State of Oregon
Department of Environmental Quality Memorandum

Date: February 1, 2010

To: Environmental Quality Commission

From: Dick Pedersen, Director

Subject: Agenda item G, Informational item: DEQ's rule revisions to adopt and implement human health water quality standards for toxic pollutants, and update on agency-wide toxics reduction strategy
February 18-19, 2010 EQC meeting

Purpose of item

DEQ will update the commission on the development and planned implementation of revised human health water quality standards for toxic pollutants based on an increased fish consumption rate of 175 grams per day. DEQ will ask for any additional input the commission may have on this project.

Why this is important

DEQ will base the revised water quality standards on the highest fish consumption rate used by any state and the standards will be the most protective of human health compared to other states and the federal criteria. The pollutants addressed by the water quality criteria come from many different sources, including sources that have National Pollutant Discharge Elimination System permits and sources that do not. In some cases, non-NPDES sources contribute a significant load of these pollutants to Oregon waterways. State and federal rules address implementation of water quality standards in NPDES permits, but remain largely silent relative to implementation strategies for other potential sources of these pollutants.

Two issues have been identified as part of this work that DEQ must address in order to successfully meet our environmental objective of attaining these revised water quality standards in Oregon's waters. First, implementation strategies are needed to facilitate cost-effective environmental improvement for NPDES permitted sources, even when ultimate attainment of the water quality standards may be uncertain. Second, strategies are needed that address other potential inputs of these pollutants into Oregon's waters where they are not already addressed through other mechanisms.

DEQ is working with NPDES and non-NPDES stakeholders and other interested entities for development of implementation strategies for the proposed standards.

Background

Water quality standards are benchmarks established to assess whether the quality of Oregon's rivers and lakes is adequate for fish and other aquatic

life, recreation, drinking, agriculture, industry and other uses. Water quality standards are also the basis of other regulatory tools used by DEQ and EPA to prevent water pollution. One component of water quality standards is numeric water quality criteria expressed as concentrations that are not to be exceeded. DEQ is responsible for establishing water quality criteria in Oregon to protect human health. The criteria allow Oregonians to consume fish and shellfish and to use state waters for drinking water supply without adverse health effects. Most of DEQ's current criteria are based on EPA's recommended values. One important exception is the current rulemaking to revise the human health criteria based on a increased fish consumption rate, which is substantially higher than the national averages used in EPA's recommended criteria values.

EQC directed DEQ to pursue rule revisions that will set new water quality standards for toxic pollutants in Oregon based upon on a revised fish consumption rate of 175 grams per day. The commission also directed DEQ to propose rule language or develop other implementation strategies to reduce the adverse impacts of toxic substances in Oregon's waters that are the result of nonpoint source discharges or other sources not subject to section 402 (which governs NPDES permits) of the federal Clean Water Act.

The commission insisted that the proposed rule and implementation measures carefully consider the costs and benefits of the fish consumption rate and carefully consider the data and scientific analysis already compiled or that is developed as part of the rulemaking proceeding. The proposed rule language must allow DEQ to implement the standards in an environmentally meaningful and cost-effective manner.

Key Issues

Summary of the revisions based on 175 grams per day

In accordance with EQC's direction, DEQ intends to propose revisions to Oregon's toxics criteria for human health based on a fish consumption rate of 175 grams per day, which equals approximately 23 eight-ounce fish meals per month. Staff will provide an overview of the revised criteria and how those revised criteria are expected to change relative to the existing criteria based on the new calculations and new science.

Pursuant to EQC's direction to consider the data and scientific analysis already compiled during this rulemaking process, DEQ has also specifically reviewed the data and information relative to arsenic, iron and manganese. Arsenic, iron and manganese are earth metals that are present in Oregon waters at high levels due to natural conditions. DEQ has evaluated the scientific information for these three pollutants and will discuss findings and the resultant revisions to the criteria values for these pollutants.

NPDES source implementation strategy
DEQ has met with the Rulemaking Workgroup since December 2008 to discuss the commission's charge to DEQ to address the implementation of revised human health criteria for NPDES permit holders in an environmentally meaningful and cost-effective manner. Staff will provide an overview of that group's work to evaluate implementation tools based on anticipated issues that may arise for permittees when DEQ implements the revised water quality standards. Some of the potential implementation tools are allowed under existing authorities, while others would require new regulations or revisions to existing regulations.

Non-NPDES source implementation strategy
Last spring DEQ communicated that the Rulemaking Workgroup should consider issues that have an immediate need and are appropriate for inclusion in the water quality standards or NPDES permitting regulations. A subcommittee of the Rulemaking Workgroup prepared two memos to the Rulemaking Workgroup dated October 21, 2009, and November 11, 2009, with suggestions for rulemaking to address nonpoint sources toxic pollution and indirect discharges to municipal collection systems and the subgroup's assessment of why revisions are needed to effectively manage toxic pollution to Oregon's waters.

DEQ will provide an overview of the rule changes suggested by the subcommittee, which include:

- Addition of specific management practices and buffers;
- Addition of allowable soil loss and nutrient application rates in rule;
- Clarification of how compliance with Total Maximum Daily Load allocations and water quality standards is determined;
- Clarification of regulatory jurisdictions between DEQ, Oregon Department of Forestry, and Oregon Department of Agriculture; and
- Removal of regulatory shields for nonpoint sources.

Current non-NPDES authorities
Generally, DEQ has broad authority to protect Oregon's water from pollution through implementation of the Clean Water Act. DEQ does not have many authorized regulatory tools to address pollution from nonpoint sources, or sources not subject to an NPDES permits. However, the commission has chosen to implement nonpoint source pollution protection measures in the TMDL program through delegation to appropriate agencies with oversight by DEQ.

EQC has authority to adopt and implement new programs to protect Oregon's waters from nonpoint source pollution by establishing the requirement through rulemaking. For existing programs, however, DEQ has authority and discretion to require reductions in pollutant loads from nonpoint sources under current authorities and the TMDL program.

Near-term steps for non-NPDES sources

DEQ will present policy recommendations and potential rules for the commission's consideration at a later meeting. These recommendations would implement toxics reduction strategies for non-NPDES sources, and could include EQC adoption of:

- Rules specifically describing the pollutant sources for which waste load and load allocations can be developed and implementation plans required;
- A rule directing DEQ to develop and implement effective rules to reduce the impacts of toxic pollutants associated with turbidity, sediment, and sedimentation;
- A rule directing DEQ to examine development of a state program to address indirect discharges of toxic pollutants to municipal collection systems;
- Antidegradation policy rule modifications to clarify and facilitate its application to non-NPDES sources;
- A specific rule describing the commission's policy direction to DEQ to develop and implement an agency wide toxics reduction strategy; and
- Rule requirements directing DEQ to evaluate toxic release inventory data in the development of permits across programs.

Any of these recommendations and actions would specifically relate to the agency-wide toxics prevention and reduction strategy while advancing the objectives of the revised human health water quality standards for toxic pollutants.

EQC involvement

DEQ will present a follow-up informational item and discussion at the April 2010 EQC meeting. This information is expected to further inform DEQ's proposed rulemaking, which is planned for June 2010.

Attachments

A. Mixed media subcommittee memos
B. Summary of DEQ's authority for non-NPDES sources
C. Table for human health criteria comparisons
D. NPDES implementation tools

Approved:

Section: _____

Division: _____

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MEMORANDUM

October 21, 2009

To: Rulemaking Workgroup
From: Mixed Media Subcommittee (Nina Bell, Charlie Logue, Peter Ruffier)
Re: **Controlling Non-Point Source Runoff of Toxic Contaminants**

The Environmental Quality Commission directed the Department to "[p]ropose rulemaking language or develop other implementation strategies to reduce the adverse impacts of toxic substances in Oregon's waters that are the result of non-point source (not via a pipe) discharges or other sources not subject to section 402 of the Clean Water Act." In the February 9, 2009 meeting of the Rulemaking Workgroup (RWG), DEQ staff, according to the minutes, agreed to "ask legal counsel to do a search for existing DEQ 'authority' and mechanisms that could be used to impact the broader work on toxics for both DEQ and other agency efforts." In addition, a subcommittee was directed to "meet and prepare a memo/outline of additional ideas about how the rule might tie to the broader toxics reduction strategy and why it is needed." Subsequently, on February 23, DEQ sent out a memo noting that " [i]f the group quickly identifies issues that have an immediate need and are appropriate for inclusion in either the water quality standards or NPDES permitting regulations, we believe those issues should be considered for inclusion within the scope of the Rulemaking Workgroup." On February 28, the subcommittee sent the RWG a memo setting out its initial concerns and proposals. On May 14, DEQ prepared an internal memo answering the concerns of the subcommittee and making Department commitments as follows:

> During the current human health water quality standards rule making effort, the Department, with the assistance of the water quality standards rule making sub-group will . . . review the department's current water quality rules to identify where these rules contain barriers to the implementation of an overall toxic reduction strategy and where changes could facilitate such implementation . . . draft proposed water quality rules additions/modifications which could facilitate toxics reduction efforts by the water quality program . . . take these proposed water quality rule changes to the Environmental Quality Commission for action which would eliminate barriers and facilitate implementation of the water quality programs efforts to reduce toxic pollution . . . identify and prioritize where department rules should be developed to facilitate the linkages between the water, air, and land quality programs' efforts to reduce toxics to meet the new standards . . . collaborate with the Air and Land Divisions, to work through the priority list of rule needs and develop proposed rules and take them to the Environmental Quality Commission for action in the water, air, and land quality programs designed to facilitate near term implementation of the overall toxics reduction strategy . . . and as appropriate, solicit ideas and review of rule proposals in the necessary media venues with appropriate media stakeholders, including the Toxics Stakeholders Group.

As a result of these on-going commitments, the subcommittee, renamed the Mixed Media Subcommittee, continued meeting to evaluate a wide variety of Department authorities over non-

NPDES sources. It has had at least nine meetings between February and September, most of which included DEQ staff and Ryan Sudbury representing the Confederated Tribes of the Umatilla Indian Reservation and some included Larry Knudsen (ODOJ) who provided input on possible Department authorities. The Subcommittee has prepared two memoranda – on traditional nonpoint sources and pretreatment programs – while the Department has recommitted to evaluating its authorities relating to Land and Air programs.

The work product of the Subcommittee was prepared solely by its members. Its purpose is to set out a variety of approaches to address the Commission's directive. Members of the Subcommittee believe that point sources alone cannot effectively achieve the objective of improving Oregon's water quality and protecting human health, particularly when they are not the largest source of many of the toxic pollutants which are impairing Oregon's waters.

I. Problem: Erosion of Contaminated Soils from Nonpoint Source Activities.

Many toxic contaminants are widely dispersed over terrestrial areas (due to broadcast distribution of pesticides and fertilizers and deposition of airborne pollutants) and become chemically associated with soils and other solid materials. For this reason, many of Oregon's current and future water quality standards for toxic contaminants cannot and will not be met without control of traditional nonpoint sources which either contribute to the contamination of soils, or cause the release of contaminated soils into Oregon's streams and rivers, thus making it possible for them to enter aquatic food webs and adversely impact the aquatic ecosystem or transfer toxics to human or wildlife consumers. Soil contamination may be natural, originate from sources such as air deposition both domestic and foreign, or be from current or previous applications of pesticides and fertilizers.[1] Oregon's Willamette River TMDL for mercury is an excellent example of the need to control sheet and rill erosion[2] and surface runoff[3] to limit toxic contaminants in State waters and aquatic

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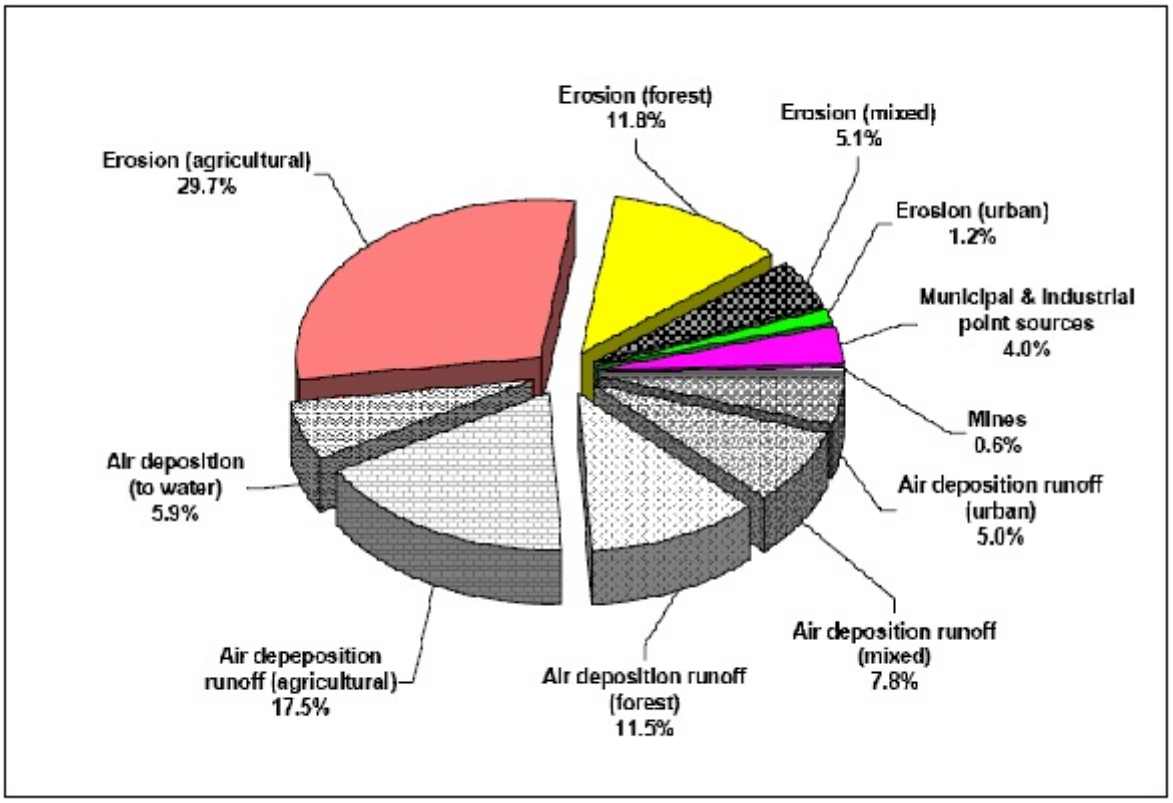
[1] As the Oregon Department of Agriculture points out, "[m]any pesticides that are no longer permitted for application may remain adsorbed to soil particles. If soil is moving off the property, pesticides may be going along for the ride. Limiting erosion removes this transportation mode of pesticides and will help address the [Willamette] DDT and Dieldrin TMDL allocation." Lower Willamette Agricultural Water Quality Management Area Plan, March 21, 2007, at 19. http://oregon.gov/ODA/NRD/docs/pdf/plans/wil_lwr_2007.pdf

[2] *Sheet erosion* is the movement of a semi-suspended layer of soil particles over the land surface. Sheet erosion begins with splash erosion in which raindrops displace soil particles and occurs as runoff travels over the ground, picking up and transporting the dislodged particles. The process of sheet erosion is uniform, gradual, and difficult to detect until it develops into rill erosion. *Rill erosion* occurs as runoff forms small concentrated channels. As rill erosion begins, erosion rates increase dramatically due to the resulting concentrated higher velocity flows. *Gully erosion* results from water moving in rills, which concentrate to form larger channels.

[3] *Surface runoff* (or overland flow) is water that flows over the soil surface and occurs from areas that are impervious, locally saturated, or areas where the rainfall rate exceeds the infiltration capacity of the soil.

life, as illustrated by the figure below.

Figure 9. Relative contributions to the mainstem by land use category.



Oregon's water quality standards, including antidegradation requirements, however, do not explicitly prohibit controllable erosion and, in fact, contain language that exempts some nonpoint sources from direct regulatory responsibility for their contribution to water quality impairments so long as they are complying with existing best management practice requirements established by DEQ or other agencies (e.g., Oregon Department of Forestry, Oregon Department of Agriculture).

A. Mechanisms of Preventing Erosion and Runoff

Effective management of toxics associated with contaminated soils can be based upon reductions in soil erosion and runoff through improved tillage and land management practices. Conserving soil on land reduces sheet erosion that can carry particulate-phase toxic chemicals (i.e., those chemicals adhering to or absorbed onto soil particles) into waterbodies. For example, between 1982 and 1997, 8.1 million tons of soil were saved each year in Oregon from reduced sheet and rill erosion on agricultural lands.[4] Much of this reduction was accomplished through conservation cropping that left more residue on the surface and installation of physical erosion treatment measures such as terraces. For example, average sheet and rill erosion rates on

[4] Http://www.or.nrcs.usda.gov/technical/nri/erosionwater.html

cultivated cropland was reduced from 4.6 tons/acre/year in 1982 to 3.0 tons/acre/year in1997. Lower erosion rates were also achieved by converting highly erodible and environmentally sensitive cropland to vegetative cover through the Conservation Reserve Program (CRP), reducing these croplands from an average erosion rate of 7.2 to 0.4 tons/acre/year between 1982 and 1997, a dramatic 94% decrease over 15 years. While strides have been made to limit erosion, there is still much work to be done to control erodable soils that may contain toxic substances.

To prevent splash erosion and therefore sheet erosion, landowners must stabilize the soil with techniques such as temporary and permanent vegetation, sodding, mulching, compost blankets, and rolled erosion control products which absorb the impact of raindrops and protect the ground surface. Surface protection prevents soil particles from being dislodged and transported by sheet flow which itself generally does not have by itself sufficient volume or velocity to dislodge soil particles from a bare surface. On the other hand, to restrict surface flows' entering State waters requires methods of retardation or infiltration.

In addition to soil conservation, additional measures are required to prevent particulate- and dissolved-phase toxics from entering waters of the State. A partially soluble contaminant will establish a nominal equilibrium between the particulate phase (carried by sheet erosion) and the dissolved phase (carried by surface flow) as these two transport mechanisms move over the soil surface. The contaminant may thus be present in two forms, which may have a bearing on where it goes – either to sediment or remaining in surface water – once it reaches the stream or river. The additional measures needed to address toxics include limiting application of agricultural chemicals and nutrients to agronomic rates and requiring undisturbed forested riparian buffers that are sufficiently wide to capture runoff. Restoring the riparian areas along streams and rivers – with trees, shrubs, ground vegetation and organic matter – provides multiple benefits in addition to limiting toxic inputs to waters. Restored stream banks also provide shade to reduce stream temperatures, provide habitat, reduce sedimentation, and capture nutrient runoff.

In fact, riparian buffers are an essential aspect to limiting toxic inputs. For example, the Army Corps of Engineers has concluded that "[t]here is solid evidence that providing riparian buffers of sufficient width protects and improves water quality by intercepting [nonpoint source pollution] in surface and shallow subsurface water flow . . . ."[5] In order to achieve water quality protection, studies coalesce around similar outcomes. A review of some articles on vegetated buffers is instructive, while not definitive. Most studies have looked at water quality in general. For example, Castelle et al[6] found that "[b]ased on existing literature, buffers necessary to protect wetlands and streams should be a minimum of 50-100 feet [15 – 30 meters]," noting that "[b]uffers less than 10 meters [33 feet] provide little protection of aquatic resources under most circumstances."

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[5] Fischer, R.A. and Fischenich J.C. 2000. Design recommendations for riparian corridors and vegetated buffer strips. U.S. Army Engineer Research and Development Center, Environmental Laboratory. Vicksburg, MS at 2 (citations omitted).

