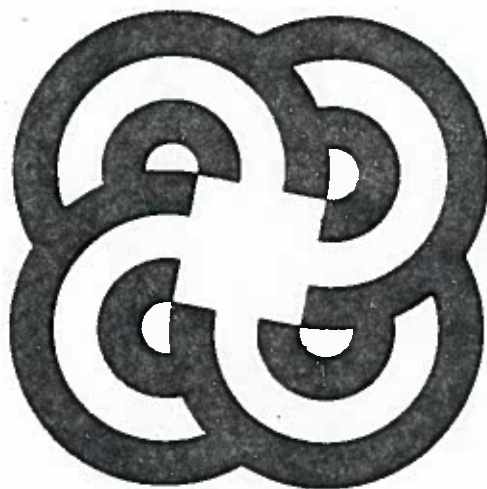


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WATER QUALITY STANDARDS
FOR
INTERSTATE WATERS
OF THE
DISTRICT OF COLUMBIA



GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
ENVIRONMENTAL HEALTH ADMINISTRATION
BUREAU OF AIR AND WATER QUALITY

APRIL 1978
(CORRECTED 8-79)

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WATER QUALITY STANDARDS
FOR
INTERSTATE WATERS
OF THE
DISTRICT OF COLUMBIA

INTRODUCTION

Water Quality Standards are numerical or narrative limitations of various physical, chemical and biological indicators of water quality (e.g., temperature, dissolved oxygen, pH and bacteria). Water Quality Standards establish use classifications and criteria needed to achieve water quality which will protect public health, aquatic life and differing levels of water contact recreation. Water Quality Standards are legally adopted and enforceable by a state and apply to all interstate waters within the state's jurisdiction.

Water Quality Standards are an essential part of a state's Water Quality Management Program. The Standards:

- define the states water quality objectives, and hence form the basis for its planning;
- serve as a basis for determining National Pollutant Discharge Elimination System effluent limitations for pollutants not specifically addressed in the effluent guidelines or for pollutants for which the effluent guidelines are not sufficiently stringent to protect the desired use of the water;

- serve as the basis for determining the best management practices to be applied for control of nonpoint sources;
- serve as a basis for judgment in other water quality related programs such as water quality inventories, toxic substance control, thermal discharges and dredge and fill activities; and
- reflect the intentions of the National Water Quality Goals as stated out in the Water Pollution Control Act Amendments of 1972 (P.L. 92-500).

Section 303(c) of Public Law 92-500 and 40 C.F.R. 130.17(a) require the states to review existing Water Quality Standards at least once every three years. At this time revisions can be adopted so that water use designations will be upgraded to meet the 1983 National Water Quality Goals. The States should also assess whether or not these goals can be attained for each individual stream section, considering environmental, technological, social and economic factors. This is the first major revision to the existing District of Columbia Water Quality Standards which were adopted on December 16, 1968.

The standards consist of four major components: (1) designation of the uses which interstate waters are to serve, (2) specification of narrative and numerical standards to protect and enhance water quality, (3) specification of general criteria that will be used as a guide in establishing effluent limitations for industrial discharges into District waters, and (4) anti-degradation policy.

