



Operating Procedures for Cross-Connection Control Program

2023 Instructions for Authorized Backflow Prevention Assembly Testers

The purpose of these instructions is to set forth the responsibilities of and requirements for backflow prevention assembly testers in the City and County of San Francisco (City). The instructions describe the requirements for operating in San Francisco, how to submit testing information, and how to communicate with the City departments involved in the Cross-Connection Control Program. Information provided by testers is used to maintain the Cross-Connection Control Program database and assists the City in creating new accounts and updating existing accounts. It is important that testers ensure the accuracy of reports and information submitted to the program.

These instructions are organized into the following sections:

- 1 Permit to Operate
- 2 Authorized Tester Responsibilities
- 3 Obtaining Backflow Tags
- 4 Establishing a CCAMS Account
- 5 Backflow Prevention Assembly Information Forms
- 6 New Installations
- 7 Removal, Replacement and Relocation of Backflow Prevention Assemblies
- 8 Plumbing Permits
- 9 Recording or Correcting Information in CCAMS
- 10 Submitting Test Information
- 11 Reporting Problems Observed in the Field
- 12 Consequences of Late Entry of Test Results
- 13 Violations and Penalties
- 14 Contact Information

1 Permit to Operate

Testers who operate within the City must obtain a permit to operate from the San Francisco Department of Public Health, Environmental Health Branch (SFDPH-EHB). Requirements for obtaining a permit are summarized below.

- All applicants for a permit to operate must hold a valid “Backflow Prevention Assembly Tester” certification from the American Water Works Association, American Backflow Prevention Association, American Society of Sanitary Engineers, or Northern California Backflow Prevention Association. Applicants must pay an initial application fee, pass an exam administered by SFDPH-EHB, and pay an annual license fee. The tester or the tester’s employer must maintain general liability insurance (described below) and annually provide proof that any test kit used within the City has been calibrated. The

permit to operate is issued to the tester, not the employer, and it is the tester's responsibility to keep the permit current.

- General liability insurance must be in full force and effect for all activities performed under a permit to operate. The insurance must include coverage for bodily injury, personal injury, including death resulting therefrom, and property damage insurance, with limits not less than \$1 million each occurrence combined single limit. The City and County of San Francisco, its officers, and employees must be named as additional insureds under the policy, and a cross-liability clause must be attached. The insurance must provide 10-day prior written notice of cancellation, non-renewal, or material change to SFDPH-EHB. SFDPH-EHB will not issue a permit to operate before receiving a certificate of insurance meeting these requirements. This requirement does not apply to testers who are City employees.
- To maintain a permit to operate, testers must be in good standing, have a current "Backflow Prevention Assembly Tester" certification from a recognized testing organization, have attended the annual tester meeting (or taken online training), maintain insurance, provide proof of use of a calibrated test kit, and pay the annual license fee. Fees are billed to individual testers or their employers through the City's Office of the Tax Collector.
- Permittees who change employment and continue to work in San Francisco must contact SFDPH-EHB and provide the following information:
 - End date with the previous employer and start date with the new employer.
 - Current certificate of liability insurance if the new employer does not already have one on file with SFDPH-EHB.
 - Updated contact information.
 - Completed form *Record Purpose Change to Authorized Backflow Assembly Tester Permit to Operate* (by tester)
 - Completed form *Authorized Backflow Prevention Assembly Testing Company Registration/Renewal Form*, if necessary (by test company)
 - Test kit calibration
 - Copy of current backflow certificate/card, if it needs to be updated
- Permittees who stop working in San Francisco permanently must contact SFDPH-EHB to close out their permits and to avoid being incorrectly billed for annual license fees.
- A tester's permit to operate may be suspended or revoked for cause, for failing to comply with the requirements of Article 12A of the San Francisco Health Code, or for failing to pay the annual license fee.

