



State of Oregon
Department of
Environmental
Quality

Proposed Fact Sheet and NPDES Waste Discharge Permit Evaluation Industrial Stormwater General Permits Nos. 1200-Z and 1200-COLS

Oregon Department of Environmental Quality
811 SW 6th Avenue
Portland OR 97204

Proposed Action

Renewal of National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater General Permits Nos. 1200-Z and 1200-COLS

Permit Writer

Jenine Camilleri, Telephone Number (503) 229-6775, email: camilleri.jenine@deq.state.or.us

Permit Category

Industrial Stormwater General Permits Nos. 1200-Z and 1200-COLS. The proposed permits replace the 1200-COLS permit effective September 1, 2006 and the 1200-Z permit effective July 1, 2007. DEQ is also proposing the 1200-ZN permit for facilities that do not have a 1200-Z permit and apply for the permit between September 1st and June 30th.

Sources Affected

The Industrial Stormwater General Permit No. 1200-Z (1200-Z permit) covers a broad range of industries throughout Oregon that discharge stormwater to rivers, streams and other surface waters. The Industrial Stormwater General Permit No. 1200-COLS (1200-COLS permit) covers industries that discharges to the Columbia Slough Watershed in the Portland metro area. There are about 773 facilities registered under the 1200-Z permit and 139 facilities registered under the 1200-COLS permit.

These permits regulate various pollutants from industrial activities that may be discharged in stormwater during rain and snow events. The stormwater from industrial activities discharges to rivers and streams or storm drains that eventually discharge to rivers and streams. Stormwater often contains pollutants that may harm aquatic life and their habitat. The permits require facilities to implement best management practices to reduce pollutants in stormwater and to meet benchmarks that measure the success of these management practices.

Background

The federal Clean Water Act provides that discharges from point sources to waters of the United States are prohibited, unless in compliance with a national pollutant discharge elimination system (NPDES) permit. (CWA 301(a)) In 1987, the CWA was amended to establish a framework for regulating municipal and industrial storm water stormwater discharges under the NPDES program. (CWA 402(p)) In 1990, the U.S. Environmental Protection Agency (EPA) adopted regulations requiring National Pollutant Discharge Elimination System (NPDES) permits for discharges of stormwater to surface waters from certain categories of industries. (55 Fed. Reg. 47990, codified at 40 Code of Federal Regulation (CFR) 122.26.) In 1992, EPA revised the monitoring requirements for industrial storm water discharges. (57 Fed.Reg. 11394-01; 40 C.F.R. 122.44(i)(2), (4)-(5).) In 1999, EPA adopted additional storm water regulations, known as Phase II. (64

Fed.Reg. 68722-52.) The Phase II regulations, provide, among other things, for exclusions from NPDES permits for “industrial activities that have “no exposure” to storm water.

As an EPA approved state program, the Oregon Department of Environmental Quality (DEQ) is responsible for implementing these regulations and issuing NPDES permits. In 1991, DEQ adopted a series of NPDES General Storm Water Discharge Permits that applied to different industrial sectors. In 1997, DEQ consolidated these sector specific general permits and issued a statewide Industrial Stormwater General Permit No. 1200-Z (1200-Z permit) that covers a broad range of industries throughout the state. In 1999, DEQ issued the Industrial Stormwater General Permit No. 1200-COLS (1200-COLS permit) for discharges to the Columbia Slough to coincide with the issuance of the Total Maximum Daily Load (TMDL) for the watershed.

These permits expire every five years. DEQ renewed the 1200-Z permit in 2002 and 2007. The current 1200-Z permit became effective on July 1, 2007 and expires on June 30, 2012. DEQ renewed the 1200-COLS permit in 2006. The current 1200-COLS permit became effective on September 1, 2006 and expires on August 31, 2011.

In 2007 and 2008, two environmental advocacy groups, Northwest Environmental Defense Center (NEDC) and Columbia Riverkeeper, challenged the current permits validity under the Federal Clean Water Act. DEQ settled the legal challenge and as part of the settlement agreement, agreed to revise the permits.¹ Under the settlement agreement, DEQ agreed to:

- Issue new permits based on the EPA Multi-Sector General Permit (EPA’s permit) for industrial stormwater discharges issued in September 2008.
- Convene an advisory committee to provide input on the proposed changes to the permits. Specifically, DEQ agreed to discuss the following issues with the committee:
 - Evaluate whether facilities should monitor their discharge at least once a year (i.e., not allowing a monitoring waiver for facilities that consistently meet benchmarks).
 - Evaluate the consequences for not meeting benchmarks.
 - Evaluate increasing monitoring to characterize the pollutants in industrial stormwater discharges.
- Retain the public notice and comment provisions in the current Oregon permits and continue to review stormwater pollution control plans.

In May 2010, DEQ and NEDC and Columbia Riverkeeper amended the settlement agreement to provide additional time for DEQ to develop water quality based metals benchmarks for copper, lead, and zinc.²

In June 2009, DEQ convened an advisory committee comprised of representatives of affected industries, small businesses, municipalities, environmental groups and stormwater consultants. The committee met sixteen times from June 2009 to April 2011 and provided input to DEQ on the proposed changes to the permits.

¹ 1200-Z and 1200-COLS Industrial Stormwater Permit Settlement Agreement and Release of Claims, Department of Environmental Quality and Northwest Environmental Defense Center and Columbia Riverkeeper, June 30, 2009

² 1200-Z and 1200-COLS Industrial Stormwater Permit Amendment to Settlement Agreement and Release of Claims, Department of Environmental Quality and Northwest Environmental Defense Center and Columbia Riverkeeper, May 12, 2010.

SUMMARY OF KEY CHANGES TO PERMITS

DEQ is proposing significant changes to the permits. DEQ made these changes based on settlement agreements with NEDC and Columbia Riverkeeper, advisory committee input and the evaluation of these permits by department staff. These changes include the following:

- DEQ is significantly lowering the metals benchmarks for copper, lead and zinc based on an evaluation of the state's waters.
- DEQ is requiring certain industries that are not consistently achieving the benchmarks to hire a professional engineer or certified engineering geologist to design their stormwater plan and identify best available technologies to reduce pollutants.
- DEQ is adding more pollutant monitoring.
 - Industries that discharge to impaired waters that are not meeting the state water quality standards will monitor for impairment pollutants on DEQ's 303(d) list and take corrective actions if these pollutants are present in their discharge.
 - Industries will monitor for Polycyclic Aromatic Hydrocarbons (PAHs) and a broader suite of metals (cadmium, chromium and nickel) to determine if they are present in industrial stormwater. Certain industries will also monitor for industry specific benchmarks.
- DEQ is adding precision to sample collection requirements. If possible, industries will collect grab composite samples, sample during first rain event after September 1st and within first 12 hours of each storm (maximum of four events per year).
- DEQ is improving efficiency and effectiveness in the reporting process. This includes specifying events which require submission of revised stormwater plans.

More information on these proposed requirements as well as other proposed changes is provided in the appropriate sections of this report below.

LOCAL MUNICIPALITIES THAT SERVE AS DEQ'S AGENT

DEQ authorizes local public agencies to act as its Agent and implement the proposed permit on DEQ's behalf if they entered into a Memorandum of Agreement (MOA). The Agent may be authorized to conduct the following activities, including but not limited to: application and SWPCP review, inspections, monitoring data review, stormwater and wastewater monitoring, and verification and approval of no-exposure certifications. Throughout the permits, DEQ uses the language "DEQ or Agent" to reflect this partnership. If a facility is operating in an Agent's jurisdiction, they must submit the materials to the Agent rather than DEQ. Also, the Agent will evaluate permit compliance for facilities within their jurisdictions such as conducting inspections, reviewing monitoring data and evaluating corrective actions. The following local municipalities currently act as DEQ's Agent for the 1200-Z and 1200-COLS permits: City of Portland, City of Eugene and Clean Water Services which includes all or parts of the cities of Beaverton, Cornelius, Forest Grove, Hillsboro, Sherwood, Tigard and Tualatin. An Agent representative served on DEQ's advisory committee for revising these permits and provided feedback on the proposed changes to the permits.

ANTIDegradation REVIEW

DEQ's antidegradation policy in OAR 340-041-0026 requires a review of discharges to surface waters to determine if existing water quality will be protected and maintained. For general permits, DEQ conducts such a review. The proposed renewal of the NPDES 1200-Z and 1200-COLS general permits have reduced benchmark concentrations for several parameters, additional benchmark monitoring of sector specific benchmark parameters, and new required monitoring of discharges to impaired waterbodies. For example, benchmarks for copper and lead will be reduced by an order of magnitude.³ Monitoring results

³ The range in benchmark reductions for copper, lead and zinc is from 69% to 91% from current benchmark values.

are subject to more stringent corrective action measures compared to previous permits. Because DEQ is proposing more stringent permit requirements and is not relaxing or eliminating any requirements, the renewal of these permits is deemed to not cause a lowering of water quality for the purpose of antidegradation review and these industrial stormwater discharges are expected to have reduced pollutant concentrations entering receiving waters.

DEQ believes that any additional load from new permitted facilities will be offset by the lowered benchmark levels and the higher level of corrective action. A review of the changing number of permittees has shown that there is a relatively consistent number of facilities operating under the permits at any time. As of April 2011, there were 773 facilities operating under the 1200-Z and 139 facilities operating under the 1200-COLS. There has been an average of 769 permitted facilities, with a difference of $\pm 1.5\%$ of the average, operating under the 1200-Z since July 2007, the effective date of the current 1200-Z. There has been an average of 140 permitted facilities, with a difference of $\pm 1.5\%$ of the average, operating under the 1200-COLS since July 2006, two months prior to the effective date of the current 1200-COLS. Since July 2004, the number of facilities under each permit has not varied over $\pm 3.5\%$ of their respective averages.

PERMIT ISSUANCE AND EFFECTIVE DATE

DEQ is proposing to issue three general stormwater permits for a five year term.

- The 1200-COLS permit will be effective on September 1, 2011 and expire on August 31, 2016.
- The 1200-ZN permit for new facilities that begin operation after September 1st or existing facilities that are operating without a permit will become effective on September 1, 2011 and expire on August 31, 2016.
- The 1200-Z permit will become effective on effective on July 1, 2012 and expire on June 30, 2017. This permit will apply to existing facilities that currently operating under the 1200-Z permit that expires on June 30, 2012 and will be renewing their coverage under this permit.

New facilities or existing facilities that are operating without a permit can apply for the 1200-COLS permit (if located within Columbia Slough Watershed) or the 1200-ZN permit, starting on September 1, 2011. The 1200-ZN permit will be available for these facilities until the 1200-Z permit becomes effective on July 1, 2012. After July 1, 2012, facilities will apply for the 1200-Z permit.

Facilities that are currently operating under these permits (1200-COLS permit that expires August 2011 and 1200-Z permit that expires June 2012) will be subject to a permit renewal process. If DEQ receives the renewal applications before the expiration date of the permits, DEQ will administratively extend these facilities' coverage under the current permit pursuant to OAR 340-045-0040. DEQ or its Agents will review the applications and stormwater plans prior to issuing facilities coverage under the new permits. These facilities will operate under the current permits until DEQ has taken final agency action and either granted or denied them coverage under these new permits. Given the number of 1200-Z facilities (approximately 900 facilities), DEQ will stagger renewing facilities coverage under the new 1200-Z permit over the course of three years. DEQ will assign facilities coverage under the new permit based on the date they received coverage under the current permit. For example, if a facility received coverage in 2007, DEQ will renew their coverage under the new permit sooner than a facility that received coverage under the current permit in 2008.

SOURCES COVERED BY THESE PERMITS

The cover page describes the sources that are required to obtain coverage under the permits. The cover page also includes the expiration date of the permits that will not exceed five years from the date of issuance.

Pursuant to 40 CFR 122.26(b)(14)(i - ix, xi), certain “stormwater discharges associated with industrial activities” are eligible for coverage under the 1200-Z and 1200-COLS permits. “Stormwater discharges associated with industrial activities” was defined broadly in the federal regulations to cover a wide variety of industrial facilities. Table 1 below provides a list of 29 categories of industrial activities and Standard Industrial Classification (SIC) codes that are eligible for permit coverage, if there is a point source discharge of stormwater to surface waters or to conveyance system that discharges to surface waters of the state.

TABLE 1: SOURCES COVERED (1200-Z and 1200-COLS permit)

Facilities with the following primary Standard Industrial Classification (SIC) codes:

- 10 Metal Mining
- 12 Coal Mining
- 13 Oil and Gas Extraction
- 20 Food and Kindred Products
- 21 Tobacco Products
- 22 Textile Mill Products
- 23 Apparel and Other Finished Products Made From Fabrics and Similar Material
- 24 Lumber and Wood Products, Except Furniture and 2491 Wood Preserving. (Activities with SIC 2411 Logging that are defined in 40 CFR §122.27 as silvicultural point source discharges are covered by this permit.)
- 25 Furniture and Fixtures
- 26 Paper and Allied Products
- 27 Printing, Publishing and Allied Industries
- 28 Chemicals and Allied Products (excluding 2874 Phosphate Fertilizer Manufacturing)
- 29 Petroleum Refining and Related Industries
- 30 Rubber and Miscellaneous Plastics Products
- 31 Leather and Leather Products
- 32 Stone, Clay, Glass, and Concrete Products
- 33 Primary Metal Industries
- 34 Fabricated Metal Products, Except Machinery and Transportation Equipment
- 35 Industrial and Commercial Machinery and Computer Equipment
- 36 Electronic and Other Electrical Equipment and Components, Except Computer Equipment
- 37 Transportation Equipment
- 38 Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks
- 39 Miscellaneous Manufacturing Industries
- 4221 Farm Product Warehousing and Storage
- 4222 Refrigerated Warehousing and Storage
- 4225 General Warehousing and Storage
- 5015 Motor Vehicle Parts, Used
- 5093 Scrap and Waste Materials

TABLE 1: SOURCES COVERED (1200-Z and 1200-COLS permit)

Facilities with the following primary SIC codes that have vehicle maintenance shops (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations: 40 Railroad Transportation 41 Local and Suburban Transit and Interurban Highway Passenger Transportation 42 Motor Freight Transportation and Warehousing (excluding 4221 Farm Product Warehousing and Storage, 4222 Refrigerated Warehousing and Storage, and 4225 General Warehousing and Storage) 43 United States Postal Service 44 Water Transportation 45 Transportation by Air 5171 Petroleum Bulk Stations and Terminals, except as provided in Note 1 below.
Facilities storing, transferring, formulating, or packaging bulk petroleum products or vegetable oils, except as provided in Note 1 below
Steam Electric Power Generation including coal handling sites
Landfills, land application sites and open dumps (excluding landfills regulated by 40 CFR §445 that discharge “contaminated stormwater” (as defined by 40 CFR §445.2) to waters of the U.S.)
Hazardous Waste Treatment, Storage and Disposal Facilities [excluding hazardous waste landfills regulated by 40 CFR §445 that discharge “contaminated stormwater” (as defined by 40 CFR §445.2) to waters of the U.S.]
Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, recycling, and reclamation of municipal or domestic sewage (including land dedicated to the disposal of sewage sludge that are located within the confines of the facility) with the design flow capacity of 1.0 mgd or more, or required to have a pretreatment program under 40 CFR §403

A complete list of SIC Codes (and conversions from the newer North American Industry Classification System” (NAICS)) can be located at www.census.gov/epcd/www/naics.html or in paper form from the document titled *Handbook of Standard Industrial Classifications*, Office of Management and Budget, 1987.

The proposed 1200-Z permit also includes in Note 1 under Table 1 permit exemptions for certain discharges. These discharges were exempt under the 1300-J permit that covered stormwater runoff and oily tank bottom water discharged through an oil-water separator. In 2006, DEQ eliminated the NPDES 1300-J general permit and transferred facilities to the 1200-Z permit. At that time, DEQ also included these exemptions to the 1200-Z permit and did not make any changes to the exemptions in the proposed permits.

The 1200-COLS permit includes additional industrial activities that are eligible for permit coverage (Table 2). These activities are included in the permit to capture potential sources of industrial stormwater that may contribute to the impairment of the Columbia Slough, as described in the Total Maximum Daily Load (TMDL).

TABLE 2: ADDITIONAL INDUSTRIAL ACTIVITIES COVERED (1200-COLS permit only)

Vehicle, machinery, equipment, and trailer maintenance including repairs, servicing, washing, and painting
Vehicle, machinery, equipment, and trailer storage including rental, sales, wrecked vehicles, fleet, and general storage (Note: Disposal/refuse containers are considered equipment and, when stored by a disposal/refuse contractor/vendor, are industrial activities covered by this permit)
Materials storage including raw materials; bulk fuels, chemicals, detergents, and plastic pellets; finished

materials; lumber and food products; wholesale gravel, sand, and soil stockpiles; and bulk liquids other than water
Waste handling, including recycled product storage, composting, tires, and bulk hazardous waste
Commercial animal operations such as kennels, race tracks, veterinarians not covered under a Confined Animal Feeding Operation permit
Fuel distribution and sales including bulk stations, fuel oil dealers, retail stations (manned and unmanned), fleet fueling, mobile fueling, and truck stops

In addition to the industrial activities and Standard Industrial Classification (SIC) codes in Table 1 and 2, other facilities may be required to obtain coverage under the permits. DEQ is proposing a new requirement that allows the Director to require a facility to obtain coverage under the permits if:

- DEQ determines that the facility is a significant contributor of pollutants to waters of the state or may reasonably be expected to cause or contribute to a violation of any water quality standards; or
- The facility discharges stormwater associated with industrial activities identified in 40 CFR 122.26(b)(14)(i - ix, xi) and the activity is not described in Table 1 of the permits.

The purpose of this provision is to provide DEQ with the ability to require certain industrial activities to obtain coverage under the permit that may otherwise be exempt from coverage. The federal Clean Water Act gives the DEQ this authority (CWA 402(p)(2)(E)), as does the state statute to protect waters of the state (ORS 468B.020). DEQ intends to use this provision under limited circumstances. For example, if DEQ determines that a facility is polluting waters of the state, the agency may require the facility that would normally be exempt from needing the permit to register for coverage under the permit. Also, the agency may require stormwater discharge associated with an industrial activity identified in 40 CFR 122.26(b)(14)(i - ix, xi), but is not listed in Table 1 of the permits to apply for permit coverage (for example, logging roads).

These facilities will first need to obtain the Director’s written permission to register for permit coverage prior to submitting a permit application to DEQ. Upon receiving that written notification, the facility will have 90 days to submit a complete permit application to DEQ.

NEW REQUIREMENTS FOR DISCHARGES TO IMPAIRED WATERS

The proposed permits contain requirements for new and existing discharges to impaired waters with or without EPA approved TMDLs.

- New dischargers are only eligible for discharge authorization if they demonstrate (and document) that there is either no exposure of stormwater to the pollutant for which the water is impaired, or the impairment pollutant is not present at the facility, or that the discharge is not expected to cause or contribute to a water quality standards exceedance.
- For new and existing discharges to impaired waters with EPA approved TMDLs, DEQ will presume that compliance with the terms and conditions of the permit complies with the TMDL unless a Waste Load Allocation (WLA) is established for industrial stormwater discharges. DEQ conducted a review on Oregon’s TMDLs to determine if stormwater discharges were considered in the source assessment of the TMDL and whether stormwater was identified as a significant source.⁴ During source assessment, the TMDL program evaluates the significant sources of the

⁴ DEQ evaluation of approved Oregon TMDLs, presented to Industrial Advisory Committee, January 2009 meeting, located at: <http://www.deq.state.or.us/wq/stormwater/docs/Advisory/ISAC6TMDLIndStormwater.pdf>

impairment. Typically, stormwater is not considered a significant source because of the pollutant/impairment (for example, temperature) the TMDL is addressing. Most TMDLs either do not mention stormwater or specifically state that stormwater is not considered a significant source of the impairment.

- If a WLA is established, DEQ will evaluate whether additional requirements are necessary to ensure the discharge is consistent with the TMDL. If the water is impaired but there is no completed TMDL, the discharger is required to control its discharge as necessary to meet applicable water quality standards and to conduct routine monitoring for the pollutants for which the waterbody is impaired.

