The Potential Impact of Conservation Oriented Plumbing Codes in Maryland

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Report 86-9a

September 1986

Revised January 1990

Interstate Commission on the Potomac River Basin

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Acknowledgement

The completion of the work leading to this report was accomplished with the assistance of others. Primarily, the cooperation and advice of Albert Frank, Project Manager, Water Conservation, Maryland Water Resources Administration was greatly appreciated. Other personal contacts on technical matters are mentioned in the text. Robert D. Miller of Maryland Department of Natural Resources - Water Resources Administration provided enthusiasm and funding support for the project. Any errors or omissions conveyed by this report are the sole responsibility of the author and not of those from whom he has sought advice.

This report has been prepared by the Interstate Commission on the Potomac River Basin. Funds for this report are provided by the United States Government, the U.S. Environmental Protection Agency, and the signatory bodies to the Interstate Commission on the Potomac River Basin: Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia. The opinions expressed are those of the author and should not be construed as representing the opinions or policies of the United States or any of its agencies, the several states, or the Commissioners of the Interstate Commission on the Potomac River Basin.

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

Management Summary

1. The striking conclusions to be drawn from this analysis are that the potential exists to reduce Maryland total in-home water consumption during the next 20 years. This could be accomplished even with the forecast growth in population by the modification and effective enforcement of the Maryland Plumbing Code. The proposed modification would require that the maximum allowable flush volume for water closets used on new homes or for replacement of existing water closets be reduced from 3.5 gpf to 1.6 gpf, effective January 1, 1991. The implementation of this code change has the potential of savings growing to 31.7 mgd by the year 2010.

It should be pointed out that the analysis is conducted with data which are assumed to be representative of in-home water use, implying no significant consumptive loss. Thus, every mgd conserved is an mgd available to support population growth, or left in a river to support environmental resources, or in the ground between what would otherwise have been its point of withdrawal and point of return as sewage effluent.

2. Assuming that the additional cost of 1.6 gal. per flush (gpf) low consumption (LC) water closets will be reduced to less than $125 per home by 1991 and that an annual average water and sewer bill will be $300 or more based on water consumption, then the expected 20% reduction in usage leads to a "payback" period

of about 2 years. However, it is likely that within a few years their cost will be equal to or lower than that of 3.5 gal/flush water closets due to production and availability considerations. In the long run, the conservation of 31.7 mgd by the year 2010 would be approximately equivalent to an annual savings of $41.25 million (1990 dollars) on Maryland consumers' water and sewer bills.

Capital costs of recent and planned water treatment plants in the region range from approximately $0.5M to approximately $1.5M per mgd capacity, and those of waste water treatment plants range from approximately $1.5M to $2M per mgd capacity. Capital costs of recently constructed reservoirs range up to $1M per mgd reliable yield. Thus, for each mgd of future water use reduction or deferral, approximately $3M to $4.5M capital cost might be deferred (amounting to between $95.1 and $142.65 for 31.7 mgd conserved).

3. Vigorous enforcement of the modified plumbing codes, specifically those provisions related to the inspection of new buildings and sale of replacement fixtures, must be supported by local inspectors and through the new requirements in the county 10-year Water and Sewer Plans. Water utility managers should be made aware of <u>all</u> the benefits of installing water saving fixtures.

4. There are associated benefits resulting from water conservation. These include reduction of energy consumption for heating of hot water, and pumping and treatment of water and waste water.

Introduction

The task of quantifying the potential effects of water saving fixtures is one of several being performed by ICPRB with funding support from the Maryland Department of Natural Resources - Water Resources Administration under the general subject of freshwater inflows to the Chesapeake Bay. Most studies of residential water conservation are carried out in order to determine the quantitative reduction in water use in the context of deferring water supply and/or waste water construction. This has the effect of "creating capacity" in existing facilities. The focus of this study is on the determination of the quantity of water, which through the implementation of conservation oriented plumbing codes, would be available to accommodate growth or left in the environment. It has been determined that maintenance and/or enhancement of freshwater flows to the Chesapeake Bay would improve its living resources.

