxics pollutant trading to comply with a water quality criterion in Oregon or elsewhere outside of a TMDL, given the concern of creating acute toxic environments near the vicinity of the effluent outfall. If such a situation arose, DEQ would carefully evaluate the feasibility of conducting such a trade.

**III. Impact to DEQ Programs, Staff, and Resources**

The following table summarizes potential fiscal and economic impacts to DEQ programs, staff, and resources. Given the recent budget forecasts, DEQ does not anticipate funding additional staff positions in response to this rulemaking. Consequently, staff time spent on implementing lower human health toxics criteria may impact other priorities of the department. DEQ may also receive additional requests to conduct Use Attainability Analyses or develop site specific criteria as a way of complying with more stringent toxics criteria, if appropriate. These rules do not generate revenue for DEQ.

**Table of Potential Impacts to DEQ**

|  |  |  |
| --- | --- | --- |
|  | DEQ Regional Staff | HQ/Lab/Administrative Staff |
| Permitting | | |
| Monitoring | - Estimate 0.5 – 2 days additional hrs per permit needed for staff to determine monitoring requirements. For this rulemaking, average review per permit could slightly increase depending on individual circumstances and compliance tools used. | -Staff and lab time needed for periodic revisions of quantitation limits (QLs)  -Generally, costs increase when criteria for toxic pollutants change from totals to individual chemical species. Costs also generally increase to achieve lower QLs  -The criteria for total mercury will be replaced by a tissue based methyl mercury criteria. Generally, cost for this analysis is higher.  -Some of the monitoring and analysis costs have already been adsorbed given DEQ’s investment in toxics monitoring for SB737, Pesticide Stewardship Program and the toxics monitoring program. |
| WQBELs and/or other WQ Limits | -Regional staff will need to do more WQBEL assessments if RPA indicates that more dischargers will have reasonable potential. Estimate an additional 1 day/parameter/permit to establish QBELs.  -**Intake Credits:** The RPA IMD would include calculations for intake credits and wouldn’t require additional staff time | -Periodic revisions of RPA IMD may be required to account for intake credits  -Increased data input into the Discharge Monitoring System (DMS) which stores information on permit features, schedules,  permit limits, required monitoring and discharge monitoring report data for individually permitted facilities.  -Because stormwater discharges are intermittent, DEQ does not apply the human health criteria (which are generally based on a 70 year exposure) to permits for these discharges.  Therefore, there will not be any anticipated fiscal impact to DEQ related to stormwater permits.  - The only general permit with toxics that would require additional work to modify based on revised human health criteria is the 1500A. The 1500A permit covers petroleum hydrocarbon cleanup from groundwater or surface water. DEQ can incorporate the new permit limits as part of the general permit renewal. |
| Background Pollutant Allowance | -More staff time needed to review applicability of a background allowance request. DEQ estimates an additional 20 – 40 hrs./permit. However, time spent in this analysis could be less than developing other “site specific solutions” if this provision was not available. | -HQ collaboration may be needed in the short term to provide regional consistency in evaluating background pollutant allowances  -Staff time needed for periodic revisions of IMD.  -Do not anticipate greater regional or HQ FTE given budget forecasts, so less technical assistance may be available for other issues/projects |
| Variances | - Regional permit writers will be interfacing with discharger to evaluate data and information needed for variance request and to incorporate permit conditions based on the variance request. In some cases, significant staff time could be spent gathering this information, possibly conducting literature reviews for treatment technology removal capabilities, and/or reviewing fiscal and economic data from discharger. DEQ estimates approximately 2 weeks/variance request.  -Time spent in this analysis could be less than developing other “site specific solutions” if this provision was not available. | - Since DEQ has yet to receive a variance request, the department is unable to specify costs based on past experience, therefore costs and/or resources described here are estimates.  -DEQ anticipates that HQ WQS staff will review variance requests submitted by the permit writer.  - Estimate 0.75 FTE (Standards 0.56 FTE and Permitting 0.19 FTE) to review variance requests and pollutant reduction plans, and coordinate DEQ/EQC/EPA approval.  -SAIC extrapolated the potential number of variance applications for the sample facilities and found that DEQ would need to review approximately 40 requests under the baseline criteria (FCR of 17.5 g/day) and an additional 16 under the revised criteria. Assuming a cost of $3,900 per review, baseline costs could be approximately $159,000 with incremental costs of approximately $65,000 under the revised criteria  -DEQ anticipates ongoing costs to review variances depending on the ability of dischargers to meet effluent limits  -Most likely, staff time in reviewing variances could decrease as the process becomes more efficient. In addition, variance renewals should be less resource intensive.  -Staff time needed for periodic revisions of variance IMD and associated staff training.  -Do not anticipate availability of additional FTE, so less HQ technical assistance available for other issues/projects. |
| Compliance Schedules | -Regional permit writers may need to develop additional compliance schedules for permittees given more stringent toxics criteria. DEQ estimates approximately 40 hrs./compliance schedule development.  -More complex permits requiring oversight and communication with permittees | -HQ permitting staff may assist regional permit writers in developing compliance schedules depending on backlog and permitting priorities |
| Non-Permitting | | |
| More Stringent Criteria  *TMDL monitoring* | -Regional staff may be involved in both developing a sampling and analysis plan and collection of samples needed for development of TMDLs to address waterbodies listed for toxics. | -Lab FTE to develop sampling and analysis plans, collect and analyze data, and develop reports. Will depend on the quality and quantity of data needed for the TMDL and availability of existing data from other sources (e.g. USGS, FWS, BLM, USFS, etc.)  -DEQ does not anticipate additional FTE due to budget forecasts, therefore, costs may be similar to that incurred under the current toxics criteria. However, there may be a backlog of TMDL development due to lack of DEQ monitoring resources |
| *TMDL Development*   1. Implementation-Ready TMDLs: Clarifying EQC and DEQ’s authorities in Divisions 41 and 42 | -Regional staff members lead TMDL development by coordinating with HQ and Lab staff and working with local advisory group.  - The resources needs are expected to double for Implementation Ready TMDLs compared to current subbasin level TMDLs.  (Will give FTE estimates for John Day and Rogue TMDLs here)  - Since DEQ will not seek additional FTE for the TMDL program due to budget forecasts, DEQ expect to issue TMDLs at a slower rate.  - There may also be an additional backlog of TMDL development if there are additional 303(d) listings as anticipated. | -HQ supports TMDL development by providing modeling and programmatic support.  - The resources needs are expected to double for Implementation Ready TMDLs compared to current subbasin level TMDLs.  (Will give FTE estimates for John Day and Rogue TMDLs here)  - Since DEQ will not seek additional FTE for the TMDL program due to budget forecasts, DEQ expect to issue TMDLs at a slower rate.  -Additional resources maybe needed for Lab in order to support the development of monitoring strategies for Implementation-Ready TMDLs.  - There may also be an additional backlog of TMDL development if there are additional 303(d) listings as anticipated.  -According to the SAIC Report, additional technical assistance may be needed in order for the dischargers to meet TMDL waste load allocations. Requests for pursuing variances by facilities may increase, for example. |
| *TMDL Development*  2. Addressing air sources in TMDLs: Clarifying EQC and DEQ’s authorities to regulate air sources to meet TMDL goals in Division 42 | -No significant increase in resource needs for the regional staff members are expected.  -If air depositional load is determined to be significant through TMDL source analysis, resource needs for Air Quality Division may increase to work with facilities and coordinate with Water Quality Division. | -No significant increase in resource needs for the HQ and Lab staff members are expected.  -If air depositional load is determined to be significant through TMDL source analysis, resource needs for Air Quality Division may increase for rulemaking and coordination with Water Quality Division. |
| *TMDL Implementation* | -Regional staff members are central to coordinate implementation efforts and monitoring efforts in their region. Since more work will be done during TMDL development phase, additional resources should not be required for implementation. (It should be noted that there currently is a shortage of staff resources to support implementation of TMDLs that are in place. The need for additional resources to implement TMDLs already exists) | -HQ and Lab provide technical and programmatic support to the region for TMDL implementation.  -Additional resources maybe needed for HQ to provide modeling and analyses associated with Implementation-Ready TMDLs.  (It should be noted that there currently is a shortage of staff resources to support implementation of TMDLs that are in place. The need for additional resources to implement TMDLs already exists) |
| *401 Certifications* |  | - Section 401 of the federal Clean Water Act requires that any federal license or permit to conduct an activity that may result in a discharge to waters of the United States must first receive a water quality certification from the state in which the activity will occur. These discharges must meet any new water quality toxics criteria for human health.  -DEQ does not anticipate additional FTE or resources needed as part of this rulemaking |
| *Integrated Report* |  | -Potential of additional toxics listings  -Will note that recent rulemaking for As, Fe, and Mn will reduce the number of listings for these metals, as well as most likely delist a number of current listings (not part of this analysis however…)  - Data evaluation tools and database systems used to prepare the Integrated Report will need to be revised.  -For 2010 IR, it required 2 FTE ( 1 programmer and 1 standards specialist) for 6 months to evaluate toxics data in LASAR using Table 20 criteria. A similar level of effort is likely needed to revise the data systems to incorporate new criteria. Additional effort will be needed to revise and update the assessment of water bodies done prior to date of EPA approval of new toxic substance criteria.  -Water body analytical data in DEQ’s LASAR data system may need to be synchronized/correlated to include metadata needed to apply new criteria (e.g. CAS numbers, total forms vs. individual species forms) |

