



US Army Corps
of Engineers
Baltimore District



Washington Aqueduct

U.S. ARMY Corps of Engineers

Annual Report of Water Analysis 2001

Prepared by:

Water Quality Laboratory
Plant Operations Branch
Washington Aqueduct
5900 MacArthur Boulevard, NW
Washington, D.C. 20016-2514

Approved by the Chief, Washington Aqueduct

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**WASHINGTON AQUEDUCT, US ARMY CORPS OF ENGINEERS
ANNUAL REPORT OF WATER ANALYSIS (2001)**

Potomac River Raw Water Supply

	Miscellaneous Physical Parameters									Inorganic Ions									Microorganisms				Metals		
	pH	ALKALINITY	ANIONIC SURFACTANTS	CONDUCTIVITY	DISSOLVED SOLIDS	SUSPENDED SOLIDS	TEMPERATURE	TOTAL HARDNESS	TOTAL ORG. CARBON	TURBIDITY	TOTAL AMMONIA	BROMIDE	CHLORIDE	FLUORIDE	NITRATE	NITRITE	PHOSPHATE	SILICATE	SULFATE	TOTAL COLIFORM	E. COLI	ALGAE COUNT	CRYPTOSPORIDIUM	ALUMINIUM	ANTIMONY
	ppm	ppm	uS/cm	ppm	ppm	F	ppm	ppm	NTU	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	MPN/100ml	MPN/100ml	Org/ml	oocysts/10L	ppb	ppb
Jan	7.7	92	ND	350	206	2	40	126	3.5	9.0	ND	ND	-	0.2	2.0	ND	ND	4.2	-	1869	323	277	ND	405.0	ND
Feb	8.0	69	ND	292	145	2	45	78	2.7	12.0	ND	ND	24.8	0.1	1.7	ND	ND	6.1	34.5	3473	111	453	ND	722.0	ND
Mar	8.2	67	ND	280	115	4	48	92	2.8	13.0	ND	ND	25.9	0.1	1.5	ND	ND	8.4	27.7	831	52	644	ND	350.0	ND
Apr	7.8	66	ND	231	134	11	58	83	2.7	13.0	ND	ND	15.8	0.1	1.6	ND	ND	5.7	23.0	2245	182	453	ND	226.0	ND
May	8.2	94	ND	291	184	9	73	101	2.7	10.0	ND	ND	18.0	0.1	1.3	ND	ND	2.3	25.3	3981	241	565	ND	245.4	0.5
Jun	7.9	79	ND	250	172	22	79	93	3.6	40.0	ND	ND	16.2	0.1	1.4	ND	ND	8.6	30.1	6783	439	386	ND	459.0	ND
Jul	8.0	84	ND	292	148	3	82	100	3.2	9.0	ND	ND	17.3	ND	0.7	ND	ND	6.2	26.0	5609	29	606	ND	457.0	ND
Aug	7.8	60	-	277	177	4	82	104	3.8	10.0	ND	ND	10.9	0.1	0.7	ND	ND	6.2	39.3	8210	78	400	ND	431.0	ND
Sep	7.9	95	ND	365	197	2	76	133	3.2	9.0	ND	ND	24.4	0.2	0.5	ND	ND	4.2	44.3	6435	1306	120	ND	362.0	ND
Oct	8.2	112	ND	384	260	2	63	143	3.4	4.0	ND	ND	24.7	0.2	0.9	ND	ND	1.3	38.4	1209	75	140	ND	409.3	ND
Nov	8.2	127	ND	433	221	6	55	169	3.5	3.0	ND	ND	28.7	0.2	0.4	ND	ND	1.0	59.0	520	309	48	ND	292.0	ND
Dec	8.2	125	ND	447	288	1	51	183	3.1	3.0	ND	ND	31.5	0.2	1.2	ND	ND	1.8	55.7	267	42	136	ND	299.0	ND
Avg	8.0	89	ND	324	187	6	63	117	3.2	11.3	ND	ND	21.7	0.1	1.2	ND	ND	4.7	36.7	3453	266	352	ND	388.1	ND
Max	8.2	127	ND	447	288	22	82	183	3.8	40.0	ND	ND	31.5	0.2	2.0	ND	ND	8.6	59.0	8210	1306	644	ND	722.0	0.5
Min	7.7	60	ND	231	115	1	40	78	2.7	3.0	ND	ND	10.9	ND	0.4	ND	ND	1.0	23.0	267	29	48	ND	226.0	ND

