

# ***MULTI-FLO***

## **WASTEWATER TREATMENT SYSTEMS**

### **MANUAL FOR OPERATION, MAINTENANCE AND TROUBLE-SHOOTING GUIDE**

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## I. BASIC OPERATION AND MAINTENANCE REQUIREMENTS

The following is a description of the normal maintenance required to insure continuous satisfactory operation of the **MULTI-FLO** systems:

### START UP:

Allow 6-to-8 weeks for sufficient bacteria to provide proper treatment in the **MULTI-FLO**. During this period, there may be sudsing from laundry wastes. *Sudsing can be reduced by limiting the volume of laundry washed daily and by using a low-sudsing detergent.* In situations where excessive laundry water is expected, “seed” the **MULTI-FLO** with “mixed liquor” from another unit. To prevent short-term hydraulic overloads, spread out laundry washing.

### PUMPING EXCESS SOLIDS:

Periodic pumping is necessary to remove excess bacteria and other solids. For a typical single-family dwelling, the **MULTI-FLO** will require pumping at 2-to-4 year intervals. **MULTI-FLO** representatives can advise customers when their **MULTI-FLO** should be pumped.

### FILTER CLEANING:

Filters should be cleaned whenever a **MULTI-FLO** is pumped. Filters may need to be laundered if the aerator is shut off for extended periods or they are plugged by grease, soap, residue or solids.

### AERATOR REPLACEMENT:

The average life expectancy of the aerator is 3-4 years. New and replacement have a two-year warranty.

### ALARM:

**MULTI-FLO** alarm systems indicate both aerator failure and filter plugging. Although the homeowner will not normally experience immediate filter plugging, the **MULTI-FLO** service representative should be notified as soon as the alarm is activated.

### SERVICE CONTRACT:

**MULTI-FLO** units require periodic maintenance. With the purchase of each **MULTI-FLO**, every owner receives a two-year service contract, which provides a warranty on all parts service, including a minimum of two inspections of the unit each year. After the initial two years of operation, owners are urged to maintain their service contracts to insure regular inspection and service of the **MULTI-FLO** system. **NOTE: The warranty does not include misuse or abuse of the system.**

### REPLACEMENT PARTS/SERVICE:

Contact the factory for the name of the closest sales/service representative.

## SUMMARY OF MAINTENANCE REQUIREMENTS (Residential)

Start up period ..... 6-to-8 weeks after sewage first enters unit

Pumping frequency ..... every 2-to-4 years

Filter cleaning..... every 2-to-4 years

Aerator replacement ..... 3-to-4 years

Routine inspection frequency..... every 6 months (minimum)

NOTE: Due to differences in wastewater strength, increased user abuse, and hydraulic surges, additional treatment facilities and/or increased maintenance may be required. Please check with your **MULTI-FLO** representative.

## II. EQUIPMENT AND MATERIAL ESSENTIAL FOR SERVICING MULTI-FLO UNITS

100' garden hose with spray nozzle

100' extension cord

1/3 hp submersible pump (little giant) with outlet made of flex pipe.

Small utility pump with 1/2 - 5/8" garden hose (6') on inlet and outlet (Teal model IP 579E, Simer Minivac Model M40 or equal.)

Pliers - standard with insulated handles

Pliers - channellock

Caulking gun

Caulking, silicone

Hammer

Electrical tape

Wire nuts

Knife

Screwdriver

Replacement parts:

- aerator

- filter bag expanders

- filter bags

- stainless steel spring clips

- pressure switches (for old style units)

- alarm

- latch assembly

Wiping rags

Gasket material

Adhesive for gasket

Volt ohm amp meter

Sample collection jars (1 quart capacity)