**Appendix A: List of Relevant Pollutants for Nonpoint Sources**

|  | **Pollutant** | **CAS number** | **Agriculture (Legacy)** | **Agriculture (Current Use)** | **Forestry (Historic or current)** | **Urban Stormwater** | **Air Deposition (widespread)** | **Naturally Occurring** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| 1 | Acenaphthene | 83329 |  |  |  | y |  |  |
| 2 | Acrolein | 107028 |  |  |  | y | y |  |
| 3 | Acrylonitrile | 107131 |  |  |  | y |  |  |
| 4 | Aldrin | 309002 | y |  |  |  |  |  |
| 5 | Anthracene | 120127 |  |  |  | y | y |  |
| 6 | Antimony | 7440360 |  |  |  | y | y | y |
| 7 | Arsenic | 7440382 | y |  |  |  | y | y |
| 8 | Asbestos | 1332214 |  |  |  | y |  |  |
| 9 | Benzene [represents range] | 71432 |  |  |  | y |  |  |
| 10 | Benzene | 71432 |  |  |  | y |  |  |
| 11 | Benzidine | 92875 |  |  |  | y |  |  |
| 12 | Benzo(a)anthracene | 56553 |  |  |  | y | y |  |
| 13 | Benzo(a)pyrene | 50328 |  |  |  | y | y |  |
| 14 | Benzo(b)fluoranthene 3,4 | 205992 |  |  |  | y | y |  |
| 15 | Benzo(k)fluoranthene | 207089 |  |  |  | y | y |  |
| 16 | BHC Alpha | 319846 | y |  |  |  |  |  |
| 17 | BHC Beta | 319857 | y |  |  |  |  |  |
| 18 | BHC Gamma (Lindane) | 58899 | y |  |  |  |  |  |
| 19 | Bromoform | 75252 |  |  |  |  |  |  |
| 20 | Butylbenzyl Phthalate | 85687 |  |  |  | y | y |  |
| 21 | Carbon Tetrachloride | 56235 |  |  |  |  |  |  |
| 22 | Chlordane | 57749 | y |  |  | y |  |  |
| 23 | Chlorinated benzenes |  |  |  |  |  |  |  |
| 24 | Chlorobenzene | 108907 |  |  |  |  |  |  |
| 25 | Chlorodibromomethane | 124481 |  |  |  |  |  |  |
| 26 | Chloroethyl Ether bis 2 | 111444 |  |  |  |  |  |  |
| 27 | Chloroform | 67663 |  |  |  |  |  |  |
| 28 | Chloroisopropyl Ether bis 2 | 108601 |  |  |  |  |  |  |
| 29 | Chloromethyl ether, bis | 542881 |  |  |  |  |  |  |
| 30 | Chloroethyl Ether bis 2 | 91587 |  |  |  |  |  |  |
| 31 | Chlorophenol 2 | 95578 | y |  |  |  |  |  |
| 32 | Chlorophenoxy Herbicide (2,4,5,-TP) | 93721 | y |  | y | y |  |  |
| 33 | Chlorophenoxy Herbicide (2,4-D) | 94757 |  | y | y | y |  |  |
| 34 | Chrysene | 218019 |  |  |  | y | y |  |
| 35 | Copper | 7440508 |  | y |  | y | y | y |
| 36 | Cyanide | 57125 |  |  |  |  |  |  |
| 37 | DDD 4,4' | 72548 | y |  |  |  |  |  |
| 38 | DDE 4,4' | 72559 | y |  |  |  |  |  |
| 39 | DDT 4,4' | 50293 | y |  |  |  |  |  |
| 40 | Di-2-ethylhexyl Phthalate |  |  |  |  | y | y |  |
| 41 | Dibenzo(a,h)anthracene | 53703 |  |  |  | y | y |  |
| 42 | Dibutylphthalate | 84742 |  |  |  | y | y |  |
| 43 | Dichlorobenzene(m) 1,3 | 541731 |  |  |  |  |  |  |
| 44 | Dichlorobenzene(o) 1,2 | 95501 |  |  |  |  |  |  |
| 45 | Dichlorobenzene(p) 1,4 | 106467 |  |  |  |  |  |  |
| 46 | Dichlorobenzenes |  |  |  |  |  |  |  |
| 47 | Dichlorobenzidine 3,3' | 91941 |  |  |  |  |  |  |
| 48 | Dichlorobromomethane | 124481 |  |  |  |  |  |  |
| 49 | Dichloroethane 1,2 | 107062 |  |  |  |  |  |  |
| 50 | Dichloroethylene 1,1 | 75354 |  |  |  |  |  |  |
| 51 | Dichloroethylene trans 1,2 | 156605 |  |  |  |  |  |  |
| 52 | Dichloroethylenes |  |  |  |  |  |  |  |
| 53 | Dichlorophenol 2,4 | 120832 |  |  |  |  |  |  |
| 54 | Dichloropropane 1,2 | 78875 |  |  |  |  |  |  |
| 55 | Dichloropropene 1,3 | 542756 |  |  |  |  |  |  |
| 56 | Dieldrin | 60571 | y |  |  |  |  |  |
