

# Information Session and Public Hearing:

## Proposed Willamette Mercury Total Maximum Daily Load and Water Quality Management Plan Revision

Water Quality, TMDL Program

Aug. 7, 2019

Portland and Eugene, OR

# Total Maximum Daily Loads

- DEQ develops TMDLs when streams or rivers don't meet water quality standards:
  - how much pollutant is there now (i.e. load)?
  - where it is coming from?
  - how much reduction is needed to meet water quality standards?
- The accompanying Water Quality Management Plan identifies management agencies and responsible persons for implementing pollution reduction strategies (171 entities).

# Willamette Basin Mercury TMDL 2006 - 2019

- 2006** US Environmental Protection Agency Approved DEQ's Willamette Basin Mercury TMDL
- 2011** EPA approved DEQ's methylmercury fish tissue standard, which is eight times more stringent than the 2006 target
- 2012** Northwest Environmental Advocates filed a lawsuit on the 2006 TMDL
- 2017** US District Court issued a ruling requiring EPA to revise the TMDL by 2019; the 2006 TMDL stays in place in the meantime
- 2018 - 2019** EPA, DEQ and contractor Tetra Tech worked on revising the 2019 TMDL; DEQ held nine advisory committee meetings to help inform process. Litigation deadline of Nov. 2019

# Big Picture

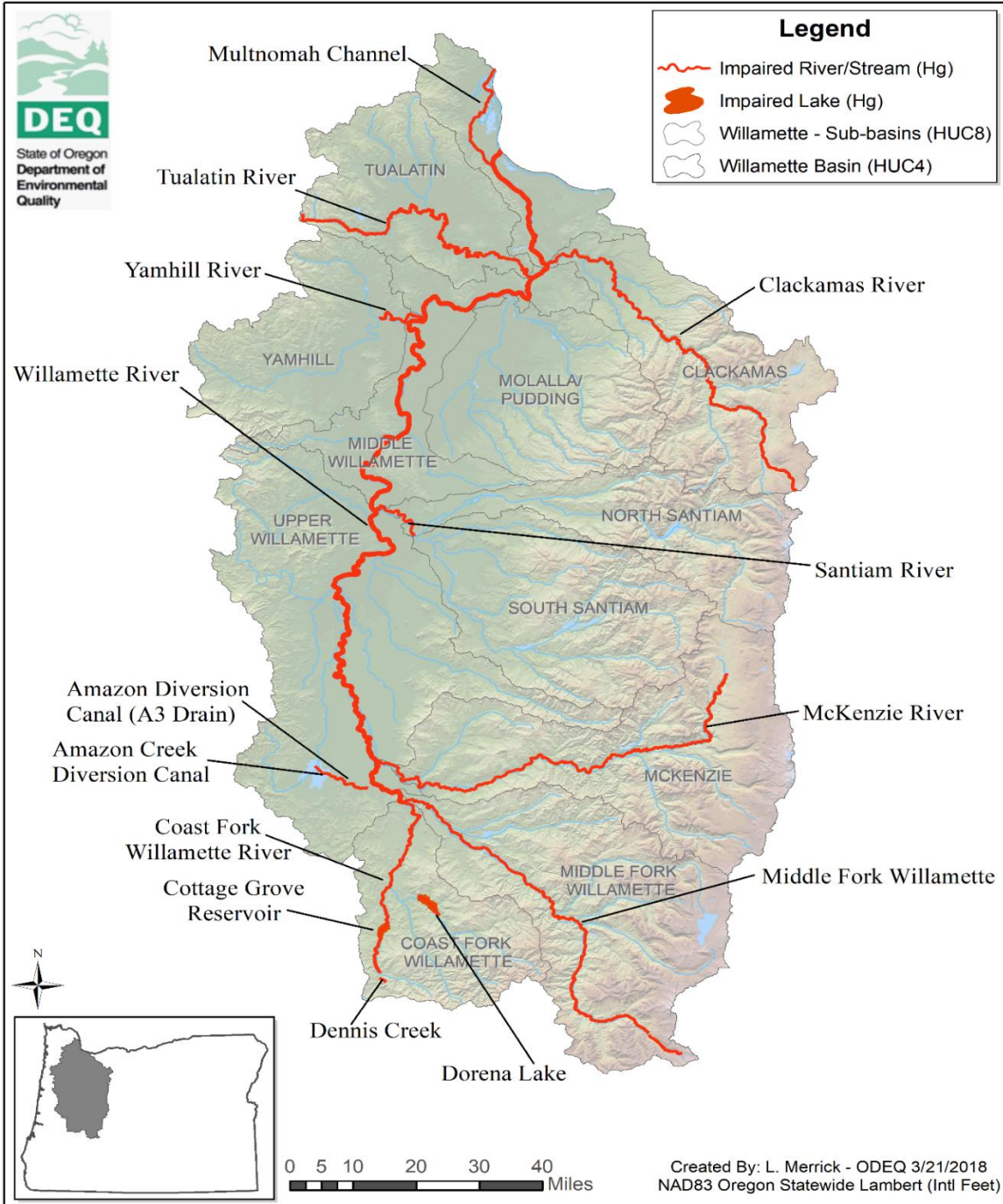
The mercury TMDL is being updated to allow Oregonians to safely eat fish and shellfish and to protect aquatic life from mercury impairments.