### III. SERVICING PROCEDURES

- Note: During all service procedures, be sure to observe good hygiene practices, including wearing gloves and proper hand washing.
- Step 1 Layout garden hose, wiping cloths, tools, electrical tape, utility pumps, and extension cord.
- Step 2 Turn off electrical power to **MULTI-FLO AFTER COMPLETEING SETTLEABLE SOLIDS TEST.**
- Step 3 Remove lid to **MULTI-FLO**. Check surge bowl for signs of high water or foaming. Check the area around the **MULTI-FLO** for signs of previous overflow.
- Step 4 Wash the inside of the lid and surge bowl of **MULTI-FLO**.
- Step 5 Remove the surge bowl and check the gasket on both the bottom and top. If it is loose, re-glue it; if it is damaged, replace it with *new gasket material*.
- Step 6 Check the filters for possible plugging by running water into the center chamber and check for a quick, noticeable rise in the water level inside of the tower. If filters are plugged, follow procedures outlined under "Filter Cleaning."
- Step 7 Collect a sample of the mixed liquor for a settleable solids test.
- Step 8 Using the utility pump, vacuum the top of the weir to remove accumulated solids. Follow procedures outlined in this manual under "Cleaning the Hanger Plate and Weir: Procedure." Check for sludge build-up in the bottom of the filter bags. If the solid accumulation on top of the weir is excessive (greater than 1/2" thick) or appears to noticeably be more concentrated in one area, check for a torn filter(s), improper placement of clips, thin filter material, or a gap between the hanger plate and the ring on the top of the filter. Make appropriate corrections.
- Step 9 Remove aerator and check for accumulation of foreign material wrapped around impeller.
- Step 10 Replace aerator and check the intake tube to insure that it does not have any blockage. On newer units, check to ensure the clear plastic tube is not twisted or kinked. Kinks in the hose will cut off aeration to the treatment tank and allow septic conditions to develop. The plastic line on pressure switch unit must not kink.
- Step 11 Reinstall the surge bowl. **Make sure that the flat surface of the surge bowl is placed next to the electrical box or that the black marking stripes align properly.**
- Step 12 Close lid to **MULTI-FLO**. Make sure the lid is properly secured with a tamper-proof bolt, padlock or other approved locking device.
- Step 13 Turn on the electrical power to the **MULTI-FLO**.
- Step 14 Check out alarm system.
- Step 15 After appropriate settling time (possibly 24 hours) check settleable solids reading to determine if the **MULTI-FLO** should be pumped before the next routine service call. Advise homeowner accordingly.
- Step 16 **Be sure to leave the owner notice of the inspection/service call, inspection results, service provided, and recommendations.**

## IV. PUMPING

Bacteria and other microorganisms present in the wastewater use soluble organic material as a food source, converting it into more microorganisms (biomass), water, and carbon dioxide. As the colony matures, the numbers of microorganisms increase until they exceed the supply of organic material to maintain them. Due to the resulting starvation, organisms will begin to die and then be metabolized as new organisms are formed. Metabolized organisms reduce the overall solids (or “sludge”) volume.

There will be a gradual increase in solids due to the accumulation of inert remains of dead organisms and non-degradable material in the wastewater. As the solids increase, the mixed liquor becomes thicker, reducing the scouring effect on the filters. Periodically, the solids must be pumped from the **MULTI-FLO** to prevent filter plugging and maintain adequate aeration within the system.

### PUMPING FREQUENCY:

The rate of solids accumulation—and resultant pumping—is dependent upon the quantity and strength of wastewater entering the plant, i.e.; the greater the waste load, the more frequently the **MULTI-FLO** should be pumped. Normally, residential systems should be pumped every 2-to-4 years. Units serving commercial occupancies may need to be pumped every 1-2 years, depending on the waste load.

### DETERMINING PUMPING FREQUENCY:

Trained service personnel can help owners establish a pumping frequency by performing a 45-min. settleable solids test of the mixed liquor during semi-annual service:

#### Procedure

1. Mark a quart jar into 10 equal portions
2. While aerator is running, fill the jar with mixed liquor suspended solids by lowering the jar into the center aeration chamber.
3. Measure the percent of the original volume occupied by the sludge after it has settled for 45-min.

The optimum level of settleable solids (45-min) is normally between five and 50 percent. Whenever the percent of settled sludge exceeds 50%, the unit should be pumped.

### PROCEDURE FOR PUMPING THE MULTI-FLO:

1. Shut off the **MULTI-FLO** and allow solids to settle for 30-60 minutes.
2. Remove access cover and the surge bowl.
3. Lower the hose into the center aeration chamber. *Care should be taken to avoid knocking or damaging the aerator, air intake tubing or power cord. Be careful with the older model FTB 0.75 because the aerator sits on a platform.*
4. Pump solids from the bottom. If the filters are not to be removed, be sure to hose down the filters and the bottom of the hanger plate.
5. Pump down the tank, until the liquid level is at the top of the aerator. This will leave sufficient seed material to allow start-up conditions to develop.

