WBS Sampling Kit Disclaimer

After receiving this kit, maintaining the cleanliness of all parts to avoid unwanted PFAS contamination becomes the users' responsibility.

READ THIS FIRST!

FOLLOW THESE RECOMMENDATIONS TO MAINTAIN CLEANILINESS AND TO AVOID PFAS CONTAMINATION.

Only open sealed bags and remove parts just before beginning a sampling campaign.

- Parts are in sealed bags to prevent any per- and polyfluoroalkyl substance (PFAS) contamination during shipment.
- Keeping parts in open bags or outside of them for extended times can contaminate parts and equipment with PFAS.

Wash hands carefully and wear the provided nitrile gloves when handling parts.

- Use only PFAS-free clothing, boots, rain gear, and personal protective equipment (PPE).

Do not substitute or change materials or substances provided with this kit.

- Materials in this kit have been carefully selected to prevent PFAS contamination of samples.

Follow the provided directions.

- Processes described in the Instruction Sheet included with this kit have been devised to prevent PFAS contamination of samples.

Wastewater Based Surveillance Sampling Kit for Teledyne ISCO Samplers

Instruction Sheet

TELEDYNE ISCO
Everywhereyoulook™

60-2962-031
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Introduction

New regulations and testing needs have made careful and accurate sampling practices more important than ever. Teledyne ISCO has developed a wastewater based surveillance (WBS) sampling kit to make sampling for a variety of substances easy. These include illicit drugs, SARS, avian influenza (bird flu), mpox (monkeypox), MERS, hepatitis, norovirus, per- and polyfluoroalkyl substances (PFAS), and other pathogens or contaminants. Materials in each item of the WBS kit have been selected based on United States guidelines to avoid adding unwanted materials or absorbing a material of interest. (See the WBS Kit Items table below.)

Testing for PFAS is particularly challenging, as they are ubiquitous in the environment, providing many possible sources of cross contamination of water samples. However, regulation demands that PFAS be measured to very low limits (i.e., parts per trillion). Therefore, accurate sampling for PFAS requires care and specific materials that do not add PFAS to samples or absorb it from them.

CAUTION

Read the attached WBS Sampling Kit Disclaimer. Opening part packages can contaminate equipment.

Avoiding PFAS Contamination

If PFAS is sampled for, extra care is needed during site visits with sampling equipment because the chances of false positives are high . Vigilance in handling samples and cleanliness will help to ensure a successful sampling campaign.

At the start of a new sampling campaign, install all new tubings and ProPak™ bags. Also, clean the sampler, strainer and coupler using the provided Liquinox® detergent, as described later in this document.

Clothing, personal care items, plastic containers, and bags can be sources of sample contamination. Ensure that all extra items brought to the site are PFAS-free. All tubing should be checked with blanks to ensure cleanliness and prevent possible absorbance of PFAS analytes.

Wash hands carefully and wear the provided nitrile gloves (item 7) during the preparation of blanks, installation of the equipment at the sampling site, sampling, and decontamination to help prevent contamination with PFAS. Change gloves frequently between each step:

- After decontamination of sampling equipment.
- Immediately prior to sample collection.
- Each time sampling equipment is placed or removed.
- When placing sampling tubing in water.
- After handling any non-dedicated sample equipment.
- After contact with non-decontaminated surfaces.

Table: WBS Kit Items

Item	Description	Qty	GLS	5800, 6712, BLZZRD	Remarks
1	stainless steel low flow strainer, 3/8"	1	✓	✓	
2	LDPE suction line tubing, 3/8" I.D. 25 ft.	1	✓	✓	
3	silicone pump and discharge tubing, 10 ft	1	✓		
4	silicone discharge tube, 10 ft	1		✓	
5	silicone pump tubing	1 pk of 5		✓	
6	LDPE ProPak™ kit (100 LDPE bags, holder bottle, and O-ring) 2.5 gal	1	✓	✓	LDPE bags are single use
7	nitrile gloves, large	1 box of 100 gloves	✓	✓	Change gloves between every step of sampling process
8	Liquinox® bottle decontamination solution	1 bottle	✓	✓	To decontaminate items that contact samples
9	PFAS-free water	4	✓	✓	To prepare blanks
10	HDPE wide-mouth bottles, 250 mL	4	✓	✓	To prepare blanks

A brush with polyolefin bristles (not supplied) will be required for cleanup.