2 Authorized Tester Responsibilities

- All testers must attend the Annual Meeting for Backflow Prevention Assembly Testers, hosted by the San Francisco Public Utilities Commission's (SFPUC's) Water Quality Division (WQD) and SFDPH-EHB. Alternatively, testers may complete an online

training program. SFDPH-EHB will inform testers of how to access the program and the date by which it must be completed.

- Testers must attach backflow tags to assemblies that have passed testing and write the month and day tested on the tag. (See Section 3 for how to obtain tags.) Tags must be from the current year: even if the test due date was the previous year, the tag attached should reflect the year that the assembly was tested, not the year that testing was due. Note that if an assembly is delinquent, it might need to be tested twice in the same year to get it back on schedule.
- Bypass assemblies require separate test reports and backflow tags in addition to those for the main assembly. Note, however, that RPDA-II and DCDA-II assemblies are considered single assemblies and only require one test report and one tag.
- Testers are responsible for entering their own test data into the Cross-Connection Control Program’s *Cross-Connection Assembly Management System (CCAMS)*. (See Section 10 for how to submit test information.) Test results must be entered within five business days of the test date, **unless** an assembly fails testing and cannot be repaired the same day. In that case, test results must be entered into CCAMS **the day of the test** so that WQD is informed of the failure.
- All assemblies installed in San Francisco must be on the “Approved Backflow Prevention Assemblies” list developed by the University of Southern California (USC) Foundation for Cross-Connection Control and Hydraulic Research.
- Assemblies must be installed in the orientation approved by USC. Any modification of an assembly—such as relocation of valves, bypass arrangements, and jumper connections, whether temporary or permanent—invalidates the foundation’s approval and is not permitted. The only exception allowed by USC is that flanged shut-off valves 2.5 inches or larger may be rotated by one bolt hole.
- Testers **must submit test results electronically** via CCAMS. (Section 4 describes how to set up a CCAMS account.)

3 Obtaining Backflow Tags

- Backflow tags are sold by the SFPUC Customer Services Bureau (CSB), located on the first floor of 525 Golden Gate Avenue, San Francisco. Tags may be purchased by Authorized Backflow Prevention Assembly Testers or representatives of testing companies. CSB accepts payments by cash (in person only), company or cashier’s check, and money order. (No personal checks or credit cards accepted.) Checks should be made out to SF Water Department.
- Hours of operation: 8:30 am to 4:30 pm. If these hours change, WQD will inform testers via CCAMS.
- To purchase tags in person, the buyer must provide official identification (e.g., driver’s license), name of the company being represented, and payment. Tags obtained in person may be purchased in any amount.

- To purchase tags by mail, mail a purchase request form (link available at sfpuc.org/backflow) with payment to Customer Services Bureau, San Francisco Public Utilities Commission, 525 Golden Gate Avenue, 2nd Floor, San Francisco, CA 94102. The request may also be deposited in the night mail box outside the entrance of 525 Golden Gate Avenue. Deposit by 8 am for fastest service. CSB will mail the tags by certified mail within five business days of receiving the request. Mail orders require a minimum purchase of 10 tags.
- Backflow tag exchange: In December 2022 and January 2023, test companies may make a one-time exchange of up to one hundred 2022 backflow tags for an equivalent number of 2023 tags. To make an exchange, fill out the “Request to Exchange Backflow Tags” (link available at sfpuc.org/backflow) and mail it to or drop it off at Customer Services Bureau with payment. The fee for an exchange is \$15, for any number of tags up to the maximum of 100. All exchanges must be made by mail.
- The cost of backflow tags through June 30, 2023, is \$24 each. WQD will inform testers via CCAMS if the cost increases on July 1.