# Where do Mercury and Methylmercury come from?

---

- Most of the mercury in the Willamette Basin comes from air deposition from national and global sources.
- Deposited mercury binds to soil particles.
- Disturbing the soil can mobilize mercury and carry it into rivers, streams, and lakes where it is transformed into methylmercury—the most toxic form of mercury to humans.
- Methylmercury is a neurotoxin that bioaccumulates in fish that people eat.



Willamette Basin  
streams and reservoirs  
not meeting water  
quality standards for  
mercury

# Why Are Greater Reductions Necessary?

- Oregon's standard to protect fish consumers limits the concentration of methylmercury in fish to 0.040 mg/kg (i.e. allows safe consumption of up to 23 8-oz servings of fish/month)
- This safe consumption level is about 8 times more stringent than what it was in 2006
- The TMDL also needs to meet a total mercury water standard of 0.012 ug/L to protect aquatic life.
- To meet these standards, reductions of approximately **88%** of existing mercury loads are needed across the basin.

# Point and Nonpoint Source Contributions

---

## Point Sources

(wastewater treatment plants, industry)



**4%**

## Nonpoint Sources

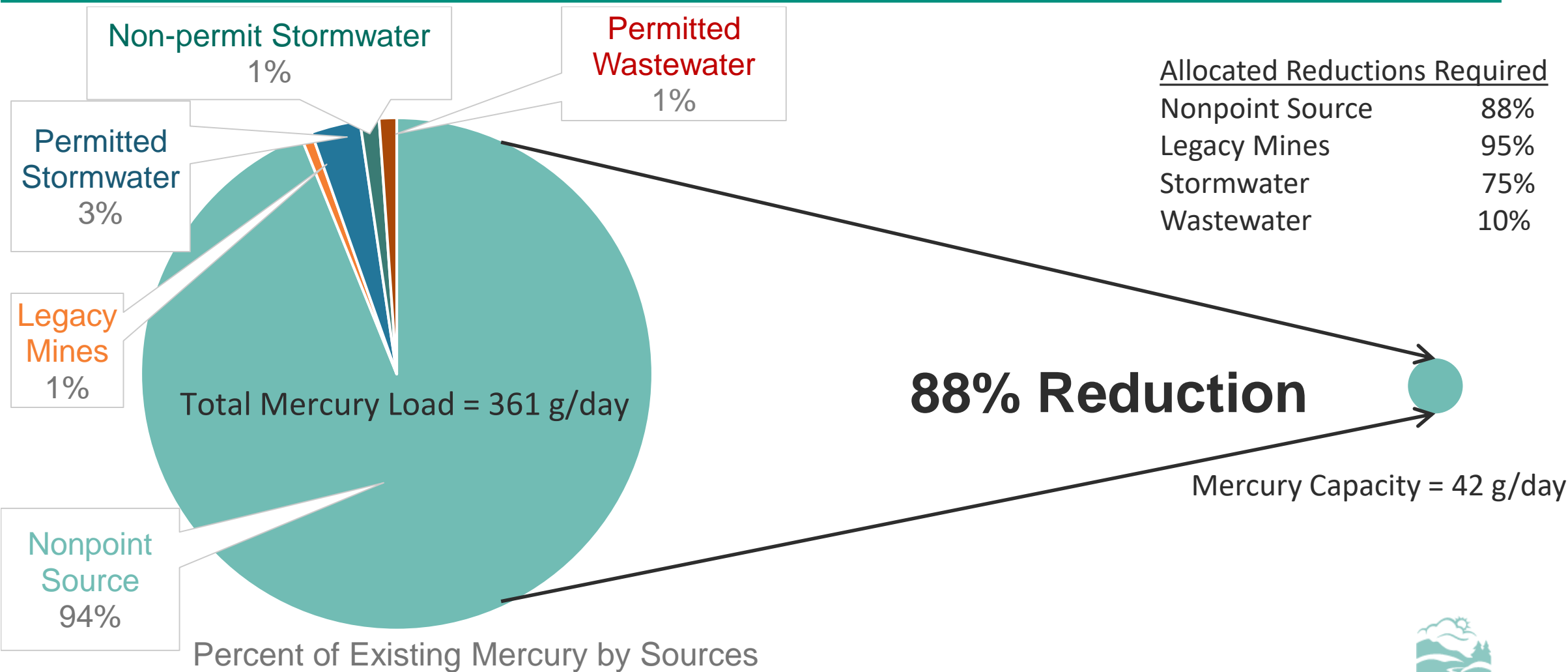
(agriculture, forestry, urban runoff)



