

## Appendix 1 - Monitoring Forms (Examples)

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# Filter Construction Monitoring Forms



if acceptable if unacceptable
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### BSF Production Monitoring Form

Location: \_\_\_\_\_

Date: \_\_\_\_\_

Mold Number	Date Poured day/ month	Filter Number	No Leaks After Demolding ✓ or ✗	7 Days of Curing Time ✓ or ✗	Filter Container Washed Out ✓ or ✗	Empty Flow Rate ✓ or ✗	Flow Rate (mL/ minute)	Water Level Below Diffuser ✓ or ✗	Filter Ready for Installation ✓ or ✗	Comments Or Recommended Actions
TOTAL ✗										
TOTAL ✓										

Technician Signature: \_\_\_\_\_ Supervisor Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Tips and Guidelines for Use**

	<b>Mold Number</b>	<b>Date Poured (day/month)</b>	<b>Filter Number</b>	<b>No Leaks After Demolding</b> ✓ or ✗	<b>7 Days of Curing Time</b> ✓ or ✗	<b>Filter Container Washed Out</b> ✓ or ✗
<b>Tips and Guidelines</b>	This is needed to track if there are problems with the filter containers built with this mold.	This can help identify if there were problems with the concrete that was mixed that day.	This is to help track individual filters. If problems are identified later, all aspects of the filter's production can be reviewed.	If there were no leaks, then the processes and capacity of technicians are acceptable. If leaks were identified some analysis can be done to help determine why and help make improvements.	If curing time is tracked, it helps to ensure that the necessary 7 days of curing is respected.	This can help to track if the production processes are being followed.

	<b>Empty Flow Rate</b> ✓ or ✗	<b>Flow Rate (mL/minute)</b>	<b>Water Level Below Diffuser</b> ✓ or ✗	<b>Filter Ready for Installation</b> ✓ or ✗	<b>Comments Or Recommended Actions</b>
<b>Tips and Guidelines</b>	The filter container should be filled to the top with water. Water should flow freely from the outlet tube, meaning the tube is not blocked.	Recording empty filter flow rate confirms that the tube is not blocked or kinked before installation.	Confirms that the outlet tube is the right length.	Tracks if filters are ready to be delivered and installed.	

**Sand and Gravel Preparation Monitoring Form**

Form #: \_\_\_\_\_ Location: \_\_\_\_\_ Dates: \_\_\_\_\_

Use ✓ = acceptable or ✗ = unacceptable

Sieve Sizes	Sieve Set in Good Condition	Sand/Gravel Sieved Properly	Sieved Sand/Gravel Organics Free (Visual Inspection)	Gravel Washed Clean	Jar Test Result on Filtration Sand	Sand /Gravel Stored Properly	The Sand is Useable	The Gravel is Useable	Additional Comments
12 mm (1/2")									
6 mm (1/4")									
1 mm (0.04")									
0.7 mm (0.03")									
<b>TOTAL</b> ✗									
<b>TOTAL</b> ✓									

Lead Technician: \_\_\_\_\_ Manager Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Tips and Guidelines for Use**

<b>Sieve Set in Good Condition</b>	<b>Sand/Gravel Sieved Properly</b>	<b>Sieved Sand/Gravel Organics Free (Visual Inspection)</b>	<b>Gravel Washed Clean</b>
This is to ensure that the sieve sets are not damaged which would affect the quality of sieving.	This refers to organization of the sand preparation area, to stop different sizes of sand and gravel from mixing. Also refers to whether the sieved sand and gravel are correctly separated into the different sizes (<0.7mm, 0,7-6mm, <1mm, 1-6mm and 6-12mm).	To confirm that the prepared sand and gravel does not have organic material (e.g. grass or leaves) in it. This is difficult when the sand preparation area is outside.	To confirm the gravel has been washed enough and is ready for installation.

<b>Jar Test Result on Filtration Sand</b>	<b>Sand /Gravel Stored Properly</b>	<b>The Sand is Useable</b>	<b>The Gravel is Useable</b>
Write the number of washes done on the filtration sand to get a good jar test result. This can be compared to the trial installation test results (see Trial Installation Flow Rate Results form).	Confirms the processes of bagging and storing of materials properly is being followed.	Overall, the prepared sand is good quality and ready to take for installation.	Overall, the prepared gravel is good quality and ready to take for installation.



