

City of Salem's Backflow Prevention Program



Photo courtesy of AWWA

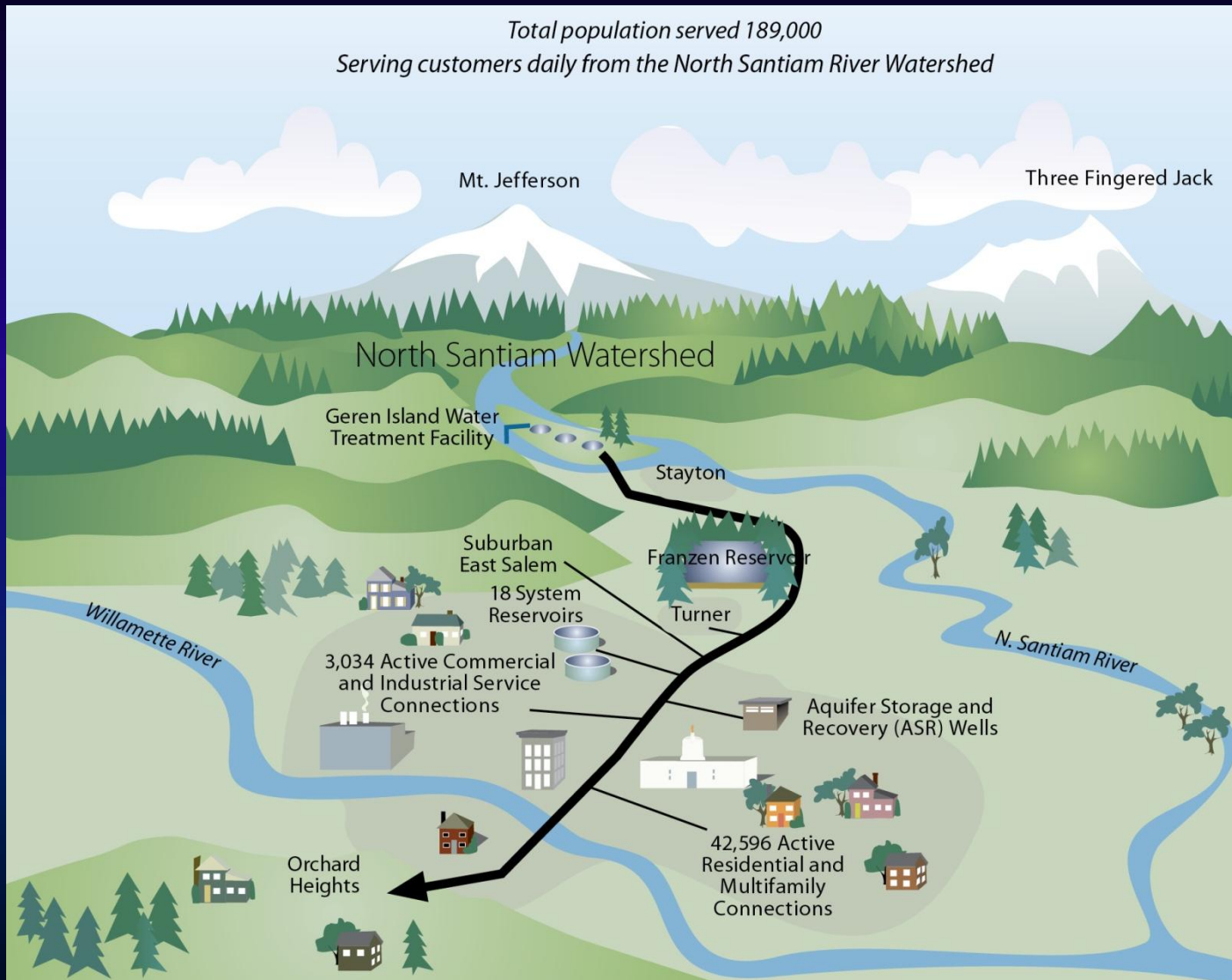


Photo courtesy of AWWA



Lacey Goeres-Priest
Water Field Supervisor, AIC
City of Salem Public Works Department

