

# Is the water safe to drink at your wastewater facility?

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Operator Training Committee of Ohio Inc.

# 6" Reduced Pressure Backflow Preventer



# Protection for Fine Screen and Rag removal Unit





# Cross Connection on VacAll Jetter Truck

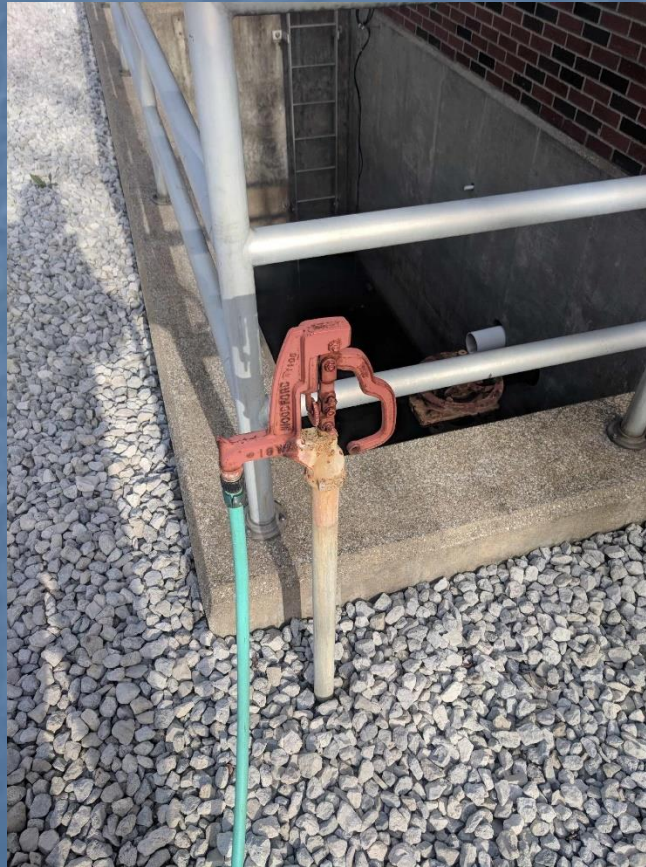


# Backflow Protection provided for Chemical Cleaning of Filters





Are your lawn hydrants properly protected?