DEQ assesses the quality of waterbodies throughout the state pursuant to federal Clean Water Act Section 305(b) and identifies impaired waterbodies needing TMDLs pursuant to Section 303(d). To determine if a waterbody is impaired, DEQ reviews available data and information, including data from the agency's monitoring activities and data submitted by third parties. DEQ compares the data and information to the water quality standards that apply to each waterbody. Standards include beneficial uses, narrative criteria that may address general levels of protection for beneficial uses, and numeric criteria for specific pollutants. Some pollutants (such as temperature and dissolved oxygen) may have specific numeric criteria that depend on the beneficial use being protected. Numeric criteria for other pollutants such as toxic substances protect general aquatic life or human health beneficial uses. To determine if waters are impaired, DEQ applies the most stringent criteria for toxic substances that are appropriate to the waterbody (freshwater, estuarine, marine).⁵

DEQ's Integrated Report describes the condition of Oregon's waters and includes the 303(d) list of impaired waterbodies needing TMDLs. The current 303(d) list is based on the 2004/2006 Integrated Report, which is located at: <http://www.deq.state.or.us/wq/assessment/rpt0406/search.asp>. In the 2004/2006 Integrated Report, waterbodies were listed as needing a TMDL for approximately 41 different pollutants. Many of the waterbodies were listed as impaired for temperature, fecal coliform and dissolved oxygen. There are some listings for toxic substances (for example, copper, iron, PCBs). These substances may be present in industrial stormwater, depending on current or past activities at the industrial site. DEQ is currently developing the 2010 Integrated Report, which will update the 303(d) list. DEQ submitted the report to EPA for review and approval. The updated list will not be effective until EPA approves it. As a result, DEQ will use the 303(d) list that is in effect at the time of the permit is effective to determine whether a waterbody is impaired and pollutants needing a TMDL.

As part of the new requirements for discharges to impaired waters, facilities will need to document the receiving waters for their stormwater discharge. Facilities currently provide information in the permit application form regarding their receiving waters. Facilities may need to provide additional information to DEQ regarding their discharge location and determine the receiving water the stormwater discharge enters. They will need to identify if they discharge directly to an impaired waterbody or indirectly via a storm sewer system, ditch or other conveyance system and the LAT/LONG of discharge point.⁶ For example, if the discharge enters a storm sewer system, that empties into Johnson creek in the Portland area, which flows into the Willamette River, the receiving water is Johnson Creek, because it is the first waterbody the discharge will reach. Man-made conveyances, such as a MS4 storm sewer system, are not considered receiving waters. Facilities that discharge to a MS4 storm sewer system will need to determine the waterbody into which that portion of the storm sewer discharges. That information should be readily available from the operator of the MS4 system.

⁵ The water quality criteria for toxic substances can be found in OAR 340-041-0033, Table 20.

⁶ Instructions from EPA's Notice of Intent (NOI) application for permit coverage under the 2008 Multi-Sector General Permit, located at http://www.epa.gov/npdes/pubs/msgp2008_appendixg.pdf.

DEQ will review the information in the permit application and notify the facilities in the permit assignment letter which impairment pollutants they must monitor and the reference concentrations. The permit assignment letter will be subject to public notice and comment along with the facility's Stormwater Pollution Control Plan.

Permit registrants that discharge to an impaired waterbody must monitor for all pollutants for which the waterbody is impaired and for which a standard analytical method exists (see 40 CFR Part 136). Some impairment pollutants are expressed in the form of an indicator or surrogate (for example, E.coli is an indicator of fecal coliform) so the permit registrant will monitor for the indicator or surrogate pollutant. Consistent with the MSGP permit, if the impairment pollutant is suspended solids, turbidity or sediment, permit registrants must monitor for Total Suspended Solids (TSS). Also, consistent with EPA's permit, DEQ is not requiring facilities to monitor for impairment pollutants if: (a) biological communities are impaired but no pollutant is specified as causing the impairment; or (b) the impairment is related to hydrologic modifications, impaired hydrology, or temperature.

Typically, stormwater discharges are intermittent and result in short term exposures.⁷ Storm events vary in intensity and duration (i.e., can be isolated or part of a storm event pattern) and there are typically high ambient flows associated with storm events. Therefore, the reference concentrations for many of the impairment pollutants will be based on the acute aquatic life criteria.⁸ The acute criteria are more appropriate than the chronic aquatic life criteria⁹ (which are based on long-term exposure) and human health criteria¹⁰ (which are based on lifetime exposure). DEQ has established aquatic life criteria for the majority of the toxic pollutants. However, there are approximately ten toxic pollutants without aquatic life criteria and DEQ will use the human health criteria for these pollutants. In instances where the quantitation limit is above the water quality criteria, the quantitation limit will be used as the reference concentration. The quantitation limit is the method reporting limit (MRL), the lowest concentration associated with a certain degree of accuracy and precision. DEQ is using the quantitation limits identified in DEQ's Reasonable Potential Internal Management Directive (IMD) that is based on DEQ's survey of laboratories and represent readily achievable quantitation limits by most state laboratories. These quantitation limits are also based on EPA's approved methods and are used for Individual NPDES permits.

The impairment pollutants on the 303(d) list for the Columbia Slough are iron and manganese. DEQ is proposing that facilities that directly or indirectly discharge to the Columbia Slough will be required to monitor for iron only. In December 2010, the Environmental Quality Commission adopted DEQ's revisions to the manganese water quality standard, which will only apply to marine waters. However, the change to the standard is not in effect until EPA approves it (estimated to occur by the end of May 2010). Subject to EPA's approval of the change to the standard, DEQ is proposing that only facilities that discharge to marine waters that are impaired for manganese will be required to meet the new requirements for impaired waters (including eligibility, monitoring and corrective action requirements).

The chart below identifies the impairment pollutants based on the 2004/2006 Integrated Report and 303(d) list and the current water quality criteria in Division 41. The pollutants and/or reference concentrations may change. DEQ is in the process of updating the Integrated Report and 303(d) list as well and revising some of the water quality criteria for toxics based on the fish consumption rate. To determine the impairment pollutant monitoring for each facility and the reference concentrations, DEQ

⁷ EPA 2008 Multi-Sector General Permit Factsheet, page 100.

⁸ Acute aquatic life criteria based on the acute exposure for the protection of fresh water aquatic life.

⁹ Chronic aquatic life criteria based on chronic exposure for the protection of fresh water aquatic life.

¹⁰ Human health criteria based on consumption of water and aquatic organisms (first value) and consumption of fish only.

plans to use the Integrated Report and 303(d) list and water quality criteria that have been approved by EPA and are in effect at the time of the facility obtains coverage under the new permits.

Chart: Impairment Pollutants (ug/L) based on 2004/2006 303(d) list

Toxic Impairment Pollutants	Toxics Criteria	Criteria Source	Quantitation Limit Limits in bold are greater than criteria ¹¹
Aldrin	3	Acute	0.01
Ammonia ¹²	see note	Acute	1000
Arsenic (tri)	360	Acute	50
Arsenic	0.0022, 0.0175	HH	0.05
Beryllium	0.0068, 0.117	HH	0.1
Chlordane	2.4	Acute	0.1
Chlorpyrifos	0.083	Acute	0.01
Chromium (hex)	16	Acute	10
DDT	1.1	Acute	0.01
DDT Metabolite (DDE)	0.00022, 0.00022	HH	0.01
Dichloroethylenes	0.033, 1.85	HH	0.5
Dieldrin	0.24	Acute	0.01
Guthion	0.01	Chronic	1
Heptachlor	0.52	Acute	0.01
Iron	1000	Chronic	100
Manganese ¹³	50, 100	HH	2
Mercury ¹⁴	2.4	Acute	0.01
PCB	2	Acute	0.5
Pentachlorophenol ¹⁵	20	Acute	2
Polynuclear Aromatic Hydrocarbons	0.0028, 0.031	HH	1
Tetrachloroethylene	0.80, 8.85	HH	0.5

¹¹ The quantitation limits in the chart are from the Revised RPA IMD, Appendix B Quantitation Limits Tables, November 2007 in the DEQ document, Addendum to Reasonable Potential IMD to revise Quantitation Limits (2007) which can be found at: <http://www.deq.state.or.us/wq/pubs/imds/rpaammend.pdf/>. RPA table may contain some criteria that are not currently effective in Oregon because they were not approved by EPA in 2010.

¹² Temperature and pH dependent aquatic life criteria.

¹³ Only required to monitor for pollutant if discharge to marine waters that are impaired.

¹⁴ Specific quantitation limits for sources in the Willamette Basin based on the Willamette TMDL.

¹⁵ pH dependent aquatic life criteria; 7.8 pH was used; below 5.6 pH QL is greater than acute criterion.

Trichloroethylene	2.7, 80.7	HH	0.5
Other Impairment Pollutants	Water Quality Standard/Criteria		
Aquatic weeds/algae	No water quality standard. Phosphorus and nitrogen as surrogate. Reference concentrations for phosphorus is 2.0 mg/L and for nitrogen is 0.68 mg/L based on MSGP benchmark.		
Dissolved oxygen	No water quality standard. BOD as surrogate. Reference concentration is 30 mg/L based on MSGP benchmark.		
E. coli	Bacteria standard is 406 organisms per 100 mL.		
Fecal coliform	E.coli is indicator. Bacteria standard of 406 organisms per 100 mL.		
Nitrates	Human health criteria for water and organism consumption: 10 mg/L; quantitation limit is 0.1 mg/L		
pH	Basin specific standards. See Division 041.		
Phosphorus	Reference concentration for phosphorus is 2.0 mg/L based on MSGP benchmark.		
Sedimentation	Narrative water quality standard. TSS as surrogate. TSS benchmark is 100 mg/L.		
Turbidity	TSS as surrogate. TSS benchmark is 100 mg/L.		

Chart: Metals Reference Concentrations (ug/L) based on Acute Criteria and Median Regional Hardness

Impairment Pollutants	East	Willamette Basin	Other Western Basins	Quantitation Limit (ug/L) Limits in bold are greater than criteria
Copper	7.9	4.5	10	10
Lead	27	13	37	5
Zinc	57	34	70	5
Silver	0.93	0.34	1.4	1
Cadmium	1.5	0.77	2.0	0.1
Nickel	690	420	840	10

PERMIT COVERAGE AND EXCLUSION FROM COVERAGE SECTION OF THE PERMITS

The “Permit Coverage and Exclusion from Coverage” section is included in the permits to provide the description of permit application and notification procedures, as well as to outline criteria for obtaining a conditional exclusion from permit coverage.

Permit eligibility for New Discharger to Impaired Waters

Consistent with EPA's 2008 Multi-Sector General Permit, the proposed permits include new eligibility requirements for new dischargers to impaired waters. EPA prohibits the issuance of NPDES permits to new dischargers that will cause or contribute to water quality standards violation. If a facility should have obtained coverage under this permit for the discharge and failed to do so they are considered a new discharger if the discharge commenced after August 13, 1979 and it is not a new source (40 CFR 122.2).

To be consistent with the requirements of 40 CFR 122.4(i), a new discharger must (a) eliminate all exposure to stormwater of the pollutant(s) for which the waterbody is impaired, and document no exposure in the Stormwater Pollution Control Plan (SWPCP); (b) demonstrate that the pollutant for which the waterbody is impaired is not present at the site and document this finding in SWPCP; or (c) if the pollutant for which the waterbody is impaired is likely to be present at the site and DEQ has not issued a TMDL for the pollutant, submit data to the appropriate DEQ regional office documenting that the pollutant discharge will not cause or contribute to an excursion of water quality standards because the discharge will meet in-stream water quality standards at the point of discharge.

If DEQ has issued a Total Maximum Daily Load (TMDL) for the impairment pollutant(s) and it is likely that these pollutant(s) are present in the discharge, the owner or operator may not have to meet any additional requirements to be eligible for permit coverage. DEQ will presume that compliance with the terms and conditions of the permit complies with the TMDL unless a Waste Load Allocation (WLA) is established for industrial stormwater discharges. If a WLA is established, DEQ will evaluate whether additional requirements are necessary before granting coverage under the permit.

DEQ conducted a review on Oregon's TMDLs to determine if stormwater discharges were considered in the source assessment of the TMDL and whether stormwater was identified as a significant source. During source assessment, the TMDL program evaluates the significant sources of the impairment. Typically, stormwater is not considered a significant source because of the pollutant/impairment (for example, temperature) the TMDL is addressing. Most TMDLs either do not mention stormwater or specifically state that stormwater is not considered a significant source of the impairment.

The only TMDL that identifies reductions from industrial stormwater is the Columbia Slough TMDL.¹⁶ DEQ evaluated the TMDL to determine whether additional requirements for the industrial sources within the watershed are necessary to ensure compliance with the TMDL. DEQ determined that the strategy in the TMDL for industrial facilities operating under the 1200-COLS permit is to implement Best Management Practices (BMPs) and monitor the effectiveness of these controls via the benchmarks in the permit. The TMDL did establish a WLA for industrial stormwater for Biological Oxygen Demand (BOD). As a result, if a new discharger applying for coverage under the 1200-COLS permit will likely have BOD present in its discharge, DEQ will evaluate during the application process whether additional requirements are necessary to ensure that the facility's BMPs are effective at controlling BOD concentrations in stormwater discharges to the Columbia Slough Watershed. DEQ will notify the facilities in the permit assignment letter whether additional requirements are necessary. The permit assignment letter will be subject to public notice and comment along with the facility's Stormwater Pollution Control Plan.

New Application for Permit Coverage

The proposed permits contain provisions for applying for coverage under the permit, such as (1) when to submit application materials, including Stormwater Pollution Control Plans (SWPCPs), to DEQ or Agent;

¹⁶ Columbia Slough TMDLs for Chlorophyll a, Dissolved Oxygen, pH, Phosphorus, Bacteria, DDE/DDT, PCBs, Pb, Dieldrin and 2,3,7,8 TCDD, Oregon DEQ Northwest Region, September 1998, located at: <http://www.deq.state.or.us/wq/tmdls/docs/willamettebasin/columbiaslough/tmdl.pdf>

(2) holding a 14 calendar day public notice and comment period; and (3) being notified by DEQ that the coverage has been granted.

DEQ is not proposing significant changes to these requirements. DEQ clarified that existing facilities that intend to change industrial processes must submit a new application if the change in processes may result in changes in pollutant levels, discharge frequency, discharge volume or flow rate, or the types of pollutants present in stormwater discharge. Under these circumstances facilities must submit a new application to account for change in industrial activities which may affect the sector specific benchmarks that are monitored or significant changes in the nature of the pollutants in stormwater discharge to signify developing a new Stormwater Pollution Control Plan.

Renewal Application for Permit Coverage for facilities that do not exceed benchmarks based on the 4th year geometric mean evaluation in current permits (condition 3 of section).

Facilities renewing permit coverage under the new permits must submit updated SWPCPs that meet the requirements of the new permits. Facilities operating under the 1200-COLS permit must submit the updated SWPCP by December 31, 2011. 1200-Z facilities must submit their renewal application by March 2, 2012. Because of the large number of 1200-Z facilities and the additional time it will take DEQ to process the large number of permit renewals, DEQ will notify the 1200-Z facilities of the date for submitting their updated SWPCP so that it reflects current information for the site.

Renewal Application for Permit Coverage for facilities that exceed benchmarks based on the 4th year geometric mean evaluation in current permits

Oregon's current permits require facilities during the 4th year of permit coverage to evaluate the last four samples collected at each outfall (Schedule A.9 of 1200-COLS permit effective September 2006 and Schedule A.10 of 1200-Z permit effective July 2007). If the geometric mean of these 4 samples exceeds benchmark(s), the permits state that DEQ will revoke the facility's coverage under the general permit and require the facility to apply for an individual permit. The goal of these requirements was to target facilities that fail to implement effective best management practices over the first 4 years of the permit term or need an individual permit with site specific permit conditions to better control their stormwater discharge. As part of the re-issuance of these permits, DEQ evaluated whether to require these facilities to obtain an individual permit. Also, as part of the settlement agreement, DEQ agreed to seek feedback from the advisory committee on developing permit requirements for facilities that repeatedly fail to meet benchmarks (see 7.b of settlement agreement).

DEQ is proposing more prescriptive requirements for these facilities under the new permits rather than requiring these facilities to obtain an individual permit. Depending on a facility's location, individual permits may not protect water quality or reduce the pollutants in a facility's discharge better than the existing permit. Also, DEQ does not have the resources to issue a large number of new individual permits to these sources. As a result, DEQ is proposing a more robust approach for regulating industrial discharges under a general permit where facilities will conduct more intensive monitoring and install more sophisticated BMPs to reduce pollutant concentrations in their discharge, with the goal of achieving more stringent benchmarks.

As part of the permit renewal process, DEQ is proposing that facilities that exceed the benchmark(s) based on the 4th year benchmark compliance evaluation in the current permits must submit an updated SWPCP and accompanying engineering report that is designed and stamped by a licensed professional engineer or certified engineering geologist. To provide added scrutiny of the BMPs needed to control the pollutant(s) that are above the benchmark(s), DEQ is proposing a licensed professional engineer or certified engineering geologist conduct a comprehensive review of control measures that are technologically available and economically achievable in light of best industry practice. The goal of these added controls is to eliminate or reduce the pollutant concentration(s) in future discharges below the

benchmarks in new permits. Permit registrants will identify in the updated SWPCP the selected control measures and provide the rationale and analysis supporting that the selected control measures are technologically available and economically achievable in light of best industry practice in the engineering report.

To determine technological availability and economic achievability, permit registrants need to consider what control measures are considered “best” for their industry, and then select and design control measures for their site that are viable for similarly situated industries in terms of cost and technology.¹⁷ This is the same technological standard that facilities will use to meet the narrative technology based effluent limits in Schedule A.4 of the permits. In evaluating the technologies that are “best” for their specific industry, permit registrants can look at control measures that are implemented by similar industries in the Pacific Northwest to control industrial stormwater based on regional storm patterns and precipitation levels. Permit registrants should also consider the following: the age of the equipment and facilities involved; the processes employed; the engineering aspects of the application of various types of control techniques; the pollutant reduction likely to be achieved, any adverse environmental or energy effects of potential measures, and the costs of achieving pollutant reductions. Permit registrants should first consider using source control measures and volume reduction measures such as low impact develop practices, if feasible based on site conditions and potential for groundwater contamination. These measures can be used alone or in conjunction with other BMPs such as active or passive treatment to effectively address the pollutants of concern.

DEQ intends for the licensed professional engineer or certified engineering geologist to include in the updated SWPCP and engineering report the following certification statement: “I certify, to the best of my knowledge, the accuracy of the site review and the suitability of recommended best management practices described in this report. Implementation of the recommended control measures is an appropriate approach for reduction of the facility's stormwater pollutant concentrations with the goal of meeting the benchmarks in Schedule A.8 of the permit.”

Most facilities operating under the 1200-COLS permit obtained coverage under the permit during the fall of 2006. These 1200-COLS facilities conducted the 4th year geometric mean compliance evaluation during the 2009/2010 monitoring year and submitted this information to DEQ by July 31, 2011. Approximately 36 percent of facilities currently operating under the 1200-COLS permit exceeded the benchmark(s) based on this 4th year geometric mean evaluation. To renew their coverage under the new 1200-COLS permit that will go into effect on September 1, 2011, these facilities must submit an updated SWPCP and engineering report that is designed and stamped by the licensed professional engineer or certified engineering geologist to DEQ or its Agent by March 2, 2012. DEQ believes that six months is a sufficient time period to hire the licensed professional engineer or certified engineering geologist, evaluate appropriate control measures and draft the updated SWPCP and accompanying engineering report.

Currently, DEQ has not received the 4th year geometric mean evaluation data for 1200-Z facilities. Some 1200-Z facilities that obtained coverage under the permit in 2007 are in their 4th year of permit coverage. By July 31, 2011, these facilities will submit the 4th year geometric mean evaluation based on 2010/2011 monitoring year to DEQ or its Agent. Other facilities will conduct the 4th year geometric mean evaluation during the 2011/2012 or 2012/2013 monitoring years.

