



# GLOBAL WATER GROUP

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MANUFACTURER OF THE WORLD'S BEST  
WATER PURIFICATION AND WASTE WATER EQUIPMENT

## Military Water Processing Equipment



4th ID with members of Al Zowie Abu Baber Tribe Diyala Province Iraq, 2004

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# Military Challenges in the Battlefield

Extended lines of communications and logistic requirements are the challenge of the modern battlefield.

Fuel and water account for the majority of transportation requirements in combat, if we can eliminate one of these requirements by having the organic capability to produce clean water those transportation assets can then concentrate on other needs

In today's military the necessity for units to be self sufficient is of the utmost importance. Currently all water purification assets come from outside the Brigade and are pushed down as required; leaving the Brigades, Battalions, and Company's to be totally dependant upon logistical allocations from their upper echelons headquarters.

## The Organization

- Must Be An Independent, Deployable Organization
- Able To Fight
- Able To Sustain Itself
- And Able To Win In Any Environment

## The Brigade Combat Team

- A Brigade Combat Team (BCT) – 2500 to 4500 Soldiers
- Water Requirements 20K to 60K per day
- A BCT Relies on Corps Level Assets for Water Purification
- The BCT Pushes Bulk Water, Fuel and Other Supplies Forward Through Use of the Forward Support Battalion
- No Organic Means to Purify Water

It is proposed that each Brigade has at least three **GLOBAL LS3 DESAL-M1200GPH** systems or a series of Global's new containerized **GLOBAL LS3 DESAL-M600GPH or M300GPH SERIES** systems These units can be trailer mounted or fit onto the flatbed of a 5-ton. They require from 40Kw to 150Kw generators to operate and can be situated with the Brigade Support to supply all the water needs for the Brigade encampment.

## A Battalion Task Force

- A Battalion Task Force – 500 to 800 Soldiers
- Water Requirements 5K to 8K per day
- A Task Forces Relies on Bulk Water Being Pushed Down From the Brigade Combat Team (BCT) in 5000 Gal Tankers to Refill Bladders and Water Buffaloes
- The Task Force Pushes Bulk Water, Fuel and Other Supplies Forward Through Use of the Support Platoons or Forward Support Companies via LogPac Convoys
- No Organic Means to Purify Water

It is proposed that each Battalion has At least 3 Global **LS3 DESAL-M300-GPH**. These units are containerized and ready for trailer mounting. They require a 20Kw generator to operate and can be situated with the Battalion Support to supply all the water needs for the Battalion's encampment. This will also eliminate the need for external vehicles to haul water and Water Buffaloes and move more critical ammunition and food forward, as the unit will be able to fill their water buffaloes with purified water from the LS3.

### **A Company/Team**

- A Company/Team – 60 to 150 Soldiers
- Water Requirements 1K to 2K per day
- A Company/Team Relies on Bulk Water Being Pushed Down From the Task Force with the Daily LogPac and uses 500 Gal Water Buffaloes to Store Water – Sometimes Bladders are Pushed Forward
- No Organic Means to Purify Water

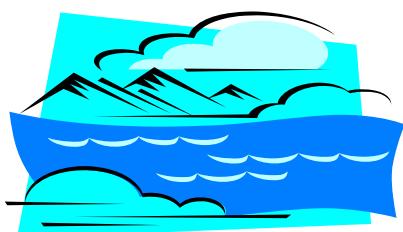
It is proposed that each Company has at least four **Global LS3-8000 Series** systems to be issued to combat platoons as required. These units are mounted in carrying cases and operate off of either AC 120/240 or 24V battery with Solar Array, they will fit into a single vehicle and be operated on an as needed basis to supply all the water needs for the Company and Platoons. Because some Company's are situated away from Battalion and operate on their own it is necessary that the company level have more smaller units for each platoon including Global's **LS3-MSP-2 BACK PACK SERIES**. These units will produce about a gallon of water per minute and are able to operate under silent operations if necessary.

### **Special Ops and LRRP's**

It is these soldiers that have to be self sufficient as the time they are in the field and the job they must accomplish dictate being self sufficient. Each team should have with them at least one of the **LS3-MSP-2 BACK PACK SERIES**. These units will produce about a gallon of water per minute and are able to operate under silent operations if necessary.

