



2014 INTERMOUNTAIN SECTION ANNUAL CONFERENCE

INDIVIDUAL BOOSTER PUMPS: LOW PRESSURE SOLUTION OR COMPLIANCE PROBLEM

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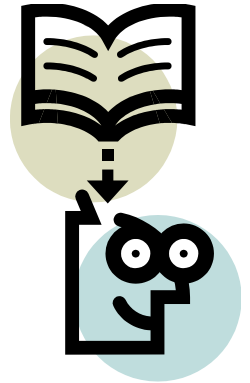
September 12, 2014



PRESENTATION OUTLINE

- **Individual Home Booster Pump Definition**
- **Problem Development**
- **Common Solutions**
- **Risks**
- **Regulation**
- **Technical and Regulatory Options**
- **Case Study**
- **Recommendations**

INDIVIDUAL HOME BOOSTER PUMP DEFINITION

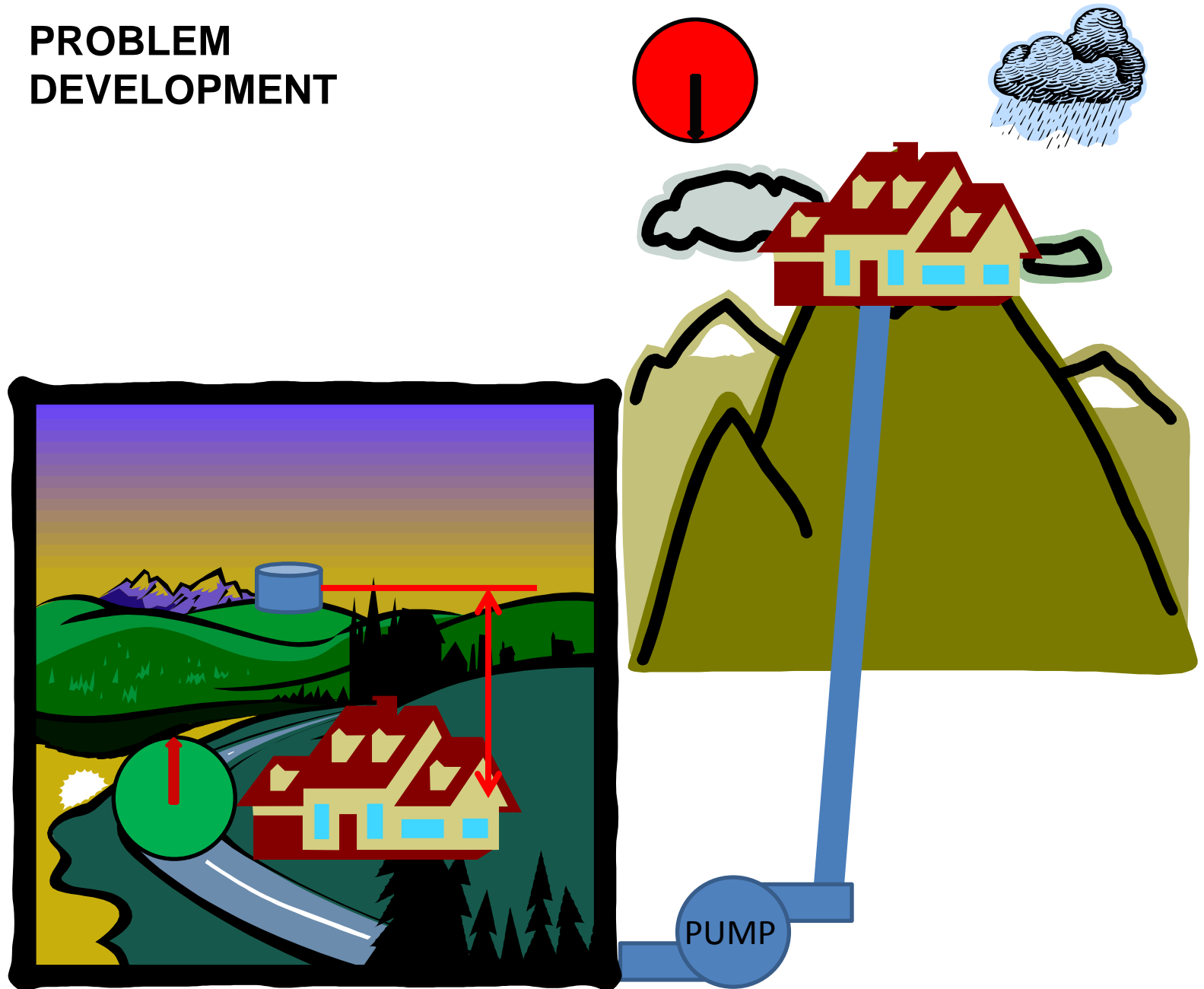


BEN'S DEFINITION

“An individual home booster pump:

- ***Increases water pressure from a public water system (PWS) main line for an individual home.***
- ***Is located downstream of the meter.***
- ***Is typically owned and maintained by the home owner.”***

PROBLEM DEVELOPMENT



PROBLEM DEVELOPMENT

THE PROBLEM:

1. Property owners want more pressure.

THE CAUSE:

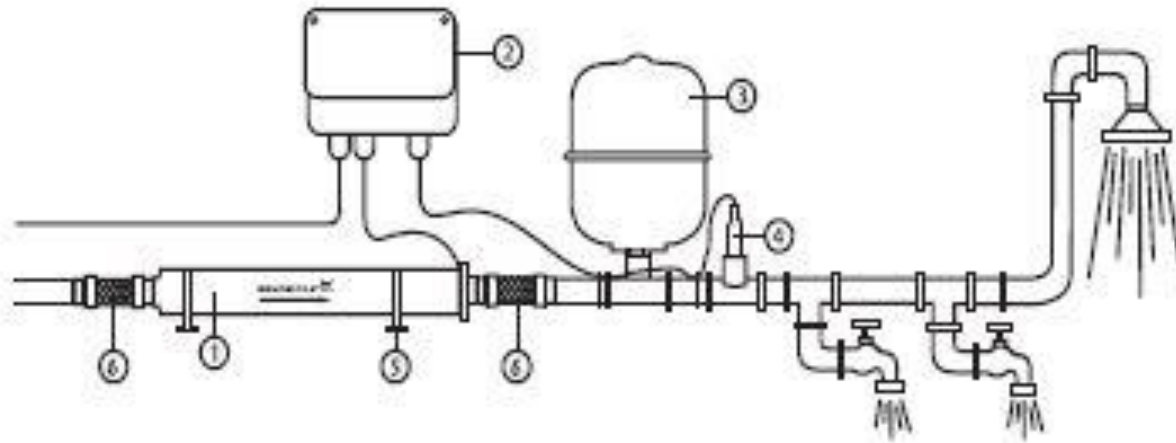
1. PWS provides pressure to meet State requirements {R309-105-9 U.A.C.}, but the Owner wants more.
2. PWS doesn't provide adequate pressure.
3. PWS provides adequate pressure to lowest part of the property but Owner want to build at a higher elevation.

THE SOLUTION

1. Individual Home Booster?

TYPICAL SOLUTION

1. CONSTANT PRESSURE BOOSTER



Photos: Courtesy Grundfos.

TYPICAL SOLUTION

1. CONSTANT PRESSURE BOOSTER

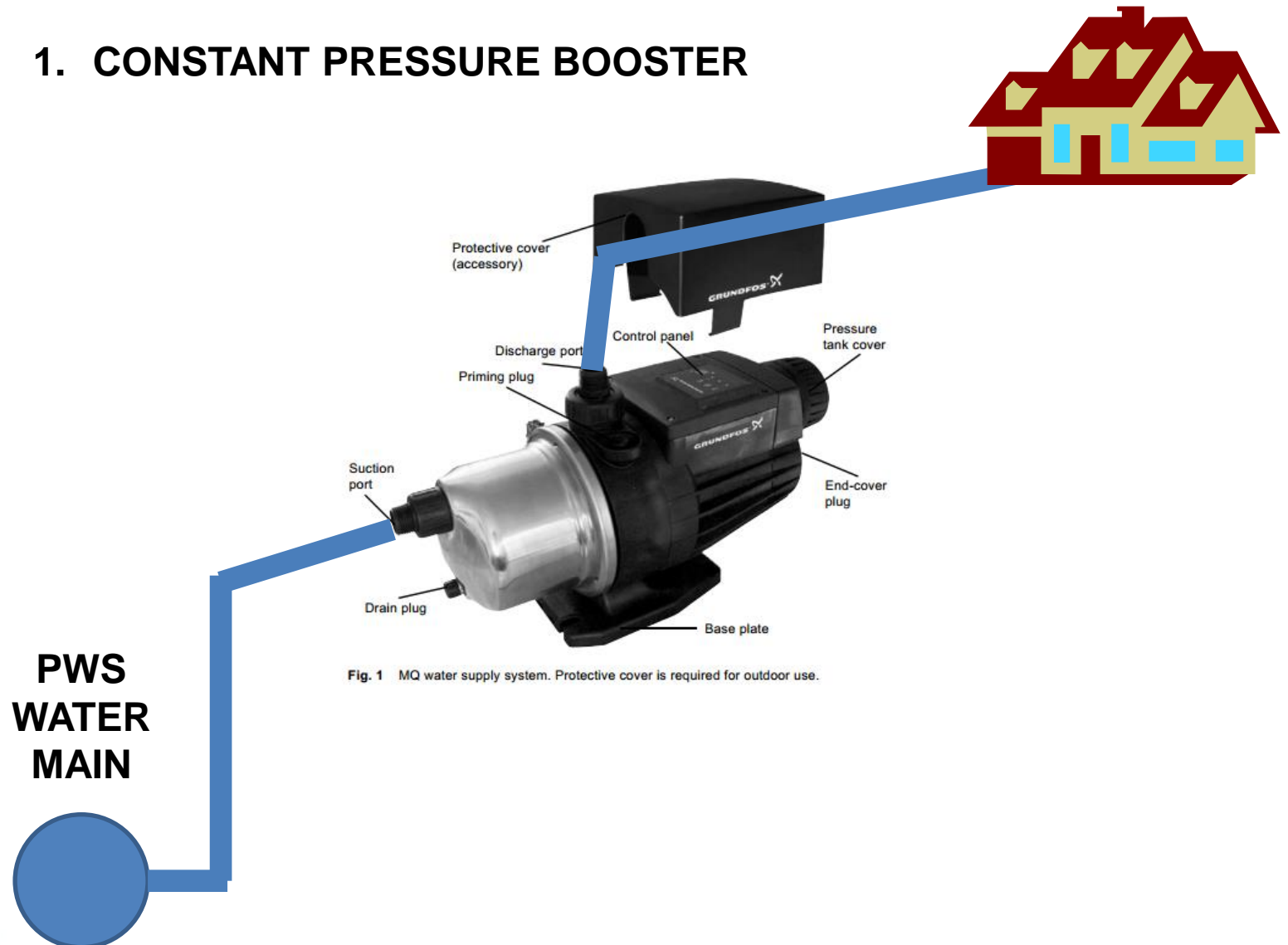


Fig. 1 MQ water supply system. Protective cover is required for outdoor use.