6. *In areas with a high water table, immediately refill the **MULTI-FLO** with clear water to prevent shifting or flotation.*

## V. FILTER CLEANING

Under normal operating conditions, the filters in the **MULTI-FLO** do not require manual cleaning or backwashing. The extent of the bacterial buildup on filter surfaces is limited by the constant scouring from the aeration and sloughing of the solids.

The biomat that develops on the surface of the filter enhances filtration. Therefore, *cleaning of the filters is not recommended unless actual plugging is occurring.* The following conditions may cause plugging of the filters to occur:

1. Excess buildup of solids in the **MULTI-FLO** (see Pumping Procedures).
2. Extended septic conditions (see Aerator Replacement). Normally, the filters will not plug unless septic conditions exist for a period more than 7-to-10 days.
3. Excessive grease entering the **MULTI-FLO**. This may become a problem at a food service facility or in a home with a garbage disposal.
4. Hydraulic overload. (See Troubleshooting Guide for remedies.)
5. Organic overload. (See Troubleshooting Guide.)

CLEANING PROCEDURE (Standard Procedure):

1. Remove spring ring retainer from filter.
2. Without removing the filters, grasp the filter by the ring at the top and move it up and down in the weir to scrape off the accumulated solids and biomat.
3. Check the interior of the filter. If there is an accumulation of sludge in the bottom, remove the filter and pour the sludge into the aeration chamber.
4. Replace the filter in weir and push back in place. Replace the spring ring retainer.
5. If the water fills up the filter as fast as it is being pushed down through the weir, no further cleaning is required. Follow the same procedure with the remaining filters. **NOTE: This procedure is only recommended when done during routine pumping. If the above procedure does not adequately cleanse the filters, or if the plugging resulted from other causes perform the following procedures:**
  - a. Replace the existing filters with a clean set.
  - b. Launder the old filters on gentle cycle and allow them to air dry (do not use a heated dryer as this will damage filters). Add bleach with the detergent (or during the rinse cycle) to enhance the cleaning of the filters and provide personal health protection.

**Do not attempt to clean the filters by washing them with a garden hose or pressure washer. This can damage the filters or leave a residue within the fabric which will cause the filters to plug prematurely.**

Hydraulic or organic overloads should be considered if filters plug frequently (i.e., less than 12 month intervals), or shortly after the unit goes into operation. Contact the **MULTI-FLO** distributor or factory representative for assistance.

## VI. CLEANING THE HANGER FILTER PLATE AND WEIR

Often, "pin floc" (less than 0.03 inches in diameter) forms as a result of over-oxidation of the sludge. Pin floc is observed in units with low hydraulic loads and long retention times, which allow digestion of the bacterial cells to occur. These fine, mostly inert, solids may pass through the filter fabric, especially if an inadequate biomat has formed on the filter surface. Pin floc may occur in new units though hydraulic surges (laundry, showers, etc.) may also force some of the small particles through the filters.

Pin floc usually settles to the bottom of the filters. However, some of the particles may be carried upward through the filters and settle on the upper surface of the hanger filter plate. It will be necessary periodically to remove the settled solids from both the hanger plate and inside of the filters to prevent solids from being carried over the weir.

#### PROCEDURE:

1. Pump the settled solids off the top of the hanger plate using a 1/2 to 5/8 inch garden hose for an intake and discharge. Place the discharge end into the center chamber.
2. If there is a significant amount of settled sludge in the bottom of the filters, pump the sludge out using a 4 foot section of 3/4 inch PVC pipe attached to the end of the intake hose. If there is no access to a pump, remove the filter and pour the sludge into the center aeration chamber. If surface discharge of the effluent is used it is good policy to plug the 4 inch discharge line until cleaning is completed.

#### CLEANING FREQUENCY:

Under ordinary conditions, the top of the hanger and weir should be cleaned during each routine inspection (every 6 months). Sludge should be removed from the interior of the filters whenever it exceeds 6 inches in depth or if clumps of floc float at the top of the filter (approximately once every 12 months).

