



# B.W.T.S.

Black Water Treatment System

## INTRODUCING BRAC SYSTEMS INC.

Brac Systems Inc. ([www.bracsystems.com](http://www.bracsystems.com)) (BAAC - OPEN MARKET - Frankfurt Stock Exchange) is a Canadian company and world leader in the research, development, production and marketing of greywater recycling systems, rainwater harvesting solutions, hardware and software and other related technologies. Brac Systems Inc. has developed a number of fully integrated systems for the recycling and harvesting of water for residential and commercial markets.

With fresh water becoming an increasingly scarce commodity around the world and with a greater focus on increased efficiency and improved environmental performance, the market for greywater recycling and rainwater harvesting systems is expected to undergo accelerated growth over the coming years.

Brac Systems Inc. is vertically integrated, covering all aspects from research and development to sales and installation, both directly and through its network of dealers and distributors. Founded in 2005, the Company has generated sales of residential and commercial systems in more than thirty countries worldwide.

We are currently seeking investors to support the launch of our latest innovative product, The Black Water Treatment System (BWTS).

The BWTS is a significant achievement in water treatment and conservation that will revolutionize the way that we treat domestic sewage.

Brac System Inc. recognizes there is a fundamental requirement for the BWTS and believes the success of which will be exponential. With investment, our ability to supply expected demand and administer the production of the BWTS in an efficient manner will be significantly enhanced.

This document intends to outline the reasons the BWTS is such an important product and why investment in Brac Systems Inc. is such a viable and attractive proposition.



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## INTRODUCING THE BWTS

*The BWTS is a small scale wastewater treatment facility that can be installed in a residential home of any size.*

It can easily replace the widely used and antiquated septic tank system.

The BWTS uses a proven biological treatment process which renders black water safe for redistribution into the environment. Unlike a septic system which releases semi-treated wastewater into the soil, the BWTS only releases 100% treated water. Once treated, the water could be used for irrigation, toilet flushing with a greywater recycling system or safely released into the environment.

*Combined with a greywater recycling system, domestic wastewater could theoretically, be reused forever.*

Even in a developed country such as the U.S.A. more than 25% of homes are still using septic systems. That is more than 15 billion litres (4 billion gallons) of semi-treated wastewater per day dispersed below the ground's surface.

The BWTS requires human biowaste to function and should be installed in a building or facility where toilets are utilized. One BWTS alone could manage facilities with up to five hundred occupants. Larger facilities could be supplied with multiple Black Water Treatment Systems, permitting an array of solutions for numerous situations. The BWTS could be installed in almost any type of building, including but not limited to, residential homes, apartment and condominium buildings, office buildings, prisons, schools, hotels, resorts, dormitories and camps grounds.

#### What will the BWTS cost?

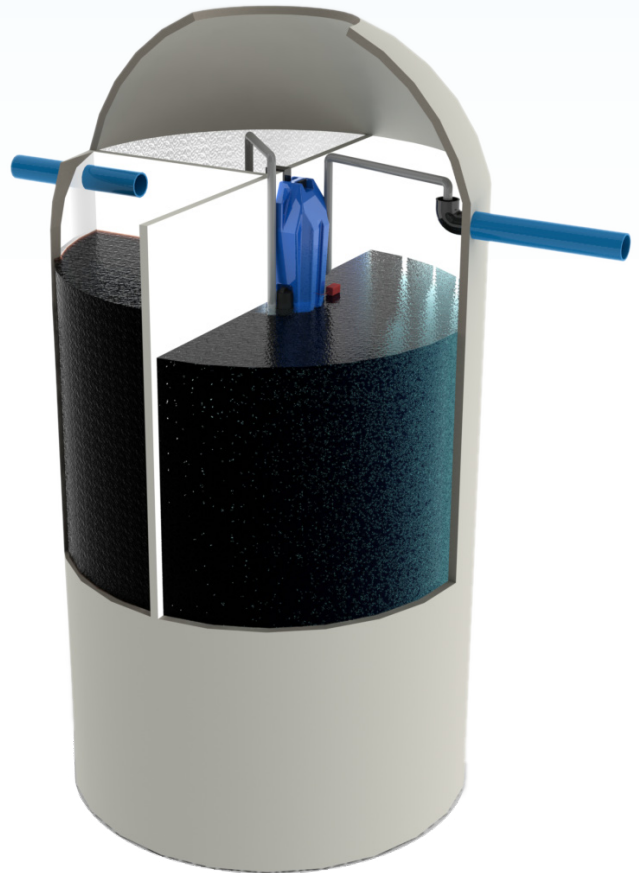
The average price of the BWTS is expected to be \$2750.