[6] Castelle, A. J., A. W. Johnson and C. Conolly. 1994. Wetland and stream buffer requirements— A review. *Journal of Environmental Quality* 23:878-882.

Fischer et al[7] found smaller buffers could be acceptable, concluding that "most buffer width recommendations for improving water quality tend to be between 10 – 30 meters [33 – 100 feet]." However, the larger buffers were supported by Knutson and Naef[8] who concluded that scientific studies indicated that vegetated buffers to protect water quality should be between 24 and 42 meters (78 – 138 feet). Also supporting the larger buffers was a paper by Wenger[9] who noted that to protect water quality overall, "a 100 foot [30 meter] fixed-width buffer is recommended for local governments that find it impractical to administer a variable-width buffer."

The examples cited above address water quality in general. However, Wenger explains the rationale for the larger buffer widths by looking at individual pollutants. He noted that for long-term sediment control and short-term phosphorus control, a "30 meter [100 ft] buffer is sufficiently wide to capture sediments under most circumstances." Likewise, for nitrogen control, his paper concluded that in "most cases 30 meter (100 ft) buffers should provide good control, and 15 meters (50 ft) should be sufficient under many conditions." Mayer et al[10] concurred that "wider buffers" (greater than 50 meters /167 feet) more consistently removed significant portions of nitrogen entering the riparian zone. And, finally, for pesticide and heavy metal control, Wenger concluded that 15 meters [50 ft] was the bare minimum, and 50 meters [164 feet] shown to filter out much of two specific pesticides.

In addition to buffer width is the location of the buffers. Fischer et al. comment that

> The spatial placement of buffer strips within a watershed can have profound effects on water quality. Riparian buffers in headwater streams (i.e., those adjacent to first-, second-, and third-order systems) have much greater influences on overall water quality within a watershed than those buffers occurring in downstream reaches. Downstream buffers have proportionally less impact on polluted water already in the stream (Alliance for the Chesapeake Bay 1996). Even the best buffer strips along larger rivers and streams cannot significantly improve water that has been degraded by improper buffer practices higher in the watershed.[11]

And finally, they note that "[m]anagement for long, continuous buffer strips adjacent to aquatic

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[7] Fischer, R.A. and Fischenich J.C. 2000.

[8] Knutson, K.L. and V.L. Naef. 1997. Management recommendations for Washington's priority habitats: riparian. Wash. Dept. Fish and Wildlife, Olympia, WA.

[9] Wenger, S.J. 1999. *A review of the scientific literature on riparian buffer width, extent and vegetation*. Athens: Institute of Ecology Office for Public Service and Outreach, University of Georgia.

[10] Mayer, P.M., Steven K. Reynolds, Jr., Timothy J. Canfield. 2005. Riparian buffer width, vegetative cover, and nitrogen removal effectiveness: a review of current science and regulations. U.S. Environmental Protection Agency, EPA/600/R-05/118, National Risk Management Research Laboratory, Ada, OK.

[11] Fischer, R.A. and Fischenich J.C. 2000 at 3.

systems should be a higher priority in most cases than fragmented strips of greater width (Weller, Jordan, and Correll 1998). Continuous buffers are more effective at moderating stream temperatures, reducing gaps in protection from [nonpoint source pollution], and providing movement corridors for wildlife."[12]

B. Agricultural and Forestry Practices are Significant Sources of Pollutants Causing Violations of Oregon's Water Quality Standards But Current Rules for Management of These Sources are Insufficient to Reliably Reduce Toxics.

The Oregon Department of Agriculture (ODA) implements Senate Bill 1010 by issuing Water Quality Management Plans (WQMP) and associated rules that are intended to meet Oregon's water quality standards. While the management plans tend to be more expansive in their content, it is the rules that provide guidance to landowners and that have the force of law. As is discussed more fully below, ODA rules for individual subbasins lack sufficient specificity regarding erosion and streamside protection to ensure that landowners know what they must do in order to control pollution to the extent necessary to meet water quality standards. Although ODA revises WQMPs after DEQ issues TMDLs, the ODA subbasin rules have not improved appreciably in this regard in terms of their specificity and protectiveness and, ultimately, the likelihood they will result in the attainment of load allocations made to agricultural sources. Despite the passage of SB 1010 and the ODA's issuance of numerous plans and rules, agricultural lands are a significant source of pollution to Oregon's waters. For example, DEQ's Molalla Pudding TMDL for pesticides found that

> A review of existing data and previous studies indicates that the main source areas for the pesticides of concern are areas of agricultural land use associated with sediment entering streams. USGS found in the Willamette River Basin Water Quality Study that water column concentrations of several pesticides, particularly DDT, correlated with suspended solids concentrations (Anderson, et al, 1996 and Anderson, et al, 1997). The USGS also found that pesticides correlate highly with the percent of watershed in agricultural land use. Since much of the sediment which enters streams comes from sediment washed off fields during storm events, pesticides associated with sediment may be controlled by reducing surface erosion.[13]

Similarly the Molalla Pudding TMDL for nitrates found a high correlation between nitrate levels and agriculture.[14]

Likewise, the Oregon Department of Forestry (ODF) administers the Oregon Forest Practices Act (FPA). The FPA requires forest management practices to result in attainment of water quality standards. There are many indications that the current practices are inadequate to meet that goal, the latest being the preliminary results of the Riparian Function and Stream Temperature Project

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[12] *Id.* at 4.

[13] DEQ's Molalla Pudding TMDL, Chapter 4 Pesticides, December 2008 at 4-7.

[14] DEQ's Molalla Pudding TMDL, Chapter 5 Nitrates, December 2008 at 5-7.

("RipStream"). After two years of post-harvest data on private lands, the ODF found, among other things, that "the probability of exceeding the [Protecting Cold Water criterion] on Private treatment reaches when comparing any pre-harvest year to either the first or second year post-harvest was 40%."[15] Forest practices can result in runoff of suspended sediment which can affect drinking water as well as contaminate sediment and fish tissue. Suspended sediment can reduce the effectiveness of drinking water disinfection treatments, harbor pathogens, contribute to formation of disinfection by-products, and carry nutrients, heavy metals, pesticides, and other toxic chemicals adsorbed onto the surface of fine sediment.

For example, unpaved forest roads can produce fine sediment during most storm events and produce more sediment when roads have heavy traffic. Logging of areas can also increase the rate of natural disturbances, such as increased landslides and windthrown trees near areas that have been clearcut, particularly during the rainy season. Peak flows can increase during the first fall storms due to clearcutting and flows can increase due to roads, potentially moving more sediment through channels and carrying sediment from roads. Soil exposed by log skidding is more vulnerable to erosion in intense storms, especially exposed soil near streams.

II. Current Department Authorities to Regulate NonPoint Source Pollution.

Our understanding is that DEQ authority to control most nonpoint sources is broad. Oregon's water pollution statutes provide clear and sufficient authority for identifying, evaluating, and setting standards for toxic substances that adversely affect the designated beneficial uses of the state's waters including protection of human health. The following are illustrative of this broad authority:

> The water pollution control laws of this state shall be liberally construed for the accomplishment of the purposes set forth in ORS 468B.015.[16]
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> "Nonpoint source" means any source of pollution other than a point source.[17]
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> "Pollution" or "water pollution" means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate

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[15] Riparian Function and Stream Temperature (RipStream) Project: Background, Analysis Approach, Initial Findings, and Future Analysis, ODF, August 1, 2009 at 6.

[16] ORS 468B.010(2) (emphasis added).

[17] ORS 468B.005(3) (emphasis added).

beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof.[18]

"Wastes" means sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive or other substances which will or may cause pollution or tend to cause pollution of any waters of the state.[19]

III. Overview of Subcommittee Approach.

In Oregon, the traditional nonpoint sources of logging and farming are primarily regulated by the Department of Forestry (ODF) and Department of Agriculture (ODA). ODF and ODA implement their programs in different ways but state law calls for both agencies to require land owners to use best management practices that conform to Oregon's water quality standards. DEQ establishes the state's water quality standards and it also issues Total Maximum Daily Loads (TMDLs) which establish how Oregon will meet water quality standards in watersheds where those standards have been violated, to remedy the violations and prevent future violations from occurring.

For nonpoint sources, TMDLs establish load allocations (LA) which set out the expected maximum pollutant contributions or expected pollutant reductions. In Oregon, TMDLs are frequently expressed in "surrogate measures." EPA developed the idea of surrogate measures so that states could express load allocations to nonpoint sources in ways that were readily understood, more practical, and easier to apply on the ground than strict pollutant measurements. For this reason, EPA Guidance describes the requirements of any TMDL with surrogate measures as needing to "contain a description of any important assumptions made in developing the TMDL, such as . . . an explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments; chlorophyl a and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices."[20]

DEQ's TMDLs for temperature are expressed as surrogate measures. A key measure is shade rather than, for example, British Thermal Units (BTU). These shade surrogate measures have been subject to interpretation – not by DEQ which develops the water quality standards and the TMDL modeling on how to meet those standards – but by ODA and ODF. As the forthcoming memo will further elucidate, ODA's SB 1010 plans and rules and ODF's Forest Practices Act (FPA) forest management practices fall well short of meeting the requirements of these standards and load allocations. A primary reason for this inconsistency between standards and practices is the DEQ's failure to make its standards and surrogate measures sufficiently clear. For example, rather than express the surrogate measures explicitly, as EPA suggests it may, DEQ expresses the surrogate measures as "site potential

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[18] ORS 468B.005(5) (emphasis added).

[19] ORS 468B.005(9) (emphasis added).

[20] Guidelines for Reviewing TMDLs Under Existing Regulations Issued in 1992, http://www.epa.gov/owow/tmdl/guidance/final52002.html.

shade." As a result, other agencies, rather than DEQ, determine the size and density of vegetated buffer that is necessary to meet DEQ's water quality standards and TMDLs.

Furthermore, TMDLs submitted to EPA are required to address what are termed "reasonable assurances." This means that "[w]hen a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards."[21]

Likewise, EPA policy for nonpoint source only waters is similar: "[implementation plans must demonstrate] [r]easonable assurances that the nonpoint source load allocations established in TMDLs (for waters impaired solely or primarily by nonpoint sources) will in fact be achieved. These assurances may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."[22]

Despite these requirements and the apparent failure of ODA and ODF to adequately ensure that agricultural and silvicultural lands minimize their respective contributions to water quality standards violations, Oregon TMDLs rely upon the ODA and ODF programs to show sufficient reasonable assurances the load allocations to nonpoint sources will be met. For this reason, nearly all the Subcommittee's proposed options seek to assure that DEQ more clearly establishes the requirements for nonpoint source controls in its water quality standards and in its TMDLs that interpret those standards.

In conclusion, while DEQ establishes Oregon's water quality standards, it has long deferred to other agencies to establish what best management practices are necessary to meet those standards. The change we seek through proposed rule changes and other recommendations for Commission directives is to place this determination of best management practices in the hands of DEQ, the State's water quality experts. By doing so, the Commission will significantly increase the clarity of its own standards and TMDLs and put Oregon on a path to achieving those standards as necessary to protect human health, fish, and wildlife.

IV. Potential Solutions to Reduce NonPoint Source Toxic Pollution to Oregon's Waters.

In order to protect human health for present and future generations, DEQ's water quality standards need to require greater control of nonpoint sources, including that related to sheet erosion and surface runoff, sufficient to meet water quality criteria and protect beneficial uses. Possible solutions are set out below to be considered by DEQ as part of the rulemaking effort.

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21 *Id.*

22 http://www.epa.gov/OWOW/tmdl/ratepace.html.

This is not an exhaustive list; rather it is a starting place for discussions. Where wholly new language has been proposed, we have not suggested where in the existing rules it should be inserted, however we recommend that all language be made a part of the water quality standards, not implementation rules.

(***Note:*** *where there is a citation to current rules, underlined material indicates proposed additions to existing rule language, strike-through indicates proposed deletions from existing language. If there is no citation to existing rules, the language is all proposed.)*

(Note: *There is some redundancy to some of the proposals.)*

A. ***Problem***: **Sheet erosion and surface runoff contribute toxics to surface water.**

Sheet erosion and surface runoff from land activities carry the toxic materials that cause most of the violations of Oregon's water quality standards. For this reason, DEQ should consider a clear prohibition on controllable sheet erosion and surface runoff into waters of the State. Such a prohibition would enhance DEQ's ability to make clear to designated management agencies (DMAs) what is necessary to meet water quality standards. As mentioned above, these two forms of runoff would likely require different control measures.

Potential Solution: **<u>Add</u> a narrative prohibition on controllable erosion.**

"The controllable discharge of soil, silt, bark, slash, sawdust, or other organic and earthen material from any agricultural, grazing, logging, construction, gravel mining, industrial, urban, or other activity of whatever nature into waters of the State or to a location where such material could readily migrate into waters of the State is prohibited."

B. ***Problem*****: Oregon's standards establish a shield for nonpoint sources regardless of whether BMPs are adequate to meet water quality standards**.

OAR 340-041-0061(12)[23] includes language which can be and has been interpreted[24] as establishing a shield for nonpoint sources that implement existing but inadequate management practices. These sections suffer from several deficiencies. *First*, they are circular. Each one states that the Department will work with the designated management agency to revise its rules to assure water quality standards are attained yet each one establishes that meeting current practices is sufficient to be deemed in attainment. *Second*, to the extent that state law or other agreements or statutes are governing, it is not necessary to capture those authorities in the State's water quality standards. *Third*, from the research

[23] OAR 1340-041-0028(12)(e, f, g) (Temperature) contains the same or similar language.

[24] *Center for Biological Diversity et al. v. Wagner*, Civ. No. 08-302-CL, D.Or., June 29, 2009 at 31-32.

and analysis done by many federal and state agencies that agriculture, forestry, and urban/suburban development – on private and public lands – are having a deleterious effect on Oregon water quality. Oregon's water quality standards should require meeting the criteria and protecting the beneficial uses, not providing shields for inaction. *Fourth*, Oregon's standards are the goals that must be met notwithstanding any shields that exist in state law. Removing this language would clarify that it is the practices that must meet the water quality standards, as the state statute clearly establishes, not the standards that must comply with the logging practices, a result that would violate the requirements of the Clean Water Act. *Last*, point sources can no longer bear the entire burden of improving Oregon's water quality particularly when they are not the largest source of many pollutants which are impairing Oregon's waters.

Potential Solution: **Remove the existing shields for nonpoint sources in water quality standards**.

> "(e) ~~Forestry on State and Private Lands. For forest operations on State or private lands, water quality standards are intended to be attained and are implemented through best management practices and other control mechanisms established under the Forest Practices Act (ORS 527.610 to 527.992) and rules thereunder, administered by the Oregon Department of Forestry. Therefore, forest operations that are in compliance with the Forest Practices Act requirements are (except for the limits set out in ORS 527.770[25]) deemed in compliance with this rule. DEQ will work with the Oregon Department of Forestry to revise the Forest Practices program to attain water quality standards.~~
>
> (f) ~~Agriculture on State and Private Lands. For farming or ranching operations on State or private lands, water quality standards are intended to be attained and are implemented through the Agricultural Water Quality Management Act (ORS 568.900 to 568.933) and rules thereunder, administered by the Oregon~~

[25] ORS 527.770 reads as follows:

"A forest operator conducting, or in good faith proposing to conduct, operations in accordance with best management practices currently in effect shall not be considered in violation of any water quality standards. When the State Board of Forestry adopts new best management practices and other rules applying to forest operations, such rules shall apply to all current or proposed forest operations upon their effective dates. However, nothing in this section prevents enforcement of water quality standards against a forest operator conducting operations after the time provided in ORS 527.765 (3)(f) for adoption of revised best management practices if the board either has not adopted revised management practices or has not made a finding that such revised best management practices are not required."

~~Department of Agriculture. Therefore, farming and ranching operations that are in compliance with the Agricultural Water Quality Management Act requirements will not be subject to DEQ enforcement under this rule. DEQ will work with the Oregon Department of Agriculture to revise the Agricultural Water Quality Management program to attain water quality standards.~~

(g) ~~Agriculture and Forestry on Federal Lands. Agriculture and forestry activities conducted on federal land must meet the requirements of this rule and are subject to the department's jurisdiction. Pursuant to Memoranda of Agreement with the U.S. Forest Service and the Bureau of Land Management, water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices and aquatic conservation strategies. Where a Federal Agency is a Designated Management Agency by the Department, implementation of these plans, practices and strategies is deemed compliance with this rule.~~"

C. ***Problem*: Rules are not clear that logging practices must conform to water quality standards, not the other way around.**

Existing rule language suggests that logging activities need only be conducted in accordance with practices issued by the Oregon Department of Forestry without reference to the statutory requirement that such practices conform to Oregon's water quality standards. In addition, the existing language refers to "minimizing" adverse effects whereas the meeting of water quality standards requires full support of beneficial uses and compliance with criteria. If DEQ is to be successful in attaining Oregon's water quality standards for the new toxic criteria, it must be able to demonstrate that it is the practices that need to conform to the standards, not the other way around.

Potential Solution: **Clarify the statutory requirement that logging practices must conform with water quality standards.**

OAR 340-041-0007(5) (Statewide Narrative Criteria). "Logging and forest management activities must be conducted in accordance with Oregon water quality standards. Practices developed by the Oregon Department of Forestry pursuant to the Oregon Forest Practices Act must therefore conform to TMDLs issued by the Department, load allocations contained within those TMDLs, and water quality standards in order to ~~minimize adverse effects on~~ protect, restore, and maintain existing and designated beneficial uses and the water quality required to support them."

D. ***Problem:* Oregon rules do not make explicit that nonpoint sources must meet load allocations established in TMDLS.**

Oregon establishes TMDLs which make wasteload allocations (WLA) to point sources and load allocations (LA) to nonpoint sources. While WLA are incorporated into NPDES permits upon their renewal, there is not a similar regulatory structure for nonpoint sources of toxics and nonpoint sources are not projected to achieve their assigned load allocations. Instead, each TMDL names Oregon's nonpoint source designated management agencies (DMA), recites applicable statutes and rules, and concludes there is "reasonable assurance" that practices will be adopted or revised to meet the load allocations. The monitoring and reporting requirements associated with load allocations and the determination of effectiveness of management practices is also insufficient. As a result, there is little documentation that action has been taken by many of the nonpoint sources DMAs to revise the best management practices (BMPs) as necessary to meet water quality standards. For this reason, Oregon's water quality standards should include an explicit expectation that nonpoint sources will meet the load allocations set out in DEQ's TMDLs, including but not limited to surrogate measures.

Potential Solution: **<u>Add</u> requirement that nonpoint sources comply with load allocations**.

"Nonpoint Sources on State, Federal, and Private Lands. Any nonpoint source operations on State, federal, or private lands shall meet water quality standards through the application of sufficient management practices, restoration plans, and aquatic conservation strategies, as applicable, to control sheet erosion and surface runoff from those lands. State, federal, or local Designated Management Agencies shall include sufficient management plans, practices, and strategies as necessary to comply with water quality standards, load allocations in approved TMDLs, and rules."

E. ***Problem*: Oregon's antidegradation requirements are not sufficient to extend the policy to nonpoint sources as needed to attain the new toxic criteria.**

An essential component of water quality standards, and particularly how they apply to individual sources of pollution, is the antidegradation policy. By law, water quality standards require both an antidegradation policy and antidegradation policy implementation methods, referred to collectively as "antidegradation requirements." Oregon's antidegradation requirements are not consistent with federal law, are not sufficient to extend the antidegradation policy to existing and new nonpoint sources as required by federal law, and do not meet the goals of the Commission including assuring attainment of Oregon's new toxic criteria.