MAJOR INTERSTATE WATERS OF THE
DISTRICT OF COLUMBIA

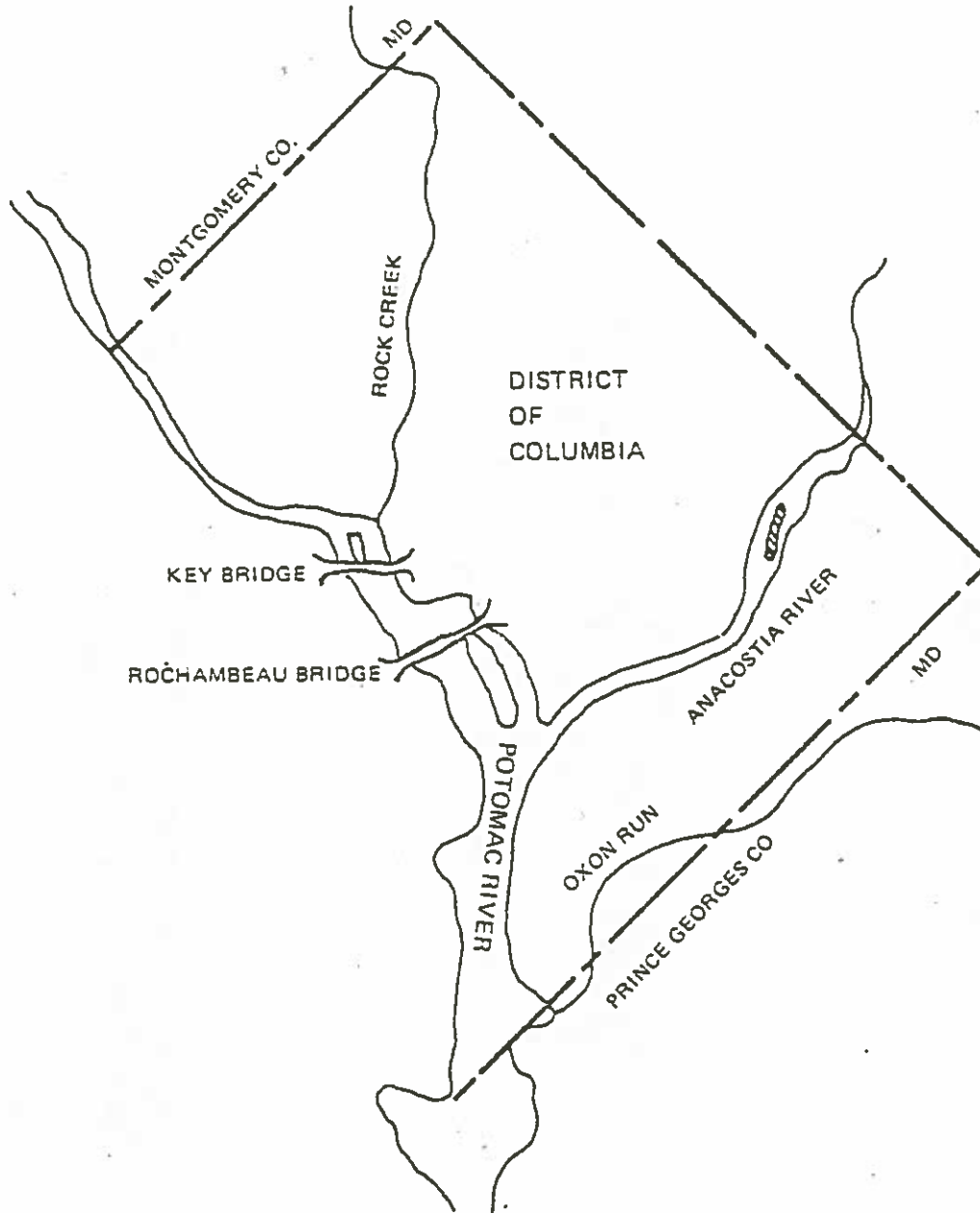


FIGURE 1

WATER USE DESIGNATIONS

The District of Columbia designates the following uses to be protected in various interstate waters. The alphabetical designations are keyed to the table of Stream Sections and Their Water Uses (Table I). The water use categorizations are not necessarily reflective of relative water quality.

<u>Category</u>	<u>Water Use</u>
A	Primary Water Contact Recreation: any activities that require prolonged intimate water contact and involve risks of ingestion. Included are swimming, wading and any water contact sports.
B	Secondary Water Contact Recreation: any activities on or near the water. Included are recreational boating, fishing and recreation along the shores.
C	Propagation of Aquatic Life and Wildlife.
D	Public Water Supply.
E	Industrial Water Supply.
F	Navigation.

TABLE I

Stream Sections and Their Water Uses

Uses to be Protected

Section	Location	Present Uses	Future Uses
1	Potomac River: Montgomery County Line to Key Bridge	B,C,F	A,B,C,D,F

2	Potomac River: Key Bridge to Prince George's County Line	B,C,E,F	B,C,E,F

3	Rock Creek	B,C	A,B,C

4	Anacostia River	B,C,E,F	B,C,E,F

5	Oxon Run		B,C

WATER QUALITY STANDARDS

Through the public hearing process the District of Columbia has adopted the water quality standards assigned to the individual streams sections based on their water uses.

1. Dissolved Oxygen

For all interstate waters - Minimum level not less than 4.0 mg/l - daily average not less than 5.0 mg/l.

2. Fecal Coliform

Streams designated for primary water contact - Based on a minimum of not less than five samples taken over a 30 day period, the fecal coliform bacterial level should not exceed a log mean of 200 per 100 ml, nor should more than 10 percent of the total samples taken during any 30 day period exceed 400 per 100 ml.

