

**avoiding**

**overtaxation**



category

# SUMMARY SHEET

sub-category

WATER  
QUANTITY

BMP

AVOIDING  
OVERTAXATION

CONSUMPTIVE  
USE  
LIMITATION

## OBJECTIVE

To maintain the predevelopment water budget by avoiding overtaxation of groundwater supplies through consumptive use.

## WHERE APPLICABLE

Any community or region which relies upon groundwater for water supply.

## PROS

1. Adds longevity to water supply
2. Reduces water quality threats by preventing concentration of contaminants
3. Minimizes deviation from natural water budget

## CONS

1. May limit or restrict excessive use of a water supply well

## IMPLEMENTATION CONSIDERATIONS

When a groundwater well is over pumped beyond what has been determined to be the safe yield of that particular groundwater system (See Ch. 2, p. 16 and Ch. 4, p. 49 of this manual), undesirable and costly consequences can result. To avoid overtaxation and consumptive use, proper planning and design measures should be taken prior to development to ensure that demand will be met without exceeding the groundwater budget. Also, following development, proper measures need to be implemented to ensure that use is according to that which was projected, and that necessary adjustments be made prior to adversely affecting the groundwater system.

Aquifer pump tests can be performed and calculations made to effectively estimate the localized productivity and limitations of a groundwater system or well.\* This procedure can also aid in the determination of proper well depth and pump setting.

To apply this aquifer-test approach, townships could allow for flexibility in zoning, which would be based upon hydrologic criteria. For example, lot densities could be planned based upon the values derived from a regional groundwater budget analysis, but final subdivision approval could be granted only after a review of the results of an aquifer test. This approach gives the developer an approximation of allowable density, but places the burden of final

\* Proper testing for well yield - For individual residences the well should be tested with a pump for a minimum of three (3) hours. Drawdown in the well should be measured. The pump setting should be in accordance with measured drawdown in the well.

(Robert Canace, New Jersey Department of Environmental Protection)

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proof of the adequacy of the water supply and compatibility with regional planning goals on the developer. In some instances the aquifer test may demonstrate that greater densities may be permitted than indicated by the regional zoning analysis.

Where large residential developments are planned with homes relying upon individual well water supplies a phased development approach should be adopted, wherein the wells be drilled initially to determine the existence of an adequate water supply for the planned home. Zoning can restrict the options for obtaining a water supply where the first well does not encounter water. Ground water does not obey zoning restrictions. A lack of flexibility in zoning laws can limit potential solutions to water supply problems once development begins.

The phased well drilling/testing approach involves drilling and test pumping wells in the proposed development on a lot-by-lot basis, to insure the existence of a water supply for each lot and test for interference between wells located on separate lots. Such an approach permits an a priori\* resolution of potential individual water supply problems.

\* a priori - from the Latin meaning "derived by reasoning from self-evident propositions"

For Additional Information

- (1) New Jersey Department of Environmental Protection, Division of Water Resources, Geologic Survey

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# SUMMARY SHEET

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WATER  
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OVERTAXATION

WATER  
CONSERVATION

## OBJECTIVE

To encourage the use of water conservation measures by domestic and industrial consumers through implementation of mandatory or voluntary conservation programs at the local level to keep water use within the safe yield.

## WHERE APPLICABLE

This conservation program is suggested for use in any community, especially that which is reliant on groundwater for their water supply.

## PROS

1. Could result in more water being available to meet future demands.
2. Reduces the cost of water and energy to consumers.
3. Helps prevent overtaxation of groundwater budget
4. Reduces loads on septic systems and sewers

## CONS

1. Sometimes difficult to change societal "habits"
2. Requires a "change of thinking" on the part of the general public who feel that water is a limitless resource

## IMPLEMENTATION CONSIDERATIONS

### Water Conservation Program

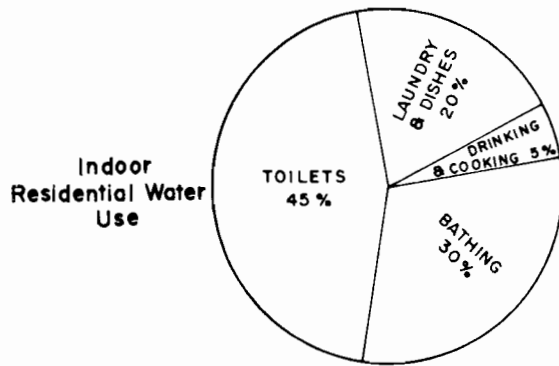
An effective water conservation program should include the following:

- (1) Modification of existing rate structures, where appropriate, to encourage the conservation of water.
- (2) Development of a strong and effective consumer education program, emphasizing cost effectiveness and long term benefits of water conservation.
- (3) Identification of State-of-the-art conservation devices for domestic use and availability in locale.
- (4) Develop a regional plan for substantial reduction of water distribution system leaks.
- (5) Promote industrial conservation techniques.
- (6) Develop enforceable laws and regulations such as changes in building codes and zoning and subdivision regulations which encourages use of water conservation devices (certain regulations would be necessary only in critical areas of water availability or during drought periods).

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## WATER CONSERVATION

The average person uses 70 gallons of water per day in the following fashion:



It's entirely possible to cut consumption by half and still get the same service and benefits you've always known, especially since other benefits are realized such as:

- Saving money on water heating bills and electricity for pumping water
- Improving the functionability of your septic system

Water conservation is basically a matter of simple procedures and common sense which can save many gallons per day. The following represents water saving suggestions for residential, as well as commercial and industrial users. Many water saving devices are surprisingly low in cost.

- Do not keep the water running while washing, shaving or brushing teeth.
- Do not let the water "run cold" when getting a drink. Keep a bottle of drinking water in the refrigerator.
- Wait until the dishwasher or clothes washer has a full load before turning it on. It takes the same amount of water and you will not use it as often. Better yet, handwash your dishes.
- If you wash dishes by hand, fill a dishpan, not the sink, and do not keep the faucet running needlessly. You can water shrubs or house plants with used dishwater. Other relatively clean water can be used more than once.
- Check your house for dripping faucets or leaking water-using appliances. A leaky faucet can waste 20 gallons or more per day.
- Take showers instead of tub baths, and turn off the shower while soaping yourself. You can install a low flow shower head, which will deliver 2-3 gallons per minute instead of 5, and as low as  $\frac{1}{2}$  gallon per minute.
- Half gallon plastic jugs filled with water and weighted down by pebbles or other means, or toilet dams, can fit into your toilet tank to reduce the amount of water flushed. Minimize the number of flushes by flushing only for sanitary reasons, and not to get rid of tissues or cigarette butts. Urine does not need flushing every time.
- Install low flow or waterless toilets - 40-50% of total water usage is consumed by the toilet.

## WATER CONSERVATION

The following represents suggestions that commercial and industrial water users should take to reduce consumption.

- Identify and repair all leaky fixtures and water using equipment. Special attention should be given to equipment connected directly to the water line, such as processing machines, steam using machines, washing machines, water cooled air conditioners and furnaces. Assure that the valves and solenoids which control water flows are shut off completely when the water-using cycle is not engaged.
- Water using equipment should be adjusted to use the minimum amount of water required to achieve its stated purpose.
- Rinse cycles for laundry machines should be shortened as much as possible; lower water levels should be implemented wherever possible.
- Temperature settings of hot water for showers should be set down at least 10 degrees to discourage lengthy shower taking.
- Where plumbing fixtures can accommodate them, flow restricting or other water saving devices should be installed.
- Review usage patterns to see where other savings can be made.
- Use non-potable water for processing and cooling and other uses where possible.
- Adjust float of tank type toilets to shut off when tank is half full; place flow restrictors in shower heads and faucets; close down automatic flushes overnight.
- Adjust flushometers and automatic flushing valves to use as little water as possible, or to cycle at greater intervals.
- Encourage water consciousness by placing water saving posters and literature where employees, students, patients, customers, etc. will have access to them.
- Customers should read water meters on a frequent basis to determine consumption patterns.

### For Additional Information

- 1) American Planning Association, Water Conservation in Residential Development, Land Use Techniques, Dec. 1982
- 2) Environmental Protection Agency, Proceedings-National Conference on Water Conservation & Municipal Wastewater Flow Reduction, Nov, 1978, Chicago
- 3) N.J. Water Resources Institute, Water Saving Devices, Rutgers University Press, Nov. 1976
- 4) "Sussex County Water Conservation Tips Brochure", Sussex County Water Resource Management Program, Newton, New Jersey, 1981