4 Establishing a CCAMS Account

- To access CCAMS, testers must have a current permit to operate. CCAMS allows testers to access test forms, submit test results, and see their test history at CCAMS.sfpuc.org.
- After being approved for a permit to operate, testers are emailed a password to be used with the email address provided.
- Testers who work for more than one company must have a separate email address and password for each company.
- Once a tester has a username and password, CCAMS can be accessed at CCAMS.sfpuc.org. Testers can only enter information into CCAMS for tests that they performed personally.
- It is recommended that testers add noreply@sfwater.org to their email contact lists so that emails from CCAMS are not treated as spam.
- CCAMS also allows creation of “supervisor” accounts, which give read-only access to all the test reports submitted by a given company. The person does not actually need to be a supervisor.

5 Backflow Prevention Assembly Information Forms

- All test results must be entered into CCAMS (not submitted on Backflow Prevention Assembly Information forms).
- A hard copy of the Backflow Prevention Assembly Information form is sent to customers along with the 30-day notice indicating that testing is due. Testers can use this form as a reference for information pertaining to the backflow prevention assembly to be tested. The notices also include the customer’s personal identification code (PIC) and the service point identification (SPID) number associated with the assemblies at a given service address.

- CCAMS accepts customer accounts, which allow customers to receive test notices by email and to choose one or more preferred test companies and have those companies notified by email when their assemblies are due for annual testing. This features eliminates the need for customers to provide their preferred testers with PIC numbers.
- Testers can either download Backflow Prevention Assembly Information forms from CCAMS or obtain them from the customer. To download the forms from CCAMS, testers must obtain the PIC number(s) from the customer.
- If a customer cannot locate PIC number(s), then the customer may obtain the PIC number(s) or preprinted test forms by calling (650) 652-3199. To access an account, the customer must have the SPID number or service address (for multiple taps). Only the customer, not the tester, may obtain PIC numbers directly from WQD if the 30-day notice is sent to a San Francisco address.
- Customers may authorize their testers via email to get PIC numbers directly from WQD. If you notify your customers via email that their assemblies need testing, copy backflow@sfgwater.org on the original message and ask the customer to “reply all” to authorize the release of the numbers. PIC numbers will be emailed to testers within one working day.
- If a 30-day notice is sent to an “accounts receivable” department outside of San Francisco, or a tester has a contract with an out-of-city customer to perform annual testing, the tester may call WQD in the month that a site is due for testing to obtain PIC numbers to allow downloading of the forms from CCAMS. This exception is made so that testers can proceed with testing for out-of-city customers in a timely manner. Note, however, that staff may contact the customer before releasing PIC numbers.
- If a customer needs to obtain PIC numbers at a time not associated with annual testing, for example, because a leaking assembly needs repair, the customer may call WQD at (650) 652-3199. To access his or her account, the customer must have the SPID number or service address (for multiple taps).

6 New Installations

- New installations must be entered into CCAMS on the “Assembly Management/Add Assembly” tab. Note that this form should only be used in three cases:
 1. An assembly is newly installed at a specific location and is not a replacement for a previous assembly at that location.
 2. An assembly does not have a backflow tag. In that case, inform the customer and ask for permission to test the assembly. If the customer does not agree to testing, email backflow@sfgwater.org and provide location, make, model, and serial number of the assembly, as well as the hazard.
 3. An assembly is not on the site’s paperwork but has an out-of-date backflow tag. Please call or email WQD and provide the assembly’s make, model, serial number, and service address to find out whether the assembly is in CCAMS or should be added as a new installation.

