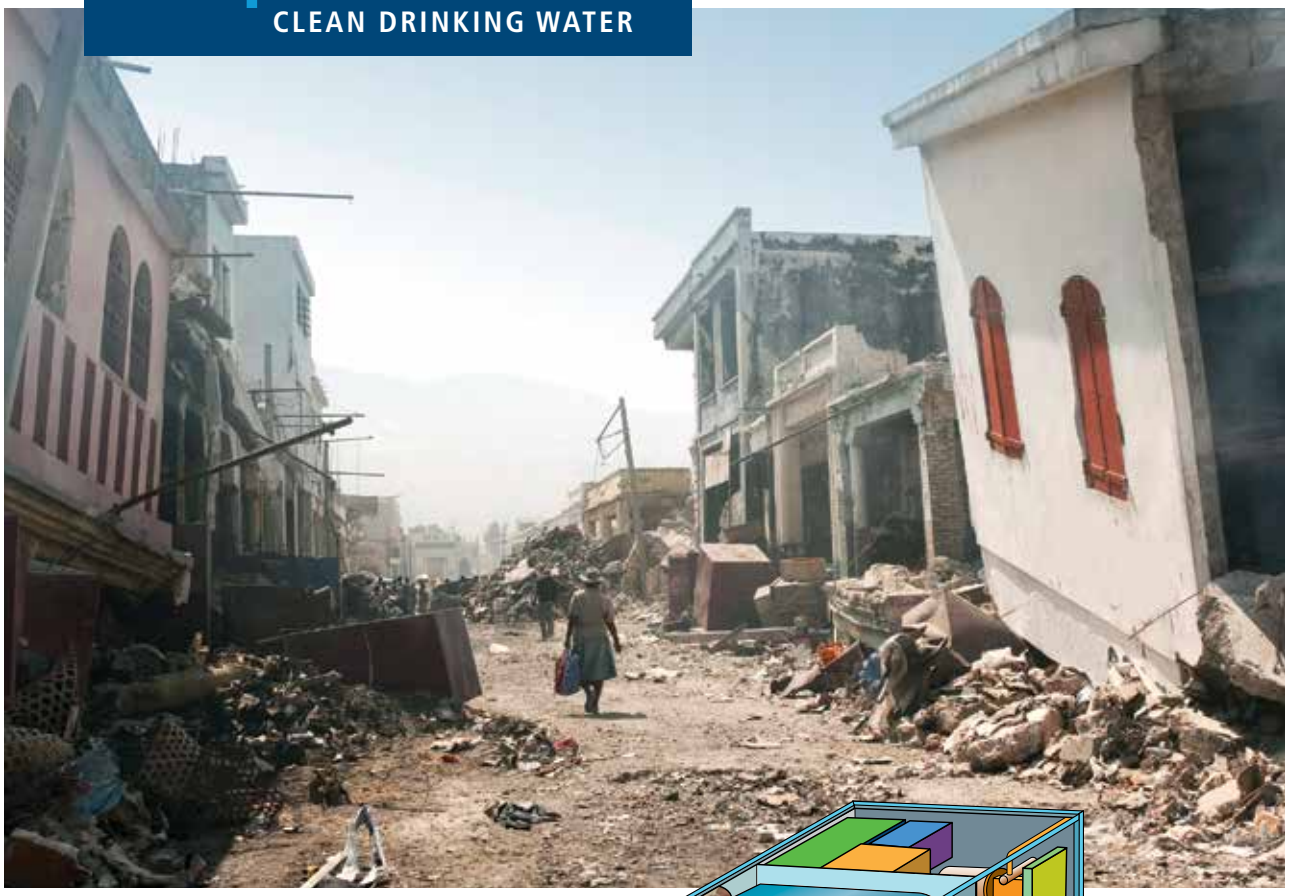
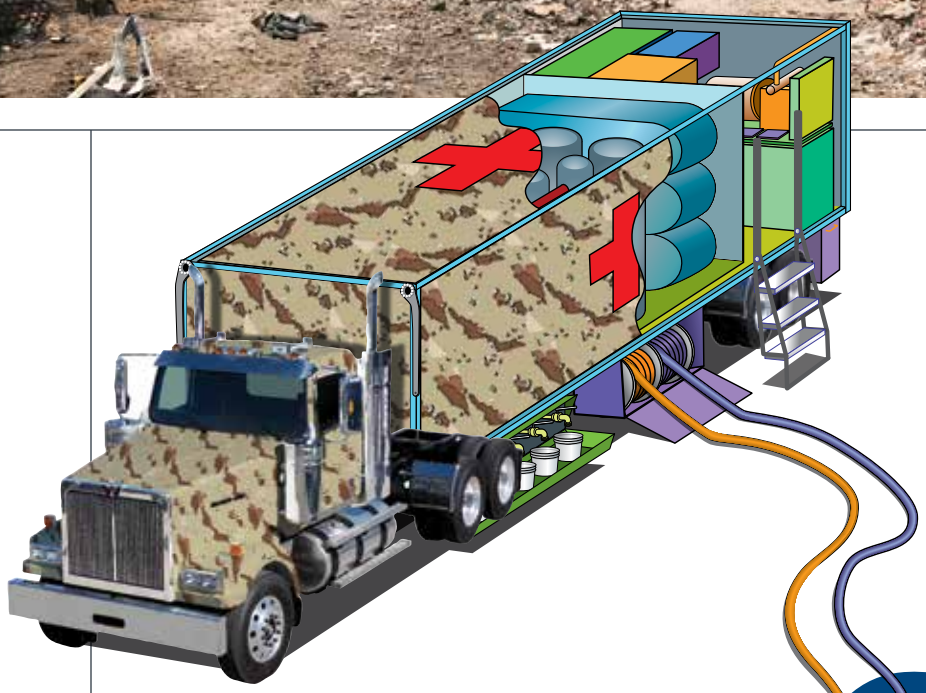
AquaMobile1000™