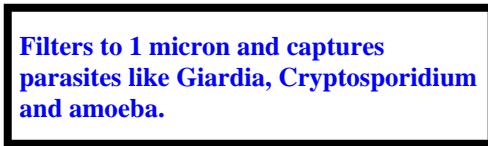
# GLOBAL WATER'S LS3™ WATER PURIFICATION SYSTEM

LS3 = Life Saving - Life Sustaining - Life Supporting™

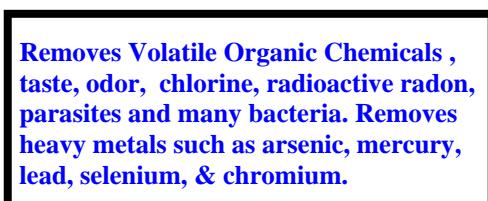


**Surface Water, Ground Water  
(Brown, wiggly, smelly water)**

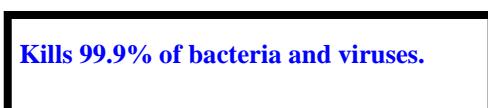
**LS3 System**



**Filtration**



**Multi  
Media  
Pod**



**Ultra Violet  
Lamp**



**Potable Water**

Global's LS3 systems integrate relatively new and much improved technologies into extremely compact units capable of reaching purity levels previously only thought to be obtained by RO or distillation. The LS3 purification system more efficiently and effectively ensures safe healthful water from dirty and previously considered unsafe water sources.

# LS3 SURVIVAL BACKPACK SERIES



The LS3 Survival Backpack series are rugged, easy to operate units designed to be carried by a single person.

They have been field proven in combat and are ideal for long-range reconnaissance patrols, special operations or any other situations that require small teams to be self-sufficient in water. May be parachuted with the operator. The Backpack series come in two variants:



## SP2-UV & SP2-UV-(S):

These units are battery operated with Ultra Violet (UV) disinfection, and include a foot pump for manual mechanical operations without the need for electricity. UV kills 99.9% of bacteria and viruses. The SP-2 models also include a totaliser that indicates the total number of gallons that have been processed.

The SP2-UV-(S) comes with a foldable solar panel array for charging the unit's batteries.

## SP2 (Iodine) & SP2-S (Iodine)

These units utilize iodine to kill bacteria and viruses (vs. UV). The S-Series includes solar arrays to recharge batteries.

The new SP3-S Series is a lightweight backpack system that utilizes fiber-impregnated filter blocks that also kill bacteria and viruses. This eliminates the need for UV, allows for a lighter system and is most conducive to air drop utilization.

Solar panels are inserted into a fold-up apron which is laid out on the ground to engage the sunlight (or even fluorescent lights). Should there be no sun light, optional attachments are available to engage wind power for recharging backpack system that utilizes fiber-impregnated filter blocks that also kill bacteria and viruses. This eliminates the need for UV, allows for a lighter system and is most conducive to air drop utilization.



## **Global Water LS3-SP (Fresh Water Survival Back Pack) Series**

### **BACKPACK MSP-2-UV**

Military, Disaster Relief, Fire-fighters, and Forest Rangers Back Pack produces 1 gallon per min, 4 liters per min, Three-step processing unit. Power: 12VDC, 110/220VAC, foot pump or battery (with AC charger). Ultra-Violet to remove Bacteria & Viruses

### **BACKPACK MSP-2UV-S**

Military, Disaster Relief, Fire-fighters, and Forest Rangers Back Pack produces 1 gallon per min, 4 liters per min, Three-step processing unit. Power: 12VDC, 110/220VAC, foot pump or battery with SOLAR ARRAY (with AC charger). Ultra-Violet to remove Bacteria & Viruses

### **BACKPACK MSP-2-IOD**

Military Back Pack, 1 GPM, 12V, 110/220, PUMP, FOOT PUMP, Iodine to remove Bacteria & Viruses

### **BACKPACK MSP-2S-IOD**

Military Back Pack, 1 GPM, 12V with SOLAR ARRAY, 110/220, PUMP,  
FOOT PUMP, Iodine to remove Bacteria & Viruses

### **BACKPACK MSP-3S-LWS**

Lightweight Military Back Pack, .7 GPM, 12V with SOLAR ARRAY, 110/220, PUMP & MOTOR, FOOT PUMP

\*Other variations and configurations available on request

# LS3 MOBILE FIELD UNITS



The LS3 mobile field units are totally self contained with their own battery for operations. They may also be powered by external sources (eg. electricity mains, generators, hand or foot pumps, shore pressure, or gravity feed). Each can be purchased with solar panels or solar arrays to recharge the batteries. The units can also run off the battery of any vehicle which might be used to transport them, as well as the capability to run off of any other available electrical source or generator. Fixed base versions are referred to as On-Site Treatment (OST) devices. OST systems provide only the basic water treatment units without mobility. They may or may not be self-contained with their own power sources.

