

## MUNICIPAL WATER QUANTITY AND QUALITY REQUIREMENTS AND EFFECTS OF USE

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### INTRODUCTION

Municipal or domestic requirements for water are most certainly a top priority in our competitive demand for the limited supplies that are normally available, and this is particularly true here in the Southwest. This is clearly illustrated in the relative costs of irrigation, recreation, and industrial waters as normally compared with municipal water. Although the value and need for municipal water cannot be questioned, other use requirements often create difficulties in our rapid concentration of population in urban areas. Availability of water is one of the major factors in limiting development in arid and semi-arid areas for uses other than the commonly envisioned agricultural development limitation.

### MUNICIPAL QUANTITY REQUIREMENTS

Quantity needs for municipal use vary greatly in spite of the tendency to dwell on average use per capita in order to simplify the situation. This is commonly used as an index to indicate the increasing demand for water as our living level develops. Yes, there is a definite correlation between water use and living standards. Here in New Mexico the average per capita use ranges from less than 25 gallons per day to as much as over 300 gallons per day. Peak uses may be well over 500 gallons per day.

Water use figures are quite misleading without proper evaluation, as home irrigation, cooling water, and lack of use of meters can give wide ranges that are not strictly domestic demands. Hence, elimination of these items is necessary for comparative purposes. However, national use figures indicate an average strictly domestic requirement of from 50 to 75 gallons per capita per day. In contrast, the overall average municipal demand is now close to 150 gallons per capita per day and is expected to be about 210 gallons per day by 1980, as domestic water uses are increasing with the installation of modern household equipment such as automatic washing machines, dish washers, garbage disposals, multiple bathrooms, water coolers, etc.

### MUNICIPAL QUALITY REQUIREMENTS

Requirements for municipal water supplies are covered by the Public Health Service's Drinking Water Standards that are generally

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accepted by the water works industry in the United States. These standards cover source of supply, bacteriological records, chemical characteristics, and protection of the treatment and distribution facilities. Generally speaking, they are higher than for most other water uses with the exception of some specialized recreational or industrial requirements.

In general terms, domestic water should be safe, clear, and practically odorless, tasteless, and colorless. In addition, chemical characteristics should not be objectionable, as this will force customers to use other private sources of water, that could be unsafe bacteriologically. Needless to say, the present Public Health Service's Drinking Water Standards are quite detailed in comparison to the first standards that were issued in 1914 to cover bacteriological aspects only.

### REUSE REQUIREMENTS

Municipal waste waters are classified as domestic sewage that contains disease organisms and decomposable organic matter. Hence, treatment is necessary prior to reuse of these waters. In New Mexico there is a great demand for the use of waste waters.

Organic solids in domestic sewage are the most noticeable objectionable feature, even though they normally amount to only about 0.02 hundredths of one percent of the total waste flow. Secondary sewage treatment involving physical settling and biological treatment will remove this objection in most instances. However, contamination in municipal waste waters still places limitations on many uses, as they are not recommended for irrigation of vegetable crops or for recreational purposes, such as swimming. Nevertheless, there are many present uses in the state such as for irrigation of cotton and forage crops, golf course irrigation, condenser cooling water, and ore processing make-up water, that involve a minimum risk in disease transmission.

Increased alkalinity and the presence of detergents are additional objectionable features in the use of municipal waste effluents. Of these two items, the detergents have created most trouble as they are a visible indicator of sewage pollution to all users. Recreational, agricultural, and domestic water consumers have encountered much difficulty with this problem, but the situation is now close to permanent control. The detergent manufacturing industry is placing a biodegradable material on the market at the present time, that will practically eliminate the foaming problem. Complete conversion is expected by July 1, 1965, and this will be six months ahead of the original schedule.

### SUMMARY

Both quantity and quality requirements are increasing for municipal water use in our increasing urbanization of the population.

These demands and other water use requirements for irrigation, recreation, and industrial purposes have emphasized the competitive nature of need for water, that is particularly true here in the Southwest. In turn, this brings forth the critical need for treatment and conservation of all water for maximum possible reuse. Indeed, water will need to be "worn out" through repeated use if it is to be available for use in many areas in the future.

#### REFERENCES

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