VEPO
CROSSCONNEX

How Technology Helps Utilities Improve Backflow Programs

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Benefits to Cross Connection Program

Protect your most precious resource

State, County, and Local Requirements

- Regulatory Agencies require water providers to protect against Hazardous cross-connections

Avoid Pollutants/Contaminants

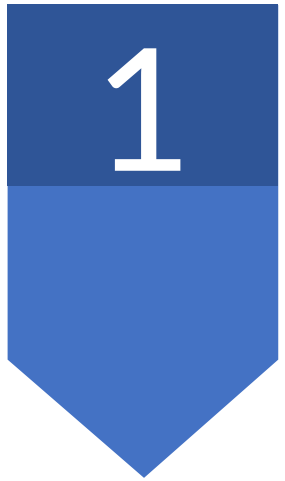
- Can be a serious health threat
- Must be contained

WHAT IF YOU DON'T?

- Could be the next water disaster!
- Susceptible to terrorist attacks
- Outbreaks of disease

Backflow Incidents

Don’t let your system be susceptible



Colorado School

- 8 Kids go to hospital
- Anti-freeze poisoning
- No backflow device

Funeral Home

- Blood in the water system
- Using a hydraulic aspirator to drain fluids
- Connected to water supply with no backflow

Burned in the Shower

- Sodium Hydroxide in water
- Near-by chemical company
- Many residents were burned

Paraquat

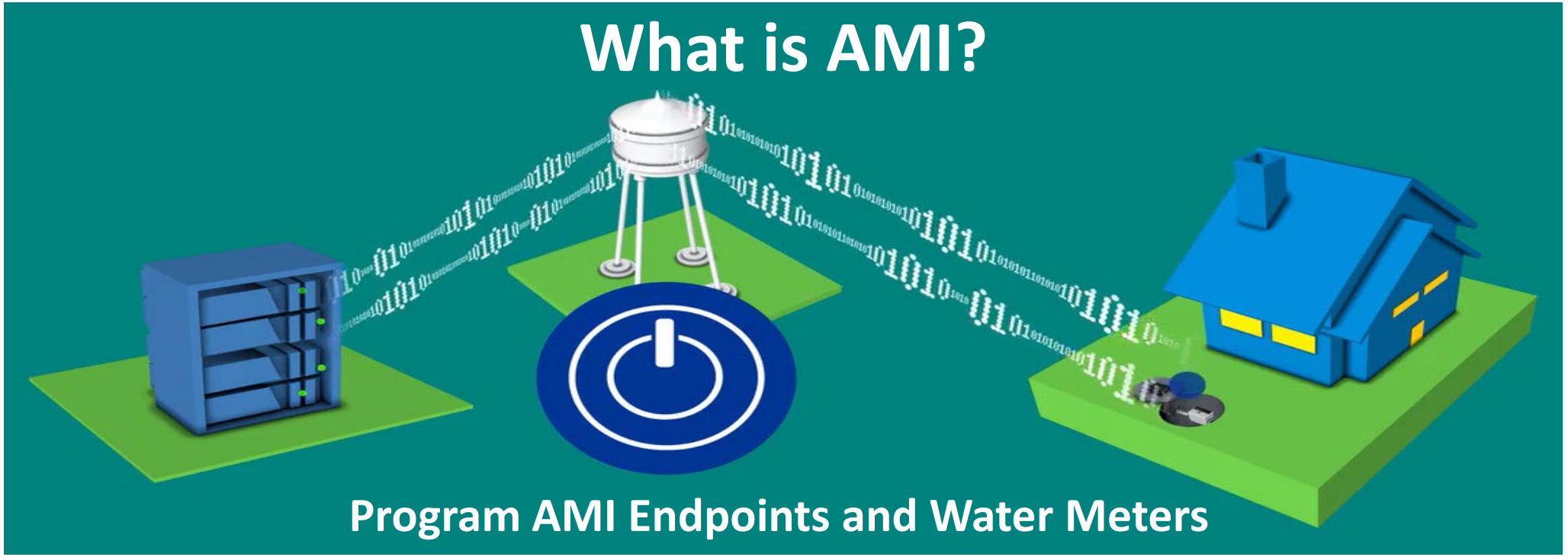
- Lethal Pesticide
- Yellow Gushy stuff was coming from people’s faucets
- Pressure reduction in water mains due to pump failure
- Cost a lot of money
- Made CBS news

AI – Artificial Intelligence for Water Industry

Common AI Websites

- ChatGPT - https://chat.openai.com/chat - writes anything you tell it to
- Dalle 2 – https://openai.com/dall-e-2/ - creates pictures from text
- Magic Eraser – Removes items from pictures
- Speech From Text – Type your text and then choose a voice
- Thing Translator – Take a picture of something and translate it to a language
- Word Tune – Improves on your writing

Using AMI to Identify Backflow



- Use AMI Endpoints to identify backflow
  - Some endpoints see as low as 1 gallon of backflow
  - Typically, an hourly read interval, so the reading in hour 2 has to be smaller than reading in hour 1

https://www.iotforall.com/use-case/backflow-valve-monitoring

Using Water Meters to Identify Backflow

Protect your most precious resource

Must be Smart Meters or Meters Retrofitted with Smart Registers

- Use Water Meters to identify backflow, doesn't have to be AMI
  - Some meters are programmable for amount of backflow they can identify.
  - EX: Some meters can be programmed to see 1,2,5,10, or 30 gal/min of backflow for a time interval of 1, 2, 4, 6, 8, 10, 15, 30 or 60 min.
  - Meters store alarms and can be transmitted through any type of meter reading system.

IoT-Enabled Backflow Valve Monitoring

Protect your most precious resource

- Backflow valve monitors built into new BFPD or retrofitted.
- IoT-enabled sensors used to detect backflow valve position.
- Measure water pressure.
- If failure or unexpected pressure readings, devices can shut off water
- Also alerts manager or owner.
- Access to water supply can also be controlled remotely.

