

Numerical criteria are found in OAC 785.45. Raw Water and Human Health Fish Flesh & Water criteria apply only if PPWS is a designated use. Human health fish flesh criteria do not apply to HLAC-designated receiving waters, but to the first non-HLAC designated downstream water body. Some criteria are hardness- or pH-dependent. NRWQC fish flesh criteria are found in the NRWQC tab. Agricultural mineral criteria are found in the Ag tab.

State WQ criteria only

State & NRWQC WQ criteria

Site-specific WQ criteria

NRWQC Fish Flesh criteria

OWQScreen-SVersion
3.35OWQS Numerical Criteria & BT/C_{max}GLENPOOL PIPELINE
BREAKOUTSTATION

Outfall		Applicable Numerical Criteria and BT/C _{max} Values												
Parameter	Units	Aesthetics	PPWS		F&WP		Fish Consump	BT/C _{max}						
			Raw Water	Human Hlth FFW	Aquatic Toxicity		Human Hlth FF	Aes	Raw	FFW	A	C	FF	
					Acute	Chronic								
PART A														
Ammonia	mg/l													
PART B														
Color														
Fluoride (at 90 deg F)	mg/l		4						0.125					
Nitrate-Nitrite (as N)	mg/l		10						0.125					
Phosphorus (as P) (Scenic Rivers only)	mg/l													
Barium, total	mg/l		1						0.125					
Manganese, total														
METALS and CYANIDE														
Antimony, total														
Arsenic, total	ug/l		40			360	190	205		0.329		0.170	0.206	0.201
Beryllium, total														
Cadmium, total	ug/l		20	14.49	102.36	2.46	84.13		0.406	0.447	0.248	0.763	0.263	
Chromium, total	ug/l		50	166.3		50.0	3,365		0.308	0.215		0.308	0.125	
Copper, total	ug/l		1000		48.56	29.69			0.125		0.311	0.360		
Lead, total	ug/l		100	5	286.15	11.15	25		0.250	0.616	0.182	0.484	0.379	
Mercury, total	ug/l		2.0	0.05	2.4	1.302	0.051		0.812	1.000	0.768	0.924	1.000	
Nickel, total	ug/l			607.2	3263.77	362.83	4,583			0.145	0.125	0.170	0.125	
Selenium, total	ug/l		10		20	5			0.500		0.406	0.616		
Silver, total	ug/l		50	104.8	22.10		64,620		0.308	0.246	0.394		0.125	
Thallium, total	ug/l			0.24	1400		0.470			1.000	0.125		1.000	
Zinc, total	ug/l		5,000		269.64	244.23			0.125		0.185	0.191		
Cyanide, total	ug/l		200		45.93	10.72			0.203		0.316	0.490		
DIOXINS														
2,3,7,8-Tetrachlorodibenzo-P Dioxin	ug/l			0.000000050			0.000000051			1.000			1.000	
GC/MS FRACTION - VOLATILE COMPOUNDS														
Acrolein	ug/l			6			9			0.583			0.516	
Acrylonitrile	ug/l			0.51	7550		2.5			1.000	0.125		0.759	
Benzene	ug/l			22		2200	510			0.394		0.125	0.153	
Bromoform														
Carbon Tetrachloride	ug/l			2.3			16			0.778			0.434	
Chlorobenzene														
Chlorodibromomethane														
Chloroethane														
2-Chloroethylvinyl Ether														
Chloroform	ug/l			56.69			4708			0.297			0.125	
Dichlorobromomethane	ug/l			5.5			170			0.599			0.213	
1,1-Dichloroethane														
1,2-Dichloroethane														
1,1-Dichloroethylene														
1,2-Dichloropropane														
1,3-Dichloropropylene														
Ethylbenzene	ug/l			530			2,100			0.151			0.125	
Methyl Bromide														
Methyl Chloride														
Methylene Chloride														
1,1,2,2-Tetrachloroethane														
Tetrachloroethylene	ug/l			6.9	5,280		33			0.559	0.125		0.349	
Toluene	ug/l			1,300		875	15,000			0.125		0.130	0.125	
1,2-Trans-dichloroethene														
1,1,1-Trichloroethane	ug/l			3,094			173,100			0.125			0.125	
1,1,2-Trichloroethane														
Trichloroethylene														
Vinyl Chloride														
GC/MS FRACTION - ACID COMPOUNDS														
2-Chlorophenol														
2,4-Dichlorophenol														
2,4-Dimethylphenol														
4,6-Dinitro-o-cresol														
2,4-Dinitrophenol														
2-Nitrophenol														
4-Nitrophenol														
p-Chloro-m-cresol														
Pentachlorophenol	ug/l			2.7	19,665	12,414	30			0.742	0.408	0.468	0.359	