Streams designated for secondary water contact - Based on a minimum of not less than five samples taken over a 30 day period, the fecal coliform bacterial level should not exceed a log mean of 1000 per 100 ml, nor should more than 10 percent of the total samples taken during any 30 day period exceed 2000 per 100 ml.

3. pH

For all interstate waters - Not less than 6.0 or more than 8.5.

4. Temperature

For all existing thermal pollution sources - No increase in natural water temperature caused by artificial heat inputs shall exceed 5°F after reasonable allowance for mixing. Maximum water temperature shall not exceed 90°F. There shall be no sudden or localized temperature changes that may adversely affect aquatic life.

For all new or expanded sources - The allowable thermal loadings will be based on "site specific thermal requirements". The two upper limiting temperature values, necessary for the protection of important aquatic species, (temperature sensitive species found in the vicinity of discharge, at that time) shall be determined as follows:

- A. The first limiting value is a maximum temperature for short exposures that is time dependent and is given by the species specific equation:

$$\text{Temperature (}^{\circ}\text{C)} = (1/b) (\log_{10} \text{ time (min)} - a) - 2^{\circ}\text{C}$$

where: \log_{10} = logarithm to base 10 (common logarithm)

- a. = intercept on the "y" or logarithmic axis of the line fitted to experimental data and which is available from Appendix II-C, National Academy of Sciences, 1974 for some species.

- b. = slope of the line fitted to experimental data and available from Appendix II-C, National Academy of Sciences, 1974 for some species.

B. The second value is a limit on the weekly average temperature that:

- (1) in the cooler months (mid-October to mid-April) will protect against mortality of important aquatic species if the elevated plume temperature is suddenly dropped to the ambient temperature, with the limit being the acclimation temperature minus 2⁰C when the lower lethal threshold temperature equals the ambient water temperature.
- (2) In the warmer months (April through October) is determined by adding to the physiological optimum temperature (usually for growth) a factor calculated as one-third of the difference between the ultimate upper incipient lethal temperature and the optimum temperature for the most sensitive important aquatic species.

or

- (3) During reproductive seasons (generally April through June and September through October) the limit is that temperature that meets site-specific requirements for successful migration, spawning, egg incubation, fry rearing, and other reproductive functions of important aquatic species. These local requirements should supersede all other requirements when they are applicable.

or

(4) There is a site-specific limit that is found necessary to preserve normal species diversity or prevent appearance of nuisance organisms.

5. Suspended Solids

For all interstate waters - Not more than 80 mg/l (seasonal average concentration).

WATER QUALITY STANDARDS SUMMARY FOR THE INTERSTATE WATERS
OF THE DISTRICT OF COLUMBIA

Section	Location	Future Uses to be Protected	pH	D.O. mg/l	Fecal Coliform	Suspended Solids	Temperature *
1	Potomac River: Montgomery County line to Key Bridge	A, B, C, D, F	6-8.5	\leq 4 at any time \leq 5 daily ave.	Based on minimum of 5 samples over a 30 day period. log mean \leq 200/100 ml. 10% of total samples \leq 400/100 ml.	\leq 80 mg/l	Site specific Standards
2	Potomac River: Key Bridge to Prince George's County line	B, C, E, F	6-8.5	Same as above	Based on minimum of 5 samples over a 30 day period. log mean \leq 1000/100ml. 10% of total samples \leq 2000/100 ml.	\leq 80 mg/l	Same as above
3	Rock Creek	A, B, C	6-8.5	Same as above	Same as Section 1	\leq 80 mg/l	Same as above
4	Anacostia River	B, C, E, F	6-8.5	Same as above	Same as Section 2	\leq 80 mg/l	Same as above
5	Oxon Run	B, C	6-8.5	Same as above	Same as Section 2	\leq 80 mg/l	Same as above

* = Applicable to new sources only

GENERAL CRITERIA

The below listed General Criteria apply to all interstate waters in the District of Columbia. These General Criteria serve as guidelines to establishing effluent limitations in discharge permits. The waters shall at all times be free from:

1. Substances attributable to sewage, industrial waste, or other waste that will settle to form sludge deposits that are unsightly, putrescent or odorous to such degree as to create a nuisance, or that interfere directly or indirectly with water uses;
2. Floating debris, oil, grease, scum, and other floating materials attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance, or that interfere directly or indirectly with water uses;
3. Materials attributable to sewage, industrial waste, or other waste which produce taste, odor, or appreciably change the existing color or other physical and chemical conditions in the receiving stream to such degree as to create a nuisance, or that interfere directly or indirectly with water uses;
4. High temperature, toxic, corrosive or other deleterious substances attributable to sewage, industrial waste, or other waste in