✓	if acceptable
✗	if unacceptable

**Trial Installation Flow Rate Results**

Test #	Test Date	Sand Source	Delivery Date (Day/Month)	Number of Washes done on Filtration Sand	Jar Test Result ✓ or ✗	Trial Installation Flow Rate (mL/min)	Flow Rate Result ✓ or ✗
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
<b>TOTAL ✓</b>							
<b>% ✓</b>							

Technician Name: \_\_\_\_\_ Supervisor Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Guidelines and Tips for Use**

Sand Source	Delivery Date (Day/Month)	Number of Washes of Filtration Sand	Jar Test Result ✓ or ✗	Trial Installation Flow Rate (mL/min)	Flow Rate Result ✓ or ✗
To track where the sand came from.	To know when the sand was delivered, helps to know which batch the sand came from.	Tracking to find the average number of washes required to get a good jar test result. This number can be compared to the trial installation flow rate result.	Indicate here whether or not the sand was jar tested and if it was acceptable. This is for comparison to the trial installation. If the jar test result was good, but the trial installation is not good, then some investigation needs to happen to determine why. You may have to adjust what a “good” jar test result is.	Install one filter with sand that has a good jar test result. Test the flow rate and write it here. Compare the result to the jar test result and flow rates after filters are installed in homes to check the quality and consistency of sand preparation.	Indicate here if the flow rate was acceptable. The flow rate should be 400 mL or less per minute. If the flow rate is more than 450 mL per minute, or less than 300 mL per minute, it is not acceptable.

**Diffuser and Lid Monitoring Form**

Location: \_\_\_\_\_

Dates: \_\_\_\_\_

Use ✓ to agree or ✗ to disagree

Lids Built Properly	
Lids Fit Properly	
Diffusers Fit Properly	
Diffuser holes = 3 mm or less	
Diffuser holes = 2.5 cm Spacing	

Recommended actions to improve:

Lead Technician: \_\_\_\_\_

Supervisor Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Location: \_\_\_\_\_

Dates: \_\_\_\_\_

Use ✓ to agree or ✗ to disagree

Lids Built Properly	
Lids Fit Properly	
Diffusers Fit Properly	
Diffuser holes = 3 mm or less	
Diffuser holes = 2.5 cm Spacing	

Recommended actions to improve:

Lead Technician: \_\_\_\_\_

Supervisor Signature: \_\_\_\_\_

Date: \_\_\_\_\_



## Filter Installation Monitoring Forms



**Biosand Filter Installation Monitoring Form**

<b>Date</b>	<b>Location</b>
<b>Your Name</b>	<b>Name of Household</b>
<b>Filter Number</b>	<b>Phone Number</b>
<b>Address</b>	

	<b>YES</b> ✓	<b>NO</b> ✗
<b>Quality of Construction</b>		
1. There are no leaks in the filter container		
2. The lid has no damage and covers the entire top of the filter		
3. The diffuser has no damage and fits correctly with no gaps around the edges Box <input type="checkbox"/> Plate <input type="checkbox"/>		
<b>Proper Installation</b>		
5. The filter is in a good location, away from weather and animals		
4. The filter is level		
6. The filter was installed by putting water in the filter container, then adding the gravel and sand		
7. The surface of the sand is flat and level		
8. The depth of the water above the sand is between 4 and 6 cm		
9. The flow rate of the filter is less than 0.4 litres/minute (or it takes longer than 2 minutes 30 seconds to fill a 1 litre bottle)		
10. The user has a container for safe water storage		
<b>Training Provided to User</b>		
11. The users have been taught how to use and maintain the filter		
12. The swirl and dump maintenance procedure has been shown to the user		
13. The user was given an instructional poster/brochure/sticker		
14. The user knows who to contact if they have questions		
<b>Collection of Payment</b>		
15. Payment has been collected from the user and a receipt given		
<b>TOTAL YES / NO</b>		

**Notes:**


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*ALL POINTS SHOULD BE MARKED "YES" BEFORE COMPLETING INSTALLATION*

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## Installation Monitoring Form - Reference Guide

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### Quality of Construction

1. If the filter is leaking, tell the manufacturer so they can fix it.
2. If the lid is damaged or does not fit, use another one and tell the manufacturer.
3. If the diffuser is damaged or does not fit, use another one and tell the manufacturer.