CLEAN DRINKING WATER





FRESH DRINKING WATER TREATMENT SYSTEMS FOR DISASTER RELIEF RESPONSE

QUICK TEMPORARY SUPPLY OF POTABLE WATER IN REMOTE AREAS

AQUALTRA™ TECHNOLOGIES

AquaMobile 1000™

The AquaMobile 1000™ from Aqualtra Technologies is a mobile, self-contained, patented system that includes pretreatment, ultrafiltration, disinfection, storage, and dispensing capability in a single truck payload compartment. This system is capable of providing a rapid-deployment and cost-effective solution to supply potable water to a population of approximately 235 people for long-term operating conditions over a period of one to several months (and up to 3,060 people per day under emergency conditions). The treatment system is used in remote areas where fresh drinking water is not readily available as a result of adverse environmental conditions such as flooding, earthquakes, contamination of traditional water sources, drought, etc. It may also be utilized in conditions where the lack of potable water infrastructure exists in both developed and developing regions of the world.

All dimensions given are approximate and are rounded.

Unique System Capabilities

- May be connected to an existing water distribution grid or dispensed as potable water at a location of immediate need
- Dispenses potable water for up to 235 people at a rate of 13 gallons per person per day (6.5 gallons dispensed in the morning and 6.5 gallons dispensed in the evening)
- Under extreme conditions, the system has the capability of dispensing potable water to 470 people at a rate of 6.5 gallons per person per day (3.25 gallons dispensed in the morning and 3.25 gallons dispensed in the evening) with two rounds of water treatment, transport and dispensing
- The AquaMobile 1000 system is capable of dispensing drinking water at the stated quantities for the number of users indicated above within a 48-minute dispensing interval per dispensing event (under normal operating conditions)
- The AquaMobile 1000 has the ability to transfer water from remote accessible surface water sources and deliver it in the form of treated potable water to distant communities or settlements where needed

* The AquaMobile 1000 system is equipped with 784 water collection containers, thus providing 172 additional containers for wear and tear replacement.

Reliable Services for the Following Applications

- Rapid deployment in response to emergency situations where potable water is required
- To supply fresh drinking water to developing countries by disaster relief organizations
- To provide emergency potable water supply to a population in disaster-stricken areas
- At remote exploration sites by companies and government agencies to meet the water needs of their employees and staff*
- At remote locations where seasonal camping activities or large gatherings necessitate the availability of potable water sources
- For large concert or sporting events that necessitate the availability of an independent, reliable supply of fresh drinking water
- To remove undesirable chemical elements from water such as humic acids, colloids, algae, bacteria and color

* The AquaMobile 1000 treatment system can also be used to provide potable water supply and to have water pumped directly to facilities throughout the duration of a project.