	Metals																									
	ARSENIC	BARIIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD	LITHIUM	MAGNESIUM	MANGANESE	MERCURY	MOLYBDENUM	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	STRONTIUM	THALLIUM	THORIUM	URANIUM	VANADIUM	ZINC
	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb	ppb
Jan	ND	38.0	ND	ND	36.0	ND	ND	3.0	131.0	ND	3.0	9.0	31.0	ND	ND	1.0	-	ND	ND	-	189.0	ND	ND	ND	0.6	1.0
Feb	ND	35.0	ND	ND	21.0	1.0	ND	5.0	397.0	ND	2.0	6.0	77.0	ND	ND	2.0	-	ND	ND	-	113.0	ND	ND	ND	0.7	6.0
Mar	ND	31.0	ND	ND	26.0	ND	ND	3.0	134.0	ND	3.0	6.0	59.0	ND	ND	1.0	1.8	0.7	ND	14.0	152.0	ND	ND	ND	0.6	ND
Apr	0.6	36.0	ND	ND	25.0	ND	ND	2.0	247.0	ND	1.5	5.0	58.0	ND	ND	1.1	-	0.8	ND	-	110.5	ND	ND	ND	0.8	1.9
May	0.6	31.0	ND	ND	32.0	ND	ND	3.2	144.7	0.5	2.6	7.0	169.9	ND	0.7	1.1	-	0.8	ND	-	159.9	ND	ND	ND	1.0	1.8
Jun	1.0	45.9	ND	ND	27.1	ND	0.5	3.7	381.0	0.7	2.7	6.0	80.9	ND	ND	1.7	1.9	0.7	ND	8.2	141.0	ND	ND	ND	1.7	2.4
Jul	1.3	34.8	ND	ND	28.0	1.3	0.5	7.0	135.0	0.7	1.6	8.0	189.0	ND	1.2	6.4	-	ND	ND	-	142.0	ND	ND	ND	1.6	5.5
Aug	1.1	59.5	ND	ND	30.0	ND	ND	4.2	117.5	ND	-	8.0	211.0	ND	2.0	1.6	-	0.8	ND	-	239.0	ND	ND	ND	1.4	2.3
Sep	1.1	44.7	ND	ND	32.0	ND	ND	3.6	110.5	ND	3.6	13.0	63.0	ND	1.9	1.2	-	0.8	ND	-	210.0	ND	ND	ND	1.7	1.6
Oct	1.0	47.4	ND	ND	40.0	ND	ND	4.3	104.1	ND	4.1	12.0	39.4	ND	2.6	1.1	-	1.7	ND	-	250.3	ND	ND	ND	1.1	2.0
Nov	0.8	46.5	ND	ND	48.0	0.5	ND	6.0	143.0	ND	2.9	13.0	33.6	-	2.1	1.7	-	1.8	ND	-	227.0	ND	ND	ND	1.2	4.4
Dec	1.2	39.9	ND	ND	51.0	ND	ND	4.7	90.2	ND	4.0	13.0	17.1	ND	2.7	1.2	-	1.6	ND	-	298.0	ND	ND	ND	1.9	1.4
Avg	0.7	40.8	ND	ND	33.0	ND	ND	4.1	177.9	ND	2.8	8.8	85.7	ND	1.1	1.8	1.9	0.8	ND	11.1	186.0	ND	ND	ND	1.2	2.8
Max	1.3	59.5	ND	ND	51.0	1.3	0.5	7.0	397.0	0.7	4.1	13.0	211.0	ND	2.7	6.4	1.9	1.8	ND	14.0	298.0	ND	ND	ND	1.9	6.0
Min	ND	31.0	ND	ND	21.0	ND	ND	2.0	90.2	ND	1.5	5.0	17.1	ND	ND	1.0	1.8	0.7	ND	8.2	110.5	ND	ND	ND	0.6	ND