**96%**



# DRAFT Willamette Basin Mercury TMDL: Sources and Allocations



# Proposed Allocations

SOURCE SECTORS	EXISTING LOADS			ALLOCATIONS			
	g/day	kg/year	Relative Contribution to Total Load	Percent Reduction	g/day	kg/year	Relative Allocation of Load Capacity (42 g/day)
<b>General Nonpoint Source and Background<sup>1</sup></b> Captures: Forestry, Agriculture, Water Impoundments, Water Conveyance Entities, Non-Permitted Urban Stormwater, Atmospheric Deposition	341.74	124.82	94.5%	88% <sup>2</sup>	28.87	10.54	68.46%
<b>Non-Permitted Urban Stormwater</b>				75%	0.63	0.23	1.5%
<b>Atmospheric Deposition</b>				11%	5.22	1.91	12.38%
<b>Legacy Metals Mines</b>	4.00	1.46	1.1%	95%	0.20	0.07	0.5%
<b>NPDES Wastewater Point Source Discharges</b>	4.44	1.62	1.2%	10%	4.00	1.46	9.5%
<b>NPDES MS4 Stormwater Point Source Discharges</b>	11.31	4.13	3.2%	75%	2.83	1.03	6.7%
<b>Reserve Capacity</b>	NA	NA	NA	1% <sup>3</sup>	0.42	0.15	1.0%
<b>Margin of Safety</b>	NA	NA	NA	implicit	implicit	implicit	implicit
<b>TOTALS</b>	<b>361.49</b>	<b>132.03</b>	<b>100%</b>	<b>NA</b>	<b>42.17</b>	<b>15.39</b>	<b>100%</b>

# Nonpoint Source Management Measures

# Nonpoint Source Load Allocation Implementation Approach

---

- Implement runoff, sediment and erosion control measures appropriate to the sector, land use, or activity that will be most effective for optimizing reductions.
- Designated Management Agencies and responsible persons must implement strategies with measurable objectives that reduce the total mercury load from their jurisdictions. Goal is to show progress towards 88% reduction **as an overall general nonpoint source sector.**

# Implementation Plans

---

The WQMP directs DMAs and responsible persons to develop implementation plans within 18 months of TMDL issuance:

- Identifies management strategies to achieve load reductions.
- Plans will include **measurable objectives and milestones** associated with reducing runoff and erosion of sediment
- Approved by DEQ