System Summary

The AquaMobile 1000 unit comprises a water intake pumping system, a water treatment system, water storage tank, water dispensing modules, water collection containers compartment and a fuel-powered generation system, all self-contained within a truck. The AquaMobile 1000 unit is powered by a powerful 355 HP Volvo engine capable of reaching a maximum speed of 87 miles per hour. The AquaMobile 1000 system is equipped to reach remote locations and is capable of sustainably operating over a period of one week.

Treatment Technology

Water transferred to the AquaMobile 1000 treatment unit is subjected to the following processes prior to dispensing for usage:

- Pumping station output @ 790 gallons/hr. (3.0 m^3/hr.)
- Primary oxidation – chlorination
- Mechanical filtration
- Sand filtration
- Ultrafiltration
- Rechlorination
- Activated carbon treatment
- UV disinfection
- Final chlorination
- Water storage (1,530 gallons)
- Drinking water dispensing system (10 timed and solenoid activated taps)

Water parameters removed by the AquaMobile 1000 System

- Color
- Turbidity
- Algae
- Humic acids
- Odor
- Colloids
- Bacteria
- Chemical oxygen demand (COD)

NOTE The AquaMobile 1000 treatment system has been proven to disinfect water by eliminating a variety of bacterial and protozoal microorganisms.

Power Requirements for System Operation

The AquaMobile 1000 has been designed to function as an autonomous system by utilizing power produced by a fuel-powered generators. A fuel storage tank, installed near the fuel power generators, contains enough fuel to operate the generators sustainably over a period of one week.

Monitoring and Operation of the AquaMobile 1000 System

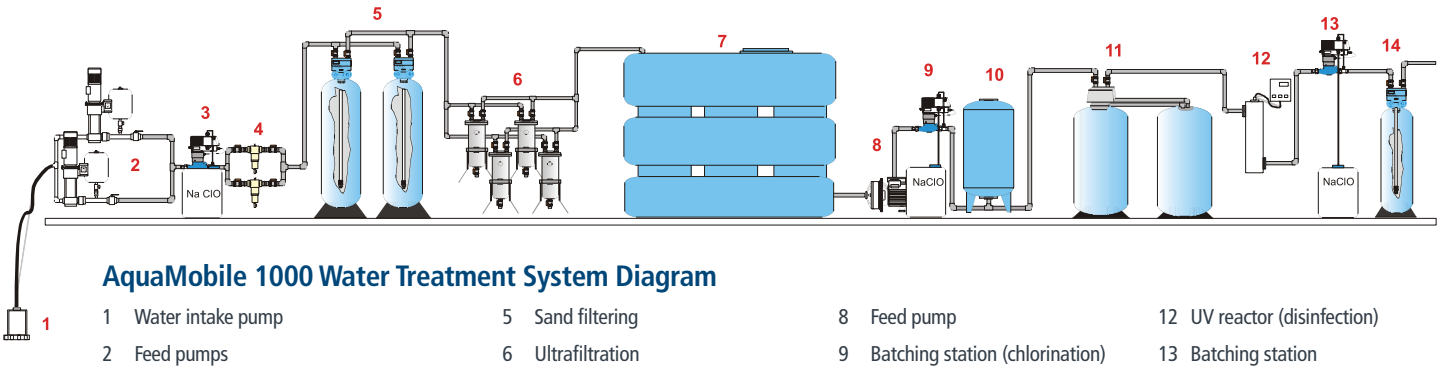
This activity requires the presence of an attendant for two and a half hours during the morning and afternoon shifts (with a quarter of an hour of dispensing time per shift).

Operator Responsibilities

- Carries out the backwash operations of the treatment system on a periodic basis
- Monitors the AquaMobile 1000 treatment system to ensure that all unit operations are functioning properly
- Monitors the quality of the water produced to ensure it meets the health quality requirements for public consumption
- Organizes the water dispensing process and its timing
- Drives the truck

Location and Space Requirements

The AquaMobile 1000 treatment system is an integrated mobile system that can be placed in an open space area (parking lot, plaza, park area, etc.). The AquaMobile 1000 treatment system should be placed at a distance of no more than 30 m (100 feet) from the water intake source with a vertical lift of water from the intake of no more than 12 m (40 feet).