1200-Z facilities must submit their renewal application by March 2, 2012. Because of the large number of 1200-Z facilities and the additional time it will take DEQ to process the large number of permit renewals, DEQ will notify the 1200-Z facilities of the date for submitting their updated SWPCP so that it

¹⁷ EPA 2008 Multi-Sector General Permit Factsheet, page 34.

reflects current information for the site and accounts for the 4th year geometric mean evaluation. DEQ will give the facilities at least six months to submit the updated SWPCPs and engineering reports. DEQ believes this is sufficient time to hire a licensed professional engineer or certified engineering geologist, evaluate appropriate control measures and draft the updated SWPCP and accompanying engineering report.

DEQ is proposing that the facilities that exceed the benchmarks based on the 4th year geometric mean evaluation in the current 1200-Z and 1200-COLS permits implement the additional BMPs identified in their updated SWPCP no later than 18 months after obtaining coverage under the new permits. These facilities can begin designing and planning for BMP implementation, including applying for any necessary other permits, prior to obtaining coverage under the new permit. Once they have received coverage under the new permit, they can begin installing and implementing these measures which should not take longer than 18 months.

Because facilities have 18 months to implement the new measures, the monitoring data collected during the first two years of permit coverage under the new permit will likely not reflect the new measures. Therefore, these facilities will not be required to meet the Tier II corrective action requirements in the new permits that apply after the 2nd year of permit coverage. By the end of the second year of permit coverage, these facilities will have identified and installed additional control measures that are technologically available and economically achievable in light of best industry practice. The goal of these added controls is to eliminate or reduce the pollutant concentration(s) in future discharges below the benchmarks in new permits.

Under the following circumstances, DEQ is proposing that certain facilities are exempt from conducting a comprehensive evaluation of BMPs during the application process and implementing additional BMPs after obtaining coverage under the new permits:

- To promote the use of volume reduction measures that reduce stormwater flow and control the mass load of pollutants that enter the receiving stream, facilities that implement volume reduction measures are not required to conduct a comprehensive review of BMPs described above. A licensed professional engineer or certified engineering geologist will evaluate their site and show how the mass load of pollutants in their discharge are at or below the mass equivalent of the benchmark(s) in Schedule A.8 of the proposed permits. The engineering report must provide data and analysis to support this determination, including the description of the measure(s), date(s) measures implemented or expected to be implemented and the mass load analysis.
- In response to the 4th year monitoring data, some facilities may implement control measures that are technologically available and economically achievable in light of best industry practice during the 5th year of permit coverage or at some time before they obtain coverage under the new permit and see improvements in the quality of their stormwater discharge. These facilities are not required to incur the added costs to evaluate and install additional BMPs. Given that some of the benchmarks in the proposed permit are significantly lower than the current benchmarks, a licensed professional engineer or certified engineering geologist must document in the engineering report that the current measures are technologically available and economically achievable in light of best industry practice with the goal of reducing the pollutant concentration(s) in future discharges below the benchmarks in Schedule A.8 of the permit.
- Some facilities that have exceeded the benchmark based on the 4th year geometric mean evaluation may establish that these exceedances are due to natural background conditions. For example, high natural background levels of metals in soils or groundwater due to natural mineral

deposits could cause a benchmark exceedance.¹⁸ Consistent with EPA's permit, the proposed permits exempt from further control measure evaluation and benchmark monitoring facilities that establish that benchmark exceedances are solely due to background natural conditions. To make this determination, natural background pollutant concentrations must be greater than the corresponding benchmark value, and there must be no net facility contribution of the pollutant (the average concentration detected in runoff from all the monitored outfalls minus the average natural concentration of the parameter does not exceed zero).¹⁹ DEQ is proposing that a licensed professional engineer or certified engineering geologist will need to provide data and analysis in an engineering report that the benchmark exceedances are due solely to natural background conditions. DEQ will update guidance on establishing background natural conditions to assist facilities with determining if this exception is applicable.

Public Notice and Comment Provisions

This provision allows for public participation in DEQ's determination that a facility be assigned or renewed coverage under the permit and allows the public to review and comment on the SWPCPs. The public notice and review of the applications and SWPCPs has the potential to result in environmental benefits because citizens may provide information on site conditions and considerations that are not known by DEQ.

Under the new permits, DEQ will also require certain facilities to sample for impairment pollutants if they are discharging to an impaired waterbody and for sector specific benchmark pollutants in Schedule E of the permit. DEQ will identify in the permit assignment the pollutants that facilities will monitor and the reference concentrations. Because DEQ is identifying site specific requirements after the general permit has been issued, DEQ will make this letter available for public notice and comment along with the permit application and SWPCP.

Name Change or Transfer of Permit Coverage

This section of the permits outlines the procedures for transferring permit coverage to a new owner or when the permit registrant changes names. The requirements in this section of the permits did not change significantly. DEQ clarified that a new application is required if changes to industrial processes may affect stormwater discharges, for example by changing the types of pollutants present in stormwater discharge, pollutant concentrations, or discharge frequency, volume or flow rate. Otherwise, the new owner or operator must submit a Permit Transfer form and, if necessary, an updated SWPCP that reflects any changes to the site.

No Exposure Conditional Exclusion

This section of the permits outlines the procedures and criteria for qualifying for the "no exposure" conditional exclusion provided in 40 CFR §122.26(g). If there is no exposure of industrial materials and activities to rain, snow, snowmelt, and/or runoff at a facility, the facility owner or operator may be eligible for this conditional exclusion from permitting requirements. The requirements in this section of the proposed permits did not change.

Non-Stormwater Discharges

This section of the permit authorizes certain non-stormwater discharges consistent with EPA's Multi-Sector General Permit. DEQ does not believe a separate NPDES permit is necessary for these uncontaminated discharges, provided that appropriate management practices, if needed, are developed in the SWPCP. However, DEQ is more restrictive than EPA in that discharges of pavement and external building wash water are not allowed if hot water is used, and DEQ requires sweeping prior to pavement

¹⁸ EPA 2008 Multi-Sector General Permit Factsheet, page 103

¹⁹ EPA 2008 Multi-Sector General Permit Factsheet, page 103

washing, which is consistent with requirements in the NPDES general permit for wash water (No. 1700-A), which is located at <http://www.deq.state.or.us/wq/wqpermit/docs/general/npdes1700a/permit.pdf>. DEQ also added vehicle washing that does not use detergents or hot water as an authorized discharge under these permits. Permit registrants should consult the 1700-A permit to determine if they need to apply for that permit. For example, a business that washes more than 8 vehicles or pieces of equipment per week needs to obtain the 1700-A permit.

Limitations on Coverage

DEQ added language to this section of the permits to clarify its authority to deny coverage to an applicant or revoke a facility's coverage under these permits. OAR 340-045-0033(10) clearly provides DEQ with authority to revoke a permit registrant's coverage under a general permit under certain instances. Similarly, any interested person may petition DEQ requesting this same action.

DEQ also added language specifying when these permits are not available. In practical terms, this section does not change requirements, because these discharges have always been implicitly prohibited under the permits. This section simply makes the prohibition explicit and unambiguous.

DEQ added language that after being covered by this permit, an owner or operator may request to be excluded from such coverage by applying for an individual permit. In this case, the owner or operator must submit an individual permit application in accordance with OAR 340-045-0030. When an individual NPDES permit is issued to an owner or operator otherwise subject to a general NPDES permit, the applicability of the general permit is automatically terminated on the effective date of the individual permit.

SCHEDULE A OF THE PERMITS

DEQ restructured Schedule A of the permits to conform to the new requirements in EPA's permit (for example, new provisions on narrative technology based and water quality based effluent limits).

Schedule A of the permit contains the following requirements:

- Development and implementation of the Stormwater Pollution Control Plan (SWPCP);
- Narrative technology based effluent limitations and numeric effluent limitations based on Effluent Limit Guidelines (ELGs);
- Narrative water quality based effluent limitations;
- Stormwater Discharge Benchmarks;
- Corrective Actions; and
- Permit Compliance.

Stormwater Pollution Control Plan

To be covered under this permit, applicants must submit a Stormwater Pollution Control Plan (SWPCP) that meets the requirements in Schedule A of the permit. DEQ is not proposing many changes to the requirements related to the development of the SWPCP. Generally, the applicant must document in the SWPCP the following: (1) a description of the site; (2) site map; (3) summary of potential pollutant sources; (4) description of control measures; and (5) identification of sampling locations and whether outfalls are substantially similar.

The SWPCP serves as a documentation tool to identify the specific control measures dischargers will use to meet the technology and water quality based effluent limits in the permit. The SWPCP itself does not contain effluent limits. The SWPCP must be kept up to date. Where control measures are modified or replaced, these changes must be documented in the SWPCP. If permit registrants fail to develop and

maintain an up-to-date SWPCP, it is a violation of the permit. This recordkeeping violation is separate and distinct from a violation of any of the other substantive requirements in the permit (for example, effluent limits, corrective action, inspections, monitoring, reporting, and sector- or state-specific requirements).

To be consistent with EPA's permit, DEQ added principles to the permit:

- Preventing stormwater from coming into contact with polluting materials is generally more effective, and cost-effective, than trying to remove pollutants from stormwater;
- Using control measures in combination is generally more effective than using control measures in isolation to minimize pollutants in the stormwater discharge;
- Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to designing effective control measures that will achieve the limits in this permit;
- Minimizing impervious areas at the facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches) can reduce runoff and improve groundwater recharge and stream base flows in local streams, although care must be taken to avoid ground water contamination;
- Attenuating flow by use of open vegetated swales and natural depressions can improve stormwater quality;
- Conserving and/or restoring riparian buffers will help protect streams from stormwater runoff and improve water quality; and
- Using stormwater treatment interceptors (such as separators and filters) may be appropriate in some instances to minimize the discharge of pollutants.

All of these concepts may not be applicable to every site, but registrants should consider these principles when selecting and designing the control measures to meet the technology and water quality based effluent limits for their site.

To improve efficiency and effectiveness in the reporting process, DEQ is proposing that permit registrants need only submit a revised SWPCP to DEQ under the following circumstances:

- Part of a corrective action or inspection.
- Changes to the site or control measures that may impact the pollutant(s) levels, discharge frequency, discharge volume or flow rate, or the types of pollutants present in stormwater discharge.
- Changes to the monitoring locations or outfalls.

Permit registrants are required to keep their SWPCP up-to-date, but they are only required to submit these specific revisions to DEQ or its Agents. DEQ is no longer requiring facilities to submit an Action Plan if they revise their SWPCP. Instead, the proposed permits require the permit registrant to submit the revised pages of the SWPCP or site map to DEQ or Agent within 30 days of making the revisions. Permit registrants may submit these revisions to DEQ or its Agent by email. Review of the revisions by DEQ or Agent prior to implementation is not required. If the permit registrant does not receive a response to the revisions from DEQ or Agent within 30 days of receipt, the proposed revisions are deemed accepted.

Narrative Technology Based Effluent Limits

All NPDES permits are required to contain technology based effluent limitations, or TBELS (40 CFR §§122.44(a)(1) and 125.3; CWA sections 301(b)(1)(A); 301(b)(2)(A); and 301(b)(2)(E)). Depending on the discharge, these technology based limits are Best Practicable control Technology currently available for conventional, toxic, and non-conventional pollutants (BPT), Best Conventional pollutant control

Technologies for conventional pollutants (BCT) and Best Available Technology economically achievable for toxic pollutants (BAT).

To be consistent with EPA's permit, DEQ is proposing in the permits numeric and narrative technology based effluent limits that facilities will be required to meet. The proposed TBELs in proposed permits are expressed in a narrative form and based on Best Professional Judgment (BPJ) decision-making. Where EPA has not promulgated federal effluent limitation guidelines for an industry, or if an operator is discharging a pollutant not covered by the effluent guideline, permit limitations may be based on the BPJ of the permit writer (33 U.S.C. § 1342(a)(1); 40 CFR 125.3(c); see also Student Public Interest Group v. Fritzsche, Dodge & Olcott, 759 F.2d 1131, 1134 (3d Cir. 1985); American Petroleum Inst. v. EPA, 787 F.2d 965, 971 (5th Cir. 1986)). In limited number of instances where EPA developed stormwater specific ELGs, the permit includes numeric TBELs based on federal effluent limit guidelines (see Schedule A.5 of the permit).

Narrative effluent limits are authorized in lieu of numeric limits, where numeric effluent limitations are infeasible (40 CFR 122.44(k)(3)). EPA believes that it is not always feasible to develop numeric TBELs for industrial stormwater due to the variability of stormwater discharge and best management practices (BMPs) employed at industrial sites.²⁰ In EPA's permit, EPA imposed narrative TBEL in the form of a requirement to minimize the discharge. EPA defines "minimize" as to reducing or eliminating discharges to the "extent achievable."²¹ Reduction to the extent achievable satisfies the best available technology economically achievable (BAT) standard. Since BAT standard is the most stringent of the three tests, it is not necessary to consider the other two technology standards. As a result, DEQ is applying the BAT standard to the requirement to meet the narrative technology based limits in the proposed permits.

Achieving these narrative limits will reduce or eliminate pollutants from the operator's stormwater discharge. The narrative TBELs are expressed as specific pollution prevention requirements to minimize pollutants in a facility's stormwater discharge (for example, minimize exposure, maintenance, good housekeeping, spill prevention and response procedures, erosion and sediment controls). Operators must select, design, and implement control measures (BMPs) in accordance with good engineering practices and manufacturer's specifications and evaluate a variety of factors when choosing their BMPs. The combination of pollution prevention approaches and structural management practices required by these limits are the most environmentally sound way to control the discharge of pollutants in stormwater runoff from industrial facilities to meet the effluent limits in the proposed permits.²²

Consistent with EPA's permit, the proposed permits require permit registrants to meet narrative TBELs where applicable, and using technologically available and economically achievable BMPs in light of best industry practice. Narrative TBELs are organized into the following categories: (1) exposure, (2) oil and grease, (3) waste chemicals and material, (4) erosion and sediment, (5) debris, (6) dust generation and vehicle tracking of industrial materials, (7) housekeeping, (8) spill prevention and response, (9) preventative maintenance, and (10) employee education. To determine technological availability and economic achievability, operators need to consider what control measures are considered "best" for their industry, and then select and design control measures for their site that are viable in terms of cost and technology for similarly situated industries.²³ Also, permit registrant should consider the following: the age of the equipment and facilities involved, the processes employed; the engineering aspects of the application of various types of control techniques, the pollutant reduction likely to be achieved, any adverse environmental or energy effects of potential measures, and the costs of achieving pollutant

²⁰ EPA 2008 Multi-Sector General Permit Factsheet, page 37.

²¹ EPA 2008 Multi-Sector General Permit Factsheet, page 34.

²² EPA 2008 Multi-Sector General Permit Factsheet, page 38.

²³ EPA 2008 Multi-Sector General Permit Factsheet, page 34.

reductions. DEQ believes that the specific limits emphasize effective pollution prevention measures such as minimizing exposure to stormwater, regularly cleaning of outdoor areas where industrial activities may take place, proper maintenance of structural controls, diversion of stormwater around areas where pollutants may be picked up, and effective advanced planning and training (for example, spill prevention and response).

Many of these narrative TBELs were listed in Schedule A.3.c in the current permit under SWPCP requirements for stormwater BMPs. DEQ changed these requirements into narrative technology based effluent limits to be consistent with the regulatory scheme in EPA’s permit. In instances where DEQ’s current BMP requirements are more stringent than EPA’s permit, DEQ retained these requirements in the proposed permits (for example, employee training occurring within 30 days of hiring a new employee). DEQ also added additional limits to the permits such as dust generation and vehicle tracking of industrial materials requirements that were included in EPA’s permit.

The narrative TBELs in the permit are enforceable. If a facility fails to meet a narrative TBEL it is a violation of the permit. For example, facilities are required to train all employees who work in areas where industrial materials or activities are exposed to stormwater. If they fail to do so, this is a permit violation.

Numeric Technology Based Effluent Limitations based on Effluent Limit Guidelines Limitations

The proposed permits include numeric effluent limitations based on national effluent limitation guidelines for certain industry-specific discharges (see specific citations for federal limitations in table below). A facility’s effluent limitations are specified in the sector specific requirements in Schedule E of the permit. DEQ added to the proposed permits the numeric effluent limit requirement for discharges from non-hazardous landfills to be consistent with EPA’s permit. EPA’s permit includes additional numeric effluent limitations based on national effluent limitation guidelines. DEQ did not add these limitations to the proposed permits because they apply to industrial sectors or discharges that are not regulated under the 1200-Z and 1200-COLS permits (for example, mine dewatering discharges from sand and gravel or industrial sand mining facilities are covered under the 1200-A NPDES general permit).

Regulated Activity	40 CFR Part/Subpart	Effluent Limit
Runoff from asphalt emulsion facilities	Part 443, Subpart A	See Schedule E.D.3
Runoff from material storage piles at cement manufacturing facilities	Part 411, Subpart C	See Schedule E.E.5
Runoff from coal storage piles at steam electric generating facilities	Part 423	See Schedule E.O.5
Discharges from non-hazardous waste landfills subject to effluent limitations	Part 445 Subpart B.	See Schedule E.L.7

Narrative Water Quality Based Effluent Limits

To be consistent with EPA’s permit, the proposed permits contain narrative water quality based effluent limits (WQBELs) in Schedules A. 6 and A.7. The narrative water quality based effluent limits supplement the permits’ technology-based effluent limits in Schedules A.4 and A.5.

The following is a list of the permits’ WQBELs:

- Discharge may not cause or contribute to a violation of water quality standards in the receiving waterbody;
- Discharge must meet specific requirements for discharges to impaired waters; and
- Registrant must comply with any additional, more stringent requirements that DEQ determines are necessary to meet applicable water quality standards.

Water Quality Standards

Water quality standards are the foundation of the water quality-based pollution control program mandated by the Clean Water Act. Water quality standards define the goals for a waterbody by designating its beneficial uses, setting water quality numeric and narrative criteria to protect those uses, and establishing provisions such as antidegradation (see antidegradation discussion on page 3 of the report). DEQ's water quality standards are described in OAR 340-041, including a table containing the numeric criteria for the protection of aquatic life and human health. When DEQ establishes or revises water quality standards, DEQ identifies the beneficial uses sensitive to the parameter and establishes criteria based on the levels needed to protect those uses. For example, the uses typically most sensitive to dissolved oxygen are fish and aquatic life. Fish and other aquatic organisms need an adequate supply of oxygen in the water to be healthy and productive. In this case, the criteria identify minimal amounts of dissolved oxygen that need to be in the water to protect the fish. In other cases, as with many of the toxic pollutants, the numeric criteria identify the levels in the water that if met, will protect aquatic biota or human health.

Water quality criteria to protect aquatic life consist of three components: the magnitude, which refers to the acceptable concentration of a pollutant and varies by pollutant; duration, which is the averaging period for comparison to the concentration and is one hour for acute aquatic life criteria and four days for chronic aquatic life criteria; and frequency, which is how often the criteria can be exceeded to allow the aquatic community sufficient time to recover from excursions of aquatic life criteria and to thrive after recovery. For aquatic life criteria, the frequency limitations specify that both the acute and chronic criteria may be exceeded once in a three-year period on the average. The human health criteria are based on lifetime exposure. As a result, compliance with these criteria is difficult to determine based on a single grab sample.

The proposed permits apply to facilities across the state that may discharge to many different receiving waters. For example, stormwater may be discharged to a municipal separate stormwater sewer system, a stormwater conveyance system such as a roadside ditch, or directly to a creek or other surface water body. The discharge will enter waters assigned designated uses intended to protect aquatic life and human health. In highly urbanized areas, the discharge likely enters a collection system and commingles with other sources of stormwater before discharging to a water body. In a more suburban setting, the receiving water is not as likely to be subject to multiple municipal and industrial stormwater discharges, but is more likely to be a small creek or intermittent stream. In both cases, the potential impact of stormwater can be significant. DEQ expects that facilities' compliance with the technology-based limits through the careful selection, design, installation, and implementation of effective control measures as well the monitoring and corrective actions requirements in the proposed permits generally will result in discharges that are controlled as necessary to meet applicable water quality standards.

Industrial stormwater discharges authorized by this permit are prohibited from causing or contributing to an exceedance of instream water quality standards (OAR 340-041). Application of the water quality criteria to a discharge requires site-specific analysis of the discharge and the receiving water. DEQ typically conducts this analysis to develop numeric water quality based effluent limits in NPDES individual permits. Such analysis is not possible in a statewide general permit like the 1200-Z permit that covers more than 700 facilities. However, the water quality criteria influenced the development of the benchmarks for lead and zinc.