# Backflow protection on belt filter press process





# Belt Filter press

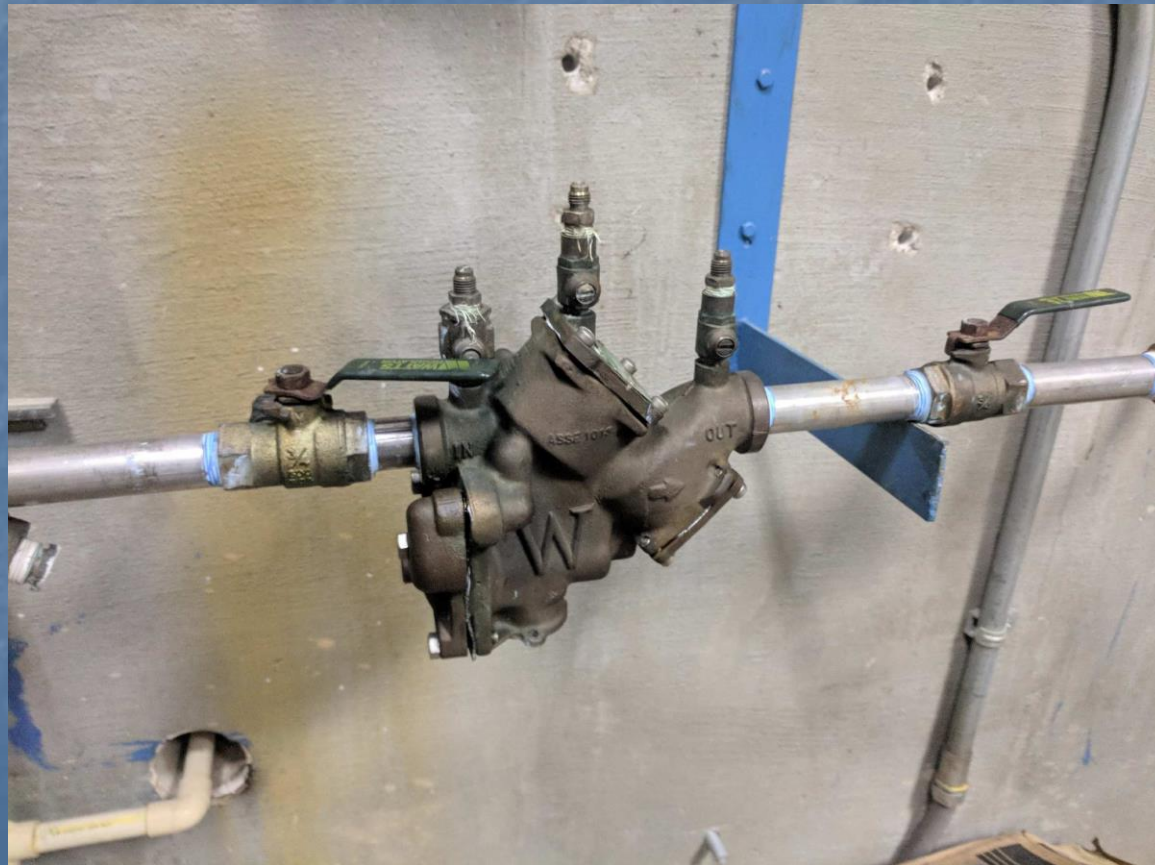




# Polymer Unit for belt filter press



# Reduced Pressure backflow protection for Raw Sewage Pump Seal Water





# Raw Sewage Pumps



# Backflow Basics

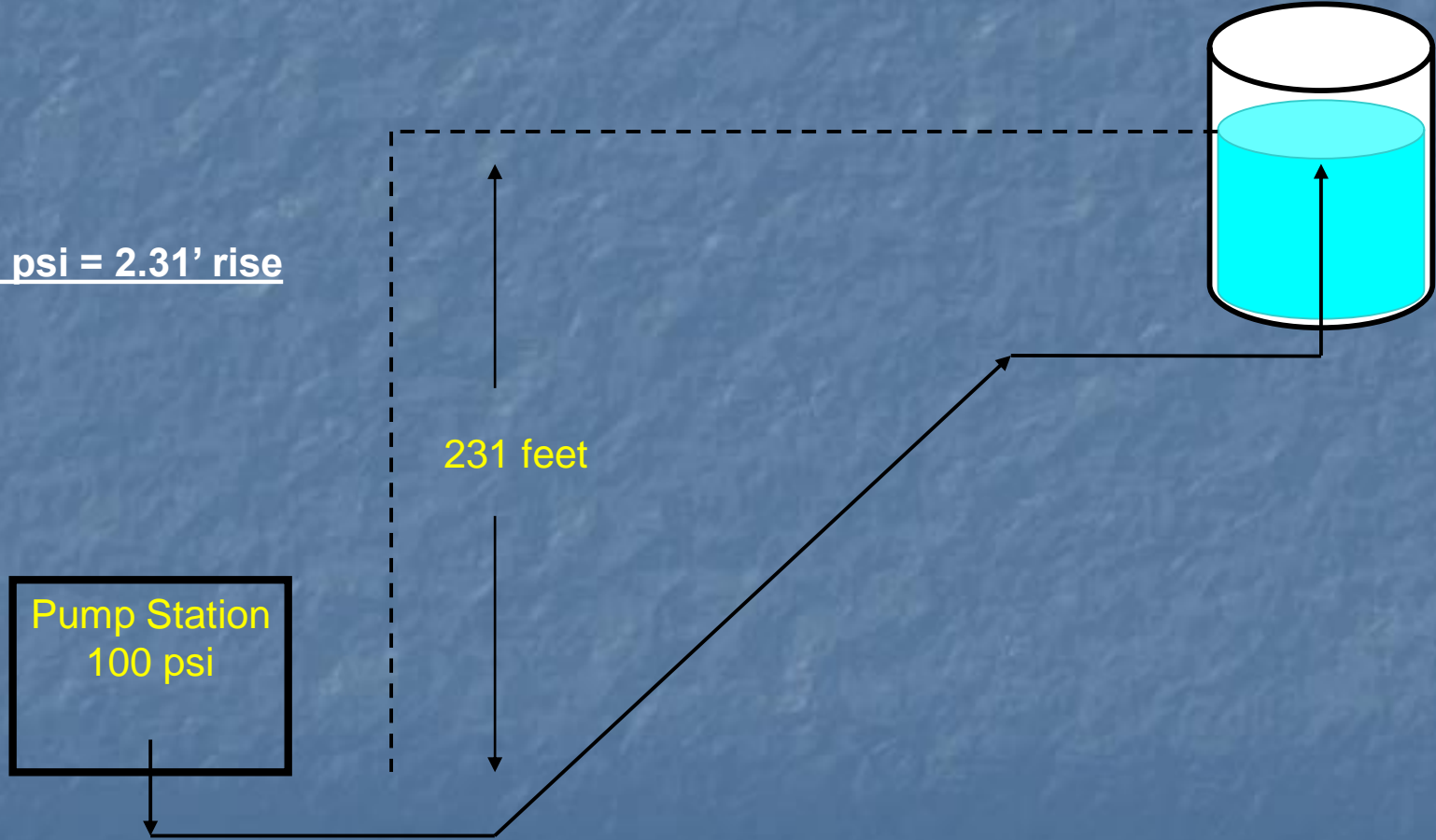
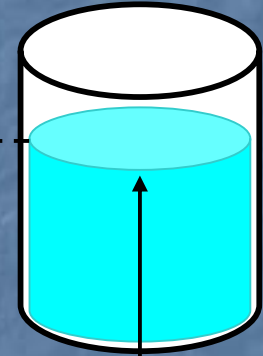