Specifically, the federal antidegradation policy requires the following three relevant components:

Tier I Requirements: Protection and maintenance of "existing uses and the level of water quality necessary to protect the existing uses" is required.[26] Existing uses are defined as "those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards."[27] The requirement to protect existing uses applies to all waters regardless of their present quality.

Tier II Requirements. To implement Tier II protection of high quality waters, the State must achieve "all cost-effective and reasonable best management practices for nonpoint source control."[28]

Implementation Methods: The State must "identify the methods for implementing" its antidegradation policy.[29] These methods must include both Tier I protections for existing uses and the level of water quality necessary to protect and maintain those uses as well as Tier II protections for the protection and maintenance of the quality of high-quality waters.

The consumption of high levels of fish by a variety of Oregonians is an existing use that requires protection. Waters that violate criteria constitute waters whose water quality fails to protect existing uses by definition and therefore violate the Tier I protections. As a result, non-NPDES sources (including, but not limited to erosion, air deposition sources, legacy sources) must be controlled to the degree necessary to protect those existing uses and their associated water quality. Where waters are of high quality, meaning there is a presumption that existing uses are protected and criteria are not violated, the nonpoint source controls that are required are limited to those that are "cost-effective and reasonable" in order to protect those waters from deteriorating. In other words, the antidegradation policy applies to waters with unsafe levels of toxic contaminants, waters that are relatively clean, and waters where the detectible levels are above the applicable numeric criteria. In all cases the needed nonpoint source controls are essentially the same unless the controls are not cost-effective, in which case they would not apply to high quality waters.

Potential Solution: **Add a clear statement of the relationship between the numeric toxics criteria and the antidegradation requirements**.

340-041-0004(1) (Antidegradation) **"**Purpose. The purpose of the Antidegradation Policy is to guide decisions that affect water quality such that unnecessary further

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26 40 C.F.R. §131.12(a)(1).

27 40 C.F.R. §131.13(e).

28 40 C.F.R. §131.12(a)(2).

29 40 C.F.R. §131.12(a).

degradation from new or increased point and existing or new nonpoint sources of pollution is prevented, and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses."

340-041-0004(7) (Antidegradation) "Water Quality Limited Waters Policy:
(a) Water quality limited waters may not be further degraded except in accordance with section (9)(a)(B), (C) and (D) of this rule.
(b) Management practices employed to control sheet erosion and surface runoff from nonpoint sources to water quality limited waters must be sufficient to assure protection of existing uses and the water quality necessary to support the existing uses."

340-041-0004(6) (Antidegradation) "High Quality Waters Policy: Where the existing water quality meets or exceeds those levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, and other designated beneficial uses, that level of water quality must be maintained and protected. To meet this goal, all cost-effective and reasonable land management practices must be used on private, state, and federal lands to assure numeric and narrative criteria are attained and maintained. Cost-effective and reasonable land management practices includes compliance with any minimum best management practices developed by the Department."

F. ***Problem:*** **Certain nonpoint sources can and should be redefined as point sources to ensure they are sufficiently regulated.**

Forest roads are a significant source of sheet erosion with a high likelihood of containing toxic chemicals. Currently, forest roads and related water conveyances are treated as nonpoint sources. However, the Clean Water Act defines "point source" to include "any discernable, confined and discrete conveyance" including but not limited to any ditch, channel, discrete fissure, and conduit but explicitly does not include agricultural stormwater discharges and return flows from irrigated agriculture."[30] In other words, once runoff enters a conduit such as those defined by the CWA as point sources, the runoff is subject to NPDES permits. Redefining forest roads as discrete man-made conveyances would bring them under the purview of the NPDES system, and reduce the release of toxics to Oregon's waters.

Sheet erosion and surface runoff from agricultural fields is normally exempt from the NPDES permitting requirements of the Clean Water Act: "[The term 'point source'] does not include agricultural stormwater discharges and return flows

[30] The Clean Water Act defines "point source" as "any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture." CWA § 502(14).

from irrigated agriculture."[31] However, when materials, such as manure, are spread or sprayed on agricultural lands in excess of agronomic rates, such materials constitute the disposal of wastes that require an NPDES permit. The term "pollutant" includes "agricultural waste discharged into water,"[32] "point source" includes a discernable conveyance of "from which pollutants are or may be discharged,"[33] and such point sources require NPDES permits.[34] Therefore, agricultural wastes discharged from point sources such as tile drain field outlets should receive NPDES permits. Because such wastes likely contain nitrates from the manure as well as agricultural chemicals and nitrates, redefining non-exempt agricultural wastes as point sources would reduce the release of toxics to Oregon's waters.

***Potential Solution*: <u>Add</u> a requirement that certain limited nonpoint sources be redefined as point sources.**

"Logging roads are point sources. Owners of land containing logging roads shall obtain an NPDES permit to discharge from such roads from the Department."

"Discharge from tile drain fields of agricultural materials applied to such fields in excess of agronomic rates constitute the discharge of a pollutant which requires an NPDES permit."

G. *Problem:* DEQ rules do not clearly specify which nonpoint sources are not regulated by ODF.

DEQ rules should be clarified to ensure that nonpoint sources under the authority of DEQ includes those types of tree growing operations that are explicitly excluded from the Oregon Forest Practices Act (Christmas trees and hybrid cottonwoods, or other hardwood plantations[35]) or have been excluded by the administrative actions of the Oregon Department of Forestry ("agricultural trees" include fruit and nut trees in actively managed orchards and all ornamental trees grown in nurseries[36]). In addition, the Oregon Forest Practices Act may not apply

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31 CWA § 502(14).

32 CWA § 502(6).

33 CWA § 502(14).

34 CWA § 402.

35 ORS 527.620(10).

36 Chapter 527 Selected Statutes (doc) Harvest Units - Definitions, Wildlife Tree & Downed Log Retention Requirements, Forestland Conversion, Harvest Limitations, Scenic Hwys http://www.oregon.gov/ODF/privateforests/fpaGuidance.shtml.

to abandoned logging roads[37] because they are not apparently included in the practices administered by the Oregon Department of Forestry. If so, authority to regulate the runoff from such abandoned roads would rest solely with DEQ. Abandoned logging roads can be significant contributors to nonpoint source runoff.

Potential Solution: **Clarify nonpoint sources excluded from the Oregon Forest Practices Act**.

340-041-0002 (Definitions): "'Agricultural practices' include any tree growing operations statutorily or administratively excluded from coverage under the Oregon Forest Practices Act including but not limited to Christmas trees, hardwood plantations, actively managed orchards, nurseries, voluntary or mandatory forested riparian buffers, and abandoned logging roads."

H. ***Problem***: **TMDL load allocations to nonpoint sources are not sufficiently clear and are not implemented or enforced**.

TMDLs currently suffer from lack of clarity in how they should be implemented to meet water quality standards, particularly for non-NPDES sources that are not given waste load allocations which are readily translated into effluent limits. The use of so-called "surrogate measures" is intended to make load allocations to nonpoint sources easier to apply. For example, rather than to establish load allocations for temperature TMDLs in British Thermal Units, the Department describes such allocations as required shade. Despite this improvement, a load allocation set out as surrogate measures may still be difficult to translate to needed on-the-ground actions. In fact, this is true more often than not; such opaque load allocations are not implemented as necessary to meet water quality standards.

Sediment TMDLs that address – directly or indirectly – the entry of particulate-phase toxic contaminants to Oregon waters must sufficiently identify acceptable sheet erosion levels and the prescriptions necessary to control sheet erosion to those levels such that DMAs do not need to interpret how to implement a TMDL. If the new toxic criteria are important enough to be the subject of extensive rulemaking and public participation, presumably they are important enough to attain. Attainment can only come about where the Department is very clear about the actions that are necessary to control pollution. Therefore unclear surrogate measures should no longer be used in establishing the load allocations in TMDLs.

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[37] ORS 527.620 (Definitions) "Forest practice" means any operation conducted on or pertaining to forestland, including but not limited to:

(a) Reforestation of forestland;
(b) Road construction and maintenance;
(c) Harvesting of forest tree species;
(d) Application of chemicals; and
(e) Disposal of slash.

Finally, while TMDL requirements administered by the Oregon Department of Agriculture are supposed to be based on water quality standards, landowners are, in essence, allowed to design voluntary practices that ostensibly meet SB 1010 rules which in turn are intended to meet water quality standards. The weakness in this approach is that there is little or no sound technical basis that links the chosen practices to the water quality standards, as they are currently written. Moreover, this approach relies heavily upon monitoring the results of such practices, which is technically complicated if not impossible. As a result, there is a legal requirement that adopted practices meet water quality standards but in reality there is little if any linkage between the two and, due to a lack of monitoring data, no way to determine whether the voluntary practices implemented are effective. This approach is further compromised by the fact that it is the ODA that determines the sufficiency of the practices to meet the standards that are set by DEQ. Therefore, it is essential that DEQ's water quality standards be made more clear in their expectations related to polluted run-off.

Potential Solution: **Add requirements that TMDL "surrogate measures" be clear and easily applied statements as to how to meet load allocations**.

"Any TMDL that uses surrogate measures to establish load allocations for the control of nonpoint sources will establish those surrogate measures such that a designated management agency or land owner can readily identify actions required to comply with the load allocations."

I. ***Problem:*** **Soil loss rates from nonpoint sources are not calculated and limited by DEQ rules.**

The Universal Soil Loss Equation (USLE), according to the U.S. Department of Agriculture's Agricultural Research Service "is hailed as one of the most significant developments in soil and water conservation in the 20th century." The USLE predicts the long term average annual rate of erosion on a field slope based on rainfall pattern, soil type, topography, crop system and management practices. This erosion model was created for use in agriculture, but is also applicable to non-agricultural conditions such as construction sites, rangelands, and forests. The USLE can be used to compare soil losses from a particular field with a specific crop and management system to "tolerable soil loss" rates. Alternative management and crop systems may also be evaluated to determine the adequacy of conservation measures in farm planning.

The Universal Soil Loss Equation was first published in 1965 in Agriculture Handbook No. 537 by the U.S. Department of Agriculture. It was revised in 1978 and again in 1997 in Agriculture Handbook No. 703 as the Revised USLE. RUSLE has the same formula as USLE, but has several improvements in determining factors including: some new and revised isoerodent maps; a time-varying approach for soil erodibility factor; a subfactor approach for evaluating the cover-management factor; a new equation to reflect slope length and

steepness; and new conservation-practice values. With a widespread acceptance, USLE – and its revisions and modifications – has become the major conservation planning tool which is used in the United States and other countries in the world.

The USLE only predicts sheet and rill erosion. Sheet erosion is the uniform removal of soil from an area without the development of conspicuous water channels. Rill erosion refers to the removal of sod through the cutting of numerous small but obvious water channels where runoff concentrates. Gully erosion on the other hand, is a more dramatic and visible form of soil erosion, but is not predicted by the USLE which is why it should be estimated by the Department to the extent that research allows.

"Tolerable Soil Loss" is often used along with RUSLE for conservation planning. Soil loss tolerance is the maximum amount of soil loss in tons per acre per year, that can be tolerated and still permit a high level of crop productivity to be sustained economically and indefinitely. It is also based on natural rates of soil formation, with soil formation consisting of mineral weathering as well as dust deposition. Tolerable soil loss is based on protecting soil for crops, not to address water quality concerns. To the extent that an augmented tolerable soil loss is derived for flat lands using the USLE, it must be also be accompanied by additional requirements to assure that such soil loss is further mitigated by forested riparian agricultural buffers, described in Section "J" below. Finally, revised and modified USLEs are primarily applicable to flat lands and are not applicable to steeper slopes, such as where logging may occur.

Potential Solution: **<u>Add</u> a requirement to use an enhanced Universal Soil Loss Equation to calculate and limit controllable erosion rates**.

"Where sheet erosion from lands can be in part controlled by erosion control practices, the measure of such controllable erosion shall be established as the Tolerable Soil Loss. Tolerable Soil Loss is any actual soil erosion rate at which a deterioration or loss of one or more soil functions does not occur, actual soil erosion being defined as the total amount of soil lost by all recognized erosion types. Allowable runoff to meet the Tolerable Soil Loss will be derived from the use of the Universal Soil Loss Equation (USLE), the Revised USLE, or any approved update, where such equations are applicable or where the Department has developed alternatives. Such USLE will be augmented, where possible, with estimates of gully erosion."

J. ***Problem***: **Agronomic rates of nutrient application are readily available but land owners are not required to control the entry of toxics to surface waters by limiting application to agronomic rates**.

An agronomic[38] rate of application is that rate at which the vegetation on land is able to use the nutrients applied to the land without excess runoff or contamination of groundwater. Oregon State University has developed specific fertilizer guides that estimate crop nitrogen requirements, known as agronomic rates. Where there are no fertilizer guides appropriate for a specific site, crop, and irrigation method (irrigated or dryland) the local Cooperative Extension or Natural Resources Conservation Service office will make the appropriate calculations. These guides are based on field growth trials under specified climate and cultural conditions and averaged over a variety of soil types and years. The fertilizer guides account for both the nitrogen available from mineralization of soil organic matter and the efficiency of nitrogen removal by the crop. These rates are used by DEQ and other agencies in determining the allowable application rates for biosolids.[39] Limiting fertilizer application to agronomic rates would reduce the runoff of fertilizer, and its possible toxic contaminants, from agricultural fields.

When nitrogen fertilizers are used on agricultural land, excess nitrates may be carried by rain and irrigation water into ground and surface water. Human and animal wastes and combustion can also contribute to nitrate contamination of water. Nitrates are toxic, causing problems with populations that obtain their drinking water from groundwater. Nitrate levels can also be an indicator of overall poor water quality, suggesting the possible presence of other contaminants such as human pathogens, pesticides, and other inorganic and organic compounds. Controlling the application of fertilizers which contain nitrogen and toxic metals is one way of reducing levels of toxics, including but not limited to nitrates, in Oregon's water. In addition, controlling agricultural runoff for one set of pollutants should be the same as achieving the necessary level of control for other pollutants.

It is important to note that agronomic rates themselves are not sufficient to protect surface water quality. In addition, agronomic rates may not offer sufficient protection to groundwater supplies. The proposed language below does not offer a solution to protecting groundwater.

Potential Solution: **<u>Add</u> a requirement that fertilizers be restricted to agronomic rates**.

"Nutrients shall not be spread on fields exceeding tolerable soil loss. Erosion controls shall be implemented so that tolerable soil loss over the crop rotation will

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[38] OAR 340-050-0010 (Biosolids) defines "Agronomic Application Rate" as "a rate of biosolids or domestic septage application which matches nutrient requirements for specific crop on an annual basis."

[39] OAR 340-050-0025(3) (Biosolids) contains the following restriction: "Biosolids land application to agricultural or forest land, or a public contact site, shall not exceed the nitrogen loading required (agronomic loading rate) for maximum crop yield."

not be exceeded on fields that receive nutrients. All land where crops or feed are grown shall be cropped to achieve a soil erosion rate equal to, or less than, the "tolerable" rate established for that soil."

K. ***Problem:*** **Riparian buffer strips are essential to protecting surface water from nonpoint sources but they have not been required by DEQ nor have their dimensions been established by DEQ.**

Reducing sheet erosion on, and surface runoff from, crop lands is one part of preventing or minimizing the movement of toxic contaminants from agricultural lands. In addition, riparian buffers are required to trap soil and contaminants as rain and/or irrigation flows naturally migrate off fields towards streams. Riparian buffers are an effective practice to reduce sheet erosion, and should be included in any rulemaking package. The size of such buffers should be related to the slope and shape of the stream banks and the buffer area. Such buffers should be assumed and required to be forested, to have sufficient ground vegetation and/or organic matter, and to have no soil disturbance preventing contaminated soils from entering streams by providing a fine net to catch debris, provide temperature control benefits, and maximize the resilience of the multi-layered vegetation over time.

DEQ is in serious need of a standardized and readily implementable method for determining the necessary width of riparian buffers if it wants to make progress in controlling nonpoint source pollution. The situation calls for a method that takes the major variables into account but is also easy to use in regulatory and field activities. The Commission should instruct DEQ to perform the research and other activities necessary to develop: (a) design specifications for riparian buffer strips intended to interdict nonpoint source pollution and (b) performance criteria and methods for determining the efficacy of such strips with respect to control of such pollution.

Current Agricultural Water Quality Management (WQMP) Area rules issued by the ODA for a variety of watersheds address the need for streamside and riparian protection. For example, the Walla Walla rules state that, with the exception of irrigation water conveyence systems, "streamside area management must allow the establishment, growth and maintenance of riparian vegetation to promote habitat and protect water quailty by filtering sediment, stabilizing streambanks, naturally storing water, and providing shade consistent with the vegetative capability of the site."[40] A similar but different example is the Mid-Coast WQMP requiring agricultural activities in the "near-stream management areas" to "allow for the establishment and development of riparian vegetation consistent with site capability. Vegetation must be sufficient to provide the following riparian functions: shade, streambank integrity during stream flows following a 25-year

[40] OAR 603-095-1740(3) (Prevention and Control Measures), April 17, 2002.

storm event, and filtration of nutrients and sediment."[41] Yet another is the draft Lower Willamette WQMP in which riparian management must allow sufficient riparian vegetation to provide "[f]iltration, settlement, and biological uptake of sediment, organic material, nutrients, and pesticides in surface runoff by intercepting or slowing overland flow."[42] Some WQMPs are more terse. Some specify prohibited conditions while others specify the desired conditions.

In all cases, regardless of the details or lack thereof, the ODA rules and plans fail to clearly set out how a landowner will determine the width and density of the vegetation that is sufficient to achieve the desired ends. Landowners are not capable of determining what constitutes "site capability" or vegetation sufficient to provide the necessary riparian functions, whether related to surface runoff, sheet erosion carrying contaminated soils, shade or other considerations. ODA also lacks the expertise to know what landowners' responsibilities should be to meet DEQ's water quality standards so it has no basis for informing landowners what its own rules mean. As a result, ODA's failure to specify what is sufficient to constitute compliance with DEQ's water quality standards means that DEQ must establish those specifications.

Potential Solution: **Recommend that the Commission direct the Department to develop design specifications for riparian buffer strips.**

"The Commission directs the Department to research and develop design specifications for riparian buffer strips necessary to maintain or improve water quality by trapping and removing various non-point source pollutants (e.g., contaminants from herbicides and pesticides, nutrients from fertilizers, and sediment from upland soils) from both particulate-phase (sheet erosion) and dissolved-phase (surface runoff) flows. Buffers will be assumed to be defined as areas of no soil disturbance in order that they may function at maximum effectiveness and offer resilience to natural forces over time."

L. ***Problem***: **DEQ rules lack specific direction to nonpoint sources.**

As with other proposals above, this specific antidegradation requirement would require agricultural landowners to minimize soil erosion from their land and implement methods of preventing particulate- and dissolved-phase contaminants from entering waters of the State.

ODA rules rely, in many cases, on preventing visible evidence of erosion. For example, the draft Lower Willamette rules call for "no visible evidence of erosion resulting from agricultural activities in a location where erosion contributes, or may contribute, sediment to waters of the state." This particular rule goes on to

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41 OAR 603-095-2240(2) (Prevention and Control Measures), August 1, 2002.

42 OAR 603-095-3740(5)(a)(C) (Riparian Management), October 22, 2003.

specify six features of visible erosion. Relying on visible evidence of erosion – such as gullies, broken streambanks, and active rills – does nothing to prevent the erosion from taking place. In fact, sheet erosion is defined as difficult to detect until it turns into rill erosion. For example, sheet erosion of up to 15 tons/acre/year can be undetectable. For this reason, practices that prevent sheet erosion before it becomes detectable must be required by Oregon's water quality standards.

