

SPREADSHEET CREATED BY D. NUNNALLEE, REV. 1-92 BY G. SHERVEY		FILENAME: SeaTac Third Runway Embankment Project			
FACILITY:		RUN DATE: 2/20/02			
WATER QUALITY CRITERIA (in ug/L unless otherwise noted)		PREPARED BY: Chung Ki Yee			
Pollutant, CAS No. & Application Ref. No.	PRIORITY	Fresh		Marine	
		acute	chronic	acute	chronic
ANTIMONY (INORGANIC) 7440360 1M	Y	9000	1600		
ARSENIC (dissolved) 7440382 2M	Y	360	190	69	36
BERYLLIUM 7440417 3M	Y	130	5.30		
CADMIUM - 7440439 4M Hardness dependent	Y	1.75	0.62	42.00	9.3
CHROMIUM(TRI) -16065831 5M Hardness dependent	N	311.04	100.90	10300	NA
CHROMIUM(HEX) 18540299	Y	15	10	1100	50
COPPER - 744058 6M Hardness dependent	Y	8.86	6.28	4.80	3.10
LEAD - 7439921 7M Dependent on hardness	Y	30.14	1.17	210.00	8.10
MERCURY 7439976 8M	Y	2.10	0.012	1.80	0.0250
NICKEL - 7440020 9M - Dependent on hardness	Y	787.43	87.45	74.00	8.20
SELENIUM 7782492 10M	Y	20	5	290	71
SILVER - 7740224 11M dependent on hardness.	Y	1.05	NA	1.90	NA
THALLIUM 7440280 12M	Y	1400	40	2130	
ZINC- 7440666 13M hardness dependent	Y	63.61	58.09	90.00	81.00

AR 033790

Pollutant, CAS No. & Application Ref. No.	PRIORITY PLANT/GEN?	Water Quality Criteria		
		Fresh acute	chronic	Marine acute chronic
<p>HARDNESS VALUE USED FOR HARDNESS DEPENDENT LIMITS&gt;&gt;&gt;&gt;&gt;</p> <p>* = INSUFFICIENT DATA TO DEVELOP CRITERIA</p> <p>VALUE PRESENTED IS THE L.O.E.L.- LOWEST OBSERVED</p>			50.00	mg/L

AR 033791

Pollutant, CAS No. & Application Ref. No.	PRIOR C ITY PLTNT GEN?	Water Quality Criteria		
		Fresh	Marine	chronic
		acute	acute	chronic

AR 033792









Pollutant, CAS No. & Application Ref. No.	PRIOR CITY	CAR PLANT/GEN?	Fresh		Marine	
			acute	chronic	acute	chronic
BHC - ALPHA 319846 2P	Y	Y	100		0.34	
BHC - BETA 319857 3P	Y	Y	100		0.34	
BHC - GAMMA 58899 4P (Lindane)	N	Y	2	0.08	0.16	
BHC - DELTA 319868 5P	Y	Y				
BIS(2-CHLOROETHYL)ETHER 111444 11B	Y	Y				
BIS(2 CHLOROISOPROPYL)ETHER 39638329 12B	Y	N				
BIS(2-ETHYLHEXYL) PHTHALATE 117817 13B	Y	Y	940	3	2944	3.40
BROMOFORM 75252 5V	Y	Y				
BUTYLBENZYL PHTHALATE 85687	Y	N	1.75	0.62	42.00	9.3
CADMIUM - 7440439 4M Hardness dependent	Y	N				
Based on hardness in next column	50					
CARBON TETRACHLORIDE 56235 6V	Y	Y	35200		50000	
CHLOROBENZENE 108907 7V	Y	N				
CHLORDANE 57749 6P	Y	Y	2.4	0.0043	0.09	0.004
CHLORODIBROMOMETHANE 124481 8V	Y	Y				
CHLORIDE (dissolved) in mg/L 16887006	N	N	860	230	7.50	
2-CHLORONAPHTHALENE 91587 16B	Y	N	1600			
CHLORINE 7782505	N	N	19	11	13	7.50
CHLOROALKYL ETHERS	Y	N	238000			
CHLOROETHYL ETHER (BIS - 2) 111444	Y	Y				
CHLOROFORM 67663 11V	Y	Y	28900	1240		
CHLOROISOPROPYL ETHER (BIS-2) 108601	Y	N				
CHLOROMETHYL ETHER (BIS)	N	Y				
2-CHLOROPHENOL 95578 1A	Y	N	4380	2000		
4-CHLOROPHENOL 106489	N	N			29700	
CHLOROPHENOXY HERBICIDES(2,4,5-TP) 93721	N	N			10 in drinking water	
CHLOROPHENOXY HERBICIDES(2,4-D) 94757	N	N			100 in drinking water	
CHLORPYRIFOS 2921882	N	N				
CHLORO-4-METHYL-3 PHENOL	N	N	0.083	0.041	0.011	0.0056
CHROMIUM(HEX) 18540299	N	N	30			
CHROMIUM(TRI) -16065831 5M Hardness dependent	Y	N	15	10	1100	50
Based on hardness in next column	N	N	311.04	100.90	10300	NA