TABLE II

Additional Criteria For Propagation of Aquatic Life

<u>Constituent or Characteristic</u>	<u>Criteria or Guidelines for Instream Water Quality</u>
Inorganic chemicals	
alkalinity	20 mg/l as CaCO ₃
ammonia	0.02 mg/l as unionized ammonia
beryllium	0.011 mg/l max. in soft water 1.1 mg/l in hard water
cadmium	✓0.004 mg/l max. (soft water) ✓0.012 mg/l max (hard water)
chlorine	0.002 mg/l max. (trout) 0.01 mg/l max. (other freshwater and marine life)
chromium	0.1 mg/l max.
copper	96 hr. LC ₅₀ x 0.1
dissolved gases	tot. dis. gas conc. in water 110% of saturation at existing atmospheric and hydrostatic pressures
iron (filterable)	1.0 mg/l max.
lead	96 hr. LC ₅₀ x 0.01
mercury	0.00005 mg/l max.
nickel	96 hr. LC ₅₀ x 0.01
PCB	0.000001 mg/l max.
selenium	96 hr. LC ₅₀ x 0.01
silver	96 hr. LC ₅₀ x 0.01
sulfide	0.002 mg/l undissociated H ₂ S
zinc	96 hr. LC ₅₀ x 0.01
Organic Chemicals	
detergents (linear alkylate sulfomates-LAS)	0.2 mg/l max. or 96 hr. LC ₅₀
oil and grease	96 hr. LC ₅₀ x 0.01
Pesticides:	
aldrin	0.000003 mg/l max
chlordane	0.00001 mg/l max.
demeton	0.0001 mg/l max.
dieldrin	0.000003 mg/l max.
endosulfan	0.000003 mg/l max.
endrin	0.000004 mg/l max.
guthion	0.00001 mg/l max.
heptachlor	0.000001 mg/l max.
lindane	0.00001 mg/l max.

TABLE II (Continued)

Additional Criteria for Propagation of Aquatic Life

<u>Constituent or Characteristic</u>	<u>Criteria or Guidelines for Instream Water Quality</u>
Pesticides (cont'd)	
malathion	0.0001 mg/l max.
methoxychlor	0.00003 mg/l max.
mirex	0.000001 mg/l max.
parathion	0.00004 mg/l max.
toxaphene	0.000005 mg/l max.
Phenols	0.001 mg/l max.
Phthalate Esters	0.003 mg/l max.

TABLE III

Criteria for Protection of Domestic Water Supplies

<u>Constituent or Characteristic</u>	<u>Criteria or Guidelines for Instream Water Quality</u>
Physical	
color	75 color units
odor	essentially free from objectionable odors
Microbiological:	
coliform organisms	20,000/100 ml max. (geom mean)
fecal coliforms	2,000/100 ml max. (geom mean)
Inorganic chemicals:	
arsenic	0.05 mg/l max.
barium	1.0 mg/l max.
cadmium	0.01 mg/l max.
chromium	0.05 mg/l max.
copper	1.0 mg/l max.
fluoride	1.4-2.4 mg/l max. (air temp. dependant)
iron (filterable)	0.3 mg/l max.
lead	0.05 mg/l max.
manganese (filterable)	0.05 mg/l max.
mercury	0.002 mg/l max.
nitrates, nitrites	10 mg/l max. as nitrate N
selenium	0.01 mg/l max.
silver	0.05 mg/l max.
sulfate	250 mg/l max.
total dissolved solids	250 mg/l max. as chlorides and sulfates
zinc	5 mg/l max.
Organic chemicals	
Oil and Grease	essentially free
Pesticides:	
endrin	0.0002 mg/l max.
heptachlor epoxide	0.0001 mg/l max.
lindane	0.004 mg/l max.
methoxychlor	0.1 mg/l max.
organophosphorous	0.1 mg/l max.
toxaphene	0.005 mg/l max.
Herbicides:	
2,4-D	0.1 mg/l max.
2,4,5-TP	0.01 mg/l max.
Phenols	0.001 mg/l max.