The combination of freshwater inflows and marine salt water under tidal influence makes the Chesapeake Bay a very productive estuary. Salinity is a major factor in determining the quality of water in the Bay and thus the quantity and variety of biological resources to be found there. An increase in salinity would aggravate the presence of MSX disease in oysters and reduce the spawning and nursery areas for the soft clam and several important varieties of finish. It would increase the range of the woodboring shipworm and reduce the habitat of food

sources which are important to sportfish and waterfowl. Therefore, the need exists to ensure that future use will progress in an orderly and economically efficient manner, and to balance the demand for consumptive use of freshwater with the aggregate impact of that consumption on the resources of the Bay.

It has been determined that reductions in freshwater inflow to the Chesapeake are undesirable for the health of beneficial biological systems, but can be tolerated during average and high flow periods. However, severe stress and death may result from extreme low flows of even short duration.

The main causes of the disruption to the natural pattern of freshwater flow to the Bay include increased diversion, consumptive losses, and land development leading to more flashy runoff and lower baseflows in its tributary streams and rivers. This report describes a method which helps quantify the potential quantity of water which may be left in the environment due to conservation oriented plumbing codes. It will be useful in the quantitative determination of domestic use which is expected to grow as the population expands in the State of Maryland. The quantitative analysis presented in this report is applicable to all of Maryland even though small portions of relatively sparsely populated areas in western Maryland drain to the Mississippi river system, and on the Eastern Shore to the Atlantic Ocean.

A rather precise economic definition of conservation is given by Baumann, et al. (1980) as: "Any beneficial reduction in water use or water losses", where "beneficial reduction" is: "A reduction in water use (or water losses) which creates net advantageous effects which exceed the net disadvantageous effects required by the actions which accomplished the reduction." The term "conservation" as used in this study, refers to long-term measures which bring about a beneficial reduction in water use. Short-term contingency measures which are usually associated with emergencies due to equipment failure or droughts are not part of the study.

The Corps of Engineers (1984) considered the impact of conservation on savings in consumptive losses from freshwater inflow to the Chesapeake Bay. Although conservation measures are generally orientated toward reducing demands rather than consumptive losses, they would help maintain freshwater inflows during all seasons of the year. Therefore, both long-term average and drought related benefits to all valuable species and resources would be provided. This is especially true where reductions in water withdrawal and consumption will result in the maintenance of freshwater flow and water quality in flow-restricted areas of the Bay's rivers (Citizens Program, 1983).

Present Plumbing Codes

The volumetric and flow limitations of present plumbing codes in force for the states of Maryland and California are presented in Appendices A and C respectively.

All areas of the state must comply with the Maryland code; however, local areas may adopt more stringent conditions. Baltimore City follows the BOCA code for the specification and installation of plumbing fixtures which meet various American National Standards Institute standards. The Washington Suburban Sanitary Commission plumbing code is based largely on the recommendations of the Council of American Building Officials.

The California plumbing code (excerpted in Appendix C) specified until recently, water closets with a flush not to exceed 3.5 gallons, and flow rates from shower heads and faucets not to exceed 2.75 gal/min. In recognition of the link between water and energy conservation, new and replacement lavatories in public facilities (since January 1, 1985) must be equipped with outlet devices which limit the flow of hot water to a maximum of 0.5 gal/min at no more than 110 ^{o}F.

Conservation Oriented Plumbing Codes

A perspective on the future direction of water conserving fixtures and codes was obtained from several experts in the field.

The code specification of water conserving fixtures is linked to their performance, price, and availability. Plumbing codes increasingly refer to product standards when specifying fixture performance criteria. Thus, it is therefore important that good standards be developed and implemented.

Six or seven years ago there were only one or two U.S. manufacturers of 1.6 gal/flush water closets; now there are approximately twenty-one (NWF 9/14/87), including most of the major fixture companies. As production and competition have developed, availability has increased, and prices have declined. A recent survey of manufacturers by the Plumbing Manufacturers Institute indicates that actual production of LC water closets has risen from less than 30,000 units in 1987 to an estimated 1.1 million units in 1989. Production is expected to increase to 2.4 million units in 1990, which would represent nearly one quarter of U. S. water closet sales, (NWF 9/6/89).

