



Final Technical Report

2008

Water Quality in the Colorado River Basin Region

Assessing surface water data collected from 2002 to 2005
through the Surface Water Ambient Monitoring Program
(SWAMP)

Appendix C

June 2008



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Appendix C

Water Quality Objectives for Region 7

This appendix has two tables. Table C.1. was adapted from the beneficial use descriptions in the Basin Plan. Each category of objective, such as aesthetic qualities, is addressed however the only criteria that are provided are ones that can be validated with the SWAMP data. For example, pathogens have a requirement based on five samples within a 30 day period or a requirement for a single sample. Since the SWAMP data is only available on a biannual basis, the single requirement is provided. Table C.2. is a compilation of the water quality criteria that are used to assess analyte results.

Table C.1. Summary of the general and site-specific water quality objectives from the Basin Plan.

General Surface Water Objectives	Criteria or Comment				
A. Aesthetic Qualities	not applicable, this type of information was not collected				
B. Tainting Substances	not applicable, this type of information was not collected				
C. Toxicity	No specific criteria: discharges cannot adversely effect beneficial uses				
D. Temperature					
E. pH	Regional waters are alkaline from 6.0 - 9.0. Discharges cannot effect beneficial uses.				
F. Dissolved Oxygen (mg/l)	Cannot go below: WARM 5.0, COLD 8.0 & WARM and COLD 5.0				
G. Suspended Solids and Setteable Solids	No specific criteria: discharges cannot adversely effect beneficial uses				
H. Total Dissolved Solids (mg/l)	Alamo River	Coachella Valley	Colorado River	New River	Salton Sea
Annual AVG	4,000	2,000	2,000	4,000	4,000a
Maximum	4,500	2,500	2,500	4,500	4,500a
I. Bacteria Maximum REC I	MPN/100 ml				
E. coli	400	400	235	400	400
enterococci	100	100	61	100	100
fecal coliformb	100	400	400	400	400
Bacteria Maximum REC II	MPN/100 ml				
E. coli	2000	2000	1175	2000	2000
enterococci	500	500	305	500	500
J. Biostimulatory substances	not applicable, this type of information was not collected				

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K. Sediment	not applicable, this type of information was not collected				
L. Turbidity	No specific criteria: discharges cannot adversely effect beneficial uses				
M. Radioactivity	not applicable, this type of information was not collected				
N. Chemical Constituents	See specific criteria below and generally discharges cannot adversely effect beneficial uses				
Inorganic Constituents (mg/L) for waters with MUN desination	Alamo River	Coachella Valley	Colorado River	New River	Salton Sea
Arsenic			0.05		
Barium			1		
Cadium			0.01		
Chromium			0.05		
Floride	not applicable, this type of information was not collected				
Lead			0.05		
Mercury			0.002		
Nitrate (as N)			10		
Selenium			0.01		
Silver			0.05		

Organic Constituents (mg/L)

Chlorinated Hydrocarbons

Endrin	0.002				
Lindane	0.004				
Methoxychlor	0.1				
Toxaphene	0.005				
Chlorophenoxys					
2,4-D	0.1				
2,4,5-TP Silvex	0.01				
O. Pesticide wates	No specific criteria: discharges cannot adversely effect beneficial uses				

III. Specific Surface Water Objectives

Colorado River: flow weighted salinity requires hydrology, insufficient information					
New River: Mexican-American Water Treaty: requires monthly sampling, not available					
Salton Sea: 35,000 mg/L TDS in the Sea - beyond RB responsibility Selenium in tributaries at .02 mg/L one hour average					
Irrigation supply canals: No specific criteria: discharges cannot adversely effect beneficial uses					

a Basin Plan is for Imperial Valley Drains

b no more than 10% of total samples during any 30 day period exceed 400 MPN/100ml

Table C.2. Water quality criteria for assessing analyte result for meeting various beneficial uses. This table supports Table 4 in the main body of the report.

Criteria ID	1	2	3	4	5	6	7	8	9	10	11
Constituent	USEPA Drinking Water Criterion	CTR, freshwater acute (CMC)	CTR, freshwater chronic (CCC)	CTR, Human Health-FW (water and organisms)	CTR, Human Health-SW (organisms only)	Drinking Water (MUNI), MCLs Title 22 Table 64431A Primary (inorganics) 64444A (organics)	Drinking Water (MUNI), SMCLs Title 22 Table 64449-A (limits) and 64449-B (ranges) Secondary	Aquatic Life, CDFG Hazardous Assessment Criteria (water)	Aquatic Life, USFWS Biol. Effects	Freshwater Sediment (Policy)	Bacterial Criteria, USEPA Criteria (freshwater), Single-sample
	ppb	ppb	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppb	MPN/100 ml
Acenaphthene				1200	2700						
Acenaphthylene											
Acolein				320	780						
Alachlor						0.002					
Acrylonitrile				0.059	0.66						