TYPICAL SOLUTION

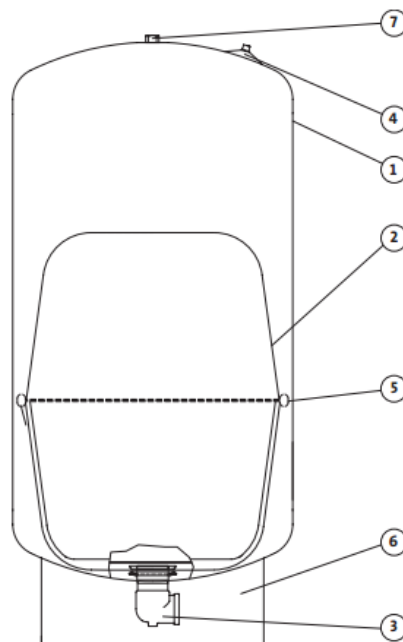
2. BOOSTER WITH HYDRO-PNEUMATIC TANK



TYPICAL SOLUTION

2. BOOSTER WITH HYDRO-PNEUMATIC TANKS

GT-D, vertical installation



TM02 9095 1804

Fig. 3 Sectional drawing, example: GT-D-130 V

Pos.	Component	Material
1	Tank body	Carbon steel
2	Double diaphragm	Butyl rubber
3	Pipe connection	Stainless steel DIN/EN 1.4301
4	Air valve	Brass
5	Clamping ring	Carbon steel
6	Skirt	Carbon steel
7	Tapped hole	Steel

