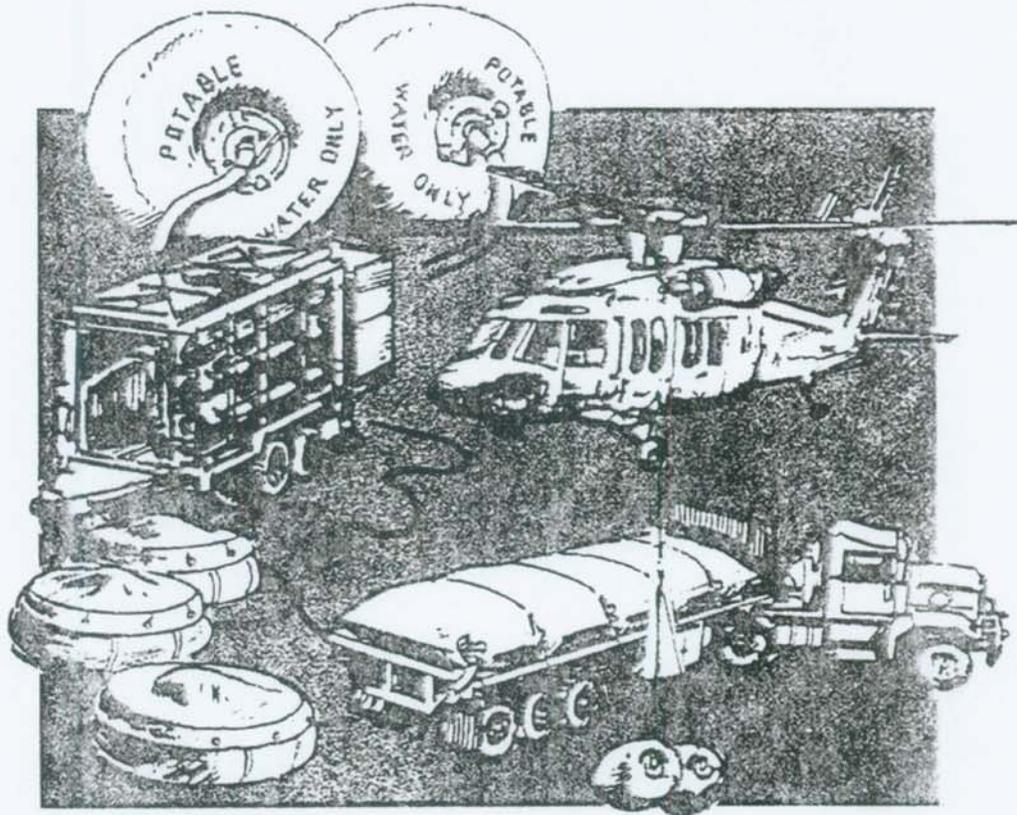


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FM 10-52



# WATER SUPPLY IN THEATERS OF OPERATIONS

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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## CHAPTER 3

### WATER SUPPLY PLANNING

#### WATER REQUIREMENTS

Planning for water support begins with determining the amount of water required. This will depend upon the battlefield environment, the expected time of hostilities, and the size of the force. Water requirements are flexible. Some may be denied indefinitely and some for several weeks. Some are always essential.

#### WATER CONSUMPTION REQUIREMENTS

A number of water consumption requirements are directly related to the number of people in the force structure. These are described below.

##### Drinking

Drinking water must be potable. The amount needed depends on the climate, intensity of work, and type of battlefield. Since the water reserve of the body is small, soldiers must replace water as it is lost.

##### Heat Treatment

Water needed for heat treatment includes ice or cold water to reduce the body temperature quickly of a heatstroke patient. It should be potable. However, in an emergency, use any available water. Heatstroke affects about one of every 1,000 soldiers in arid and tropical zones. The water needed for heat treatment is small in temperate and arctic zones. Wearing MOPP for long periods will increase heat treatment requirements.

##### Personal Hygiene

These requirements include water for shaving, brushing teeth, and washing. This water first be potable. Daily shaving is needed since the protective mask does not fit properly over a beard. Since showers are scheduled only once a week, daily sponge baths are necessary. Teeth usually are brushed after each meal.