"-" = No Analysis required

ND = Not Detected

**WASHINGTON AQUEDUCT, US ARMY CORPS OF ENGINEERS
ANNUAL REPORT OF WATER ANALYSIS (2001)**



Inorganic Ions										Inorganics (Metals)																										
TOTAL AMMONIA	BROMIDE	CHLORIDE	FLUORIDE	NITRATE	NITRITE	PHOSPHATE	SILICATE	SULFATE	ALUMINUM	ANTIMONY	ARSENIC	BARIUM	BERYLLIUM	CADMIUM	CALCIUM	CHROMIUM	COBALT	COPPER	IRON	LEAD	LITHIUM	MAGNESIUM	MANGANESE	MERCURY	MOLYBDENUM	NICKEL	POTASSIUM	SELENIUM	SILVER	SODIUM	STRONTIUM	THALLIUM	THORIUM	URANIUM	VANADIUM	ZINC

EPA MCL* 4 10 1 6 50 2000 4 5 100 2 100 50 2

Dalecarlia Water Treatment Plant Finished Water

	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Jan	0.9	ND	--	0.9	1.9	ND	ND	4.0	--	49.0	ND	ND	34.0	ND	ND	40.0	1.0	ND	2.0	18.0	ND	3.0	10.0	2.0	ND	ND	1.0	--	ND	ND	--	185.0	ND	ND	ND	ND	ND	
Feb	0.8	ND	30.2	0.8	1.7	ND	ND	6.2	41.3	36.0	ND	ND	32.0	ND	ND	26.0	ND	ND	3.0	ND	ND	2.0	6.0	2.0	ND	ND	1.0	--	ND	ND	--	129.0	ND	ND	ND	ND	ND	
Mar	0.9	ND	29.5	0.8	1.3	ND	ND	7.5	39.8	24.0	ND	ND	30.0	ND	ND	31.0	0.7	ND	3.0	ND	ND	2.0	7.0	1.0	ND	ND	0.8	1.7	0.8	ND	14.0	144.0	ND	ND	ND	ND	ND	
Apr	0.9	ND	19.4	0.8	1.6	ND	ND	5.4	35.2	30.0	ND	ND	31.0	ND	ND	31.0	ND	ND	1.3	ND	ND	1.3	5.0	1.2	ND	ND	0.8	--	0.8	ND	--	111.2	ND	ND	ND	ND	ND	
May	0.8	ND	21.4	0.8	1.4	ND	ND	1.7	38.3	51.1	ND	ND	31.0	ND	ND	37.0	1.4	ND	2.0	ND	ND	2.3	7.0	1.4	ND	0.7	0.7	--	0.9	ND	--	159.1	ND	ND	ND	0.8	0.6	