### Proper Installation

4. The filter should be inside the house or at least under a roof. It should be kept out of the way of animals, maybe with a fence. If the filter needs to be moved once it is installed, a technician will have to re-install the sand and gravel.
5. If the filter is not level, make it level before doing anything else.
6. If gravel and sand are put into the filter when it is not full of water, it will trap air bubbles in the filter. The filter should be emptied out and re-installed if this happens.
7. It is essential that the sand surface is leveled after installation. If the sand is not flat and level, the biolayer will not grow evenly.
8. The water depth should be 5 cm above the sand. If it is more than 5 cm, add more sand. If it is less than 3 cm, remove some sand.
9. When you fill the reservoir with water, the flow rate should be less than 0.4 litres/minute. If the flow rate is faster, the filter will not work properly. The filter should be re-installed with new sand. If the flow rate is slower, the filter is working fine. If you think the flow rate is too slow and the users do not like it, ask the users if they have done a swirl and dump maintenance. If the user has not done a swirl and dump, do one with the users to show them how.
10. Each user should have a safe storage container so the filtered water does not become contaminated again. The storage container should stop people's hands, cups, or dippers from touching the water, have a lid and be easy to clean.

### Training Provided to User



11. The user should receive a full explanation of the use and maintenance of the filter and should be able to repeat it back to the installer.
12. The procedure should be demonstrated and then, if possible, practiced by the user.
13. Any printed information available should be left with the user to help them remember the important points of using and maintaining the filter.
14. The users must know how to contact someone if they have problems with their filter or want to ask a question. If not, they may just stop using the filter.

### Collection of Payment

15. A receipt should be given to the user for their payment to the filter. This prevents the loss of any money and prevents future disputes.



**Biosand Filter  
Multi-Installation Monitoring Form**

 if acceptable  if unacceptable
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Technician Name: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_

Date Installed	Filter Number	Household name	Location and Phone Number of Household	Location of Filter In House	Flow Rate (mL/min)	Flow Rate less than 400mL/min ✓ or X	Standing Water Depth 4 to 6 cm ✓ or X	Swirl and Dump Shown to User ✓ or X	Safe Storage ✓ or X	Comments
TOTAL ✓										
TOTAL X										

Technician Signature: \_\_\_\_\_ Supervisor Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## Follow-Up Monitoring Forms



**Biosand Filter Follow-Up Visit Monitoring Form**

<b>Date</b>	<b>Location</b>
<b>Your Name</b>	<b>Name of Household</b>
<b>Filter Number</b>	<b>Phone Number</b>
<b>Address</b>	

	YES ✓	NO ✗
<b>The Filter</b>		
1. There are no leaks in the filter container		
2. The lid has no damage and covers the entire top of the filter		
3. The diffuser has no damage and fits correctly with no gaps around the edges Box <input type="checkbox"/> Plate <input type="checkbox"/>		
4. The filter is in a good location, away from weather and animals		
5. The surface of the sand is flat and level		
6. The depth of the water above the sand is between 4 and 6 cm		
7. The flow rate of the filter is less than 0.4 litres/minute (or it takes longer than 2 minutes 30 seconds to fill a 1 litre bottle)		
8. The water does not have a bad taste or smell		
<b>How the Filter is Used</b>		
9. There is no tap and no hose attached to the outlet spout		
10. The outlet spout is clean		
11. The filter is used every day		
12. The water poured into the filter is clear		
<b>Safe Water Storage</b>		
13. The treated water storage container has a lid		
14. The storage container has a narrow opening or a tap to get water out		
15. The storage container is clean		
16. The user has separate containers for collecting and storing water		
<b>Problems with the Filter</b>		
17. Any other problems? (Write them down below.)		
<b>TOTAL YES / NO</b>		

Notes/Problems:

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## Follow-Up Visit Monitoring Form Reference Guide

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### The Filter

1. If the filter is leaking, tell the manufacturer so they can fix it.
2. If the lid is missing or damaged, either the user or the manufacturer can replace it.
3. If the diffuser is damaged, replace it with a new diffuser.
4. The filter should be inside the house or at least under a roof. It should be kept out of the way of animals, maybe with a fence. If the filter needs to be moved, a technician will have to re-install the sand and gravel.
5. If the sand is not flat and level, the diffuser may not be working. If the sand looks like it has been pushed away from the concrete walls, the water may be running around the edges of diffuser plate and the diffuser may need to be replaced.
6. The water depth should be 5 cm above the sand. If it is less than 4 cm or more than 6 cm, add more sand or take some sand out. The biolayer will take 30 days to re-grow.
7. When you fill the reservoir with water, the flow rate should be less than 0.4 litres/minute. If the flow rate is faster, the filter will not work properly. The filter should be re-installed with new sand. If the flow rate is slower, the filter is working fine. If you think the flow rate is too slow and the users do not like it, ask the users if they have done a swirl and dump maintenance. If the user has not done a swirl and dump, do one with the users to show them how.
8. If the treated water has a bad taste or smell, ask the user if they changed the water source recently. Ask them if their water always has that taste or smell at this time of year. Try flushing the filter with many buckets of water. If the problem does not go away after 2-4 weeks, a technician should re-install the filter with new gravel and sand.