AquaMobile 1000 Water Treatment System Diagram

1 Water intake pump
2 Feed pumps
3 Batching station (chlorination)
4 Mechanical filter with backwash function
5 Sand filtering
6 Ultrafiltration
7 Treated water accumulation tank
8 Feed pump
9 Batching station (chlorination)
10 Pressure station
11 Charcoal filtering
12 UV reactor (disinfection)
13 Batching station (final chlorination)
14 Mixing tank

Overall Operation of the AquaMobile 1000 System

The AquaMobile 1000 water treatment system is used to treat water from a surface body source (pond, lake, or river) in order to provide a product suitable for drinking and for domestic use.

Raw water is pumped from the surface water body source into the treatment unit, and following treatment, the water produced is stored in tanks totaling 1,530 gallons in volume and located in the semi-trailer compartment. The produced water meets or exceeds EPA and other governmental quality and health standards.*

Water is dispensed to the users via a manifold pipe fitted with 10 timer-controlled dispensing taps (5 taps on each side of the truck). The dispensing system allows water to be distributed to 235 users on a daily basis (with a daily operation of the AquaMobile 1000 treatment system for 1.9 hours twice per day).

Each user will receive 50 liters (13 gallons) of potable water per day. 25 liters (6.5 gallons) are dispensed in the morning and 25 liters (6.5 gallons) are dispensed later in the afternoon. Two 5-gallon (19-liter) water collection containers are distributed to each user and are carried by the user for daily use.

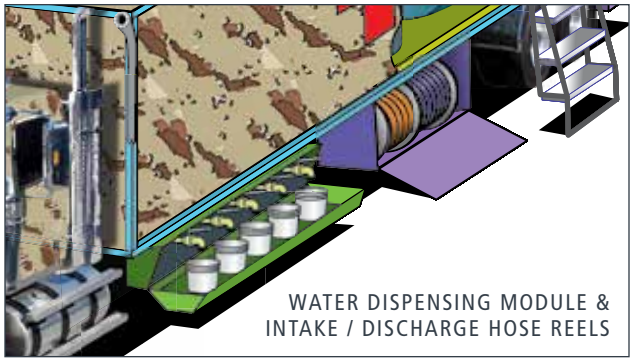
The AquaMobile 1000 dispensing unit has the capability of dispensing stored treated water to 10 users simultaneously. The objective is to allow all 235 users to fill their water collection containers during a 24-minute period in the morning and during a 24-minute period in the late afternoon.

This system is fully scalable to meet the needs and specific requirements of the customer and has the capability of treating, storing, and dispensing potable water to up to 470 people per day at 6.5 gallons per day per person, with a two-trip operation each, including pumping, treatment and dispensing operations.)

The water collection containers distributed to the users are stored in a specially designed compartment within the truck.

AquaMobile 1000 Has the Following Unique Features

- It has the ability to collect, treat, deliver, and dispense water to areas remote from the water source
- It has built-in timer-controlled water dispensing and conveyance systems
- It is ready for immediate start-up upon arrival to the site
- It is a low maintenance operating system
- The units inside the trailer box compartment are installed for ease of maintenance and repair
- It has an efficient space-saving design
- It has an integrated, autonomous, power generation system
- It has a clean, quiet and efficient water treatment operation (65-72 decibels for generator with sound shield)
- It has a separate clean and low noise operating generator ($3°d^3$) to provide the necessary power for lighting and water dispensing.



WATER DISPENSING MODULE & INTAKE / DISCHARGE HOSE REELS

- It includes a truck storage compartment with retractable sides that can serve as a protective awning during inclement weather conditions.
- The truck is equipped with a powerful 355 HP Volvo engine
- It is affordably priced
- It is adaptable to various geographical conditions

* AquaMobile 1000 has been designed in conformance with the American Water Works Association (AWWA) and American Society for Testing and Materials (ASTM) standards.

NOTE AquaMobile 1000 is designed for short term applications where potable water will need to be supplied for a time period spanning one week.