# Measurable Objectives

---

## Examples:

- Minimize bare ground in agricultural operations
- Track percent compliance with Forest Practices Act rules related to sediment delivery
- Develop road management strategies—e.g. inventory hydrologically-connected roads, identify at-risk stream crossings, track percent of roads repaired/decommissioned/stored to date.
- Evaluate hillslope erosion potential related to logging

# Forestry Management Measures

---

## ODF / BLM / USFS

- Riparian rules
- Road management / culvert maintenance
- Fuels management (reduce catastrophic wildfires)
- Post-wildfire mitigation
- Steep slope protection, landslide prone areas
- Harvest practices
- Implementation/compliance monitoring
- Education and outreach to operators and landowners

# Agricultural Management Measures

---

## Oregon Department of Agriculture

- Regulatory and voluntary approach—Agricultural Water Quality Area Rules and Plans:
  - Establishing perennial vegetation in riparian areas
  - Grazing management
  - Farm road maintenance
  - Erosion control and prevention
  - Reduce bare ground
  - Appropriate irrigation application



# Urban Stormwater (Non-MS4)

Modeling indicates that mercury in stormwater is primarily a function of erosion and runoff from atmospheric deposition of mercury, rather than specific sources in large urban areas



**Small cities and counties also need to take a comprehensive approach to control stormwater pollutants, including mercury:**

- 2006 WQMP required non-permitted MS4 communities **greater than 10K** to implement stormwater control measures
- 2019 WQMP is proposing stormwater control measures for communities **greater than 5K**.

# Proposed Approach: Implement Six Stormwater Control Measures

---

1. Pollution Prevention and Good Housekeeping for Municipal Operations
2. Public Education and Outreach
3. Public Involvement and Participation
4. Illicit Discharge Detection and Elimination
5. Construction Site Runoff Control
6. Post-Construction Site Runoff for New Development and Redevelopment

# Applicable Communities (21+)

According to PSU's 2018 certified population estimates (>5K):

1. Canby
2. Columbia County
3. Cottage Grove
4. **Dallas**
5. Lebanon
6. McMinnville
7. **Newberg**
8. St. Helens
9. **Woodburn**
10. Sandy
11. Silverton
12. Yamhill County
13. Creswell
14. Independence
15. Junction City
16. Molalla
17. Monmouth
18. Scappoose
19. Sheridan
20. Stayton
21. Sweet Home

*+ MS4s outside  
of "urbanized  
areas"*

**Bolded text** = had stormwater requirements in 2006 TMDL

# Water Conveyance Entities

- Including irrigation and drainage districts that own and/or operate water conveyance systems and have the potential to discharge to waters of the state (return flows)--not included in 2006 mercury TMDL
- Maintenance of these ditches can impact sediment transport to streams
- Some of the entities DEQ has identified may not operate systems that discharge to waters of the state (return flows). Potential to remove these entities from the TMDL WQMP in response to public comment.

# Water Conveyance Entities: Management Strategy Examples

---

## **Implementation plan with map of conveyance system:**

- Maintain a list of construction or ditch maintenance activities that require state and/or federal permits or ODFW approval
- Implement streambank and/or canal stabilization practices, including structural and non-structural best management practices
- implement flow and drainage management to reduce erosion, and sediment delivery to streams

# Reservoir Management Measures

- Impoundments create conditions where methylation rates are higher than flowing streams
- Largest reservoir operators: U.S. Army Corps of Engineers, Portland General Electric, U.S. Bureau of Reclamation, Eugene Water and Electric Bureau
- Requirements:
  - Assess factors affecting methylation rate in reservoirs
  - Evaluate approaches to reduce methylmercury production
  - Implement management strategy

# Point Source Management Measures

# Point Source Assessment

## NPDES Stormwater Permits

- **8 MS4 Phase I** (implemented by 33 jurisdictions)
- **14 MS4 Phase II** (most registrants of general permit, a few individual permits)
- **General Stormwater Permits**
  - ~109 1200A
  - ~629 1200Z
  - ~1000 1200C/CN/CA