| 57 | Diethyl Phthalate | 84662 |  |  |  |  |  |  |
| 58 | Dimethyl Phthalate | 131113 |  |  |  |  |  |  |
| 59 | Dimethylphenol 2,4 | 105679 |  |  |  |  |  |  |
| 60 | Di-n-butyl Phthalate | 84742 |  |  |  |  |  |  |
| 61 | Dinitrophenol 2,4 | 51285 |  |  |  |  |  |  |
| 62 | Dinitrophenols | 25550587 |  |  |  |  |  |  |
| 63 | Dinitrotoluene 2,4 | 121142 |  |  |  |  |  |  |
| 64 | Dioxin (2,3,7,8-TCDD) | 1746016 |  |  |  | y | y |  |
| 65 | Diphenylhydrazine |  |  |  |  |  |  |  |
| 66 | Diphenylhydrazine 1,2 | 122667 |  |  |  |  |  |  |
| 67 | Endosulfan |  |  | y |  |  |  |  |
| 68 | Endosulfan Alpha | 959988 |  | y |  |  |  |  |
| 69 | Endosulfan Beta | 33213659 |  | y |  |  |  |  |
| 70 | Endosulfan Sulfate | 1031078 |  | y |  |  |  |  |
| 71 | Endrin | 72208 | y |  |  |  |  |  |
| 72 | Endrin Aldehyde | 7421934 | y |  |  |  |  |  |
| 73 | Ethylbenzene | 100414 |  |  |  | y |  |  |
| 74 | Ethylhexyl Phthalate bis 2 | 117817 |  |  |  | y | y |  |
| 75 | Fluoranthene | 206440 |  |  |  | y | y |  |
| 76 | Fluorene | 86737 |  |  |  | y | y |  |
| 77 | Heptachlor | 76448 | y |  |  |  |  |  |
| 78 | Heptachlor Epoxide | 1024573 | y |  |  |  |  |  |
| 79 | Hexachlorobenzene | 118741 | y |  |  |  |  |  |
| 80 | Hexachlorobutadiene | 87683 |  |  |  |  |  |  |
| 81 | Hexachlorocyclopentadiene | 77474 |  |  |  |  |  |  |
| 82 | Hexachloroethane | 67721 | y |  |  |  |  |  |
| 83 | Indeno(1,2,3-cd)pyrene | 193395 |  |  |  | y | y |  |
| 84 | Isophorone | 78591 |  |  |  |  |  |  |
| 85 | Manganese | 7439965 |  |  |  | y | y | y |
| 86 | Methoxychlor | 72435 | y |  |  |  |  |  |
| 87 | Methyl Bromide | 74839 | y |  |  |  |  |  |
| 88 | Methyl-4,6-dinitrophenol 2 | 534521 |  |  |  |  |  |  |
| 89 | Methylene Chloride | 75092 |  |  |  |  |  |  |
| 90 | Methylmercury (mg/kg) | 22967926 |  |  |  | y | y | y |
| 91 | Nickel | 7440020 |  |  |  | y | y | y |
| 92 | Nitrates | 14797558 |  | y |  |  |  |  |
| 93 | Nitrobenzene | 98953 |  |  |  |  |  |  |
| 94 | Nitrosodibutylamine, N | 924163 |  |  |  |  |  |  |
| 95 | Nitrosodimethylamine, N | 62759 |  |  |  |  |  |  |
| 96 | Nitrosodi-n-propylamine, N | 621647 |  |  |  |  |  |  |
| 97 | Nitrosodiphenylamine, N | 86306 |  |  |  |  |  |  |
| 98 | Nitrosopyrrolidine, N | 930552 |  |  |  |  |  |  |
| 99 | Pentachlorobenzene | 608935 |  |  |  |  |  |  |
| 100 | Pentachlorophenol | 87865 |  |  |  | y |  |  |
| 101 | Phenol\* | 108952 |  |  |  |  |  |  |
| 102 | Polychlorinated Biphenyls (PCBs) |  |  |  |  | y | y |  |
| 103 | Pyrene | 129000 |  |  |  | y | y |  |
| 104 | Selenium | 7782492 |  |  |  | y | y | y |
| 105 | Tetrachlorobenzene, 1,2,4,5- | 95943 |  |  |  |  |  |  |
| 106 | Tetrachloroethane 1,1,2,2 | 79345 |  |  |  |  |  |  |
| 107 | Tetrachloroethylene | 127184 |  |  |  |  |  |  |
| 108 | Thallium | 7440280 |  |  |  |  | y |  |
| 109 | Toluene | 108883 |  |  |  |  |  |  |
| 110 | Toxaphene | 8001352 | y |  |  |  |  |  |
| 111 | Trichlorobenzene 1,2,4 | 120821 |  |  |  |  |  |  |
| 112 | Trichloroethane 1,1,2 | 79005 |  |  |  |  |  |  |
| 113 | Trichloroethylene | 79016 |  |  |  |  |  |  |
| 114 | Trichlorophenol 2,4,6 | 88062 |  |  |  |  |  |  |
| 115 | Trichlorophenol, 2, 4, 5- | 95954 | y |  |  |  |  |  |
| 116 | Vinyl Chloride | 75014 |  |  |  |  |  |  |
| 117 | Zinc | 7440666 |  |  |  | y | y | y |