The adoption of 1.6 gal/flush water closets can be expected to reduce in-home water use by 20% to 25% below that consumed where 3.5 gallon "water saver" water closets are installed. The installation of water conserving fixtures is gaining wider acceptance outside of areas of severe water shortage. As experience is gained and products are more widely and cheaply available, installations are expected to spread to other areas (like the Chesapeake Bay basin) where conservation of water is important for reasons other than water supply shortage.

An analysis of conservation practices and attitudes among water supply managers in Maryland generally indicated that water conservation was single purpose and applicable only to areas where water resources were deficient (Sawyer, 1982). However, water conservation is also an effective tool for reducing the hydraulic load on waste water treatment plants, as was demonstrated in Montgomery County in the early 1970's (WSSC, 1973).

This may also have long-term beneficial effects by reducing operating costs of such buildings by owners and operators. Wesely (1986), Sharpe and Tsong (undated), and Brown and Caldwell (1984) all give estimates of the value of residential water and energy saved by the installation of water saving fixtures.

Many local jurisdictions in Maryland now require (by ordinance or agreement with developers) the installation of low consumption water closets. Aberdeen, Calvert County, Charles County, and Frederick City are among the areas with existing programs. Other areas actively pursuing the development of such programs include Boonsboro, Brunswick, Denton, Havre de Grace, Indian Head, Mt. Airy, City of Westminster, and areas of Baltimore and Harford Counties.

There is some potential for influencing developers and builders in their choice of fixtures. Some local regulating agencies are

offering incentive reductions in permitting and development fees if water conserving fixtures are installed in new buildings. Coordination with residential and commercial real estate developers has taken place, i.e. agreements concluded in Anne Arundel County, which encourage the specification and installation of water saving fixtures. Such agreements could provide for technical assistance and financial incentives.

The most effective general water conservation programs may be those where utilities conduct direct retrofit and repair programs as in Aberdeen; Boonsboro; Brunswick; Frederick City; Westminster; and Anne Arundel, Charles, and Howard counties, Maryland. Many utilities including Boston, Phoenix, and San Jose make water conservation retrofit kits available to their residential customers. The effectiveness of kit-based programs is difficult to substantiate.

In addition to conservation technology and regulation addressed in plumbing codes, conservation of water use may be effected by public education programs and modifications to rate structures. These measures are mutually reinforcing and have greatest effect when applied together.

Application of Conservation Oriented Plumbing Code in the State of Maryland

The Maryland Water Conservation Plumbing Fixtures Act, Article

56, Section 445, since incorporated in the Maryland State Plumbing Code, is reproduced in Appendix A. Its effective implementation has recently been strengthened by a new requirement in the counties' 10-year water and sewer plans produced biennially for State agency approval. The draft regulation (Maryland Department of Health & Mental Hygiene, Title 10, Subtitle 17 .07) is reproduced as Appendix B.

The present Maryland plumbing code is applicable to all new and replacement fixture installations. Among other features, it requires water closets not to exceed 3.5 gal/flush and shower heads not to exceed 3.0 gal/minute.

The Maryland plumbing code applies throughout the State to all public and private systems, whether they supply water to whole cities and regions or just a single house which relies on a well. The Maryland Department of State Planning forecasts of population and households are used to estimate the effect of water conserving devices on the existing and expanding housing sector. In addition, an assumption of 2% per year is made with respect to the rate of fixture replacement in the remodeling of the existing housing stock. (Thomas Konen, Stevens Institute of Technology). These figures are combined with those from the forecast of new housing units (population) in order to provide an estimate of the total potential effect of residential water saving fixtures.

In order to make a quantitative assessment of the effect of the proposed requirement for 1.6 gal/flush water closets, some information must be developed with regard to water use per person or per household, and the influence on that water use by the Proposal. In addition, forecasts of Maryland population and/or numbers of households are required.