To establish that a permit registrant's discharge caused or contributed to a water quality standards exceedance, DEQ would collect samples of the facility's discharge along with samples at upstream and downstream locations in the receiving waterbody. If the permit registrant becomes aware, or DEQ determines, that the discharge causes or contributes to a water quality standards exceedance, the permit registrant is required to take immediate corrective actions identified in Schedule A.11 of the permits. The Tier III corrective actions in the proposed permit require the permit registrant within 14 days of determining that the discharge caused an exceedance of water quality standards, to evaluate the effectiveness of the control measures on-site and identify corrective actions to ensure that the discharge does not cause an exceedance of water quality standards in the future. These corrective actions must be implemented within sixty days, unless additional time is approved by DEQ.

In addition to the corrective actions in the proposed permit, DEQ may impose additional site specific requirements such as requiring the facility to develop a monitoring plan and collect additional samples of the discharge and receiving waterbody to ensure that instream water quality standards are being met. If DEQ determines that additional site specific requirements are necessary, DEQ will issue an addendum to the permit and require the permit registrant to revise the SWPCP to include additional monitoring and control measures. DEQ will hold a 14-calendar day public review period on the permit addendum and revised SWPCP.

Discharges to Impaired Waters

To be consistent with EPA's permit, the proposed permits contain requirements for new and existing discharges to impaired waters with or without TMDLs. These requirements are in the following sections of the permits:

- Eligibility requirements for new discharges in the "*Permit Coverage and Exclusion from Coverage*" section.
- Complying with narrative water quality based effluent limits in Schedule A.7 of the permit.
- Monitoring requirements in Schedule B for impairment pollutants on the 303(d) list needing a TMDL.

New dischargers are only eligible for discharge authorization if they demonstrate (and document) that there is either no exposure of stormwater to the pollutant for which the water is impaired, or the impairment pollutant is not present at the facility, or that the discharge is not expected to cause or contribute to a water quality standards exceedance.

For new and existing discharges to impaired waters with EPA approved or established TMDLs (except the Columbia Slough TMDL), DEQ will presume that compliance with the terms and conditions of the permit complies with the TMDL unless a Waste Load Allocation (WLA) is established for industrial stormwater discharges. If a WLA is established, DEQ will evaluate whether additional requirements are necessary to ensure the discharge is consistent with the TMDL. If DEQ determines that additional site specific requirements are necessary, DEQ will issue an addendum to the permit and require the permit registrant to revise the SWPCP to include additional monitoring and/or control measures. DEQ will hold a 14-calendar day public review period on the permit addendum and revised SWPCP.

The Columbia Slough TMDL established a WLA for industrial stormwater for Biological Oxygen Demand (BOD).²⁴ For new and existing discharges to the Columbia Slough, DEQ is proposing that they control the BOD concentrations in their discharge to meet the benchmark of 33 mg/L in the proposed

²⁴ Columbia Slough TMDLs for Chlorophyll a, Dissolved Oxygen, pH, Phosphorus, Bacteria, DDE/DDT, PCBs, Pb, Dieldrin and 2,3,7,8 TCDD, Oregon DEQ Northwest Region, September 1998, located at: <http://www.deq.state.or.us/wq/tmdls/docs/willamettebasin/columbiaslough/tmdl.pdf>

1200-COLS permit. As a result, if a new discharger applying for coverage under the 1200-COLS permit will likely have BOD present in its discharge, DEQ will evaluate during the application process whether additional requirements are necessary to ensure that the facility's BMPs are effective at controlling BOD concentrations in stormwater discharges to the Columbia Slough Watershed. DEQ will notify the facilities in the permit assignment letter whether additional requirements are necessary. The permit assignment letter is subject to public notice and comment along with the facility's SWPCP. In addition, existing facilities that failed to meet the BOD benchmark based on the 4th year geometric mean compliance evaluation must implement control measures to meet the BOD benchmark within two years of obtaining permit coverage. DEQ estimates that approximately 5% of the 1200-COLS facilities are not meeting the BOD benchmark. DEQ is proposing that these facilities identify in an updated SWPCP additional control measures to reduce the pollutant concentration in their discharge to below the BOD benchmark within two years of obtaining permit coverage under the proposed permit. The updated SWPCP and accompanying engineering report must be designed and stamped by the licensed professional engineer or certified engineering geologist and submitted to DEQ by March 2, 2012.

For facilities that discharge to impaired waters in which DEQ has not issued a TMDL for the pollutant(s), the facilities are required to meet the water quality standards provision in the permit and to monitor for the pollutants for which the waterbody is impaired. DEQ will notify these facilities in the permit assignment letter which pollutants they must monitor and the reference concentrations. Reference concentrations for impairment pollutants, like benchmarks, are guideline concentrations and are not numeric effluent limitations. An exceedance of a reference concentration is not a permit violation. The reference concentrations are designed to assist the permit registrant in determining whether the control measures are effectively reducing pollutant concentrations in stormwater discharged from the site. The reference concentrations for many of the impairment pollutants will be based on the acute aquatic life criteria. There are approximately 10 toxic pollutants without aquatic life criteria and DEQ will use the human health criteria for these pollutants. (For more information see chart on page 10 of the report).

In addition, permit registrants are required to comply with all applicable in-stream water quality standards provisions in the permit. To establish that a permit registrant's discharge caused or contributed to a water quality standards violation, samples of the facility's discharge along with samples at upstream and downstream locations in the receiving waterbody must be collected. If the permit registrant becomes aware, or DEQ determines, that the discharge causes or contributes to a water quality standards exceedance, the permit registrant is required to take immediate corrective actions identified in Schedule A.11 of the permits. In addition to the corrective actions in the proposed permit, DEQ may impose additional site specific requirements to ensure the discharge does not violate water quality standards.

DEQ's intention with developing these requirements is to ensure that industrial facilities that are discharging impairment pollutants into a waterbody that is not meeting water quality standards are effectively controlling these pollutants. However, given that DEQ has not developed TMDLs for these impaired waters, the agency has not assessed industrial stormwater's contribution to the impairment of a given waterbody. In addition, facilities have not monitored for impairment pollutants in the past. As a result, DEQ is proposing in the new permits that facilities will monitor for the impairment pollutants to determine if they are present in their discharge, the source of the pollutants and what BMPs are needed to control the pollutants in their discharge. Additional discussion on these new requirements is located under the section on discharges to impaired waters on page 10 of the report and under the monitoring section on page 36 of the report.

Benchmarks

DEQ proposes retaining the 1200-Z and 1200-COLS benchmark parameters in addition to adopting the sector specific benchmark parameters in EPA's permit. The 1200-Z permit, which expires June 30, 2012, contains benchmarks (statewide benchmarks) that are applicable to all facilities throughout the state

operating under the 1200-Z, with exception of the E.coli benchmark, which is an additional benchmark for certain 1200-Z permitted landfills. The benchmarks of the 1200-COLS permit, which expires August 31, 2011, are applicable to all facilities discharging to the Columbia Slough watershed. The sector specific benchmarks identified in EPA’s permit pertain to certain industries.

DEQ initially considered replacing the broadly applied benchmarks of the 1200-Z and the 1200-COLS with the sector specific benchmarks in EPA’s permit. However, based on the applicability of EPA’s benchmarks to different industrial sectors, approximately 77% of currently permitted Oregon facilities would conduct benchmark monitoring for fewer pollutants compared to the benchmark monitoring expectation under Oregon’s current general industrial stormwater permits. Approximately 14% of the facilities would monitor only one or two pollutants and 40% would not be required to perform any benchmark monitoring. DEQ believes that, without supporting data, a reduction of benchmark parameters will not result in adequate protection or improvement of state water quality. Therefore, the proposed permits include the broadly applicable benchmark parameters in the current Oregon permits and the industry specific benchmark monitoring identified in EPA’s permit.

The current 1200-Z and 1200-COLS benchmarks, concentrations for copper, lead, and zinc will be reduced in the proposed permits. The 1200-Z total suspended solids (TSS) benchmark concentration will be reduced. All other 1200-Z and 1200-COLS benchmark values will not be changed. A summary of the current and proposed statewide and Columbia Slough benchmarks is shown in Table 1.

Table 1. Benchmark parameters retained from current permits. The benchmarks in the proposed permits are comprised of these benchmarks, in addition to the sector specific benchmarks in EPA’s permit.

Benchmark Parameter	Benchmark Values (in mg/L unless otherwise specified)			
	1200-Z		1200-COLS	
	Permit Expiring 6/30/12	Proposed Permit	Permit Expiring 8/31/11	Proposed Permit
Total Copper	0.1	0.020	0.036	0.020
Total Lead	0.4	0.040 - Eastern Oregon 0.035 - Willamette Basin 0.084 - Other Western Basins	0.06	0.035
Total Zinc	0.6	0.12 - Eastern Oregon 0.09 - Willamette Basin 0.19 - Other Western Basins	0.24	0.090
pH	5.5 - 9.0 SU	unchanged	5.5 - 8.5 SU	unchanged
Total Suspended Solids	130	100	50	unchanged
Total Oil & Grease	10	unchanged	10	unchanged
E. coli*	406 counts / 100 mL	unchanged	406 counts / 100 mL	unchanged
BOD ₅	n/a	n/a	33	unchanged
Total Phosphorus	n/a	n/a	0.16	unchanged

* The benchmark for E. coli applies only to active landfills and sewage treatment plants.

DEQ intends to use the basin boundaries, identified in Table 2, to determine which metal benchmark applies to the facilities. For example, a facility discharging to a waterbody in the Klamath basin will compare their discharge concentration against the Eastern Oregon metals benchmark values. In-stream water quality data from these basins were used to develop the corresponding regional metals benchmarks.

Table 2. Regional metals benchmarks applicable to facilities located in the corresponding basins.

Benchmark Region	Basin
Eastern Oregon	Deschutes
	John Day
	Klamath
	Lower Snake
	Middle Columbia
	Middle Snake-Boise
	Middle Snake-Powder
	Upper Sacramento
Other Western Basins	Lower Columbia
	Northern Oregon Coastal
	Southern Oregon Coastal
Willamette	Willamette

DEQ is proposing that the 1200-Z TSS benchmark value be reduced from 130 mg/L to 100 mg/L to be consistent with the more stringent value in EPA’s permit. The TSS benchmark in EPA’s permit is the median concentration assessed in the National Urban Runoff Program (NURP). An analysis of 1200-Z discharge monitoring data collected from July 1, 2007 through June 30, 2009 showed that approximately 10% of 1200-Z facilities may have at least one monitoring location with geometric mean TSS concentrations in excess of 130 mg/L. The monitoring data contrasted against a TSS benchmark of 100 mg/L shows a 4% increase in the portion of facilities with geometric mean TSS exceedances. Information from the International Stormwater BMP Database²⁵ shows that commonly used BMPs are capable of reducing TSS to the proposed benchmark concentration.

EPA’s permit does not state benchmarks for E. coli and oil and grease. Therefore the current benchmark values will be retained. Active landfills and sewage treatment plants are subject to the E. coli benchmark in the new 1200-Z. Whereas the current 1200-Z permit identifies applicability of the E.coli benchmark to landfills, which have on site disposal of septage and sewage biosolids, and sewage treatment plants. The

²⁵ The International Stormwater BMP Database, is located at <http://bmpdatabase.org/>

pH benchmark range in EPA's permit will not be adopted in the new 1200-Z and 1200-COLS because EPA's range does not specifically consider the characteristics of Oregon receiving waters.

DEQ is not proposing to make changes to the 1200-COLS benchmarks, with the exception of the copper, lead and zinc. The description and basis for the unchanged benchmarks can be found in the 1999 and 2004 NPDES Permit Evaluation Reports for the 1200-COLS permit. Many of the benchmark parameters or values were included in the permit to address the water quality concerns identified in the Columbia Slough TMDL (such as BOD, phosphorus, E. coli, lead and TSS). The 1200-COLS TSS benchmark (50 mg/L) is a technology based benchmark. The benchmark value is a reasonable expectation of commonly used passive stormwater treatment BMPs based on information in the International Stormwater BMP Database.

DEQ did not adopt metals benchmark values from EPA's permit for copper, lead, and zinc. In EPA's permit, these benchmark values are reflective of the hardness dependent aquatic, fresh water, acute water quality criteria with no consideration of dilution affects and no consideration of receiving water metals concentrations. In EPA's permit, Appendix J, Calculating Hardness in Receiving Waters for Hardness Dependent Metals, describes the methods in which facilities establish their metals benchmark values by providing proof of receiving body hardness with either hardness analysis results of a grab sample collected from the water body or third party data. The receiving body's hardness will fall within a 25 mg/L hardness increment that corresponds to a metals benchmark values as shown in Appendix J. The resulting hardness dependent metals benchmarks will be very low given the low hardness characteristic of many Oregon streams. For example, based on the approach in EPA's permit, hardness concentrations within the range of 0-25 mg/L have corresponding benchmarks of 3.8 ug/L for total copper, 14 ug/L for total lead, and 40 ug/L for total zinc. DEQ was concerned that commonly used stormwater treatment BMPs would not be able to achieve the low benchmark concentrations that EPA's approach may have established. This was especially a concern for copper.

The total lead and total zinc benchmark values were determined using risk based modeling with conservative inputs for parameters such as hardness and metals concentrations in the receiving waters. Potential total copper benchmark values were also evaluated using this process. However, DEQ chose a technology based approach to determine the proposed copper benchmark because results of risk based modeling yielded copper benchmark values that were very low and on the order of what may have been established using the hardness dependent approach in EPA's permit.

Overview of risk based modeling approach

Risk based modeling was conducted to evaluate water quality based, statewide, metals benchmark concentrations. The modeling procedure was adapted from the model developed by Herrera Environmental Consultants, Inc.²⁶ to conduct benchmark evaluations for the Washington Department of Ecology's Industrial General Stormwater Permit. This modeling utilized Monte Carlo simulations in which ambient water quality characteristics were used to generate a large number of stream and stormwater discharge mixing scenarios that were contrasted against variable, hardness dependent, acute water quality criteria to evaluate the likelihood of different stormwater concentrations to contribute to an exceedance of water quality criteria. Model inputs included variable upstream metals concentration, variable hardness concentration, constant dilution factor of five, and variable stormwater runoff concentrations. The upstream metals and hardness inputs were based on Oregon's regional ambient stream data. Table 2 above shows the basins from which data were used to develop the regional benchmarks. There were enough data to support regional benchmark evaluations for Eastern Oregon, the Willamette Basin, and the Other Western Basins. Benchmark values in the current 1200-Z were

²⁶ Herrera Environmental Consultants, 2009. Water Quality Risk Evaluation for Proposed Benchmarks/Action Levels in the Industrial Stormwater General Permit. Prepared for the Washington State Department of Ecology.

determined by applying the dilution rate of five to the acute aquatic water quality criteria corresponding to a hardness of 100 mg/L. This dilution rate was found to be representative of the minimum dilution for 48 evaluated facilities that were selected based on their collective ability to represent the distribution of receiving body sizes of the 1200-Z permitted facilities. The model output the portion of mixing scenarios in which downstream water quality criteria were exceeded relative to finite increments of runoff concentrations. An administrative decision was made to select the metals benchmarks as the runoff concentration corresponding to a 10% risk of exceeding in-stream water quality criteria. The regional water quality based lead and zinc benchmarks are shown in Table 1 above. A technical report detailing the modeling process is in Appendix 1, Water Quality Risk Evaluation for Metals Benchmarks, and a report describing the dilution evaluation is in Appendix 2, Assessment of Dilution Rate.

DEQ believes there is a reasonable expectation for facilities to meet the proposed lead and zinc benchmarks. Based on an evaluation conducted of lead discharge concentrations reported to DEQ by the facilities, between 6% and 23% of facilities may require additional stormwater control measures to meet the proposed lead benchmarks. However, commonly used stormwater treatment technologies are capable of reducing lead concentrations to the proposed benchmarks. Information compiled in the International Stormwater BMP Database supports this assertion.

An evaluation was performed to assess the ability of passive filtration BMPs to treat zinc concentrations down to the lowest proposed zinc benchmarks considering the comparably high zinc concentrations in stormwater reported by the facilities. Data from the International Stormwater BMP Database were used to assess zinc treatment capabilities by media filter treatment BMPs. The data were comprised of discrete influent and effluent pairs for individual storm events. The paired data were grouped according to 50 ug/L increments of influent total zinc concentrations between 0 and 500 ug/L. The 75th percentile total zinc effluent concentrations were determined for each group. Instead of using the median effluent, the 75th percentile was used as a conservative measure to represent an achievable concentration for each 50ug/L influent increment. The graph shown in Figure 1 below displays squares representing the 75th effluent percentiles graphed against the corresponding median zinc influent concentrations of each 50 ug/L increment squares.

To assess relevant total zinc discharge concentrations from industrial land uses, an examination was conducted using the discharge monitoring report (DMR) data submitted by the facilities under the current 1200-Z and 1200-COLS permits. Geometric means were calculated for each outfall using all of the data from all the storm events monitored at that outfall provided at least four events were monitored. The highest geometric mean represented a multiple outfall facility. The graph shown in Figure 1 below displays diamonds representing facility discharge concentrations. Approximately 56% of facilities discharge zinc concentrations above 90 ug/L, the proposed benchmark for facilities in the Willamette Basin. However, the graphed filter BMP data show a high capability of treatment to be able to meet the 90 ug/L Willamette Basin zinc benchmark. Thus, although many facilities will need to improve BMPs, improvements are very likely to succeed in achieving the new benchmark.

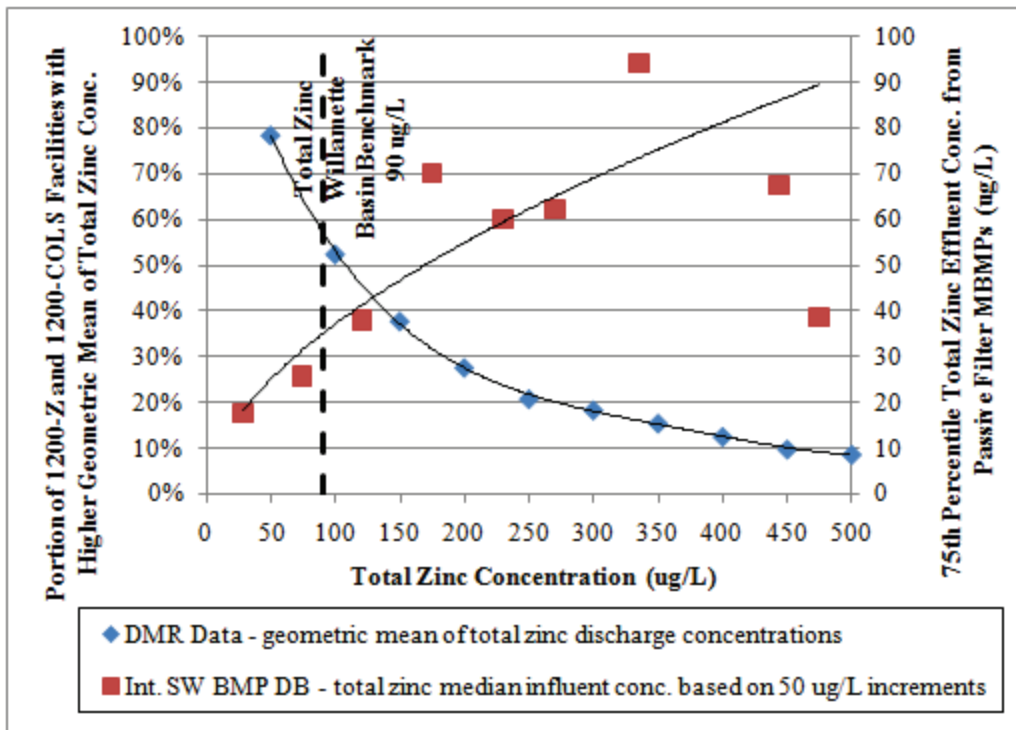


Figure 1. Comparison of total zinc concentrations in industrial stormwater discharge and treatment capability of passive filter BMPs. Discharge data are displayed against the primary y-axis. The primary y-axis represents the portion of facilities that have at least one outfall with a geometric mean total zinc concentration that is higher than the corresponding concentration on the x-axis. The secondary y-axis represents the 75th percentile of total zinc effluent concentrations from passive filter BMPs corresponding to the median influent of 50 ug/L influent increments represented on the x-axis. The two data sets are independent of each other. The point at which the lines cross is coincidental.