**Appendix B**

**TABLE 1: Comparison of Current and Proposed Human Health Toxics Criteria and Quantitation Limits**

| **Chemical** | **CAS No.** | **Currently Effective Criteria Water + Org** | **New Human Health Criteria Water + Org** | **Currently Effective Criteria Org Only** | **New Human Health Criteria Org Only** | **Quantitation Limit (µg/L)** |
| --- | --- | --- | --- | --- | --- | --- |
| Acenaphthene | 83329 | none | 95 | none | 99 | 1\*\* |
| Acrolein | 107028 | 320 | 0.88 | 780 | 0.93 | 5 |
| Acrylonitrile | 107131 | 0.058 | 0.018 | 0.65 | 0.025 | 5 |
| Aldrin | 309002 | 0.000074 | 0.0000050 | 0.000079 | 0.0000050 | 0.01 |
| Anthracene | 120127 | none | 2900 | none | 4000 | 1\*\* |
| Antimony | 7440360 | 146 | 5.1 | 45000 | 64 | 0.1 |
| Arsenic | 7440382 | 0.0022 | **\***2.3 | 0.0175 | **\***2.7 | 0.5 |
| Asbestos | 1332214 | 7,000,000 f/L | 7,000,000 f/L | none | none |  |
| Barium | 7440393 | 1000 | 1000 | none | none | 0.1 |
| Benzene | 71432 | 0.66 | 0.44 | 40 | 1.4 | 0.5 |
| Benzene [represents range] | 71432 | none | 1.6 | none | 5.1 | 0.5 |
| Benzidine | 92875 | 0.00012 | 1.8E-05 | 0.00053 | 2.0E-05 | 10 |
| Benzo(a)anthracene | 56553 | none | 0.0013 | none | 0.0018 | 1\*\* |
| Benzo(a)pyrene | 50328 | none | 0.0013 | none | 0.0018 | 1\*\* |
| Benzo(b)fluoranthene 3,4 | 205992 | none | 0.0013 | none | 0.0018 | 1\*\* |
| Benzo(k)fluoranthene | 207089 | none | 0.0013 | none | 0.0018 | 1\*\* |
| Beryllium | 7440417 | withdrawn | none | withdrawn | none |  |
| BHC alpha | 319846 | none | 0.00045 | none | 0.00049 | 0.01 |
| BHC beta | 319857 | none | 0.0016 | none | 0.0017 | 0.01 |
| BHC gamma (Lindane) | 58899 | none | 0.17 | none | 0.18 | 0.01 |
| Bromoform | 75252 | none | 3.3 | none | 14 | 0.5 |
| Butylbenzyl Phthalate | 85687 | none | 190 | none | 190 | 1 |
| Cadmium | 7440439 | withdrawn | none | withdrawn | none |  |
| Carbon Tetrachloride | 56235 | 0.4 | 0.10 | 6.94 | 0.16 | 0.5 |
| Chlordane | 57749 | 0.00046 | 0.0000810 | 0.00048 | 0.0000811 | 0.1 |
| Chlorobenzene | 108907 | none | 74 | none | 160 | 0.5 |
| Chlorodibromomethane | 124481 | none | 0.31 | none | 1.3 | 0.5 |
| Chloroethyl ether bis 2 | 111444 | 0.03 | 0.020 | 1.36 | 0.05 | 1 |
| Chloroform | 67663 | 0.19 | 4.3 | 15.7 | 17 | 0.5 |
| Chloroisopropyl ether bis 2 | 108601 | 34.7 | 1200 | 4400 | 6500 | 2 |
| Chloromethyl ether, bis | 542881 | 0.0000000038 | 0.000024 | 0.00184 | 0.000029 | Contact DEQ Lab |
| Chloronaphthalene 2 | 91587 | none | 150 | none | 160 | 1 |
| Chlorophenol 2 | 95578 | none | 14 | none | 15 | 1 |
| Chlorophenoxy Herbicide (2,4,5,-TP) | 93721 | 10 | 10 | none | none | 1 |
| Chlorophenoxy Herbicide (2,4-D) | 94757 | 100 | 100 | none | none | 1 |
| Chromium III | 16065831 | withdrawn | none | withdrawn | none |  |
| Chromium VI | 18540299 | withdrawn | none | withdrawn | none |  |
| Chrysene | 218019 | none | 0.0013 | none | 0.0018 | 1\*\* |
| Copper | 7440508 | 1300 | 1300 | none | none | 10 |
| Cyanide\* | 57125 | 200 | 130 | none | 130 | 5 |
| DDD 4,4' | 72548 | none | 3.1E-05 | none | 3.1E-05 | 0.01 |
| DDE 4,4' | 72559 | none | 2.2E-05 | none | 2.2E-05 | 0.01 |
| DDT 4,4' | 50293 | 0.000024 | 0.000022 | 0.000024 | 0.000022 | 0.01 |
| Dibenzo(a,h)anthracene | 53703 | none | 0.0013 | none | 0.0018 | 1\*\* |
| Dichlorobenzene(m) 1,3 | 541731 | none | 80 | none | 96 | 0.5 |
| Dichlorobenzene(o) 1,2 | 95501 | none | 110 | none | 130 | 0.5 |
| Dichlorobenzene(p) 1,4 | 106467 | none | 16 | none | 19 | 0.5 |
| Dichlorobenzenes |  | 400 | none | 2600 | none | 0.5 |
| Dichlorobenzidine 3,3' | 91941 | 0.01 | 0.0027 | 0.02 | 0.0028 | 1 |
| Dichlorobromomethane | 75274 | none | 0.42 | none | 1.7 | 0.5 |
| Dichloroethane 1,2 | 107062 | 0.94 | 0.35 | 243 | 3.7 | 0.5 |
| Dichloroethylene 1,1 | 75354 | 0.033 | 230 | 1.85 | 710 | 0.5 |
| Dichloroethylene trans 1,2 | 156605 | none | 120 | none | 1000 | 0.5 |
| Dichloroethylenes |  | 0.033 | none | 1.85 | none | 0.5 |
| Dichlorophenol 2,4 | 120832 | 3090 | 23 | none | 29 | 1 |
| Dichloropropane 1,2 | 78875 | none | 0.38 | none | 1.5 | 0.5 |
| Dichloropropene 1,3 | 542756 | 87 | 0.30 | 14100 | 2.1 | 0.5 |
| Dieldrin | 60571 | 0.000071 | 0.0000053 | 0.000076 | 0.0000054 | 0.01 |
| Diethyl Phthalate | 84662 | 350,000 | 3800 | 1,800,000 | 4400 | 1 |
| Dimethyl Phthalate | 131113 | 313,000 | 84000 | 2,900,000 | 110000 | 1 |
