WATER MANAGEMENT STRATEGIES

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Confrontations are common in division of water among those upstream and downstream of rivers. There is also competition between agricultural and domestic use. Water scarcity will increase to the level of countries going to war for water rights. Fresh water supply is very limited in locations with large and increasing population. Due to watershed pollution, water quality is reduced even at the source.

Multiple strategies are required to manage water in the near future such as better use of information, water conservation, watershed protection, dual use of water systems, reuse of water and use of new technologies to purify the water.

Real-time monitoring with live measurement of rainfall with next Generation Radar (NEXRAD) and mapping of watersheds are two examples of better use of information. Water conservation should include public education and better practices by end users such as low flow plumbing fixtures and faucet aerators. Large volume of water is used for agriculture purposes and should be managed better. Rainwater could be collected and re-injected in to earth. In USA, Clean Water Act of 1972 established EPA regulations for controlling water pollution.

Dual water system require two pipe distribution. Only a small fraction of water quantity is required for drinking. Where as agricultural use requires large quantity. Reduced water quality standards may be used for non-drinking purposes.

Indirect reuse involves reintroduction of treated water in to the environment and water is used downstream. Treated water can be used to charge an aquifer. But direct reuse of water has only limited public acceptance. Water from sinks and showers is grey water. Water from toilets is black water. In office complexes, grey water is partially treated and used for non-potable purposes. New technologies are being developed to purify water. Ozonation /UV produce less disinfection byproducts. Membrane processes require more efficient RO membranes. Engineered bioremediation is application of specific organisms to degrade pollutants.

Wastewater treatment and reuse of treated water requires more attention. Water management must include reuse of treated water since fresh water source is limited.