AquaMobile 1000 Technical Features

The AquaMobile 1000 treatment system uses space-saving, energy-efficient components to deliver a maximum capacity output of fresh water from a compact system design. This is achieved in an efficient manner under emergency conditions where time is of the essence. AquaMobile 1000 comprises several modules engineered to fit into a truck box compartment.

These modules include:

The water intake system includes an influent submersible pump that delivers water to the AquaMobile 1000 from an existing surface water source such as a lake, pond, or river. The pump is capable of delivering water from the source up to the treatment system with a total lift of 12 m (40 feet). The intake pipe is 30 m (100 ft) long and is usually stored along with the submersible pump cable in a reel assembly when the system is not in operation. A discharge pipe, also rolled into a reel, allows for the discharge of reject water from the treatment system to a distance of approximately 30 m (100 ft). (Booster pumps would need to be added to the intake lines under conditions where the intake pipe is longer than 30 m (100 ft) or when lifts greater than 12 m (40 ft) are necessitated due to challenging topographic conditions).

The water treatment module comprises a combination of treatment technologies that include oxidation, filtration, ultrafiltration, and sorption. These technologies are used in tandem to achieve superior results. The pumped incoming water is processed in the treatment module and is disinfected prior to its transfer into the water storage module's accumulation tank. (AquaMobile 1000 water treatment

systems are not intended for use in treating water that contains low molecular weight organic pollutants, nitrates or dissolved inorganic salts).

The water storage module consists of two accumulation tanks equipped with a water level scale and a total storage capacity of 1,530 gallons (5.8 m^3) of potable water. The water storage tanks are designed for safe transportation, should there be a need to transport water from the source to the dispensing location. It is equipped with a water overflow feature that allows the excess water to be released from the tank during fillup operations. The water storage tanks also conform to applicable Environmental Protection Agency (EPA) and American Water Works Association (AWWA) standards for access operation and maintenance. They also conform to the American Society of Mechanical Engineers (ASME) Specifications for Construction of Food Grade Vessels.

The water collection containers, totalling 784 empty 5-gallon (19-liter) water collection containers, are stacked in a compact fashion when the treatment system is not in operation. The containers are easily accessible for dispensing to the users during water dispensing operations.

The water dispensing module in the AquaMobile 1000 system is comprised of two water dispensing units, one on each side of the truck. Each dispensing unit includes a manifold that connects to the water storage tank on one side, and to five solenoid-controlled water dispensing taps on the other. In order to reduce water spillage, each of the dispensing valves is programmed to release the required volume of water using a centrally located control. The water dispensing module is permanently stowed in a separate compartment under the truck when the AquaMobile 1000 treatment system is not in operation. The entire compartment of the permanently installed water dispensing module swings open to allow for the tapping of drinking water by the users. This is done by placing a water collection container on a platform under the tap and by allowing a timer control to dispense a specific amount of water on a periodic basis.

The fuel power generator module provides power for the AquaMobile 1000 system operation. This module has a fuel storage tank associated with it that allows for continuous system operation over the duration of a full week. The power generators also have a self-fueling capability and are designed for easy maintenance by providing plenty of space around the units. A second power generator provides power for the lighting fixtures.

The chemical and material storage modules are designed with enough space to allow adequate storage of chemicals used daily for a 7-day operation period. Furthermore, the storage module compartments, which are located below the truck bed, are designed to ensure the proper storage and containment of chemicals, thus preventing spillage and contamination of adjacent areas (the containment area meets chemical storage requirements according to the U.S. Code of Federal Regulations (40 CFR 264.175)).