## NPDES Wastewater Permits

- **23 Major & 47 Minor STPs**
- **8 (6 active) Major & 56 Minor Industrials**
- **~158 General Wastewater**
- **~31 700PM Registrants**



# Point Source Wasteload Allocation Implementation Approach

---

- Application of mercury and erosion minimization and control measures appropriate to the sector, facility, land use, or activity will be most effective for optimizing reductions.
- Permittees are responsible for applying controls with measurable objectives linked to activities that contribute to the total mercury load from their facilities/jurisdictions. Goal is to show progress towards 10% and 75% reduction **as overall sectors.**

# Stormwater WLA Implementation

## MS4 Phase I

- Implement mercury minimization and erosion control measures
- Monitor paired Total Mercury and Total Suspended Solids (TSS)
- Report data and BMP effectiveness analysis

## MS4 Phase II

- Implement the MS4 Phase II general permit, effective March 2019, or
- For individual Phase II permit coverage:
  - Develop and implement mercury minimization and erosion control measures
  - Monitor and report BMP effectiveness

## General Stormwater (1200A, 1200Z, 1200C/CN/CA)

- Loads implicit to MS4 loads – existing requirements to control erosion and TSS



# Wastewater WLA Implementation

## Major STPs and Industrials with activities that may increase Hg in discharge and adequate data

- determine effluent level currently being achieved
- implement mercury minimization plan (MMP)
- monitor Total mercury
- report data & MMP effectiveness measures

## Industrials with activities that may increase Hg in discharge, but insufficient data

- monitor Total mercury
- after 2 years, determine potential load and level currently being achieved
- MMP, if warranted – implement at next permit renewal
- report data and, if applicable, MMP effectiveness measures

## 700PM

- In addition to prohibition of suction dredging in streams 303(d) listed for mercury, also prohibit suction dredging in streams tributary to Dorena Reservoir

## SIC Categories that may increase mercury in discharge:

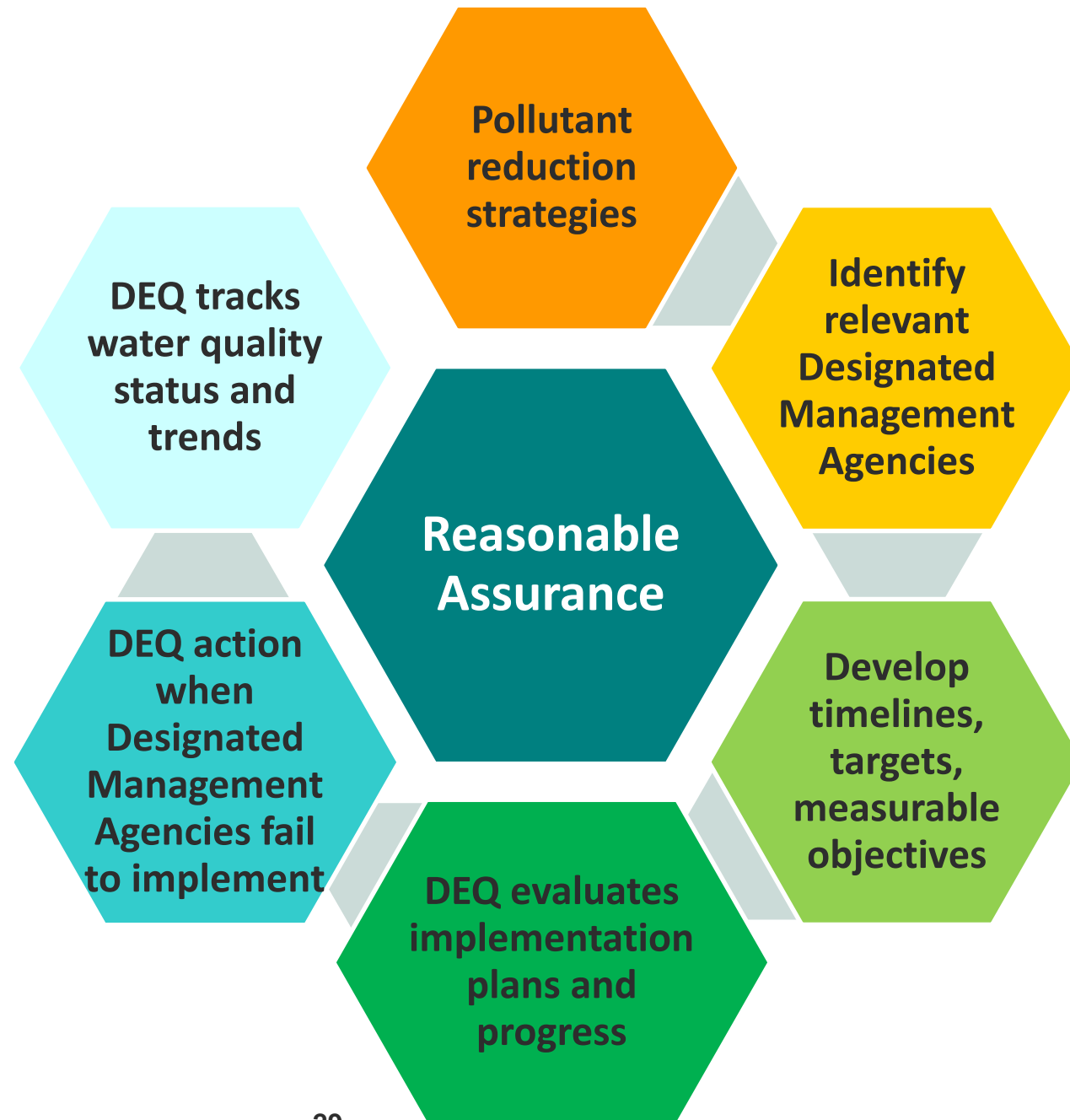
- timber products
- paper products
- chemical products
- glass, clay, cement, concrete, gypsum products
- primary metal industries
- fabricated metal products
- electronics and instruments