Scan any of these for WBS sampling kit how-to videos:

5800 sampler | 6712 sampler | BLZZRD sampler | GLS sampler

CAUTION

Only tubing and other materials from the WBS sampling kit should be used for the following procedures.

Installing Pump and Discharge Tubing (items 3, 4, and 5)

The WBS sampling kit includes the proper tubing for four Teledyne ISCO samplers:

GLS sampler: Silicone Pump/Discharge Tube (item 3)

5800, 6712, and BLZZRD samplers: Silicone Discharge Tube (item 4)

5800, 6712, and BLZZRD samplers: Silicone Pump Tube (item 5)

Only tubing and other materials from the WBS sampling kit should be used; consequently, removal of installed tubing may precede installation of kit tubing.

The discharge tube does not "wear out" under normal circumstances. Typically, a discharge tube must be removed before installing the tube provided with the WBS sampling kit.

☑ **Note**

Consult your sampler's *Installation and Operation Guide* for step-by-step instructions to install pump and discharge tubing.

For all units and all tubing types, heed the following cautions and warnings:

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 7) during these operations to prevent PFAS contamination of the equipment.

⚠ WARNING

Remove power from the sampler before replacing tubing. The pump is extremely powerful. The pump can injure you severely if the sampler activates the pump while you are working on it.

Pump tubing (item 5, 5800, 6712, & BLZZRD)

⚠ WARNING

The 6712, 5800, and BLZZRD samplers have a safety interlock that prevents the pump from operating when the pump housing band is open. DO NOT tamper with the pump housing and band. The pump is extremely powerful. The pump can injure you severely if the sampler activates the pump while you are working on it. Remove power from the sampler before opening the pump housing.

Confirm that the sampler is disconnected from power before replacing the pump tubing. Note the orientation of the tubing inlet and outlet (Figures 1-4).

Figure 1. Removing and replacing the pump tube (shown: 6712; BLZZRD is similar).

The blue bands on the tubing fit into notches that run across the tubing channel (Figure 2).

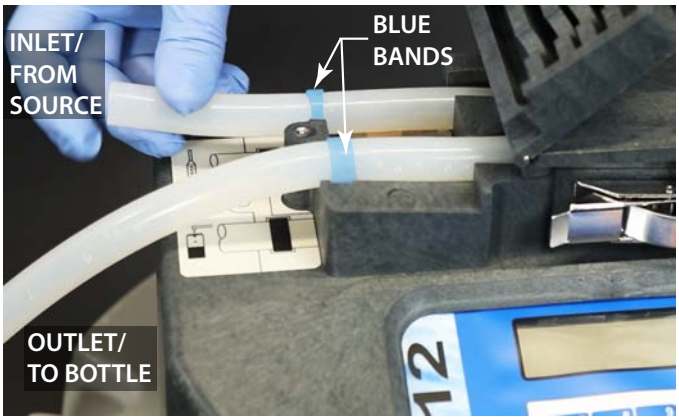

Figure 2. Placing the pump tube in the liquid detector (shown: 6712; BLZZRD is similar).

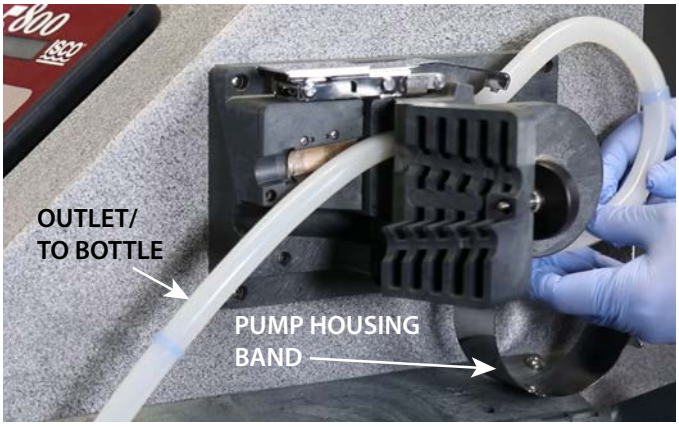

Figure 3. Removing and replacing the pump tube (shown: 5800).