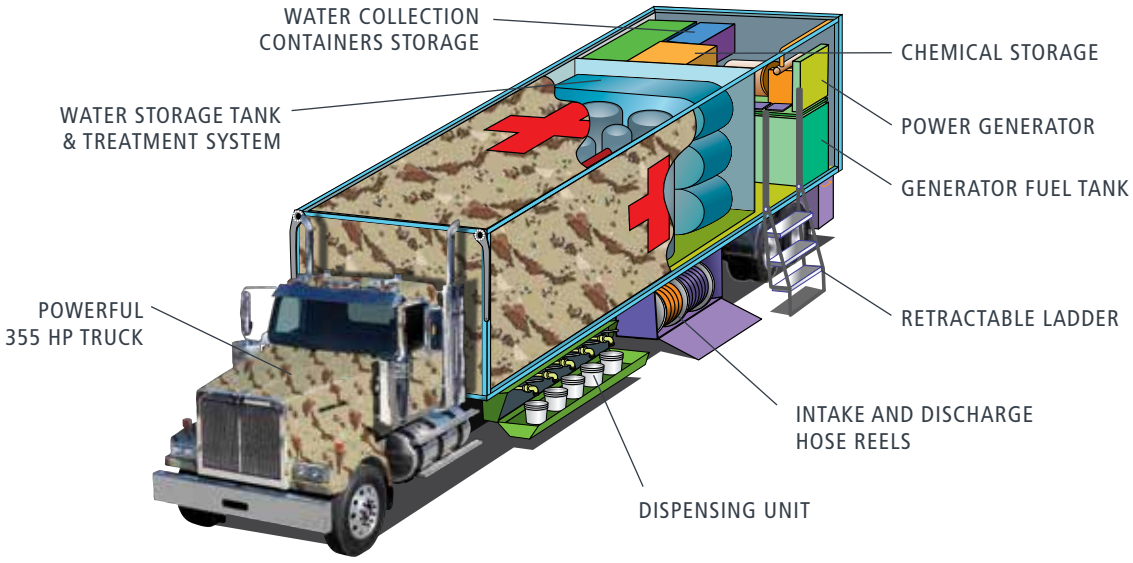
Specifications

TREATMENT MODULE

Dimensions (L x W x H)	28 ft x 8.4 ft x 9 ft clear height (8.5 m x 2.5 m x 2.8 m clear height)
Shipping load	13,200 lb (6 metric tons)
Operating load	17,600 lb (8 metric tons)

COMBINED TRUCK / TREATMENT MODULES

Dimensions (L x W x H)	37.5 ft x 8.7 ft x 13.3 ft clear height (3.1 m x 2.7 m x 4.1 m clear height)
Shipping load	41,100 lb (18.6 metric tons)
Operating load	54,100 lb (23.31 metric tons)
Feed water	13.2 gpm (3 m^3/hr) intake capacity
Product water	10 taps for output @ 3.6 gpm/tap (10 taps for output @ 0.8 m^3/tap/hr)
Drain	Backwash water - quantity = function of frequency of backwash
Electrical requirements	Self-contained fuel power generator
Certification	ISO 9001



SIDE WALLS FULLY CLOSED

RETRACTABLE SIDE WALLS
FUNCTION AS A PROTECTIVE AWNING

RETRACTABLE SIDE WALLS
FULLY OPEN FOR ACCESSIBILITY

AquaMobile 1000 Self-Contained Box Truck Features

The AquaMobile 1000 treatment system is contained within a 28-foot box truck unit that is manufactured by Volvo Trucks, and which is equipped with a powerful 355 HP Volvo engine. The following considerations were made in selecting the treatment plant / truck system:

- Volvo Trucks is a reliable manufacturer that offers a large number of service centers world wide
- The truck meets standards and certification requirements for EPA/ Carbon Emissions
- The truck is capable of reaching a maximum speed of 80 MPH
- The box truck is of a special design to accommodate hydraulically operated retractable side walls that fold up to 180 degrees, and can be positioned to serve as awnings to protect users from the elements
- This unique truck was designed for ultra-efficient operation which allows each of the two side walls to slide open within 20 seconds via remote control command
- Accessibility of components through the open truck sides allows for easy serviceability and/or replacement and fastening of equipment modules
- An external storage compartment is available to allow for the storage of treatment chemicals
- A total of 784 water collection containers (5 gallon/19 liter capacity) are stored inside the truck and are ready for distribution
- A foldable and stowable ladder allows easy access to the truck payload area to service the treatment system and the fuel power generators
- Optional heating and insulated pipes are offered in regions where treatment, storage, and distribution are to be conducted in freezing conditions
- A truck design is available that meets the State of California (Caltrans) regulations

AQUALTRA™ TECHNOLOGIES

info@aqualtra.com | www.aqualtra.com
3838 OAK LAWN AVENUE | SUITE 1000 | DALLAS TEXAS 75219 | 972.971.9755 PHONE | 469.317.6301 FAX