# 700-PM General Placer Mining Permit

---

- Proposed prohibitions on suction dredge mining in tributaries to Dorena Reservoir
  - Sediment in these streams is mercury contaminated
  - Multiple studies in OR, CA and other states show mercury contamination is mobilized and methylated by suction dredges

# Reasonable Assurance



# Summary of Changes 2006 to 2019

Metric		2006	2019	
Target for methylmercury in fish tissue		0.3 mg/kg	0.040 mg/kg	
Instream guidance/target value for Total Mercury		0.92 ng/l	0.14 ng/L	
Annual mercury load		128.6 kg	132.0 kg	
Annual mercury loading capacity		94.6 kg	15.4 kg	
Mercury reduction needed (basin total)		27%	88%	
Portion of mercury load	Erosion of mercury containing soils	41.8%	42.8%	~94% (general nonpoint source & background)
	Runoff of atmospherically deposited mercury	47.8%	33.7%	
	Direct atmospheric deposition to surface water	5.9%	1.6%	
	Groundwater	NA	16.8%	
	Legacy mines	0.6%	1.1%	
	Non-permitted urban stormwater	NA	0.7%	
	Point source discharges – wastewater – stormwater	3.9%	1.2%	
		NA	3.1%	



# We Want Your Feedback!

**Public comment period:**

**July 3 - Sept. 3**

**Website:**

<https://www.oregon.gov/deq/wq/tmdls/Pages/willhgtmdlac2018.aspx>

**Submit comments to:**

[WillametteMercuryTMDL@deq.state.or.us](mailto:WillametteMercuryTMDL@deq.state.or.us)

**Revised Willamette Basin Mercury TMDL**  
Draft for Public Comment  
July 3, 2019



Watershed  
Management  
700 NE Mulvornish St.  
Suite 600  
Portland, OR 97232  
Phone: 503-229-5696  
800-452-4011  
Fax: 503-229-6762  
Contact: Alex Liverman,  
Andrea Matzke, Kevin  
Hansen, Priscilla  
Woolverton  
[www.oregon.gov/DEQ](http://www.oregon.gov/DEQ)

DEQ is a leader in  
restoring, maintaining and  
enhancing the quality of  
Oregon's air, land and  
water.



State of Oregon  
Department of  
Environmental  
Quality

# Opportunity for Questions