#### What will the annual operation expenses of the BWTS?

The annual operation expenses will vary from one installation to another but on average it is expected to be \$350.

Estimated price breakdown is as follows:

- \$180 Annual extraction of solids.
- \$100 Inspection and water testing. (Mandated by some local authorities)
- \$25 Electricity.
- \$45 Miscellaneous.



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[Brac Systems Inc.](http://www.brac.com)

Tel: 514 856 2722 Fax: 514 856 2723

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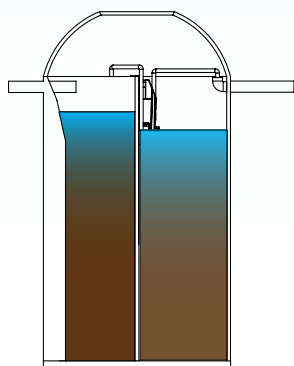
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## HOW THE SYSTEM OPERATES

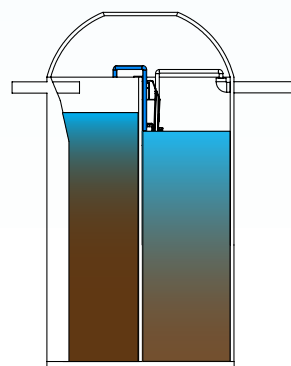
*The BWTS is based on the Sequencing Batch Reactor (SBR) process successfully used in industrial wastewater treatment systems.*

In every twenty four hours, the BWTS completes three full treatment cycles, each one lasting eight hours.

Raw effluent enters the primary settling chamber of the tank from the various fixtures around the residential home. Solid matter in the effluent will settle, the wastewater will continue through a coarse filter into the secondary chamber of the tank.

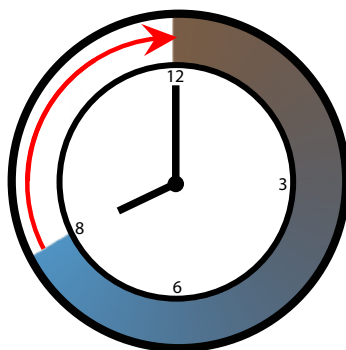


Settlement

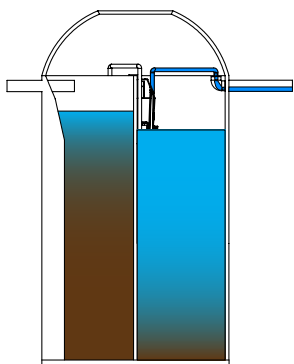


Transfer

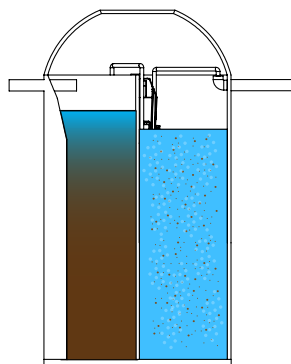
Here a biological process will begin and further settlement will take place. This wastewater is, at predetermined times transferred to the aeration chamber of the tank.



A layer of treated, reclaimed water is produced in the aeration portion of the tank and upon completion of the eight hour cycle, is evacuated out of the tank.