Salem's Water System



Salem Backflow Statistics

2012 Data

- RP Assemblies – 2,393
- DC Assemblies – 13,041
- PVB Assemblies – 328
- Also manage the Backflow Prevention Program for the City of Turner

Backflow Review: Definitions

- **Cross connection** – any connection in a plumbing system between a potable and non-potable water supply
- **Backflow** – Reversal of flow from a non-potable source into a potable source through a cross connection
 - **Backsiphonage** – Reversal of flow in a system caused by negative pressure in the supply line
 - **Backpressure** – Reversal of flow in a system caused by an increase in the downstream pressure above the supply pressure

Backflow Prevention Assemblies

- Atmospheric Vacuum Breaker (AVB)
 - Does not protect against backpressure

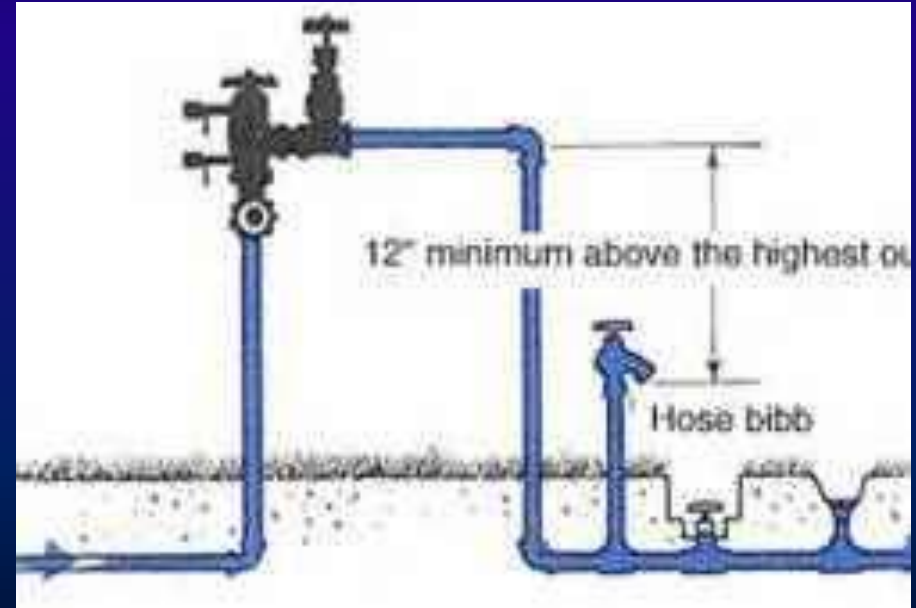


Backflow Prevention Assemblies

- Pressure Vacuum Breaker (PVB)
 - Does not protect against backpressure



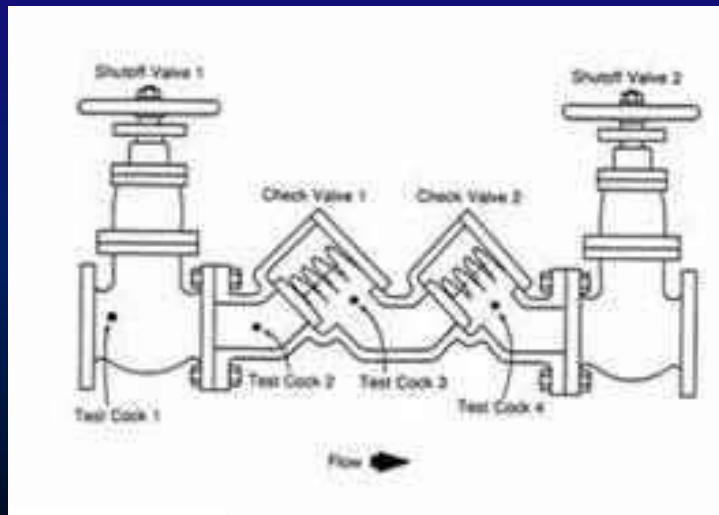
Courtesy of IDC Irrigation BCS



Courtesy of Portland Water Bureau

Backflow Prevention Assemblies

- Double Check Valve Backflow Prevention Assembly (DC or DCDA)
 - Protects against non-health hazards under both backsiphonage and backpressure