**It is not advisable to remove or clean the filters more than is necessary. Unnecessary cleaning will wear or damage filters and expanders.**

## VII. AERATOR REPLACEMENT

#### PROCEDURE:

1. Turn off the electricity before working on aerator.
2. Remove the three wire nuts and disconnect the aerator electrical cord from the main power cable.
3. Loosen the pressure fitting in the center tower and gently pull the power cord through so that the aerator is free.
4. Grasp the air intake tube and raise the aerator until the upper union (located in the middle of the air intake tube) is visible.
5. Disconnect the sensor (upper) portion of the intake and lay it back on the hanger plate. The aerator is now free and can be moved from the **MULTI-FLO**.
6. Change aerators and replace in the **MULTI-FLO** by following the above procedure in reverse.

## VIII. ALARM REPLACEMENT

### PROCEDURE:

1. Turn off the electricity before working on the alarm.
2. Unplug the alarm or disconnect the power cord.
3. Unscrew the face plate of the alarm.
4. Remove the two wire nuts and disconnect the green and white sensor wires.
5. Remove the alarm box from the wall or mounting bracket and replace with a new alarm.
6. Reconnect the sensor wires (white to white; black to black).
7. Replace the face plate; plug in the alarm and restore power.
8. Check alarm by pressing test button.

## IX. SAMPLE COLLECTION

**MULTI~FLO** units produce an effluent exceeding the performance requirements of NSF Standard 40 (Class I) for aerobic treatment plants: 30 day average of <25 mg/l CBOD and <30 mg/l TSS. Local health agencies may require periodic sampling to confirm this performance. If this is necessary, the following procedure should be followed.

To collect samples from the **MULTI~FLO**, care must be taken to get reliable and uncontaminated samples as **effluent is discharged from the unit**.

1. Provide a suitable port on the outlet of the **MULTI~FLO** (see Fig. 1). The port should be at least 6" in diameter, with a minimum depth of 8" below the effluent line.
2. Using a clean cloth, wipe the interior of the effluent line, where it enters the sampling port, to remove any debris that may have accumulated.
3. Drain water into the cleanout before the **MULTI~FLO**, to generate a flow through the unit. Allow the flow to continue for approximately one (1) minute to flush the line.
4. Shut off the water and dip the water out of the sampling port. Discard this water.
5. Turn on the water and collect a sample as effluent flows into the sampling port. Do not collect water that has accumulated in the sampling port. Take care to avoid catching dirt or other debris while collecting the sample.

Figure 1



## I. AERATOR

A. Aerator will not run or continually kicks the circuit breaker.

1. Circuit breaker is inadequate for use.

1. Check circuit breaker. Should be at least 8 AMP, but should not exceed 15 AMP per aerator. Check for other appliances/pump connected to breaker.

2. Impeller is rubbing on motor bracket.

2. Check gap between the impeller bracket by turning the impeller. Loosen set screw on cross and slide tight against motor housing. Replace impeller. Remove spacers until rubbing occurs, then add one or more until rubbing stops.

3. Foreign material is caught on impeller.

3. Check aerator and move material.

4. Worn motor is drawing excessive amperage or locking up completely.

4. Remove aerator from tank and check for proper operation by connecting to separate electrical receptacle. Check amperage to insure it does not exceed 2.4 Amps. If motor is faulty replace or send to factory (Consolidated Treatment) for repair.

5. Power cord is cut or damaged.

5. Inspect cord and test for continuity. Replace if necessary.

6. Wiring used for installation may be inadequate for loading and distance. Wiring may also be damaged.

6. Have wiring checked by licensed electrician and replace if necessary.

B. Motor hums but the impeller will not turn

1. Foreign material is caught on impeller.

1. Remove material.

2. Impeller is rubbing on motor.

2. Refer to section I "Aerator".

C. Aerator runs but no air in intake pipe.

1. Foreign material in aerator.

1. Remove pipe, nipple and tee from aerator and flush with water.

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|--|--|
| 2. Aerator has a loose impeller or key way is sheared from impeller. | 2. Tighten bolt or replace impeller.   |
| 3. Air intake pipe or plastic tubing is plugged                      | 3. Flush with a garden hose and pressure nozzle.   |
| 4. Plastic intake pipe tube is kinked                                | 4. Re-align to remove kink. Plastic tubing may need to be replaced if the kink is permanent. |
| 5. Debris or scale build-up under impeller.                          | 5. Remove impeller and scrape off material.  |

## II. ALARM

A. Light does not come on when pressing the test button.

1. Alarm is not properly energized or the power is off.
2. Alarm has a built in time delay.
3. Alarm is faulty.

1. Check alarm to insure it is plugged into a 115 VAC outlet and that the breaker is on.
2. Hold the test button for at least 15 seconds.
3. Turn off aerator to check alarm. If alarm is not activated, replace with a new alarm or return to factory for repair.