Article by Cameron Rapoport
https://www.workingpressuremag.com/new-technologies-in-backflow-prevention/

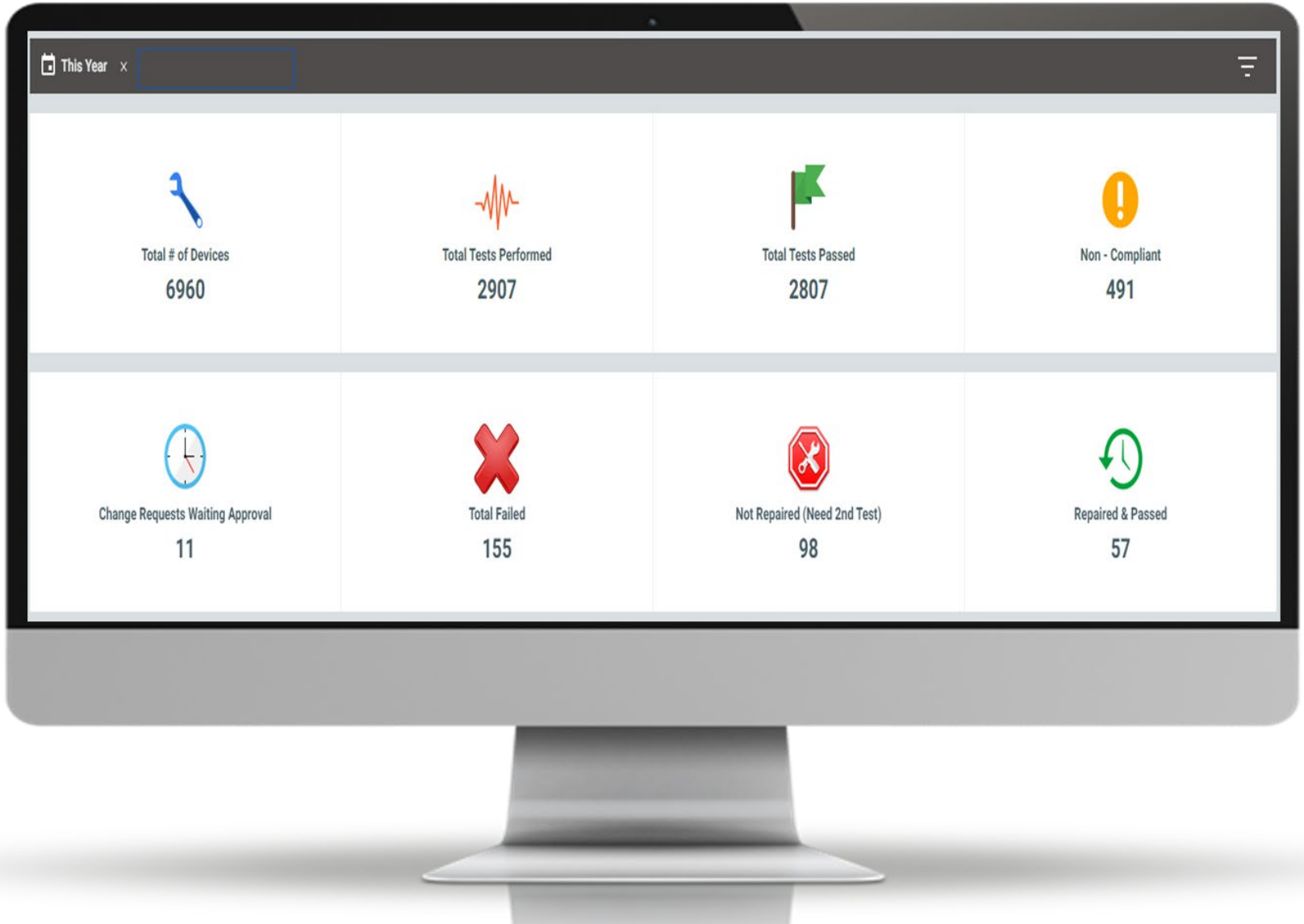
Why Use IoT-Enabled Valve Monitoring

- Eliminate surprise results from annual backflow preventer inspections
- Receive real-time alerts to backflow valve failure or unexpected drops in pressure – allowing you to act instantly to prevent contamination or damage.
- Monitor multiple backflow preventers with one online dashboard and enable access to multiple stakeholders
- Remotely shut off water supply to prevent flooding, even when you're not on-site

https://www.iotforall.com/use-case/backflow-valve-monitoring

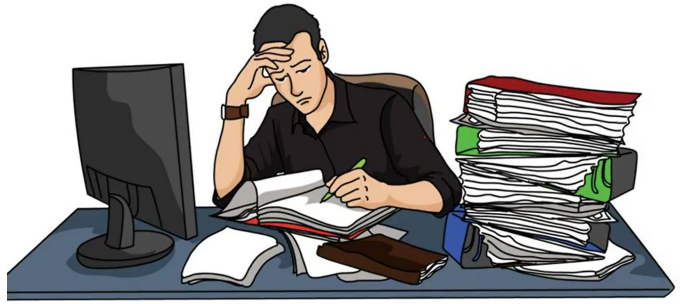
Backflow Management Software

Protect your most precious resource



Typical Water Utility Record Keeping Process

1. Water Utility Generates Letters

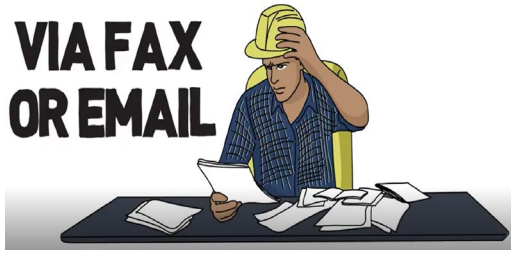


2. Sends them to Customers via Mail

3. Customer Schedules Tester

4. Tester Performs Test

5. Tester Submits Test to Utility



Problems with Paperwork

- The wrong form is used
- CAN’T READ
- Form is missing information
- Forms lost in mail or on the fax
- Manual data entry or scans required by the Water Utility
- Data inconsistencies
- Difficult to find test result data
- Annual reports take forever to generate

NEW YORK STATE DEPARTMENT OF HEALTH
Bureau of Public Water Supply Protection
Flanigan Square, 547 River Street, Room 400
Troy, New York 12180-2216

Report on Test and Maintenance of Backflow Prevention Device

Please use a separate form for each device.

For the year 2019
☐ Initial test - Complete entire form
☒ Annual test - Complete Part A only

Public Water Supply	Account No.	County	Block	Lot
GARDEN CITY PARK WATER				

Facility Name [illegible]
Address [illegible] Street City Zip

Location of Device [illegible]

could not read anything on this form

Device Information	Manufacturer	Type	Model	Size (in inches)	Serial Number
	[illegible]	☐ RPZ ☒ DCV	[illegible]	[illegible]	[illegible]

	Check Valve No. 1	Check Valve No. 2	Differential Pressure Relief Valve	Line Pressure 60 psi
Test before repair	Leaked ☒ Closed tight ☒ Pressure drop across first check valve ____psid	Leaked ☐ Closed tight ☒	Opened at ____psid	Date 04 04 19 M D Y
Describe repairs and materials used				Repaired by Name ____ Lic.# ____ Date repaired: M D Y
Final test	Closed tight ☐ Pressure drop across first check valve ____psid	Closed tight ☐	Opened at ____psid	Date M D Y

Water Meter Number [illegible] Meter Reading [illegible] Type of Service: (check one) ☒ Domestic ☐ Fire ☐ Other ____

Remarks (Describe deficiencies: bypasses, outlets before the device, connections between the device and point of entry, missing or inadequate slopes, etc.)