As with the discussion above regarding the width and density of riparian buffers, neither landowners nor ODA know how much sheet erosion must be curtailed to meet water quality standards. In most cases ODA rules leave this to the judgment of the individual landowner. Occasionally, the rules set out restrictions. For example, the Walla Walla rules restrict sheet and rill erosion to not more than 5 tons/acre/year as estimated by RUSLE.[43] In the Yamhill subbasin, ODA rules restrict landowners to "two times the tolerable soil loss (T) leaving the property or being transported to streams."[44] There is no indication that these soil erosion levels allowed by ODA rules are sufficient to meet water quality standards and the plans do not explain why ODA chose these levels.

Potential Solution: **<u>Add</u> that agricultural landowners must implement specific practices to be in compliance with water quality standards.**

"A landowner engaged in agricultural practices shall implement the following conservation practices in order to protect existing uses and the level of water quality necessary to protect them and to have implemented all cost-effective and reasonable best management practices for nonpoint source control:

(1) Nonpoint Source Pollution Control. A landowner shall implement conservation practices that achieve compliance with water quality standards and load allocations including but not limited to:

(a) TMDL load allocations including those described by surrogate measures;
(b) Riparian buffers strips consistent with DEQ specifications;
(c) Practices needed to prevent surface runoff of dissolved phase toxic chemicals;

(2) Soil Erosion Control. A landowner shall manage croplands and cropping practices so that soil erosion rates on cropped soils do not exceed tolerable soil loss values."

M. ***Problem***: **DEQ lacks sufficient regulation to prevent contamination of sediments.**

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[43] OAR 603-095-1740(4)(c)(C) (Soil Erosion and Sediment Control), April 17, 2002.

[44] OAR 603-095-0540(1)(b) (Prevention and Control Measures), April 8, 2003.

As a general rule, toxic residues are most often found and most easily detected in the fish tissue or sediment in surface waters. Sediments are the primary mechanism by which fish tissue consumed by people becomes contaminated. Oregon has narrative criteria for toxics that explicitly prohibit the build-up of contamination in sediments:

> OAR 1340-041-0007(12) (Statewide Narrative Criteria1) "The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed."
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> OAR 340-041-0033(1) (Toxic Substances) "Toxic substances may not be introduced above natural background levels in waters of the state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare or aquatic life, wildlife, or other designated beneficial uses."

Other than these narrative toxic criterion, however, Oregon does not have a regulatory approach to limiting the build-up of toxic chemicals in sediments.

Nationally, EPA has found that 43 percent of sediment contaminant sampling stations are "probably associated with harmful effects on aquatic life or human health" with another 30 percent "possibly associated" with such harmful effects.[45] That report noted that the most significant sediment contamination in EPA Region X included the Willamette and Columbia Rivers and the Columbia Slough. Eighty-nine of the sampling stations in the Lower Willamette watershed were deemed to show sediment contamination levels that were probably or possibly associated with harmful effects. In Oregon, 51.8 percent of sampling stations were considered to "probably" present harmful effects with 33.9 percent presenting "possible" threats.

In its 2004 report, EPA concluded that "[a] lag is evident in the improvement of sediment quality compared to water quality because of the persistent nature of many pollutants, especially since sediment acts as a reservoir for many contaminants. Other factors include the difficulty in monitoring and regulating most toxic bioaccumulative pollutants."[46] Not surprisingly, EPA also concluded that "[t]he feasibility and long-term success of sediment remediation approaches (natural recovery, dredging, or capping) depend on effective pollutant source

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[45] The Incidence and Severity of Sediment Contamination in Surface Waters of the United States, National Sediment Quality Survey: Second Edition, EPA, November 2004.

[46] *Id*. at. 5-5.

control."[47] It is precisely this source control that sediment quality standards and/or a regulatory methodology to implement them are missing from DEQ's approach to controlling toxics.

Potential Solution: **Recommend that the Commission direct the Department to develop a regulatory plan to address contaminated sediment**.

"The Commission directs the Department to evaluate administrative options to controlling toxic contamination of sediments in Oregon waters including identifying violations of existing narrative criteria for toxics, OAR 1340-041-0007(12) and 340-041-0033(1). Such options could include but not be limited to adoption of sediment criteria, adoption of tissue criteria, adoption of guidance levels for assessment of sediment contamination, and any other regulatory means of interpreting and applying Oregon's existing narrative toxic criteria."

N. ***Problem***: **DEQ has not established what nonpoint source controls are necessary to meet water quality standards or load allocations established in TMDLs.**

The Department is the best situated state agency to establish the necessary best management practices needed to meet state water quality standards. Currently, despite the widespread impacts of nonpoint sources on Oregon's water quality and the broad authority granted the Department and the Commission to address nonpoint sources, the state has not made clear what practices must be adopted to clean up and maintain the quality of state waters. The proposed rule language above, similar to language in Washington State's water quality rules, would clarify the role of mandatory BMPs in restoring and protecting Oregon's waters from toxic and other pollution.

The proposed recommendation would direct the Department to develop BMP manuals over a period of years to ensure that nonpoint sources are given clear requirements to follow.

Potential Solutions: **Add Requirement that BMPs Established by DEQ be Used, and Modified, if Necessary, to Meet Water Quality Standards and Recommend that DEQ Establish BMP Manuals.**

"Activities which generate nonpoint source pollution shall be conducted so as to comply with water quality standards. Best management practices shall be applied so that when all appropriate combinations of individual practices are used, violation of water quality criteria shall be prevented. The Department shall develop BMP manuals establishing best management practices required of all sources. If a source is applying all best management practices and a violation of water quality standards occurs, the source shall modify existing practices and

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[47] *Id*. at 5-7.

apply further pollution control measures selected or approved by the Department to achieve compliance with standards. When applicable BMPs are not being implemented, the Department may conclude individual activities are causing pollution in violation of standards. In these situations, the Department may pursue orders, directives, permits, or civil or criminal sanctions to gain compliance with standards."

"The Commission directs the Department to develop a series of BMP manuals for nonpoint sources, excluding logging practices covered by the Forest Practices Act."

IV. Type of Rule Changes Required

This memo attempts to identify the relevant issues associated with the objective of protecting human health from water related toxics, and the effective management of the non-point sources of those toxics. The memo outlines deficiencies in the existing regulatory system for toxics control and suggests possible options for addressing these deficiencies and strengthening the system. DEQ should consider the rule changes discussed in this memo and incorporate specific rule language in its recommendations to the EQC in order to adequately address nonpoint source contributions of toxics to Oregon's waters in accordance with the direction of the Commission. The rule changes discussed in this memo should be incorporated into Oregon's antidegradation requirements because such policies and implementation methods are a required part of a water quality standards and submittals to EPA,[48] and because federal rules require the use of best management practices for nonpoint sources sufficient to protect high quality waters and assure non-degradation of existing uses, through Tier II and Tier I protections respectively. By including any rules relating to nonpoint sources as part of Oregon's antidegradation provisions, DEQ can be assured that those rules are considered water quality standards.

[48] 40 C.F.R. §131.6(d).

November 11, 2009

To: Rulemaking Work Group
From: Mixed Media Subcommittee (Nina Bell, Charlie Logue, Peter Ruffier)
Re: Controlling Toxics from Indirect Dischargers

The Mixed Media Subcommittee has considered the potential for indirect industrial and/or commercial dischargers to contribute toxic contaminants which may not be fully removed by the receiving municipal wastewater treatment facility. This memo sets out information on the federal pretreatment program which regulates indirect dischargers, the criteria under which POTWs must participate in it, and the requirements of that participation. It also identifies the gaps associated with limitations in the federal pretreatment program for the control or reduction of toxic pollutants, how it is implemented by local jurisdictions, and when it does not apply. For each identified gap, suggestions have been made on how DEQ could, through rules or encouragement, help municipalities reduce toxics loading from industrial and commercial indirect dischargers.

This memo does not identify the administrative burdens and other costs associated with potential solutions. It is intended to start that conversation.

I. Background

Publicly owned treatment works (POTWs) collect and treat wastewater from homes, commercial buildings, and industrial sources.[1] The POTW removes the majority of harmful organisms and other contaminants from the sewage before it is discharged. POTWs are designed to treat domestic sewage but are not generally designed to remove specific toxic contaminants.[2] Even so, POTWs also receive wastewater from industrial facilities that discharge into the collection system (along with commercial wastes, household toxics, and urban runoff in cases of combined sewer systems). The quantities and characteristics of non-domestic wastewater discharged to the collection system are considered when designing treatment facilities. Industrial facilities that discharge to POTW collection systems do not have NPDES permits as they would if they were direct dischargers to waters of the state. Instead, these indirect dischargers may or may not fall under the federal pretreatment program.

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[1] Some industrial wastes are "hauled" waste, such as septage and wastes produced from hazardous waste clean-up.

[2] Generally, POTWs are designed to treat domestic sewage only. Primary treatment is designed to remove large solids and smaller inorganic grit through methods such as screening and settling. Secondary treatment removes organic contaminants using microorganisms to consume biodegradable organics through such approaches as activated sludge, trickling filters, and rotating biological contactors. POTWs may also use tertiary treatment such as nitrification (to convert ammonia and nitrite to the less toxic nitrate), denitrification (to convert nitrate to molecular nitrogen), physical-chemical treatment (to remove dissolved metals and organics). Disinfection is used to kill any remaining human pathogens. The sewage sludge that is produced may be used as fertilizer, regulated under the biosolids program, or disposed of as waste.

The U.S. EPA has established regulations that determine the respective responsibilities of government agencies, POTW authorities, and indirect discharging industries to implement federal pretreatment standards to control pollutants which may: (1) pass through or (2) interfere [3] with POTW treatment processes, including interfering with the beneficial use of sewage sludge.[4] "Pass through" means "a discharge which exits the POTW into waters of the U.S. in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any NPDES permit requirement."

The State of Oregon is revising the fish consumption rate used in calculating the human health risk component of water quality criteria. The new rate of consumption is significantly greater than the previous rate, which in turn will result in significant decreases in the water quality criteria and corresponding decreases in the allowable discharge concentrations of toxics in wastewater discharges regulated under NPDES permits. As a result, POTWs will be under increasing pressure to limit levels of toxic contaminants in their wastewater discharges. Yet treatment facilities may not be able to achieve the levels of removal required to meet these new water quality criteria concentrations. For this reason, it is more cost effective and practical for POTW authorities to use source control and toxics reduction approaches to reduce toxics in municipal wastewater. For many POTWs, the federal pretreatment program is the foundation upon which site-specific pollutant source control and reduction efforts are built. Other POTWs do not have a federal pretreatment program or limit its use in controlling toxic inputs to collection systems.

II. Oregon SB 737 and DEQ's Toxics Reduction Strategy

In addition, in Oregon, SB 737 requires the Department of Environmental Quality to develop a prioritized list of persistent, bioaccumulative, and toxic substances (PBTs) that impact Oregon's waters. The final list of toxic pollutants – called Priority Persistent Pollutants or "P^3" – was issued on October 20, 2009. This statute also requires the 52 largest municipal wastewater treatment agencies in Oregon to assess their treated discharges for the presence of these PBTs and, if they are present, to develop plans to reduce the levels of these toxics through pollution prevention and source control programs. In this way, SB 737 dovetails with the demands put upon POTWs by the revised human health criteria and Oregon's objective of meeting those criteria in state waters.

There are 118 pollutants on the P^3 list, divided into two tiers:

Tier 1: 69 Persistent Pollutants (examples: PAHs, halogenated flame retardants, pesticides, herbicides, pharmaceuticals and personal care products, perfluorinated surfactants, metals, and some industrial plasticizers).

Tier 2: 49 Legacy Persistent Pollutants e.g., PCBs, PCNs, dioxins, DDT, etc.).

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[3] Interference can include chemicals that turn into dangerous gases, inhibit the biological treatment, etc.

[4] 40 C.F.R. § 403.2.

Now DEQ is developing draft rules to specify the "trigger levels" for the P^3 pollutants; a pollutant detected in the wastewater treatment facility discharge at concentrations greater than the trigger level would require the POTW to develop a toxics reduction plan.

In addition, DEQ is developing a Toxics Reduction Strategy that has generated two of its own lists: a Base List and a Focus List. Both are currently in draft form. The draft Focus List of toxics developed under this toxics reduction strategy does not contain all of the PBTs identified on the 737 P3 list.

The majority of the wastewater treatment agencies with a treatment capacity of greater than 1 million gallons per day, to which SB 737 applies, are collaboratively working to develop a statistically representative sampling scheme for an initial reconnaissance-level screening of the presence/absence of the P^3 pollutants. Once this initial screening is performed, the wastewater treatment agencies will develop toxics reduction plans for the more common pollutants detected. In the summer of 2010, the municipal agencies will perform a formal sampling of the effluents and then will develop utility-specific toxics reduction plans for submittal to DEQ, as required under SB 737.

In developing their toxics reduction plans, the municipal wastewater treatment agencies will evaluate a host of options for reducing or eliminating the P^3 pollutants in their respective effluent discharges. These include the development of: (1) local pretreatment program limits for the discharge of wastewater into the municipal collection system; (2) enhanced public education and outreach on consumer product selection and usage; and (3) local ordinances and product bans, etc.

III. Indirect Point Source Dischargers Contribute Significant Toxics

In 1986, more than one-third of all toxic pollutants entering the nation's waters from publicly owned treatment works (POTWs) came from industrial discharges to public sewers.[5] The federal pretreatment program addresses some of those pollutants. For example, in 1991, EPA estimated that 190 to 204 million pounds of metals and 30 to 108 million pounds of organics were removed each year as a result of pretreatment program requirements.[6] That same year, EPA estimated that approximately half of the mass of the most common toxics in POTW wastestreams were released to surface waters, the rest contaminating sludge and a small fraction volatilizing. [7]

IV. The Federal Pretreatment Program

A. <u>POTWs Required to be Included in Program</u>

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[5] Introduction to the National Pretreatment Program, EPA-833-B-98-002, February 1999, at iii.

[6] *Id*. at 3.

[7] Report to Congress: National Pretreatment Program, EPA 21W4004, July 1991 at 6-6.

EPA requires all large POTWs (designed to treat over 5 million gallons/day) and smaller POTWs with "significant industrial discharges" to establish local pretreatment programs. These local programs must enforce all national pretreatment standards and requirements in addition to any more stringent local requirements necessary to protect site-specific conditions of the receiving water from the POTW discharge.

The local pretreatment program is a condition of a POTW's NPDES permit, which is approved by Oregon DEQ. A POTW pretreatment program must contain six minimum elements, as follows: [8]

1. Legal authority for the POTW to apply and enforce pretreatment regulations;
2. Procedures to ensure compliance with pretreatment requirements, including how the POTW will:
   a. locate all dischargers subject to the pretreatment program;
   b. identify the character and volume of pollutants discharged;
   c. sample and analyze discharges and evaluate the need for slug (one-time discharges) control plans; and
   d. investigate noncompliance.
3. Funding to carry out the program;
4. Local limits developed or a demonstration why they are not necessary;
5. Enforcement response plan; and
6. A list of significant industrial users (SIUs).

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B. <u>Indirect Dischargers Required to be Included in Program</u>

The federal pretreatment program can apply to all indirect dischargers but focuses primarily on "significant industrial users" (SIU) which are defined as sources that:

- discharge an average of more than 25,000 gallons/day of process wastewater to the POTW;
- contribute a process wastestream equal to or more than 5 percent of the average dry weather hydraulic or organic capacity of the POTW treatment plant;
- have been designated by the local government because of their reasonable potential to adversely affect the POTW's operation or violate any pretreatment standard or requirement; or
- are subject to federal categorical pretreatment standards.

A "categorical industrial user" (CIU) is an industrial discharger subject to the federal categorical pretreatment standards. The "categorical pretreatment standards" are federal limitations on discharges to POTWs that apply to specific process wastewater discharges of particular industrial categories.

[8] Edited for brevity and relevance to the subject of this memo.

C. Required Controls

There are three types of restrictions the federal pretreatment program places on indirect dischargers which are covered by the program: (1) prohibited discharge standards; (2) categorical standards, and (3) local limits.

1. Specific Prohibitions

In addition to the general prohibition on the discharge of pollutants to POTWs that cause pass through or interference, federal regulations also prohibit eight specific categories of discharges that pertain to safety, protection of property, obstruction of POTW flows, interference with the treatment processes, and discharges released at a flow rate and/or concentration which will cause interference with the POTW.

2. Categorical Standards

"Categorical standards" are national, uniform, technology-based standards that apply to indirect discharges for both existing and new sources. The goal of these categorical standards is to prevent the discharge of pollutants that could pass through, interfere with, or otherwise be incompatible with POTW operations. They take the place of national effluent limitations guidelines (ELGs) that apply to direct dischargers subject to NPDES permits. EPA has issued specific categorical standards for some industrial categories where as it relies on general prohibitions and local limits for other categories. The categorical standards are intended to account for any pollutant removal that the POTW may accomplish. Dischargers are required to comply with categorical standards by a date certain, usually not more than three years after promulgation, while new source standards usually apply not longer than 90 days after a discharge commences. Categorical standards can be concentration- or mass-based.

As with ELGs, categorical standards only restrict certain pollutants in a given wastestream. Therefore, a source covered by categorical standards may have pollutants that are unregulated because they are not the subject of restrictions or because they are: sanitary wastestreams, demineralized backwash streams, boiler blowdown, noncontact cooling water, storm water, and any process wastestreams based on the findings they contain none of the regulated pollutant or only trace amounts. Sources can also obtain removal credits if they can show the POTW treats the pollutant(s) or obtain a "fundamentally different factor" variance if the source can demonstrate that the factors considered by EPA in developing the applicable category/ subcategory are fundamentally different than those factors relating to a specific industrial discharger. These factors could include wastewater volume, energy requirements, non-water environmental impacts, cost, site configurations, etc. Dischargers may also obtain intake credits if its treatment will not remove all of the regulated pollutant.

Some categorical regulations currently limit the discharge of total toxic organics (TTO) including the following industries: electroplating, metal finishing, metal molding and casting, coil coating, aluminum forming, copper forming, electrical and electronic components. The TTO are limited to the sum of the masses or concentrations of certain toxic organic pollutants in the regulated

discharge at a concentration greater than 0.01 milligrams per liter (mg/l). However, the toxic organic pollutants regulated by this limit are specific to each industrial category. Some industrial categories offer flexibility with regard to monitoring and/or reporting requirements related to the TTO limit.

3. Local Limits

The last is "local limits" which are specific discharge limits developed by POTWs in order to implement the federal regulations' general and specific discharge prohibitions (pass through and interference) and to address the specific needs of a POTW and its receiving waters. EPA notes that local limits "should correct existing problems, prevent potential problems, protect the receiving waters, [and] improve sludge use options." Federal regulations[9] require local authorities to evaluate whether local limits are needed and to implement them if necessary. Local limits can be developed for pollutants including, but not limited to, metals, cyanide, BOD5, TSS, oil and grease, organics, nutrients, flow, etc. that may cause interference, pass through, result in sludge contamination, and/or worker health and safety problems if discharged in excess of the receiving POTW treatment plant's capabilities and/or receiving water quality standards. Typically these local limits apply to all the indirect industrial dischargers to a POTW, not just the dischargers covered under categorical standards. They are usually imposed at the point of connection to the POTW collection system. In deciding whether to establish local limits, EPA recommends that the local authority:

- identify all indirect dischargers that might be subject to the pretreatment program;
- identify the character and volume of pollutants they contribute;
- determine which pollutants have a reasonable potential to pass through, interfere, or cause sludge contamination;
- determine the maximum allowable POTW treatment plant headworks (influent) loading[10] for at least the "pollutants of concern" (see below);
- identify additional pollutants of concern;
- determine contributions from unpermitted sources to determine the maximum allowable treatment plant headworks loading[11] from "controllable" industrial sources;
- implement a system to ensure these loadings will not be exceeded.