B. Customer complains alarm is going off but at time of service the alarm is reset and the MULTI-FLO appears to be running normally.

1. A power outage.
2. The filters are partially plugged causing a temporary surging of the water into the surge bowl during periods of heavy water usage such as laundry.
3. Sensor foam cap is missing.
4. Moisture has collected under red sensor foam cap.
5. A partial blockage in the discharge line restricts flow out of the plant.
6. The aerator motor is

1. Check to see if power outage has occurred. Alarm will come on after any power outage when the power is restored. This will occur for a few seconds only and will reset automatically. Push reset button on visual, and audio visual alarms.
2. Refer to section V "Filter Cleaning".
3. Replace foam cap if missing.
4. Remove and clean foam cap and top of metal sensor. Replace cap, leaving at least ¼" space between cap and sensor bolt.
5. Check by running water from hose into outlet pipe and observe for back-up. If blockage exists rod out line or repair as required.
6. Replace aerator.

running intermittently due to the thermal overload when motor over heats.

7. High ground water in area causes back-up due to saturation of drainfield. Problem occurs during rainy periods.

7. Repair/Replace drainfield according to directions from health department.

C. Alarm is not activated when aerator is turned off.

1. Alarm box is not energized.

1. Check by pushing test button for 15 seconds. If light and/or buzzer are not activated, check to make sure alarm is plugged in and that the breaker is on.

2. Sensor wires are not properly connected.

2. Check connection of the two wires in the alarm box to the cable from pressure/float switch (old style) or aerator/high water sensors (new style).

3. Aerator sensors are corroded or dirty.

3. Flush airline and clean sensors located on the inside of the airline.

4. (Old style) 3/8" tubing to pressure switch clogged or kinked so that proper pressure is not occurring at pressure switch.

4. Clean or replace tubing.

5. (Old style) Leakage between the pressure switch and aerator tee which causes pressure loss.

5. Tighten all fittings and connections.

6. (Old style) Faulty pressure switch.

6. Replace pressure switch.

7. (Old style) Pressure switch connections are loose.

7. Check the pressure switch cable, restrip and connect the wires properly. Clean terminal and all connections.

D. Alarm does not go off due to high water in surge bowl.

1. Alarm box is not energized.

1. Check by pushing test button for 6-7 seconds.

		Check to make sure alarm is plugged in and that the breaker is on.
	2. Holes in red foam cap are plugged.	2. Clean cap or replace. Make sure that holes are at least 13/64" in diameter.
	3. (Old style) Float switch is not connected to the alarm cable.	3. Strip and clean the ends of the alarm cable and float cable. Reconnect with wire nuts.
E. Alarm stays on all the time even when the aerator is running and filters are OK.	1. Sensor wires in the alarm box are touching.	1. Check to make sure the wires are properly connected: white to white and black to black.
	2. Black and white wires are wired incorrectly.	2. Reverse connection of white and black wires in the alarm box.
	3. Sensor wires are damaged in air intake assembly.	3. Replace air intake assembly.
	4. Aerator sensors are shorting out.	4. Remove top air intake assembly and check sensor. If they are touching, hold one sensor with needle nose pliers and push up second sensor with a screw driver so that they no longer touch.
	5. The alarm is faulty.	5. Replace alarm or return to factory for repair.
	6. Debris or water has collected under red sensor cap.	6. Remove cap and clean cap and sensor. Replace cap making sure there is about 1/4" gap between the sensor and cap.
	7. (Old style) Float switch is faulty.	7. Replace float switch.
	8. (Old style) Pressure switch is faulty.	8. Replace pressure switch.
	9. (Old style) Moisture has collected in pressure switch.	9. Replace pressure switch and allow old switch to dry.