# Head Pressure

1 psi = 2.31' rise

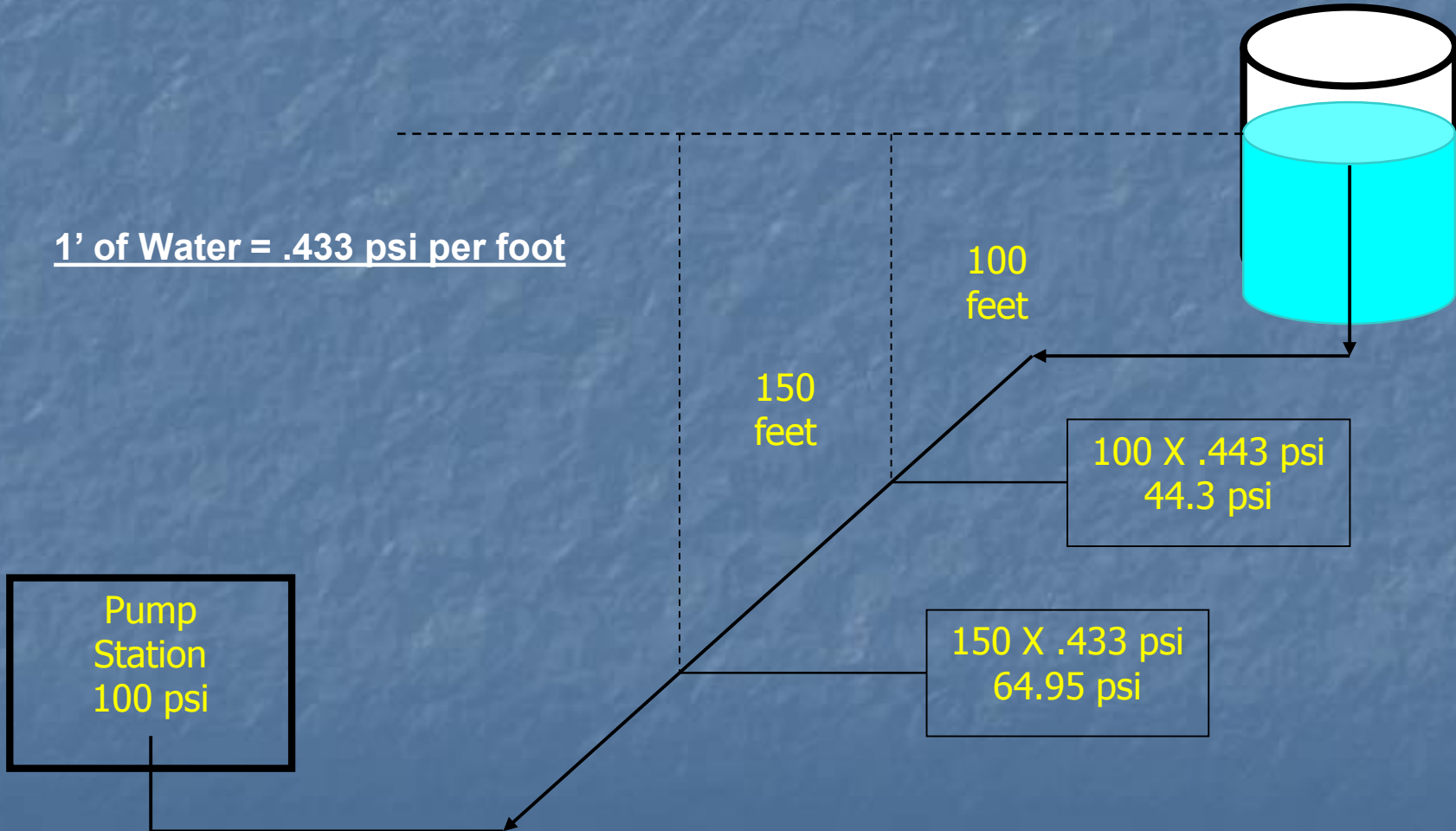
Pump Station  
100 psi

231 feet



# Elevation Head

1' of Water = .433 psi per foot





# Vacuum

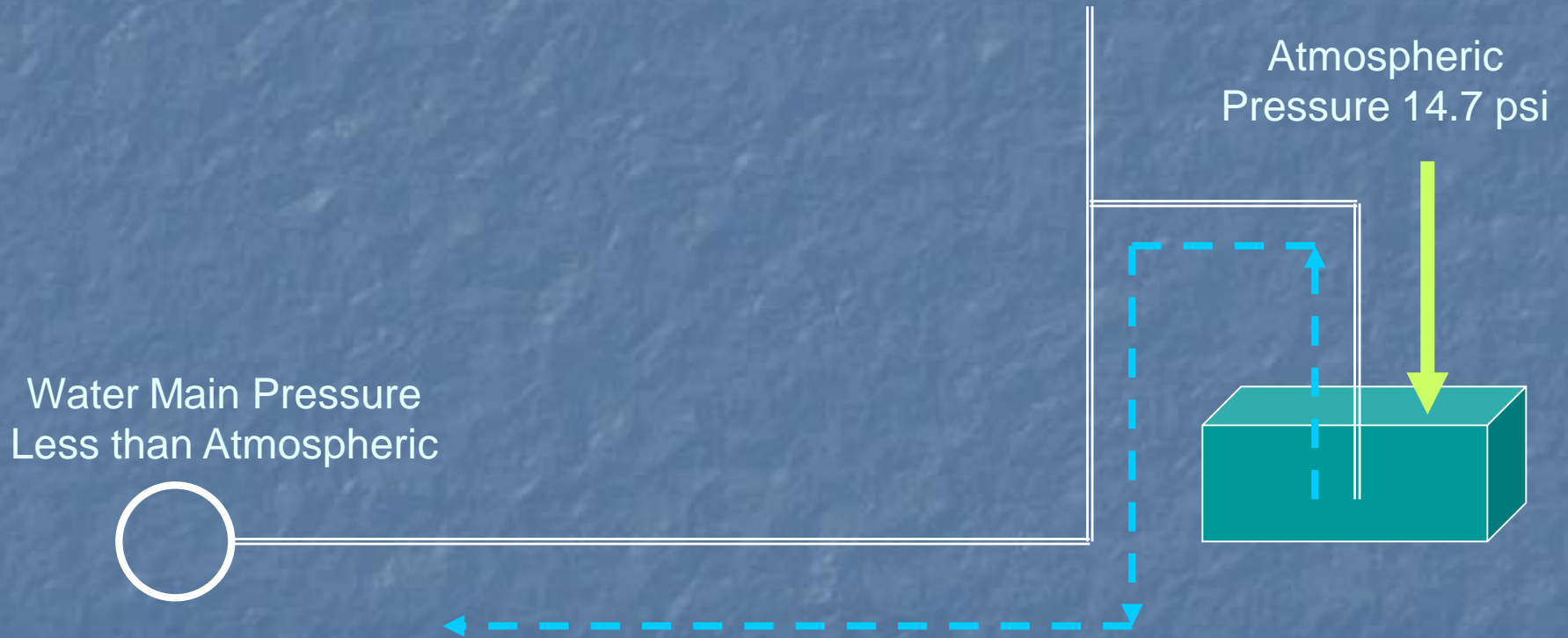
Water Main Pressure Less  
than Atmospheric