## Special Features:

The on-board pump will only function when the UV unit is operating, ensuring the destruction of harmful bacteria and viruses

The units are fitted with a speed control for the pump or a manual valve to maintain flow rate when using water already under pressure



## **Global Water LS3 Fresh Water Mobile Field Series**

### **LS3-M2500S**

2,500 GPD, DOLLY MOUNTED, 12V with SOLAR ARRAY,  
120V/240V

### **LS3-M4000**

4,000 GPD, CARRY CASE, AC 120/240 & CONNECTIONS FOR  
12V BATTERY

### **LS3-M4000S**

4,000 GPD, CARRY CASE, AC 120/240 & 12V BATTERY with  
SOLAR ARRAY,

### **LS3-M5000**

5,000 GPD, CARRY CASE, AC 120/240 & CONNECTIONS FOR  
12V BATTERY

### **LS3-M5000S**

5,000 GPD, CARRY CASE, AC 120/240 & 12V BATTERY with  
SOLAR ARRAY,

### **LS3-M6000**

6,000 GPD, CARRY CASE or DOLLY MOUNTED, AC 120/240 &  
CONNECTIONS FOR 24V Battery

### **LS3-M6000S**

6,000 GPD, CARRY CASES or DOLLY MOUNTED, with 24V  
BATTERY with SOLAR ARRAY, 120/240

### **LS3-M8000**

8,000 GPD, CARRY CASE, AC 120/240 & CONNECTIONS FOR  
24V BATTERY

### **LS3-M8000S**

8,000 GPD, CARRY CASES, AC 120/240 & 24V BATTERY with  
Solar Array

\*Other variations and configurations available on request

# LS3 MOBILE FIELD TRAILER UNITS

Global's LS3 mobile field trailer units are compact trailer mounted, self-powered, self-contained treating units. Its specifications is intended for military and emergency disaster relief operations. Purification system frame can be disconnected from the trailer for shipping or remounting. The modular design can be fitted to accommodate any number of attached units. Each trailer can be handled by one person.



## Global Water LS3 Fresh Water Mobile Trailer Series

### **LS3-M1500**

20,000 GPD, TRAILER MOUNTED, GAS GENERATOR (DIESEL OPTION)

### **LS3-M1500-H**

20,000 GPD, TRAILER MOUNTED, DIESEL GENERATOR, Fully Enclosed

### **LS3-M36000-H**

36,000 GPD, TRAILER MOUNTED, DIESEL GENERATOR, Fully Enclosed

# Global Water LS3 Mobile Field Platform Units



## Global Water LS3 Fresh Water Mobile Field Platform Units

### **LS3-M72K**

72,000 GPD, Platforms for flatbeds, DIESEL GENERATOR, Fully Enclosed

### **LS3-M144K**

144,000 GPD, Platforms for flatbeds, GAS GENERATOR (DIESEL OPTION)

### **LS3-M250K**

250,000 GPD, Platforms for flatbeds, DIESEL GENERATOR, Fully Enclosed

### **LS3-M264K**

1,000 M3/day, Platforms for flatbeds, DIESEL GENERATOR, Fully Enclosed

# DIVISION AND CORPS ASSETS

## Fresh Water Platform Systems – ENCAMPMENT SERIES

### LS3-M15-GPM PLATFORM SYSTEM

Military ENCAMPMENT 15 GPM (21,600 GPD) fresh water purification platform. Removes parasites, removes hazardous chemicals, UV kills bacteria & viruses. 3-Phase 220V -60Hz or 380V-50Hz. Frame assembly for lifting 6' (L) x 6' (W), 1,500 lbs. Options: all-weather housing; self-cleaning UV, Generator.

### LS3-M30-GPM PLATFORM SYSTEM

Military ENCAMPMENT 30 GPM (43,200 GPD) fresh water purification platform. Removes parasites, removes hazardous chemicals, UV kills bacteria & viruses. 3-Phase 220V -60Hz or 380V-50Hz. Frame assembly for lifting 8' (L) x 6' (W), 2,600 lbs. Options: all-weather housing; self-cleaning UV, Generator.

### LS3-M50-GPM PLATFORM SYSTEM

Military ENCAMPMENT 50 GPM (72,000 GPD) fresh water purification platform. Removes parasites, removes hazardous chemicals, UV kills bacteria & viruses. 3-Phase 220V -60Hz or 380V-50Hz. Frame assembly for lifting 12' (L) x 6' (W), 4,000 lbs. Options: all-weather housing; self-cleaning UV, Generator.