10. (Old style) 3/8" tubing to pressure switch is clogged.

10. Clean tubing.

### III. FILTERS

A. Unit is overflowing or backing up into house.

1. Filters are completely or partially plugged.

1. Run water into the surge bowl. If water does not pass through filters causing a noticeable and rapid rise in the water level, follow the procedures for cleaning filters.

2. Filters are plugged due to excessive solids concentration.

2. Perform 60 minute settleable solids test. If results are >50% and unit has been in use for 2+ years, follow the procedures for pumping.

3. Filters are plugged due to septic conditions. This is indicated by black or grey color of aeration tank and filters: Aerator may be inoperative or running very slowly. If necessary, check with air flow meter to insure a minimum of 1.5 ft<sup>3</sup>/m.

3. Check breaker or power source to insure power is provided to aerator. Remove aerator and connect directly to power source. If aerator is inoperative, replace or return to factory for repair.

4. Filters are plugged due to grease or soap residue.

4. Check for improper use of garbage disposal. If noted, discontinue use or provide a trash trap. If grease continues to accumulate in MULTI-FLO, check sewer line from building for grease build-up

5. Filters are plugged due to excessively high BOD (organic loading). This would be indicated if the influent (raw) BOD exceeds 350 mg/l.

5. Contact your MULTI-FLO factory representative for assistance.

6. Filters are plugged due to

6. Contact your MULTI-FLO

excessive hydraulic flows (daily flows average more than 70% of plant design); or, peak flows/hydraulic surges (any hourly flow rate greater than 10% of plant design).

factory representative for assistance.

7. Filters are plugged due to extraneous water entering the system (i.e., leaking fixtures, floor drains, etc.)

7. Check for sources of non-sewage flows to system. If they exist, they need to be disconnected or repaired.

8. Filters are plugged due to the growth of "filamentous" organisms in the treatment plant. These organisms produce an extra-cellular "slime" which can seal off the filter surface. The causes of these organisms can be due to low pH (<6.0); low dissolved oxygen; septic influent containing high sulfide or iron levels; nutrient deficiency; or recovery from a toxic upset. Waste waters containing high levels of grease or carbohydrates may also stimulate the growth of these organisms. Occasionally, heavy continued use of medications may be a factor.

8. Contact your MULTI-FLO factory representative for assistance.

9. Filters are plugged due to the introduction of toxic materials into the treatment plant, preventing the growth of normal bacteria. Refer to item VI, C (odors).

9. Contact your MULTI-FLO factory representative for assistance. Possible causes include water softener backwash, continual use of medications, drain cleaners, bleach, etc.

B. Accumulation of solids on hanger plate above filters (solids settle out but accumulate more heavily on certain sections of the hanger

1. Torn or damaged filter (large air bubbles will be noted coming up the inside of the filter plate).

1. Replace filter.

2. Filters are not properly

2. Remove clips; re-set filter,

	fitted to hanger plate (small bubbles will be coming around the edge of the filter ring.	making sure the cloth is not caught between the ring and the hanger plate; replace clips. Make sure the clips are set at right angles to each other.
	3. Solids have settled in bottom of filters and are beginning to "denitrify" causing solids to float to the top of the filter.	3. Pump settled sludge out of filters.
C. Accumulation of scum layer which floats on the surface of the water (i.e., effluent) above the filters.	1. Damaged gasket on the bottom of the surge bowl.	1. Replace gasket.
	2. Residue of brown foam which has overflowed from under the lid and adhered to the bottom of the surge bowl.	2. Refer to Section V "Foaming".
	3. Poor seal between gasket on bottom of surge bowl and access tower, allowing seepage to occur under the surge bowl.	3. Install a tower ring adapter to provide a tighter seal.
D. On new installations, a grayish material develops on the hanger plate; effluent is clear, free of solids.	1. A fungus develops due to the soluble nutrients from laundry waste. Plant has not matured.	1. Using utility pump, clean off hanger plate. Generally, the growth will not re-appear. If so, contact the factory representative for assistance.

#### IV. SUDSING

A. During start-up, white frothy suds build up in the surge bowl. In extreme cases the suds may seep out under the lid.

1. Insufficient bacterial development in plant. Although typically a start-up condition (6-8 weeks), intermittent or light usage can create similar conditions.