Clear Water Evacuation



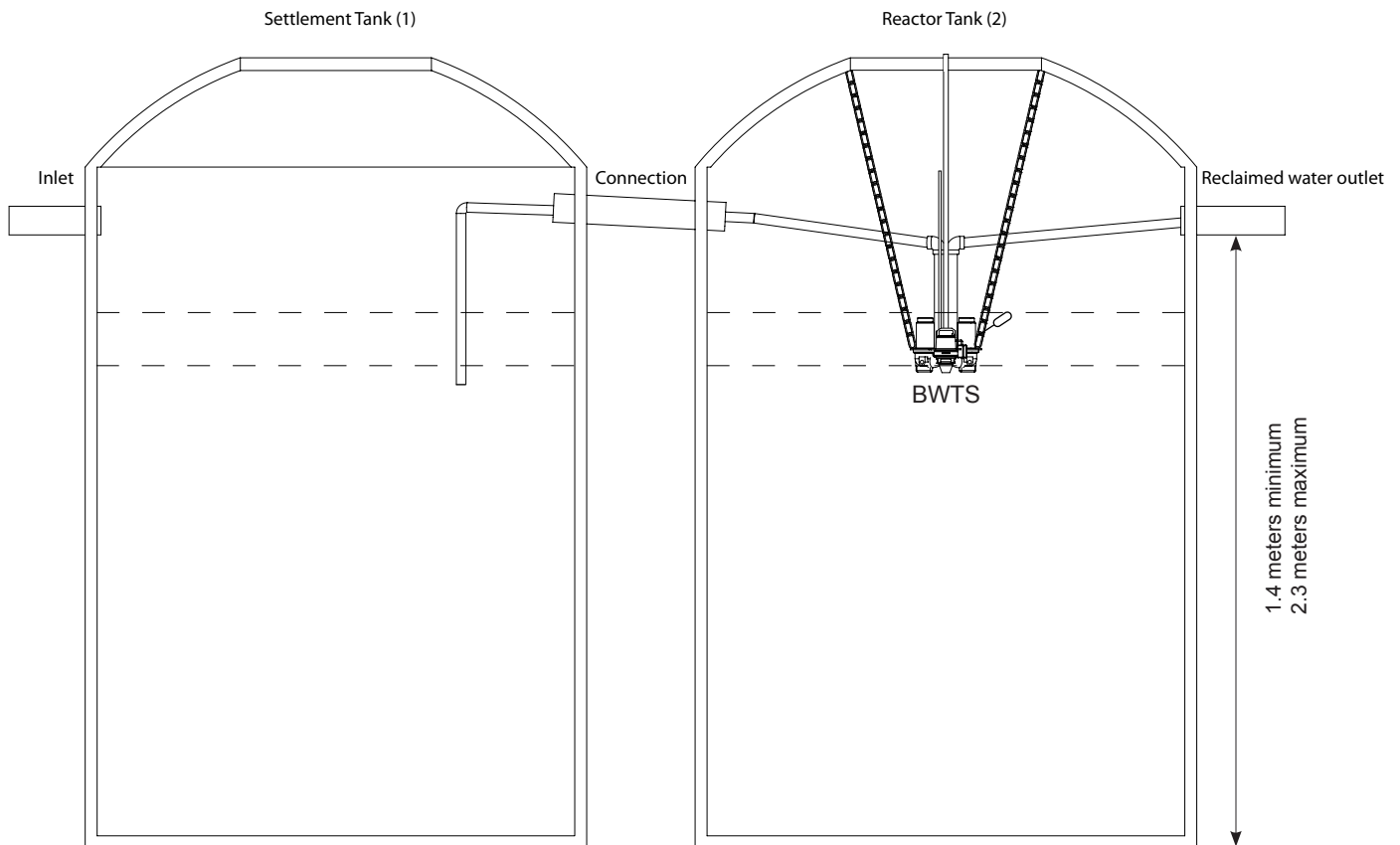
Aerification

For a set period of time, aerification takes place after which another settling stage is introduced. Activated sludge is returned to the second chamber of the tank which is necessary to ensure the continuation of the biological process.

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## Data Sheet: BWTS Tank Requirements