Recent before and after studies of code implementation similar to that in Maryland indicate the following results:

1. A typical family of four persons with a base use of 82 gallons per capita per day (gpcd) can effect a reduction, with the code, of 31 gpcd to a revised use of 51 gpcd (Wesely, 1986). This example does include some behavior modification which exceeds the provisions of the code.

2. In a study which surveyed experience in several U.S. cities, base use of 77 gpcd was reduced on average by 16.3 gpcd; whereas a survey of the relevant literature indicated a reduction of 20 gpcd could have been expected (Brown and Caldwell).

3. Low consumption (LC) water closets with flush volumes less than or equal to 1.6 gallons have been developed, installed and used successfully. A study of a relatively large group (250) of homes with 0.8 gal/flush water closets was conducted in Phoenix, Arizona (Anderson and Siegrist,

1986). For comparison, there was a control group of 680 homes with water saving 3.5 gal/flush water closets but similar in other respects. The study determined that LC water closets involved less multiple flushes, less water closet clogging, no sewer problems, and only slightly more cleaning than conventional fixtures. On average, winter household consumption was reduced by 23% with the LC water closets.

4. In a study referred to by Thomas Konen (Konen 1989), persons living in houses equiped with fixtures similar to the present Maryland code would use 59.7 gpcd, and those in houses with LC water closets would use 48.4 gpcd.

The consensus drawn from these references is that 60 gpcd is an appropriate figure for use in dwellings equipped according to present Maryland code. As previously noted, a further 20% (12 gpcd) savings can be realized by the use of 1.6 gal/flush water closets. This would reduce in-home water use to 48 gpcd. A water conservation scenario, incorporating low consumption water closets is examined in this study. The scenario assumes that all population growth will be accommodated in dwellings which comply with the proposed code. In addition, existing housing stock is assumed to be remodeled with new fixtures which comply with the proposed code, at an annual rate of 2%. This type of scenario has been adopted by the U.S. Army Corps of Engineers in its planning process (Boland, et al., 1983). The resulting water use from this scenario is presented in Table 1.

Table 1 Water Conservation Scenario for Maryland
Incorporating Low Consumption Water Closets

Year	1990	2000	2010
Maryland Population(1)	4,666,200	5,005,550	5,248,850
LC SCENARIO: New Code from 1991 (incl. max. 1.6 gal/flush toilet)			
'90 Pop'n not Complying(2)	3,732,960	2,799,720	1,866,480
Water Use (mgd) @ 80 gpcd	298.6	224.0	149.3
'90 Population Complying(2)	933,240	933,240	933,240
Water Use (mgd) @ 60 gpcd(4)	56.0	56.0	56.0
'90 Population Complying(2)	0	933,240	1,866,480
Water Use (mgd) @ 48 gpcd(4)	0	44.8	89.6
Population Growth(3)	0	339,350	582,650
Water Use (mgd) @ 60 gpcd	0	16.3	28.0
Total Water Use (mgd)	354.6	341.1	322.9

(1) Latest available population data from: Maryland Department of State Planning, Office of Planning Data, Revisions, September 1987.