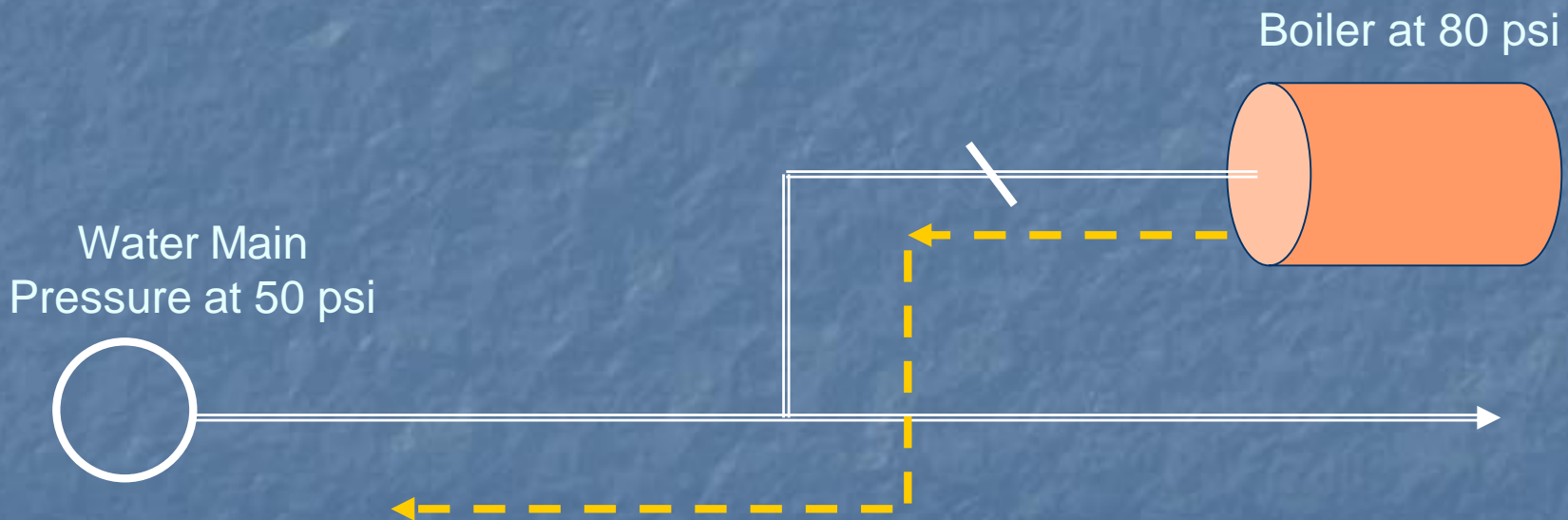
Atmospheric  
Pressure 14.7 psi



# Backsiphonage

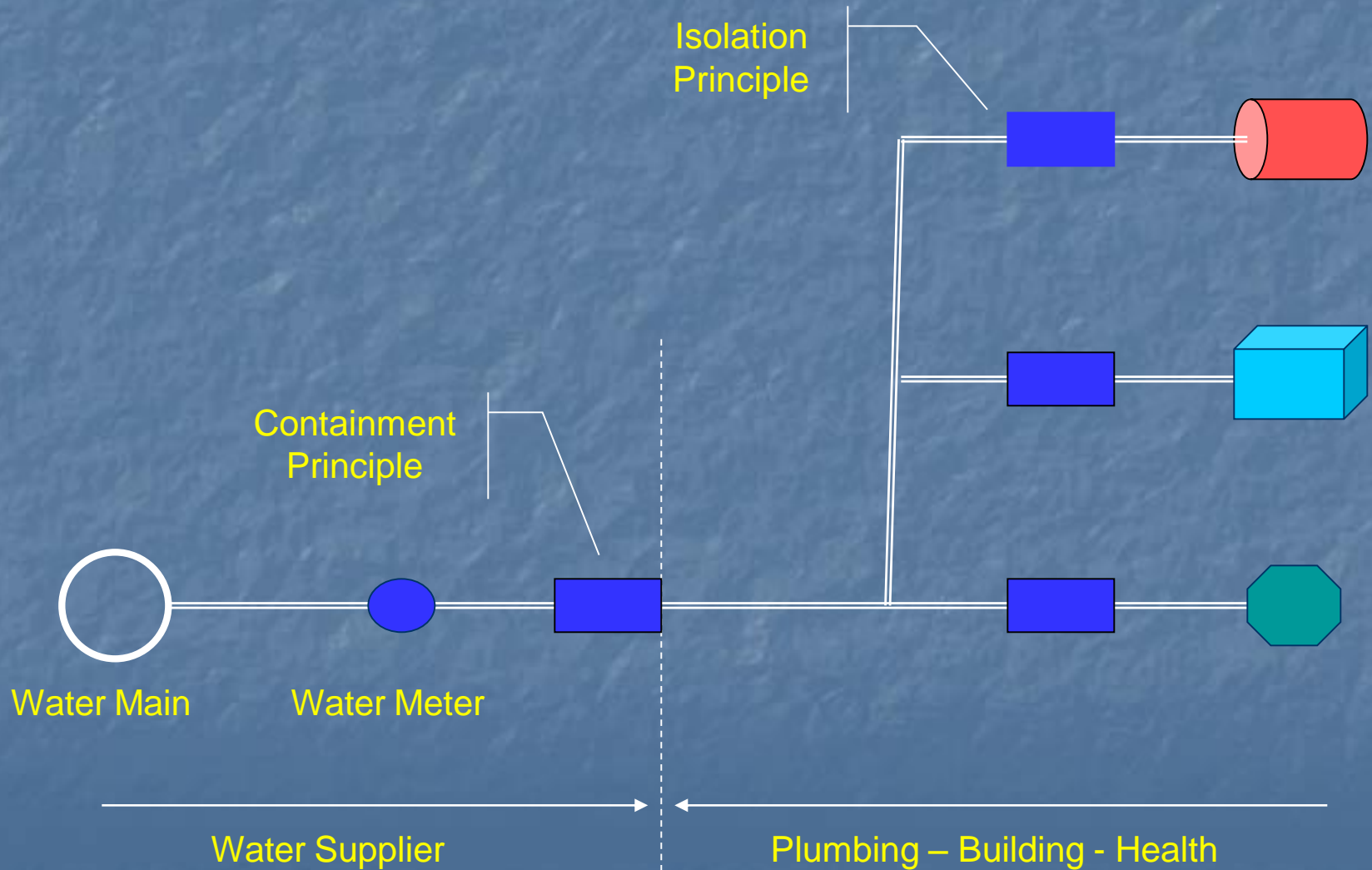


# Backpressure





# Responsibility



# Degree of Hazard

- Severe Health Hazard
  - causes death or significant morbidity
- Health Hazard
  - is a threat to health
- Non-Health Hazard
  - degrades water quality but is no threat to health

# Where Protection is Required

- Uncorrectable Cross-Connections
- Intricate Piping
- Security Restrictions Prevent a Survey of Use
- Repeated History of Violation
- Others Specified by the Public System



# Type of Protection

- Severe Health Hazard
  - approved air-gap separation
- Health Hazard
  - approved air-gap separation
  - reduced pressure assembly
- Non-Health Hazard
  - approved air-gap separation
  - reduced pressure assembly
  - double check valve assembly

# Booster Pumps

- Must Include a Low-Suction Pressure Cut-Off Controller
- Shuts Off Pump if Suction Pressure Falls Below 10 psi

# Backflow Prevention Assemblies

- Must meet certain standards and be approved by the water supplier to be used for containment protection.