AR 033797



Pollutant, CAS No. & Application Ref. No.	PRIOR CAR		Water Quality Criteria				Marine	
	ITY	CIN	Fresh	acute	chronic	acute	chronic	
CHRYSENE 218019 18B	Y	Y	narrative statement see document	8.86	6.28	4.80	3.10	
COLOR	N	N						
COPPER - 744058 6M Hardness dependent	Y	N						
Based on hardness in next column	###							
CYANIDE 57125 14M	Y	N		22	5.20	1.00	1.00	
DDT 50293 7P	Y	Y		1.10	0.001	0.13	0.001	
DDT METABOLITE (DDE) 72559 8P	Y	Y		1.10	0.001	0.13	0.001	
DDT METABOLITE (DDD) 72548 9P	Y	Y		1.10	0.001	0.13	0.001	
DEMETON	Y	N			0.10		0.10	
DIBENZO(a,h)ANTHRACENE 53703 19B	Y	Y		940	3	2944	3.40	
DIBUTYLPHTHALATE 84742	Y	N		1120	763	1970		
1,2 DICHLOOROBENZENE 95501 20B	Y	N		1120	763	1970		
1,3 DICHLOOROBENZENE 541731 21B	Y	N		1120	763	1970		
1,4 DICHLOOROBENZENE 106467 22B	Y	N		1120	763	1970		
3,3 DICHLOOROBENZIDINE 91941 23B	Y	Y						
DICHLOROBROMOMETHANE 75274 12V	Y	Y						
1,2 DICHLOOROETHANE 107062 15V	Y	Y		118000	20000	113000		
1,1 DICHLOOROETHYLENE 75354 16V	Y	Y		116000		224000		
2,3 DICHLOOROPHENOL	N	N		2020	365			
2,4 DICHLOOROPHENOL 1208312 2A								
2,5 DICHLOOROPHENOL								
2,6 DICHLOOROPHENOL								
1,2 DICHLOOROPROPANE 78875	Y	N		23000	5700	10300	3040	
1,3 DICHLOOROPROPENE 542756	Y	N		6060	244	790		
1,3 -DICHLOOROPROPYLENE 542756 18V	Y	N						
DIELDRIN 60571 10P	Y	Y		2.50	0.0019	0.71	0.0019	
DIETHYLPHTHALATE 84662 24B	Y	N		940	3	2944	3.40	
2,4 DIMETHYLPHENOL 105679	Y	N		2120				
DIMETHYLPHTHALATE 131113 25B	Y	N		940	3	2944	3.40	
DI-n-BUTYL PHTHALATE 84742 26B	Y	N						
2-METHYL-4,6 -DINITROPHENOL 534521 4A	Y	N						
2,4-DINITROPHENOL 51285 5A	Y	N						