Certification: This device ☒ meets, ☐ does NOT meet, the requirements of an acceptable containment device at the time of testing
I hereby certify the foregoing data to be correct.
Print Name ANTHONY TOMA Certified Tester No. 5466 Signature [signature] Expiration Date 01/31/2022

Property owners (or owners agent) certification that test was performed:
Print Name [illegible] Title [illegible] Signature [signature] Telephone [illegible]

PART B Certification that installation is in accordance with the approved plans. (To be completed by the design engineer or architect or water supplier.)

I hereby certify that this installation is in accordance with the approved plans.

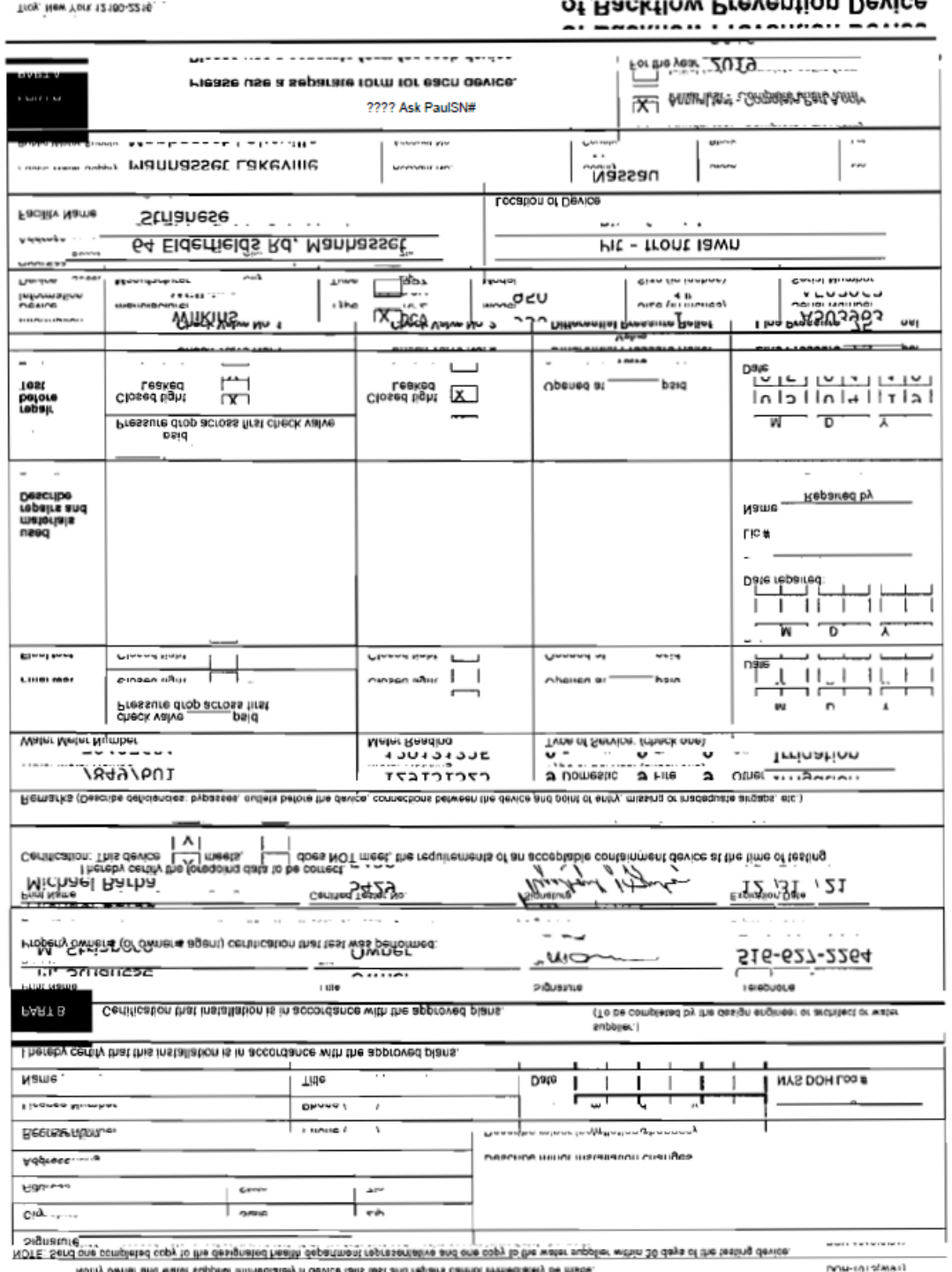
Name	Title	Date	NYS DOH Log #
License Number	Phone ( )	m d y	
Representing			
Address			
City	State	Zip	
Signature			