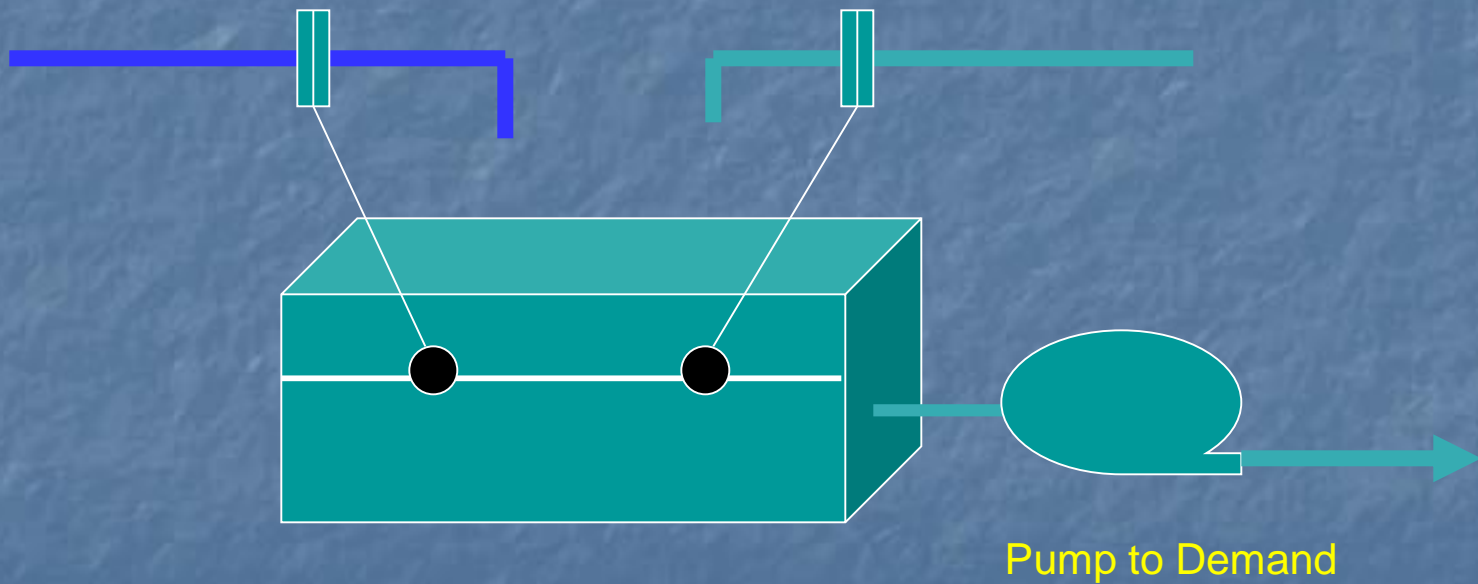


# Auxiliary Water Systems

- Auxiliary is an Unknown Water Quality
- Containment Principle Not Required if Separation is in place
  - could be interconnected without suppliers knowledge
- Should be Justified to Interconnect

# If Interconnection Is Not Justified

Method 1

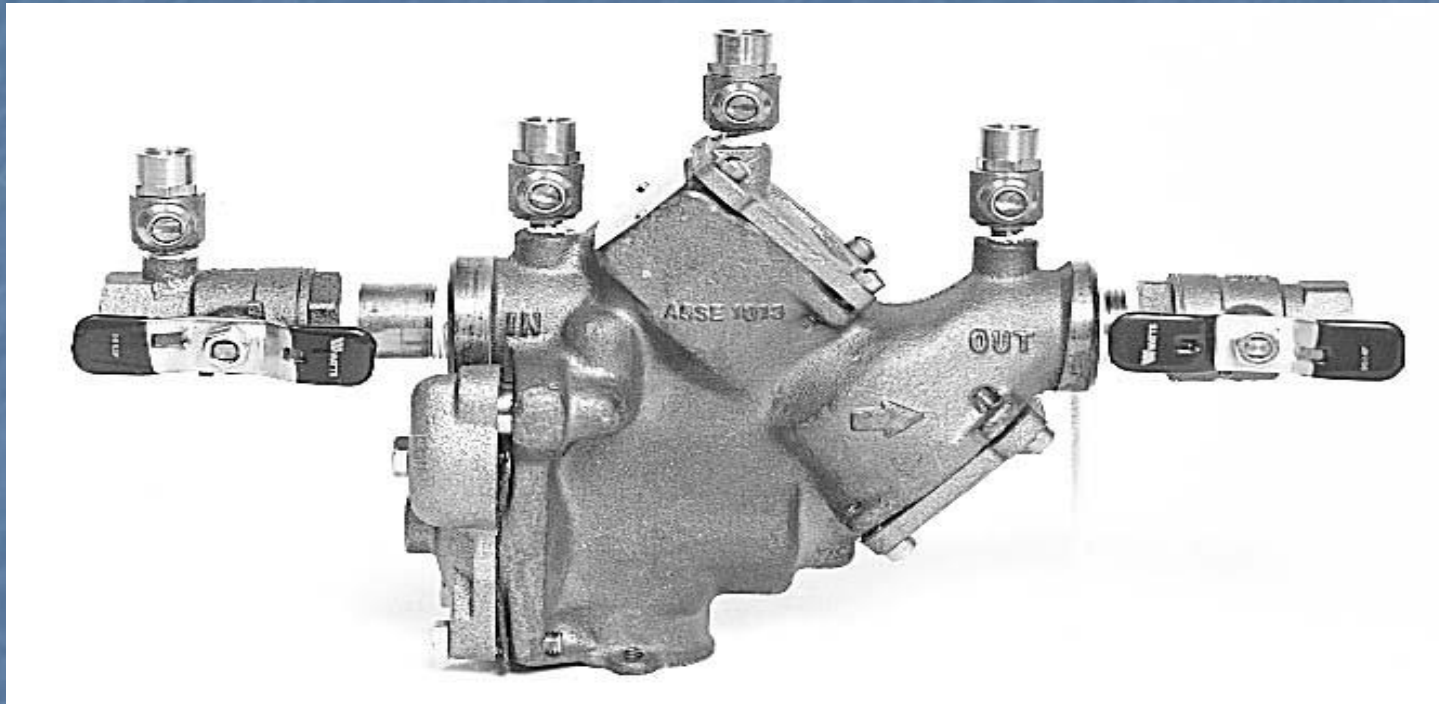


# If Interconnection Is Justified

- Use Method 2 to Interconnect
  - Swing Connector
  - Four-Way Valve
- Provides Alternate but not Simultaneous Supply



# Reduced Pressure Assembly 1013



Health Hazard Additives (backpressure/backsiphonage)

Boiler/Chiller

Lawn Irrigation

Fire Protection Additives

# Backflow Preventer – Atmospheric Vent 1012



Non-Health Hazard (backpressure/back-siphonage)