Jun	0.8	ND	19.7	0.9	1.4	ND	ND	5.8	46.7	34.3	ND	ND	39.8	ND	ND	35.0	2.7	ND	1.9	ND	ND	2.5	6.0	1.9	ND	ND	1.0	1.5	0.6	ND	7.4	156.0	ND	ND	ND	1.5	0.8	
Jul	0.9	ND	22.2	0.9	0.7	ND	ND	5.4	44.7	23.7	ND	0.8	33.0	ND	ND	35.0	1.3	ND	2.1	ND	ND	1.6	7.0	2.6	ND	0.9	6.4	--	ND	ND	--	138.0	ND	ND	ND	0.6	0.6	
Aug	0.8	ND	15.9	0.8	0.7	ND	ND	5.4	61.8	38.4	ND	0.6	53.5	ND	ND	36.0	1.2	ND	3.1	ND	ND	--	5.0	2.1	ND	2.0	1.1	--	0.8	ND	--	250.0	ND	ND	ND	1.0	0.8	
Sep	0.8	ND	28.5	0.6	0.5	ND	ND	3.8	56.9	50.7	ND	0.5	42.9	ND	ND	37.0	2.0	ND	2.5	ND	ND	3.2	12.0	1.9	ND	1.9	1.1	--	ND	ND	--	214.0	ND	ND	ND	1.7	ND	
Oct	0.8	ND	28.5	0.9	0.9	ND	ND	1.4	50.6	52.1	ND	0.6	43.0	ND	ND	43.0	1.3	ND	3.7	ND	ND	3.2	11.0	1.5	ND	2.5	1.0	--	2.1	ND	--	252.0	ND	ND	ND	1.1	1.0	
Nov	0.8	ND	33.3	0.9	0.5	ND	ND	1.3	72.7	36.2	ND	0.5	41.6	ND	ND	54.0	0.8	ND	3.8	ND	ND	0.8	14.0	1.1	--	2.3	1.2	--	2.3	ND	--	228.0	ND	ND	ND	0.7	1.7	
Dec	0.9	ND	35.6	0.9	1.2	ND	ND	1.8	68.6	36.4	ND	0.6	35.4	ND	ND	56.0	1.6	ND	5.3	ND	ND	2.4	13.0	0.7	ND	2.7	1.1	--	2.2	ND	--	296.0	ND	ND	ND	1.3	1.7	
Avg	0.8	ND	25.8	0.8	1.1	ND	ND	4.1	50.6	38.5	ND	ND	37.3	ND	ND	38.4	1.2	ND	2.8	ND	ND	2.2	8.6	1.6	ND	1.1	1.4	1.6	0.9	ND	10.7	188.5	ND	ND	ND	0.7	0.6	
Max	0.9	ND	35.6	0.9	1.9	ND	ND	7.5	72.7	52.1	ND	0.8	53.5	ND	ND	56.0	2.7	ND	5.3	18.0	ND	3.2	14.0	2.6	ND	2.7	6.4	1.7	2.3	ND	14.0	296.0	ND	ND	ND	1.7	1.7	
Min	0.8	ND	15.9	0.6	0.5	ND	ND	1.3	35.2	23.7	ND	0.5	30.0	ND	ND	26.0	0.7	ND	1.3	ND	ND	0.8	5.0	0.7	ND	ND	0.7	1.5	ND	ND	7.4	111.2	ND	ND	ND	ND	ND	