### How the Filter is Used

9. There cannot be any taps, valves, hoses or tubes on the outlet spout- the filter will not work well.
10. The outlet spout should not have any dirt or algae on it and should be cleaned regularly. If it is dirty recommend to the user that regular cleaning with soap or chlorine on a cloth is required.
11. The filter must be used every day or two for it to work properly. If it is not being used regularly, instruct the user on the need to use their filter every one or two days and tell the person who is responsible for training users so they can do a follow-up visit.
12. The water that the user pours into the top of the filter should not be too dirty or cloudy. To test if it is too dirty, fill a 2 litre bottle with the water. Put the bottle on top of the CAWST logo on this form. Look down into the top of the bottle. If you can see the CAWST logo through the water in the bottle, the water is OK to pour into the BSF. If you cannot see the logo through the water in the bottle, the water is too dirty to pour into the BSF. Tell the user to let the water stand in a container for a few hours so the dirt settles to the bottom, then pour the clear water into the BSF.

### Safe Water Storage

13. The storage container should have a lid so the water does not get contaminated. It also stops people from putting their hands, cups, or dippers into the water.
14. There should be an easy way to get the water out of the container without dipping.
15. The storage container should have no dirt or algae in it. If it is not clean, explain that they need to keep the container clean, and show them how (use soap and safe water).
16. The user must use different containers for collecting water and for storing water, so that they do not contaminate their treated water. If they are not using different containers, explain that they should use separate containers and tell the person who trains the users.

### Problems with the Filter

17. Writing down any problems with filters on the correct form will help make sure they are solved and help the project manager improve the project.

## Biosand Filter Multi Follow-Up Visit Monitoring Form

if acceptable if unacceptable
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Technician Name: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_

Filter number	Household name	Flow rate (mL/min)	Flow rate less than 400mL/min ✓ or ✗	Diffuser OK ✓ or ✗	Surface of sand is flat and level ✓ or ✗	Standing water depth 4 to 6 cm ✓ or ✗	Water poured into filter is not too dirty ✓ or ✗	Filter used every day ✓ or ✗	Filter and outlet spout clean ✓ or ✗	Safe water storage ✓ or ✗	Comments
TOTAL ✓											
TOTAL ✗											

Technician Signature: \_\_\_\_\_ Supervisor Signature: \_\_\_\_\_ Date: \_\_\_\_\_





### Follow-Up Visit Monitoring Form (Visual)



<b>Name of Technician or Community Health Promoter:</b>	
<b>Date of visit:</b>	
<b>Household Name:</b>	
<b>Phone Number:</b>	
<b>House address or Location:</b>	
<b>Filter Number:</b>	<b>How long have you been using the filter?</b>
<b>How many people use the filter?</b>	<b>How many times to you pour water into the filter per day?</b>

**What is the source water that is poured into the filter?**

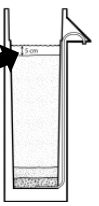


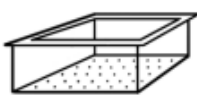
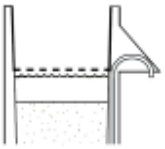
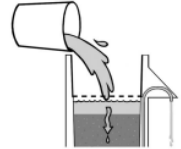
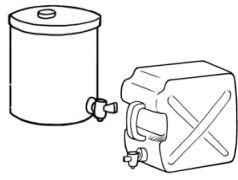






<input type="checkbox"/> OR <input type="checkbox"/>					
	River or Pond	Open Well	Closed Well	Tap Stand	Pump

**Besides the biosand filter, what other methods do you use to treat your water?**

<input type="checkbox"/> OR <input type="checkbox"/>					Other
	No Treatment	Settling	Boiling	Chlorine	

**Does anyone in the home suffer from the following?**

<input type="checkbox"/> OR <input type="checkbox"/>					Other
	Diarrhea	Stomach Ache	Skin Infection	Eye Infection	

Operating Parameters				
✓ OR ✗	4-6 cm  Standing water depth = 4 to 6 cms	 Flow rate	 BSF used once a day?	 Diffuser is in good condition
		_____ mL/min OR _____ min:sec to fill 1 L bottle		
✓ OR ✗	 Sand is flat and level	 Source water is clear	 Clean safe storage container used	 No leaks
End User Competence				
USER SHOWED ME CORRECTLY HOW TO :  ✓ OR ✗	 Clean Filter Container	 Swirl and Dump	 Clean Lid and Diffuser	 Clean Safe Water Container
USER SHOWED ME CORRECTLY HOW TO :  ✓ OR ✗	 Use the filter			