Technology approach used for copper benchmark

The 20 ug/L total copper benchmark is a technology based benchmark which corresponds to the 75th percentile of effluent concentrations for the 25 – 50 ug/L influent range treated by passive media filter BMPs based on data from the International Stormwater BMP Database.

DEQ was concerned that facilities in the Willamette Basin and Eastern Oregon would not be able to meet the low water quality based copper benchmarks determined using risk based modeling. Based on modeling results, the Willamette Basin copper benchmark would be 4 ug/L and the Eastern Oregon copper benchmark would be 10 ug/L. DEQ acknowledges that, not only passive, but also active stormwater treatment may not be able to consistently reduce copper concentrations to such low levels. The low copper benchmarks may have been a result of conservative model inputs including the dilution rate of five and use of total metals water quality criteria instead of the dissolved criteria.

In light of using conservative model inputs and the concern over the ability of stormwater BMPs to achieve the low copper concentration that resulted from the modeling exercise, DEQ evaluated a technologically achievable benchmark to increase the likelihood that facilities will succeed in meeting the new copper benchmark. DEQ analyzed data from passive media filtration BMPs rather than active treatment BMPs (such as electrocoagulation or chemical treatment system) that may not be economically feasible for many facilities.

Data from the International Stormwater BMP Database and additional third party testing sources were used to assess copper treatment capabilities by media filter treatment BMPs. The data were comprised of discrete influent and effluent pairs for individual storm events. The paired data were grouped according to 25 ug/L increments of influent total copper concentrations between 0 and 100 ug/L. Influent concentrations greater than 100 ug/L were placed in one group. The average and median total copper effluent concentrations were calculated for each group.

To assess relevant total copper discharge concentrations from industrial land uses and focus on a specific 25 ug/L influent range, an examination was conducted using the discharge monitoring report (DMR) data submitted by the facilities under the current 1200-Z and 1200-COLS permits. Geometric means were calculated for each outfall using all of the data from all the storm events monitored at that outfall provided at least four events were monitored. The highest geometric mean was taken to represent a multiple outfall facility. A large portion of facilities (i.e. 79%) discharge copper below 25 ug/L. DEQ assumes that facilities whose geometric means are below 25 ug/L have a greater likelihood of reducing their copper concentrations to a low benchmark without active treatment technologies. Less than 10% of facilities discharge copper concentrations above 50 ug/L. Therefore, the total copper range of 25 – 50 ug/L was selected as a representative influent range to evaluate the treatment ability of passive treatment. The corresponding effluent concentrations were used as a basis for the benchmark concentration. The 75th percentile of effluent concentrations was selected over the median effluent concentration on the premise of increasing the likelihood that more facilities will be able achieve the higher value concentration of 20 ug/L as opposed to 50% of facilities discharging within 25-50 ug/L total copper being able to achieve the 15 ug/L median effluent. The graph shown in Figure 2 below displays squares representing the 75th effluent percentiles graphed against the corresponding median copper influent concentrations of each 25 ug/L increment squares. The diamonds in the figure represent facility discharge concentrations. Thus, 20 ug/L was selected as a statewide copper benchmark based on:

- Most of the facilities discharge copper below 50 ug/L.
- 20 ug/L should be attainable for most facilities that discharge copper below 50 ug/L.

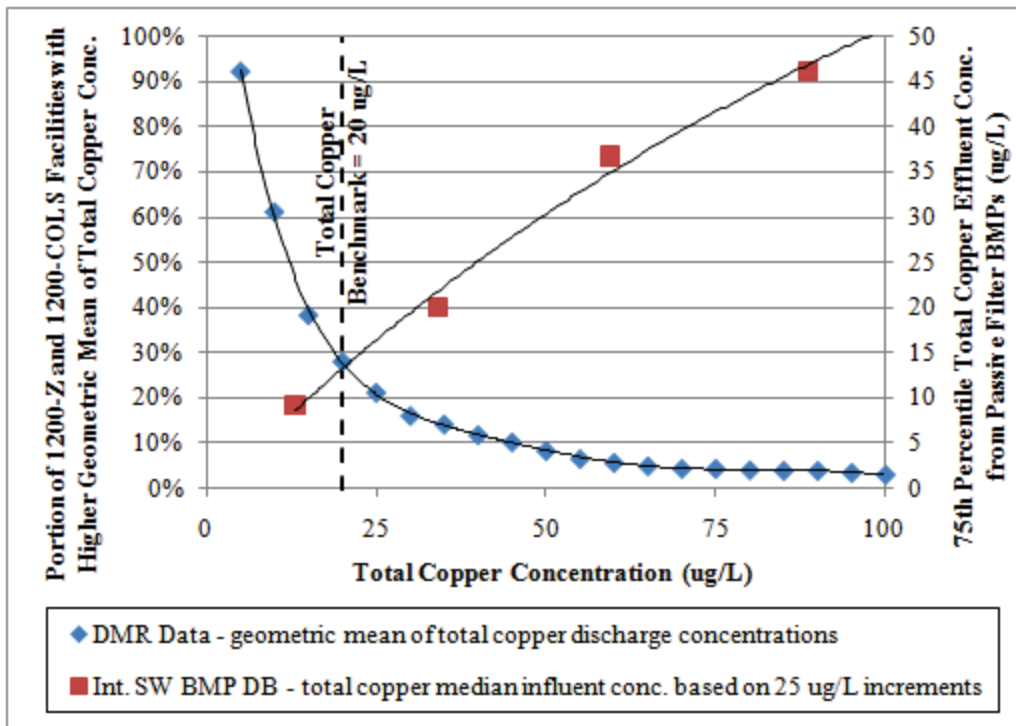


Figure 2 Comparison of total copper concentrations in industrial stormwater discharge and treatment capability of passive filter BMPs. Discharge data is displayed against the primary y-axis. The primary y-axis represents the portion of facilities that have at least one outfall with a geometric mean total copper concentration that is higher than the corresponding concentration on the x-axis. The secondary y-axis represents the 75th percentile of total copper effluent concentrations from passive filter BMPs corresponding to the median influent of 25 ug/L influent increments represented on the x-axis. The two data sets are independent of each other. The point at which the lines cross is coincidental.

Sector Specific Benchmarks

EPA's sector specific benchmarks apply to 29 industrial sectors or subsectors. The sector specific benchmark parameters were originally developed by EPA for the 1995 Multi-Sector General Permit. The benchmarks were based on group applications that were submitted in two parts by facilities with common industrial practices. Part 1 contained information on industrial practices, materials and processes exposed to precipitation, and activities conducted to manage exposed materials. Part 2 was comprised of stormwater monitoring data collected from facilities representing a variety of industrial sectors.

EPA considered monitoring data from these facilities if at least three different facilities within a sector or subsector submitted data on similar pollutants. EPA then evaluated the data from each sector on a pollutant by pollutant basis by comparing the median concentrations against the 1995 benchmarks and assessing whether the source of high pollutant concentrations was from industrial activities and not from natural background sources.

If facilities submitted insufficient data, EPA did not identify any benchmark parameters for these sectors or require these sectors to conduct any monitoring. There were exceptions made to this approach for the high priority sectors (hazardous waste treatment facilities, storage and disposal facilities, auto salvage yards, and airports). EPA based the benchmarks for these sectors on the amount and type of exposed materials and gathered additional data from other sources besides the group applications.

Rational for EPA's current benchmark values can be found on pages 100-102 of EPA's permit factsheet at: http://www.epa.gov/npdes/pubs/msgp2008_finalfs.pdf.

Corrective Actions

The industrial stormwater general permits are based on an adaptive management approach where permit registrants monitor their stormwater discharge, evaluate the effectiveness of their control measures, and taking corrective actions to ensure they are controlling the industrial pollutants that are exposed to stormwater to achieve the benchmarks in the permit. DEQ evaluated the corrective action requirements to in the current permits and as part of the settlement agreement agreed to seek feedback from the advisory committee on developing permit requirements for facilities that repeatedly fail to meet benchmarks. Based on these discussion and evaluations, DEQ is proposing changes to the corrective action requirements in the permit.

The proposed permits include the new corrective action requirements that:

- Focus on those facilities that consistently fail to meet the statewide benchmarks (see Corrective Action II) and require that these facilities install the best available technology to reduce the pollutants below benchmarks. These facilities must hire a licensed professional engineer or certified engineering geologist to add scrutiny to the selection of control measures to address the pollutants of concern and revise the SWPCPs.
- Clarify the timeline and corrective actions facilities must take if they exceed benchmarks.
- Provide flexibility for facilities to evaluate all available control measures such as operational, structural or treatment BMPs to address the pollutants of concern. Facilities should first consider source control measures, if possible, before implementing more resource intensive BMPs such as installing a treatment system.
- Promote the use of volume reduction measures such as low impact development practices to reduce stormwater flow and control the mass load of pollutants that enter the receiving stream.
- Promote innovations in stormwater management.
- Improve the quality of industrial stormwater discharge over time.

Tier I Corrective Actions

DEQ is proposing that facilities that exceed the statewide benchmarks, sector specific benchmarks in Schedule E of the permit or reference concentrations for impairment pollutants take corrective actions within 30 days of receiving the monitoring results. DEQ is proposing the following traditional adaptive management approach under the Tier I corrective actions requirements:

- Within 14 days of receiving the monitoring results, facilities must investigate the cause of the elevated pollutant concentrations; review the SWPCP and determine if additional BMPs are necessary to control the pollutants, and document the results of review and corrective actions that were/will be taken.
- Within 30 days of receiving the monitoring, submit the Tier I corrective action report to DEQ or Agent.
- Implement BMPs according to timeline identified in corrective action report

This approach is similar to the requirements in the current permit related to the action plan requirements. However, DEQ added more specificity regarding the timing of evaluating corrective actions (within 14 days) and the documenting in the Tier I corrective action report the specific corrective actions and the date implemented. Also, to better track SWPCP revisions, DEQ is requiring facilities to submit a revised SWPCP if changes are made to control measures rather than identifying SWPCP revisions in the report.

Facilities that exceed EPA sector specific benchmarks or have impairment pollutants present in discharge in concentrations above the water quality criteria will be required to conduct the Tier I requirements.

Given that DEQ is proposing new monitoring requirements for these pollutants, these facilities have not evaluated if these pollutants are present in their discharge and whether there are technologically achievable BMPs to control the pollutants, DEQ is not proposing that these facilities meet the more rigorous Tier II requirements unless the Tier II requirements are triggered due to exceedances of statewide benchmark parameters. Tier II corrective actions for statewide benchmarks are required when facilities have monitored pollutants for many years and are expected to continue to reduce pollutant concentrations in their discharge and strive to meet the benchmarks in the permit.

Tier II corrective actions

DEQ is proposing that a more rigorous approach for facilities that routinely exceed the statewide benchmarks²⁷ in the proposed permits. This approach is similar to the application requirements for facilities that exceed the benchmark(s) based on the 4th year benchmark compliance evaluation in the current permits. However, the Tier II requirements apply to facilities that have been operating under the proposed permit for two years. To ensure that permit registrants are implementing effective measures to control the pollutants in their discharge, DEQ is proposing that facilities that do not consistently meet the benchmarks must meet the Tier II corrective action requirements.

After the second year of permit coverage, facilities will evaluate the samples collected at each outfall that is monitored and conduct a geometric mean calculation of the data (based on maximum of 8 samples).²⁸ The geometric mean tends to dampen the effect of very high or low values and is an appropriate measure of stormwater discharges given their highly variable nature. To ensure that the data is more representative of their discharge, DEQ is proposing that facilities conduct this calculation based on two years of data. Facilities that exceed the benchmark(s) based on the 2nd year geometric mean compliance evaluation will trigger the Tier II corrective action requirements.

To provide added scrutiny of the BMPs needed to control the pollutant(s) that are above the benchmark(s), DEQ is proposing a licensed professional engineer or certified engineering geologist conduct a comprehensive review of control measures that are technologically available and economically achievable in light of best industry practice. The goal of these added controls is to eliminate or reduce the pollutant concentration(s) in future discharges below the benchmarks in new permits. Permit registrants will identify in the updated SWPCP the selected control measures and provide the rationale and analysis supporting that the selected control measures are technologically available and economically achievable in light of best industry practice in the engineering report. If permit registrant is monitoring for sector specific benchmark(s) or impairment pollutant(s) and the geometric mean of the pollutant(s) for each outfall monitored exceeds the benchmarks in Schedule E of the permit or reference concentrations for impairment pollutant, they should also consider control measures to address these pollutants.

To determine technological availability and economic achievability, permit registrants need to consider what control measures are considered “best” for their industry, and then select and design control measures for their site that are viable in terms of cost and technology for similarly situated industries.²⁹ This is the same technological standard that facilities will use to meet the narrative technology based effluent limits in Schedule A.4 of the permits. In evaluating the technologies that are “best” for their specific industry, permit registrants can look at control measures that are implemented by similar

²⁷ Statewide benchmarks for 1200-Z permit: copper, lead, zinc, total suspended solids, oil and grease, E.coli (where applicable). Statewide benchmarks for 1200-COLS permit: copper, lead, zinc, total suspended solids, oil and grease, E.coli, phosphorus and biological oxygen demand (BOD5).

²⁸ Guidance on how to calculate the geometric mean of monitoring data, Appendix VII of the DEQ’s guidance on applying for the 1200-Z and 1200-COLS Industrial Stormwater General Permits, December 2007, located at: <http://www.deq.state.or.us/wq/wqpermit/docs/general/1200indguide.pdf>

²⁹ EPA 2008 Multi-Sector General Permit Factsheet, page 34.

industries in the Pacific Northwest to control industrial stormwater based on regional storm patterns and precipitation levels. Permit registrant should also consider the following: the age of the equipment and facilities involved; the processes employed; the engineering aspects of the application of various types of control techniques; the pollutant reduction likely to be achieved, any adverse environmental or energy effects of potential measures, and the costs of achieving pollutant reductions. Permit registrants should first consider using source control measures and volume reduction measures such as low impact development practices, if feasible based on site conditions and potential for groundwater contamination. These measures can be used alone or in conjunction with other BMPs such as active or passive treatment to effectively address the pollutants of concern.

DEQ intends for the licensed professional engineer or certified engineering geologist to include in the updated SWPCP and engineering report the following certification statement: "I certify, to the best of my knowledge, the accuracy of the site review and the suitability of recommended best management practices described in this report. Implementation of the recommended control measures is an appropriate approach for reduction of the facility's stormwater pollutant concentrations with the goal of meeting the benchmarks in Schedule A.8 of the permit."

DEQ is proposing that these permit registrants submit to DEQ or Agent the revised SWPCP and/or engineering report designed and stamped by the licensed professional engineer or certified engineering geologist by December 31st of the 3rd year of permit coverage. DEQ believes that six months is a reasonable time period to hire a licensed professional engineer or certified engineering geologist, evaluate control measures and submit a revised SWPCP. If the permit registrant does not receive comments from DEQ or Agent on the revised SWPCP and/or engineering report within 30 days of receipt, the proposed revisions and analysis are deemed accepted.

DEQ is proposing that these facilities implement the selected BMPs identified in their revised SWPCP no later than June 30th of the 4th year of permit coverage. DEQ is proposing that facilities complete the corrective actions within a year and half of submitting the revised SWPCP that identifies the new controls. Because facilities will need time to budget, make any necessary design changes and install the new control measures, DEQ believes a year and half is a reasonable deadline to complete the corrective actions, especially since some facilities will need to obtain local permits prior to installing the new controls. If a facility fails to implement the controls by this deadline, it is a violation of the permit.

Although the 1200-Z permit becomes effective on July 1, 2012, the timing for these requirements will be dependent on when each individual facility obtains coverage under the new permits. For example, a facility may obtain coverage under the 1200-Z permit in September 2012. The facility will conduct two years of monitoring (2012/2013 and 2013/2014 monitoring years) and submit the updated plan to DEQ by December 31, 2014. They will then need to implement the BMPs in their plan by July 31st of 2015.

Under the following circumstances, DEQ is proposing that certain facilities are exempt from conducting a comprehensive evaluation of BMPs during the application process and implementing additional BMPs after obtaining coverage under the new permits:

- To promote the use of volume reduction measures that reduce stormwater flow and control the mass load of pollutants that enter the receiving stream, facilities that implement these measures are not required to conduct a comprehensive review of BMPs described above. A licensed professional engineer or certified engineering geologist will need to evaluate the site and show that the mass load of pollutants in their discharge are at or below the mass equivalent of the benchmark(s) in Schedule A.8 of the proposed permits. The engineering report must provide data and analysis to support this determination, including the description of the measure(s), date(s) measures implemented or expected to be implemented and the mass load analysis.

- Some facilities may have already implemented control measures that are technologically available and economically achievable in light of best industry practice and see improvements in the quality of their stormwater discharge. For example, during the first year of permit coverage, the pollutant concentrations in their discharge were significantly above the benchmarks. As a result, facilities implemented additional control measures in the second year of permit coverage. However, they still exceeded the benchmarks based on the 2nd year benchmark evaluation because of the quality of their discharge during the 1st year. Since these facilities took corrective actions to remedy the problem, they are not required to incur the added costs to evaluate and install additional BMPs. However, a licensed professional engineer or certified engineering geologist must document in the engineering report that the current measures are technologically available and economically achievable in light of best industry practice. The goal of these measures must be to eliminate or reduce the pollutant concentration(s) in future discharges below the benchmarks in Schedule A.8 of the permit.
- Some facilities may establish that the benchmark exceedances are due to natural background conditions. For example, high natural background levels of metals in soils or groundwater due to natural mineral deposits could cause a benchmark exceedance.³⁰ Consistent with EPA's permit, the proposed permits exempt facilities that establish that benchmark exceedances are solely due to background natural conditions from further control measure evaluation and benchmark monitoring. To make this determination, natural background pollutant concentrations must be greater than the corresponding benchmark value, and there is no net facility contribution of the pollutant (the average concentration detected in runoff from all the monitored outfalls minus the average natural concentration of the parameter does not exceed zero).³¹ DEQ is proposing that a licensed professional engineer or certified engineering geologist will need to provide data and analysis in an engineering report that the benchmark exceedances are due solely to natural background conditions. DEQ will update guidance on establishing background natural conditions to assist facilities with determining if this exception is applicable.

Tier III corrective actions

Consistent with EPA's permit, DEQ is proposing Tier III corrective actions under the following situations occur, facilities must respond quickly to eliminate the problem:

- An unauthorized release or discharge occurs at the facility, except spills or releases addressed by spill prevention and responses procedures.
- A discharge violates a numeric effluent limit;
- Permit registrant becomes aware, or DEQ or Agent determines, that the control measures are not stringent enough for the discharge to meet applicable water quality standards; or
- An inspection or evaluation of the facility by DEQ or Agent determines that modifications to the control measures are necessary to meet the non-numeric effluent limits in this permit.

DEQ is proposing that facilities submit the Tier III Corrective Action report to DEQ or Agent within 30 days of discovering the problem. If permit registrant determines that SWPCP revisions are necessary based on the corrective action review, submit a revised SWPCP to DEQ or Agent with the report. Permit registrant must implement the corrective actions before the next storm event if practicable or no later than 60 days from discovering the problem, unless otherwise approved by DEQ or the Agent.

DEQ believes that the deadlines proposed for the Tier III corrective actions are reasonable. An

³⁰ EPA 2008 Multi-Sector General Permit Factsheet, page 103

³¹ EPA 2008 Multi-Sector General Permit Factsheet, page 103

unauthorized discharge of process wastewater that is not covered by the spill prevention and response procedures or a stormwater discharge that exceeds water quality standards can adversely impact water quality. As a result, the facility will need to take quick action to remedy the problem. If a facility needs additional time to install additional control measures such as a structural treatment system to effectively address the problem, DEQ may extend the deadline to account for additional time to design and install the system and obtain any necessary local permits.