Describe minor installation changes

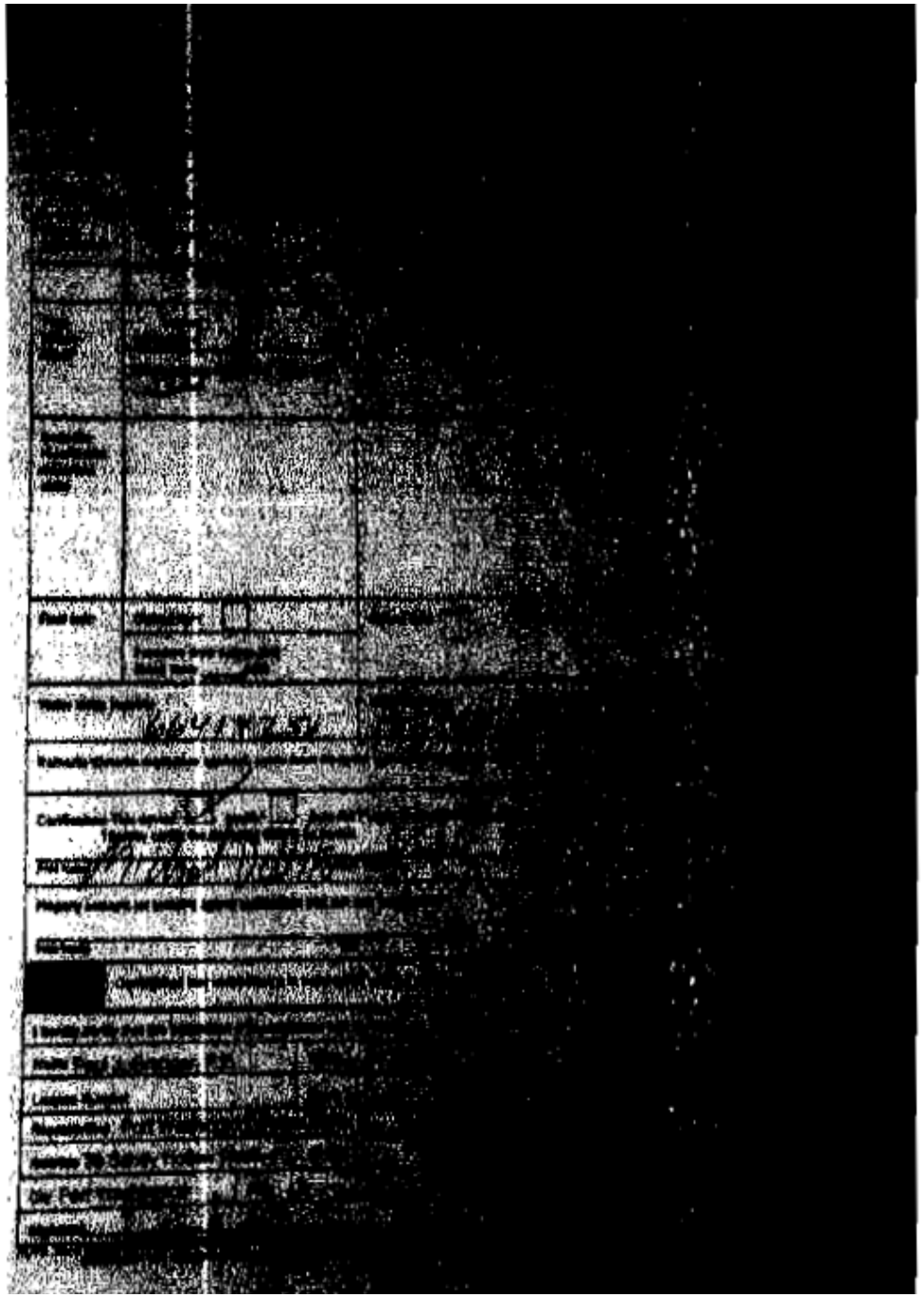
NOTE: Send one completed copy to the designated Health department representative and one copy to the water supplier within 30 days of the testing device. Notify owner and water supplier immediately if device fails test and repairs cannot immediately be made.

DOH-1013(9/91)

CAN YOU READ THESE?



WOW REALLY?



Automate Your Backflow Program with Industry Accepted Software

- Eliminate All Paperwork – Letters and Test Reports
- No More Missing Data or Hard to Read Forms
- Achieve 100% Compliance
- Automated Test Reminders
- Identify Falsified Test Reports

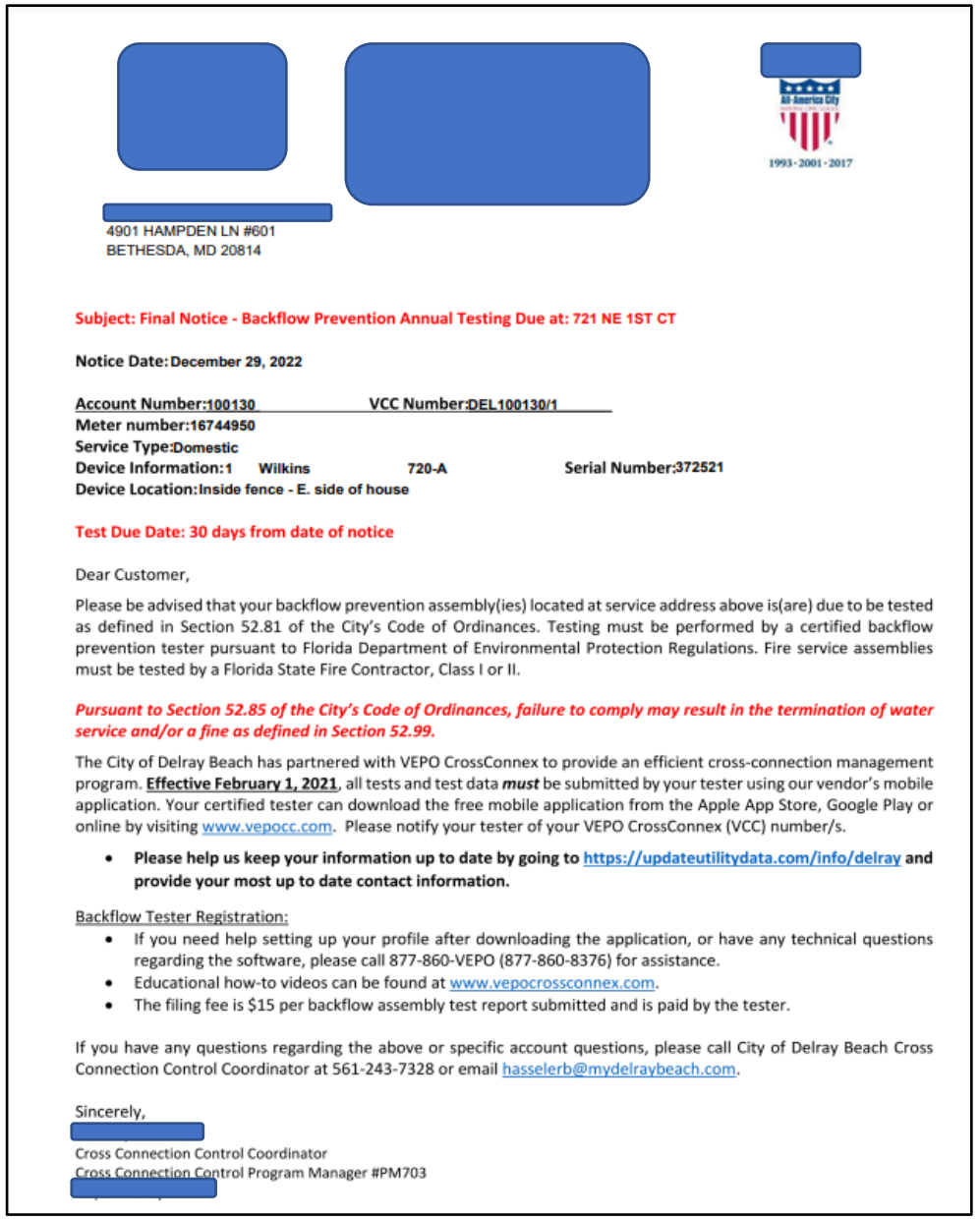
Automate Your Backflow Program with Industry Accepted Software