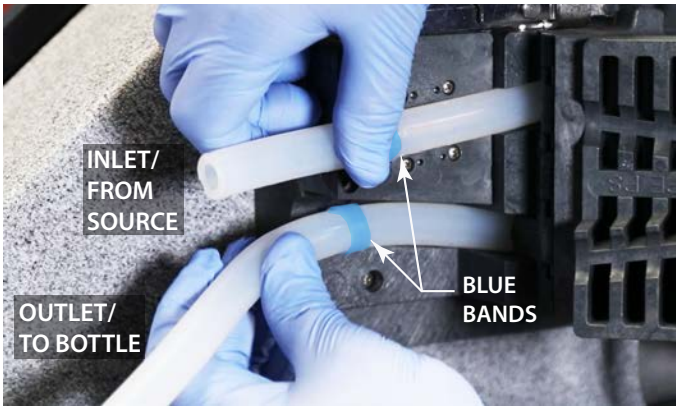

Figure 4. Placing the pump tube in the liquid detector (shown: 5800).

Connect the outlet tube to the bulkhead fitting at the exterior of the unit.

Figure 5. Connecting pump tubing to the bulkhead fitting (shown: 6712 (left) and BLZZRD (right)).

Figure 6. Pump tubing connected to the bulkhead fitting at exterior (shown: 5800).

Pump Discharge tubing (item 3, GLS only)

Confirm that the sampler is disconnected from power before replacing the pump discharge tube. The discharge tube should be well fitted and carefully routed. The tube must be free of twists or kinks. Be sure to adjust the new tube so that 1 1/2 inches (38 mm) of tubing extends beyond the end of the tube guide.

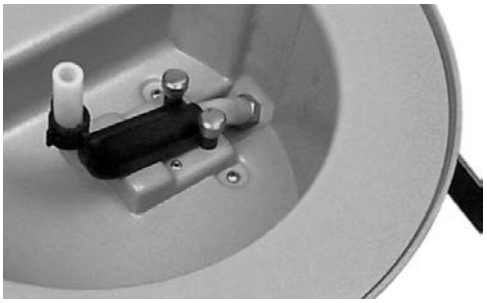

Figure 7. Discharge tube and tube guide

Discharge tubing (item 4, 5800, 6712, and BLZZRD samplers)

Confirm that the sampler is disconnected from power before replacing the discharge tube. The discharge tube should be well fitted and carefully routed. The tube must be free of twists or kinks. Cut the length accurately if required, cutting the ends of the tubing square and not at an angle. Connect one end of the tube to the bulkhead fitting inside the unit.

5800: The discharge tube has a natural curve. Should the tube create a low spot where liquid can pool, twist the end of the tube connected to the bulkhead fitting so that the natural curve holds the tube in a downward sloping position.

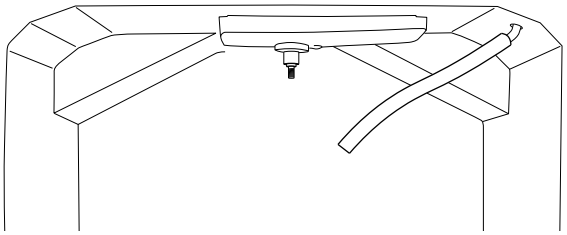

Figure 8. 5800 discharge tube installed at top-corner of refrigerator.

6712 and BLZZRD: Route the free end of the discharge tubing through the sampler's composite tube guide.

Figure 9. Discharge tube routed through the 6712 (left) and BLZZRD (right) composite tube guides.

Connecting the LDPE Suction Line (item 2)

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 7) during this operation to prevent PFAS contamination of the equipment.

1. Attach the LDPE suction line to the pump tubing with a 3/8" stainless steel tube coupling (69-4703-106).
2. Attach the suction line to the pump tube with the tubing coupler.
   a. First, screw the threaded end into the suction line until the flat surface is flush against the suction line (Figure 10).
   b. Then, push the other end of the coupler into the end of the pump tube until the other flat surface is flush against the tubing.

Figure 10. Attaching the suction line to the pump tubing.

Once the coupler is attached to the pump tube, removal is difficult and may require cutting the tube.

Connecting the Low Flow Strainer (item 1)

Caution

With clean hands, wear a clean pair of nitrile gloves (item 7) during this operation to prevent PFAS contamination of the equipment.

The low flow strainer is fabricated from stainless steel, which is compatible for PFAS sampling.

Cutting the suction line

The suction line should be cut to the shortest feasible length. This reduces the possibility of cross-contamination between sample volumes and extends the battery life. The suction line can be easily cut with a knife.