Permit Compliance

Consistent with EPA's permit, DEQ is adding language to the proposed permits to clarify that even if a facility is conducting corrective actions, the condition triggering the corrective action review is a permit violation. For example, if a facility violates a narrative numeric effluent limit, correcting the violation does not remove the original violation. DEQ also clarified that where corrective action is triggered by an event that does not itself constitute a violation, such as a benchmark exceedance, there is no permit violation provided that the permit registrant takes the corrective action within the deadlines identified in the permit.

DEQ also included in the proposed permit time for new permit registrant with a new facility (that begins operation after July 1, 2012) or an existing facility (that was in operation before July 1, 2012 without a stormwater discharge permit) to implement stormwater control measures to meet the requirements in numeric and narrative effluent limits in the proposed permits. These facilities must meet these requirements within 90 days of receiving permit coverage. If a facility is implementing control measures that require capital improvements, they must include in an implementation schedule in the SWPCP and complete the improvements within two years of receiving permit coverage. DEQ included these requirements in the current permits and is not making changes to the language in the proposed permits. Capital Improvements are defined in the permit as the following improvements that require capital expenditures: (1) treatment best management practices including but not limited to settling basins, oil/water separation equipment, catch basins, grassy swales, detention/retention basins, and media filtration devices; (2) manufacturing modifications that incur capital expenditures, including process changes for reduction of pollutants or wastes at the source; (3) concrete pads, dikes and conveyance or pumping systems utilized for collection and transfer of stormwater to treatment systems; (4) roofs and appropriate covers for manufacturing areas, and (5) volume reduction measures such as low impact development control measures. DEQ did clarify that the installation of volume reduction measures would be considered a capital improvement.

SCHEDULE B – MONITORING REQUIREMENTS

DEQ is proposing to expand the number of pollutant parameters that permit registrants must monitor in stormwater runoff. In addition to the statewide benchmarks retained from the current permit, certain registrants must monitor benchmarks pollutants based on their industrial sector and impairment pollutants based on discharges to impaired waterbodies, where applicable. DEQ is also proposing that facilities monitor additional pollutants specified by DEQ to identify pollutant sources and inform future permit development. The set of visual observations, to be monitored by all facilities, has been expanded.

DEQ did not make any changes to the monitoring frequency and is consistent with the current permit requirements. Visual observations will occur monthly when discharging and sampling for pollutant concentration analysis will occur four times annually, at most. Under the new permit DEQ is proposing that benchmark monitoring continue to occur four times annually. Monitoring for impairment pollutants is to occur twice annually. The monitoring frequency for the other pollutants varies (such as numeric effluent limits and DEQ specified additional pollutants) and is discussed further on page 41 of the report.

Qualifying storm events for analytical sample collection are subject to more conditions than the previous permit. DEQ is retaining the monitoring period of July 1st to June 30th each year.

Monitoring Parameters

Benchmarks

The benchmarks are a baseline that runoff concentrations are compared against to determine if BMPs are operating effectively. DEQ proposes that benchmarks include the parameters all permitted facilities must monitor, either as a condition of the current 1200-Z or 1200-COLS, and parameters identified in EPA’s permit, which are to be monitored by specific industries. Table 3 below includes the benchmark parameters facilities must monitor regardless of specific facility location and industry classification, with exception of E.coli under the 1200-Z which will be monitored by active landfills and sewage treatment plants.

Table 3. Benchmark parameters for 1200-Z and 1200-COLS registrants.

Source	Benchmark Parameter	Applicable Facilities
Retained from the previous 1200-Z and 1200-COLS	Total Copper	All 1200-Z and 1200-COLS permitted facilities
	Total Lead	
	Total Zinc	
	pH	
	Total Suspended Solids	
	Total Oil and Grease	
	E.Coli	All 1200-COLS facilities and specific 1200-Z facilities ^a
	BOD5	All 1200-COLS facilities
	Total Phosphorus	
EPA 2008 Multi-Sector General Permit	Various parameters to be monitored by facilities in specific industrial sectors.	

a – Under the proposed 1200-Z, E.Coli monitoring is expected of active landfills and sewage treatment plants.

Schedule E contains EPA’s sector specific benchmarks which apply to 29 industrial sectors or subsectors. Table E1 in Schedule E shows the EPA defined subsector corresponding to SIC codes. A description of how EPA determined the sector specific benchmarks can be found on page 30 of the report.

Visual Observations

The proposed permit retains the requirement to conduct monthly visual examinations of stormwater discharges. Visual observations are to be used as a regular check to confirm that pollution control measures are functioning properly. All facilities covered by this permit are required to conduct visual observations, which are not eligible for monitoring waivers.

In addition to the two visual parameters specified in the current permit (floating solids and oil and grease sheen) facilities will also conduct observations for color, clarity, settled solids, suspended solids, and foam. These additional parameters were adopted from EPA’s permit. Odor was not included from EPA’s permit due to safety concerns. No analytical tests are required to be performed on these samples. Visual observations are not subject to either Tier I or Tier II corrective actions.

Impairment pollutants

A facility will monitor for the 303(d) listed impairment pollutant(s) in its discharge if its discharge is enters a waterbody segment that is water quality limited and needs a TMDL. DEQ will inform the facilities, through a permit assignment letter confirming facility coverage under the permit, of the impairment pollutant(s) they will be required to monitor based on facility discharge location compared against water body segments and pollutants on the 303(d) list. The assignment letter will also state the impairment pollutant reference concentration which will serve as comparative concentration for discharge monitoring. The quantitation limit will be used for the reference concentration if it is above the water quality criteria for the impairment pollutant.³² Impairment pollutant concentrations in a facility's discharge will be compared against the reference concentration to determine whether or not corrective actions are required. A detailed discussion on of the new requirements for impaired waters can be found on page 10 of the report.

Numeric effluent limits

The proposed permits include numeric effluent limitations based on national effluent limitation guidelines for certain industry-specific discharges. Consistent with minimum monitoring requirements for NPDES permit limits established at 40 CFR 122.44(i), monitoring for these parameters must be conducted at least once each year for the duration of permit coverage.

Additional pollutants

DEQ evaluated whether there are any additional pollutants facilities should monitor to better characterize the pollutants in their discharge. DEQ is proposing that facilities monitor additional pollutants to identify pollutant sources in industrial stormwater and inform future permit development. Permit registrants are required to monitor their discharge for these pollutants and report the monitoring result to DEQ or its Agent. There are not any corrective action requirements associated with the results of the monitoring data.

DEQ conducted a literature review of scientific peered reviewed journal articles and documents produced by government agencies that evaluate the various pollutants commonly found in industrial stormwater and information regarding specific pollutants that are based on industry/sector specific activities. DEQ also reviewed data sources such as Portland Harbor stormwater data which was collected to evaluate stormwater sources of contamination. DEQ evaluated the industrial stormwater fact sheets developed by EPA as part of the issuance of the 2008 Multi-Sector General Permit. The fact sheets summarize the types of facilities in each of the 29 sectors regulated under the permit, the pollutants associated with each sector, and the types of stormwater control measures generally used. DEQ also discussed with the agency's toxics coordinator whether there are additional pollutants that are addressed in statewide toxics reduction strategy that may be found in industrial stormwater.

DEQ is proposing that all facilities monitor total cadmium, total nickel and total chromium for eight storm events. A Stenstrom (2007) study found that industrial land uses had highest concentrations of heavy metals, specifically cadmium, chromium, lead and nickel.³³ In addition, EPA identified in the industrial stormwater fact sheets heavy metals as pollutants that are associated with many of the industrial sectors. Facilities monitor total copper, lead and zinc in the current permits. DEQ believes that if facilities implement BMPs to control copper, lead and zinc that they will also control other metals that

³² The quantitation limits will be based on the Revised RPA IMD, Appendix B Quantitation Limits Tables, November 2007 in the DEQ document, Addendum to Reasonable Potential IMD to revise Quantitation Limits (2007) which can be found at: <http://www.deq.state.or.us/wq/pubs/imds/rpaammend.pdf>

³³ Stenstrom, M.K., Lee, H., 2007. Design of stormwater monitoring programs. Water Research. 41, 4186-4196.

may be present in industrial stormwater. DEQ will use this additional metals data to evaluate whether it is appropriate to use currently monitored copper, lead and zinc as indicator pollutants for a broader suite of metals that may be present in industrial stormwater. Additional metals monitoring is to be conducted four times a year (two samples before December 31 and two samples after January 1) for the first two years of permit coverage. The quantity of monitoring is based on the amount of data required to evaluate the adequacy of indicator pollutants.

DEQ is proposing that all facilities monitor polycyclic aromatic hydrocarbons (PAHs) for two storm events. PAHs are toxic constituents of petroleum products and combustion by-products, some of which are classified as probable carcinogens. Several PAHs are on both DEQ's agency-wide "Focus List" of toxic chemicals and the agency's Priority Persistent Pollutant (P3) list for water quality protection (mandated by Senate Bill 737). PAHs can be found in either new or used petroleum products like motor oil ("petrogenic" PAHs) or in combustion by-products such as those resulting from field burning ("pyrogenic" PAHs). Industrial operations with high levels of motorized equipment and vehicle use or storage could produce both petrogenic and pyrogenic PAHs at their sites, but also may be affected by ambient sources in the area. The presence of PAHs in stormwater and sediments raises concerns because of the potential risk and impact of these contaminants on aquatic organisms.

DEQ has determined the general types of sources of these petroleum or combustion by-products. Toxicologists in DEQ's Cleanup Program have used PAH analyses to characterize the three major sources: specific "near shore" sites, urban stormwater discharges, and regional ambient sources (for example, air deposition), that are contributing to in-stream sediment contamination sites in the Portland area. Requiring industrial facilities to monitor PAHs in the new permits can assist the facilities and DEQ to focus pollution prevention efforts on the most appropriate sources of PAH pollutants. DEQ is proposing that all industrial facilities operating under the new permits sample for a suite of 16 PAHs that have been identified by EPA as priority pollutants. The concentrations for the PAHs must be reported individually to be useful for characterization:

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo[a]anthracene
- Benzo[a]pyrene
- Benzo[b]fluoranthene
- Benzo[ghi]perylene
- Benzo[k]fluoranthene
- Chrysene
- Dibenzo[a,h]anthracene
- Fluoranthene
- Fluorene
- Ideno[1,2,3-cd]pyrene
- Naphthalene
- Phenanthrene
- Pyrene

Based on the monitoring data collected, DEQ will conduct additional analysis to determine whether industrial facilities may be a significant contributor of PAHs in stormwater runoff. It is proposed that facilities with more than one outfall monitor a maximum of two outfalls.

Some facilities will be required to monitor PAHs under the proposed impairment pollutant monitoring. For example, dischargers to the lower segment of the Willamette River, where there is an impairment due to PAHs (river miles 0 – 24.8), will monitor PAHs twice a year for the entire permit cycle unless PAH discharge concentrations are low enough to qualify the discharge for a monitoring waiver. However, all facilities must monitor PAHs as an additional pollutant twice during the first year of permit coverage at a maximum of two outfalls. The quantity of monitoring is based on the amount of data required to evaluate industrial facilities as a source of PAHs.

DEQ's intention in requiring additional monitoring by certain industries or sectors is to collect additional data that is related to the specific industry or sector activities. DEQ evaluated EPA's fact sheets which include specific pollutants that may be associated with certain industry sectors. Many of the pollutants that EPA listed in the fact sheets were fairly broad (for example, heavy metals) and not necessarily unique to an industry sector (for example, pollutants associated with vehicle maintenance are universal to many sectors). However, DEQ found that EPA's fact sheets for auto salvage facilities (Sector M, SIC code 5015) and scrap and waste recycling facilities (Sector N, SIC code 5093) provided information regarding additional pollutants that are commonly present at these facilities, but are not monitored under EPA's sector specific benchmark requirements. There is potential mercury release into the environment from mercury containing float switches in materials stored and processed outside at auto salvage facilities and scrap and waste recycling facilities. Polychlorinated biphenyls (PCBs) can also be found at scrap and waste recycling facilities in stockpiled materials such as transformers and electrical equipment. Corrosion and deterioration of materials stored outside can release pollutants such as mercury and PCBs into the environment. Based on this information, DEQ is proposing that facilities in Sector M monitor mercury and facilities in Sector N monitor mercury and PCBs in their discharge.

Many facilities will be required to monitor PCBs and mercury based on the proposed impairment pollutant monitoring under the new permits. For example, approximately 20% of the Sector N facilities discharge to an impaired waterbody listed for either PCBs or mercury. DEQ is proposing that facilities monitor these pollutants during the first year of the new permit to determine if the pollutants are present in their discharge. Facilities will collect grab composite samples during four storm events. This monitoring can occur at the same time as the benchmark and impairment pollutant monitoring, if applicable.

Table 4 provides estimated analytical costs associated with monitoring. The impairment pollutant example corresponds to a river segment that receives discharges from approximately 90 permitted facilities. This segment has the highest number of impairment pollutants as compared to all other segments receiving industrial stormwater discharge.

Table 4 Estimated analytical costs per analytical suite.

Analytical Suite	Suite Description	Pollutants	Estimated Analytical Costs (per storm event, per outfall) ₁
Benchmarks	Base suite all facilities will monitor; does not include any additional sector specific benchmarks and any additional 1200-COLS benchmarks (phosphorus, E.coli and BOD)	Metals (total): copper, lead, and zinc; TSS, oil and grease, and pH	\$150
Impairment Pollutants	Impairment pollutants on the 303(d) list for the lower reach of the Willamette River (river mile 0-24); impairment pollutants will vary depending on location of facilities.	Pesticides: aldrin, DDT, DDE, dieldrin; metals (total): iron, arsenic, manganese; mercury; semi-volatiles: pentachlorophenol, PAHs; PCBs, E.coli, dissolved oxygen	\$800- estimated maximum (based on impairments of the lower reach of Willamette River)

Additional Pollutants	Pollutants proposed for monitoring by all facilities based on literature review and consultations with DEQ staff and experts	Metals (total): cadmium, chromium, and nickel; PAHs	\$250
-----------------------	--	---	-------

1 – The number of years that facilities will incur these costs will be dependent on type of pollutant. DEQ is proposing that facilities are eligible to obtain a monitoring waiver for benchmark pollutants after the first monitoring year and impairment pollutants after the first two years of monitoring. All facilities will monitor cadmium, chromium, and nickel for eight events over the first two years and PAHs for two events during the first year.

Monitoring Timing

DEQ’s current permits do not specify a time period for collecting samples during a storm event. As a result, facilities have a lot of flexibility as to when they can collect stormwater samples. In considering the timing requirement in EPA’s permit and the State of Washington’s Department of Ecology’s permit, DEQ is proposing that sample collection occur during the first 12-hours of the storm event. DEQ’s goal for the proposed permit is to improve sampling so that data is more representative of the discharge, yet not be so burdensome that it reduces a facility’s ability to collect stormwater data. This data serves an important function in notifying the facility if their control measures are working effectively.

DEQ is not requiring sampling during the event first flush, which is typically collected during the first half hour of runoff. The theory behind first flush monitoring is sampling near the start of runoff to capture the highest pollutant concentrations of the storm event.

EPA’s permit is requiring facilities to sample during the first 30 minutes of a storm event to account for first flush. If it is impractical for a facility to collect a sample within the first 30 minutes, they can collect a sample as soon as practicable. Facilities must document in their stormwater plan why a sample could not be collected within the first 30 minutes. EPA’s rationale for requiring first flush monitoring is that during the first 30 minutes of a storm event stream flows are at their lowest and the pollutant loading from stormwater runoff presents the greatest potential for adverse impacts to aquatic species. Also, by requiring facilities to collect samples at similar times during the storm event, EPA believes that the facilities will have a better ability to evaluate their monitoring results and determine if additional BMPs are necessary to reduce pollutant concentrations in their discharge.

Washington did not propose first flush monitoring in their 2009 draft Industrial Stormwater General Permit (ISWGP). Under Washington’s previous permit, the agency required facilities to sample discharges within the first hour after a discharge begins from a qualifying storm event (i.e., first flush). Many facilities found these criteria difficult to meet, which resulted in an increase of facilities not conducting benchmark monitoring. As a result, Washington’s proposed sampling requirements in the 2009 draft permit did not specify sampling criteria relative to time from the start of runoff in order to allow for an increased likelihood of sample collection by the facilities. EPA formally commented on Washington’s draft permit and recommended that facilities collect samples within the first twelve hours of the discharge. This recommendation was initially made in a 2006 report by EnviroVision and Herrera Environmental Consultants, contracted by the Washington to conduct an evaluation of the ISWGP.³⁴

³⁴ Enviro Vision and Herrera Environmental Consultants, 2006. Evaluation of Washington’s Industrial Stormwater General Permit. Prepared for the Washington State Department of Ecology.; <http://www.ecy.wa.gov/programs/wq/stormwater/industrial/Evaliswgp.pdf>

The question arises as to whether or not a first flush is characteristic of runoff events throughout Oregon. In general, studies have shown that first flush occurrence is dependent on a number of factors and is more likely to occur with a smaller runoff area, a higher portion of impervious surface, and a greater amount of time since the preceding runoff event.³⁵ The presence of a first flush is also influenced by the type of runoff generating storm event. A storm beginning with high intensity rainfall is more effective in mobilizing pollutants during the start of runoff. However, the frontal storm systems common to the Pacific Northwest are less likely to contribute to conditions that generate a first flush because high intensity rainfall does not typically occur at the start of the storm.

DEQ is proposing that one of the monitored storm events represent a seasonal first flush which is referred to as the “first fall storm event.” Discharge must be monitored at the first sampling opportunity after September 1. The sampling opportunity is defined by the timing discussed above (sampling during the first twelve hours of the event during regular business hours under safe conditions). This requirement is reflective of the seasonal first flush monitoring in EPA’s permit. Because of the seasonal weather patterns characteristic of the Pacific Northwest, the seasonal first flush occurs a month before the October 1 date specified in EPA’s permit.

Monitoring Frequency

The monitoring year identified as July 1st to June 30th is applicable to all monitoring parameters including benchmarks, visual observations, impairment pollutants, numeric effluent limits, and additional pollutants. The frequency of benchmark monitoring, including the sector specific benchmarks, visual observations, and numeric effluent limits are unchanged from the current permits. DEQ is proposing that impairment pollutant monitoring occur twice a year throughout the five-year permit cycle. Table 4 provides a summary of monitoring frequency throughout the permit duration.

The additional pollutant monitoring frequency and permit duration of monitoring is not consistent with either the benchmark or additional pollutant monitoring to prevent facilities from incurring more analytical costs than necessary. The amount of monitoring proposed for monitoring of additional pollutants (i.e. PAHs, cadmium, chromium, and nickel; and mercury and PCBs were applicable) was determined to be the amount of monitoring required to achieve the different data analysis goals associated with the additional pollutants.

DEQ originally considered timing of qualifying storm events to include a minimum 24-hour antecedent dry period, 14-day period between sample collection for different storm events, and monitoring within the first 12 hours of the event. The City of Portland’s Bureau of Environmental Services (BES) conducted an evaluation of sampling opportunities using rainfall data from the 2009/2010 monitoring year. The rainfall data were filtered based on the originally considered specification of qualifying storm events and sampling during regular business hours, which were assumed to be between 8am and 5pm. This exercise revealed that monitoring opportunities were constrained to a couple of events for that monitoring year under the originally considered timing of qualifying storm events. Considering Northwest rainfall characteristics, there are infrequent occurrences of a minimum 24-hour antecedent dry period. DEQ is omitting the 24-hour antecedent dry period condition to give facilities more monitoring opportunities.

DEQ recognizes that facilities obtain permit coverage at different times of the year so facilities may not be able to collect two samples before December 31st and two samples before June 30th. Some permit registrant will obtain permit coverage close to the end of the monitoring period. For example, a facility may obtain coverage under the 1200-Z permit on December 15th and the monitoring period ends on

³⁵ City of Portland Bureau of Environmental Services and Woodward-Clyde Consultants, 1996. Executive Summary: Event History Data from Storms Monitored between May 1994 and March 1995.

December 31st. DEQ will notify the facility in the permit assignment letter whether they will be required to take two stormwater samples before the end of the year.

Table 4. Summary of monitoring frequency for monitoring events that require sample submission to analytical laboratories.