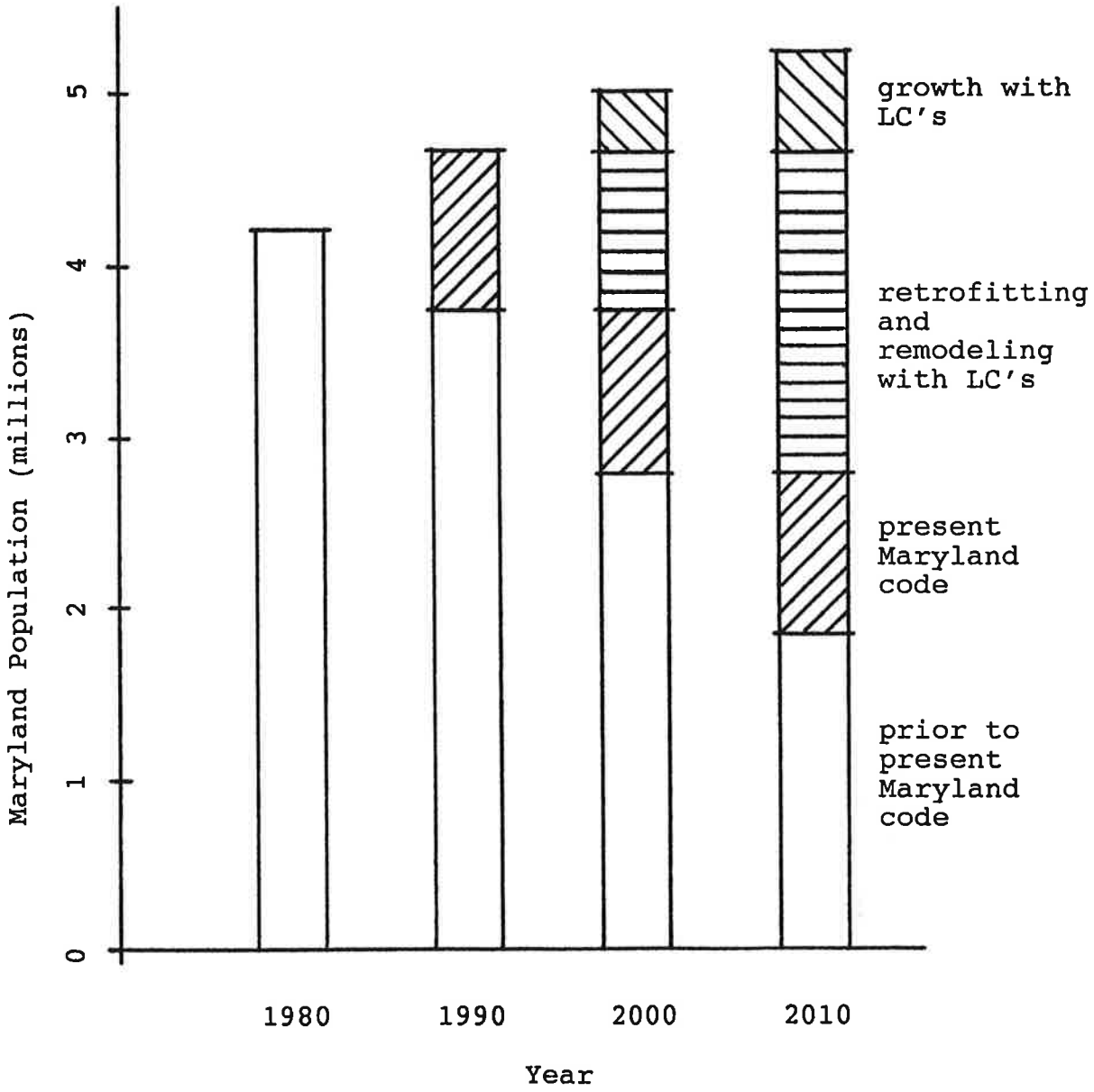
(2) Say 20% of population by 1990 will have water saving fixtures through 10 years of compliance with the present Maryland code; thence installation at 2% per year via replacement.

(3) Assumes all population growth accommodated in new housing which complies with code.

(4) @ 60 gpcd with present code through 1990; @ 48 gpcd with the new code from 1991.

FIGURE 1.

Population Implementing the Water Conservation Scenario Incorporating Low Consumption (LC) Water Closets



The results to be drawn from this analysis are that the potential exists to reduce in-home residential water consumption during the next 20 years. This could be accomplished even with forecast growth in population by the modification and effective enforcement of the Maryland State and local plumbing codes, by requiring 1.6 gal/flush water closets from the year 1991.