- Generate Annual Reports
- Reduce/Eliminate Admin Costs for Backflow
- Possibly GENERATE REVENUE!
- Track all Customer Communications

Track Communications History with Customers

EXAMPLE

- Utility has sent multiple notifications.
- Test does not get completed by customer.
- Customer calls because they received a shutoff notice or fine.
- Software allows immediate access to all notifications with Date and Time Stamps



[redacted]

4901 HAMPDEN LN #601
BETHESDA, MD 20814

Subject: Final Notice - Backflow Prevention Annual Testing Due at: 721 NE 1ST CT

Notice Date: December 29, 2022

Account Number: 100130 **VCC Number: DEL100130/1**
Meter number: 16744950
Service Type: Domestic
Device Information: 1 Wilkins 720-A Serial Number: 372521
Device Location: Inside fence - E. side of house

Test Due Date: 30 days from date of notice

Dear Customer,

Please be advised that your backflow prevention assembly(ies) located at service address above is(are) due to be tested as defined in Section 52.81 of the City's Code of Ordinances. Testing must be performed by a certified backflow prevention tester pursuant to Florida Department of Environmental Protection Regulations. Fire service assemblies must be tested by a Florida State Fire Contractor, Class I or II.

Pursuant to Section 52.85 of the City's Code of Ordinances, failure to comply may result in the termination of water service and/or a fine as defined in Section 52.99.

The City of Delray Beach has partnered with VEPO CrossConnex to provide an efficient cross-connection management program. **Effective February 1, 2021**, all tests and test data ***must*** be submitted by your tester using our vendor's mobile application. Your certified tester can download the free mobile application from the Apple App Store, Google Play or online by visiting www.vepocc.com. Please notify your tester of your VEPO CrossConnex (VCC) number/s.

- **Please help us keep your information up to date by going to https://updateutilitydata.com/info/delray and provide your most up to date contact information.**

Backflow Tester Registration:

- If you need help setting up your profile after downloading the application, or have any technical questions regarding the software, please call 877-860-VEPO (877-860-8376) for assistance.
- Educational how-to videos can be found at www.vepocrossconnex.com.
- The filing fee is $15 per backflow assembly test report submitted and is paid by the tester.

If you have any questions regarding the above or specific account questions, please call City of Delray Beach Cross Connection Control Coordinator at 561-243-7328 or email hasselerb@mydelraybeach.com.

Sincerely,

[redacted]
Cross Connection Control Coordinator
Cross Connection Control Program Manager #PM703
[redacted]