- Note that if an assembly is in violation of installation requirements (modified, not on USC list, wrong orientation, etc.) and cannot be tested, check the “In-Violation” box under the “Unable To Test” section and **do not test it**.
- Whether or not an assembly gets tested, ask the customer for a plumbing permit number. In most cases, the permit will be from the San Francisco Department of Building Inspection, Plumbing Inspection Division (SFDBI-PID). However, if the facility falls under another jurisdiction (listed in Section 7 of these instructions), the permit/approval number will be from the authority having jurisdiction.
- Enter the meter number, if known, on the New Installation form in CCAMS. This information is important for associating the correct customer with a particular backflow prevention assembly.
- Clearly identify the hazard. Consider asking the building owner or building manager what the assembly is supplying water to if it isn’t obvious. If you don’t know the hazard, select “Other.”
- Be sure to put in the assembly orientation. The dropdown menu on the New Installation form only includes USC-approved orientations. If a correct orientation is not shown in the dropdown menu, email backflow@sfgov.org. If the orientation is confirmed on the USC website, WQD will add the orientation to CCAMS.
- Under “Exact Assembly Location,” be as specific as possible (e.g., “Building B, 2nd Floor, north wall utility closet J2”; “Basement, 25 feet east of the northeast corner, below stairwell”). If the assembly is in a multi-unit building, be sure to enter the unit number.

7 Removal, Replacement or Relocation of Backflow Prevention Assemblies

- Only a licensed contractor may remove, replace or relocate a backflow prevention assembly. A plumbing permit for the work must be obtained from the Department of Building Inspection, Plumbing Inspection Division (DBI/PID), unless the facility falls under a different jurisdiction (e.g., Port of San Francisco, Office of Statewide Health Planning and Development [OSHPD], or state Fire Marshal). In that case, a permit or other authorization must be obtained from the relevant entity.
- DBI/PID permits can be obtained online at <https://sfdbi.org/onlinepermit>. For support, email DBIOnlineServices@sfgov.org or call (628) 652-3240 (Central Permit Bureau).
- Plumbing inspections can be scheduled several ways:
 - Online: <https://sfdbi.org/inspection-scheduling-procedures>.
 - By calling Inspection Services at (628) 652-3400 between 7:30 am and 3 pm.
 - By calling DBI/PID’s scheduling number, (628) 652-3401, which allows you to schedule, reschedule or cancel an inspection, as well as obtain results, 24/7.
- Enter plumbing permit numbers into CCAMS or ask owners to provide permit numbers to WQD by email or phone.
- Report the removal of a backflow prevention assembly in CCAMS by choosing “Unable to Test” and then “Removed.” Include the plumbing permit number if you have it. If the

removed assembly was replaced with another assembly, follow the instructions in the next bullet point.

- Report the replacement of a backflow prevention assembly in CCAMS. If the assembly being removed or replaced was tested, be sure to record the results of the test in the “Initial Test” area of the form. For the new assembly, go to the old assembly test form, mark the check box next to “Replacement Information Below,” and enter the replacement assembly information in the fields below. Then record the test results for the new assembly in the “Final Test” area of the form.

It is important that the information for both the old and new assemblies be reported on the same form. That way, the customer will have the correct serial number and associated backflow prevention assembly inactivated, and the old and new assemblies will be tied together in CCAMS.

Sometimes, a replacement assembly is not installed for months after the removal of the original assembly. Even if you know that an assembly will be replaced in the future, for example, as part of a remodel, report the removal of the original assembly as soon as you are aware of it. If you test the replacement assembly sometime later, do not enter it as a new installation. Send an email to backflow@sfgwater.org, and WQD will reactivate the original assembly in CCAMS. Then enter test results for the new assembly on the replacement screen.

- Replacement of assemblies having a bypass with an RPDA-II or DCDA-II (or vice versa): CCAMS treats an assembly with a bypass assembly as two separate assemblies, each of which requires its own test report and backflow tag. However, RPDA-II and DCDA-II assemblies are considered single assemblies and only require one test report and one tag.
 - If an assembly with a bypass is replaced with an RPDA-II or DCDA-II, then report the new assembly on the same form as the removed mainline assembly. Report the removal of the bypass assembly separately by selecting “Unable to Test” and then “Removed.”
 - If an assembly without a bypass is replaced with an RPDA-II or DCDA-II, then a single form is used to report the replacement.
 - If an RPDA-II or DCDA-II is replaced with an assembly having a bypass, then report the new mainline assembly on the same form as the removed RPDA-II or DCDA-II, and report the new bypass assembly as a new installation.