When cutting the suction line, keep in mind that the length must be cut to the nearest whole foot or decimeter. The length is measured from end to end, without the strainer or tubing coupler.

Attaching the strainer to the suction line

Screw the threaded end of the strainer into the suction line. Connect the other end of the line to the pump tube.

Using the LDPE ProPak kit (item 6)

The ProPak liner bag is inserted into the 2.5 gallon (9.46 L) holder bottle and secured with the provided O-ring. Please confirm that there is at least a single 1/4" diameter hole near the top in the holder bottle for ventilation as the ProPak bag fills.

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 7) during this operation to prevent PFAS contamination of the equipment.

To insert a ProPak liner bag into the holder bottle, consult Figure 11:

1. Fold in the bottom of the liner bag up to its first corner before inserting it into the bottle.
2. Insert the bag fully into the bottle, leaving no more than 2" to 3" of liner material outside of the bottle.
3. Secure the bag to the mouth of the bottle with the provided O-ring.
4. Ensure that the bag is open at the mouth of the bottle to allow the discharge tube to enter easily.

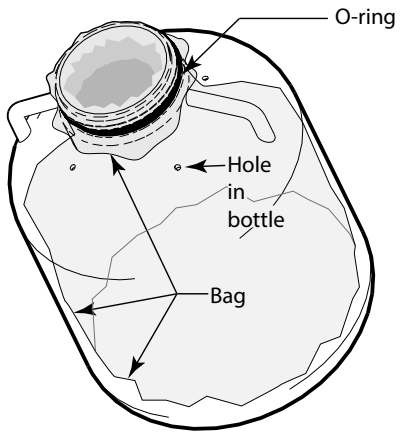

Figure 11. ProPak holder bottle with liner bag secured with O-ring

The bottle is now ready to be placed into the sampler base section.

Preparation of blanks

Clean wide-mouth 250 mL HDPE bottles with caps are included. HDPE is the preferred material for PFAS sampling due to its cleanliness and because it has the least absorbance of PFAS analytes.

Two 500 mL bottles of PFAS-free reverse osmosis water (item 9) are included for the preparation of blank samples at the sampling site using the included 250 mL HDPE bottles (item 10). (Four 250 mL bottles are included.)

Three levels of blank samples are used as field quality control samples: equipment rinse blanks (EB), field blanks (FB) and trip blanks (TB).

As you prepare the blanks, remember to

- Use the provided sample bottles with PTFE-free caps.
- Keep dust and fibers out of sample bottles.
- Keep tubing or other items or materials out of the sample bottles.

The equipment rinse blank (EB)

The EB can be collected at the sampling site using the equipment outfitted with new silicone pump tubing, new suction line, and clean strainer. The EB is better performed on site but before installation.

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 5) during this operation to prevent PFAS contamination of the blank or the sample. Gloves should always be changed immediately prior to sample collection.

1. Set up the equipment with the correct final cut length of the suction line.
2. Using an extra clean 1 L HDPE bottle, fill with PFAS-free water and carefully insert the strainer into the bottle.
3. Allow the distributor line to fill one of the provided 250 mL HDPE bottle placed temporarily inside the sampler.
4. Pressing the appropriate button on the control to manually pump water into the 250 mL HDPE bottle until nearly full.
5. Promptly cap and return the sample bottle to the lab after the site visit. Ensure that it is properly labeled.

The field blank (FB)

The FB consists of a sample bottle filled with PFAS-free water prepared in the laboratory, sealed, and shipped to the sampling site along with the sample bottles. The analysis of the FB can indicate whether PFAS were introduced into the samples during sample collection or handling. Always treat the FB in every respect like the other samples during travel from the lab to the site, exposure to the site conditions, storage, preservation, return to the lab, and all analytical procedures.

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 5) during this operation to prevent PFAS contamination of the blank or the sample. Gloves should always be changed immediately prior to sample collection.

1. Prepare the FB in a lab with the PFAS-free water in a new HDPE bottle.
2. Seal it and label it as a field blank.
3. Bring the FB to the site and pour the water into another clean 250 mL HDPE bottle also labeled as FB.
4. (GLS only:) Open this bottle and place it as physically close as possible to the sampler equipment at the site. (5800, 6712, BLZZRD) Open this bottle and install it into the sampler equipment at the site.
5. (GLS only:) Leave this sample bottle in place near the sampler during the sampling campaign. (5800, 6712, BLZZRD:) Leave this sample bottle within the sampler during the sampling campaign.
6. Position this open bottle with FB bottle carefully within the sampler to prevent contamination from dust or spray within the sampler. (There is enough gap between the sampler walls and the composite sample bottle.)
7. Ensure that the sampler is properly programmed so no new water is accidentally introduced to the FB bottle.
8. During the next visit to collect all samples, cap all bottles, add appropriate preservative reagent to all bottles and return them to the lab.
9. Treat the FB bottle the same as the rest of the samples in the lab. Ensure that it is properly labelled.