| Dimethylphenol 2,4 | 105679 | none | 76 | none | 85 | 2 |
| Di-n-butyl Phthalate | 84742 | 35000 | 400 | 154000 | 450 | 1 |
| Dinitrophenol 2,4 | 51285 | none | 62 | none | 530 | 5 |
| Dinitrophenols | 25550587 | none | 62 | none | 530 | Contact DEQ Lab |
| Dinitrotoluene 2,4 | 121142 | 0.11 | 0.084 | 9.1 | 0.34 | 1 |
| Dioxin (2,3,7,8-TCDD) | 1746016 | 0.000000013 | 5.1E-10 | 1.4E-08 | 5.1E-10 | 0.000005 |
| Diphenylhydrazine | 38622183 | 0.042 | none | 0.56 | none |  |
| Diphenylhydrazine 1,2 | 122667 | none | 0.014 | none | 0.02 | 5 |
| Endosulfan | 115297 | 74 | none | 159 | none |  |
| Endosulfan alpha | 959988 | none | 8.5 | none | 8.9 | 0.01 |
| Endosulfan beta | 33213659 | none | 8.5 | none | 8.9 | 0.01 |
| Endosulfan Sulfate | 1031078 | none | 8.5 | none | 8.9 | 0.01 |
| Endrin | 72208 | 0.001 | 0.0060 | none | 0.0060 | 0.01 |
| Endrin Aldehyde | 7421934 | none | 0.03 | none | 0.03 | 0.01 |
| Ethylbenzene | 100414 | 1400 | 160 | 3280 | 210 | 0.5 |
| Ethylhexyl phthalate bis 2 | 117817 | 15000 | 0.20 | 50000 | 0.22 | 1 |
| Fluoranthene | 206440 | 42 | 14 | 54 | 14 | 2\*\* |
| Fluorene | 86737 | none | 390 | none | 530 | 1\*\* |
| Heptachlor | 76448 | 0.00028 | 7.9E-06 | 0.00029 | 7.9E-06 | 0.01 |
| Heptachlor Epoxide | 1024573 | none | 3.9E-06 | none | 3.9E-06 | 0.01 |
| Hexachlorobenzene | 118741 | 0.00072 | 2.9E-05 | 0.00074 | 2.9E-05 | 1 |
| Hexachlorobutadiene | 87683 | 0.45 | 0.36 | 50 | 1.8 | 2 |
| Hexachlorocyclo-hexane-Technical | 608731 | 0.0123 | 0.0123 | 0.0414 | 0.0414 |  |
| Hexachlorocyclopentadiene | 77474 | none | 30 | none | 110 | 2 |
| Hexachloroethane | 67721 | 1.9 | 0.29 | 8.74 | 0.33 | 2 |
| Indeno(1,2,3-cd)pyrene | 193395 | none | 0.0013 | none | 0.0018 | 1\*\* |
| Iron | 7439896 | 300 | **\***none | none | \*none | 100 |
| Isophorone | 78591 | 5200 | 27 | 520000 | 96 | 10 |
| Lead | 7439921 | withdrawn | none | withdrawn | none | 5 |
| Manganese | 7439965 | 50 | **\***none | 100 | \*100 | 2 |
| Mercury | 7439976 | withdrawn | none | withdrawn | none | 0.01 |
| Methoxychlor | 72435 | 100 | 100.0 | none | none | 0.01 |
| Methyl Bromide | 74839 | none | 37 | none | 150 | 0.5 |
| Methyl-4,6-dinitrophenol 2 | 534521 | none | 9.2 | none | 28 | 2 |
| Methylene Chloride | 75092 | none | 4.3 | none | 59 | 0.5 |
| Methylmercury (mg/kg) | 22967926 | none | none | none | 0.040 | 0.00005 |
| Nickel | 7440020 | 13.4 | 140 | 100 | 170 | 10 |
| Nitrates | 14797558 | 10,000 | 10000 | none | none | 100 |
| Nitrobenzene | 98953 | 19800 | 14 | none | 69 | 1 |
| Nitrosamines | 35576911 | 0.0008 | 0.0008 | 1.24 | 1.24 |  |
| Nitrosodibutylamine, N | 924163 | 0.0064 | 0.0050 | 0.587 | 0.02 | 10 |
| Nitrosodiethylamine, N | 55185 | 0.0008 | 0.0008 | 1.24 | 1.24 |  |
| Nitrosodimethylamine, N | 62759 | 0.0014 | 0.00068 | 16 | 0.30 | 1 |
| Nitrosodi-n-propylamine, N | 621647 | none | 0.0046 | none | 0.051 | 2 |
| Nitrosodiphenylamine, N | 86306 | 4.9 | 0.55 | 16.1 | 0.60 | 1 |
| Nitrosopyrrolidine, N | 930552 | 0.016 | 0.016 | 91.9 | 3.4 | 10 |
| Pentachlorobenzene | 608935 | 74 | 0.15 | 85 | 0.15 | 10 / Contact DEQ Lab |
| Pentachlorophenol | 87865 | 1010 | 0.15 | none | 0.30 | 2 |
| Phenol\* | 108952 | 3500 | 9400 | none | 86000 | 1 |
| Polychlorinated Biphenyls (PCBs) |  | 0.000079 | 6.4E-06 | 0.000079 | 6.4E-06 | 0.5 |
| Pyrene | 129000 | none | 290 | none | 400 | 1 |
| Selenium | 7782492 | 10 | 120 | none | 420 | 2 |
| Silver | 7440224 | withdrawn | none | withdrawn | none | 1 |
| Tetrachlorobenzene, 1,2,4,5- | 95943 | 38 | 0.11 | 48 | 0.11 | 1 |
| Tetrachloroethane 1,1,2,2 | 79345 | 0.17 | 0.12 | 10.7 | 0.40 | 0.5 |
| Tetrachloroethylene | 127184 | 0.8 | 0.24 | 8.85 | 0.33 | 0.5 |
| Thallium | 7440280 | 13 | 0.043 | 48 | 0.047 | 0.1 |
| Toluene | 108883 | 14300 | 720 | 424000 | 1500 | 0.5 |
| Toxaphene | 8001352 | 0.00071 | 2.8E-05 | 0.00073 | 2.8E-05 | 0.5 |
| Trichlorobenzene 1,2,4 | 120821 | none | 6.4 | none | 7.0 | 0.5 |
| Trichloroethane 1, 1, 1 | 71556 | withdrawn | none | withdrawn | none | 0.5 |
| Trichloroethane 1,1,2 | 79005 | 0.6 | 0.44 | 41.8 | 1.6 | 0.5 |
| Trichloroethylene | 79016 | 2.7 | 1.4 | 80.7 | 3.0 | 0.5 |
| Trichlorophenol 2,4,6 | 88062 | 1.2 | 0.23 | 3.6 | 0.24 | 1 |
| Trichlorophenol, 2, 4, 5- | 95954 | 2600 | 330 | none | 360 | 2 / Contact DEQ Lab |
| Vinyl Chloride | 75014 | 2 | 0.02 | 525 | 0.24 | 0.5 |
| Zinc | 7440666 | none | 2100 | none | 2600 | 5 |