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Aldrin		3		0.00013	0.00014						
HCH, alpha				0.0039	0.013						
Endosulfan I		0.22	0.056	110	240						
Aluminum						1	0.2				
Ammonia (as Nitrogen)											
Anthracene				9600	110000						
Anthrazene										845	
Antimony				14	4300	0.006					
Arsenic		340	150			0.05		0.25		33000	
Asbestos				7000000		7 MFL					
Atrazine						0.001					

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Barium						1					
Benz(a)anthracene										1050	
Bentazon						0.018					
Benzene				1.2	71	0.001					
Benzidine				0.00012	0.00054						
Benzo[a]Anthracene				0.0044	0.049						
Benzo(a)pyrene				0.0044	0.049	0.0002				1450	
Benzo(ghi)Perylene											
Benzo[b]Fluorathene				0.0044	0.049						
Benzo(k)fluoranthene				0.0044	0.049						
Beryllium						0.004					
beta-BHC				0.014	0.046						
beta-Endosulfan		0.22	0.056	110	240						
Bis(2-Chloroethoxy)Methane											
Bis(2-Chloroethy)Ether				0.031	1.4						
Bis(2-Chloroisopropyl)Ether				1400	170000						
Bis(2-Ethylhexyl)Phthalate				1.8	5.9						
Bromoform				4.3	360						
4-Bromophenyl Phenyl Ether											
Butylbenzyl Phthalate				3000	5200						
Cadmium		32.18200799	9.14			0.005				4980	
Carbofuran						0.018					
Carbon Tetrachloride				0.25	4.4	0.0005					
Chlorbenseide											
Chlordane		2.4	0.0043	0.00057	0.00059	0.0001				17600	
Chlordane (total)											
Chloride							250				

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Chlorine Total Residual										
Chlorobenzene				680	21000					
Bromochloromethane				0.401	34					
Chloroethane										
Chloroform										
2-Chloroethylvinyl Ether										
2-Chloronaphthalene				1700	4300					
2-Chlorophenol				120	400					
4-Chlorophenyl Phenyl Ether										
Chlorpyrifos (4-day average)								0.014		
Chlorpyrifos								0.02		
Chromium (total)		1724	565			0.05				111000
Chromium III		2380.515458	772.21							
Chromium (6+)		16	11							
Chrysene				0.0044	0.049					1290
coliform (fecal)										
coliform (total)										
coliform (total)										
Color							15			
Copper		72.70172607	41.40	1300			1	15		149000
Corrosivity										
Cyanide		22	5.2	700	220000	0.15				
2,4-D						0.07				
Dalapon						0.2				
DDD(p,p)				0.00083	0.00084					
DDD (sum)										28
DDE(p,p)				0.00059	0.00059					

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DDE (sum)										31.3	
DDT(p,p)		1.1	0.001	0.00059	0.00059						
DDT (sum)										62.9	
DDT(o,p)		1.1	0.001	0.0059	0.0059					572	
delta-BHC											
Diazinon									0.1		
Diazinon (1-hour average)									0.16		
Dibenz[a,h]-anthrazene											
Dibenz(a,h)anthracene				0.0044	0.049						
Dibromochloropropane						0.0002					
Bromodichloromethane				0.56	46						
Dichlorobenzenes											
1,2-Dichlorobenzene				2700	17000	0.6					
1,3-Dichlorobenzene				400	2600						
1,4-Dichlorobenzene				400	2600	0.005					
3,3'-Dichlorobenzidene				0.04	0.077						
1,1-Dichloroethane						0.005					
1,2-Dichloroethane				0.38	99	0.0005					
Dichloroethylene, 1,1-				0.057	3.2	0.006					
cis-1,2-Dichloroethylene						0.006					
trans-1,2-Dichloroethylene						0.01					
Dichloromethane						0.005					
2,4-Dichlorophenol				93	790						
1,2-Dichloropropane				0.52	39	0.005					
1,3-Dichloropropylene				10	1700	0.0005					
1,3-Dichloropropene											
Dieldrin		0.24	0.056	0.00014	0.00014					61800	
Diethyl Phthalate				23000	120000						
Di(2-ethylhexyl)adipate						0.4					