TYPICAL SOLUTION

2. BOOSTER WITH HYDRO-PNEUMATIC TANK – Cul-de-sac Supply

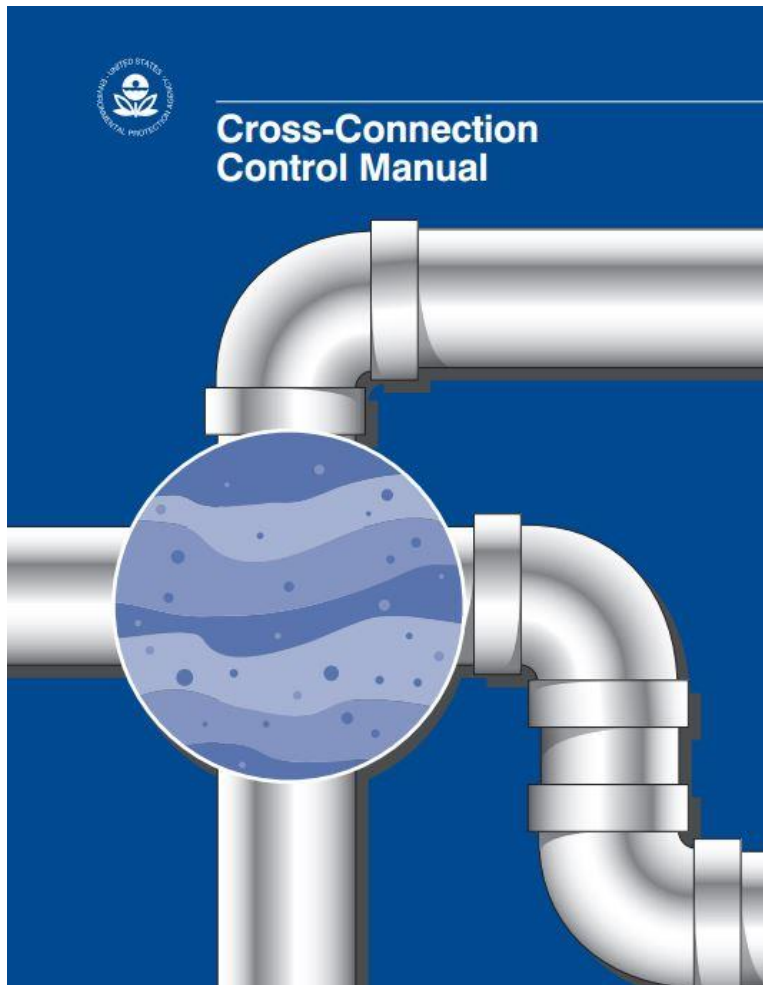


TYPICAL SOLUTION

2. BOOSTER WITH HYDRO-PNEUMATIC TANK – Chemical Mixing



RISKS



CROSS CONNECTION CONTROL PROGRAM OF UTAH

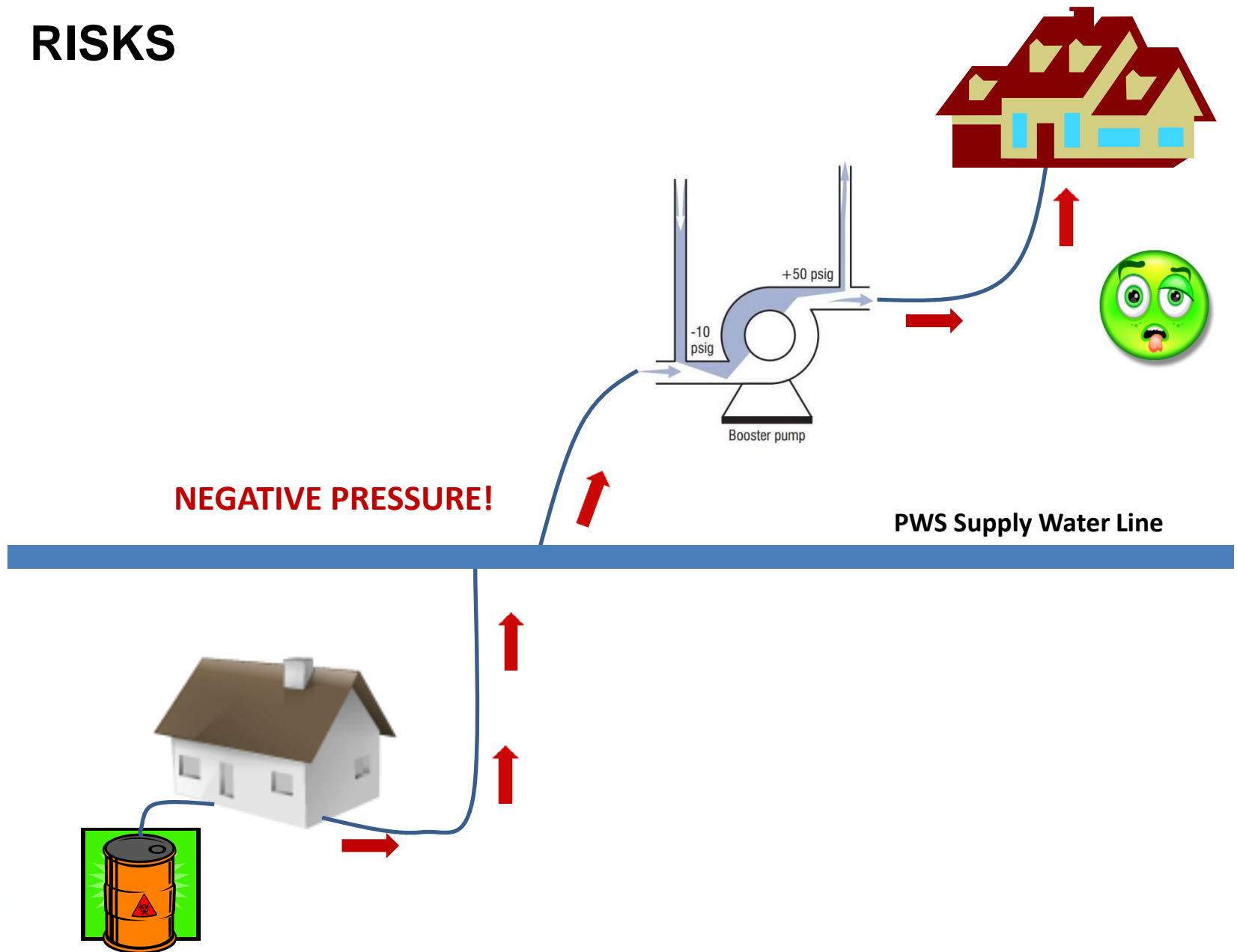
January 2010

Cross Connection Control Commission
Michael S. Moss, Secretary

Division of Drinking Water
195 North 1950 West, 3rd Floor
P.O. Box 144830
Salt Lake City, Utah 84114-4830
Phone (801) 536-4200



RISKS



REGULATION



STATE ADMINISTRATIVE CODE

“ Individual home booster pumps shall not be allowed for any individual service from the public water supply main.” {R309-540-5(4)(c) U.A.C}

INTERNATIONAL PLUMBING CODE (2012), AMENDED, ADOPTED BY {TITLE 15A U.C.A.}

"606.5 Water pressure booster systems - Water pressure booster systems shall be provided as required by Section 606.5.1 through 606.5.11."

"606.5.11 Prohibited installation - In no case shall a booster pump be allowed that will lower the pressure in the public main to less than the minimum water pressure specified in Utah Administrative Code R309-105-9."

TECHNICAL AND REGULATORY OPTIONS

- **LIMIT SERVICE AREA FOR “HIGH” ELEVATION ZONES**
 - **PWS may need to restrict service connections in some areas where minimum pressure standards can’t be met**
- **CONSTRUCT NEW WATER SYSTEM FACILITIES – PWS OWNED BOOSTER PUMP AND STORAGE**
 - **Booster pumps are okay if owned/maintained/controlled by the PWS**
- **REQUEST ADMINISTRATIVE “EXCEPTION-TO-RULE”**
 - **May not be approved**

OPTIONS - CONTINUED

- **DO NOT APPROVE SERVICE CONNECTION BASED ON THE HOME OWNER “WAIVING HIS/HER RIGHT” TO ADEQUATE PRESSURE**
- **OWNER DOESN'T HAVE AUTHORITY TO WAIVE DRINKING WATER STANDARDS**

OPTIONS - CONTINUED

EXCEPTION-TO-RULE PROCESS

- **Per {R309-105-6(2)(b) UAC}**
- **The Division of Drinking Water can waive rules as long as it “will not jeopardize the public health.”**

EXCEPTION-TO-RULE PROCESS

1. **Consider whether project can be completed without an “Exception.”**
2. **Prepare a written request to the Utah Division of Drinking Water**
3. **Cite the specific rule(s) to be waived.**
4. **Explain why the rules can’t be met.**
5. **Describe the alternative proposed system**