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[9] 40 CFR §§ 403.8(f)(4) and 122.21(j)(4).

[10] The Maximum Allowable Headworks Loading Method (MAHL) uses pollutant-by-pollutant POTW to calculate removal efficiencies, before applying the most stringent criteria (i.e., water quality, sludge quality, NPDES permit, or pollutant inhibition levels) to back-calculate the MAHLs. Subtracting out contributions from domestic sources, the available industrial loading is then either evenly distributed among the indirect dischargers or allocated on an as-needed basis to those sources discharging the pollutant above background levels.

[11] The Maximum Allowable Industrial Load (MAIL) is the total daily mass that a POTW can accept from all permitted indirect sources and ensure the POTW is protecting against pass through and interference.

In addition, local authorities can also use local limits to (1) restrict pollutants that may cause fire and explosive hazards; (2) require dischargers to develop management practices (e.g., chemical management practices, best management practices, and spill prevention plans) for the handling of chemicals and wastes (issued as an Industrial User Management Practice Plan); (3) set numeric case-by-case discharge limits based on best professional judgment (BPJ) and available pollution prevention and treatment technologies which are known to be economically feasible; and (4) impose "local specific prohibitions" to address hydraulic, pollutant specific, and/or aesthetic concerns. EPA includes as examples of the latter: pollutants that create a public nuisance, storm water, roof runoff, and swimming pool drainage.

Local authorities are encouraged to identify pollutants of concern by looking at the environmental requirements the POTW must meet; identifying the pollutants in the POTW influent, effluent, and sludge; identifying pollutants for which a TMDL has been or will be developed; and characterizing all industrial discharges to assess which discharges, and which pollutants in those discharges, pose potential problems. EPA has identified 10 pollutants of concern – arsenic, lead, cadmium, mercury, chromium, nickel, copper, silver, cyanide, and zinc – to which it has added an additional five: molybdenum, selenium, 5-day Biochemical Oxygen Demand (BOD), total suspended solids (TSS), and ammonia (for plants that accepting non-domestic sources of ammonia). POTWs can use local limits to control any pollutant, not just CWA priority pollutants.

POTWs control contributions from non-significant dischargers using various means, such as through general permits issued to an entire industrial sector within the POTW collection area. These types of control mechanisms may not necessarily require compliance with specific pollutant limitations. For example they may include:

- grease trap maintenance and record keeping requirements for food establishments;
- maintenance of photo processors' silver reclamation units;
- practices for automotive facilities;
- non-commercial car wash practices; and
- practices for mercury recovery by hospitals and dentists.

Industrial sector general permitting programs are common where a real or potential POTW problem is linked to a particular pollutant discharged (e.g., grease is causing collection system blockages). POTWs have the authority to enforce their sewer use ordinances or regulations against non-significant dischargers without the need for any type of individual control mechanism.

D. Pollution Prevention Through Pretreatment Programs

EPA encourages use of pretreatment programs for pollution prevention through such efforts as:

- using inspections to disseminate information on pollution prevention measures;
- asking questions about pollution prevention measures and plans in the permit application process, where local laws allow;

- requiring a pollution prevention assessment and /or pollution prevention plan as a condition of the permit; and
- establishing local limits where POTWs are near or above maximum allowable headworks loadings in order to reduce specific pollutants.

V. Oregon's Pretreatment Rules

Oregon's Industrial Waste Pretreatment regulations are as follows:

> (1) All owners of sewerage systems which receive industrial waste subject to federal or state pretreatment standards will develop and implement a pretreatment program for controlling those industrial contributors. The program will be submitted to the Director for approval. Department approval is considered a Category III action as described in OAR 340-045-0027.
>
> (2) The Director will review requests for revisions of categorical pretreatment standards to reflect removals achieved by the sewerage system. No removal credit is allowed unless approved by the Director.
>
> (3) Both the owners of sewerage systems receiving industrial wastes and the industrial contributors will comply with applicable pretreatment provisions of the federal Clean Water Act and the rules of the Department.
>
> (4) Where a question exists as to whether or not an industrial contributor falls within a particular industrial subcategory, the Director will make a written finding and shall submit it to the EPA Regional Enforcement Division Director for a final determination, unless the Enforcement Division Director waives the receipt of the Director's determination as provided in the federal regulations. In that case the Director's determination shall be final.
>
> (5) The owner of a sewerage system receiving industrial waste is responsible for assuring that the industrial contributor meets the prohibited discharge or categorical pretreatment standards established by the United State Environmental Protection Agency or the Department, whichever is most limiting. The owner of the sewerage system may impose more stringent pretreatment standards if deemed necessary by the owner for the proper operation and maintenance of the sewerage system or disposability of the sewage sludge.
>
> (6) The Director will review requests for Fundamentally Different Factors variances and will either deny them or concur with them and submit the concurrence to the United State Environmental Protection Agency for approval, as provided in federal regulations. [2][1]

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12 OAR 340-045-0063

Oregon DEQ's Reasonable Potential Analysis Internal Management Directive (RPA IMD) sheds some light on the role of the pretreatment program in setting water quality based effluent limits for POTWs.[13] It allows POTWs with an average dry weather design flow of less than one million gallons per day to avoid analyzing their effluent for toxic pollutants thereby avoiding both effluent limits and permit monitoring requirements so long as they do not have any "significant industrial user that discharges into the treatment plant that may be a potential source of pollutants."[14] On the other end of the spectrum, a POTW which is deemed under the IMD to be adding a significant load of toxics to the receiving water is labeled "Outcome B" and is subject to "Pretreatment designation and/or calculating pretreatment local limits for significant industries using health criteria." [5]1

Appendix D of the RPA IMD elaborates on the impacts of new water quality standards on the pretreatment program.[16] It states that DEQ has provided a Local Limits Workbook to establish Maximum Allowable Headworks Loading (MAHL) criteria for toxic pollutants that is then translated into allocations to the SIUs discharging to the POTW. It also notes that currently this Workbook only addresses metals and that it will require updating for the new (2004) criteria. Finally, it states that the POTW permit applicant must reevaluate its local limits not later than 18 months after the effective date of their new or reissued NPDES permit.

VI. What Are the Potential Gaps in the Federal Pretreatment Program?

In Oregon, 24 of the 52 largest municipal wastewater treatment agencies have pretreatment programs already in place that will facilitate pollution prevention and source control efforts for toxics.[17] For those POTWs that have mandated pretreatment programs, enhancements of these programs may be necessary to control the types and quantities of toxic pollutants sufficient to meet the new Oregon toxic criteria as well as the requirements of SB 737. For these programs, the POTWS have the authority, under state oversight, to modify their programs to include revised local limits, use of Best Management Practices for pollutant reduction by specified dischargers to the public sewer system, or other source control and reduction mechanisms. However, there are gaps between current regulatory requirements for mandated pretreatment programs and the toxics control objectives of the State, and also gaps in the pollutant control and reduction authorities for those POTWs that are not required to have formal pretreatment programs. Here are some of these potential gaps:

(1) No restrictions on industrial dischargers to small POTWs that have no significant industrial dischargers (discharge quantity) or categorical dischargers (industry type);
(2) Industrial discharges with process water under 25,000 gallons/day and are therefore not "significant" and which are not categorical sources but which discharge toxics.
(3) Under-regulated industrial discharges into a POTW with pretreatment which the

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13 Oregon DEQ, Reasonable Potential Analysis Internal Management Directive, September 2005, http://www.deq.state.or.us/wq/pubs/imds/rpatoxics.pdf.

14 *Id*. at 59.

15 *Id*. at 29, Figure 3.

16 *Id*. at 76.

17 *Id.* Information as of September 2005.

POTW has not designated as significant.

(4) Categorical dischargers where EPA relies upon general prohibitions and/or local limits;
(5) Unregulated pollutants discharged by categorical dischargers;
(6) Unregulated categorical dischargers' demineralized backwash streams, boiler blowdown, noncontact cooling water, storm water, and process wastestreams based on the findings they contain none or only trace amounts of the regulated pollutant;
(7) Categorical dischargers without total toxic organics (TTO) limits (i.e., not: electroplating, metal finishing, metal molding and casting, coil coating, aluminum forming, copper forming, electrical and electronic components.)
(8) Inadequate total toxic organics limits that are less than 0.01 milligrams/liter categorical limits for electroplating, metal finishing, metal molding and casting, coil coating, aluminum forming, copper forming, electrical and electronic components;
(9) POTWs' not identifying and regulating pollutants of concern (e.g., due to failure to anticipate 303(d) listings/TMDLs, failure to evaluate all industrial discharges; assessment compared to old toxic criteria instead of new criteria);
(10) Local limits that are only applied to categorical or significant dischargers;
(11) Inadequate or insufficient general permits issued by POTW authorities to non-significant dischargers (e.g., restaurant grease, dental mercury, photo silver) with or without discharge limits;
(12) Categorical limits that do not sufficiently restrict discharges to meet toxic criteria and which are not augmented by adequate local limits;
(13) No limits on indirect dischargers because POTW's NPDES permit is based on quantitation limits, not actual toxic criteria;
(14) Local limits established by a POTW do not apply to a separate jurisdiction supplying wastes to the POTWs;
(15) Lack of limits on commercial facilities – such as radiator shops, car washes, hospitals, laundries, and photo processors – which are often not considered significant sources of toxics because of their low flows, however, they may discharge at surprisingly high pollutant loading levels; and
(16) POTWs may be evaluating only the 15 pollutants of concern.

VII. Approaches to Filling Identified Gaps

The objective of addressing the identified gaps should be to adopt rules or other approaches to ensure that municipal wastewater agencies adopt the necessary authority and programmatic elements in local codes, ordinances, and/or policies needed to effectively regulate or manage the introduction of toxic substances to the public sanitary sewer system which result in impacts to the receiving waters to which the POTW discharges.

Here are potential ways of addressing the gaps that allow indirect dischargers to contribute toxic chemicals to Oregon waters:

A. POTWs With No Federal Pretreatment Program In Place

1) DEQ could develop new Significant Industrial User (SIU) categories which will increase the number of POTWs included in the federal pretreatment program;
2) Encourage municipalities to implement pretreatment programs with local limits for toxic pollutants even where no categorical discharges are present and no federal pretreatment program is required;
3) DEQ could use the Oregon WPCF permit program to regulate discharges in municipalities that are not required to have a federal pretreatment program;
4) Encourage or require non-pretreatment municipalities to adopt source control and pollution reduction methods through local ordinances and best management practices, including to address commercial facilities with low flow but high individual or cumulative toxic loading;
5) DEQ could encourage or require POTWs subject to SB 737 but not the federal pretreatment program to adopt a pretreatment program;
6) DEQ could prepare BMP manuals to control sources where controls should focus on prevention rather than treatment prior to discharge to sewage systems;
7) DEQ could prepare model product bans and model local ordinances for the control of household and commercial sources of toxics;
8) DEQ could prepare model local ordinances and education programs to control disposal of pharmaceuticals from sources that are not required to register under the federal Controlled Substances Act. Registrants include: pharmacies, hospitals, clinics, practitioners, teaching institutions, mid-level practitioners, manufacturers, distributors, reverse distributors, researchers, importers, exporters, and narcotic treatment programs. Nonregistrants may include: coroners' offices, elementary and secondary schools, long-term care facilities, and veterinarians.
9) DEQ could require jurisdictions that supply wastes to POTWs that operate in municipalities with local limits to themselves establish local limits, through WPCF permits or another approach.

B. POTWs with Federal Pretreatment Program In Place

1) Encourage or require more local limits or stricter local limits (that apply to all indirect dischargers, not just categorical and significant dischargers) under existing pretreatment programs;
2) Encourage or require existing pretreatment programs to expand the number of sources they regulate under local limits;
3) DEQ could develop new Significant Industrial User (SIU) categories which would increase the number of sources regulated under existing pretreatment programs;
4) POTWs could designate industrial discharges as significant;
5) DEQ could ensure, through POTW NPDES permits, that local limits are sufficiently stringent for categorical dischargers where EPA relies upon local limits;
6) DEQ could ensure that unregulated pollutants discharged by categorical dischargers are subject to local limits;

7) POTWs could evaluate currently unregulated categorical dischargers' demineralized backwash streams, boiler blowdown, noncontact cooling water, storm water, and process wastestreams to ensure that they do not contain treatable levels of regulated pollutants;
8) DEQ could evaluate need to regulate categorical dischargers that do not have EPA-issued total toxic organics (TTO) limits and evaluate existing TTO limits for: electroplating, metal finishing, metal molding and casting, coil coating, aluminum forming, copper forming, electrical and electronic components;
9) DEQ could help POTWs to identifying pollutants of concern by anticipating 303(d) listings based on new human health criteria, and require comprehensive evaluation of industrial discharges;
10) DEQ could require POTWs to apply local limits to all dischargers;
11) DEQ could require POTWs to issue more and more stringent general to non-significant dischargers (e.g., restaurant grease, dental mercury, photo silver);
12) DEQ could require POTWs to develop local limits as necessary to meet new human health criteria and SB 737 (not limited to priority pollutants);
13) DEQ could require local limits on indirect dischargers for pollutants where the POTW effluent limitations are based on quantitation limits, not the actual criteria;
14) DEQ could maintain database on local limits and effective practices to share with POTWs;
15) DEQ could require or encourage local limits established by a POTW to apply to a jurisdiction supplying wastes to the POTW;
16) DEQ could require POTWs to establish local limits on commercial facilities which are or may be significant sources of toxics but which are not regulated as pretreaters because of their low flows; and
17) DEQ could ensure that POTW evaluate more than the EPA-identified 15 pollutants of concern.

C. <u>Draft Approaches</u>

Of the 23 identified approaches listed above, we have set out more details for four of them below for purposes of illustration.

Encourage voluntary enrollment in federal pretreatment program.

No. A.2

Municipalities not already mandated to have pretreatment programs may voluntarily "enroll" in the pretreatment program under the NPDES permit regulations. This program requires development of local codes or ordinances for regulation of dischargers of covered pollutants, an enforcement response guide, and a procedures manual for the program. This voluntary action may, in fact, be motivated by SB 737 rules for a POTW which exceeds a trigger level for a listed toxic contaminant. The elements of a pretreatment program can be adapted to specifically address any of the SB 737 P3 listed toxics, either through the development of specific, technically-based local limits, or

through the application of Best Management Practices for pollution prevention and source control. All necessary state regulations are already in place to support this option.

No. A.4 ***Encourage adoption of local codes and ordinances outside federal pretreatment program***.

Municipalities which are not already mandated to have pretreatment programs may voluntarily adopt local codes and ordinances that explicitly give them the authority to regulate or manage any of the P3 toxics (or, more generically, any pollutant or wastewater component of concern to the local system). Programmatic elements would then be tailored to address the specific toxic and its source. This approach would be attractive to municipalities that also want to enhance their control of Fats, Oil, and Grease (which commonly cause sewer system blockages), and could build upon already known and proven approaches with the application of Best Management Practices (such as for the control of mercury from dental clinics). Some addition to, or modification of, State regulations may be useful in facilitating the use of this option.

No. B.12 ***Adopt local limits for any pollutant with reasonable potential to exceed criteria***.

EPA recommends that any pollutant that has a "reasonable potential" to be discharged in amounts that could exceed water quality standards or criteria should be considered a pollutant of concern and evaluated accordingly. The agency notes that "A POTW does not have to develop a local limit for every pollutant for which there is a water quality standard or criterion. However, EPA recommends that where a POTW permit includes a narrative water quality-based condition (e.g., "no discharge of toxics in toxic amounts"), the POTW may wish to evaluate the discharge of a particular toxic pollutant by considering its effect on water quality for that pollutant relative to EPA or State criteria for the pollutant."

EPA goes on to say that a

> [d]ischarge of a pollutant that results in a violation of a water quality standard is actionable even if the discharger's NPDES permit does not include a specific permit condition limiting the discharge of that particular pollutant. The Ninth Circuit has held that a general permit condition prohibiting the discharge of wastewater that violates water quality standards, including a State water quality standard expressed as a broad narrative criterion, subjects a POTW to citizen suit under Section 505 of the Clean Water Act. See *Northwest Environmental Advocates, et al. v. City of Portland*, 56 F.3d 979 (9th Cir. 1995). In appropriate conditions, therefore, Section 403.5(c) would require a POTW to develop local limits to ensure compliance with the POTW's permit condition requiring it to comply with State water quality standards. Such conditions consist of those where the record demonstrates that a discharge from a POTW is

causing or would cause violation of State water quality standards, including qualitative or broad narrative criteria, and the permit includes a permit condition prohibiting a discharge that violates State water quality standards. [8][1]

DEQ might create a set of criteria it could use to identify POTWs that warrant a complete reasonable potential analysis.

No. A.3 ***DEQ could restrict discharges through WPCF permits where municipalities cannot bear cost of pretreatment program.***

DEQ has the authority to issue Water Pollution Control Facilities (WPCF) permits under state law to point sources that do not qualify for NPDES permits. In municipalities where it is desirable to restrict pollution (through discharge limits or pollution prevention practices) from indirect dischargers which do not fall within the mandatory federal pretreatment program, DEQ could issue general permits that establish such requirements.

D. Recommendations

1. Recommendations of the ACWA Industrial Pretreatment Committee

The ACWA Industrial Pretreatment Committee believes that the National Pretreatment Program should be considered as one of a number of tools that can be used to control toxics identified in SB 737 and the revised human health criteria for toxics. Using the National Pretreatment Program as a model would allow municipalities to modify and adopt elements of the Program to help control these toxics without DEQ's having to develop rules mandating stricter definitions and control measures. These program elements can be implemented quickly in a focused manner, as opposed to later during a process of rule development and promulgation.

The ACWA Industrial Pretreatment Committee recommends the following, either singly or in combination:

A POTW without an existing program to address the revised human health criteria and SB 737 pollutants should be encouraged to evaluate the elements of the industrial pretreatment program to determine if one or more of these elements can be effectively developed and implemented within its agency to reduce the discharge of toxic materials from its non-domestic dischargers.

POTWs should be encouraged to evaluate local program options and tools besides the development and implementation of a National Industrial Pretreatment Program to address and control SB 737 toxics and the implementation of the revised human health water quality criteria. This may include: the ability to condition or deny non-domestic discharges,

[18] EPA, Local Limits Development Guidance, EPA 833-R-04-002A, July 2004, http://www.epa.gov/npdes/pubs/final_local_limits_guidance.pdf.

establish local permits, BMPs, pollution prevention, source reduction, and technical outreach activities.

Oregon agencies should work with local municipal programs to address toxics in common consumer products by working directly with consumer product manufacturers to change product constituents to less toxic formulations.

DEQ should evaluate, holistically, each POTW for: inclusion of local pretreatment program elements, expanded federally-mandated programs, pollution prevention and reduction plans, and/or additional treatment facilities.

DEQ should provide complete toxics reduction program oversight and management for small POTWs.