The trip blank (TB)

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 5) during this operation to prevent PFAS contamination of the blank or the sample. Gloves should always be changed immediately prior to sample collection.

1. Prepare the TB in the lab with the PFAS-free water by filling one of the new included 250 mL HDPE bottle with cap. Properly label the capped TB bottle.
2. Bring the TB bottle to the site during installation.
3. Return it to the lab promptly after the installation visit. No preservative is added on site. The cap must remain tightly on the bottle during the entire site visit.

Placing the Sampling Equipment on Site

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 5) each time sampling equipment is placed or removed to prevent PFAS contamination of the sample. Change gloves before placing sampling tubing in water and after handling any non-dedicated sample equipment.

Sample Collection

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 5) immediately prior to sample collection prevent PFAS contamination of the sample.

Sampling best practices

- **Grab sampling:** Samples should not be collected from the very top layer because PFAS are expected to accumulate at the air/water interface.
- **Automatic sampler:** Keep the strainer and suction line at the desired depth to collect samples.

Handling bottles at the collection site

- Use the provided sample bottles with PTFE-free caps.
- Keep dust and fibers out of sample bottles.
- Never set the sample bottle cap directly on the ground during sampling. If necessary, set it on a clean surface (e.g., cotton sheeting, HDPE sheeting, a triple-rinsed cooler lid, etc.).

- Do not insert tubing or other items or materials into the sample bottle or allow them inside of it.
- Bottles should only be opened immediately prior to sampling. (The trip blank should not be opened during the site visit.)
- A bottle should be capped immediately after collection of the sample and may need to be chilled appropriately as part of its preservation.

Cleaning Sampling Equipment

When PFAS sampling has been performed, most US state PFAS sampling guidelines recommend Liquinox or Alconox® as detergents for cleansing sampler equipment, followed by thorough rinsing three times with PFAS-free water (item 9). The liquid detergent form is more convenient. Liquinox (item 8) has been included for cleansing used equipment before and after the sampling campaign.

⚠ WARNING

Use Liquinox only in a well-ventilated area. Avoid contact with skin and eyes. Undiluted, Liquinox causes skin irritation and serious eye damage. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Wear appropriate protective eyewear, gloves, and clothing. Wash skin thoroughly with soap and water after handling. Dispose of properly; consult local, regional, and national authorities. Read the Liquinox Safety Data Sheet thoroughly and follow its guidelines.

CAUTION

With clean hands, wear a clean pair of nitrile gloves (item 5) after decontaminating sampling equipment to avoid recontaminating it.

Consumables such as the suction line tubing, pump tubing, ProPak bags, and HDPE sample bottles must be new (as-is) when used for PFAS sampling, so no cleansing is recommended for them. Once used, dispose of these items properly.

Clean the remaining equipment using a 1% V/V Liquinox in warm PFAS-free water; dilute to 2.5 Tbsp / gallon or 1.25 fl. oz. / gallon or 10 mL / L. Use a brush with polyolefin bristles (preferably PFAS-free too). Then, rinse thoroughly at least three times with PFAS-free water.

Figure 12. (a) Cleaning supplies: detergent, brush with polyolefin bristles, HDPE plastic bucket, and 6712 top cover. (b) Cleaning the Teledyne ISCO 6712 top cover.

Replacement Parts

Low Flow Stainless Steel Strainer, 3/8"	69-2903-138
Silicone Pump Discharge Tubing, 10 ft (for GLS)	60-6700-046
Silicone Discharge Tubing, 10 ft (for 5800, 6712, BLZZRD)	60-6700-046
Silicone Pump Tubing, 10 ft (for 5800, 6712, BLZZRD)	60-6700-062
LDPE ProPak kit (100 liner bags, holder bottle, and O-ring)	68-2950-006
LDPE suction line tubing, 3/8" I.D. 25 ft.	02-9071-004

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