Pollutant, CAS No. & Application Ref. No.	PRIOR CITY	CAR	Water Quality Criteria			
			Fresh	Marine	acute	chronic
DINITROTOLUENE 2,4 121142 27B	Y	Y	330	230	590	370
DINITROTOLUENE 2,6 606202 28B	Y	N	330	230	590	370
DINITRO-O-CRESOL 2,4	Y	N	0.01	0.00001		
DIOXIN (2,3,7,8-TCDD) 1746016	Y	Y	270			
1,2-DIPHENYLHYDRAZINE 122667 30B	Y	Y	940	3	2944	3.40
DI-2-ETHYLHEXYLPHTHALATE 117817	Y	N	0.22	0.056	0.034	0.0087
ENDOSULFAN a 959988 11P, b 33213659 12P	Y	N				
ENDOSULFAN SULFATE 1031078 13P	Y	N	0.18	0.0023	0.037	0.0023
ENDRIN 72208 14P	Y	N				
ENDRIN ALDEHYDE 7421934 15P	Y	N				
ETHYLBENZENE 100414 19V	Y	N	32000		430	
FLUORANTHENE 206440 31B	Y	N	3980		40	16
FLUORENE 86737 32B	Y	N				
GASES, TOTAL DISSOLVED	N	N				
GUTHION 86500	N	N		0.01		0.01
HALOETHERS	Y	N	380	122		
HALOMETHANES	Y	Y	11000		12000	6400
HEPTACHLOR 76448 16P	Y	Y	0.52	0.0038	0.0530	0.0036
HEPTACHLOR EPOXIDE 1024573 17P	Y	Y	0.52	0.0038	0.0530	0.0036
HEXACHLOROBENZENE 118741 33B	Y	Y				
HEXACHLOROBUTADIENE 87683 34B	Y	Y	90	9.30	32	
HEXACHLOROCYCLOHEXANE-ALPHA 319846 2P	Y	Y				
HEXACHLOROCYCLOHEXANE-BETA 319857 3P	Y	Y				
HEXACHLOROCYCLOHEXANE-GAMMA (lindane) 58899 4P	Y	Y	2	0.08	0.16	
HEXACHLOROCYCLOHEXANE-DELTA 319868 5P	Y	Y				
HEXACHLOROCYCLOPENTADIENE 77474 35B	Y	Y	7	5.20	7.0	
HEXACHLOROETHANE 67721 36B	N	Y	980	540	940	
INDENO(1,2,3-cd)PYRENE 193395 37B	Y	Y		1000		
IRON 7439896	N	N	117000		12900	
ISOPHORONE 78591	Y	Y	30.14	1.17	210.00	8.10
LEAD - 7439921 7M Dependent on hardness	Y	N				
Based on hardness in next column <sup>c</sup>	###					

see WAC 173-201A and the Gold Book

AR 033799



Seatac

Pollutant, CAS No. & Application Ref. No.	PRIOR CITY	CAR CEN	PLTNT'GEN?	Water Quality Criteria					
				Fresh acute	chronic	Marine acute			
PHOSPHORUS-ELEMENTAL 7723140	N	N							
Polychlorinated Biphenyls (PCB's) 53469219, 11097691, 1104282, 11	Y	Y		2	0.014	10	0.10		
POLYNUCLEAR AROMATIC HYDROCARBONS	Y	Y				300	0.03		
PYRENE 129000 45B	Y	N							
SELENIUM 7782492 10M	Y	N		20	5	290	71		
SILVER - 7740224 11M dependent on hardness.	Y	N		1.05	NA	1.90	NA		
Based on hardness in next column	####								
SOLIDS, DISSOLVED AND SALINITY	N	N			See Gold Book				
SOLIDS, SUSPENDED AND TURBIDITY	N	N			See EPA 440/9-76-023 and WAC 173-201A				
SULFIDE, HYDROGEN SULFIDE 7783064	N	N			2.0		2.0		
TETRACHLORINATED ETHANES	Y	N		9320					
TETRACHLOROBENZENE 1,2,4,5 95943	Y	N			See Gold Book				
TETRACHLOROETHANE 1,1,2,2 79345 23V	Y	Y			2400	9020			
TETRACHLOROETHANE	Y	N		9320	840	10200	450		
TETRACHLOROETHYLENE 127184 24V	Y	Y		5280					
TETRACHLOROPHENOL 2,3,4,6 95954	Y	N				440			
TETRACHLOROPHENOL 2,3,5,6	Y	N		1400	40	2130			
THALLIUM 7440280 12M	Y	N		17500		6300			
TOLUENE 108883 25V	Y	N		0.73	0.0002	0.21	5000		
TOXAPHENE 8001352 25P	Y	Y					0.0002		
1,2-TRANS-DICHLOROETHYLENE 156605				0.460	0.063	0.37	0.01		
TRIBUTYL TIN (TBT)									
TRICHLOROBENZENE 1,2,4 120821	Y	Y		18000					
TRICHLORINATED ETHANES	Y	N							
TRICHLOROETHANE 1,1,1 71556 27V	Y	Y							
TRICHLOROETHANE 1,1,2 79005 28V	Y	Y							
TRICHLOROETHYLENE 79016 29V	Y	Y		45000	9400	31200			
TRICHLOROPHENOL 2,4,5 95954	N	N			21900	2000			
TRICHLOROPHENOL 2,4,6 88062 11A	Y	Y			See Gold Book				
VINYL CHLORIDE 75014 31V	Y	Y			970				
ZINC- 7440666 13M hardness dependent	Y	N		63.61	58.09	90.00	81.00		
Based on hardness in next column	####								