**\* Criteria proposed in the current rulemaking for arsenic, iron, and manganese**

**Appendix C**

**TABLE 1: Waterbodies\* Listed for Toxics on the 2004/2006 Integrated Report[[4]](#footnote-4)**

| **Watershed (USGS 4th Field Name)** | **Water Body (Stream/Lake)** | **303(d) Toxics Listing** |
| --- | --- | --- |
| COAST FORK WILLAMETTE | Coast Fork Willamette River | Iron, Mercury |
| COAST FORK WILLAMETTE | Coast Fork Willamette River / Cottage Grove Reservoir | Mercury |
| COAST FORK WILLAMETTE | Dennis Creek | Mercury |
| COAST FORK WILLAMETTE | Row River / Dorena Lake | Mercury |
| COOS | Elk Creek | Iron |
| COOS | Isthmus Slough | Manganese |
| COQUILLE | Fishtrap Creek | Iron |
| CROSSES SUBBASINS | Columbia River | Arsenic, DDE, PCB, PAH |
| CROSSES SUBBASINS | Klamath River | Ammonia |
| CROSSES SUBBASINS | Malheur River | DDT, Dieldrin |
| CROSSES SUBBASINS | Owyhee River | Arsenic, DDT, Dieldrin, Mercury |
| CROSSES SUBBASINS | Snake River | Mercury |
| CROSSES SUBBASINS | Willamette River | Aldrin, Arsenic, DDT, DDE, Dieldrin, Iron, Manganese, Mercury, PCB, Pentachlorophenol, PAH, |
| CROSSES SUBBASINS / LOWER OWYHEE | Owyhee River / Owyhee, Lake | Mercury |
| DONNER UND BLITZEN | Bridge Creek | Iron, Manganese, Beryllium |
| DONNER UND BLITZEN | Little Blitzen River | Beryllium |
| GOOSE LAKE | East Branch Thomas Creek | Iron |
| GOOSE LAKE | Thomas Creek | Iron |
| JORDAN | Jack Creek / Antelope Reservoir | Mercury |
| JORDAN | Jordan Creek | Arsenic, Mercury |
| LOST | Klamath Strait | Ammonia |
| LOST | Lost River | Ammonia |
| Lower Columbia | Unnamed Creek | Chromium (hex) |
| Lower Columbia | Unnamed Creek | Copper |
| Lower Columbia | Unnamed Creek | Iron |
| Lower Columbia | Unnamed Creek | Manganese |
| Lower Columbia | Unnamed Creek | Zinc |
| LOWER OWYHEE | Overstreet Drain | Copper, Iron, Lead, Manganese |
| LOWER WILLAMETTE | Arata Creek / Blue Lake | Ammonia, Manganese |
| LOWER WILLAMETTE | Columbia Slough | Iron, Manganese |
| LOWER WILLAMETTE | Johnson Creek | DDT, Dieldrin, PCB, PAH |
| LOWER WILLAMETTE | South Columbia Slough | Iron, Manganese |
| MCKENZIE | Blue River | Manganese |
| MCKENZIE | Mohawk River | Iron |
| MIDDLE COLUMBIA-HOOD | Dog River | Beryllium, Iron |
| MIDDLE COLUMBIA-HOOD | East Fork Hood River | Beryllium, Copper, Iron |
| MIDDLE COLUMBIA-HOOD | Evans Creek | Beryllium, Copper, Iron |
| MIDDLE COLUMBIA-HOOD | Hood River | Beryllium, Copper, Iron |
| MIDDLE COLUMBIA-HOOD | Indian Creek | Chlorpyrifos |
| MIDDLE COLUMBIA-HOOD | Lenz Creek | Arsenic (tri), Beryllium, Chloropyrifos, Iron, Manganese |
| MIDDLE COLUMBIA-HOOD | Middle Fork Hood River | Beryllium, Iron |
| MIDDLE COLUMBIA-HOOD | Mitchell Creek | Zinc |
| MIDDLE COLUMBIA-HOOD | Neal Creek | Arsenic (tri), Beryllium, Chloropyrifos, Guthion, Iron, Manganese |
| MIDDLE COLUMBIA-HOOD | West Fork Hood River | Beryllium |
| MIDDLE WILLAMETTE | Champoeg Creek | Dieldrin |
| MIDDLE WILLAMETTE | Pringle Creek | Copper, Dieldrin, Lead, Zinc |
| MIDDLE WILLAMETTE | Pringle Creek Trib | Heptachlor |
| MOLALLA-PUDDING | Pudding River | DDT, Iron, Manganese |
| MOLALLA-PUDDING | Zollner Creek | Arsenic, Chlordane, Dieldrin, Iron, Manganese, Nitrates |
| NECANICUM | Ecola Creek | Iron |
| NORTH UMPQUA | Cooper Creek / Cooper Creek Reservoir | Iron, Mercury |
| NORTH UMPQUA | North Umpqua River | Arsenic |
| NORTH UMPQUA | Platt I Reservoir | Mercury |
| NORTH UMPQUA | Sutherlin Creek | Arsenic, Beryllium, Copper, Iron, Lead, Manganese |
| NORTH UMPQUA | Unnamed creek | Arsenic |
| NORTH UMPQUA | Unnamed creek | Iron |
| NORTH UMPQUA | Unnamed creek | Lead |
| SOUTH UMPQUA | Galesville Reservoir | Mercury |
| SOUTH UMPQUA | Middle Creek | Arsenic, Cadmium, Copper, Manganese, Nickel, Zinc |
| SOUTH UMPQUA | Olalla Creek | Iron |
| SOUTH UMPQUA | South Fork Middle Creek | Cadmium, Copper, Manganese, Zinc |
| SOUTH UMPQUA | South Umpqua River | Arsenic, Cadmium |
| TUALATIN | Beaverton Creek | Iron, Manganese |
| TUALATIN | Fanno Creek | Dieldrin |
| Tualatin | Koll Wetland | Chromium (hex), Copper, Lead, Silver, Zinc |
| TUALATIN | Tualatin River | Iron, Manganese |
| UMATILLA | Athena Spring | Nitrates |
| UMATILLA | Birch Creek | Iron |
| UMATILLA | Butter Creek | Iron |
| UMATILLA | McKay Creek | Iron |
| UMATILLA | Umatilla River | Iron, Manganese |
| UMATILLA | Wildhorse Creek | Iron, Manganese |
| UMPQUA | Calapooya Creek | Iron |
| UMPQUA | Cook Creek | Beryllium, Copper, Iron, Lead, Manganese |
| UPPER WILLAMETTE | A-3 Drain | Arsenic, Dichloroethylenes, Tetrachloroethylene |
| UPPER WILLAMETTE | Amazon Creek | Arsenic, Copper, Dichloroethylenes, Lead, tetrachloroethylene, Trichloroethylene |
| UPPER WILLAMETTE | Amazon Creek Diversion Channel | Arsenic (tri), Copper, Lead, Mercury |
| UPPER WILLAMETTE | Amazon Diversion Canal/A3 Drain | Mercury |
| UPPER WILLAMETTE | Calapooia River | Iron, Manganese |
| UPPER WILLAMETTE | Long Tom River | Iron, Manganese |
| UPPER WILLAMETTE | Marys River | Iron, Manganese |
| UPPER WILLAMETTE | Willow Creek | Arsenic |
| WALLA WALLA | Pine Creek | Iron |
| WARNER LAKES | Fifteenmile Creek | Silver |
| WARNER LAKES | Twelvemile Creek | Arsenic (tri), Silver |
| WARNER LAKES | Twentymile Creek | Arsenic, Silver |
| WILSON-TRASK-NESTUCCA | Mill Creek | Iron |
| YAMHILL | Cedar Creek | Iron |
| YAMHILL | North Yamhill River | Iron, Manganese |
| YAMHILL | Salt Creek | Manganese |
| YAMHILL | South Yamhill River | Iron |
| YAMHILL | West Fork Palmer Creek | Chlorpyrifos |
| YAMHILL | Yamhill River | Iron, Manganese |