Chemical Dispensers

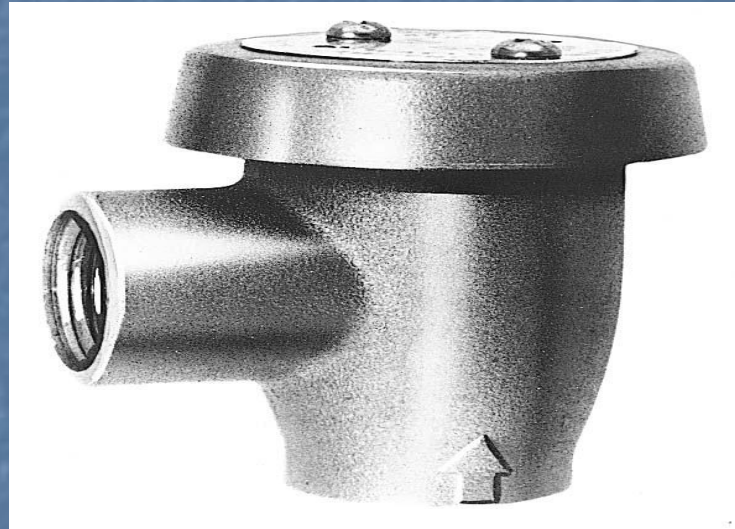
Portable Cleaning Equipment

Dental Equipment

Soup Kettles

Food Cookers

# Atmospheric Vacuum Breaker 1001



Health or Non-Health Hazard (backsiphonage only)

Commercial Dishwashers or Garbage Disposals

Lab Faucets

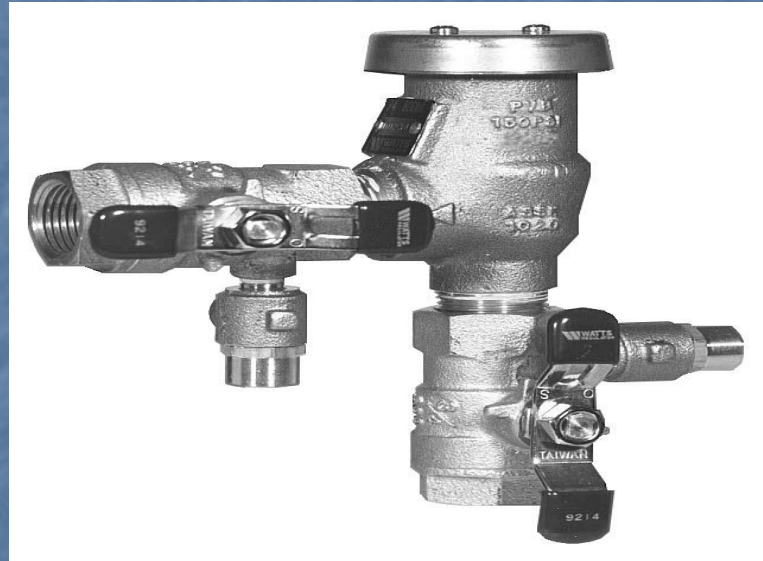
Commercial Laundry Equipment

Janitor Sinks

Photo or X-ray Developing Tanks



# Pressure Vacuum Breaker 1020

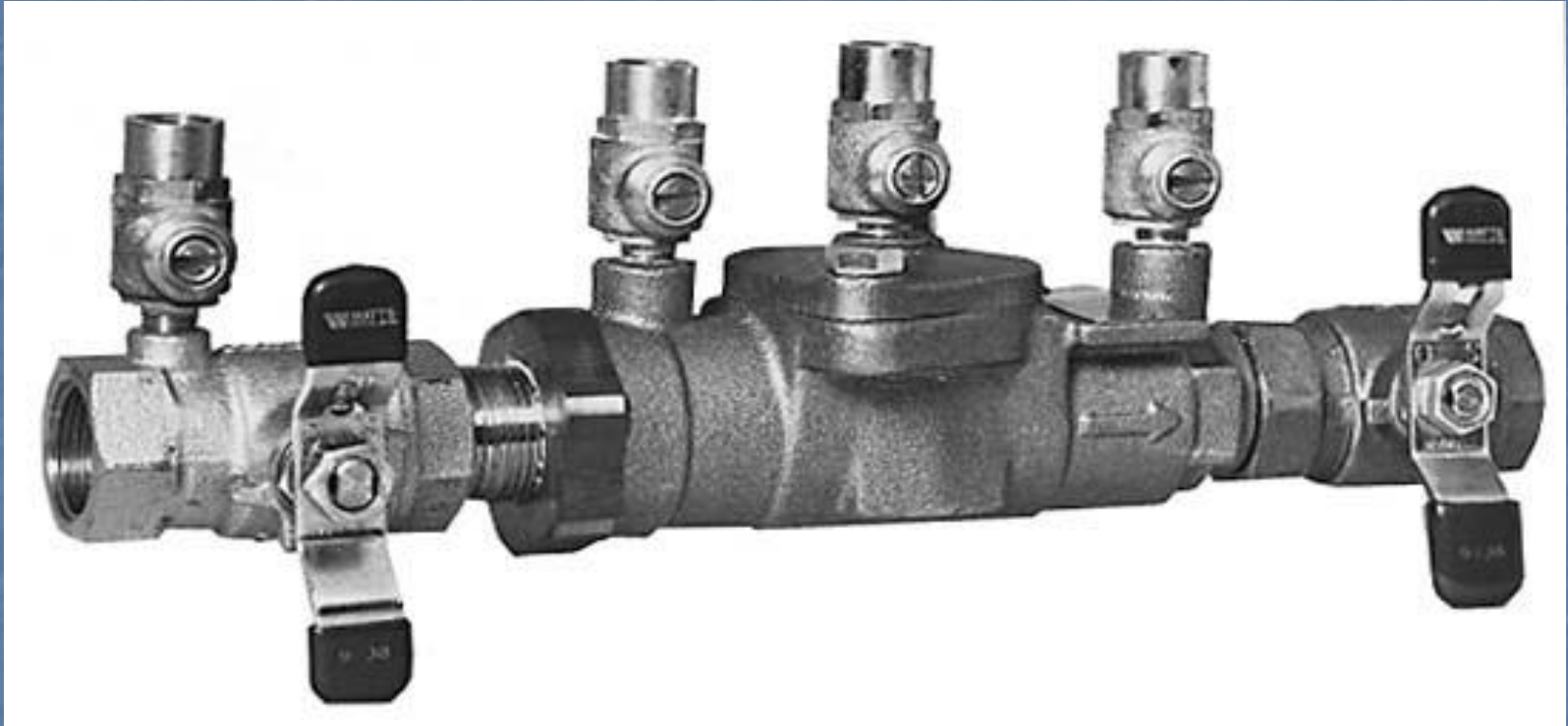


Health or Non-Health Hazard (backsiphonage only)