2. Recommendations of Environmental Organizations

Northwest Environmental Advocates, Columbia RiverKeeper, and the Northwest Environmental Defense Center recommend the following:

Improve monitoring of indirect dischargers' contributions of toxics.
Currently POTWs need only evaluate EPA's 15 pollutants of concern. In addition, the RPA IMD limits the evaluation of toxics in the effluent of small POTWs by their size (under 1 MGD) and whether they have any significant discharger, a term established by the federal pretreatment program and not necessarily applicable where efforts are being made to meet more stringent toxic criteria. DEQ should work with the municipalities and public to identify where SB 737 fills these gaps and where it does not, and to create an approach to evaluate the likely contributions of currently unregulated categorical dischargers' waste streams and unregulated sources.

DEQ should require broader use of the federal pretreatment program or alternatives.
DEQ should revise its rules to require municipalities that do not currently participate in the federal pretreatment program to (1) enter the program; (2) establish the equivalent of a pretreatment program without its administrative burdens; or (3) assist DEQ in ensuring industrial and commercial sources that discharge into the POTW are covered by DEQ-issued WPCF permits (see description below).

DEQ to support municipalities' use of more effective and efficient pollution controls.
DEQ should develop Best Management Practices (BMPs) manuals that address key pollutants and/or sources outside the federal pretreatment program (e.g., non-significant commercial dischargers) so that municipalities can efficiently reduce toxic pollutants from entering sewage collection and treatment systems. The BMPs could be incorporated into existing pretreatment programs, voluntary equivalent programs, through WPCF permits, and/or incorporated in municipalities' POTW NPDES permits. Such BMPs

should include model product bans and model municipal ordinances and address commercial and household sources of toxic pollutants as well as industrial dischargers.

DEQ should use WPCF permits to ensure more consistent and effective controls. Water Pollution Control Facilities (WPCF) non-discharge permits are authorized by state law.[19] DEQ rules define a WPCF permit as "a permit to construct and operate a disposal system with no discharge to navigable waters. A WPCF permit is issued by the Director in accordance with the procedures of this division or OAR 340-071-0162." [20] As with NPDES permits, DEQ may issue general WPCF permits; several currently exist.[21] WPCF permits can last up to 10 years. [22]

DEQ should create new general WPCF permits to fill the gaps left by the federal pretreatment program. Using WPCF permits issued by DEQ to control toxics would be a way of consistently controlling discharges to POTWs without placing an administrative and financial burden on municipalities that currently do not have federal pretreatment programs or do not care to expand their limited programs.

DEQ should require equity in municipalities' treatment requirements. Some municipalities do not treat their own wastes but instead contract with other municipalities that operate POTWs. DEQ should develop rules that require jurisdictions that supply wastes to POTWs that are operated by jurisdictions with local limits to themselves establish equivalent local limits. Currently the owner/operator of a POTW may control – through pretreatment or other local limits and programs – the quality of its influent but is not able to ensure any limitations on toxic inputs to the sewage it treats that comes from another municipal source.

DEQ should require pollution controls where criteria are below quantitation limits. The adoption of numeric criteria, many of which are under the quantitation limit, raises serious questions about the efficacy of the criteria adoption. An NPDES effluent limit based on quantitation limits may be allowing the discharge of a toxic pollutant in excess of the applicable numeric criterion. For this reason, DEQ rules should require a pollution prevention approach to those pollutants.

For this reason, DEQ should adopt rules that require the use of local limits for indirect dischargers (through pretreatment programs, WPCF permits, and/or other programs) to control pollutants from those dischargers holding NPDES permits where the POTW effluent limitations are based on quantitation limits, in lieu of applicable numeric criteria, where those discharges meet or exceed the quantitation limit. The local limits would apply to industrial and commercial sources of any pollutant for which the effluent limit is based on the quantititation limit.

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19 *See. e.g.,* ORS 468B.050.
20 OAR 340-045-0010 (31)
21 OAR 340-045-0033(2).
22 OAR 340-045-0037(7).

Second, DEQ should adopt rules that require a pollution prevention approach to industrial, commercial, and household sources of pollutants for which a POTW WQBEL is established on the basis of quantitation limits but where the indirect discharges do not exceed quantitation limits.

Last, where DEQ determines that a water quality based effluent limit will not be included in a POTW permit because either the receiving water or the effluent are below the quantitation limit but where DEQ has reason to believe that indirect dischargers to the POTW are contributing that pollutant, a DEQ rule should require a pollution prevention approach to that source.

Authorities related to Nonpoint (Non-NPDES) Source Pollution Prevention and Control

The purpose of this document is to summarize the legal authorities currently available to the Department of Environmental Quality (DEQ) to prevent, control and abate existing and new sources of water pollution from nonpoint sources which are defined as non-NPDES permitted sources. This paper discusses current strategies under the legal authorities for controlling water pollution from nonpoint sources.

Nonpoint Source (NPS) Pollution

The concept of "nonpoint source" pollution is relatively well understood in the context of water quality regulation in Oregon. Oregon statutes define point and nonpoint sources of water pollution, and the Environmental Quality Commission (EQC) also has defined these terms by rule.[1] For all practical purposes, the state definitions are consistent with the definitions applicable under the federal CWA..

Section 319 of the federal Clean Water Act[2] requires states to develop nonpoint source management programs, but the Act does not include a definition of the term nonpoint source pollution. The federal Clean Water Act defines a point source as any "discernable, confined and discrete conveyance" to surface water, including ditches, pipes and other channels as well as boats, trucks and equipment and certain animal feeding operations.[3] NPS pollution is generally understood to be water pollution that arises from sources including forestry and agricultural lands, stormwater runoff and irrigation return flows other than those regulated under the NPDES Permitting system.[4]

DEQ/ General Legal Authority to Prevent, Control and Abate Existing and New Water Pollution

The DEQ's authority to regulate sources of pollution to waters of the state[5] is in most respects extremely broad, and DEQ has many of the same tools with which to control and abate nonpoint source pollution as it does with point source pollution. Pollution of waters of the state is expressly declared in state statute to be against state policy. This is true in theory, but the EQC hasn't provided to DEQ the same tools for control of nonpoint sources of pollution as for point sources. However, the EQC has chosen to implement nonpoint source pollution protection measures in the TMDL Program

[1] *See* ORS 468B.005; OAR 340-041-0002(42).
[2] 33 USC § 1329.
[3] 33 USC § 1362(14).
[4] *See*, *e.g.*, *Friends of Pinto Creek v. EPA*, 504 F.3d 1007 (9th Cir., 2007).
[5] The statutory term "waters of the state" is broadly defined to include all surface waters and groundwater except "those private waters which do not combine or affect a junction with natural surface or underground waters…." ORS 468B.005(10).

through delegation to appropriate agencies (Designated Management Agencies, DMAs) with oversight by DEQ.

Generally, wastes may not be discharged into waters of the state without first receiving necessary treatment or other corrective action to protect the legitimate beneficial uses of such waters (which includes fish and aquatic life, drinking water, irrigation, and other uses). New and existing water pollution must be prevented, abated and controlled.[6] The state statutes also specify that water pollution is by definition unreasonable and DEQ is directed to require dischargers to use "all available and reasonable methods necessary to achieve" the legislative policies and conform to water quality standards established by the EQC.[7] In addition, the DEQ statutes that prohibit water pollution are to be liberally construed and that the EQC's authority to regulate water quality generally controls over any inconsistent state laws and authority granted to other state agencies.[8]

Nonpoint activities that cause pollution or place pollution where it is likely to be carried into waters of the state or cause a violation of water quality standards are deemed public nuisances and are subject to penalties.[9]

Finally, DEQ has the authority to institute actions or proceedings for legal or equitable remedies to enforce compliance with or restrain further violation of any rule, standard, order or permit adopted or issued under ORS chapter 468B, as well as the authority to assess civil penalties for such violations. ORS 468.035(j) and (k) 468.100 and 468.140.

In sum, the EQC has authority to adopt and implement almost any program that it determines to be needed to protect waters of the state from NPS pollution with the exception of budget limitations and some specific cases discussed below.

For the most part, the broad statutory authority discussed above is not self-executing. Agency directives, standards and any other generally applicable provision that implements these statutes or prescribes conduct must be adopted by rule. ORS 468B.020(2). And in the absence of a delegation of rulemaking authority, this means the Commission itself must establish requirements applicable to nonpoint source pollution.

Section 319 Plans and TMDLs

DEQ is authorized by state statutes to implement and enforce the federal Clean Water Act within Oregon.[10] CWA Section 319 requires states to prepare and implement a nonpoint source management plan that requires controls on nonpoint sources to the

[6] ORS 468B.015.
[7] ORS 468B.020.
[8] ORS 468B.015. The one state exception is for certain orders issued by the Energy Facility Siting Commission
[9] ORS 468B.020 and 468B.025.
[10] ORS 468B.035.

maximum extent practicable.[11] Aside from that plan, the primary mechanism for regulating NPS pollution is through the DEQ's adoption of Total Daily Maximum Loads (TMDLs) and the related implementation plans. [12] TMDLs and their implementation plans are designed to control point source and NPS pollution to bring water bodies into attainment with the water quality standards adopted by the Commission for water bodies across the state.

Under ORS 468B.110(1), DEQ has the specific authority to take the actions necessary to attain and maintain water quality standards and to implement load allocations established under a TMDL. As discussed below, the only significant limitation on DEQ's authority is that it may not impose, establish or enforce effluent limits on nonpoint source discharges from forest operations subject to the State's Forest Practice Act, unless such limits are actually required by the CWA.[13]

ORS 468B.048(3) provides that persons responsible for complying with water quality standards will "determine the means, methods, processes, equipment or operation" used to meet those standards, subject to DEQ approval. The interplay between ORS 468B.110 and 468B.048(3) is somewhat unclear. To the best of our knowledge, ORS 468B.048(3) has not been construed by the courts or Oregon's Attorney-General's office.[14]

Further, in 1989 water resource *protection* elements were incorporated into the federal Safe Drinking Water Act (SDWA) pertaining to wellhead protection. This expanded the SDWA to require states to develop programs to protect groundwater in recharge areas for public water supply wells. DEQ's authorities under ORS 468B.155 provides for implementation of the groundwater protection elements of the SDWA.

State rules were necessary as part of the SDWA requirements, but states were allowed to establish a voluntary approach instead of mandatory local ordinances or statewide requirements. OAR 340-040-0140 to 0210 provide a process for DEQ to issue guidance and certification if a community elected to develop a wellhead protection plan.[15]

The following sections describe DEQ's existing programs under current authority that address nonpoint sources of pollution.

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[11] 33 USC § 1329. DEQ's comprehensive annual reports on its CWA nonpoint source program is available at http://www.deq.state.or.us/wq/nonpoint/reports.htm
[12] OAR chapter 340, division 42.
[13] ORS 468B.110(2). The concept of "effluent limitation" in this context of forest operations is discussed in more detail below.
[14] ORS 468B.048(3) has been in effect since 1961, predating ORS 468B.110 by 30 years. It also predates the Clean Water Act and state statutory authority for the EQC to take any action needed to implement the Act. *See* ORS 468B.035.
[15] DHS (OAR 333-061-0057) and DLCD (OAR 660-016-0000) also amended their rules to include similar voluntary provisions in the water supply and land use planning rules.

DEQ Nonpoint Source Program

Historically, nonpoint source issues had been addressed through voluntary education and awareness programs, technical assistance, guidance documents, as well as funding nonpoint source projects throughout the State with available Federal grants. ”

The EQC and the DEQ determined that the program’s goals will more effectively and efficiently be achieved by integrating nonpoint source concerns into the fabric of the State and Federal water pollution programs. Nonpoint source pollution is addressed through the following programs implemented by DEQ: Water Quality Standards, Water Quality Assessment, Total Maximum Daily Load, §319 Nonpoint Source Grant, Drinking Water Protection, Groundwater, State Revolving Fund, Pesticide Stewardship Partnerships, and Monitoring. DEQ also coordinates with federal and state agencies that are responsible for nonpoint source issues and identifies them as Designated Management Agencies (DMAs). These partnerships and activities are reported to EPA annually.[16] There is no administrative rule specifically for “NPS pollution control” for DEQ, but are instead found within the administrative rules of other agencies.

Surface Water Protection

DEQ’s primary mechanism for addressing surface water pollution from nonpoint sources is through its adoption of Total Maximum Daily Loads (TMDLs) and approval of the related implementation plans[17] based on the authority under Division 42 Total Maximum Daily Loads. TMDLs address protection of all beneficial uses including, but not limited to, fish and other aquatic life, recreation, drinking, agriculture, and industry.

Under ORS 468B.110(1), DEQ has the specific authority to take the actions necessary to attain and maintain water quality standards and to implement load allocations established under a TMDL.

Current TMDL Process

A TMDL is a regulatory term in the CWA, describing a value of the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards. The TMDL process in Oregon, including coordination with designated management agencies (DMAs), is as follows.

DEQ establishes TMDLs for pollutants in waters of the state that are listed as failing to meet in-stream water quality standards in accordance with the Federal Water Pollution Control Act Section 303(d). DEQ then prioritizes those listing based on factors such as severity and uses to schedule TMDLs for completion. DEQ’s water quality analysts and

[16] 33 USC § 1329. DEQ’s comprehensive annual reports on its CWA nonpoint source program is available at http://www.deq.state.or.us/wq/nonpoint/docs/reports.htm
[17] OAR chapter 340, division 42.

basin coordinators, with input from a local technical advisory group, determine load capacity, waste load and load allocations, and other elements that are required under the Division 42 TMDL rule. During the process, a water quality management plan (WQMP) is developed, which provides the framework to guide the detailed plans and analyses provided in sector specific implementation plans.

Currently, the water quality analyses DEQ conducts for TMDLs are coarse and not at a scale that allows DEQ to assign load allocations to individual nonpoint sources or groups of sources. DEQ typically relies on designated management agencies (DMAs) to take information provided in TMDLs to do further, more detailed analysis in order to implement the TMDLs.

Drinking Water Protection

The drinking water protection program focuses on pollution prevention of source water areas used for drinking water. Source water area protection for public drinking water supply is achieved by using existing CWA programs and pollution prevention tools from other programs to reduce the contamination and risks of loss. The beneficial use designation for drinking water applies upstream of any supply intake or wellheads since all waters of the U.S. are subject to authorities under the CWA. If the CWA and state water quality standards are met in these source waters, a drinking water treatment facility using standard treatment technology can produce drinking water that meets SDWA standards. The SDWA regulates the finished quality of drinking water delivered by public water suppliers and is administered by the Department of Human Services.

Pesticide Management/ Stewardship

Since 1999, DEQ has been using a voluntary, collaborative approach called Pesticide Stewardship Partnerships (PSPs) to identify problems and improve water quality associated with pesticide use at the local level. The PSP approach uses local expertise in combination with water quality sampling and toxicology expertise of DEQ to encourage and support voluntary changes that cause measurable environmental improvements.

The key actions include: identify local, pesticide-related water quality issues through targeted monitoring, share results early and often with local stakeholders, explain data in relation to effects and water quality criteria, engage the agricultural community for identifying and implementing solutions, and use ongoing effectiveness monitoring to measure success and provide feedback to support water quality management. PSPs use both water quality and crop quality as measures of success. Pest management and water quality management must both be effective for long term stewardship of natural resources. PSPs have focused on agricultural and some urban areas to date, but DEQ is working with the Department of Forestry and urban stakeholders with the goal of expanding into forested landscapes.

Groundwater Protection

DEQ's main mechanism to regulate groundwater pollution from nonpoint source activities is the department's authority to declare a Ground Water Management Area under ORS 468B.150 to 190. In most cases, the trigger level is 50% of a federal drinking water standard and for nitrate, 70% of the federal drinking water standard. Where monitoring shows that groundwater quality exceeds trigger level and is caused by nonpoint sources of pollution, EQC has the authority to declare groundwater management areas.[18] Once GWMAs are declared, action plans detailing a voluntary program led by local Soil and Water Conservation Districts are negotiated. If the goal is not met, DEQ will consider regulatory measures.

Oregon has designated three GWMAs because of elevated nitrate concentrations in groundwater. These include the Lower Umatilla Basin GWMA, the Northern Malheur County GWMA, and the Southern Willamette Valley GWMA. Each one has developed a voluntary action plan to reduce nitrate concentrations in groundwater.

Toxics Reduction Strategy

Toxic chemicals and pollutants pose risks to both human health and ecological life. Preventing the adverse impacts of toxics is a major focus of DEQ's Air, Water and Land Quality Programs. DEQ adopted a comprehensive, agency-wide approach to developing and implementing toxics reduction actions to address the problem of toxics in the environment.

DEQ's goal is to use a comprehensive, integrated, cross-media approach to reduce the greatest risks to human health and ecological life from toxic pollutants in Oregon's environment.

A DEQ cross-media team was formed in spring 2009 to develop a draft Toxics Reduction Strategy. Team members represent their programs, including regional staff.
As each major task of the draft Strategy is completed, the summary is shared with DEQ managers and the Agency's Executive Management Team (EMT). In addition, an external stakeholder group will provide assistance in developing the draft Strategy and provide input on each major component of the Strategy. The final draft Strategy will be presented to the Environmental Quality Commission for approval.

Civil Enforcement

DEQ also takes enforcement actions under OAR Division 12 ("Enforcement Procedure and Civil Penalties") for violations of ORS 468B. These enforcement actions typically cover violations of permit conditions, water quality certifications, , discharges without a

[18] 468B.180 Declaration of ground water management area; standards

permit that cause pollution or violate Division 41 Water Quality Standards, or placing wastes where they are likely to be carried to waters of the state.[19]

Overarching Limitations

Even assuming the existence of authority to regulate, DEQ cannot establish programs without funding. This requires either appropriation of general funds, authorization to impose fees, use of ecosystem services[20], or approval of the use of federal grants. The Commission has existing authority to establish fees for specified permits, but not for NPS programs. And even though permit fees are expressly authorized, the amount of the fee assessed remains subject to Department of Administrative Services and legislative approval.[21] A similar legislative approval requirement exists for the expenditure of grant funds from the federal government.[22]

Designated Management Agencies' Authorities

As stated earlier, the State legislature determined that Oregon's goals of protecting and enhancing water quality will more effectively and efficiently be achieved by integrating nonpoint source concerns into the fabric of the State and Federal programs. The following sections describe state and federal authorities and associated programs in addition to DEQ's that address water pollution from nonpoint sources.

ODF / Forest Practices on Private and State Lands

The Legislature established a partnership between the EQC and the Board of Forestry, and their respective departments[23]. This partnership is intended to protect water quality and comply with the minimum requirements of the federal CWA.

To this end, the Board of Forestry (Board) is charged with responsibility to "supervise all matters of forest policy and management under the jurisdiction of the state." ORS 526.016. More specifically, Oregon's Forest Practices Act (FPA) authorizes the Board to adopt and enforce rules governing forest practices required to protect water quality. ORS 527.610 to 527.770, 527.990(1) and 527.992.[24] Forest roads are considered exempt

[19] ORS 468B.025.
[20] EPA defines ecosystem services as the products of ecological functions or processes that directly or indirectly contribute to human well-being.
[21] ORS 291.050 and 291.055.
[22] ORS 291.375.
[23] ORS 527.765.
[24] The regulation of forest practices on private and state lands is almost entirely a matter of state law. Although operations on forestlands may give rise to liability generally under federal laws such as the Endangered Species Act and the Clean Water Act, there is no federal law specifically governing forest practices on state and private lands, and no mandate that states adopt such laws.

from the NPDES system under the federal silvicultural exemption. However, certain forest activities are considered point sources and therefore subject to NPDES permitting requirements and pending litigation may change the requirements for forest roads.[25] To the extent NPDES permits are required for certain forestry operations, DEQ would be the issuing agency under the current program structure.

Details of the roles of the Environmental Quality Commission and Board of Forestry in protecting Oregon's water quality from NPS pollution are described in previous white papers from Oregon Attorney-General's Office[26].