Pollutant Category	Year of Coverage									
	1		2		3		4		5	
	Grab Composite		Grab Composite		Grab		Grab		Grab	
	July - Dec.	Jan - June	July - Dec.	Jan - June	July - Dec.	Jan - June	July - Dec.	Jan - June	July - Dec.	Jan - June
Benchmarks _a	2 X	2 X	2 X	2 X	2 X	2 X	2 X	2 X	2 X	2 X
Impairment Pollutants _a	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X	1 X
Numeric Effluent Limits	1X		1X		1X		1X		1X	
Additional Pollutants	PAHs		2 X		--		--		--	
	Mercury _b and PCBs _c		2 X		2 X		--		--	
	Cadmium, chromium, and nickel		2 X		2 X		2 X		2 X	

a – Individual parameters eligible for monitoring waiver after four consecutive sampling events show concentrations below benchmark values or impairment pollutant reference value.

b – Facilities with SIC codes 5015 and 5093 will conduct monitoring for mercury as an additional pollutant

c - Facilities with SIC code 5093 will conduct monitoring for PCBs as an additional pollutant

Monitoring Method

For the first two years of coverage under the permit, grab composite sampling will be used to collect samples for analysis of most benchmark parameters, impairment pollutants, and additional pollutants. The facilities may collect a grab sample per event for the remainder of the permit duration. Utilizing the grab composite monitoring method will yield more representative analytical results than individual grab sampling. More representative data is essential for the assessment of whether or not a facility will be required to undergo Tier II corrective actions.

The National Research Council (NRC) report, Urban Stormwater Management in the United States, suggests abandoning the grab sample method (i.e. single grab sample collected during a runoff event) as a “credible stormwater sampling approach for virtually all applications.”³⁶ Pollutant concentrations in stormwater are highly variable among and during storm events. Because of the variable concentrations

³⁶ National Research Council, 2008. Urban Stormwater Management in the United States. National Academies Press. Washington, DC.; http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf

during a runoff event, a single grab sample is not considered representative of runoff during the entire event. The NRC report promotes the use of continuous, flow-weighted sampling method as a means of collecting representative data that is less variable than data resulting from grab sampling. Considering that this method is labor and cost intensive, DEQ is proposing the collection of a grab composite sample during the first two years of permit coverage for those parameters analyzed by a laboratory. Excluded from the grab composite sampling method are pH, oil and grease, and E.Coli.

The grab composite sample will consist of three distinct grab samples, which are equal in volume, collected at any time during the first 12 hours of a storm event. There is no minimum or maximum time interval for the collection of the grab samples. There is also no requirement that one of the three grab samples must be collected within a short time after the start of the storm event. In other words, sampling an event first flush is not required. By allowing the grab composite sampling to occur at any time during the 12-hour period, DEQ is promoting the use of a more representative monitoring method without overly constraining facilities, which may result in reduce the number of events facilities are able to successfully monitor. Grab composite sampling is to be conducted if practicable. If a grab composite sample cannot be collected, a single grab sample can be submitted for analysis instead. However, why it was not practicable to collect a grab composite must be documented in the Discharge Monitoring Report.

DEQ acknowledges that facilities may use pH paper given the difficulties associated with adhering to the holding times for samples specified in 40 CFR 136. The pH must be tested within fifteen minutes after collecting a stormwater sample to be valid and in compliance with the 1200-Z permit. DEQ will allow the use of fresh pH paper that provides a sensitivity of at least three-tenths (0.3) standard units (i.e., accurate color matches for every 0.3 pH unit) or a properly calibrated portable pH meter to make a field measurement of pH.

Monitoring Location

The current and proposed permits allow permit registrants to designate a subset of outfalls as representative of other outfalls at the facility, based on the types of industrial activities and materials at various locations. A facility will be required to identify in the SWPCP those outfalls that will be sampled and whether they are representative (have substantially similar effluents). The facility must describe the location of outfalls and a detailed explanation of why the outfalls are expected to discharge substantially similar effluent. The representative outfall determination should be based on consideration of the industrial activity, significant materials, and management practices and activities within the area drained by the outfalls. If DEQ determines that the outfalls are not representative, it can require the facility to sample additional outfalls. Otherwise, permit registrants are required to conduct sampling and visually monitoring at representative outfalls.

DEQ proposes that monitoring PAHs as an additional pollutant occur at a maximum of two outfalls. Where possible, one of the two outfalls will drain an area that is more likely exposed to site sources of PAHs. This area may store exposed vehicles with combustion engines or where there is a high amount of vehicle traffic. The second of the two outfalls will drain an area that has little or no exposure to vehicle traffic and where no vehicles are stored. The outfalls must be labeled as either the high or low onsite source of PAHs. The designation must not be influence by the analytical results. For facilities whose sites have little differentiation between high and low likelihood of onsite release of PAHs, the two outfalls to be monitored for PAHs must be labeled in the DMR as either both having a high or low likelihood of onsite release of PAHs.

Monitoring Variance

On occasion, facilities have not been able to collect the requisite number of stormwater samples because of insufficient opportunities to collect runoff from all sampling locations during normal working hours. Some of these facilities are located in drier areas of the state, such as Eastern and Southern Oregon.

There are also facilities implementing infiltration or retention BMPs that reduce runoff and the number of opportunities for sample collection. The proposed permit includes criteria that allow for permit registrants to submit a request for a sampling variance if they could not obtain all requisite samples in a given monitoring year. A set of criteria relate to dry weather conditions in the permit registrant's area of the state. Separate criteria relate to use of on-site retention or infiltration systems. The burden is placed on the permit registrant to provide the data or information with the Discharge Monitoring Report form that supports the assertion that these criteria have been met.

Monitoring Waiver

DEQ proposes retaining the monitoring waiver for benchmarks and making the waiver available for impairment pollutants. All permit registrants will be required to conduct benchmark and impairment pollutant monitoring to obtain data that will substantiate waiver qualification. If they collect four consecutive samples that meet benchmark(s), they can request a sampling waiver for the benchmark(s) they have met for the remainder of the permit term. Existing facilities that previously obtained a sampling waiver will have to meet this requirement to reinstate their waiver. DEQ is requiring this additional sampling because it believes it is important for facilities to evaluate each permit term whether the BMPs continue to effectively treat stormwater discharge from their site. The monitoring reduction is not allowed for facilities subject to limitations under the Code of Federal Regulations.

Some facilities may establish that the benchmark exceedances are due to natural background conditions. For example, high natural background levels of metals in soils or groundwater due to natural mineral deposits could cause a benchmark exceedance.³⁷ Natural background does not include legacy pollutants from earlier activity on the site, or pollutants in run-on from neighboring sources which are not naturally occurring, or pollutants in discharge due to air deposition. Consistent with EPA's permit, the proposed permits exempt facilities that establish that benchmark exceedances are solely due to background natural conditions from further control measure evaluation and benchmark monitoring. To make this determination, natural background pollutant concentrations must be greater than the corresponding benchmark value, and there is no net facility contribution of the pollutant (the average concentration detected in runoff from all the monitored outfalls minus the average natural concentration of the parameter does not exceed zero).³⁸ DEQ is proposing that a licensed professional engineer or certified engineering geologist will need to provide data and analysis in an engineering report that the benchmark exceedances are due solely to natural background conditions. DEQ will update guidance on establishing background natural conditions to assist facilities with determining if this exception is applicable.

Additional Monitoring required by DEQ

Consistent with the EPA's permit, DEQ may determine that additional discharge monitoring is required to ensure the protection of receiving water quality. In this case, DEQ will provide the appropriate facility with a brief description of why additional monitoring is needed, locations and parameters to be monitored, frequency and period of monitoring, sample types, and reporting requirements.

Monitoring required by the Three Basin Rule- 1200-Z permit only

As required by DEQ water quality standards (OAR 340-041-0350), facilities that discharge to the following waterbodies must meet additional requirements in the permit (1) Clackamas River; (2) McKenzie River above Hayden Bridge (River Mile 15) or (3) North Santiam River. These facilities must submit to DEQ a monitoring and water quality evaluation program no later than 180 calendar days after obtaining permit coverage. This program must be effective in evaluating the in-stream impacts of the discharge as required by OAR 340-041-0350. Within 30 calendar days of department approval, the permit registrant must implement the monitoring and water quality evaluation program.

³⁷ EPA 2008 Multi-Sector General Permit Factsheet, page 103

³⁸ EPA 2008 Multi-Sector General Permit Factsheet, page 103

Inspections

Under the current permits, facilities conduct monthly preventive maintenance inspections and conduct monthly visual observations of their discharge. To be consistent with EPA's permit, DEQ clarified in proposed permits that operators should inspect the following:

- Industrial materials, residue, or trash that may have or could come into contact with stormwater;
- Leaks or spills from industrial equipment, drums, tanks, and other containers;
- Offsite tracking of industrial or waste materials, or sediment where vehicles enter or exit the site, excluding employee only entrances and exits;
- Tracking or blowing of raw, final, or waste materials;
- Evidence of, or the potential for, pollutants entering the drainage system;
- Evidence of pollutants discharging to receiving waters at all facility outfall(s), and the condition of and around the outfall, and
- Observe stormwater control measures to ensure they are functioning correctly.

As part of the facility's preventative maintenance procedures, facilities typically inspect the industrial materials that are exposed to stormwater, checking to see if spills or leaks are occurring and that control measures are working properly. The proposed requirements make it clear exactly where and how the operators should conduct their inspections.

DEQ is proposing operators document their inspections in an inspection report and summarize what they observed during their inspection. These reports should be retained on site and used to ensure that the control measures are working effectively and the SWPCP is being implemented. DEQ is proposing that operators identify the dates of the monthly inspections in the Discharge Monitoring Report form that is submitted to DEQ annually. Facilities are already required to document the monthly visual observations in the DMR form. Since the visual observations will likely occur during the monthly inspections, providing this information in the DMR form is straight forward for DEQ and the facilities.

To be consistent with EPA's permit, DEQ is providing an exception from monthly inspections for inactive or unstaffed sites as long as there are no industrial materials or activities exposed to stormwater. If circumstances change and industrial materials or activities become exposed to stormwater or the facility becomes active and/or staffed, this exception no longer applies and permit registrant must immediately resume monthly facility inspections.

DEQ also recognizes that it may be infeasible for exceptionally large facilities to conduct monthly inspections of all the areas where industrial materials or activities are exposed to stormwater and areas where stormwater control measures and catch basins are located. As a result, DEQ or Agent may approve in writing a modified inspection frequency for these facilities.

MONITORING REPORTING REQUIREMENTS

Discharge Monitoring Report Form

Permit registrants must document the analytical laboratory results of benchmark monitoring in a department approved Discharge Monitoring Report (DMR) form. The DMR form and a copy of the results provided by the analytical laboratory must be submitted to the DEQ or its Agent annually by July 31st, one month after the monitoring year that the monitoring occurred. DEQ will be developing a new DMR form to account for the additional pollutant parameters that facilities will monitor under the new permit (for example, impairment pollutants).

DEQ is retaining the condition in the current permit that facilities report the minimum Detection Level and analytical methods for the pollutants analyzed. The Detection Level which is the same as the Method Detection Limit (MDL) is derived from 40 CFR 136 and is based on the lowest concentration that method

is capable of producing. DEQ prefers that that whenever possible, permit registrants use a Quantitation Limit that is lower than benchmark or reference concentration. The Quantitation Level is the same as the Method Reporting Limit (MRL) and represents a certain level of quality assurance and quality control.

Exceedance Report for Numeric Effluent Limits

Consistent with EPA's permit, DEQ is requiring facilities that are subject to effluent limit guidelines in Schedule A.5 of the permit to submit an exceedance report if follow-up monitoring exceeds a numeric effluent limit. The permit registrant must submit an Exceedance Report to DEQ or Agent no later than 30 days after receiving the lab results. The report must include the monitoring data from this monitoring event and the preceding monitoring event(s) and an explanation of the situation; what the permit registrant has done to correct the violation or intends to do if the corrective actions are not complete.

SCHEDULE D – SPECIAL CONDITIONS and DEFINITIONS

DEQ is proposing additional definitions to address new requirements in the permit such as discharges to impaired waters. DEQ also added additional definitions that were included in EPA's permit (for example, new discharger).

SCHEDULE E- SECTOR SPECIFIC REQUIREMENTS

Consistent with EPA's permit, the proposed permits also include sector specific requirements in Schedule E of the permit. The proposed permits contain specific requirements for certain sectors/subsectors related the following:

- Tailoring their SWPCP to meet additional sector specific plan requirements;
- Narrative and numeric technology based effluent limits (e.g., housekeeping requirements for fabricated metal products industries (Sector AA) for their raw steel handling storage areas); and
- Sector specific benchmarks.

These requirements originate from EPA's permit. In certain instances DEQ modified the requirements to match the general requirements in Schedule A or B of the proposed permit (e.g., employee training must occur within 30 days of hiring a new employee under DEQ's permit rather than annually under EPA's permit).

Permit registrants must meet the sector-specific requirements that are associated with their primary industrial activity and any co-located industrial activities that meet the description of industrial activities covered by the stormwater regulations (CFR 122.26(b)(14)(i - ix, xi)) and/or are identified in Table 1: Sources Covered on page 3 of the permits. Some permit registrants may have multiple industrial activities that are identified in Table 1 of the permit and may be subject to more than one sector/subsector requirement. For example, if a facility has multiple outfalls, there may be different requirements for different outfalls depending on the type of industrial activity conducted in the drainage area of each outfall. Facilities are required to conduct benchmark monitoring for those outfalls with discharges from the specific sectors/subsectors that have sector specific benchmarks. Where an outfall includes no discharges from those sectors/subsectors for which benchmark monitoring requirements apply, then no sector specific benchmark samples need to be taken at that outfall.

These sector-specific requirements in Schedule E are in addition to the requirements in Schedule A and B of the permit. For example, permit registrants must monitor for the benchmarks in Schedule A.8 of the permit and any additional benchmarks specified for their industrial sector(s) in Schedule E of the permit. However, if copper is listed as a statewide benchmark and a sector specific benchmark, permit registrants may use a single sample to satisfy both monitoring requirements.

If there is a conflict with requirements in the “Sources that are Required to Obtain Coverage under the Permit” section or the “Permit Coverage and Exclusion from Coverage” section of the permit, the requirements in Schedule E will not apply. In certain instances, DEQ’s general permit eligibility requirements may differ from EPA’s permit. As a result, the requirements in Schedule E of the permit are not intended to conflict with DEQ’s general requirement for sources that are allowed to apply for coverage under the permit.

The sector specific requirements differ based on the sector/subsector under which a particular facility falls. All the sectors are not subject to sector specific requirements. The table below identifies the sectors/subsectors that are required to meet the sector specific requirements in Schedule E of the permit.

Sector A – Timber Products	Sector P – Land Transportation
Sector B – Paper and Allied Products Manufacturing	Sector Q – Water Transportation
Sector C – Chemical and Allied Products Manufacturing	Sector R – Ship and Boat Building or Repairing Yards
Sector D – Asphalt Paving and Roofing Materials Manufactures and Lubricant Manufacturers	Sector S – Air Transportation Facilities
Sector E – Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing	Sector T – Treatment Works
Sector F – Primary Metals	Sector U – Food and Kindred Products
Sector G – Metal Mining (Ore Mining and Dressing)	Sector V – Textile Mills, Apparel, and other Fabric Products Manufacturing
Sector H – Coal Mines and Coal Mining-Related Facilities	Sector W – Furniture and Fixtures
Sector I – Oil and Gas Extraction and Refining	Sector X – Printing and Publishing
Sector K – Hazardous Waste Treatment Storage or Disposal	Sector Y – Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries
Sector L – Landfills and Land Application Sites	Sector Z – Leather Tanning and Finishing
Sector M – Automobile Salvage Yards	Sector AA – Fabricated Metal Products
Sector N – Scrap Recycling Facilities	Sector AB – Transportation Equipment, Industrial or Commercial Machinery
Sector O – Steam Electric Generating Facilities	

SCHEDULE F – GENERAL CONDITIONS

Schedule F includes the general conditions that are applicable to all NPDES permits and are adopted directly from 40 CFR Part 122. They deal with operation and maintenance, monitoring and record keeping, and reporting requirements. DEQ recognizes that a majority of these conditions do not apply to stormwater discharges. Many specifically address industrial and domestic wastewater treatment facilities. However, the stormwater permits are NPDES permits and these conditions are required for all such

permits. Several minor revisions were made to the general conditions to update them to the most current version in use by DEQ and EPA.

Schedule F contains General Conditions that are included in all general permits issued by DEQ. Should conflicts arise between Schedule F and any other schedule of the permit, the requirements in Schedule F will not apply.

Separate analyses were performed using representative receiving water background concentrations (C_b) for Eastern Oregon, the Willamette Valley and for Other Western Oregon Basins regions. A dilution factor (F_d) of 5 was used in all analyses. Monte Carlo simulation was used to address environmental variability of the following variables:

- Receiving water background concentrations, and
- Receiving water hardness.

In order to perform the Monte Carlo simulation, background water quality data were used to develop probability distributions for these variables within each region. These probability distributions were then used to derive input data for each variable during 10,000 iterations of the dilution model. The effluent concentration (C_f) was held constant throughout these iterations. At each iteration, the accompanying hardness was used to calculate a hardness-dependent water quality criterion for that iteration. The risk of exceeding the state water quality standard for the selected effluent concentration was then determined as the percentage of these iterations where the estimated downstream water concentration (C_e) exceeded the accompanying hardness-dependent water quality standard. These model runs were performed across a range of potential effluent concentrations in order to generate “risk curves” that show the probability of exceeding water quality standards as a function of the effluent concentration.

Model Input Data

The dilution rate used in the model was supported through an evaluation of common dilution rates for 48 of the approximately 770 1200-Z permitted facilities. The facilities were randomly selected based on weighting relative to the size of the waterbody receiving their stormwater discharge. The distribution of waterbody sizes, corresponding to the 48 facilities, was selected to be representative of the distribution of all waterbodies receiving discharges from 1200-Z permitted facilities. Drainage areas were used as surrogates in evaluating stream size distributions. Considering that a dilution rate of 5 is used in DEQ's current 1200-Z benchmarks, the dilution evaluation contrasted the facility dilutions against a dilution of 5. The dilution evaluation showed that a dilution factor of at least 5 is common for approximately 80% of the facilities examined. Based on these results, a dilution factor of 5 was selected for use in modeling. A complete description of the dilution evaluation is provided in Appendix 2.

Information on background receiving water conditions was extracted from DEQ's Laboratory Analytical Storage and Retrieval (LASAR) database and the US Geological Survey's National Water Information System (NWIS) database. Data that were not representative of typical in-stream conditions, such as data collected for impaired waters or TMDL studies, were omitted from the data sets. An initial assessment was made that there were adequate data to conduct copper and zinc modeling for Eastern Oregon, the Willamette Basin, and the other Western Basins aside of the Willamette. However, there were not enough lead data to develop frequency distributions of background concentrations for the different Oregon regions. Therefore, one set of lead data was used to characterize background conditions for the entire state, with regional hardness applied during modeling. Data compilation of background receiving water conditions is detailed in a, July 20, 2010, Industrial Stormwater Advisory Committee (ISAC) Meeting 10 memo.⁴⁰

The compiled data were further analyzed and screened. Historical data corresponding to sampling dates prior to 1997 were not used to develop probability distributions for the Monte Carlo simulations. Much of the early data were comprised of high non-detected values. These non-detected data are not useful because most of the later detected concentration values are below the early non-detected values. The high

⁴⁰ <http://www.deq.state.or.us/wq/stormwater/docs/advisory/ISAC10SampleSize.pdf>

non-detected values would not be helpful in defining a probability distribution. Additionally, there was an observed decrease in lead concentrations from the 1970s to the early 1980s which likely resulted from the phase out of leaded gasoline in the 1970s. The probability distributions should not be based on a data set which exhibits a trend over time. For consistency, hardness data from 1997 onward were used to develop regional hardness probability distributions.

The Willamette Basin hardness data set was refined after conducting an analysis of the geographic distribution of sampling locations. The Willamette Basin hardness data, corresponding to 1997 and onward, came from 68 monitoring sites. Of the 68 sites, data from 2 remote sites comprised 14% of the data set. Data from the 2 sites were screened from the dataset to limit affects of over representation in the resultant probability distribution.