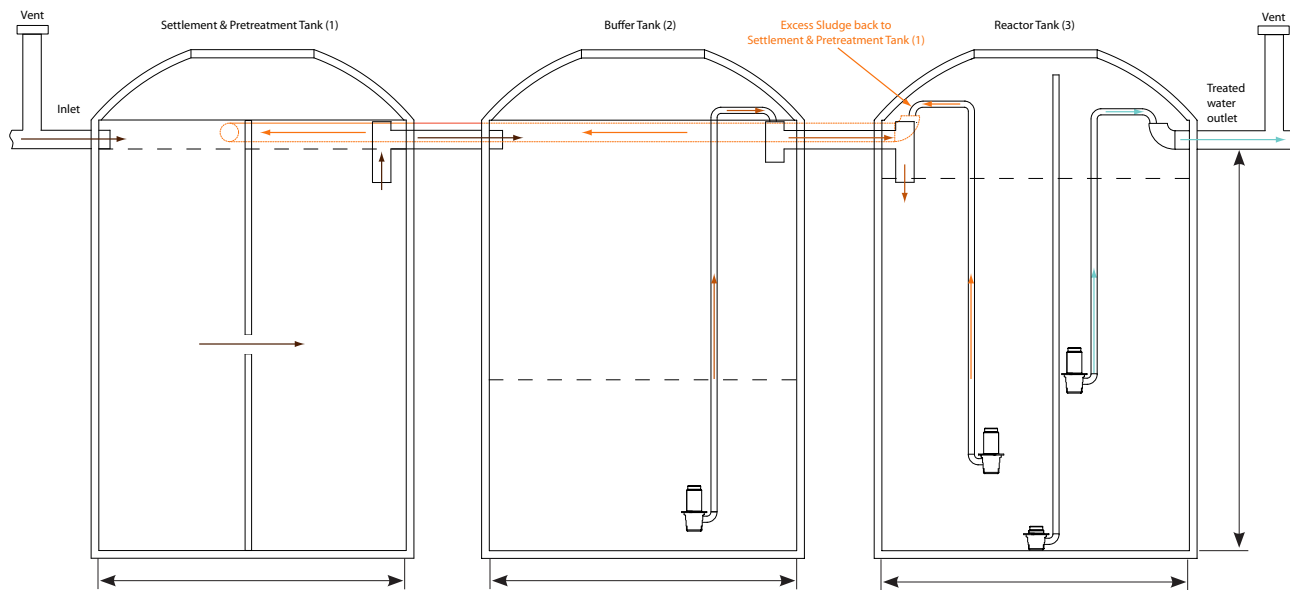
Settlement holding tank or chamber (1) - 2500 litres (660.5 USG) minimum volume based on 4 people. An additional 160 litres (42.2 USG) per person to a maximum of 10 people must be added to the minimum volume. Reactor holding tank or chamber (2) should be the same size as the settlement holding tank or chamber (1). The depth of the holding tanks should be a minimum of 1.4 metres (4.6 ft.) and a maximum of 2.3 metres (7.5 ft.). Ventilated access covers are required for both tanks or chambers.

A third holding tank could be utilized to store the reclaimed water for non-potable applications. Such a setup would require a disinfecting system to chlorinate the stored water to prevent bacterial contamination.



The **solution** for **water shortages**

## Data Sheet: BWTS Tank Requirements 60 -100



Inhabitants	Settlement Tank (1) Volume M3	Buffer Tank (2) Volume M3	Reactor Tank (3) Volume M3	Settlement Tank Diameter M	Buffer Tank Diameter M	Reactor Tank Diameter M	In/Outlet M
60	8.84	4.24	8.35	2.3	2.0	2.5	.8
75	11.70	5.18	10.54	2.8	2.0	2.8	.8
100	14.78	6.75	14.31	2.8	2.0	2.8	.8

Based on cylindrical tanks construction.  
Ventilated access covers are required for both tanks.

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## REASONS TO SELECT THE BWTS

*Over 30 million homes in the USA alone, are managing their domestic sewage with unsophisticated septic systems.*

The BWTS will change this, allowing any home to have its very own wastewater treatment plant resulting in a more sustainable, cost effective and safer way to manage domestic sewage.

### SUPERIOR WATER QUALITY

The BWTS uses a proven, fully-biological SBR treatment method that is used in large scale water treatment facilities. The result is treated water that is classed as reclaimed water and safe for redistribution. This is an especially important innovation considering that the mainstream septic systems function by releasing partially treated wastewater into the environment.

### SAFETY

Flooding, backups and leaks are huge concerns with a septic system that inevitably turn into serious health risks. This can take place over a considerable period of time with contamination of ground water with human fecal matter. If the BWTS experiences difficulty it sets off a warning alarm notifying homeowners before complications develop. If the BWTS is integrated into a buildings control management system, it can be set-up to monitor and automatically detect abnormalities.

### SUSTAINABLE

The treated water from the BWTS is reclaimed water which could be reused for certain types of irrigation, outdoor cleaning and with the aid of a greywater system, toilet flushing. This will allow homeowners and commercial business to save substantial amounts of potable water.

### INEXPENSIVE

An average septic system can cost up to \$20,000 compared to the BWTS which will retail for approximately \$2750 for an average domestic application. Since the BWTS is a lightweight and compact apparatus weighing approximately 55 lbs (25 kg), transportation and handling are straightforward and inexpensive.