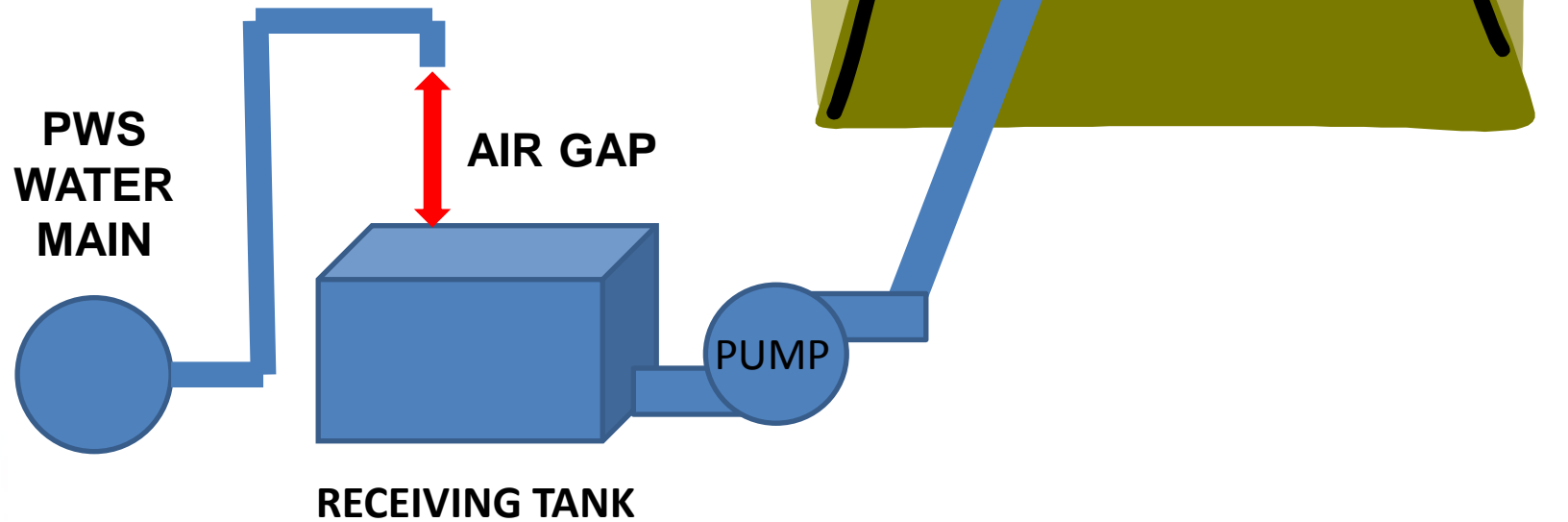
OPTIONS - CONTINUED

ALTERNATIVE PROPOSED SYSTEM

- 1. “Air Gap” system is usually the best.**
- 2. Backflow Prevention Devices (i.e. RP)? – May Be Acceptable**

