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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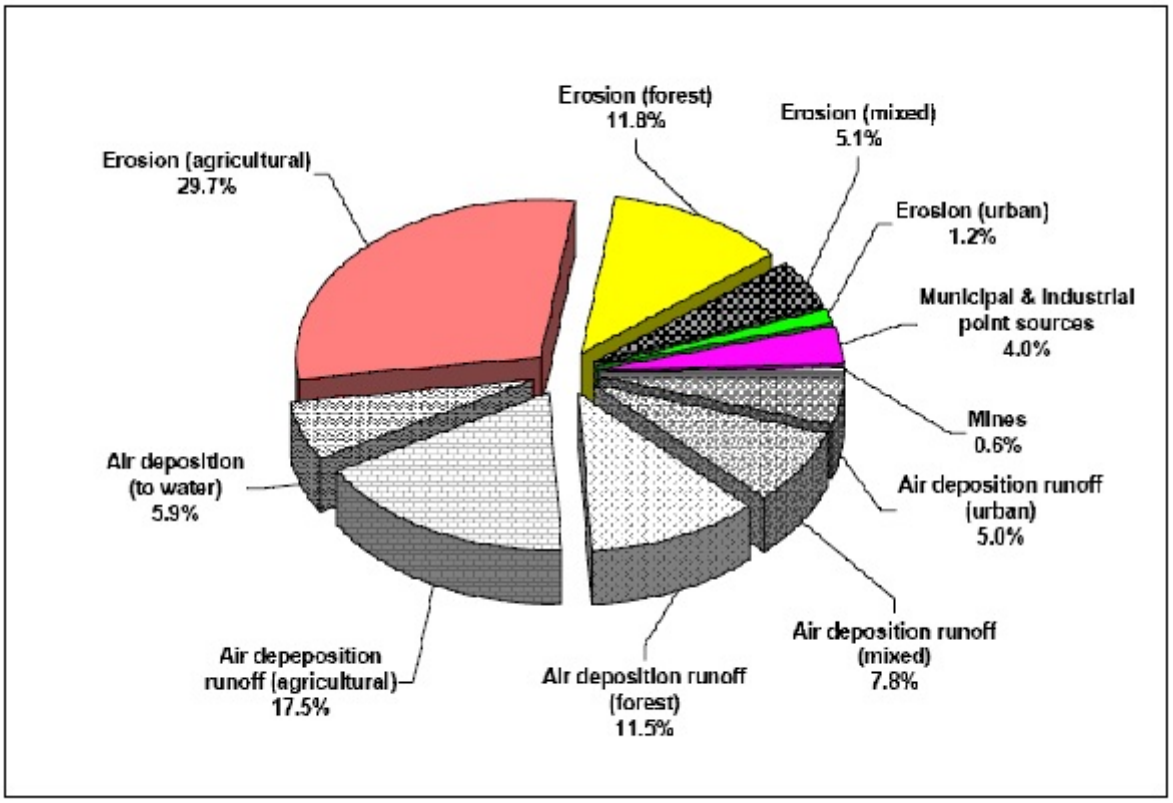
[1] As the Oregon Department of Agriculture points out, "[m]any pesticides that are no longer permitted for application may remain adsorbed to soil particles. If soil is moving off the property, pesticides may be going along for the ride. Limiting erosion removes this transportation mode of pesticides 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: **<u>Remove</u> 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

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[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: **<u>Add</u> 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

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[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: **<u>Recommend</u> 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: **<u>Add</u> Requirement that BMPs Established by DEQ be Used, and Modified, if Necessary, to Meet Water Quality Standards and <u>Recommend</u> 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).