Benefits to Testers

Automates Redundant Data Entry – Tester Info

Autofill Test Forms

Simplifies the Test Process – No Complex Forms

Tracks Customer Due Dates

Automated Reminder Notifications to Testers

Don’t Have to Track Utility Test Forms

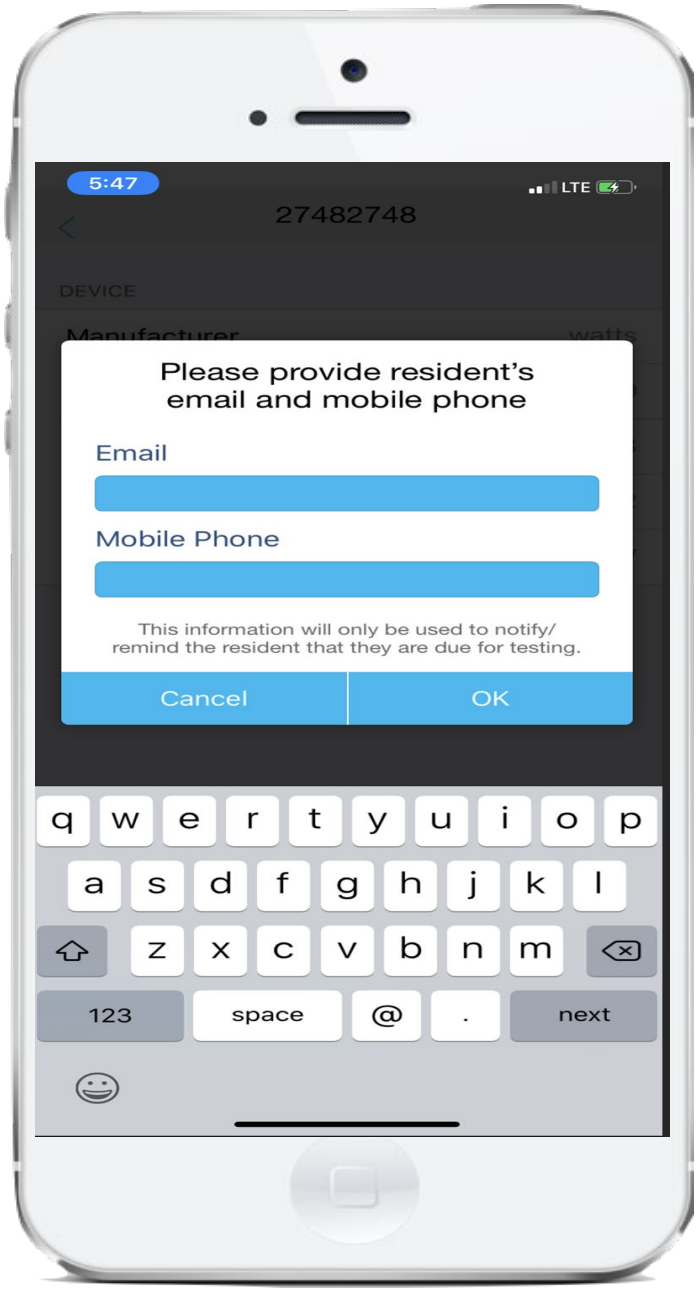
Automatic Test Form Submission

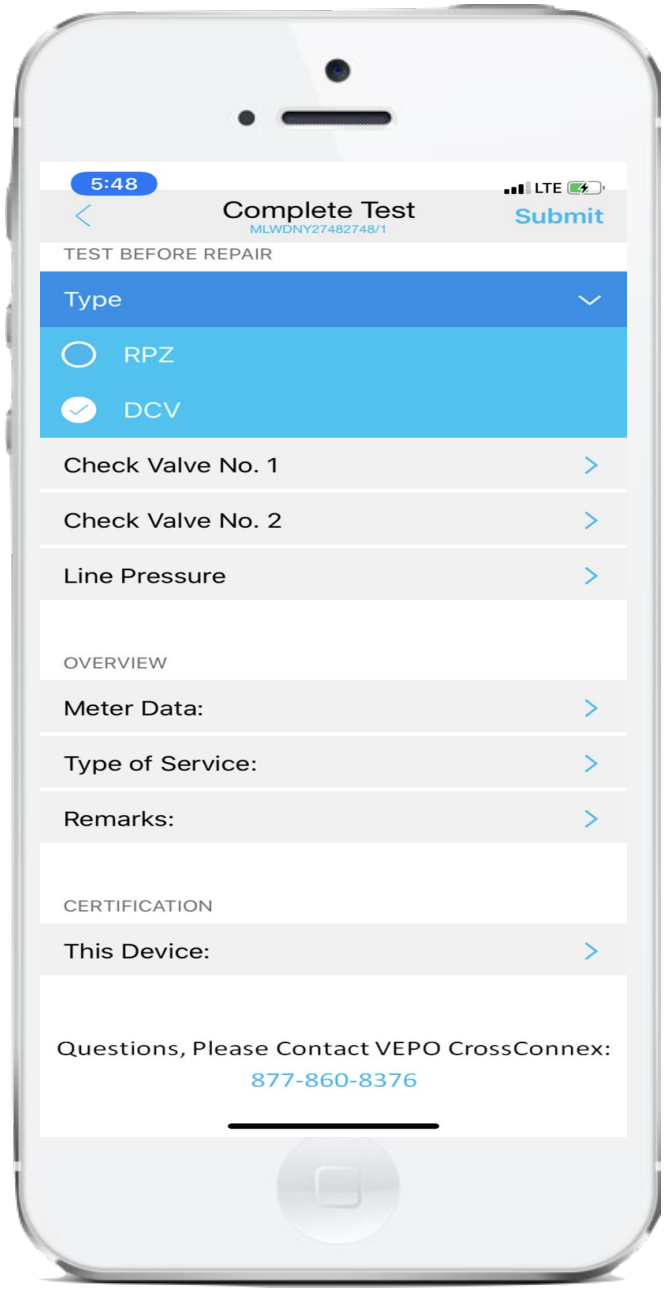
What to Look for in a Backflow Management Software

Protect your most precious resource

Simple to Enter Test Data on Mobile Devices or PC

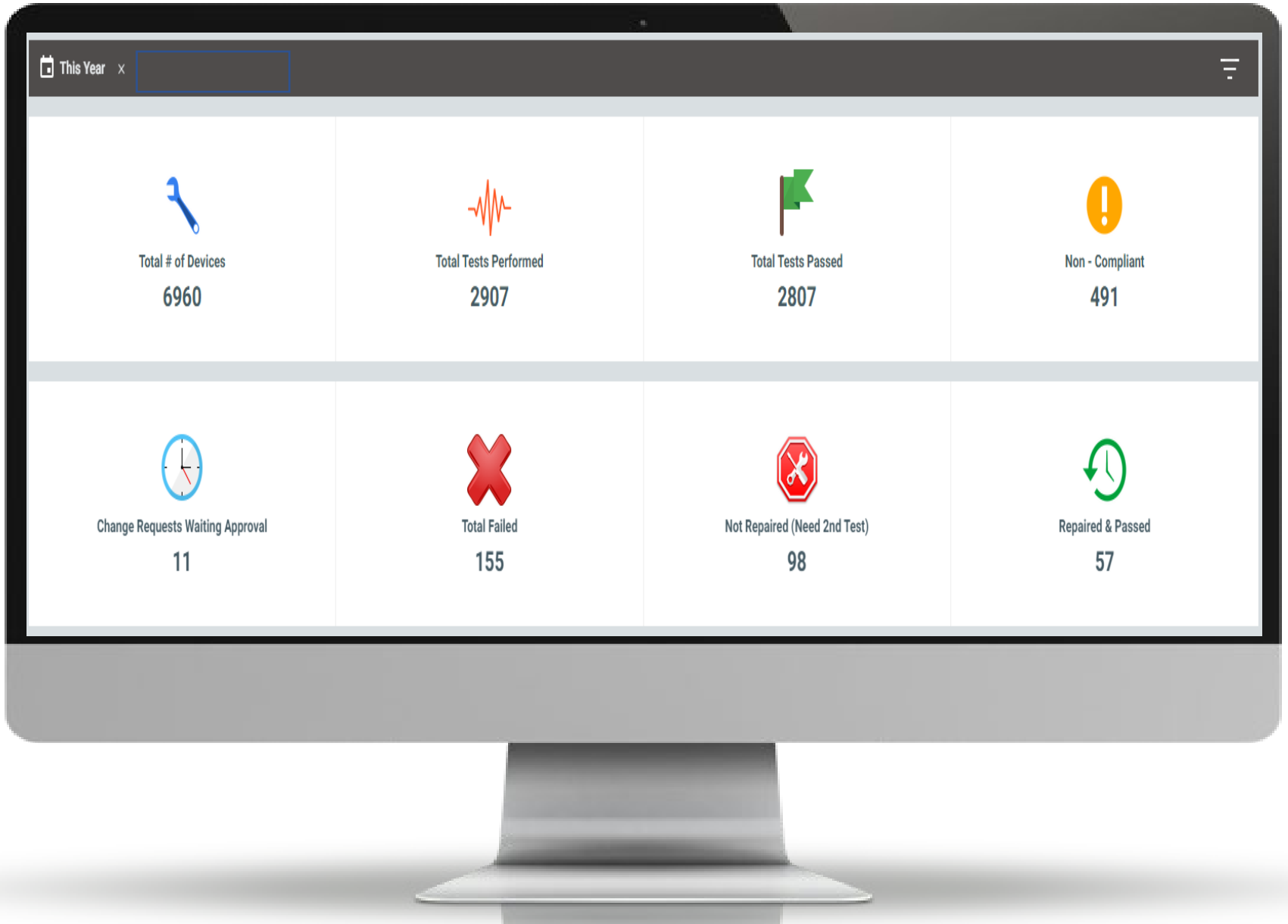
Backflow Software with
Mobile App/Web Portal





