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Environmental Programs Directorate

Standard Operating Procedure

for **AIRNET—USING HIGH-VOLUME AIR SAMPLERS**

APPROVAL SIGNATURES:

Subject Matter Expert:	**Organization**	**Signature**	**Date**
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Responsible Line Manager:	**Organization**	**Signature**	**Date**
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1.0 PURPOSE AND SCOPE

This standard operating procedure (SOP) states the responsibilities and describes the steps to operate the CF-1003BRL High-Flow sampler, the Hi-Q HVP-3000BRL TSP sampler, and similar samplers used for collecting total suspended particulates (TSP) samples from air for the air monitoring network (AIRNET) or special projects for the Los Alamos National Laboratory (LANL).

All **WES** participants shall implement this procedure when operating high volume air samplers for AIRNET.

2.0 BACKGROUND AND PRECAUTIONS

2.1 Background

The CF-1003BRL high-flow sampler is a portable, maintenance-free, high volume air sampling system and can be used for continuous or intermittent sampling. The sampler will pull air at any rate up to 50 cubic feet per minute (cfm). The AIRNET project uses polypropylene filter media (same as used to collect AIRNET samples according to WES SOP 5143) and a sample rate of 40 cfm. The CF 1000 comes standard with a 4 in. diameter filter holder. The sampler can accommodate an 8 in. x 10 in. holder by simply threading on a HI Q model number CFPH 810.

The Hi-Q HVP-3000BRL TSP (Total Suspended Particulate) sampler is also portable, maintenance free, and a high volume sampling system. The TSP can pull air at any rate up to 50 cubic feet per minute (cfm). The TSP samplers are fitted with an 8 in. x 10 in. filter holder. The standard filter used by AIRNET is polypropylene, and the standard sample rate is 40 cfm, but other filter media and sample rates may be used depending on the needs of the customer.

2.2 Precautions

In addition to training to this procedure, the following training is also required before performing this procedure:

- Obtain approval from facility management before beginning work to locate a monitor in a Facility Management Unit. Facility management must also have knowledge of your presence and activity for their plan of the day during subsequent normal operations.
- Ensure you have completed all facility-specific training requirements.
- If working conditions are unsafe, stop work and contact your supervisor and the Task Leader.

3.0 EQUIPMENT AND TOOLS

None.

4.0 STEP-BY-STEP PROCESS DESCRIPTION

4.1 Setting up the CF-1003BRL High-Flow sampler, or the Hi-Q HVP-3000BRL TSP sampler

Task Leader	1.	The AIRNET Task Leader will determine the location for the sampler to be deployed.
Field Team Member	2.	Ensure the data about the sampling event is entered into the AIRNET database under “Special Studies.” Obtain the chain-of-custody form for the sampling event from this database. Contact the database manager for assistance.
	3.	Ensure the sampler’s calibration is current. If it is not, calibrate the sampler following section 4.3.
	4.	Set up the station securely, with sand bags if needed. Some stations are pre-deployed in the field. If using a tripod mounted sampler, extend the legs to the maximum height.

Field Team Member	5.	Remove the top half of the filter holder.
	6.	Place filter onto holder and reinstall the top half of the filter holder.
	7.	Connect sampler to ground fault circuit interrupter (GFCI) -equipped power source or use a GFCI extension cord. Double check connections before energizing equipment. Use only outdoor extension cords.
	8.	Mark the location of the extension cord with cones or similar marking so it is visible to others (e.g., personnel mowing grass).
	9.	Turn the power switch on the sampler to on.
	10.	Adjust the flow rate control knob to 40 cfm, or the flow rate requested by the Task Leader.
	11.	Reset the sample timer.
	12.	Record necessary start information on the chain-of-custody form or in the field notebook.
	13.	If needed, use a global positioning system unit to collect site location coordinates; record these in the logbook.
4.2 Collecting filters after a sampling period		
Field Team Member	1.	When sample time is complete, record the final timer reading and final flow rate readings on the chain-of-custody form.
	2.	Turn off the sampler.
	3.	Remove filter and place it in its properly identified bag or envelope.
	4.	Complete the chain-of-custody form to document the sample collection.
	5.	Follow the instructions of the Task Leader for submitting the collected filter samples. Include the original chain-of-custody form with the sample and keep a copy for the AIRNET files.
	6.	Document field collection activities in the field notebook.
	7.	Bring the station back to the TA-54 AIRNET offices if the sampling is complete and the station is not to remain in the field.
4.3 Calibration of a High Volume Air Sampler		
Field Team Member	1.	Re-calibrating the sampler: Before each use, ensure the sampler has been calibrated within the past year. If not, follow the steps below to calibrate the sampler.
	2.	Install clean filter media and filter holder adapter into the pump intake. IMPORTANT: Ensure you are using the same filter media as will be used for sample collection.
	3.	Connect the Hi-Q Environmental Products air flow calibrator to the filter holder adapter.
	4.	Turn the sampler on.
	5.	Adjust the flow rate control knob on the sampler to 50 cfm.

Field Team Member	6.	Read the flow rate on the flow meter. It should be the same as the calibrator flow rate within 5% full scale. If not, adjust the flow meter by turning the small brass needle valve located near the top of the flow meter on the sampler so that the flow meter is reading the same as the calibrator within 5% full scale. Note: To access the brass needle valve on the CF-1003BRV, the dust cover must be removed. Remove the front panel screws and separate the front panel from the housing. Unplug the power cord while disassembling the panel. If the flow is reading within 5%, or has been adjusted to within 5%, move to step 7. If the flow cannot be adjusted to match the calibrator, clearly mark the sampler as being "out of calibration, do not use", and attempt to repair the sampler or replace the flow meter.
	7.	Repeat steps 5 and 6 for flow rates of 45, 40, 35, 30, 25, and 20 cfm. If any adjustments are made to the sampler flow meter at any flow rate, the other rates must be rechecked and read within 5%.
Worker	8.	If all flow rates read within 5% of the reading on the calibrator, place a calibration sticker on the sampler that indicates the date calibrated, the date calibration will expire, and the initials of the person who performed the calibration. If flows are not linear, for example if the sampler reads correctly at one flow rate but not at another, place a sticker on the sampler that reads "out of calibration, do not use".
	9.	Record all calibration information in the logbook and update the calibration tracking spreadsheet with the new expiration dates.

4.4 Records Management

Worker	1.	Maintain and submit records and/or documents generated to the Records Processing Facility according to EP-DIR-SOP-4004, Records Transmittal and Retrieval Process.

5.0 DEFINITIONS

N/A

6.0 PROCESS FLOW CHART

N/A

7.0 ATTACHMENTS

N/A

8.0 REVISION HISTORY

Revision No. *[Enter current revision number, beginning with Rev.0]*	Effective Date *[DCC inserts effective date for revision]*	Description of Changes *[List specific changes made since the previous revision]*
0	2/20/01	New document
1	12/1/03	Update descriptions and process steps, add steps to require marking of extension cords that power samplers.
2	2/4/05	Revision of Attachment 1 Hazard Control Plan to Hazard Review.
0	4/16/2009	New document number and reformatted for WES division. Formerly ENV-MAQ-240.