## Wastewater and Wastewater-Effluent Recycling SERIES

### ENCAMPMENT

#### WASTE-WATER-RECYCLING 5-K SYSTEM

Global Wastewater and Wastewater-Effluent Recycling System for Military ENCAMPMENTS. Processes 5,000 GPD of wastewater and recycles effluent back to potability

#### WASTE-WATER-RECYCLING 10-K SYSTEM

Global Wastewater and Wastewater-Effluent Recycling System for Military ENCAMPMENTS. Processes 10,000 GPD of wastewater and recycles effluent back to potability

#### WASTE-WATER-RECYCLING 20-K SYSTEM

Global Wastewater and Wastewater-Effluent Recycling System for Military ENCAMPMENTS. Processes 20,000 GPD of wastewater and recycles effluent back to potability

#### WASTE-WATER-RECYCLING 50-K SYSTEM

Global Wastewater and Wastewater-Effluent Recycling System for Military ENCAMPMENTS. Processes 50,000 GPD of wastewater and recycles effluent back to potability

#### WASTE-WATER-RECYCLING 100-K

Global Wastewater and Wastewater-Effluent Recycling System for Military ENCAMPMENTS. Processes 100,000 GPD of wastewater and recycles effluent back to potability

## **SYSTEM**

## Emergency & Disaster Relief



### Fresh Water Systems (fits between seats of Hum V)

#### **LS3-EM-60-GPH-HP**

EMERGENCY 3-POD FRESH WATER SYSTEM Produces 60 gallons per hour of Purified Water, 1,440 GPD, weight 25 lbs, Hand Pump for water processing. 110V needed for Ultra-Violet. 18" (L) x 22" (H) x 9" (W)

#### **LS3-EM-60-GPH-BAT**

EMERGENCY 3-POD FRESH WATER SYSTEM Produces 60 gallons per hour of Purified Water, 1,440 GPD, weight 45 lbs, 18" (L) x 22" (H) x 9" (W). Battery operated Motor/Pump (12V, 9 amps) for water processing and for UV. Battery would last about 1 ½ hours before re-charging.

#### **LS3-EM-60-GPH-PWR**

EMERGENCY 3-POD FRESH WATER SYSTEM Produces 60 gallons per hour of Purified Water, 1,440 GPD, weight 40 lbs, 18" (L) x 22" (H) x 9" (W) Electric Motor (110V\*) for water processing and UV

#### **LS3-EM-120-GPH-PWR**

EMERGENCY 4-POD FRESH WATER SYSTEM for rivers & lakes with pre-filter. Produces 120 GPH of Purified Water, 2,880 GPD, weight 60 lbs, 25" (L) x 22" (H) x 9" (W) Electric Motor (110V\*) for water processing and UV

#### **LS3-VILLAGE-200-C**

EMERGENCY FRESH WATER SYSTEM produces 3.5 GPM or 4,800 GPD. 110V (220-50 Hz option) on/off no control box. Removes parasites, removes hazardous chemicals, UV kills bacteria & viruses. 39.5" (L) x 43" (H) x 12" (W) / 120 lbs

#### **LS3-VILLAGE-200-D**

EMERGENCY FRESH WATER SYSTEM WITH WHEELS and HANDLE produces 6 GPM or 8,640 GPD. 110V (220-50 Hz option) on/off no control box. Removes parasites, removes hazardous chemicals, UV kills bacteria & viruses. 39.5" (L) x 43" (H) x 12" (W) / 140 lbs

#### **LS3-VILLAGE-200-E**

EMERGENCY FRESH WATER SYSTEM WITH WHEELS and HANDLE produces 10 GPM or 14,400 GPD. 110V (220-50 Hz option) on/off no control box. Removes parasites, removes hazardous chemicals, UV kills bacteria & viruses. 39.5" (L) x 46" (H) x 12" (W) / 160 lbs

# LS3 DESALINIZATION UNITS

Global Water manufactures a state-of-the-art technological system that is more efficient, easier to operate and maintain, and more cost effective than any previous, water purification system of this size produced for the U.S. military. When dealing with NBC contamination, seawater or brackish water, Global's DESAL Series more than adequately solves these problems.



Global Water's DESAL Series is a *three phase* system with *Four Modes of Operation* which are more efficient by combining:

Phase 1 the addition of the LS3 multi-filtration-ultraviolet technology developed by Global Water Technologies linked together with

Phase 2 the latest technology in RO filtering; and

Phase 3 a basic system of pre-filtering to eliminate most of the input problems which hinder typical RO systems.

These processes make the entire system easier to operate and maintain. While the source input for water purification may vary considerably during operations, alternative technologies provided for a single mode throughput. The four mode *LS3 DESAL Series* provides for the purification of drinking water through the most cost effective method applicable to the type of source water available. In doing so it minimizes maintenance and operations costs and extends the life of the RO subsystem. In the first three modes of operation the system Separator/Sand Filter can either be included or excluded from the process depending on the condition of the source water. (Very simple controls will set any mode or sequence into operation.)