The probable realization of net change in in-home water demand would be -31.7 mgd for Maryland by the year 2010. The implementation, by 1991 of a change in the code requiring 1.6 gal/flush water closets has the potential of reducing water use by 31.7 in the year 2010 compared with 1990 use. In the long run, the conservation of 31.7 mgd by the year 2010 would be approximately equivalent to an annual savings of $41.25 million (1990 dollars) on Maryland consumers' water and sewer bills.

Capital costs of recent and planned water treatment plants in the region range from approximately $0.5M to approximately $1.5M per mgd capacity, and those of waste water treatment plants range from approximately $1.5M to $2M per mgd capacity. Capital costs of recently constructed reservoirs range up to $1M per mgd reliable yield. Thus, for each mgd of future water use reduction or deferral, approximately $3M to $4.5M capital cost might be deferred (amounting to between $95.1 and $142.65 for 31.7 mgd conserved).

All estimates are calculated on a per capita basis. The size of households is exhibiting a declining trend, and it is acknowledged that per capita water use probably depends to some extent on household size.

The analysis is primarily residential because it is difficult to account separately for the retail, commercial, industrial and institutional water use for sanitary purposes which would be subject to the fixtures code. Larger water utilities are likely to be able to separate water use by major user sectors, but forecasting over such a long period would be speculative at best. Petzold and Sawyer (1981) collected data on 37 public water systems in Maryland. These data indicated a total water use of 477.2 mgd and a population served of 3,632,400, implying 131 gpcd; more than 1.5 times the 80 gpcd assumed useage prior to the present Maryland code. This includes a significant retail, commercial, industrial and institutional use of water for both sanitary and production purposes.

It should be pointed out that the analysis is conducted with data which are assumed to be representative of in-home water use, implying no significant consumptive loss. Thus, every mgd conserved is an mgd available to support population growth, or left in a river to support environmental resources, or in the ground between what would otherwise have been its point of withdrawal and point of return as sewage effluent.

If it is assumed that the additional cost of providing LC water closets in a home is $125, and that an annual average water and sewer bill of $300 based on water consumption is reduced 20% thereby, then it can easily be seen that the "payback" period for the installation is only about 2 years. However, it is likely that within a few years of the requirement for LC water closets, their cost will be approximately equal to, and possibly less than, that of 3.5 gal/flush water closets due to production and availability considerations.

References

Anderson, Damann L. and Robert L. Siegrist, 1986, Performance of Ultra-Low Volume Flush water closets in Phoenix, Arizona, RSE Group/Ayres Associates, Madison, Wisconsin.

Bailey, J.R., R.J. Benoit, J.L. Dodson, J.M. Robb and H. Wallman, 1969, A Study of Flow Reduction and Treatment of Waste Water from Households, For the Federal Water Quality Adm., Program #11050 FKE, Contract #14-12-428, Groton, CT., General Dynamics, Electric Boat Division, (Summarized in Water and Sewage Works 85:57-66).

Baumann, Duane D., John J. Boland and John H. Sims, 1980, The Evaluation of Water Conservation for Municipal and Industrial Water Supply -- Procedures Manual, Contract Report 80-1, U.S. Army Corps of Engineers, Institute for Water Resources, Ft. Belvoir, VA.

Benjamin, Arthur, Maryland Department of State Planning, personal communication.

Boland, John J., Wai-See Moy, Roland C. Steiner and Jane L. Pacey, 1983, Forecasting Municipal and Industrial Water Use: A Handbook of Methods, Contract Report 83C-01, U.S. Army Corps of Engineers, Institute for Water Resources, Ft. Belvoir, VA.

Brown and Caldwell, 1984, Residential Water Conservation Projects, Summary Report, Walnut Creek, California.

Citizens Program for the Chesapeake Bay, Inc., 1983, Choices for the Chesapeake: An Action Agenda. Workshop Recommendations: A Report to the Sponsors.

Galowin, Lawrence S., National Bureau of Standards, personal communication.

Higgins, Patrick J., P.J. Higgins Associates, personal communication.

Konen, Thomas P., Chief, Building Technology Research, Department of Mechanical Engineering, Stevens Institute of Technology, Hoboken, NJ, personal communication.