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Di(2-ethylhexyl)phthalate					0.004				
Dimethyl Phthalate			313000	2900000					
2,4-Dimethylphenol			540	2300					
Di-n-Butyl-Phthalate			2700	12000					
4,6-dinitro-2-methylphenol									
2,4-Dinitrophenol			70	14000					
2,4-Dinitrotoluene			0.11	9.1					
2,6-Dinitrotoluene									
Dinoseb					0.007				
Di-n-Octyl Phthalate									
Dioxin			0.000000013	0.000000014					
1,2-Diphenylhydrazine			0.04	0.54					
Diquat					0.02				
Disulfoton									
Endosulfan Sulfate			110	240					
Endosulfan (total)									
Endothall					0.1				
Endrin	0.086	0.036	0.76	0.81	0.002			207	
Endrin Aldehyde			0.76	0.81					
Enterococcus									61
E. coli									235
Ethion									
Ethylbenzene			3100	29000	0.3				
Ethylene Dibromide					0.00005				
Fluoranthene			300	370				2230	
Fluorene			1300	14000				536	
Flouride					2				
gamma-BHC	0.95		0.019	0.063					
Glyphosate					0.7				

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halomethanes										
Heptachlor		0.52	0.0038	0.00021	0.00021	0.00001				
Heptachlor epoxide		0.52	0.0038	0.0001	0.00011	0.00001				
Hexachlorobenzene				0.00075	0.00077	0.001				
Hexachlorobutadiene				0.44	50					
hexachloro-cyclohexane (total) HCH										
hexachlorocyclopentadiene				240	17000	0.05				
Hexachloroethane				1.9	8.9					
Indeno(1,2,3-cd) Pyrene				0.0044	0.049					
Iron							0.3			
Isophorone				8.4	600					
Lead		631.9650803	24.63						128000	
Lindane (gamma hexachloro-cyclohexane)						0.0002			4.99	
Manganese							0.05			
MBAS (foaming agent)							0.5			
Mercury		1.4	0.77	0.05	0.051	0.002			1060	
Methoxychlor	40					0.03				
Methyl Bromide				48	4000					
2-Methyl-4,6-Dinitrophenol				13.4	765					
Methylene Chloride				4.7	1600					
2-methyl-naphthalene										
MTBE						0.013	0.005			
Mirex										
Molinate						0.02				
Monochlorobenzene						0.07				
Naphthalene									561	

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Nickel		2131.967381	236.80	610	4600	0.1				48600	
Nitrate (NO3)						45					
Nitrate + Nitrite						10					
Nitrite						1					
Nitrobenzene				17	1900						
2-Nitrophenol											
4-Nitrophenol											
N-Nitrosodimethylamine				0.00069	8.1						
N-Nitrosodi-n-Propylamine				0.005	1.4						
N-Nitrosodiphenylamine				5	16						
Odor--Threshold							3				
Oxamyl						0.05					
Oxyfluorfen											
PAHs (high molecular weight)											
PAHs (low molecular weight)											
PAHs											
PAHs (total)										22800	
PCBs											
PCBs (total)			0.014	0.00017	0.00017	0.0005				676	
Pentachlorophenol		19	15	0.28	8.2	0.001					
Phenanthrene										1170	
Phenol				21000	4600000						
Phenolic Compounds (non-chlorinated)											
Phenolic Compounds (chlorinated)											
Picloram						0.5					
Pyrene				960	11000					1520	

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Radioactivity										
Selenium			5			0.05				
Silver		75.20367335	0.85				0.1			
Simazine						0.004				
Specific Conductance (umhos)							900			
Styrene						0.1				
Sulfate							250			
TDS (Total Dissolved Solids)							500			
Terbufos										
1,1,2,2-Tetrachloroethane				0.17	11	0.001				
2,3,7,8,-TCDD (Dioxin)				0.115300087	0.000000014	0.00000003				
Tetrachloroethylene				0.8	8.85	0.005				
Thallium				1.7	6.3	0.002				
Thiobencarb						0.07	0.001			
2,4,5-TP (Silex)						0.05				
Toluene				6800	200000	0.15				
Toxaphene		0.73	0.0002	0.00073	0.00075	0.003				
Toxicity Acute										
Toxicity Chronic										
1,2-Trans-Dichloroethylene				700	140000					
1,2,4-Trichlorobenzene						0.005				
1,1,1-Trichloroethane						0.2				
1,1,2-Trichloroethane				0.6	42	0.005				
Trichloroethylene				2.7	81	0.005				
Trichlorofluoromethane						0.15				
1,1,2-Trichloro-1,2,2-Trifluoroethane						1.2				
2,4,6-Trichlorophenol				2.1	6.5					

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Tributyltin											
Turbidity							5				
Vinyl Chloride				2	525	0.0005					
Xylene, m/p-						1.75					
Xylene, o-						1.75					
Zinc		534.7893269	539.16				5			459000	