Same Application as Atmospheric

But for Pressurization Beyond 12 Hours

# Double Check Valve Assembly 1015



Non-Health Hazard Additives (backpressure/backsiphonage)

# Hose Connection Vacuum Breaker 1011



All Hose Connections

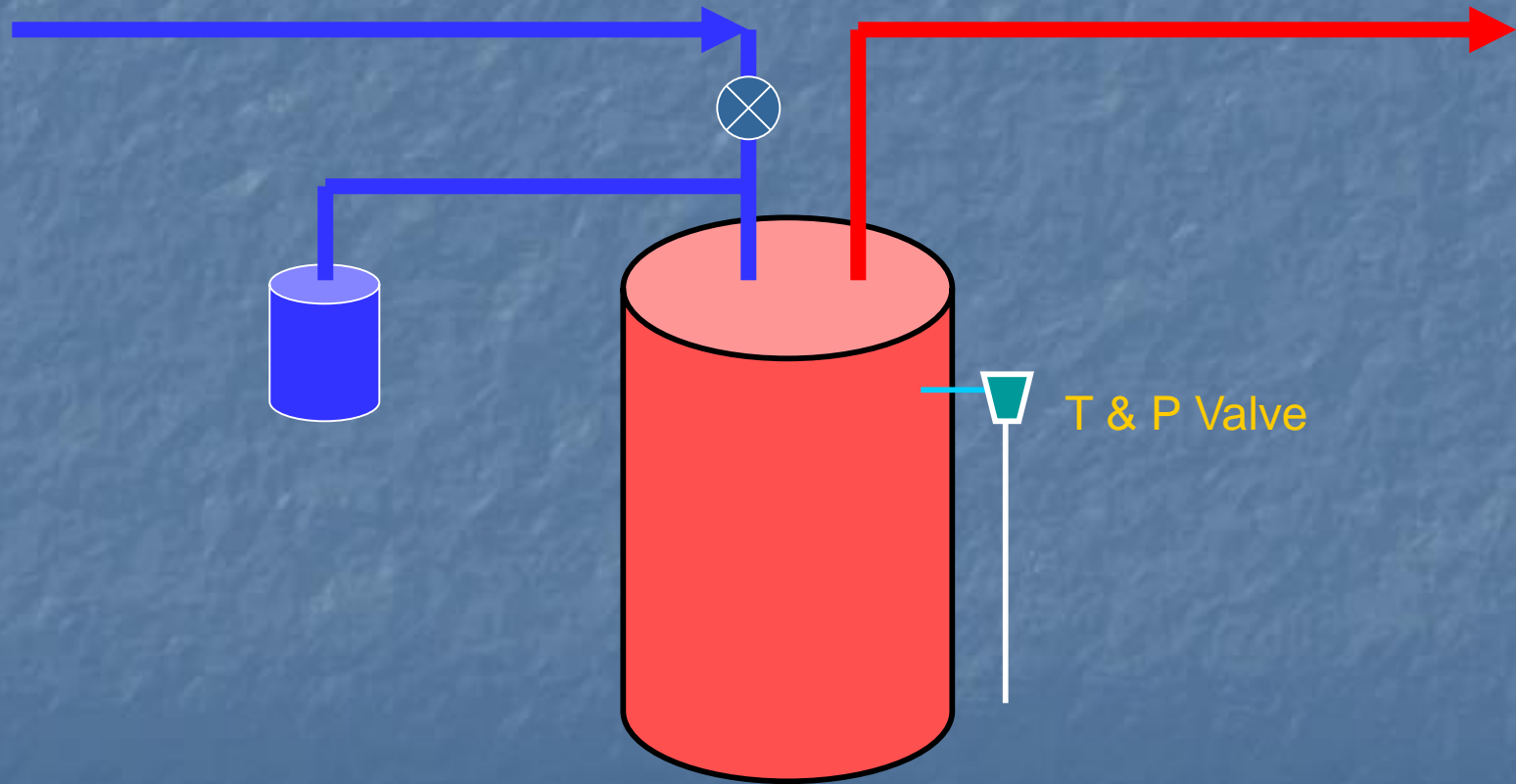


# Backflow Preventer – Atmospheric Vent Carbonated Beverage Dispenser 1022

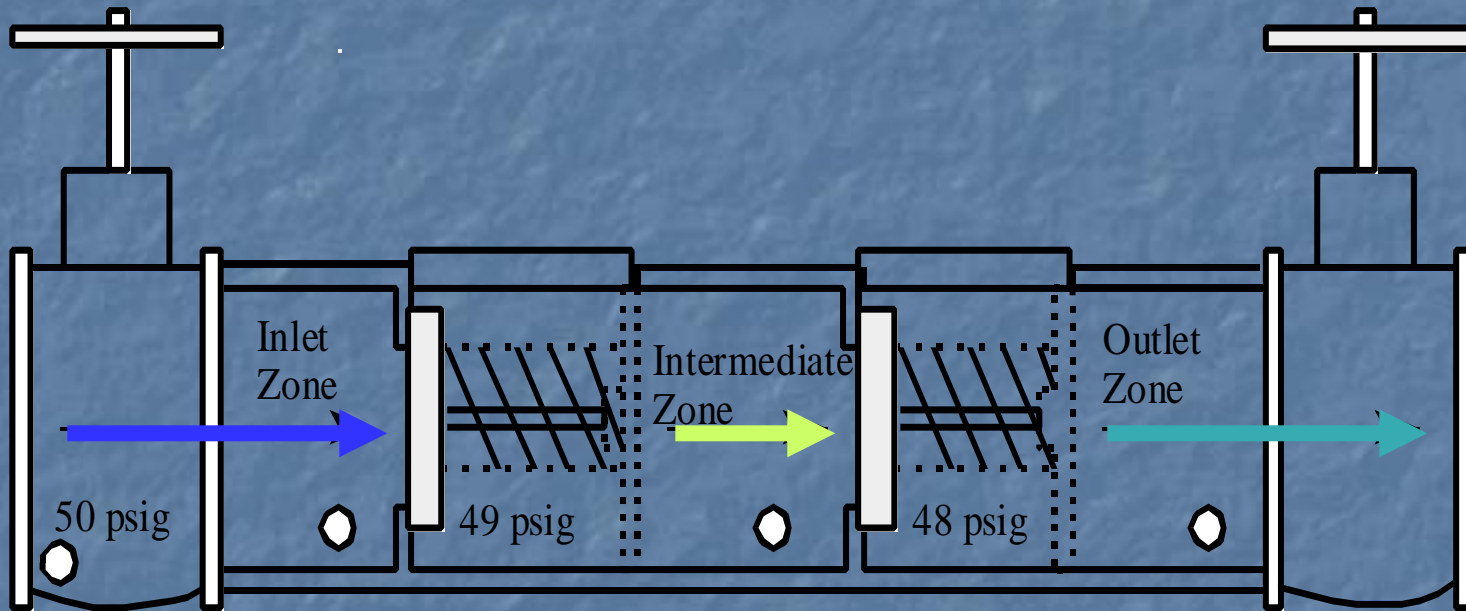


Carbonated Beverage Dispensers

# Thermal Expansion Protection



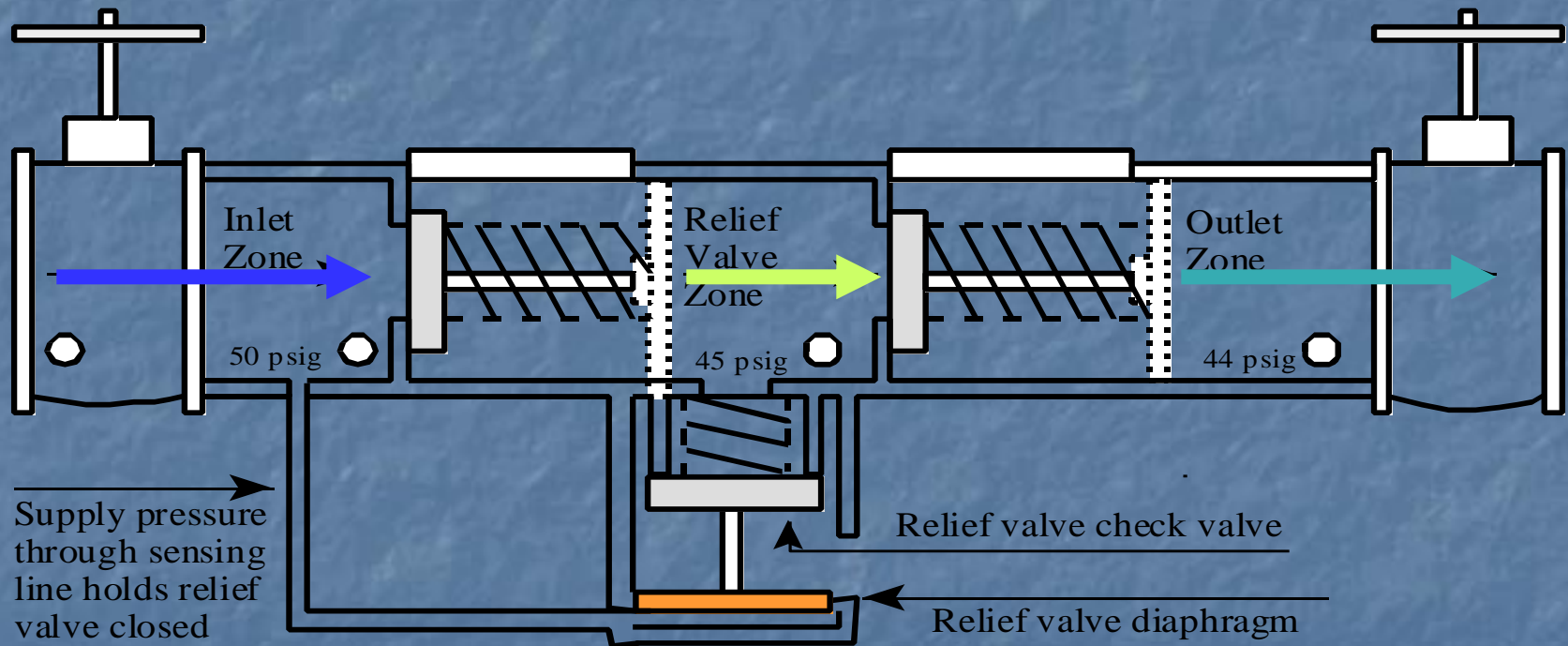