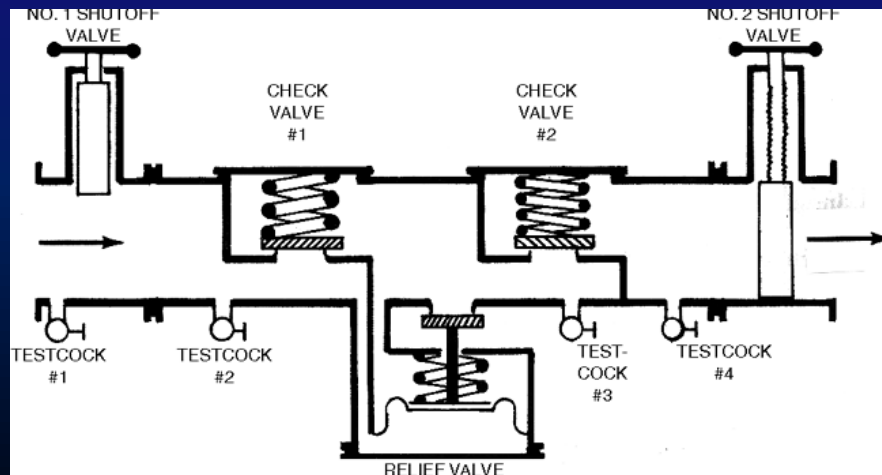
Courtesy of bfptest.com



Courtesy of drillspot.com

Backflow Prevention Assemblies

- Reduced Pressure Principle Backflow Prevention Assembly (RP or RPDA)
 - Protects against non-health OR health hazards under both backsiphonage and backpressure



Oregon Administrative Rules (OARs)

- OAR 333-061-0070 – Cross Connection Control Requirements
- OAR 333-061-0071 – Backflow Prevention Assembly Installation and Operation Standards
- OAR 333-061-0072 – Backflow Assembly Tester Certification
- OAR 333-061-0073 – Cross Connection Specialist Certification
- OAR 333-061-0074 – Cross Connection Training Programs, Course, and Instructor Requirements

Backflow Staffing

- Two FTE Cross Connection Inspectors
- Administrative Support Staff to print and mail notification letters
- Minor coordination with Customer Services staff for water service disconnections

Notification Procedures

- Three notification letters
 - *First Notification* – advises customer that they have 30 days to schedule the testing of their backflow assembly
 - *Second Notification* – advises customer that they received notice (month, year) and the assembly must be tested and report received within 30 days
 - *Third Notification* – advises customer that they have 14 additional days to submit test report and water service disconnection will occur on the 22 day – **Sent Certified Mail**

Program Software

- XC-2 Backflow Management Software
- Designed for the administration of backflow prevention and cross connection programs for water utilities

What happened in 2011?

- On June 27, 2011, Salem City Council voted to approve Resolution No. 2011-43 which set fees for the Public Works Department for the 2011-2012 fiscal year
- Included a \$15 charge per cross connection prevention device
- “to more fairly distribute staff costs”



Delay of Implementation of Fee

- November 2011 – Councilor Rich Clausen made a motion that the cross connection fee shall be implemented in January 2013, not January 2012.
- Cost for this service was already included in rates; new rates to be set 2013
- Should not be charging twice for the service in 2012



Program Changes - Fees

- \$15 annual fee to the utility billing account where the backflow assembly is located
- \$1.25 monthly rate, in addition to regular water and wastewater usage fee
- Notification letters regarding fee were sent in August 2011 to affected property owners
- Notification postcard with new implementation date of 2013 sent in December 2011



Program Changes - Software

- Due to fee, City had to tie backflow assembly locations to the appropriate utility billing account
- Change from XC-2 (Backflow Program Database) to Hansen (Asset Management and Utility Billing database)

Hansen Software

v7 Hansen Information Technologies - Version 7.7 (hansprod)

File Asset Inspection Work Order PM Customer Billing Part Window

Water Backflow Inventory Lookup

Backflow ID:

Address:

Backflow Type: Installed: To:

Area: Map #: Loc:

Sub-area: District: Service Status:

Water Backflow Inventory Lookup [Extra Search](#) [Contact](#) [Search Criteria](#)

Backflow ID	Address	Area	Sub-area	District	Loc	Backflow Type	Service Status	Installed
1231852WI	1148 EVERGREEN AVE NE					DC		
1811065WI	1148 WILLOW CREEK DR NW					DC		08/01/1988
221771WI	1148 37TH PL NE					DC		11/01/1995
3341147WI	1148 37TH PL NE					DC		11/01/1995
556542WI	1148 POLLYANNE AVE SE					DC		04/01/1998
AE7222FE	1148 14TH AVE NW					DC		03/01/1993
T5502FE	1148 KAREN WY NW					DC		05/01/1990

Water Backflow Preventer Inventory

Backflow ID:

Address:

Qualifier:

Address:

Area: Parcel:

Sub-area: X Coord:

District: Y Coord:

Loc: Z Coord:

Map #:

Location [Structural](#) [Associated](#) [Comments](#) [Maint](#) [Insp](#) [Additional Data](#)

Assembly Asset Inventory

Water Backflow Preventer Inventory

Backflow ID: 1231852WI

Address: 1148 EVERGREEN AVE NE SALEM OR 97301-1617

Qualifier: IN BOX AT THE LEFT FRONT CORNER OF THE GARAGE

Address: 1148 EVERGREEN AVE NE SALEM OR 97301-1617

Area: Parcel

Sub-area: X Coord

District: Y Coord

Loc: Z Coord

Map #

Water Backflow Preventer Inventory

Backflow ID: 1231852WI

Address: 1148 EVERGREEN AVE NE SALEM OR 97301-1617

Backflow Type: DC

Manufacturer: WILKIN

Model #: 950 XL

Serial #: 1231852

Backflow Size: 0.75

Pressure Zone:

Water Backflow Preventer Inventory

Backflow ID: 1231852WI

Address: 1148 EVERGREEN AVE NE SALEM OR 97301-1617

Hazard Level: LOW

Hazard Type: IRRIGATION SYSTEM

Protection Type: ISOLATION

Compliance Month: 4

Utility Account: 24699

Confined Space

Replacement

Verified Serial #

Verified Hazard Level/Type

Verified Confined Space

v7 Hansen Information Technologies - Version 7.7 (hansprod)
 File Asset Inspection Work Order PM Customer Billing Part Window

Water Backflow Preventer Inventory

Backflow ID: 1231852WI
 Address: 1148 EVERGREEN AVE NE SALEM OR 97301-1617

Inspection #	Started	Completed	Failed	Check VI #1 PSID	Chec
714539	04/16/2008 00:00	04/16/2008 00:00	N		0.00
714538	04/14/2009 00:00	04/14/2009 00:00	N		0.00
714537	04/10/2010 00:00	04/10/2010 00:00	N		0.00
714536	04/18/2011 00:00	04/18/2011 00:00	N		0.00
3176490	04/12/2012 00:00	04/17/2012 17:21	N		0.00

Assembly Test Report Data

v7 Hansen Information Technologies - Version 7.7 (hansprod)
 File Asset Inspection Work Order PM Customer Billing Part Window

Water Backflow Assembly Test

Inspection # 3176490 Work Order # Activity BFPASS
 Backflow ID 1231852WI

Started 04/12/2012 Crew
 Completed 04/17/2012 17:21 Tester BF2926
 Comp By 3066 Failed
 Project

Initial Test	Check Valve #1	Check Valve #2	Pressure Relief Valve	PVB/SVB
Held At 2.20 PSID	Held At 2.00 PSID	Held At 2.00 PSID	Opened At 0.00 PSID	Air Inlet Opened At 0.00 PSID
<input type="checkbox"/> Leaked	<input type="checkbox"/> Leaked	<input checked="" type="checkbox"/> Closed Tight	<input type="checkbox"/> Did Not Open	<input type="checkbox"/> Did Not Open
Final Test	Held At 0.00 PSID	Held At 0.00 PSID	Opened At 0.00 PSID	Air Inlet Opened At 0.00 PSID
	<input type="checkbox"/> Closed Tight	<input type="checkbox"/> Closed Tight		Check Valve Held At 0.00 PSID
				<input type="checkbox"/> Leaked
				Air Inlet Opened At 0.00 PSID
				Check Valve Held At 0.00 PSID
				<input type="checkbox"/> Leaked