ANTIDegradation POLICY

1. The following Antidegradation Policy is adopted for the interstate waters of the District of Columbia:
 - A. For all stream sections of interstate waters of the District of Columbia, existing instream water uses shall be maintained and protected. No further water quality degradation which would interfere with or become injurious to existing instream water uses is allowable.
 - B. Limited degradation is justifiable only to provide necessary economic or social growth. In considering if any degradation of an interstate water is justifiable to provide necessary economic or social growth, regardless of present water quality, a public hearing shall be held to solicit citizen and local government views and recommendations on the evaluation.
 - C. If limited degradation is allowed, it cannot result in violation of water quality criteria that describe the base levels necessary to sustain the national water quality goal uses of protection and propagation of fish, shellfish, and wildlife and recreation in and on the water.

D. To accomplish the objectives of this Antidegradation Policy, all existing and new sources of pollution will be required to provide the best practicable degree of waste treatment to maintain and/or improve the water quality of the receiving stream.

E. In those cases where potential water quality impairment associated with a thermal discharge is involved, the Antidegradation Policy and implementing method shall be consistent with section 316 of P.L. 92-500.

2. The following Antidegradation Policy is adopted for Rock Creek in the District of Columbia because of the special status of those waters and Rock Creek Park:

The waters of portions of Rock Creek in the District of Columbia are the highest quality waters now present in the District of Columbia. Rock Creek traverses Rock Creek Park, a National Park established by Congress for the enjoyment of all citizens of the United States and entrusted to the Department of the Interior "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" and to the National Park Service to preserve from injury or

spoliation all timber, animals and curiosities within the park area including Rock Creek and to retain them in their natural condition, as nearly as possible. The waters of Rock Creek are waters of exceptional recreational significance because they constitute the only naturally-flowing, easily accessible high quality waters in the District of Columbia in a park setting. The National Capital Planning Commission, the central planning agency for the Federal Government in the Washington Metropolitan Area, has directed that the essential integrity of Rock Creek Park as the principal natural park within the District of Columbia be protected and that under no circumstances should the park be invaded by developments which would threaten its future as a park of the first order. For these reasons, no degradation shall be allowed in the waters of Rock Creek in the District of Columbia.

GLOSSARY OF TERMS

As used herein the following terms shall have the meanings indicated, unless the context clearly indicates otherwise:

Bacteria

A group of test organisms which are used as indicators of the sanitary quality of the water. Fecal coliform bacteria is the specific test organism selected by the District of Columbia for this purpose. Bacterial concentrations originate primarily from municipal waste treatment plants, sanitary and combined sewers, storm drains, vessels and agricultural wastes.

Criteria

Measurements or descriptions of instream water quality used as guidelines in setting discharge permit effluent limitations.

Degradation

A measurable deterioration in a receiving stream (beyond a prescribed mixing zone) of one or more of the five (5) constituents of water quality for which standards are designated herein.

Dissolved Oxygen (D.O.)

The oxygen dissolved as a gas in sewage, water, or other liquid usually expressed in milligrams per liter (mg/l), parts per million (ppm), or percent saturation. Adequate dissolved oxygen

levels are necessary in waters to protect fish and other aquatic life and to prevent offensive odors. Low dissolved oxygen concentrations are generally due to excessive organic solids discharged as a result of inadequately treated waste (having high BOD); excessive algae growths may cause vastly fluctuating dissolved oxygen levels, and other factors such as temperature and water movement have an impact on dissolved oxygen levels.

Interstate Waters

To the extent they are within the geographic boundaries of the District of Columbia the following waters are interstate waters:

Potomac River
Anacostia River
Rock Creek
Oxon Run

pH

The index of hydrogen ion activity, used as an indication of acidity or alkalinity in waters. The pH of most waters ranges from 6.5 to 8.5, and most uses of water, such as aquatic life propagation, prosper at these levels. In most cases, a pH outside this range is due to discharge of industrial wastes or decaying organic vegetation.

Pollution

The addition of sewage, industrial wastes or other harmful or objectionable material to water at a concentration or in sufficient quantity to result in measurable degradation of water quality.

Suspended Solids

Solids that either float on the surface of, or are in suspension in water, wastewater, or other liquids, and which are largely removable by laboratory filtering. Also referred to as nonfilterable residue.

Sewage

(1) The water supply of a community after it has been used and discharged into a sewer, (2) wastewater from the sanitary conveniences of dwellings, business buildings, factories and other institutions.

Temperature

A measure of the heat content of water. While stream temperature is affected naturally, man significantly affects it through the construction and operation of dams and the discharge of cooling waters from industrial processes, particularly power generation.

Toxic Materials

Materials which are harmful to human, plant, animal or aquatic life. These may include hundreds of compounds present in various waters such as industrial waste discharges or runoff from where pesticides have been applied.