Konen, Thomas P., Memo and Ultra Low Flush Volume Water Closets, A Research Plan for Their Evaluation and Integration with Current Plumbing Technology, Building Technology Research Laboratory, Department of Civil, Environmental and Coastal Engineering, Stevens Institute of Technology, Hoboken, NJ, Novemebr, 1989.

Maryland Department of Natural Resources and Maryland Department of Health and Mental Hygiene, 1983, The Water Supplies of Maryland, Volume I, Water Supply Management and Conservation.

National Wildlife Federation, 9/6/89, Water Conservation Network, Water Resources Program.

National Wildlife Federation, 9/14/89, Water Conservation Network, Water Resources Program

Nelson, John, General Manager, North Marin Water District, Novalo, CA, personal communication.

Petzold, Donald E. and Stephen W. Sawyer, 1981, The Structure and Status of Water Supply Planning in Maryland, Department of Geography, University of Maryland, College Park, Maryland.

Sawyer, Stephen W., 1982, Conservation Practices and Attitudes Among Maryland Water Supply Managers, Water Resources Bulletin, American Water Resources Association, Vol. 18, No. 5.

Sharpe, William E. and Sophia W.S. Tsong, undated, Saving Money with Home Water Conservation Devices, Institute for Research on Land and Water Resources, The Pennsylvania State University, University Park, Pennsylvania.

U.S. Army Corps of Engineers, Baltimore District, 1984;1. Chesapeake Bay Low Freshwater Inflow Study: Main Report.

Washington Suburban Sanitary Commission, 1973, Final and Comprehensive Report, Cabin John Drainage Basin Water-saving Customer Education and Appliance Test Program, Hyattsville, MD.

Wesely, Edwin F., Jr., 1986, Easy Ways to Save Water Money and Energy at Home, Potomac River & Trails Council, Frederick, Maryland.

APPENDIX A

Maryland Water Conservation Plumbing Fixtures Act

MARYLAND
WATER CONSERVATION PLUMBING
FIXTURES ACT

Article 56, §445. Water-conserving fixtures.

A. DEFINITIONS

In this section the following words have the meanings indicated:

(1) "Approved showerhead" means any automatic flow showerhead using no more than three gallons of water per minute, with the rate based on a pressure at the fixture of 40-50 pounds per square inch.

(2) "Approved sink faucet for a public facility" means any faucet with spring-loaded valves or other devices that stop the flow of water upon release of the handle or that stop the flow of water after not more than one gallon of water has flowed through the fitting.

(3) "Approved sink faucet for private use" means any faucet using no more than four gallons of water per minute, with the rate based on a pressure at the fixture of 40-50 pounds per square inch.

(4) "Approved water closet" means any water closet using no more than 3 1/2 gallons of water per flush, with the rate based on a pressure at the fixture of 40-50 pounds per square inch.

(5) "Approved urinal" means any single, flush-type urinal using no more than 1 1/2 gallons of water per flush, with the rate based on a pressure at the fixture of 40-50 pounds per square inch.

(6) "Building" includes any building or structure the initial construction of which commenced on or after January 1, 1979.

(7) "Constructed" means the building, inspecting and supervising of new structures and the installing of equipment required in connection with the new structures.

(8) "Local plumbing inspectors" means the inspectors of the appropriate agencies or units of each county and municipal government in the State who inspect the installation of plumbing fixtures and devices and water, drainage, and sewage systems.

(9) "Remodeled" means the complete reconstruction or the relocation of a whole plumbing system to another part of a building.

(10) "Secretary" means the Secretary of the Department of Licensing and Regulation.

B. SALES OF FIXTURES

(1) A person may not sell any plumbing fixture which is not an approved plumbing fixture as defined in subsection A.

(2) The local plumbing inspectors shall enforce the prohibition against the sale of any plumbing fixtures which are not water-conserving fixtures in the interests of ensuring that the capacities for wastewater-treatment of municipal sewage treatment facilities and private on-site wastewater disposal systems are not exceeded.