Applicable Numerical Criteria and BT/C _{max} Values													
Outfall													
Parameter	Units	Aesthetics	PPWS		F&WP		Fish Consump	BT/C _{max}					
			Raw Water	Human Hlth FFW	Aquatic Toxicity		Human Hlth FF	Aes	Raw	FFW	A	C	FF
					Acute	Chronic							
Phenol	ug/l			10,000			860,000			0.125			0.125
2,4,6-Trichlorophenol													
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS													
Acenaphthene													
Acenaphthylene													
Anthracene													
Benzidine	ug/l		1.0						1.000				
Benzo (a) Anthracene													
Benzo (a) Pyrene													
3,4-Benzofluoranthene													
Benzo (ghi) Perylene													
Benzo (k) Fluoranthene													
Bis (2-Chloroethoxy) Methane													
Bis (2-Chloroethyl) Ether													
Bis (2-Chloroisopropyl) Ether													
Bis (2-Ethylhexyl) Phthalate	ug/l			12			22			0.473			0.394
4-Bromophenyl Phenyl Ether													
Butylbenzyl Phthalate	ug/l		150	1,500			1,900		0.221	0.125			0.125
2-Chloronaphthalene													
4-Chlorophenyl Phenyl Ether													
Chrysene													
Dibenzo (a,h) Anthracene													
1,2-Dichlorobenzene													
1,3-Dichlorobenzene													
1,4-Dichlorobenzene													
3,3'-Dichlorobenzidine													
Diethyl Phthalate	ug/l			17,000			44,000			0.125			0.125
Dimethyl Phthalate	ug/l			270,000			1,100,000			0.125			0.125
Di-n-butyl Phthalate	ug/l			2,000			4,500			0.125			0.125
2,4-Dinitrotoluene													
2,6-Dinitrotoluene													
Di-n-octyl Phthalate													
1,2-Diphenylhydrazine (as Azobenzene)													
Fluoranthene													
Fluorene													
Hexachlorobenzene	ug/l			0.0028			0.0029			1.000			1.000
Hexachlorobutadiene													
Hexachlorocyclopentadiene													
Hexachloroethane													
Indeno (1,2,3-cd) Pyrene													
Isophorone													
Naphthalene													
Nitrobenzene													
n-Nitrosodimethylamine													
n-Nitrosodi-n-propylamine													
n-Nitrosodiphenylamine													
Phenanthrene													
Pyrene													
1,2,4-Trichlorobenzene													
GC/MS FRACTION - PESTICIDES													
Aldrin	ug/l			0.00049	3.0		0.0005			1.000	0.718		1.000
alpha-BHC													
beta-BHC													
gamma-BHC	ug/l		4.0	0.98	2.0	0.08	1.8		0.659	1.000	0.812	1.000	0.838
delta-BHC													
Chlordane	ug/l			0.0080	2.4	0.17	0.0081			1.000	0.768	1.000	1.000
4,4'-DDT	ug/l			0.0022	1.1	0.001	0.0022			1.000	0.972	1.000	1.000
4,4'-DDE													
4,4'-DDD				0.0031			0.0031			1.000			1.000
Dieldrin	ug/l			0.00052	2.5	0.0019	0.00054			1.000	0.759	1.000	1.000
Endosulfan, total (α + β)	ug/l				0.22	0.056					1.000	1.000	
Endosulfan Sulfate													
Endrin	ug/l		0.2	0.059	0.18	0.0023	0.060		1.000	1.000	1.000	1.000	1.000
Endrin Aldehyde													
Heptachlor	ug/l			0.00079	0.52	0.0038	0.00079			1.000	1.000	1.000	1.000
Heptachlor Epoxide													
PCB-1242													
PCB-1254													
PCB-1221													
PCB-1232													
PCB-1248													
PCB-1260													