Assembly Test | Inspection Data | Repairs & Materials | Comments | Status

Location | Structural | Associated | Comments | Maint | Insp | Additional Data

Program Changes - Staffing

- 2 FTE Cross Connection Inspectors



- Primary Job Duties
 - 1 FTE – Field verifications, Testing City assemblies
 - 1 FTE – Entry work, customer issues, field verifications, notifications, shut-offs

Program Changes – Additional Staffing

- Dispatch Center
 - Test report entry
 - Service Request (SR) generation
 - Owner/Tenant List verification
 - Returned mail processing
 - Failed Test Reports
 - Other Water Supplier Reports
 - Invalid Test Reports
- Customer Services
 - 72-hour SR generation
 - 72-hour door hanger delivery
 - Shut-off SR generation
 - Shut-off door hanger delivery
- Administrative Support
 - Return invalid test report letters

Program Changes - Notifications

- First Notification – 30-day notification
- Second and Final Notification – additional 30-day notification
- No longer a third notice

Notifications – Property Owner/Tenant

- Assemblies used to be tied to whoever wanted to be the contact (ie. Property Owner, Property Management, HOA, etc)
- Now tied to utility account holder (could be property owner or tenant)
- Owner/Tenant verification list – compares Marion/Polk Counties data with utility account information
- Property owners sent official notification, tenants sent a courtesy notification

Passing/Valid Test Report Entry

- Test reports received by Dispatch staff (time/date stamped)
- Entered by Dispatch Staff into Hansen Database – Backflow Assembly asset inventory
- Scanned into Document Archive (Laserfiche)
- Physical copy destroyed

Failed Test Reports

- Test report received by Dispatch staff (time/date stamped)
- Entered into Hansen Database as a FAIL
- Service Request (SR) generated with a BFFAIL code
- Customer letter generated requiring assembly to be repaired/replaced within 30-days
- Scanned into Document Archive (Laserfiche)
- Document destroyed



Backflow Inspections

- Test report received by Dispatch
- New, replaced, or removed assemblies
- Issue with test report
 - Inaccurate address/serial number
 - Missing report information (test date, data)
- SR generated
- Field verification initiated
 - Hansen is wrong – update Hansen and enter test report
 - Tester is wrong – Invalid Test Report process

Field Verification Forms

- Verified by Cross Connection Inspector
- Photo of serial number; tied to BF asset inventory
- Information verified
 - Assembly location
 - Assembly type, model, size, manufacturer, and serial number
 - Assembly address
 - Hazard Type
 - High or Low Hazard

Confined Space?

Invalid Test Reports

- Tester has reported inaccurate information on the report
- Information has been verified by City staff
- Customer receives courtesy notification
 - Water service will not be disconnected
- Tester received notification and test report marked “Invalid”
- Must correct and resubmit test report to City

72-hour Notifications

- 72-hour call list – Dispatch calls residential customers one week prior to delivery of 72-hour notifications
- Inspectors follow up with industrial/commercial accounts
- 72-hour SR generated with door hanger
- Delivered to residential customers by Customer Services staff
- Delivered to commercial/industrial customers by Cross Connection



Water Service Disconnections and Fees

- Shut-off SRs generated
- Alerts placed on utility account
- Shut-offs completed and door hanger delivery
- List of shut-off properties given to Dispatch staff
- Fee of \$25 accessed to utility account



Backflow Tester Challenges

- No longer supplying a partial tester list with notification letters
- Illegible/inaccurate test reports
- Invalid test report process
- Payment vs. 10-day test report submittal



Overall Program Challenges

- Assemblies tied to right utility accounts
- Property Management Companies and HOAs – notification process
- Inactive assemblies
- Removal of assemblies – permit required
- Customer dissatisfaction
- Clean up, Clean up, Clean up!



Questions?



Lacey Goeres-Priest
Water Field Supervisor, AIC
City of Salem Public Works Department
lgoeres@cityofsalem.net