\* Toxics listings for any one waterbody may only represent a certain portion of that waterbody as being water quality limited.

**TABLE 2: Pollutants of Concern from 2004/2006 Integrated Report**

| **Pollutants of Potential Concern** | |
| --- | --- |
| Acenapthene | Endrin |
| Aldrin | Fluoranthene |
| Alkalinity | Guthion |
| Alpha-BHC | Heptachlor |
| Ammonia | Iron |
| Antimony | Isophorone |
| Arsenic | Lead |
| Arsenic (tri) | Malathion |
| Benxo(a)anthracene | Manganese |
| Benzo(A)anthracene | Mercury |
| Benzo(A)pyrene | Naphthalene |
| Benzo(g,h,i)perylene | Nickel |
| Beryllium | Nitrates |
| BHC | p,p` DDD |
| Cadmium | Parathion |
| Chlordane | PCB |
| Chlorophenoxy Herbicides (2,4-D) | Pentachlorophenol |
| Chlorpyrifos | phenanthrene |
| Chromium (hex) | Phenol |
| Chrysene | Phthalate Esters |
| Copper | Polynuclear Aromatic Hydrocarbons |
| Cyanide | pyrene |
| DDD | Radionuclides |
| DDT | Silver |
| DDT Metabolite (DDE) | Tetrachloroethylene |
| Dichloroethylenes | Thallium |
| Dieldrin | Toxaphene |
| Dioxin (2,3,7,8-TCDD) | Tributyltin |
| Dioxins/Furans | Trichloroethylene |
|  | Zinc |

**Appendix D**

*This appendix captures all the fiscal and economic data rulemaking workgroup members have submitted to DEQ. If time allows, DEQ will incorporate data and information gathered by members into this fiscal analysis.*

**OR Small Woodlots Association, David Ford**

*9/14/10 e-mail*

Dear Andrea:

Thank you for the opportunity for the Oregon Small Woodlands Association to offer the following comments on the fiscal and economic impacts of the proposed draft rulemaking.  I apologize for the delay in sending these comments to you.

According to the U.S. Forest Service, 35 percent of Oregon’s forests are in private ownership.  The total acreage of private forestland is 10,668,000 acres.  According to the Oregon Department of Forestry, over the last two decades more than 80 percent of timber harvest has come from private forestlands, while about 10 percent has come from federal lands and 10 percent from other public and tribal lands.

Thus, any rules that have the effect of reducing tree growth or decreasing timber harvest on private forestlands in Oregon will have significant fiscal and economic impact to private forestland owners.  Further restrictions that result in reduced timber harvest may force forest landowners to further reduce harvest rotation age or to convert lands from forest to other uses.  Reduced timber harvest would also result in a reduction of state tax revenue collected through timber harvest tax.

There are 4,668,000 acres classified as small private forestland ownership – land holdings of less than 5,000 acres.  The U.S. Forest Service estimates that there are approximately 70,000 families that own between 10 and 5,000 acres.  Most of these ownerships are organized in one of a multitude of small business structures, such as LLCs, Limited Partnerships, Sub-S corporations or C corporations.  Thus, the proposed rule may have a significant impact on small businesses throughout Oregon.

There are an additional 70,000 families that own between 2 and 10 acres of forest land in Oregon.  A portion of these ownerships are also held in small business legal structures.

It is difficult to estimate what the financial impact may be related to the proposed rulemaking.  It is clear that any restrictions to timber harvest or other forest management activities that affect growth and yield as the result of the proposed rulemaking would have a significant impact to over 100,000 small businesses that own forest land in Oregon.  Oregon law requires state agencies to analyze and disclose these impacts on small businesses.

DEQ’s assessment that there will be no fiscal or economic impact as a result of the proposed rule is not a reasonable position.  It is based on the perspective that no changes to the current forest practice rules or no regulatory interventions by DEQ over forest operations will be necessary to achieve higher water quality standards in the future.  On its face, this is an unreasonable assumption and an unlikely scenario.

The proposed rule is intended to reduce or prevent toxic pollutants in waters of the state.  To help achieve reduced levels of toxic pollutants in waters of the state, DEQ is proposing to include non-point sources in its rulemaking.  If no changes to Best Management Practices or no new regulations will be imposed by DEQ to achieve more stringent water quality standards, then why do the proposed rules include forest lands throughout Oregon?