## Four Modes of Operation

**Mode 1:** Water other than sea water or NBC contaminated water is processed directly by the LS3 portion of the system. This process will eliminate the parasites, the hazardous metals, and disease causing organisms, toxic chemicals, chlorine, bad taste, odor, bacteria and viruses. This process provides high quality drinking water through a simple to operate, low maintenance, field tested system and produces no waste water stream.

**Mode 2:** Sea water, or NBC contaminated water is processed first through the RO, with that output water being processed by the LS3. This process provides high quality drinking water from the worst of possible sources.

**Mode 3:** Water including sea or nuclear/biologically/chemically contaminated water is processed solely through the RO. This process provides acceptable drinking water from the worst of possible sources.

**Mode 4:** Water other than sea water or NBC contaminated water is processed directly by both the LS3 and the RO components of the system simultaneously. This process provides both high quality drinking water and acceptable drinking water. *This mode provides for almost double normal system capacity.*

## **Logistic & Readiness**

### **Set Up, Tear Down and Operating Requirements**

After all components or modules have been positioned at the site of use, assuming only Mode 1 of operations, just the LS3 component of the WPS UNIT, the system can be put into operation by one personnel. If only the LS3 subsystem mode is being used, the setup time would be less than 1 hour (usually under 30 minutes). If using a sea water source or if NBC contamination is present and the RO subsystem mode is being used, the setup time would be within one hour and require two personnel. Set up time includes performing all pre-operation checks and services, establishing initial settings, making all mechanical or electrical connections, installing expendable items or supplies, making adjustments, and adding fluids or chemicals. Preparing the WPS UNIT for shipment or movement to another site takes one to two personnel no longer than 1 hour from the time of notification. Operations are geared for one person to operate.

### **Fuel and Power Interfaces**

Diesel generators are preferred and can be placed on the operating platforms.

### **Procedures and Tools**

Tools are standard SAE (all English) and the number of tools required to repair or maintain the systems are kept to a minimum. Operator level maintenance consists of preventive maintenance checks and services and modular replacement of defective assemblies. All tools required for normal operations and routine operator maintenance should be stored with each Global unit for protection, accessibility and transport.

### **Operation Time Meters**

The RO component has a meter that indicates to the operator the number of hours that the unit has been operated. The meter shall use the operational hours of the high pressure pump as the basis for the RO component system operational hours. The LS3 component has its own rate and flow metering.

### **System Durability and Ruggedness**

The WPS UNIT is rugged and durable to prevent, other than normal wear and tear, damage during repetitive transport, handling, lifting and loading/unloading, set-up, tear down, and operating cycles by personnel in a field environment. Global's current equipment has been field tested through the roughest of terrain, dropped from helicopters, and dropped from the back of

trucks with minimal problems. They hold up just fine, and after years of use, they keep on working.

## Maintainability

To promote and assist the achievement of maintainability objectives, Global Water will ensure the ability to maintain the equipment in the field. The capability of the potential operators to affect necessary repairs on-site is also an integral part of our design philosophy. Integral to these is the capability of the operator to quickly identify and correct any malfunction in the most adverse conditions to which the system is exposed.

In achieving the above objectives Global's operations, maintenance, and parts manuals are written in concise language. Technical terms are used only when absolutely necessary and are followed by definition. The use of drawings and pictures to compliment written text and promote understanding are maximized. The objective of the manuals is to provide the tools which an individual, who has no prior knowledge of the unit, can use to learn to operate and maintain the unit in a minimum amount of time.

Global will define:

Periodic maintenance requirements are those tasks which must be performed on calendar and/or hourly intervals.

Conditional task are performed when a given condition is met.

Unscheduled component replacement occurs when a component fails and must be replaced.

## Reliability

The design of ruggedly built reliable water purification units has been a major part of the design and manufacturing philosophy since the inception of Global Water Technologies. In many instances our current production models are deployed and utilized in areas that are remote and isolated where the availability of spare parts is non-existent. Many of our units are used in disaster relief efforts and are frequently the sole source of clean drinking water in the immediate area. As a result, users of equipment expect to not only produce safe drinking water but to do so day after day. Global Water Technologies takes pride in its ability to produce highly dependable water processing units. We also recognize that, with age and use, equipment will malfunction regardless of the amount of depth of a preventive maintenance program. We have therefore focused our efforts on developing and maintaining simplicity in unit design and construction, simplicity in operator-machine interface, and simplicity and ease of maintainability. These concepts have enable user personnel to rapidly gain the knowledge, skills, and experience required to operate and maintain the LS3 units in the field. The capability of field personnel to quickly complete on-site repairs and return the units to full operating status has significantly contributed to the reputation of the equipment and the company.