### Arid Zone

In arid regions, available water sources are limited and widely dispersed. Water must therefore be transported to the point of use. Surface fresh water is almost nonexistent, and available subsurface water varies from region to region. Detailed planning for water supply in an arid region is essential. Individual water consumption must be much greater than in a temperate region to prevent heat casualties. Cool drinking water to encourage soldiers to drink the large quantities of water required. Cooling is most efficiently done close to the point of actual consumption. Commanders and supervisors will ensure that drinking water is available and that soldiers drink sufficient quantities to maintain effectiveness. Use potable water to meet nonpotable water requirements when untreated water is not available. Provision of a separate nonpotable water distribution system will not be feasible. The lack of water sources will mean a large storage and distribution requirement. General support units provide this capability. Major tactical operations may be aimed at controlling scarce water sources. Total potable water requirements increase since potable water is used to meet nonpotable water requirements. Nonpotable water requirements include centralized hygiene, laundry, vehicle maintenance, construction, and aircraft maintenance. In the battalion and company areas, potable water is needed for drinking, personal hygiene, field feeding, heat casualty treatment, and vehicle maintenance. In the brigade support and division rear areas, add the water requirement for medical treatment, centralized hygiene, construction, and aircraft maintenance to those in forward areas. In EAD (corps and EAC), water requirements increase due to water requirements for laundering and hospital medical treatment. Where exact numbers and types of hospitals are unknown, use 2.8 gallons per man per day to estimate hospital water requirements. Table 3-4 provides specific arid zone consumption factors.

### WATER REQUIREMENTS COMPUTATIONS

A number of computations must be made to determine supply, purification, and storage requirements for water. Personnel strength data are used by the MMC managers to compute water

Table 3-4. Arid zone consumption factors (gallons per man per day)

Unit	Sustaining	Minimum
Company	5.9	5.0
Battalion	8.7	5.7
BSA	11.1	6.2
DSA	11.9	6.4
Corps/EAC	18.4	9.5

requirements. The MTOE and TDA provide authorized strengths for planning before hostilities begin. Data from the SIDPERS and subsisted strength reports may be used to modify requirements after units are established in the theater.

### Supply Requirement

To compute the total daily water requirement of the force, multiply the strength (authorized, actual, or subsisted) by the proper consumption factor. The total, expressed as gallons per day, includes 10 percent for waste due to spills and evaporation.

### Purification Requirement

The size and composition of the water supply section, detachment or team needed to provide for the total daily requirement must often be computed. To do this, divide the total daily requirement by the daily production capability of one purification unit. The daily production capability depends on several factors. These include the GPH rating of the unit (600 GPH, 1500 GPH, 3000 GPH), type and temperature of the water source (fresh, brackish, or saline), and the daily hours of operation. This information is in Section I of the appropriate TOE for each section, detachment, or team. Under normal conditions, water purification equipment is operated 20 hours per day with four hours downtime for operator and crew maintenance. Temperature affects the production capability of purification equipment. At a raw water temperature of 50 of ROWPU production capability is reduced by 50 percent.

Table B-4. Arid zone factors

COMPANY		
Function	Daily Gallons-Per-Man Requirements	
	<i>Sustaining</i>	<i>Minimum</i>
Drinking	3.0	3.0
Personal Hygiene	1.7	0.3
Field Feeding	0.3	0.8
Heat Casualty Treatment	0.2	0.2
Vehicle Maintenance	<u>0.2</u>	<u>0.2</u>
Subtotal	5.4	4.5
+ 10% waste	<u>0.5</u>	<u>0.5</u>
TOTAL	5.9	5.0
BATTALION		
Function	Daily Gallons-Per-Man Requirements	
	<i>Sustaining</i>	<i>Minimum</i>
Drinking	3.0	3.0
Personal Hygiene	1.7	1.0
Field Feeding	2.8	0.8
Heat Casualty Treatment	0.2	0.2
Vehicle Maintenance	<u>0.2</u>	<u>0.2</u>
Subtotal	7.9	5.2
+ 10% waste	<u>0.8</u>	<u>0.5</u>
TOTAL	8.7	5.7
BRIGADE		
Function	Daily Gallons-Per-Man Requirements	
	<i>Sustaining</i>	<i>Minimum</i>
Drinking	3.0	3.0
Personal Hygiene	1.7	1.0
Field Feeding	2.8	0.8
Heat Casualty Treatment	0.2	0.2
Vehicle Maintenance	0.2	0.2
Division-Level Medical Treatment	0.4	0.4
Centralized Hygiene	<u>1.8</u>	<u>0.0</u>
Subtotal	10.1	5.6
+ 10% waste	<u>1.0</u>	<u>0.6</u>
TOTAL	11.1	6.2