The key elements of the Forest Practices Act (FPA) can be summarized as follows, and further details can be found in aforementioned white papers from the AG's office:

1. Forest practice rules must encourage "economically efficient" forest practices that "ensure the continuous growing and harvesting of forest tree species" as the leading use of private forestlands. ORS 527.710(2). The rules must "provide for the overall maintenance of the following resources: (a) air quality; (b) water resources, including but not limited to sources of domestic drinking water; (c) soil productivity; and (d) fish and wildlife." ORS 527.710(2).

2. The forest practice rules include water protection provisions governing activities in or adjacent to water bodies, wetlands, and riparian areas. OAR 629-635-0000 to 629-660-0060. The rules are intended to serve the FPA's resource protection goals for water, fish, and wildlife:

"The overall goal of the water protection rules is to provide resource protection during operations adjacent to and within streams, lakes, wetlands and riparian management areas so that, while continuing to grow and harvest trees, the protection goals for fish, wildlife, and water quality are met. (a) The protection goal for water quality (as prescribed in ORS 527.765) is to ensure through the described forest practices that, to the maximum extent practicable, non-point source discharges of pollutants resulting from forest operations do not impair the achievement and maintenance of the water quality standards." OAR 629-035-0100(7)(a)-(c).

3. The FPA contains important substantive limitations on any new rules that directly affect forest practice standards. ORS 527.714. Rules that implement the FPA's resource-protection objectives and "provide new or increased standards for forest

[25] See 40 CFR §122.27. Notably, forest roads are sometimes a significant source of some pollutants. These roads are currently regulated under the Forest Practices Act. There is litigation pending before the federal Ninth Circuit Court of Appeals, where environmental groups argue that stormwater discharges from these forest roads must be regulated under the NPDES permit system. *See NEDC v. Oregon Board of Forestry*, 476 F Supp 2d 1188 (D. Or, 2007), *appeal pending sub. nom. NEDC v. Brown* No. 07-35266 (9th Cir.)

[26] "Regulation of Water Quality and Forest Practices" (September 7, 2004) and "Legal Relationship Between ORS 527.765 and ORS 527.714 in Deciding Whether to Adopt BMPs under the Oregon Forest Practices Act" (August 23, 2005).

practices" must meet stringent scientific or monitoring evidentiary criteria. ORS 527.714(1) and (5). For example, evidence must show that existing practices are likely to cause degradation of protected resources, and the proposed rule must reflect available scientific information, relevant monitoring, and, as appropriate, adequate field evaluation at representative locations in Oregon. ORS 527.714(5)(a)-(c). Proposed rules must be drafted with precision to prevent the harm or provide the benefits for the resource requiring protection. Rules must directly relate to, and substantially advance, their underlying objective. ORS 527.714(5)(d). New rules must undergo an alternatives analysis, non-regulatory approaches must be considered, and the "least burdensome" alternative must be chosen. ORS 527.714(5)(e). The benefits to the resource achieved by the rule must be proportional to the harm caused by forest practices. ORS 527.714(5)(f). New rules must also be accompanied by a detailed economic impact analysis. ORS 527.714(7).

As explained above, the FPA limits rulemaking ability of BOF by requiring evidence of degradation of protected resources. On the other hand, 527.765 requires BMP adoption to commence when Clean Water Act, i.e. water quality standards and load allocations would not be met by existing forest practices. The following section explains the fundamental differences between FPA and CWA approaches.

4. The Legislature was clear that it did not intend that the grant of authority to the Board should interfere with DEQ's authority to implement the CWA. As a consequence, the FPA establishes a partnership between the Board and Commission intended to ensure federal minimum requirements are met.

ORS 527.765 specifies that the best management practices (BMPs) practices established by the Board must ensure, to the maximum extent practicable, that the Commission's water quality standards are achieved and maintained. This requirement is comparable to that set out in Section 319 of the CWA.[27] In order to provide for regulatory consistency and predictability, ORS 527.770 further clarifies that a forest operator who complies in good faith with all applicable BMPs is deemed not to be violating the Commission's water quality standards.[28] This is sometimes referred to as the "BMP shield." These two statues are designed to work together to ensure that both (1) the BMPs are adequate to meet water quality standards and TMDL load allocations; and (2) given this assurance around the adequacy of the BMPs, forest operators who are in compliance with said BMPs are assured they will not be deemed to be in violation of water quality standards.

ORS 527.765 includes an express requirement that the Board must consult with the Commission in the adoption of BMPs and other rules needed to address NPS pollution. If the Commission believes this consultation has not resulted in adequate BMPs, the Commission may petition the Board to adopt more stringent requirements. The Board

[27] 33 USC §1329(a)(1).
[28] ORS 527.770.

may not take more than two years to adopt new rules to respond to the Commission's petition, unless the EQC agrees to an extension. [29] Further, the Board may not terminate the review without the Commission's concurrence. If the Board and Commission are unable to resolve their differences within the two-year period, the FPA provides that the BMP shield is lost and operators are subject to enforcement by DEQ for water quality standards violations.

The Legislature has limited the broad general authority of the Commission and DEQ to implement TMDLs in a manner that is consistent with the FPA. Under 468B.110(2):

> "Unless required to do so by the provisions of the [CWA], neither the [EQC nor the DEQ] shall promulgate or enforce any effluent limitation upon nonpoint source discharges of pollutants resulting from forest operations on forestlands in this state. Implementation of any limitations or controls applying to nonpoint source discharges or pollutants resulting from forest operations are subject to ORS 527.765 and 527.770. …"

This exemption withdraws "forest operations on forestlands" from EQC's regulatory jurisdiction (at least as far as "effluent limitations," "limitations" or "controls" are concerned) and places jurisdiction in the Board's hands, through the best management practice provisions of ORS 527.765 and 527.770.

The precise meaning of ORS 468B.110(2) has not been explored by the courts and it contains several ambiguities. Technically it prohibits the EQC and DEQ from imposing "effluent limitations" on nonpoint source forest operations. The term is not defined in state law, but under federal law an effluent limitation has a specific meaning. It is a condition placed in an NPDES permit that limits the pollutants that may be discharged based on technological requirements or water quality standards. We assume that the legislature meant something more, particularly in light of the broader terms "limitations or controls" used in the second sentence. But the breadth of the provision is not clear.

In addition, the State Forester is authorized to issue citations and orders directing a landowner or operator who is out of compliance with the FPA rules to cease violation, to repair the damage and to correct the unsatisfactory condition specified in the citation, and under certain circumstances, to cease further activity on the portion of the operation causing the damage. ORS 527.680. The State Forester is further authorized to initiate legal action upon failure of a landowner or operator to comply with an order requiring the repair of damage or correction of an unsatisfactory condition within designated areas, and to assess civil penalties for violations of the water protection rules. ORS 527.690 and 527.687. The Department of Forestry need not demonstrate that water quality standards have been violated.

[29] The Board also must act as quickly as practical to prevent any significant damage to beneficial uses identified by the Commission. ORS 527.756(2)(f).

Given the breadth of DEQ's authority to impose "other controls" under ORS 468B.110(1) as discussed above under Surface Water Protection section, the Department of Forestry's express authority to develop best management practices (BMPs) under ORS 468B.110(2) and 527.765, and the fact that ORS 468B.048(3) requires that DEQ approve the means or methods used to achieve water quality standards, we do not believe that ORS 468.048(3) would be construed to place significant limits on DEQ's implementation of Oregon's Nonpoint Pollution Control Program on forest lands.

Forest Land Conversions

Forest lands are sometimes converted to other uses. The passage of Measure 37[30] resulted in an increased number of such conversions and, with the recent adoption of Measure 49, conversions will continue.

DEQ, along with the State Departments of Forestry, Agriculture, State Lands, Fish and Wildlife, Parks and Recreation, and Land Conservation and Development have regulatory authority or advisory roles associated with land use activities. For example, Department of Forestry regulates commercial harvesting on private and state forest lands. The Department of Agriculture regulates agricultural activities through Agricultural Water Quality Management Area rules. In general, regulations governing riparian management vary depending on the land use surrounding the riparian area.

When forest lands are converted, ODF typically requires the BMPs established under the FPA be followed with respect to how timber is harvested. After conversion, the lands are no longer subject to regulation by the Department of Forestry. Depending on the proximity to certain types of water bodies as well as the future land use, trees are removed and ground is disturbed to varying degrees. Due to these activities associated with land use changes, there may be water quality or load allocation exceedances.

The agencies have entered into a Memorandum of Agreement for the purpose of clarifying regulatory roles between ODF and the agency having oversight for the new land use during land conversion and protecting water quality and other resources.[31] The MOA provides procedures for ODF to notify other affected agencies of the timber harvest associated with the proposed conversion.

Federal Lands

Generally, federal agencies are subject to and must comply with state water quality laws to the same extent and in the same manner as nongovernmental entities.[32] As discussed in detail previously, Oregon law prohibits water pollution from point as well non-point

[30] *Former* ORS 197.352.
[31] The MOA does not appear to be available on line, but a copy can be secured from DEQ.
[32] CWA §313(a) (33 USC § 1323(a); *see*, *e.g.*, *Center For Native Ecosystems v. Cables*, 509 F. 3d 1310 (10th Cir . 2007).

sources and typically requires compliance with water quality standards. To the extent that federal agencies fail to comply with state water quality requirements, however, DEQ has fewer options when it comes to legal remedies. Under the CWA, federal agencies are generally not liable for payment of administrative penalties. [33] However, DEQ may still issue a compliance order, and if the federal agency failed to comply with a final compliance order, DEQ could go to court to enforce the order.

Another alternative available to DEQ is to refer violations to EPA for enforcement. EPA is not subject to the same constraints on assessing penalties. EPA is subject to other constraints, however, including that USDOJ may refuse to allow it to pursue enforcement of another federal agency.

DEQ could also file a judicial action seeking to enjoin the federal agency from violating state and federal law. If a federal agency then fails to comply with the injunction, the court may impose penalties for contempt or enforce its order by other means.

In order to cooperatively meet State and Federal water quality regulations, USFS and BLM, which are major federal land owners in Oregon, have entered into a Memorandum of Understanding and Memorandum Of Agreement. These documents state that USFS and BLM are the designated management agencies.

ODA/ Agricultural Activities on private lands

In 1993, the Legislature adopted Senate Bill 1010 to establish the Agricultural Water Quality (AgWQ) Management Act , which gives the Oregon Department of Agriculture (ODA) authority to establish management plans and adopt rules regulating agricultural practices that contribute to water quality problems within the planning area if the EQC has determined that a TMDL is necessary for a water body, DEQ establishes a groundwater management area, or an agricultural water quality management plan is otherwise required by state or federal law. ORS 568.909.[34] Under rules subsequently adopted by the Commission, ODA's agricultural area water quality management plans and implementing rules are the official TMDL implementation plans for agricultural nonpoint sectors (including non-permitted CAFOs and operation not covered under CAFO permits). The AgWQ Management Act provides ODA with the primary authority to address agricultural water quality issues in areas subject to water quality management plan requirements.

ODA may impose civil penalties on landowners that fail to comply with ODA rules pertaining to implementation of a water quality management plan. Moreover, unlike

[33] *Department of Energy v. Ohio v. EPA*, 503 U.S. 607, 112 S. Ct. 1627, 118 L. Ed. 2d 255 (1992).
[34] In previous advice, DOJ concluded "that 16 USC 1455b (a) is an 'other state or federal law requirement' for purposes of ORS 568.909." (*See* Knudsen letter, July 21, 1994) The Coastal Nonpoint Pollution Control Program is also required under 16 USC 1455b and is intended to be part of the state's nonpoint program required under CWA §319. Moreover, ORS 568.909 was intended to apply to federal Clean Water Act requirements such as those requiring establishment of TMDLs (33 USC § 1313).

the provisions of the Forest Practices Act, the provisions implemented by ODA are in addition to, not in lieu of, those administered by DEQ including water quality standards, adopted by the Commission, and the AgWQ Management Act expressly reserves DEQ's right to directly enforce against landowners.[35] The AgWQ Management Act further requires ODA to consult with DEQ in the preparation of plans and rules and establish a mechanism for the Commission to petition ODA if the Commission finds the management plans or rules to be inadequate.

In 1995, the Legislature gave the Department of Agriculture substantially broader authority and responsibility to regulate water pollution arising from agricultural activities. This statute, ORS 561.191 provides that ODA "shall develop and implement any program or rules that directly regulate farming practices … that are for the purpose of protecting water quality and that are applicable to areas of the state" zoned for farm use[36] including but not limited to rules related to:

(a) Protection of the quality of surface or ground water;
(b) Wellhead protection areas;
(c) Coastal zone management areas;
(d) Areas of ground water concern; and
(e) Ground water management areas"

The statute is clear that ODA programs and rules governing farm practices must "be designed to assure the achievement and maintenance of the water quality standards adopted by the Environmental Quality Commission."[37]

Unlike the AgWQ Management Act, ORS 561.191does not specify what effect, if any, it has on DEQ's authority to regulate water pollution.[38] The Department of Justice has informally advised that the statute should be viewed as a legislative policy favoring a primary role for ODA in the development of regulations ensuring that discharges from agricultural lands do not cause or contribute to violations of water quality standards or otherwise allow pollution of waters of the state. DOJ further advised that the statute should not be viewed as preempting DEQ's regulatory authority under the CWA.

To date, the Oregon Department of Agriculture has not adopted general agricultural practices rules under ORS 561.191. In part, this is because of the highly variable nature of agriculture and its effects on water quality. In recent years, however, ODA has cited this statute as additional authority for the agricultural water quality management plans developed under ORS 568.909. The two agencies have worked closely, however, to develop complimentary programs for point source permitting (e.g. confined animal

[35] ORS 568.930.
[36] ORS 561.191.
[37] *Id.*
[38] Subsection (2) directs the coordination of DEQ and ODA rulemakings relating to groundwater and subsection (4) excludes any application to the statutes governing the Department of Water Resources.

feeding operations under ORS 468B.217 and composting) and TMDL implementation. Such cooperative efforts could be a model for addressing any NPS pollution programs not already covered by the AgWQ and TMDL programs.

Urban and Suburban and Industrial Lands

Historically, runoff from urban and suburban lands was treated as nonpoint source pollution. As the result of changes to the federal Clean Water Act enacted in 1987, this regulatory paradigm has largely changed. Now National Pollutant Discharge Elimination System (NPDES) permits are required for storm water discharges to surface waters from construction and industrial activities and some municipalities if stormwater from rain or snow melt leaves a site through a "point source" and reaches surface waters either directly or through storm drainage. As a result stormwater discharges from large and medium sized municipal storm sewer systems are required to have NPDES permits.[39] Similarly, NPDES stormwater permits are required for most industrial properties and for construction affecting one acre or more of land, including projects that are less than one acre that are part of a larger common plan of development that ultimately disturbs one acre or more.

Runoff from smaller cities[40] and rural communities and rural residential areas remains largely unregulated, except to the extent that it may be covered by an implementation plan developed by a local government or special district as a designated management agency identified under a TMDL. Local governments operating as designated management agencies may develop TMDL implementation plans both for properties over which they provide control (e.g. a street system or park) and for areas where they maintain regulatory (police power or land use planning) authority over private property. DEQ has clear legal authority to require local governments to address NPS pollution that arises from proprietary activities. Local governments may also be required to regulate for the purposes of protecting water quality under the statewide land use planning statutes and Statewide Goal 6. LCDC has not promulgated rules implementing Goal 6, however, so the precise extent of this obligation is not clear.

As discussed above, the Commission likely would have authority to adopt rules governing the nonpoint source discharges from urban and suburban lands that are not

[39] 33 USC § 1342(p).

[40] Federal rules promulgated in 1999 required permit coverage under the NPDES permit program for all small municipalities (and other governmental jurisdictions) located in the US Census Bureau defined Urbanized Areas (maps are available). Generally, the Urbanized Areas are identified based on communities in or around a population center with 50,000 individuals with a higher density (e.g., 1000 persons/sq.mile). In addition, any municipality with a municipal separate storm sewer system (MS4) directly connected to another MS4 required to obtain a NPDES MS4 permit has generally been required to be covered by a permit. As a result, many communities surrounding medium (100,000 to 249,999 population) and large (250,000 population or greater) were included even though they did not have large populations. In Oregon, these areas include Medford, Eugene, Bend, Portland, Salem and Corvallis.

otherwise subject to NPDES permitting requirements or management plans implemented by local governments.

In addition, DEQ could petition LCDC to adopt rules implementing Goal 6. For example, such rules could require LID standards for new residential construction in all areas that are water quality limited for relevant pollutant parameters.

Summary

The EQC has broad authority to adopt and implement programs that it deems needed to protect waters of the state from NPS pollution. Since DEQ has not been delegated the rulemaking authority, the Commission itself must establish requirements applicable to nonpoint source pollution if new programs are needed. For existing programs, however, DEQ has authority and discretion to require reductions in pollutant loads from nonpoint sources under current authorities (ORS 468B, OAR Division 42, and the Clean Water Act) through issuance of a TMDL.