Based on unit design, all primary, secondary, and support systems are identified. A preliminary Bill of Material (BOM) is then prepared for each of the systems. The BOM identifies every component and item, including common hardware, which is required for each individual system.

The identification of all primary and secondary systems every components within the systems are also identified.

Required operating parameters are established for each component based on function and critical importance to system and unit performance.

Material and components are researched and purchased based on the ability to meet or exceed the criteria established above. Every model now produced by Global Water Technologies exceeds original design criteria.

Critical manufacturing tasks are identified. These are tasks, which if not performed correctly, could/would cause premature failure of a component or unit.

Quality assurance inspection requirements are established with special attention placed on critical manufacturing tasks.

Every unit currently produced by Global Water Technologies must meet stringent test criteria established for systems and components in each unit to ensure that not only the components but also the system meets the criteria for water purification equipment as required by local, state, and federal regulations. The test criteria apply to all system modes of operations and functions. Currently all production units manufactured by Global Water undergo a minimum of 25 hours of test and operation prior to shipment to ensure that the unit is ready for use when received by the customer.

### **Use of Corrosion Resistant Materials and Suitability for Field Conditions**

Global military equipment is designed to be simple to use, easy to maintain, rugged and reliable. All Military models constructed by Global Water Technologies takes into consideration the tough operational environment of military training and operation. The WPS system follows the same tough standards, making it resistant to moisture, corrosion, oxidation and growth of fungus and bacteria. All the electrical connections are protected. All material that could be corroded is made of corrosion resistant material. They have been field proven in combat and have been used by the US military in Somalia, Rwanda, Haiti, Afghanistan, Iraq and Bosnia.

### **Nuclear Biological Chemical (NBC) Survivability (optional features)**

These systems can be equipped with an optical spectrometer, a nephelometer, conductimeter and thermometer to determine, turbidity, TDS and temperature of source water. Data will automatically select the components to be used for the particular water type being processed. The output water from the RO and the LS3 components are then monitored for TDS, turbidity, temperature, and flow rate. The data is digitally displayed, digitally recorded and graphed. If the output water is below established minimums, the component will disconnect the system. The system is configured to withstand NBC contamination and decontamination. LS3-DESAL Series are designed to reduce corners and lips that can retain contaminants. Materials and assembly will tolerate water pressure, detergents and alkaline solutions. After the decontamination, the system will resume normal operation producing potable water of US Tri-Service quality Standards as originally designed. Following an NBC attack, there is a procedure set to replace all filters, filter housings, multi-media pods and hoses. All processed water will now be potable. Initial start-up clean output is used to wash down the equipment (with cleansing solvents) to decontaminate the system. Control panels have been modified for NBC survivability specifications whereby the operator, can easily activate and service the system wearing heavy, bulky gloves, and protective gear.

## LS3 Desalinization Small Mobile Units



### Global Water LS3 Desalination Carry-Case / Foot Locker Series

#### DESAL-M75GPH

**Military Mobile 75 Gallons Per Hour (GPH) SEAWATER up to 50,000 TDS, 125 to 200 GPH FRESH WATER, 120/240, (requires 5Kw generator) OPTIONS (at add'l cost): Trailer, All-Weather Housing, NBC capabilities, Generator, Extended Warranty, Training on-site, up to 60,000 TDS capabilities.**



## LS3 Desalination Trailer Units

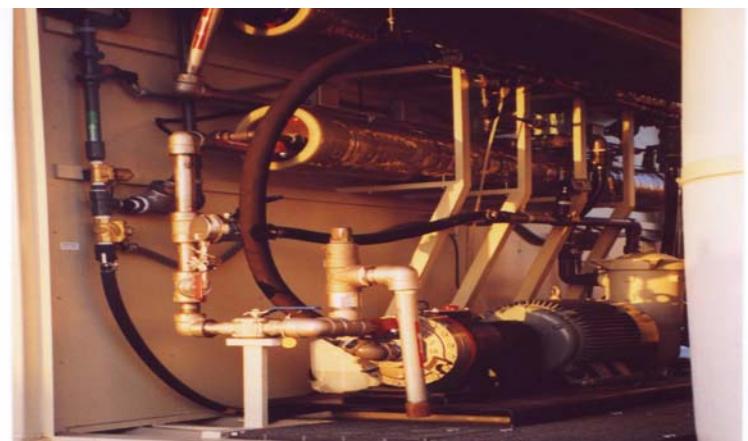
### DESAL-M300GPH

**Military Mobile 300 GPH SEAWATER up to 50,000 TDS, 300 to 700 GPH FRESH WATER, 120/240, (requires 15Kw generator)**  
**OPTIONS: AAR Container, Trailer, All-Weather Housing, NBC capabilities, Generator, Extended Warranty, Training on-site, up to 60,000 TDS capabilities.**