TEST DATA ENTRY

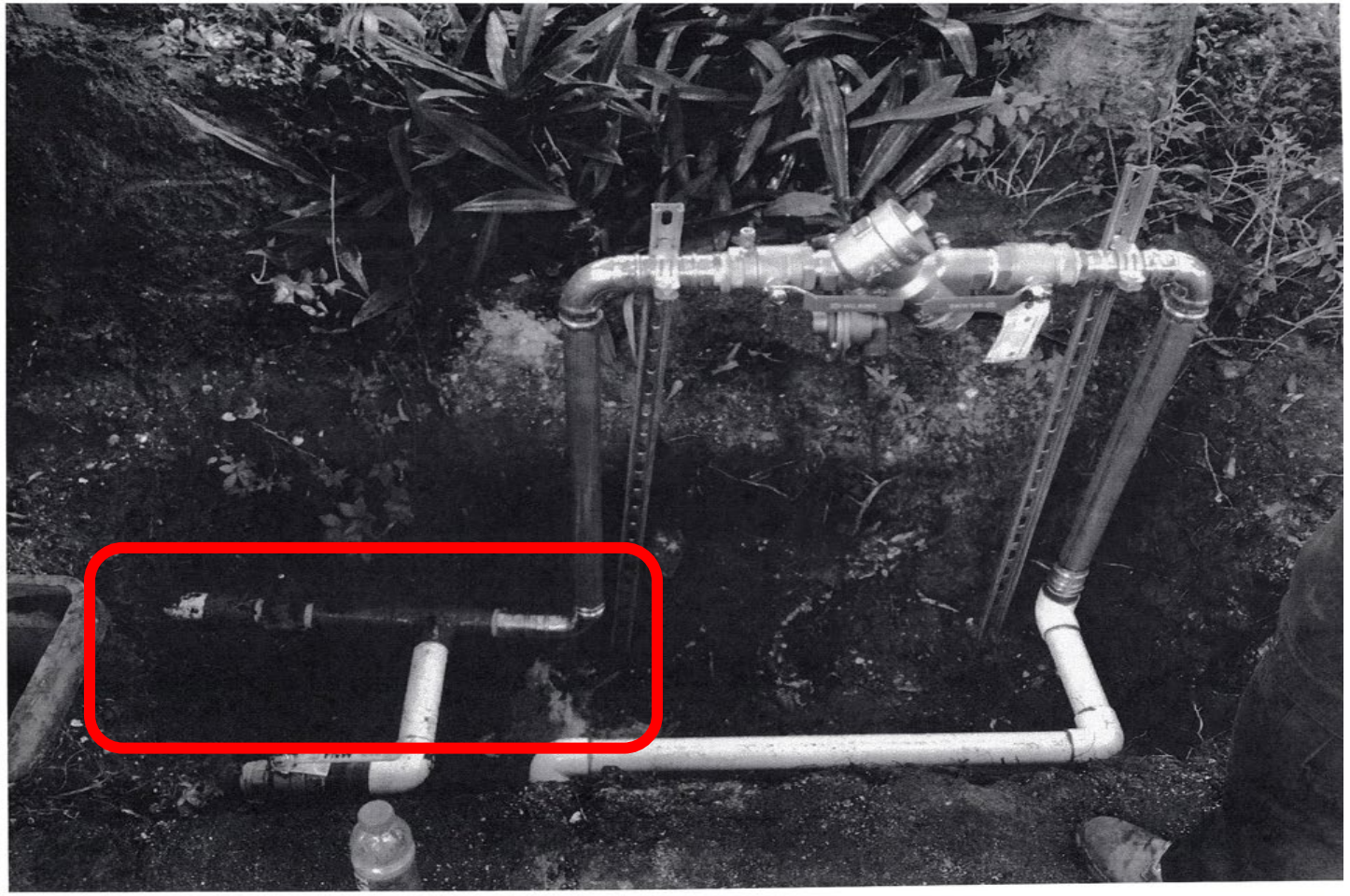
Example Software Utility Dashboard



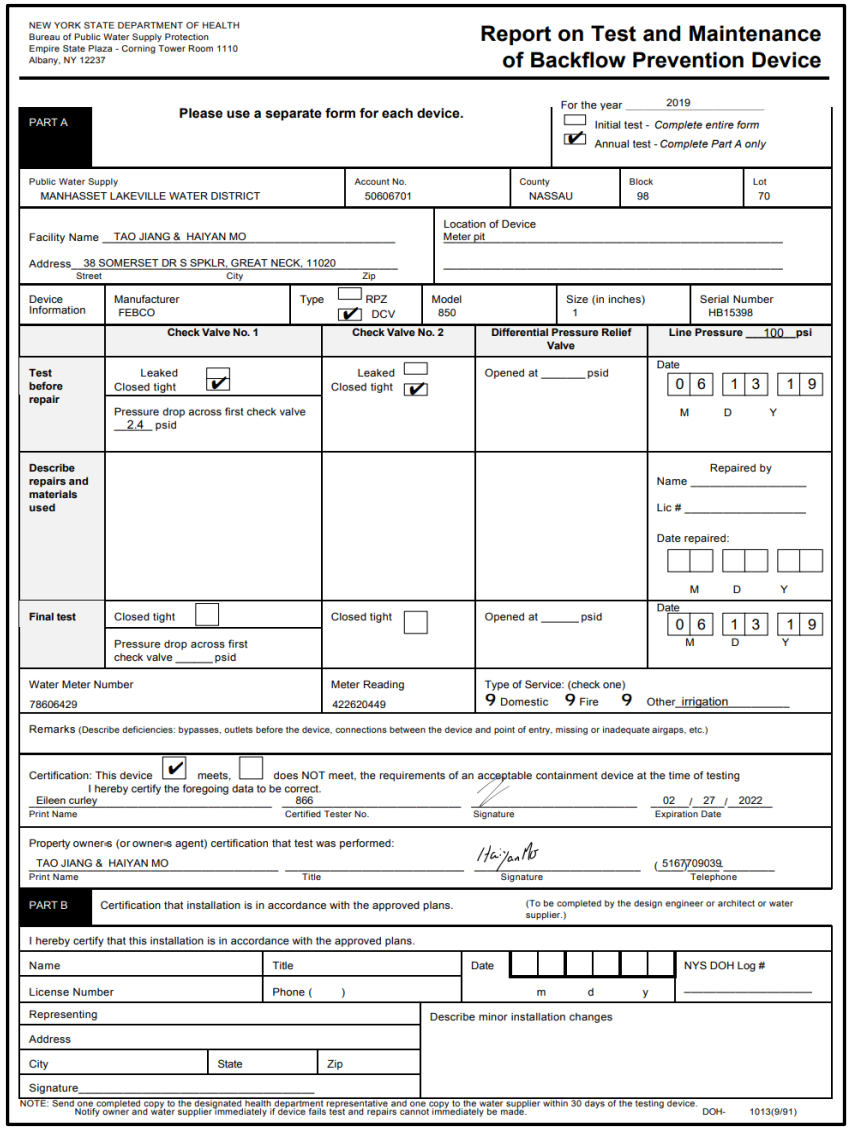
View Device Details

- Track all device details
- Search on individual device or groups of devices
- Export all data when desired
- Automated device data updates
- Generate custom letters for devices or groups of devices
- Assign devices to internal testers for testing
- Plot device locations on a map
- Review Pictures Submitted by Testers