8 Plumbing Permits

When filling out a plumbing permit application, be sure to specify:

- Location of the backflow prevention assembly, hazard (e.g. boiler, fire system), and assembly serial number. If possible, include the assembly type, make, and model.
- Whether the permit is for a new installation, removal, replacement or relocation.

9 Recording or Correcting Information in CCAMS

- If you wish to add a contact to the account, such as a chief engineer or person to call, add it to the “Comments” field of the test report.
- If you believe that information in CCAMS is incorrect, such as the location or make of a backflow prevention assembly, enter the correct information into the “Comments” field of the test report. Staff will review the program’s database and verify the information.
- If customer information (name or mailing address) needs to be updated, the customer must contact CSB at (415) 551-3000 to have the changes made. Information will then be updated in CCAMS by the following Monday morning.
- Customers who wish to change a test date to another month or synchronize multiple accounts can arrange this by contacting WQD.

10 Submitting Test Information

- Test results must be entered into CCAMS within five business days of the test date **unless** an assembly fails testing and cannot be repaired the same day. In that case, test results must be entered into CCAMS **the day of the test** so that the Cross-Connection Control Program is informed of the failure.
- After entering test results into CCAMS, testers have a five-day window for modifying the results. If modifications need to be made after five business days, a tester must contact WQD to have the test canceled. The tester may then reenter the test information. Note that a “fail” result causes an assembly to be automatically routed to SFDPH-EHB for enforcement action. However, entering a subsequent “pass” result returns an assembly to normal status. Once a “pass” result is entered for an assembly, the test’s PIC number can no longer be used to access that assembly in CCAMS.

11 Reporting Problems Observed in the Field

- If a backflow prevention assembly fails a test, record the test results in the “Initial Test” results area of the test form. Then contact the customer and request authorization to repair the assembly or recommend that it be replaced. If the assembly cannot be repaired or replaced the same day, test results must be entered into CCAMS **the day of the test** so that the Cross-Connection Control Program is informed of the failure.
- If an assembly cannot be tested because it has no water supply or is temporarily inaccessible, inform the customer, email backflow@sfwater.org, and do not enter any information into CCAMS.
- If a backflow prevention assembly has been modified or incorrectly installed (e.g., illegal by-pass, relocated shut-off valve, or wrong orientation), take a picture of the assembly showing the violation and report the violation in CCAMS by checking “Unable to Test” and then “In Violation.” Select all relevant violation types. Email the picture to backflow@sfwater.org along with a description of the violation. The assembly will be locked in CCAMS so that only the CCAMS Administrator can access the assembly’s record. Test results cannot be entered until the Cross-Connection Control Program receives evidence that the violation has been corrected.

After the violation has been corrected, take at least two pictures of the assembly, one close up and a second distant one. If possible, include a picture of the assembly's serial number in the close-up; otherwise, take a separate picture of the number. Email the pictures to backflow@sfwater.org and request that the assembly be unlocked in CCAMS. After the correct installation has been verified, the assembly will be unlocked, and the tester will be able to enter test results in CCAMS.

If an assembly is in violation because of a missing or expired plumbing permit, the tester, contractor, or customer must email a valid permit number or copy of a valid plumbing permit to backflow@sfwater.org to have the assembly unlocked. WQD will provide a PIC number if the assembly also needs to be tested.

- If a tester finds a cross-connection hazard that is unprotected, that is, with no backflow prevention assembly or the wrong type of assembly, the tester must inform the customer of the hazard and the potential health risk associated with it. Email backflow@sfwater.org or, if the hazard has no protection at all, call (650) 652-3199. An assembly that is the wrong type for the hazard should not be tested.
- If a tester finds an existing backflow prevention assembly that is not tagged, follow the procedures described in Section 6, New Installations.
- Contacting Cross-Connection Control Program staff from the field can save you time and resources; often, questions can be answered or issues rectified on the spot. In addition, vital information that you might not otherwise know to record might be needed from the site.