A large amount of non-detected data remained in the data sets after they were screened. Incorrectly incorporating non-detected data could result in non-representative descriptive statistics and probability distributions for the data sets. Therefore, DEQ applied regression on order statistics (ROS), the same approach used by Herrera, to resolve issues involving the non-detected data. The ROS program developed by CalTrans was used to calculate the descriptive statistics and determine the parameters of the best fit lognormal probability distribution.⁴¹ Table 1 and 2 summarize the descriptive statistics. Parameters of the lognormal probability distribution were used in an Excel statistical function in combination with an Excel randomizer to generate the Monte Carlo simulations.

Table 1. Descriptive statistics for in-stream metals data compiled from DEQ's Laboratory Analytical Storage and Retrieval (LASAR) database and the US Geological Survey's National Water Information System (NWIS) database. The data were used to develop probability distributions of background concentrations for Monte Carlo simulations.

	Total Copper			Total Lead	Total Zinc		
	Eastern Oregon	Willamette Basin	OWOB	Statewide Oregon	Eastern Oregon	Willamette Basin	OWOB
n, sample size	79	625	39	592	80	522	45
Percent detected	58.2%	65.8%	46.2%	63.5%	43.8%	81.6%	60.0%
Mean (µg/L)	1.58	2.38	1.28	0.52	3.44	7.01	4.81
Median (µg/L)	0.94	1.70	0.76	0.29	1.96	5.15	2.09
Standard Deviation (µg/L)	2.22	3.69	1.36	1.60	6.84	9.48	8.55

OWOB – Other Western Oregon Basins, data set does not include data from the Willamette Basin;
Bold values are exact calculations. Unbolded values are estimated using regression on ordered statistics (ROS).
 ROS statistics calculated using the CALTRANS (2001) data analysis tool (DAT).

⁴¹ CALTRANS. 2001. Data Analysis Tool Excel Add-In Documentation. California Department of Transportation (CALTRANS), January 30, 2001.

Table 2. Descriptive statistics for in-stream hardness data compiled from DEQ's Laboratory Analytical Storage and Retrieval (LASAR) database and the US Geological Survey's National Water Information System (NWIS) database. The data was used to develop probability distributions of hardness concentrations for Monte Carlo simulations run to calculate hardness dependent water quality criteria.

	Hardness		
	Eastern Oregon	Willamette Basin	OWOB
n, sample size	81	766	122
Percent detected	100	100	100
Mean (mg/L)	70.1	37.7	57.9
Median (mg/L)	42.4	23.5	54.2
Standard Deviation (mg/L)	67.1	32.8	25.7

OWOB – Other Western Oregon Basins, data set does not include data from the Willamette Basin;

Results

Figures 1 -3 display the modeled risk curves for copper, lead, and zinc corresponding to the different geographic areas. Risk evaluation results are summarized in Table 3 which shows stormwater runoff concentrations corresponding to 10% probability of exceeding water quality criteria. These concentrations were used in the development of industrial stormwater benchmark values.

Table 3. Results of risk evaluation showing stormwater runoff concentrations corresponding to 10% probability of exceeding water quality criteria. Risk evaluation incorporates a dilution factor of 5.

Stormwater Runoff	Eastern Oregon	Willamette Basin	OWOB
Total Copper (µg/L)	10	4	21
Total Lead (µg/L)	40	35	84
Total Zinc (µg/L)	120	90	188

OWOB – Other Western Oregon Basins, data set does not include data from the Willamette Basin.

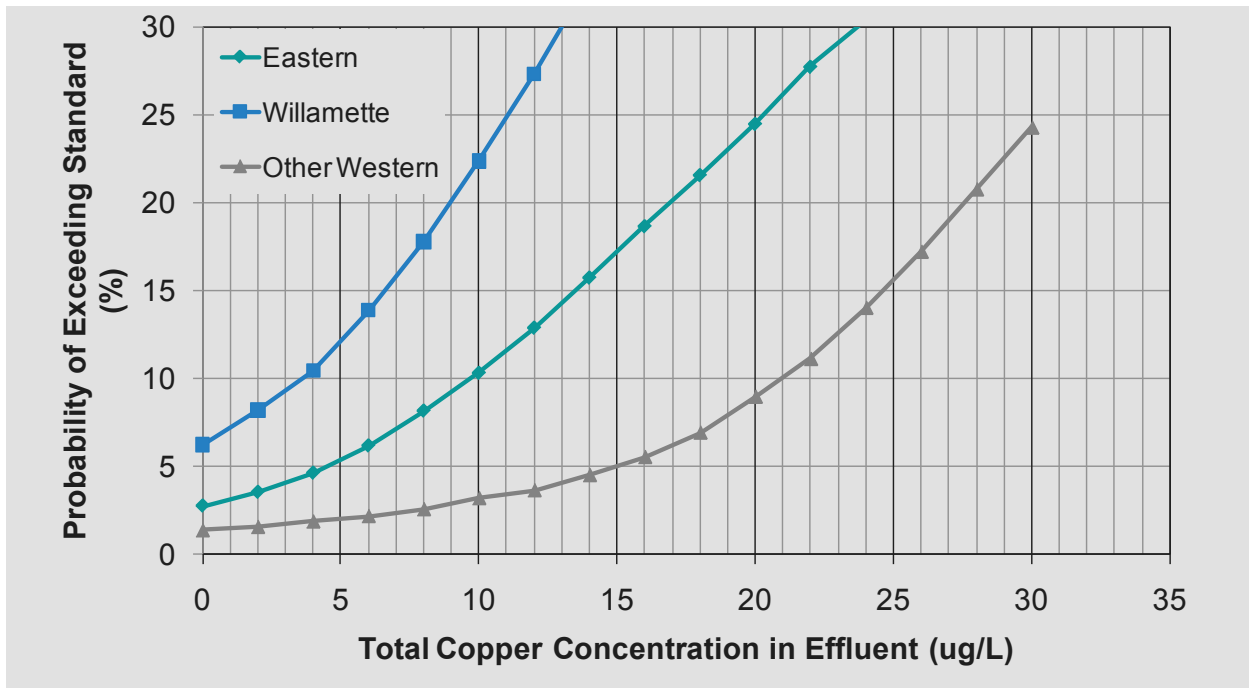


Figure 1. Model results for copper risk of exceeding water quality standard.

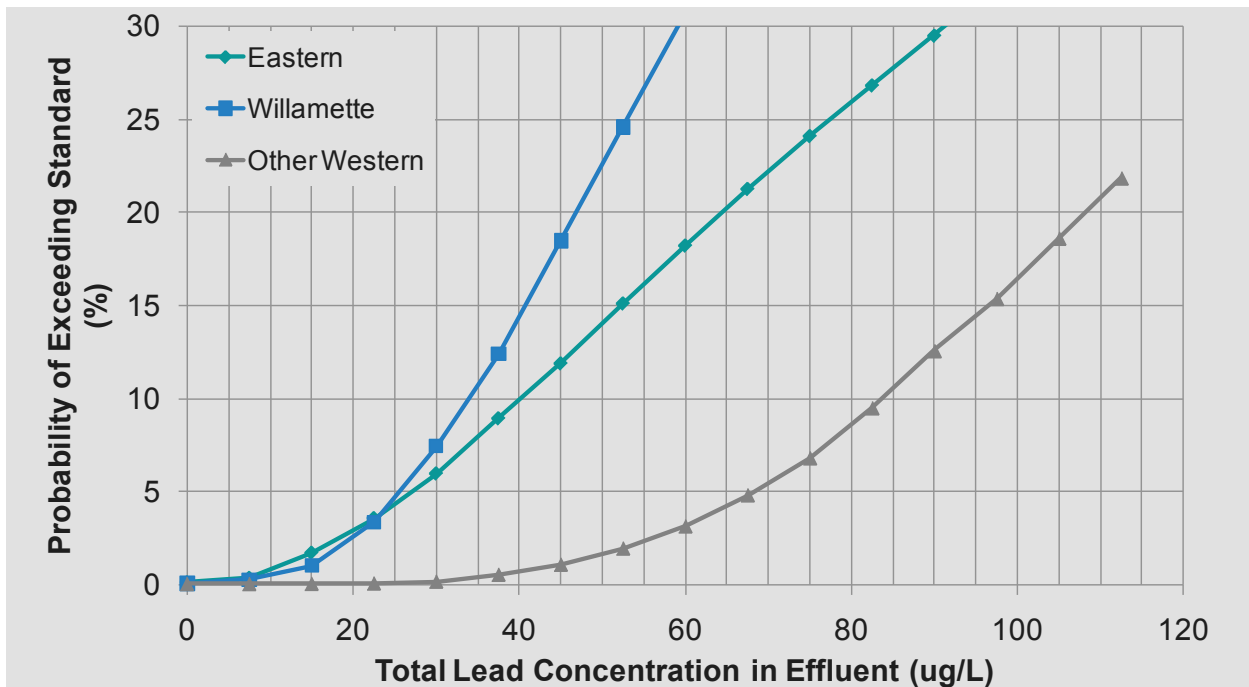


Figure 2. Model results for lead risk of exceeding water quality standard.

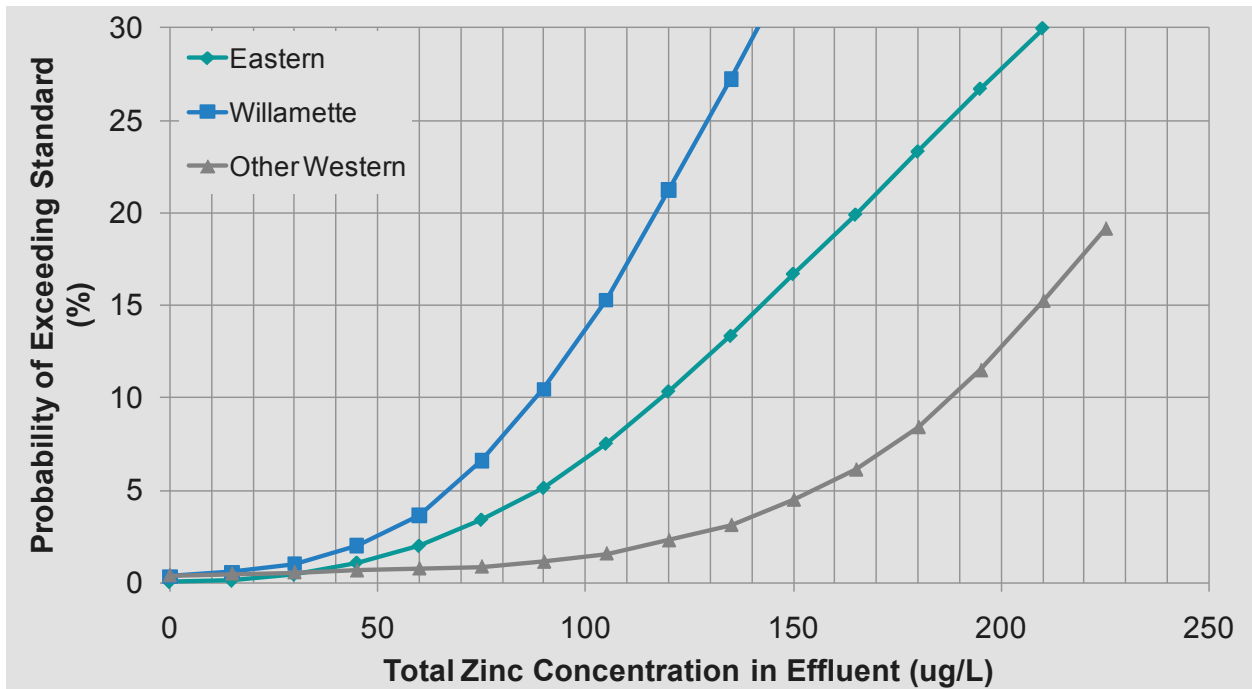


Figure 3. Model results for zinc risk of exceeding water quality standard.

Appendix 2: Assessment of Dilution Rate

Dilution is defined as the total streamflow divided by effluent flow (for this modeling, effluent flow is facility stormwater runoff). A higher dilution rate means that there is relatively less effluent in the receiving water, compared to a lower dilution rate. Thus, a higher dilution rate is more protective of the environment than a lower dilution rate.

DEQ's current benchmarks in the 1200-Z permit are based on a dilution rate of 5, which accounts for higher receiving stream flows during storm events than during dry weather. To select an appropriate dilution rate for model input, DEQ assessed the adequacy of the current dilution rate. DEQ estimated potential dilution based on commonly occurring storm events in different regions of the state, the stormwater runoff from 48 randomly selected facilities, and the flow in streams to which they discharge. Facilities were selected using a stratified random sampling method. This method is appropriate when a known factor may contribute to differences between the items being sampled. In this case, stream size was the factor of concern. Therefore, the facilities were selected based on the size of the stream to which they discharged (see Table 1 below). Because more facilities discharge to streams in larger watersheds, more facilities were selected from large watershed categories.

Table 1. Distribution of evaluated facilities based on regional location and the watershed size corresponding to the point the discharge enters the receiving body.

Bin	Watershed Size		Number of Facilities	
	larger than (mi ²)	equal to or less than (mi ²)	NWR & WR region	ER region
A	0.01	0.1	1	
B	0.1	1	5	
C	1	10	10	1
D	10	100	9	
E	100	1000	10	2
F	1000	10000	8	1
G	10000	--	1	

The assessment utilized the rational method, a simple rainfall-runoff equation, to estimate facilities' stormwater runoff based on rainfall depth. The rational method accounts for surface conditions, such as impervious areas, through a runoff coefficient. To calculate the dilution for each facility, estimated facility runoff was compared to the estimated receiving water streamflow. Flows were calculated as follows:

- Runoff from facility
 - The impervious area for each facility was used to calculate the total area that contributes runoff for each facility. Facility impervious area was obtained from the facility's application form and Stormwater Pollution Control Plan.
 - Rainfall intensity was then used to calculate runoff from the facility. Rainfall data were evaluated from three regions in the state (Rogue Valley, Willamette Valley and Eastern Oregon). For each region, the median storm size was calculated, and then three storms with median flow were selected. The rainfall intensity was estimated by looking at the maximum sustained intensity for the three storms.
- Stream flow

- DEQ estimated a median streamflow using the daily average flows from the rainy season for the last three years.
- DEQ estimated the flows for each facility's stream based on the contributing area size of the watershed

Results:

DEQ's analysis indicated that the dilution rate of 5 in the current permit is reasonable for the following reasons:

- The estimated dilution rate was 5 or more for approximately 80% of the facilities (see histogram in Figure 1 below). Approximately 20% of the facilities had estimated dilution rates that were less than 5. These facilities all discharged to smaller watersheds (less than 5 square miles), and typically had a large impervious areas contributing to stormwater runoff (see watershed size in Figure 2 below).
- The estimated dilution rate was more than 10 for over three-quarters of the facilities.
- The estimated dilution rate was greater than 200 for over half of the facilities.

Because this is a general permit that applies to wide variety of sources discharging to many different waterbodies, and the dilution rate of 5 in the current permit is appropriate for the majority of the facilities, DEQ concluded that the dilution rate of 5 is protective of the environment and appropriate for model input.

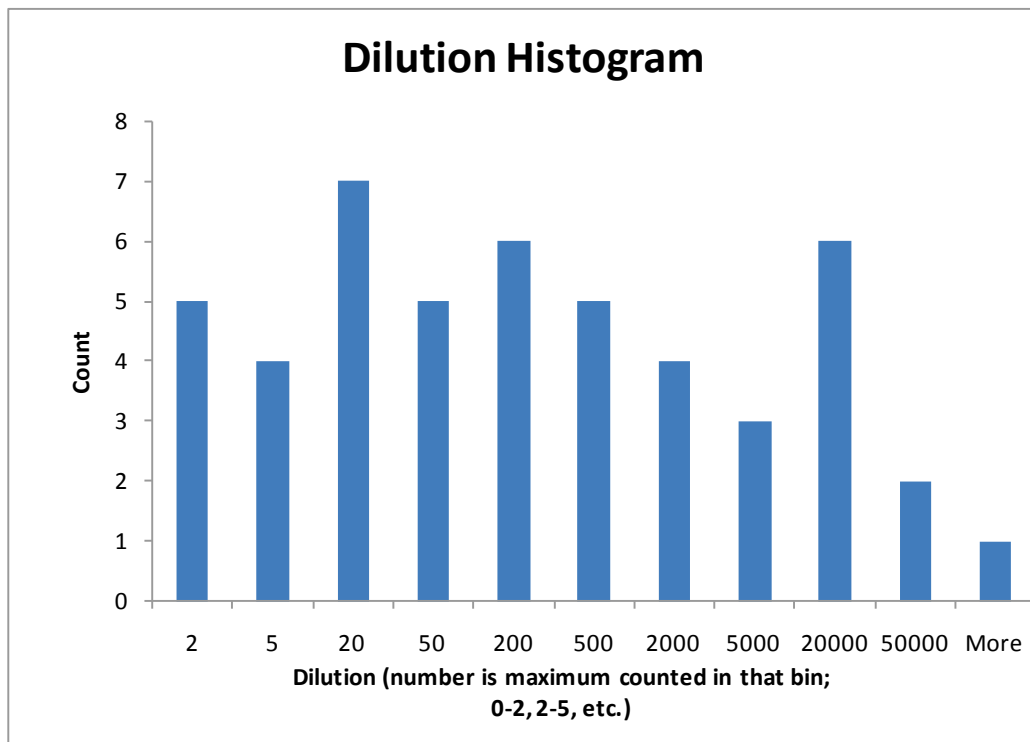


Figure 1. Histogram of dilution rates available to 48 evaluated facilities.

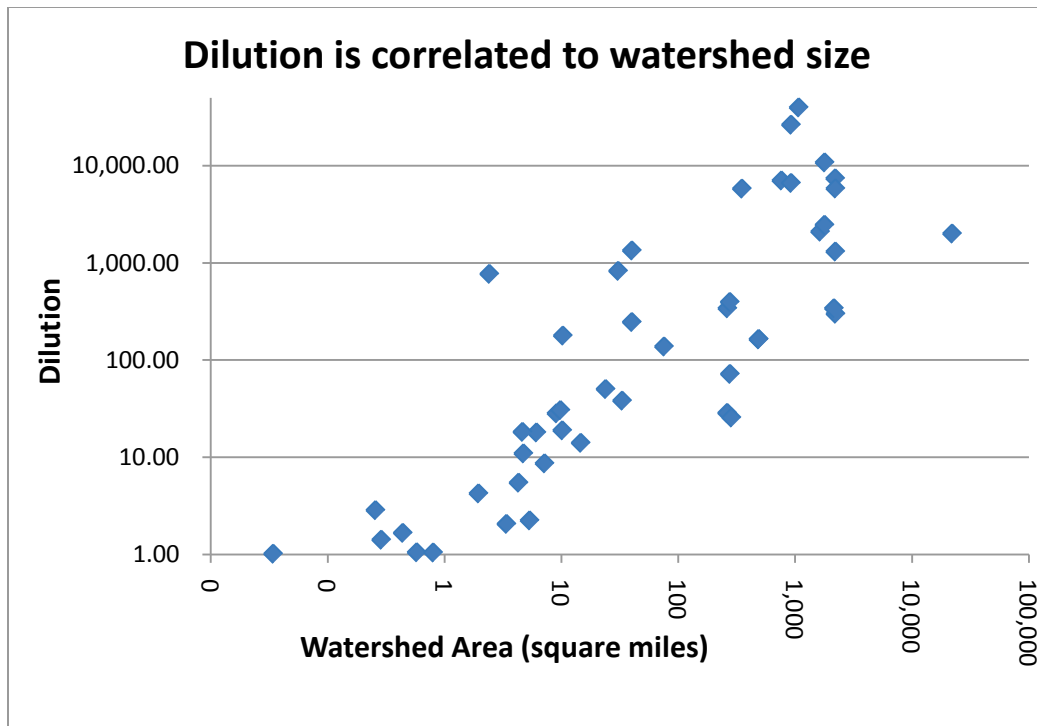


Figure 2. Dilution rates available to 48 facilities plotted against the receiving bodies' watershed area defined by the point the discharge enters the receiving body