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			Raw Water	Human Hlth FFW	Aquatic Toxicity		Human Hlth FF	Aes	Raw	FFW	A	C	FF
					Acute	Chronic							
PCB-1016													
Toxaphene	ug/l		5.0		0.78	0.0002			0.616		1.000	1.000	
ADDITIONAL PARAMETERS													
Chlorides	See AG Worksheet												
Sulfates	See AG Worksheet												
Total Dissolved Solids (TDS)	See AG Worksheet												
2,4,5-TP	ug/l		10			10			0.500			0.500	
2,4,6-Trinitotoluene	ug/l				450						0.159		
2,4-D	ug/l		100						0.250				
Bis-chloromethyl ether													
Chlorpyrifos (Dursban)	ug/l				0.083	0.041					1.000	1.000	
Demeton	ug/l					0.1						1.000	
Detergents, total	mg/l		0.2						0.203				
Diazinon	ug/l				0.17						1.000		
Dinitrophenols													
Guthion	ug/l					0.01						1.000	
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	ug/l				2591.5						0.125		
Malathion	ug/l					0.1						1.000	
Methoxychlor	ug/l		100			0.03			0.250			1.000	
Methylene Blue Active Substances	ug/l		500						0.154				
Mirex	ug/l					0.001						1.000	
n-Nitrosodibutylamine													
n-Nitrosodiethylamine													
n-Nitrosopyrrolidine													
Nonylphenol (mixed isomers)	ug/l				28	6.6					0.367	0.567	
Parathion	ug/l				0.065	0.013					1.000	1.000	
PCB's, total	ug/l			0.00064		0.044	0.00064			1.000		1.000	1.000
Pentachlorobenzene													
Perchlorate	ug/l			9	6600	1800				0.516	0.125	0.125	
Phthalate Esters (except Butylbenzyl)	ug/l		3.0						0.718				
1,2,4,5-Tetrachlorobenzene													
2,4,5-Trichlorophenol													

Equations Used to Calculate Hardness- and pH-dependent Acute and Chronic Toxicity Criteria

Parameter	Acute	Chronic
Cadmium	$e^{(1.128 [\ln(\text{hardness})] - 1.6774)}$	$e^{(0.7852 [\ln(\text{hardness})] - 3.49)}$
Copper	$e^{(0.9422 [\ln(\text{hardness})] - 1.3844)}$	$e^{(0.8545 [\ln(\text{hardness})] - 1.386)}$
Lead	$e^{(1.273 [\ln(\text{hardness})] - 1.46)}$	$e^{(1.273 [\ln(\text{hardness})] - 4.705)}$
Nickel	$e^{(0.846 [\ln(\text{hardness})] + 3.3612)}$	$e^{(0.846 [\ln(\text{hardness})] + 1.1645)}$
Pentachlorophenol	$e^{(1.005 [\text{pH}] - 4.83)}$	$e^{(1.005 [\text{pH}] - 5.29)}$
Silver	$e^{(1.72 [\ln(\text{hardness})] - 6.52)}$	N/A
Zinc	$e^{(0.8473 [\ln(\text{hardness})] + 0.8604)}$	$e^{(0.8473 [\ln(\text{hardness})] + 0.7614)}$
Cadmium for Trout Waters	$e^{(1.128 [\ln(\text{hardness})] - 3.828)}$	$e^{(0.7852 [\ln(\text{hardness})] - 3.49)}$

Calculation of BT/C_{max} (see also BTC and CONCLIMITS worksheets)

Where the magnitude of the criterion is	Equation for BT/C _{max} is
$\leq 1 \text{ ug/l}$ (i.e., $\leq 0.001 \text{ mg/l}$)	$\text{BT/C}_{\text{max}} = 1.0$
$> 1.0 \text{ ug/l}$ and $\leq 1000 \text{ ug/l}$ (i.e., > 0.001 and $\leq 1.0 \text{ mg/l}$)	$\text{BT/C}_{\text{max}} = 1 / (2^{\log(\text{criterion})})$
$> 1000 \text{ ug/l}$ (i.e., $> 1.0 \text{ mg/l}$)	$\text{BT/C}_{\text{max}} = 0.125$