C. REQUIRED FIXTURES AND DEVICES ENUMERATED

(1) Except as provided under subsection D, the following fixtures or devices shall be installed, as necessary, in buildings constructed or remodeled after January 1, 1979:

(i) Approved urinals, in every building.
(ii) Approved sink faucets for private use, in private residences and in buildings with restrooms not intended for public use and in hotels, motels and dormitories.
(iii) Approved sink faucets for a public facility, in buildings with restrooms intended for public use except in hotels, motels and dormitories.
(iv) Approved showerheads, in every building.

(2) Except as provided under subsection D, approved water closets shall be installed, as necessary, in every building constructed or remodeled after February 15, 1980.

(3) (i) Except as provided under subsection D of this section, all showerheads and sink faucets in State facilities shall be retrofitted with approved flow control fittings on a regular maintenance schedule.
(ii) For the purposes of this section "flow control fitting" means any device which controls the flow rate of water without the use of moving parts to no more than 3.4 gallons per minute at 70 pounds per square inch (psi) dynamic pressure, no more than 3.0 gallons per minute at 50 psi and no less than 2.4 gallons per minute at 30 psi for showerheads and kitchen faucets and to no more than 1.3 gallons per minute at 70 psi and no less than 0.7 gallons per minute at 30 psi for lavatory faucet supply lines. All flow rates may vary by plus or minus 10 percent.

D. SUSPENSION OF ENFORCEMENT

Enforcement of this section may be suspended for a specified period of time if it is determined by the local plumbing inspectors that:

(1) There is an inadequate supply of approved water closets, approved sink faucets or approved showerheads, or water-conserving devices intended for attachment to water closets, sink faucets or showerheads to allow the fixtures to qualify as approved fixtures, under subsection A; or

(2) The configuration of a drainage system for a building requires a greater quantity of water to adequately flush the system than is delivered by approved fixtures; or

(3) There would be an adverse effect upon an historic restoration.

E. RULES

The State Board of Commissioners of Practical Plumbing, with the approval of the Secretary shall promulgate those rules deemed necessary to carry out the purposes of and to enforce this section, including the formulation of standards for acceptable fixtures and devices which reduce water consumption and meet requirements of safety and sanitation. These rules shall be incorporated into and be part of the State Plumbing Code.

F. ADOPTION OF NATIONAL STANDARDS

The Board, with the approval of the Secretary, may vary the standards provided in this section by adopting as part of the State Plumbing Code, national standards for water conserving fixtures, appliances, or devices as promulgated from time to time by the American National Standards Institute.

G. PENALTY

Any person violating any of the provisions of this section shall forfeit to the State not less than $25 nor more than $500 for each violation. Each day that the violation continues constitutes a separate offense. (1980, chs. 131, 666; ch. 712, §2.)

APPENDIX B

Compliance with
Maryland Water Conservation Plumbing fixtures Act
(Draft Regulation)

Maryland Department of Health and Mental Hygiene

Title 10, Subtitle 17

.07 Compliance with Maryland Water Conservation Plumbing Fixtures Act (MWCPFA) (Draft Regulation)

A. Every county water and sewerage plan shall contain documentation that compliance with the MWCPFA (as codified in Article 56, Section 445, ACM) is being achieved.

B. The documentation shall include:

1) Designation of the county agency responsible for the enforcement of MWCPFA.

2) A summary of county programs to assure implementation of and compliance with MWCPFA, including:

a) A description of a procedure which assures compliance with MWCPFA, prior to the issuance of a certificate of occupancy.

b) A description of local actions taken to assure compliance with the prohibition of the sale of non-water-conserving plumbing fixtures.

c) A description of the local procedures used to ensure that agreements between a developer and a builder to assure compliance with MWCPFA are made part of the record plat process or a part of a county building, plumbing or occupancy permit, or bill of sale.

d) A description of proposed or planned change to the local program intended to assure compliance with MWCPFA.

APPENDIX C

Water Conserving Plumbing Fixtures

(California)