AR 033801

Seatac

Pollutant, CAS No. & Application Ref. No.	PRIOR CAR ITY PLTNT GEN?	Water Quality Criteria			
		Fresh acute	chronic	Marine acute	chronic
* = INSUFFICIENT DATA TO DEVELOP CRITERIA VALUE PRESENTED IS THE L.O.E.L- LOWEST OBSERVED  <sup>a</sup> CADMIUM ACUTE CONVERSION FACTOR <sup>b</sup> CADMIUM CHRONIC CONVERSION FACTOR <sup>c</sup> LEAD CONVERSION FACTOR					
			0.97		
			0.94		
		0.89			

# AMMONIA WATER QUALITY CRITERIA CALCULATION

Calculation Of Ammonia Concentration and Criteria for fresh water. Based on EPA Quality Criteria for Water (EPA 400/5-86-001) and WAC 173-201A. Revised 1-5-94 (corrected total ammonia criterion). Revised 3/10/95 to calculate chronic criteria in accordance with EPA Memorandum from Heber to WQ Stds Coordinators dated July 30, 1992.

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## INPUT

1. Ambient Temperature (deg C; 0<T<30)	27.0
2. Ambient pH (6.5<pH<9.0)	7.25
3. Acute TCAP (Salmonids present- 20; absent- 25)	20
4. Chronic TCAP (Salmonids present- 15; absent- 20)	15

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## OUTPUT

1. Intermediate Calculations:	
Acute FT	1.00
Chronic FT	1.41
FPH	1.93
RATIO	24
pKa	9.18
Fraction Of Total Ammonia Present As Un-ionized	1.1511%
2. Un-ionized Ammonia Criteria	
Acute (1-hour) Un-ionized Ammonia Criterion (ug NH3/L)	134.7
Chronic (4-day) Un-ionized Ammonia Criterion (ug NH3/L)	12.4
3. Total Ammonia Criteria:	
Acute Total Ammonia Criterion (mg NH3+ NH4/L)	11.7
Chronic Total Ammonia Criterion (mg NH3+ NH4/L)	1.1
4. Total Ammonia Criteria expressed as Nitrogen:	
Acute Ammonia Criterion as mg N	9.6
Chronic Ammonia Criterion as N	0.89







PERFORMLIM

<b>PERFORMANCE-BASED EFFLUENT LIMITS</b>	
USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE	
LOGNORMAL TRANSFORMED MEAN =	2.5456
LOGNORMAL TRANSFORMED VARIANCE =	0.1238
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =	4
AUTOCORRELATION FACTOR( $\rho$ )(USE 0 IF UNKNOWN) =	0
E(X) =	13.5652
V(X) =	24.248
VARn	0.0324
MEANn=	2.5913
VAR(Xn)=	6.062
MAXIMUM DAILY EFFLUENT LIMIT =	28.904
AVERAGE MONTHLY EFFLUENT LIMIT =	17.948