McMillan Water Treatment Plant Finished Water

	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Jan	0.8	ND	--	0.8	2.0	ND	ND	5.6	--	78.0	ND	ND	35.0	ND	ND	43.0	2.6	ND	5.0	54.0	ND	3.0	10.0	2.0	ND	ND	2.0	--	ND	ND	--	188.0	ND	ND	ND	ND	4.0	
Feb	0.6	ND	29.9	0.8	1.9	ND	ND	6.4	38.4	53.0	ND	ND	33.0	ND	ND	26.0	1.0	ND	6.0	12.0	ND	3.0	6.0	ND	ND	ND	1.0	--	ND	ND	--	155.0	ND	ND	ND	ND	1.0	
Mar	1.2	ND	35.7	0.8	1.3	ND	ND	4.6	40.2	26.0	ND	ND	30.0	ND	ND	32.0	0.6	ND	4.0	ND	ND	3.0	8.0	0.6	ND	ND	0.8	1.8	0.7	ND	19.0	149.0	ND	ND	ND	ND	ND	
Apr	0.9	ND	18.9	0.7	1.4	ND	ND	6.4	37.5	48.0	ND	ND	30.0	ND	ND	29.0	0.6	ND	3.5	12.9	ND	1.6	5.0	0.8	ND	ND	1.3	--	1.0	ND	--	102.5	ND	ND	ND	ND	2.6	
May	1.1	ND	20.5	0.8	1.4	ND	ND	1.8	37.2	46.7	ND	ND	35.0	ND	ND	36.0	1.5	ND	7.8	ND	ND	2.2	7.0	ND	ND	0.6	0.9	--	0.8	ND	--	153.7	ND	ND	ND	0.8	1.6	
Jun	0.8	ND	19.5	0.8	1.2	ND	ND	5.5	48.9	48.0	ND	ND	37.3	ND	ND	33.0	0.9	ND	10.0	ND	ND	2.8	6.0	4.0	ND	ND	1.7	3.4	0.5	ND	9.5	163.0	ND	ND	ND	0.6	1.1	
Jul	0.9	ND	21.8	0.8	0.8	ND	ND	5.5	46.8	30.0	ND	0.9	39.4	ND	ND	33.0	1.7	ND	11.1	ND	ND	1.4	7.0	2.0	ND	ND	7.1	--	ND	ND	--	148.0	ND	ND	ND	1.1	2.6	
Aug	0.8	ND	24.7	0.8	0.6	ND	ND	5.5	82.0	49.3	ND	0.6	54.0	ND	ND	37.0	0.8	ND	11.0	ND	ND	--	8.0	1.9	ND	1.7	1.1	--	0.8	ND	--	239.0	ND	ND	ND	0.8	2.5	
Sep	0.9	ND	28.4	0.9	0.4	ND	ND	4.3	63.8	56.9	ND	0.6	46.7	ND	ND	36.0	2.1	ND	9.7	ND	ND	3.4	11.0	1.7	ND	1.9	1.1	--	0.8	ND	--	229.0	ND	ND	ND	1.3	1.8	
Oct	0.7	ND	25.8	0.8	0.7	ND	ND	1.3	50.7	49.0	ND	0.7	39.8	ND	ND	40.0	0.8	ND	10.5	ND	ND	1.9	13.0	1.0	ND	1.7	1.1	--	ND	ND	--	204.0	ND	ND	ND	1.2	3.2	
Nov	0.8	ND	35.8	0.8	0.5	ND	ND	1.3	74.0	52.0	ND	0.7	43.0	ND	ND	52.0	0.5	ND	12.5	ND	ND	ND	14.0	0.7	--	2.6	1.0	--	3.1	ND	--	270.0	ND	ND	ND	0.6	2.8	
Dec	0.9	ND	35.0	1.0	1.0	ND	ND	1.9	64.7	35.0	ND	0.6	39.0	ND	ND	54.0	0.8	ND	8.1	11.0	ND	2.3	12.0	0.8	ND	2.5	1.3	--	1.7	ND	--	243.0	ND	ND	ND	0.6	1.9	
Avg	0.9	ND	26.9	0.8	1.1	ND	ND	4.2	53.1	47.7	ND	ND	38.5	ND	ND	37.6	1.2	ND	8.3	ND	ND	2.1	8.9	1.3	ND	0.9	1.7	2.6	0.8	ND	14.3	187.0	ND	ND	ND	0.6	2.0	
Max	1.2	ND	35.8	1.0	2.0	ND	ND	6.4	82.0	78.0	ND	0.9	54.0	ND	ND	54.0	2.6	ND	12.5	54.0	ND	3.4	14.0	4.0	ND	2.6	7.1	3.4	3.1	ND	19.0	270.0	ND	ND	ND	1.3	4.0	
Min	0.6	ND	18.9	0.7	0.4	ND	ND	1.3	37.2	26.0	ND	ND	30.0	ND	ND	26.0	0.5	ND	3.5	ND	ND	ND	5.0	ND	ND	ND	0.8	1.8	ND	ND	9.5	102.5	ND	ND	ND	ND	ND	

*EPA MCL = Environmental Protection Agency's Maximum Contaminant Level for regulated parameters.

ND = Not Detected

"--" = No Analysis required