12 Consequences of Late Entry of Test Results

If test results for a given month are not entered into CCAMS by the 6th of the following month, the database automatically generates a "Notice of Violation," and the customer might receive this notice after having paid for testing. If this happens, testers should confirm that the test results were submitted to CCAMS and explain the situation to the customer. Testers and customers can call Cross-Connection Control Program staff at (650) 652-3199 to check on the compliance status of their accounts.

13 Violations and Enforcement

Testers must meet all of their responsibilities described in these instructions. Tester permits to operate may be suspended or revoked for violations including, but not limited to:

- Failure to maintain valid certification as a "Backflow Prevention Assembly Tester" from a recognized testing organization.
- Failure to maintain required liability insurance.
- Failure to provide proof of use of a calibrated test kit.
- Failure to pay annual license fee.
- Late entry of test results (more than five business days after test).
- Failure to submit accurate test reports.

- Failure to attend annual meetings or complete online training.
- Failure to follow testing procedures in the USC Foundation for Cross-Connection Control and Hydraulic Research *Manual of Cross-Connection Control*, 10th edition (or latest edition), for example, testing an assembly that has been modified or installed in an incorrect orientation.
- Falsification of test results, for example, entering the wrong date so as to appear to be submitting results within five business days of testing.

Enforcement may include warning letters, notices of violation, citations to conferences or administrative hearings, or permit revocation.

14 Contact Information

Water Quality Division	
<p>Cross-Connection Control Program Water Quality Division San Francisco Water, Power and Sewer 1657 Rollins Road Burlingame, CA 94010 (650) 652-3199</p> <p>Utility Services Representative backflow@sfgwater.org (650) 652-3127</p>	<ul style="list-style-type: none"> • Plumbing permit submission (if not submitted in CCAMS) • Photos/correspondence for assemblies that have been modified or whose records are locked in CCAMS • CCAMS technical issues • PIC number(s) or preprinted test forms • Changing/synchronizing test months (customers) • Questions about testing notices or other general cross-connection control issues • Questions about backflow tags
<p>CCAMS website: ccams.sfpuc.org/ WQD Cross-Connection Control Program website: sfpuc.org/backflow or sfpuc.org/backflow-testers SFPUC’s main website with consumer information and Water Quality Reports: sfpuc.org/</p>	

Department of Public Health, Environmental Health Branch	
<p>Cross-Connection Control Program Environmental Health Branch San Francisco Department of Public Health 49 South Van Ness Avenue, Suite 600 San Francisco CA 94103</p> <p>Michelle Kanemoto, Senior Environmental Health Inspector <i>Michelle.Kanemoto@sfdph.org</i> (415) 252-3943</p>	<ul style="list-style-type: none"> • Permits to operate (obtaining and cancelling) • Tester certification updates • Certificate of liability insurance • Test kit calibration documentation • Updating test company and contact information • Test company registration/renewal • Questions about notices of violation
<p>DPH Cross-Connection Control Program website: https://www.sfdph.org/xconn</p>	
Department of Building Inspection, Plumbing Inspection Division	
<p>San Francisco Department of Building Inspection 49 South Van Ness Avenue, Suite 400 San Francisco CA 94103 (628) 652-3400 ext. 1 https://sf.gov/departments/department-building-inspection</p> <p>Automated Inspection Scheduling: (628) 652-3401</p>	<ul style="list-style-type: none"> • Plumbing permit assistance and scheduling • Exceptions: Facilities that fall under the Port of San Francisco, California Department of Health Care Access and Information, Division of the State Architect, or the State Fire Marshal
<p>DBI Instant Online Permit website: https://sfdbi.org/onlinepermit DBI Permit tracking website: http://dbiweb.sfgov.org/dbipts/</p>	