### DESAL-M600GPH

**Military Mobile 600 GPH SEAWATER up to 50,000 TDS, 825 to 1400 GPH FRESH WATER, 120/240, (requires 45Kw generator)**  
**OPTIONS: AAR Container, Trailer, All-Weather Housing, NBC capabilities, Generator, Extended Warranty, Training on-site, up to 60,000 TDS capabilities.**



# LS3 Desalination Flat-bed Trailer Units

## **DESAL-M1200-GPH**

**Military Mobile 1,200 GPH SEAWATER up to 50,000 TDS, 1,500 to 2,500 GPH FRESH WATER, 120/240, (requires 80Kw generator) OPTIONS: Trailer, All-Weather Housing, NBC capabilities, Generator, Extended Warranty, Training on-site, up to 60,000 TDS capabilities.**

## **DESAL-M3000-GPH**

**Military Mobile 3,000 GPH SEAWATER up to 50,000 TDS, 3,000 to 6,000 GPH FRESH WATER, 120/240, (requires 150Kw generator) OPTIONS: Trailer, All-Weather Housing, NBC capabilities, Generator, Extended Warranty, Training on-site, up to 60,000 TDS capabilities.**

**Note: See Military Catalogue for details on all products**

**All of Global's systems (unless stated as DESAL [Desalination], High TDS, or Brackish) assume fresh water or low TDS source water. Sources of water might be municipal systems, rivers, lakes, ponds or wells. Water Filtration System: Unit filters out harmful bacteria and parasites using replaceable filter media. This prepares water for consumption by persons without access to safe water supplies.**

**Systems are mobile and self-contained. They can be ordered as fixed base systems. All systems have a one year limited warranty. There are options for ALL WEATHER HOUSINGS, trailers, NBC capability and Extended (3-Year) Warranties.**

# Military, Mobile, Self-Contained WASTEWATER-RECYCLING SYSTEMS

For temporary encampments or permanent facilities, *Global Wastewater's modular, mobile and deployable*, proprietary wastewater systems provide:

**NO SLUDGE**  
**NO ODOR**  
**MINIMUM MAINTENANCE**  
**...AND EFFLUENT THAT IS POTABLE!**

## OPERATING THE SYSTEM

Raw sewage enters the unit through the influent line and passes through a bar screen, which keeps out any large solids. A super-diffuser system introduces air into the aeration chamber. The air bubbles that are generated provide the oxygen necessary to sustain the bacteria and also provide the agitation necessary to reduce solids to small particles.

After a suitable retention time, the solution is displaced from the aeration chamber to the clarifier chamber. There the remaining solids settle to the bottom in the form of activated sludge. The sludge is returned to the aeration chamber to maintain a high active bacteria count. The clear liquid at the top of the clarifier chamber flows into the LS3 wastewater purification system to kill any disease-carrying bacteria that remain. The effluent is then purified into polished quality drinking water.

The process involves only three steps:

1. **Use bacteria to eliminate waste in the water.**
2. **Separate the bacterial sludge from the water.**
3. **Recycle, disinfect, purify and polish with Global's LS3 system.**

## SIMPLE TO MAINTAIN

Maintenance on this unit is minimal! No special equipment needed! Any minor adjustment or small repair can be made with the tools you use everyday!

## EXPLANATION OF THE WASTEWATER and RECYCLING SYSTEMS



The first aspect of understanding, regarding the Global Water process, is that it is more environmentally correct and efficient to recycle wastewater than to just try to clean it and hope that the effluent doesn't ruin your land, your beaches, or your lives.

Most wastewater processing now results in “dumping” the chlorine soaked effluent flow

into the lakes, bays, rivers or right onto the land. The “sludge” from wastewater “drying ponds” is “dumped,” left on the land, or processed into a fertilizer (with sometimes questionable ingredients).

**The Global process is to totally destroy and eliminate all waste products from the wastewater stream and then recycle the effluent flow back to the quality of drinking water.** Then to disperse that final, clean effluent back into the bay, or into reservoirs for reuse, or into useful water sources for maintenance, agriculture or other needs is the only way to preserve a higher quality of life and preserve our land.

**Global's proprietary Wastewater Process** is the best quality system currently available when analyzing ease in installation, ease in operations, minimal maintenance and the resulting effluent (output). The Global process is a modular design able to grow a system efficiently and quickly as needs grow.



wastewater system; the footprint is smaller; maintenance is easier; and the quality is so superior for a better environment.