2. Excessive use of laundry detergent. This can be an on-going problem with lightly loaded or intermittently used installations.

1. Space out laundry. A defoamant block (purchased from the manufacturer) can also be installed to reduce foaming tendencies. Refer to recommendations on laundry.

2. Reduce the amount of laundry detergent used per load. This will also provide a cost savings to the homeowner. Again, the use of a defoamant block can be beneficial.

## V. FOAMING

A. A thick, brown, leathery foam builds up in the surge bowl. In extreme cases, particularly during laundry, the foam will overflow under the lid, leaving a sludge-like residue on the ground.

1. Organic foam is due to a heavy accumulation of solids in the plant. This condition may occur after the system has been in use for 3-4 years.

1. Perform 24 hour settleable solids test. If test results are >50%, follow the procedures for pumping the MULTI-FLO.

2. Sudden change in organic loading to the plant. This may occur during holidays, change in usage (commercial) or during periodic cleaning activities (commercial). A seasonal temperature change may cause a temporary foaming condition.

2. If the "shock load" is a one-time occurrence, or happens infrequently, there is little to be done. It may be helpful to shut off the plant (not to exceed 48 hours).

3. Growth of filamentous organisms. Refer to sections III A8: Filter plugging

3. This typically occurs on commercial facilities or food services. Contact your factory representative for assistance.

## VI. ODORS

A. Plant has a strong septic odor and the aerator is not running.

1. Aerator is inoperative due to loss of power or mechanical problems.

1. Refer to Trouble-Shooting Guide: Aerator.

B. Aerator is running and the mixed liquor has a normal brown color. Odor may be intermittent.

1. Installation has a pre-tank which generates odors during heavy water usage such as laundry.

1. Provide a Sch. 40 4" PVC elbow on the inlet to the MULTI-FLO. Add a 12" extension that discharges under the water.

2. Installation has a dosing pump preceding the MULTI-FLO. Too much septic waste is being dosed one time.

2. Check the dosing rate. If required, re-set the floats (or timer) to pump no more than 10-20 gallons per dose. Also, install a 4" elbow as described above.

C. Aerator is running but mixed liquor (aeration chamber) has a grey, dishwater appearance. Filters usually plug within a few months. The top of the hanger plate may have a grey septic appearance with black, slimy growth (generally, this condition is observed on commercial facilities or food establishments).

1. Hydraulic overload, including a peak. Short term "shock" loading.

1. If the daily average flow >70% of the plant's capacity, flow equalization may be required. Contact your factory representative.

2. Excessive grey water, resulting in hydraulic overload in addition to nutrient imbalance.

2. Provide a separate grey water system or install water-saving devices. Contact your factory representative.

3. Use of over-sized pre-treatment tank.

3. If pre-tank capacity is more than 200% of MULTI-FLO capacity, replace the pre-tank with a smaller size or eliminate entirely if daily flows

are <25% of MULTI-FLO capacity.

4. Presence of inhibitory or toxic materials in waste water. This can also include medications and antibiotics.

4. Contact your factory representative for recommendations if you suspect this is a problem.

5. Water leaks, sump pump discharges or downspouts connected to sewer allow the discharge of excessive amounts of clear water.

5. Check temperature of aeration, if the temperature is less than 60°F, check for possible leaks or storm water connections. If found, disconnect.

D. Aerator runs, but plant has a dark brown or black appearance and a strong septic odor.

1. Organic overload.

1. Check influent BOD. If >350 mg/l, additional treatment may be required. Contact your factory representative.

2. Aerator is not providing sufficient air flow (oxygen). Check with air flow meter to insure a minimum of 15cfm.

Refer to Section I C1-5.

E. MULTI-FLO is running normally, with good effluent quality, but odor is observed to be coming from auxiliary components such as a chlorine contact tank, or effluent pump tank. Effluent may be slightly turbid.

1. Accumulation of solids or debris in pump tank or chlorine contact tank. This can occur during routine servicing procedures.

1. Pump or flush contact tank or pump chamber to insure all solids residue is removed. As an extra precaution, pour ½ to 1 gallon of household bleach into the pump tank or contact chamber.