# Double Check Valve Assembly



◊ = test cocks

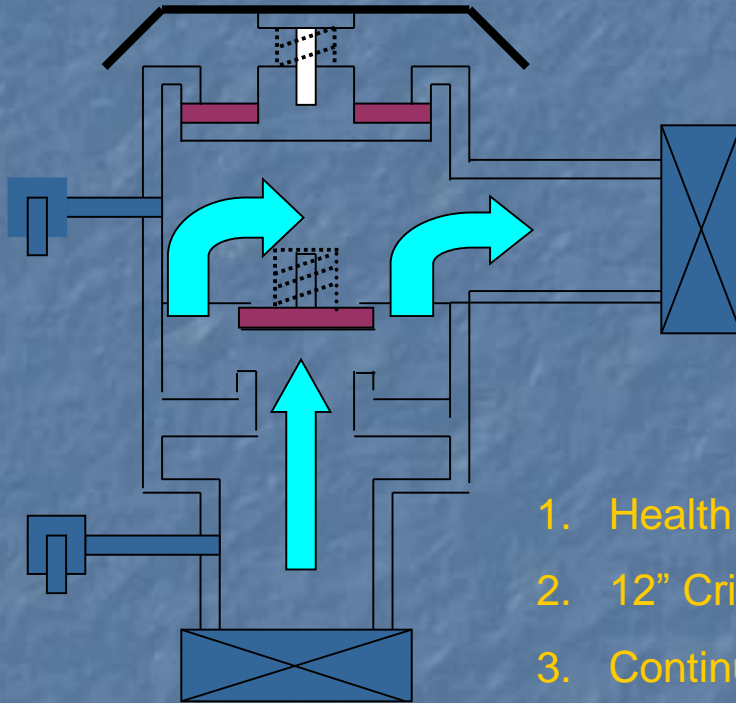


# Reduced Pressure Assembly



⊙ = test cocks

# Pressure Vacuum Breaker



1. Health or Non-Health Hazard (backsiphonage only)
2. 12" Critical Installation Level
3. Continuous Pressure
4. Downstream Valve is OK

# All Water & Wastewater Treatment Facilities need backflow protection

State Law requires all public water  
systems to establish and enforce  
an effective backflow program