Global's modular, mobile and deployable Village Systems start with 8' containers processing 2,500 GPD to 20' containers processing 15,000 GPD to 40' containers processing 30,000 GPD.

Municipal systems function with 50,000 GPD modules 40' x 10' x 10' in clusters up to five modules, or 250,000 GPD. Every 4-clusters equals 1,000,000 GPD; 40 clusters equals 10-MGPD; 400-clusters equals 100-MGPD.

The cost to build these modular configurations is less than the “old-style”

## The Global Wastewater Processes

Global Wastewater systems utilize the biological treatment process to clean up sewage. All of the sewage input is food for micro-organisms. Raw sewage is consumed by the micro-organisms and is used to provide energy for cell activity and material for cell reproduction. These processes are called respiration and synthesis.

For years municipal sewage treatment plants use biological in one form or other. The process of biological treatment is proven and most economical.

The prime factor of biological treatment processes is that the micro-organisms (mostly bacteria) are able to easily remove organic wastes from a liquid that would otherwise be very difficult and expensive to remove by other means.

There are two types of bacteria used for biological sewage treatment systems and they both are naturally contained in the sewage.

*One type is anaerobic bacteria.* This type does not require oxygen for their metabolism. They will consume the organic waste material in sewage, but release methane and hydrogen sulfide gas as a by-product. Both of these gases are explosive, and the hydrogen sulfide produces the offensive odor associated with this process. In addition to become efficient, anaerobic processes require some form of heating. These reasons have precluded the use of anaerobic bacteria for package type sewage treatment units.

*The second type of bacteria is aerobic.* They must have oxygen for their respiration and synthesis process. They consume the organic waste material in sewage and release carbon dioxide and water vapor as by-products. This does not result in any odor or explosive hazard. No special heating requirements are needed, if the sewage treatment units are located where hard freezes do not occur. The aerobic process is also faster than the anaerobic process, with regard to waste reduction reaction rates.

If the sewage is permitted to become stale and subsequently to become septic, its odor becomes pronounced, it turns black, the solids disintegrate and decompose, the dissolved oxygen is used up, and the formation of hydrogen sulfide starts.

Both anaerobic and aerobic treatment systems are biological. That is, they depend on bacteria to consume and eliminate the organic waste material in sewage. An aerobic (air required) sewage treatment process, if the air supply is cut off. It will be a gradual change, and the odor will increase as the process becomes more anaerobic. However, the process will revert back to an aerobic process once the air supply is restored. It can take twelve to thirty-six hours for an aerobic system to become anaerobic, depending on unit size of loading.

**Global Wastewater's proprietary sewage treatment unit utilizes a type of aerobic biological treatment process called an "extended aeration activated sludge" process.**

The micro-organism or bacterial cell mass that is generated by cell reproduction is separated from the liquid being treated prior to discharge, collected, and mixed with incoming sewage. This increases the rate of removal of the organic waste coming into the system, because the waste comes in direct contact with a hungry a relatively dense population of bacteria almost immediately. This arrangement is called an "activated sludge" process.

Global's extended aeration treatment process creates a super-charged environment for the bacteria to generate more digestion in less time, enabling the recycling system to initialize its process much quicker. This arrangement keeps the ratio of bacteria population (sludge) to the available food supply (sewage) essentially constant. The bacteria cells are continuously multiplying, and the cell population exceeds the food supply available for feeding the excess population. These cells starve to death and become food for the survivors. The result of this process is to minimize bacterial cell sludge accumulation in the sewage treatment unit.

Sewage treatment systems that do not employ the extended aeration treatment concept will require continuous drain off and disposal of sludge, because bacteria are not kept away from a food supply long enough to keep the bacteria population from increasing. As a result, the bacteria population will continue to increase to a point where the sludge density becomes so great, that sludge is discharged from the sewage treatment unit.

## The Global Water Recycling Processes

Global's Wastewater System has an enhanced efficiency with a Global Recycling-Water System.

The Global Recycling-Water System will receive the effluent from the wastewater flow after only (12) hours. It will then recycle all suspended solids back to the wastewater unit.

The remaining effluent will be processed through Global's water purification process just as any other contaminated water source. Any remaining parasites and hazardous chemicals will be removed, and then all effluent will be treated with ultra-violet lamps to kill all bacteria (e-coli) and viruses.

The output of the Recycling-water system will be totally recyclable for re-entering the environment (ground or water disposal), to be used for non-food or non-drinking purposes (toilets, washing equipment, etc.), or **actually be potable for re-use.**