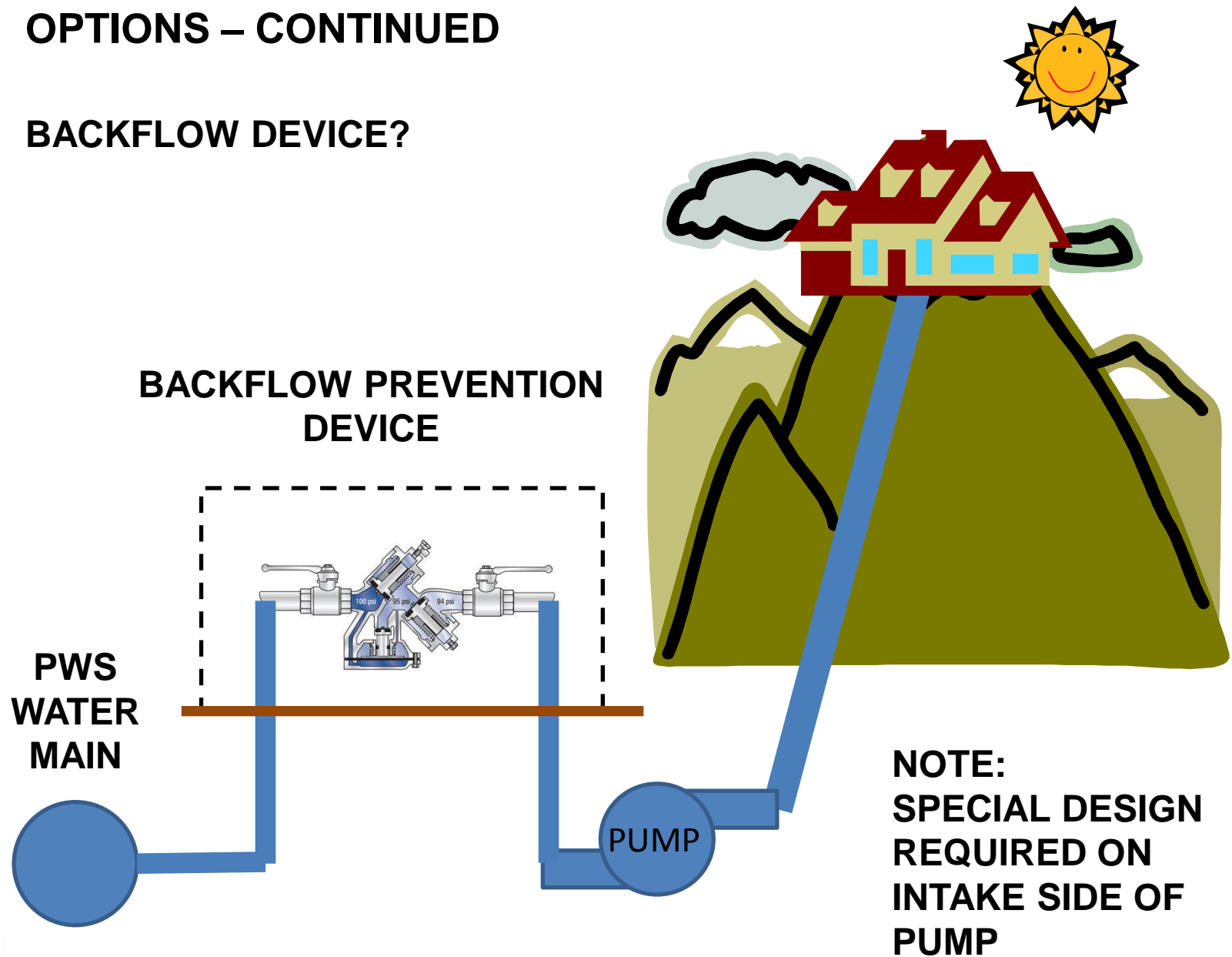
OPTIONS – CONTINUED

AIR GAP



OPTIONS – CONTINUED

BACKFLOW DEVICE?



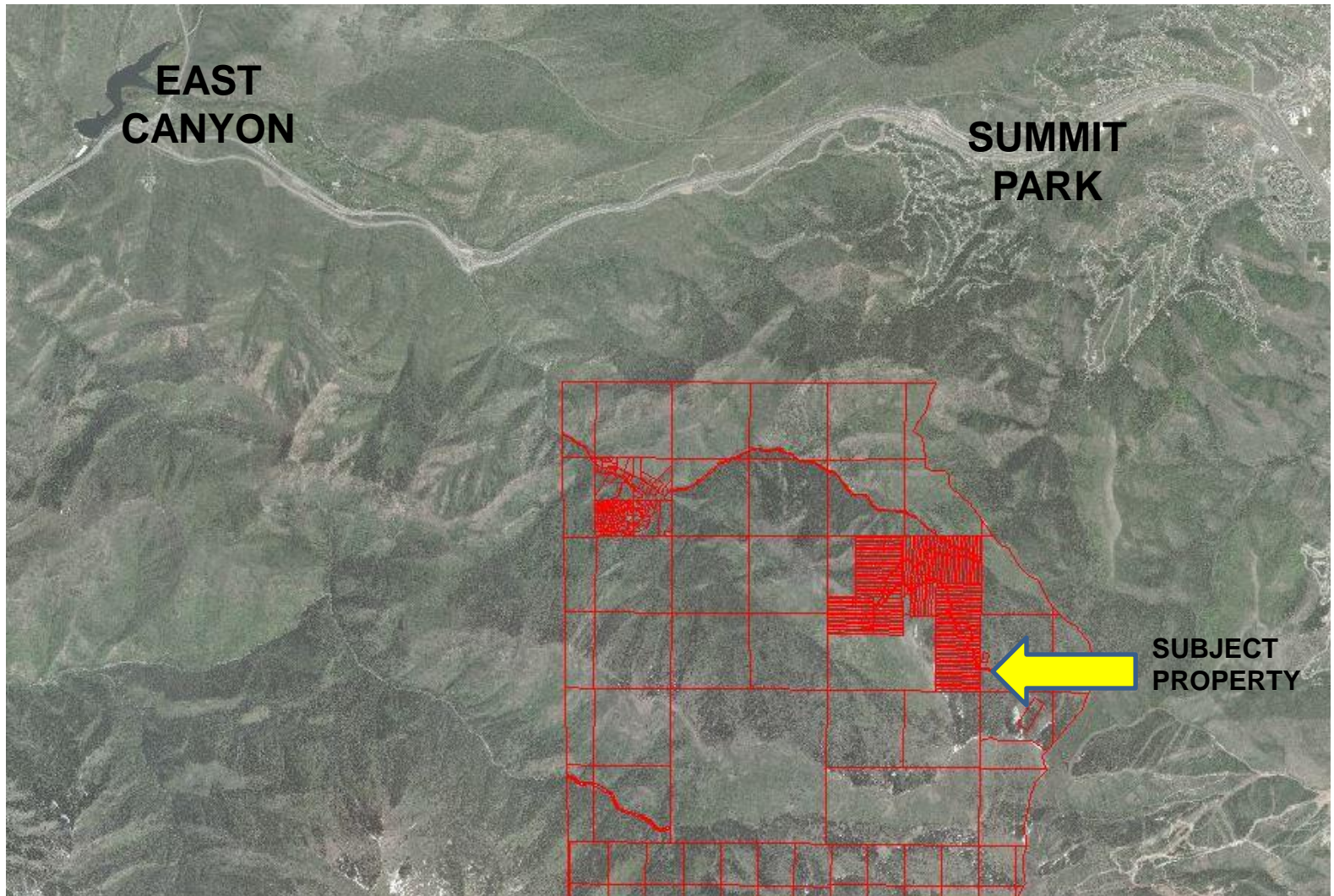
CASE STUDY

Mountain Water System – Recreational Property

- 1. Property owner want to build near top of site.**
- 2. PWS has committed to provide a connection.**
- 3. Water pressure is less than Owner desires.**