Working Draft: Human Health Criteria Comparison Spreadsheet

Currently Effective Criteria: Based pm a FCR pf 6/5. Pre-2004, Table 20. Effective for CWA purposes.
2004 Criteria: Based on a FCR of 17.5 g/d
Draft Revised Criteria: Based on a FCR of 175 g/d

	Water & Organisms (µg/l)			Organism Only (µg/l)				
Chemical	**Currently Effective Criteria (Table 20)**	**2004 Criteria**	**Draft Revised Criteria**	**Currently Effective Criteria (Table 20)**	**2004 Criteria**	**Draft Revised Criteria**	**Carcinogen**	**Quantitation Limit (µg/L)**
Antimony	146	5.6	5.1	45,000	640	64	n	0.1
Arsenic	0.0022	0.018	2.3*	0.02	0.14	2.7*	y	0.05
Iron	300	300	none	none	none	none		
Manganese	50	50	none	100	100	100**		
Methylmercury (mg/kg)	none	none	NA	none	0.30	0.029	n	0.00005
Nickel	13.4	610	140	100	4600	170	n	10
Selenium	10	170	120	none	4200	420	n	2
Thallium	13	0.24	0.043	48	0.47	0.047	n	0.1
Zinc	none	7400	2100	none	26000	2600	n	5
Cyanide*	200	140	130	none	140	130	n	5
2,3,7,8-TCDD (Dioxin)	1.3E-08	5.0E-09	5.1E-10	1.4E-08	5.1E-09	5.1E-10	y	0.000005
Acrolein*	320	190	28	780	290	29	n	5
Acrylonitrile	0.058	0.051	0.018	0.65	0.25	0.025	y	5
Benzene*	0.66	0.61	0.44	40	14	1.4	y	0.5
Benzene [represents range]		2.2	1.6		51	5.1	y	
Bromoform	none	4.3	3.3	none	140	14	y	0.5
Carbon Tetrachloride	0.4	0.23	0.10	6.94	1.6	0.16	y	0.5
Chlorinated benzenes	488			none				
Chlorobenzene	none	130	74	none	1600	160	n	0.5
Chlorodibromomethane	none	0.4	0.31	none	13	1.3	y	0.5
Chloroform	0.19	5.70	4.3	15.7	470	17	y	0.5
Dichlorobromomethane	none	0.55	0.42	none	17	1.7	y	0.5
1,2-Dichloroethane	0.94	0.38	0.35	243	37	3.7	y	0.5
Dichloroethylenes	0.033			1.85				
1,1-Dichloroethylene	none	330	230	none	7100	710	n	0.5
1,2-Dichloropropane	none	0.50	0.38	none	15	1.5	y	0.5
1,3-Dichloropropene	87	0.34	0.30	14,100	21	2.1	y	0.5

	Water & Organisms (µg/l)			Organism Only (µg/l)				
Chemical	**Currently Effective Criteria (Table 20)**	**2004 Criteria**	**Draft Revised Criteria**	**Currently Effective Criteria (Table 20)**	**2004 Criteria**	**Draft Revised Criteria**	**Carcinogen**	**Quantitation Limit (µg/L)**
Ethylbenzene	1,400	530	160	3280	2100	210	n	0.5
Methyl Bromide	none	47	37	none	1500	150	n	0.5
Methylene Chloride	none	4.6	4.3	none	590	59	y	0.5
1,1,2,2-Tetrachloroethane	0.17	0.17	0.12	10.7	4.0	0.40	y	0.5
Tetrachloroethylene	0.8	0.69	0.24	8.85	3.3	0.33	y	0.5
Toluene	14,300	1300	720	424,000	15,000	1500	n	0.5
1,2-trans-Dichloroethylene	none	140	120	none	10,000	1000	n	0.5
1,1,2-Trichloroethane	0.6	0.59	0.44	41.8	16	1.6	y	0.5
Trichloroethylene	2.7	2.5	1.4	80.7	30	3.0	y	0.5
Vinyl Chloride	2	0.025	0.02	525	2.4	0.24	y	0.5
2-Chlorophenol	none	81	14	none	150	15	n	1
2,4-Dichlorophenol	3090	77	23	none	290	29	n	1
2,4-Dimethylphenol	none	380	76	none	850	85	n	2
2-Methyl-4,6-dinitrophenol	none	13	9.2	none	280	28	n	2
2,4-Dinitrophenol	none	69	62	none	5300	530	n	5
Pentachlorophenol	1010	0.27	0.15	none	3.0	0.30	y	2
Phenol*	3500	21000	1.9E+04	none	1.7E+06	170000	n	1
2,4,6-Trichlorophenol	1.2	1.4	0.23	3.6	2.4	0.24	y	1
Acenaphthene	none	670	95	none	990	99	n	1**
Anthracene	none	8300	2900	none	40000	4000	n	1**
Benzidine	1.2E-04	8.6E-05	1.8E-05	5.3E-04	2.0E-04	2.0E-05	y	10
Benzo(a)anthracene	none	0.0038	0.0013	none	0.018	0.0018	y	1**
Benzo(a)pyrene	none	0.0038	0.0013	none	0.018	0.0018	y	1**
3,4-Benzo(b)fluoranthene	none	0.0038	0.0013	none	0.018	0.0018	y	1**
Benzo(k)fluoranthene	none	0.0038	0.0013	none	0.018	0.0018	y	1**
Bis(2-chloroethyl)ether	0.03	0.03	0.020	1.36	0.53	0.05	y	1
Bis(2-chloroisopropyl)ether	35	1400	1200	4400	65000	6500	n	2
DI-2-ethylhexyl phthalate	15,000			50,000				
Bis(2-ethylhexyl)phthalate	none	1.2	0.20	none	2.2	0.22	y	1
Butylbenzyl Phthalate	none	1500	190	none	1900	190	n	1
2-Chloronaphthalene	none	1000	150	none	1600	160	n	1
Chrysene	none	0.0038	0.0013	none	0.018	0.0018	y	1**
Dibenzo(a,h)anthracene	none	0.0038	0.0013	none	0.018	0.0018	y	1**
Dichlorobenzenes	400			2600				
1,2-Dichlorobenzene(o)	none	420	110	none	1300	130	n	0.5
1,3-Dichlorobenzene(m)	none	320	80	none	960	96	n	0.5
1,4-Dichlorobenzene(p)	none	63	16	none	190	19	n	0.5

	Water & Organisms (µg/l)			Organism Only (µg/l)				
Chemical	**Currently Effective Criteria (Table 20)**	**2004 Criteria**	**Draft Revised Criteria**	**Currently Effective Criteria (Table 20)**	**2004 Criteria**	**Draft Revised Criteria**	**Carcinogen**	**Quantitation Limit (µg/L)**
3,3'-Dichlorobenzidine	0.010	0.021	0.0027	0.02	0.028	0.0028	y	1
Diethyl Phthalate	350,000	17000	3800	1.8 g	44000	4400	n	1
Dimethyl Phthalate	313,000	270000	84000	2.9 g	1100000	110000	n	1
Dibutylphthalate	35,000			154000				
Di-n-butyl Phthalate	none	2000	400	none	4500	450	n	1
2,4-Dinitrotoluene	0.11	0.11	0.084	9.1	3.4	0.34	y	1
Diphenylhydrazine	0.042			0.56				
1,2-Diphenylhydrazine	none	0.036	0.014	none	0.20	0.02	y	5
Fluoranthene	42	130	14	54	140	14	n	2**
Fluorene	none	1100	390	none	5300	530	n	1**
Hexachlorobenzene	0.00072	0.00028	0.000029	0.000740	0.00029	0.000029	y	1
Hexachlorobutadiene	0.45	0.44	0.36	50	18	1.8	y	2
Hexachlorocyclopentadiene	none	40	30	none	1100	110	n	2
Hexachloroethane	1.9	1.4	0.29	8.74	3.3	0.33	y	2
Indeno(1,2,3-cd)pyrene	none	0.0038	0.0013	none	0.018	0.0018	y	1**
Isophorone	5200	35	27	520,000	960	96	y	10
Nitrobenzene	19,800	17	14	none	690	69	n	1
N-Nitrosodimethylamine	0.0014	0.00069	0.00068	16.0	3.0	0.30	y	1
N-Nitrosodi-n-propylamine	none	0.0050	0.0046	none	0.51	0.051	y	2
N-Nitrosodiphenylamine	4.9	3.3	0.55	16.1	6.0	0.60	y	1
Pyrene	none	830	290	none	4000	400	n	1
1,2,4-Trichlorobenzene	none	35	6.4	none	70	7.0	n	0.5
Aldrin	7.4E-05	4.9E-05	5.0E-06	7.9E-05	5.0E-05	5.0E-06	y	0.01
alpha-BHC	none	0.0026	0.00045	none	0.0049	0.00049	y	0.01
beta-BHC	none	0.0091	0.0016	none	0.017	0.0017	y	0.01
gamma-BHC (Lindane)		0.98	0.17		1.8	0.18	n	0.01
Chlordane	4.6E-04	8.0E-04	8.1E-05	4.8E-04	8.1E-04	8.1E-05	y	0.1
4,4'-DDT	2.4E-05	2.2E-04	2.2E-05	2.4E-05	2.2E-04	2.2E-05	y	0.01
4,4'-DDE	none	2.2E-04	2.2E-05	none	2.2E-04	2.2E-05	y	0.01
4,4'-DDD	none	3.1E-04	3.1E-05	none	3.1E-04	3.1E-05	y	0.01
Dieldrin	7.1E-05	5.2E-05	5.3E-06	7.6E-05	5.4E-05	5.4E-06	y	0.01
Endosulfan	7.4E+01			1.6E+02				
alpha-Endosulfan	none	62	8.5	none	89	8.9	n	0.01
beta-Endosulfan	none	62	8.5	none	89	8.9	n	0.01
Endosulfan Sulfate	none	62	8.5	none	89	8.9	n	0.01
Endrin	0.001	0.059	0.0060	none	0.060	0.0060	n	0.01
Endrin Aldehyde	none	0.29	0.03	none	0.30	0.03	n	0.01

	Water & Organisms (µg/l)			Organism Only (µg/l)				
Chemical	**Currently Effective Criteria (Table 20)**	**2004 Criteria**	**Draft Revised Criteria**	**Currently Effective Criteria (Table 20)**	**2004 Criteria**	**Draft Revised Criteria**	**Carcinogen**	**Quantitation Limit (µg/L)**
Heptachlor	2.8E-04	7.9E-05	7.9E-06	2.9E-04	7.9E-05	7.9E-06	y	0.01
Heptachlor Epoxide	none	3.9E-05	3.9E-06	none	3.9E-05	3.9E-06	y	0.01
PCBs	7.9E-05	6.4E-05	6.4E-06	7.9E-05	6.4E-05	6.4E-06	y	0.5
Toxaphene	7.1E-04	2.8E-04	2.8E-05	7.3E-04	2.8E-04	2.8E-05	y	0.5
Non-Priority Pollutants								
Ether, bis(chloromethyl)	3.8E-09	1.0E-04	2.4E-05	1.8E-03	2.9E-04	2.9E-05	y	Contact DEQ Lab
Dinitrophenols	none	69	62	none	5300	530	n	Contact DEQ Lab
Nitrosodibutylamine, N	0.0064	0.0063	0.0050	0.587	0.22	0.02	y	10
Nitrosopyrrolidine, N	0.016	0.016	0.016	91.9	34	3.4	y	10
Pentachlorobenzene	74	1.4	0.15	85	1.5	0.15	n	10 / Contact DEQ Lab
Tetrachlorobenzene, 1,2,4,5-	38	0.97	0.11	48	1.1	0.11	n	1
Trichlorophenol, 2, 4, 5-	2600	1800	330	none	3600	360	n	2 / Contact DEQ Lab

QL is greater than criterion

BCF = bioconcentration factor, L/Kg

* Oregon specific criteria. Based on FCR of 175, but other factors in calculation are also revised.
** Manganese criterion for organism only will apply only to marine waters.

***** Benzene calculations represent the range of the criteria for water and organisms (0.61-2.2 ug/L) and organisms only (14-51ug/L)

* Cyanide: Based on public comment, EPA chose a more conservative value for the organism only cyanide criterion by equating it to the water and organism criterion. This spreadsheet has been updated to reflect this new calculation.

Implementing Water Quality Standards in Clean Water Act NPDES Permits

ODEQ, December 4, 2009

Implementation Tool or Approach	Description	Environmentally Meaningful	Cost Effective	State/Federal Authority	Comments
Water quality-based effluent limit (WQBEL)	A numeric effluent concentration limit included in an NPDES permit when the source has the reasonable potential to exceed a water quality criterion	Prevents the discharge of a pollutant at levels that may impair beneficial uses. In some cases the contribution from the point source is so small relative to other contributions that removal of the point source load will not provide a significant or meaningful benefit to beneficial uses.	Per federal regulations, WQBELs are calculated to meet water quality standards without regard to cost. Where facilities would need to add expensive treatment to meet WQBELs, the consequence may be expensive removal of a small pollutant load by an NPDES source, without consideration of whether reducing the same or greater loads from other sources could be more cost-effective.	Existing, no proposed changes	The CWA regulates point sources through the NPDES permit program, but does not place enforceable requirements on nonpoint sources to meet WQS. Nonpoint sources may be given load allocations in a TMDL.

Implementing Water Quality Standards in Clean Water Act NPDES Permits

ODEQ, December 4, 2009

Implementation Tool or Approach	Description	Environmentally Meaningful	Cost Effective	State/Federal Authority	Comments
Intake credit	This tool allows a source to pass through pollutants contained in their intake water to their effluent without treatment as long as the facility does not increase either the mass or concentration of the pollutant at the point of discharge.	This provision does not result in an environmental benefit or impact.	This provision is cost effective for the point source because it allows them to forgo the cost of removing pollutants that they did not contribute.	DEQ will propose a new rule authorizing intake credits.	DEQ expects there will be very few permittees that will qualify to use this provision.
Compliance schedule	A schedule of actions included in an NPDES permit leading to compliance with water quality-based permit limits or other requirements	A facility may need time to install technology improvements or implement pollution reduction programs before they can achieve their permit limits based on WQS. This tool requires that milestones toward achieving compliance be met.	The compliance schedule allows an existing source time to complete planning, financing and construction of improvements over the specified timeframe.	Existing implementation of provision voluntarily on hold pending litigation settlement. If needed, DEQ will propose a provision to allow compliance schedules for human health criteria prior to resolution of litigation.	This is a tool DEQ, other states and EPA have used for many years. DEQ is currently developing guidance to improve our process. The human health provision is being considered because the litigation is related to endangered species rather than human health concerns.

Implementing Water Quality Standards in Clean Water Act NPDES Permits

ODEQ, December 4, 2009

Implementation Tool or Approach	Description	Environmentally Meaningful	Cost Effective	State/Federal Authority	Comments
Variances	A variance is a temporary exemption from meeting certain otherwise applicable water quality standards and must be justified based on one of 6 reasons specified in federal and state WQS regulations.	A variance may establish alternative limits, and may, where appropriate, include terms and conditions that will result in progress toward meeting the WQS. Terms and conditions could include capital improvements, public education and take-back programs, trading or offsets, etc.	A variance provides a permitted source relief where attainment of the standard is cost-prohibitive or cannot be attained due to other specified factors, and provides a mechanism by which other more cost-effective reductions can be implemented.	Existing. DEQ will propose revisions intended to clarify and streamline the process to obtain a variance.	Substantial and widespread economic and social impact is one reason a variance may be granted. Other reasons include high, naturally occurring pollutant loads and human-caused conditions or sources of pollution that cannot be remedied or would cause more environmental damage to correct than leave in place. EPA must approve variances. Underlying WQS remain in effect for the water body and for all other CWA purposes (e.g. other permittees, 303(d) listing and TMDL development).

Implementing Water Quality Standards in Clean Water Act NPDES Permits
ODEQ, December 4, 2009

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Background concentration allowance	This tool would allow non-contact cooling water systems that do not add, but only concentrate, pollutants in their intake water, to pass through those pollutants without additional treatment, under certain circumstances, if the effect on the ambient water body concentration is not significant. Otherwise, where ambient river concentrations are above the criteria, sources would be required to meet the criteria at the 'end-of-pipe.'	No specific environmental benefit. The resultant discharge concentration of the pollutant(s) does not significantly affect the receiving water body ambient concentration(s).	The intake concentration allowance could provide specified permitted sources relief where attainment of the standard in the effluent of that source would be costly but would not provide meaningful environmental benefit.	DEQ will propose adoption by rule and submit to EPA for approval. EPA would likely characterize the provision as a multiple discharger variance.	Individual facilities could be covered by this provision as part of the permitting process. While EPA would need to approve the provision, individual approvals from EPA would not be needed for each facility covered under the provision. Facilities would need to provide information demonstrating that they meet the requirements for receiving coverage that are described in the provision.

Implementing Water Quality Standards in Clean Water Act NPDES Permits
ODEQ, December 4, 2009

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De minimis concentration	Allow facilities to be in compliance with their WQBELs based on meeting method quantification levels.	No specific environmental benefit. Would address concern that facilities not be held accountable for pollutants they cannot detect or quantify.	DEQ and EPA's current policies on the application of criteria below quantitation limits address these issues. Continued implementation will result in determinations of compliance based on quantification limits, where applicable.	No authorizing rule language is needed; DEQ's current QL policy is consistent with state and federal law and EPA guidance.	DEQ has a policy in our Reasonable Potential Analysis IMD regarding measurable limits (quantitation limits) and the application of criteria lower than that in permits.

Implementation Tool or Approach	Description	Environmentally Meaningful	Cost Effective	State/Federal Authority	Comments
De minimis increase allowance	New WQS provisions to allow a "de minimis" increase in toxic pollutant load above ambient WQ conditions from a single point source, which is small enough that it is not expected to significantly affect human health risk.	Could result in more environmentally meaningful implementation of the standards by focusing efforts on discharges that are likely to have a real or significant human impact or risk.	This provision would focus toxics reduction and control efforts where they are most likely to have a significant human health effect, resulting in an overall increase in cost effectiveness.	Would require new WQS rule provision and approval by EPA (see comment).	EPA would be unable to approve such a provision without a demonstration that the provision is protective of designated uses. EPA does not currently see a path forward for being able to demonstrate that such a provision meets this requirement. This is particularly true if such a provision were applied to human health criteria for non-carcinogens, given that these criteria are derived using a threshold approach which does not incorporate the use of risk levels.

Implementing Water Quality Standards in Clean Water Act NPDES Permits

ODEQ, December 4, 2009

Implementation Tool or Approach	Description	Environmentally Meaningful	Cost Effective	State/Federal Authority	Comments
Trading with upstream sources to meet WQBEL	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.	Provides more options for reducing toxic pollutants from multiple sources.	Allows a permittee to achieve toxics reductions more cost effectively if there are other sources nearby that can be reduced at less expense.	No authorizing rule language is needed; this is possible under existing regulations.	May be limited applications—requires an upstream source discharging the same pollutant of concern. If time is needed to implement or the outcomes are uncertain, a compliance schedule or variance may need to be used in conjunction.
Offsets in lieu of meeting WQBEL	Would allow a permittee to reduce loading of the same pollutant from another point or nonpoint source within the watershed/subbasin if this will result in greater overall pollutant reduction. The source may exceed water quality standards immediately downstream of their discharge.	Environmental benefit would be realized at the watershed/ subbasin scale by reducing the overall pollutant loading. However, local environmental impacts could result from increased pollutant concentrations near the point of discharge.	Allows sources to find more cost-effective means to reduce pollutant loading.	Under current federal regulations, DEQ can not allow a source to exceed standards unless the source is granted a variance.	May have limited applicability outside a handful of commonly found pollutants. For discharges occurring under a variance, DEQ agrees that offsets this could have both environmental and cost benefits. We will continue to work to make the administrative process to allow offsets under a variance as efficient as possible.

Implementing Water Quality Standards in Clean Water Act NPDES Permits
ODEQ, December 4, 2009

Implementation Tool or Approach	Description	Environmentally Meaningful	Cost Effective	State/Federal Authority	Comments
Source reduction	Reducing pollutants generated or entering a treatment facility by finding ways to reduce them before they become waste; e.g., recycling, reduced use or substitution of raw materials. For municipalities it could include education or collection programs or enhanced pre-treatment by dischargers to the POTW.	Reducing toxics at the source can provide multiple environmental and safety benefits.	Source reduction is often found to be more cost effective than waste treatment.	No authorizing rule language is needed; this is possible and currently occurs under existing regulations.	
Benchmark approach	Use best available practices and controls as a means of achieving progress toward WQS in lieu of including WQBELs in permits.	May be a means to focus resources where there is greatest potential to achieve pollutant reductions and environmental benefit.	In some cases, this could be a more cost effective approach for NPDES sources and for DEQ, if the only other alternative is to obtain a variance in situations where meeting WQBELs is not technologically or economically feasible.	Federal regulations do not allow this approach.	This same result can occur through a variance process (see above).

Implementing Water Quality Standards in Clean Water Act NPDES Permits
ODEQ, December 4, 2009

Implementation Tool or Approach	Description	Environmentally Meaningful	Cost Effective	State/Federal Authority	Comments
Use attainability analysis	A process to set appropriate use goals for the water body. Demonstrate that a use is not attainable for one of 6 reasons; replace that use with the use determined to be attainable.	Getting the uses/goals for the water body right can be the first step in making real environmental progress.	By setting appropriate and attainable use goals, resources will be allocated where they are more likely to accomplish the desired environmental results.	Existing, no new rule language is needed.	This is a revision to the standards for a water body rather than a tool applied to a specific permittee and would affect all CWA programs implementing WQS on that water body.
Site specific criterion	A process to set appropriate criteria for the water body. Demonstrate that a water body-specific or basin-specific criterion is protective of the designated use.	Getting the criteria right can be the first step in making real environmental progress through regulatory and non-regulatory programs.	By setting appropriate criteria, resources will be allocated where they are more likely to accomplish the desired environmental success.	Existing, no new rule language is needed.	This is a revision to the standards for a water body rather than a standards tool applied to a specific permittee and would affect all CWA programs implementing WQS on that water body.