At such time as waters flowing from forest lands do not meet the more restrictive water quality standards, the EQC will petition the Board of Forestry to tighten its Best Management Practices.  If the Board refuses to do so, it is clear that the intent of the CEQ will be to assert regulatory authority (as the AG’s recent opinion asserts) over forest operations.   In either case, more restrictive rules will financially impact forest landowners (small businesses) when such rules limit harvesting and other forest management activities designed to improve growth and yield of forest stands.

It is my understanding that DEQ’s purpose for including non-point sources in the rulemaking is to ensure that forest and agriculture lands contribute to the targeted reductions in toxic pollutants.  To achieve reduced toxic pollutant levels, restrictions will likely be placed on forestry activities.  Restrictions may include larger fixed-width stream buffers, limits on road building activities, reduced operation periods in wet weather and additional limits for operations on steeper slopes.  All these examples would have significant financial and economic impacts to landowners and to state harvest tax revenues.

To conclude, it seems very unlikely that no additional restriction will be placed on forest harvest and other forest operational activities as a result of the proposed rule changes.  Thus, DEQ should reevaluate the impact to small businesses as a result of adoption of the proposed rule changes.  If DEQ concludes there will be impact, OSWA urges DEQ to remove forest lands from the proposed rule changes.

Please feel free to call me at 503-449-6957 if you have any questions.

Thank you, David

**Oregon Farm Bureau, Jennifer Shmikler**

*9/8/2010 E-mail*

Jennifer and Gene,

Kathryn and I would like to know what specific fiscal and economic information you are looking for.  Please keep in mind over 97% of Oregon farms and ranches would be considered small business operations by your definition of 50 or fewer FTEs.  Hope that is helpful.

Jennifer Shmikler

**Oregon Department of Agriculture, Dave Wilkinson**

*9/24/2010 e-mail*

Fish Consumption Rate

Existing Agricultural Water Quality Management Area Plans and Rules are expected to be adequate to achieve TMDL load allocations and meet water quality standards on agricultural lands. The plans rely on both voluntary and regulatory approaches to implement management measures that prevent pollution by controlling upland erosion and sediment transport, restoring and maintaining riparian vegetation, appropriately utilizing nutrients, and addressing other agricultural activities as needed to protect surface and ground waters. The plans rely on, and the rules are generally limited to, available and technically feasible conservation practices. The cost of these practices were considered in adopting current area plans and rules.

Impacts on small business

If additional practices must be developed or requirements otherwise increase or are better defined, there may be increased costs of production or land management to farmers and landowners on rural lands who operate as small businesses.

OAR 340-041-0061(12)

The proposed rule describes how DEQ would communicate through the EQC to ODA if DEQ believed that an area plan was not adequate to achieve a water quality standard. Currently, all waters of the state on agricultural lands are addressed with one of 39 area plans and area rules to implement them. The area plans are designed to achieve water quality standards and meet TMDL load allocations. Because ORS 568.930 currently provides for the EQC to petition ODA for changes to the area plans, no additional cost from this proposed rule is anticipated. If DEQ determines any of the area plans are inadequate, in some aspect, there could be additional cost to ODA, and possibly to landowners, if the area plans must be modified.

The proposed rule also clarifies that DEQ has the authority to require a landowner to change their activities if found to be causing or contributing to a water quality standards violation. The rule reflects current DEQ practice of first referring the landowner to ODA to resolve the issue. Because this rule clarifies existing interagency practice to address pollution from agricultural activities, no additional cost to ODA or landowners is anticipated.

OAR 340-042-0080(2)

This proposed rule explains that area plans and rules must be adequate to prevent and control water pollution from agricultural activities and soil erosion as provided by ORS 568.900 to 933 and 561.191. The rule allows the DEQ to request the EQC to petition ODA to modify an area plan if it believes the plan to be inadequate. Because the ability of the EQC to petition ODA is provided in law and is currently available to the EQC to resolve any perceived plan deficiencies, no additional cost is anticipated by this proposed rule change.

The proposed rule also allows DEQ to assign load allocations to specific agricultural sources or sectors. As with TMDLs generally, the cost of compliance can be shifted from one type of source to another through assignment of load allocations. Any specific load allocation would be achieved through an area plan and implementation of area rules. Since plans and rules are currently designed to meet load allocations by implementing available conservation practices, any increase in specific load allocation could result in additional cost to the agricultural producers in that source or sector. Until an individual source or sector has been identified in this way, it is not possible to estimate any additional cost compared to current requirements to prevent and control pollution.

Implementation Ready TMDL

TMDL Development

DEQ proposes to develop TMDLs with improved spatial scale and source assessment. The potential benefit would be to better inform ODA, other agricultural agencies, and landowners more specifically where water quality problems exist and restoration projects or management changes would be most beneficial. There would likely be no direct cost savings because the amount of work to be done is large compared to the resources available. However, the investments in time and effort could, potentially yield better water quality results.

DEQ proposes to include timelines and associated milestones in TMDLs. A potential benefit of this would be to allow area plans to set clear objectives and work effectively and measurably toward the identified milestones. Costs could potentially be increased to ODA and landowners if timelines are accelerated beyond the current implementation rate. Until individual TMDL timelines and milestones are created, it is not possible to estimate potential additional costs.

TMDL Implementation

DEQ proposes to further clarify TMDLs goals by working collaboratively with ODA to identify surrogates to water quality standards and evaluate measures to effectively achieve the surrogates. A benefit could be realized by using surrogates that are easily applied by landowners and reported as progress in implementation. No additional cost is anticipated, however landowners and local agencies may be able to work more effectively toward agreed upon water quality goals.

1. Infiltration occurs when groundwater enters the sewer system through cracks, holes, faulty connections, or other openings. Inflow occurs when surface water such as storm water enters the sewer system through roof downspout connections, holes in manhole covers, illegal plumbing connections, or other defects. In this particular case, arsenic in groundwater can enter the sewer system, thus causing or contributing to arsenic water quality violations. [↑](#footnote-ref-1)
2. Estimate given through DEQ pretreatment coordinator communications with the five largest pretreatment programs [↑](#footnote-ref-2)
3. Dave Wilkinson, OR Department of Agriculture, e-mail September 24, 2010 [↑](#footnote-ref-3)
4. For information on the 2004/2006 Integrated Report, please visit: <http://www.deq.state.or.us/wq/assessment/rpt0406.htm> [↑](#footnote-ref-4)