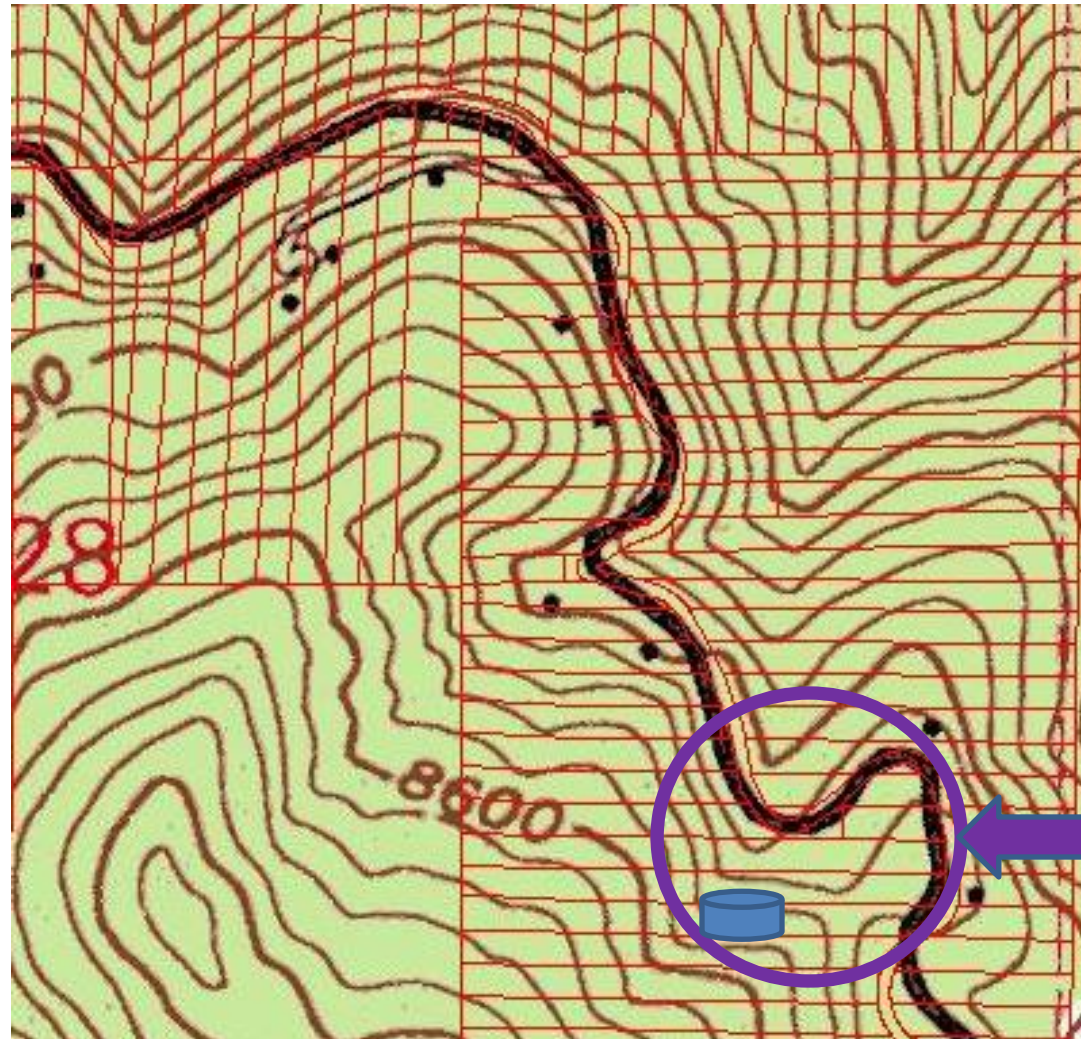
CASE STUDY

Mountain Water System – Recreational Property



CASE STUDY

Mountain Water System – Recreational Property



**SUBJECT
PROPERTY**

CASE STUDY

Mountain Water System – Recreational Property

- 1. Property owner wants to build near top of site.**
- 2. PWS has committed to provide a service connection.**
- 3. Water pressure is less than Owner desires.**
- 4. Owner and Architect consider using a booster pump**



Planning Department Committee notices the booster pump concept during a planning meeting and notifies owner of regulation.

CASE STUDY

Mountain Water System – Recreational Property

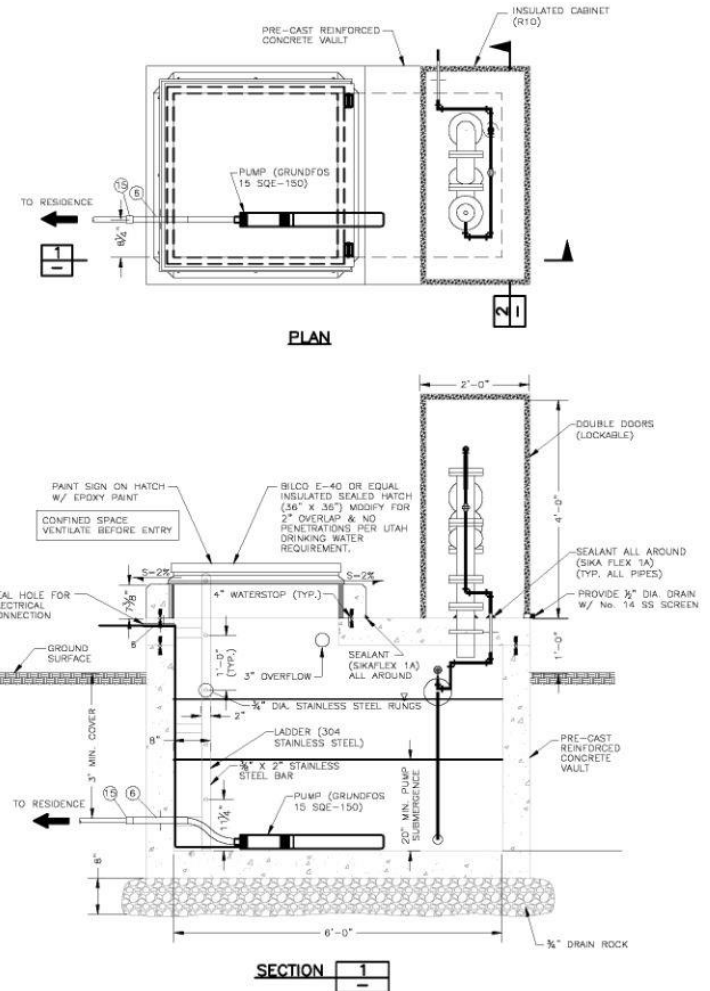
- 1. HAL was asked to assist with:**
 - 1. Coordination with the PWS**
 - 2. Permitting with the Utah Division of Drinking Water**
 - 3. Design**
 - 4. Plan Review with the Utah Division of Drinking Water**