Unauthorized Cross Connection Identified by Picture Submitted by Backflow Tester



Completed Test Form with Automated Process



NEW YORK STATE DEPARTMENT OF HEALTH
Bureau of Public Water Supply Protection
Empire State Plaza - Corning Tower Room 1110
Albany, NY 12237

Report on Test and Maintenance of Backflow Prevention Device

PART A — **Please use a separate form for each device.**

For the year 2019
☐ Initial test - *Complete entire form*
☑ Annual test - *Complete Part A only*

Public Water Supply	Account No.	County	Block	Lot
MANHASSET LAKEVILLE WATER DISTRICT	50606701	NASSAU	98	70

Facility Name TAO JIANG & HAIYAN MO
Address 38 SOMERSET DR S SPKLR, GREAT NECK, 11020 (Street / City / Zip)

Location of Device
Meter pit

Device Information	Manufacturer	Type	Model	Size (in inches)	Serial Number
	FEBCO	☐ RPZ ☑ DCV	850	1	HB15398

	Check Valve No. 1	Check Valve No. 2	Differential Pressure Relief Valve	Line Pressure 100 psi
Test before repair	Leaked ☐ Closed tight ☑ Pressure drop across first check valve 2.4 psid	Leaked ☐ Closed tight ☑	Opened at _____ psid	Date 06 / 13 / 19 (M D Y)
Describe repairs and materials used				Repaired by Name _____ Lic # _____ Date repaired: ___ / ___ / ___ (M D Y)
Final test	Closed tight ☐ Pressure drop across first check valve _____ psid	Closed tight ☐	Opened at _____ psid	Date 06 / 13 / 19 (M D Y)

Water Meter Number	Meter Reading	Type of Service: (check one)
78606429	422620449	9 Domestic 9 Fire 9 Other irrigation

Remarks (Describe deficiencies: bypasses, outlets before the device, connections between the device and point of entry, missing or inadequate airgaps, etc.)

Certification: This device ☑ meets, ☐ does NOT meet, the requirements of an acceptable containment device at the time of testing
I hereby certify the foregoing data to be correct.

Print Name	Certified Tester No.	Signature	Expiration Date
Eileen curley	866		02 / 27 / 2022

Property owners (or owners agent) certification that test was performed:

Print Name	Title	Signature	Telephone
TAO JIANG & HAIYAN MO		Haiyan Mo	(5167709039

PART B — Certification that installation is in accordance with the approved plans. (To be completed by the design engineer or architect or water supplier.)

I hereby certify that this installation is in accordance with the approved plans.

Name	Title	Date (m d y)	NYS DOH Log #
License Number	Phone ( )		

Representing
Address
City / State / Zip
Signature

Describe minor installation changes

NOTE: Send one completed copy to the designated health department representative and one copy to the water supplier within 30 days of the testing device. Notify owner and water supplier immediately if device fails test and repairs cannot immediately be made.

DOH- 1013(9/91)

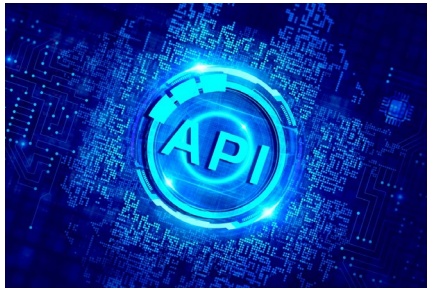
Test Forms

- Get Digital Version of Existing Form
- Forms Should be Customizable
- Forms to be Emailed or Text to Customer
- Pre-Populate Device and Customer Data
- Simple Easy Data Entry for Testers
- Test Forms filled without Data Connection
- Run Custom Reports on all Tests
- Capture, pictures, signatures, gps, bar code

Data Integration to 3rd Party Software

SHARE DATA BETWEEN BACKFLOW AND OTHER SOFTWARE WITHIN THE UTILITY
(3 OPTIONS…)

1. Manual Data Entry – Not really an option
2. File Transfer/Automated File Transfer
3. Applications Programming Interface (API)



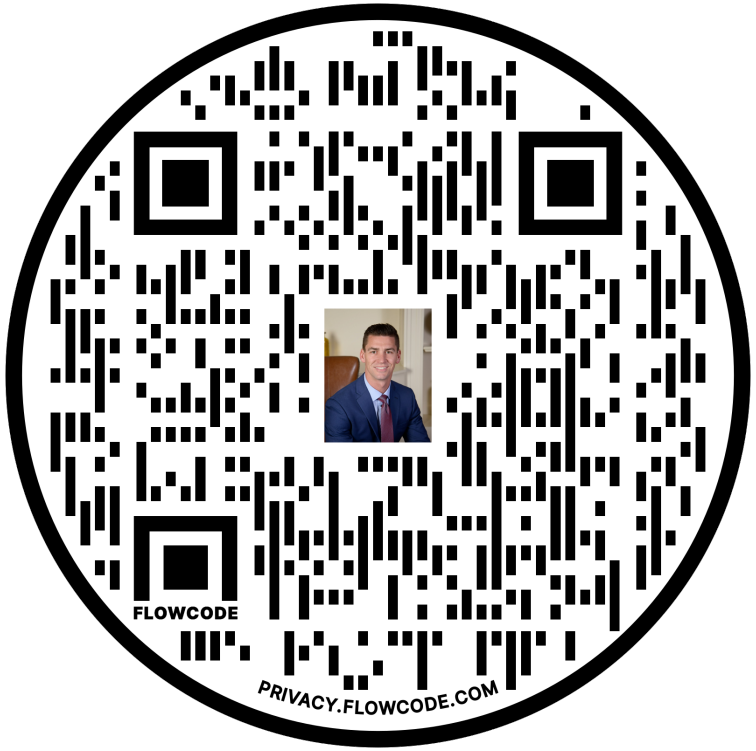
How Automated Software Technology Helps Utilities Improve Backflow Programs?

Save Money

Save Time

Full Compliance

The Alternative to Managing Your Cross-Connection Program Manually. Simple, Easy, and Potentially FREE!

VEPO
CROSSCONNEX

THANK YOU