### LONG TERM RELIABILITY

A perfectly maintained BWTS is a solution that could last a lifetime requiring minimal replacements of parts over a ten to twenty year period. Since the apparatus is installed from the top, accessibility for maintenance is a straightforward procedure. This is extremely beneficial compared to a septic system that can require replacement almost every decade due to annual declines in treatment quality.

### EASY TO INSTALL

The BWTS is a compact apparatus mounted over any approved holding tank with an accessible manhole. To reduce costs, tanks can be built or purchased locally or existing septic tanks utilized with some minor alterations. In approximately five hours, one experienced installer could install and setup the BWTS. In comparison, a septic system can take several days to install with its elaborate set of drainage piping. The septic systems drainage and holding tank could occupy approximately 1000 square feet of land that cannot be built upon or used as parking.

### WILL WORK ANY WHERE

The BWTS does not depend on the outside environment to function as in the case of a septic system. An existing septic system can be retrofitted to accept the BWTS with relative ease.

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## THE BWTS IN THE USA

*When singling out the USA as a market, it becomes apparent just how lucrative the BWTS could become. When you consider that the USA represents only 10 to 15% of the overall global market.*

One and a half million housing units are built on average per year in the USA based on the last 10 years. It is impossible to build a housing unit without addressing wastewater, whether it is a municipal connection or a septic system.

Only 3% of the waster water market is required to earn \$123.75 million yearly revenue from the U.S.A.

### NEW BUILDING DEVELOPMENTS

Estimated Sales: \$41.25 million.

One and a half million housing units are built on average per year in the U.S.A. based on the last ten years. It is impossible to build a housing unit without addressing wastewater, whether it is a municipal connection or a septic system.

If only 1% of new housing units per year, installs a BWTS, this would represents fifteen thousand units a year. Which in turn calculates with the expected BWTS retail price, of \$41.25 million annual revenue.

### EXISTING HOUSING UNITS

Estimated Sales: \$82.50 million dollars

There are 30 million housing units in the USA with septic systems. 5% (1.5 million) of these housing units per year will need to change their septic system. This is based on a 20 year changing period however a real conscientious homeowner will change their septic system every 10 years.

If only 2% of new housing units per year, installs a BWTS, this would represents thirty thousand units a year. Which in turn calculates with the expected BWTS retail price, of \$82.5 million annual revenue.

## Conservative Five Year Forecast

### NEW BUILDING DEVELOPMENTS

BWTS installations in new developments would be expected to increase rapidly over the next few years, as project developers, designers, contractors and the general public learn about our products.

If 1% if market share is gained every year then the next five years of annual revenue would look like this:

2011 - 1% = \$41.25 million  
2012 - 2% = \$82.50 million  
2013 - 3% = \$123.75 million  
2014 - 4% = \$165 million  
2015 - 5% = \$206.25 million

**Revenue over 5 years = 618.75 million**

### EXISTING HOUSING UNITS

BWTS installations in existing housing units would be expected to increase every year as more homeowner's learn about our product.

If we assume the rate of growth for the first year is 2% and continues at a pace of 0.5% per year then the next five years of annual revenue would look like this:

2011 - 2% = \$82.50 million  
2012 - 2.5% = \$103.125 million  
2013 - 3% = \$123.75 million  
2014 - 3.5% = \$144.375 million  
2015 - 4% = \$165 million

**Revenue over 5 years = \$618.75 million**

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## THE BWTS AROUND THE WORLD

*All these regions are threatened by water scarcity in which numerous countries do not have municipal plumbing.*

This is a risk to public health and safety making the BWTS an extremely important product to supply the global market for the treatment of domestic wastewater.



The USA as a market for the BWTS has incredible potential considering the existing and new developments. However, the USA represents only 10 -15% of the global market. There are countless regions where water resources are limited through drought and infrastructure, threatening public health and the environment.

The truth is that water is life, not only for the human race, but for the survival of all animals. As the population grows our natural resources deplete, contamination of this most precious resource increases and we are forced to find alternatives to save water and protect our world. Brac Systems Inc. has been committed to this cause for over five years and has become synonymous with greywater recycling and rainwater harvesting.

It is now time to pursue new aspirations with our dedicated personnel's skills and determination to produce innovation that is the BWTS. Our international distributors and dealers are receiving weekly inquiries as to when a black water treatment system will be available proving the requirement and urgency to produce such a system. By utilizing our experienced global distribution and dealer network, the BWTS will achieve success.

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