CASE STUDY

Mountain Water System – Recreational Property

OUTCOME - Designed a Connection

1. Above Ground Air Gap Connection
2. Float Controlled Inlet Valve in Vault
3. Submersible Pump
4. Insulated and Heated
5. Limited Storage Provided

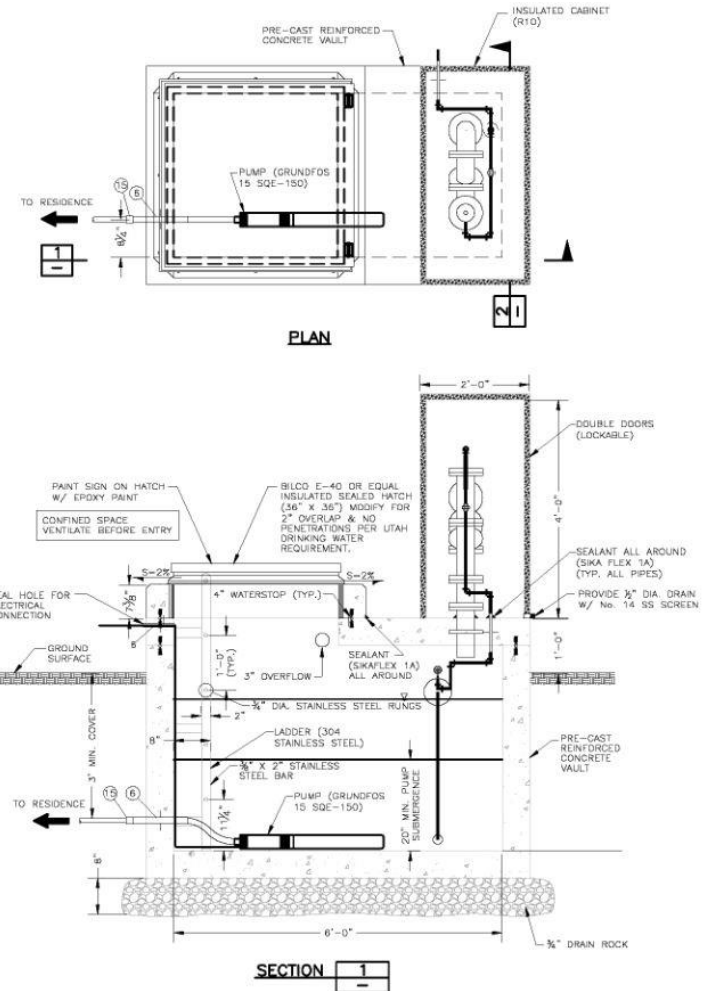


CASE STUDY

Mountain Water System – Recreational Property

OUTCOME

1. DDW Approved Connection
2. Protects PWS
3. Allows “Top of Hill” Construction
4. Owner agreed to PWS and DDW Inspections
5. Permitted by “Exception” Request
6. DDW Notice Limiting Future “Exceptions”



RECOMMENDATIONS FOR PUBLIC WATER SYSTEMS

- 1. TRAIN PWS STAFF TO UNDERSTAND INDIVIDUAL BOOSTER PUMP RULES**
- 2. CREATE A MECHANISM FOR PWS INVOLVEMENT IN PLANNING PROCESSES AND BUILDING PERMITS**
 - 1. Planning and Building Departments may operate autonomously from the Water Department**
 - 2. The PWS and the Building Department may be a separate public/private agencies (i.e., a special service district within a County Planning jurisdiction)**
 - 3. Building Officials may approve an individual booster pump without knowledge of PWS**
- 3. TRACK INDIVIDUAL HOME BOOSTERS AS PART OF THE CROSS CONNECTION CONTROL PROGRAM.**

RECOMMENDATIONS FOR PUBLIC WATER SYSTEMS - *CONTINUED*

4. ESTABLISH JURISDICTION FOR INSPECTIONS AND CONDUCT INSPECTIONS

- 1. Property Access / Facilities Public ROW**
- 2. Inspections (Annually?)**
- 3. Inspection Costs**

5. DESIGNATE A SERVICE AREA

- 1. Review existing infrastructure capabilities**
- 2. Review planned infrastructure expansions and budgets**
- 3. Property Owners want to build high on the property**

6. ENACT AN ORDINANCES IF POSSIBLE

- 1. PWS may have limited jurisdiction in some cases.**

QUESTIONS