

ADMINISTRATION

1. **All existing standards and publications adopted by reference will be updated.**  
*Rationale: In order to be applicable, references in NAC must be current.*  
*Amends NAC 445A.6663*
2. **An Emergency Plan shall include a list of phone numbers of essential services, vendors, and contractors.**  
*Rationale: Identifies necessary component of Emergency Plan.*  
*Amends NAC 445A.66665*
3. **An Operation and Maintenance Plan shall be submitted to BSDW within 60 days of completion of construction of a new water system.**  
*Rationale: Current NAC is silent on the issue.*  
*Amends NAC 445A.6667*
4. **An Operation and Maintenance Plan shall include a valve exercise program, including fire hydrant flushing.**  
*Rationale: Identifies necessary component of O & M Plan.*  
*Amends NAC 445A.6667*
5. **An Operation and Maintenance Plan shall include accurate and up-to-date drawings or schematics of water system components including wells, treatment plants, storage tanks and distribution system including valves and hydrants.**  
*Rationale: Identifies necessary component of O & M plan.*  
*Amends NAC 445A.6667*
6. **An Operation and Maintenance Plan shall inventory spare parts.**  
*Rationale: Identifies necessary component of O & M plan.*  
*Amends NAC 445A.6667*
7. **Materials not specifically determined to be compatible with drinking water and treatment systems not specifically approved by NSF may be considered for use in a public water system with the consent of the supplier of water and the Division or appropriate district board of health if the materials of construction are approved by the Food and Drug Administration for contact with food or otherwise approved by Underwriters Laboratory for use with potable water.**  
*Rationale: Not all manufacturers seek NSF approval of small scale treatment units if the quantity produced does not warrant the cost associated with NSF certification.*  
*Amends NAC 445A.66685*
8. **Engineer may request a “courtesy review” of plans by the Division or appropriate district board of health and a concomitant waiver of the plan review fee for design of public water system modifications that do not meet the definition of a “water project”.**  
*Rationale: Provides state input on designs that otherwise might be overlooked. Provides assurance to engineering community that improvements are acceptable from the standpoint of a sanitary survey.*  
*Amends NAC 445A.6669*

- 9. Water project plans of engineering improvements shall depict the degree of angle fittings and the radius of curvature of water main bends.**  
*Rationale: Alerts design engineer to ensure bends fall within manufacturer's recommended guidelines. Ensures contractor follows designer's intent.*  
*Amends NAC 445A.66695*
- 10. Water project plans shall be submitted showing existing and proposed infrastructure in plan and profile. Mines and other industrial operations in rural settings that have minimal conflicts with other utilities may be exempt from this requirement.**  
*Rationale: Plan and profile views are necessary in order to determine possible crossing conflicts between water and sewer as well as burial depths. This is accepted engineering convention presently not required by NAC.*  
*Amends NAC 445A.66695*
- 11. 30 days shall be the maximum time allowed for BSDW to initiate review of a water project. Contact with the design engineer may be either verbally or in writing. A resubmittal shall be reviewed and approved or denied within a 30 day maximum time frame.**  
*Rationale: Requires state staff to review projects in a timely manner and alerts engineering community to possible plan review timeframe.*  
*Amends NAC 445A.6671*
- 12. Construction may proceed on a water project after the Division or appropriate district board of health has reviewed and approved the water project.**  
*Rationale: Addresses conflict with subdivision regulations which precludes construction until final map signed. Resolves dilemma: public water systems want water projects built prior to issuing will serve letters and NDEP won't sign final map until it receives will-serve letters.*  
*Amends NAC 445A.6671*
- 13. Once the water project is approved, design engineer shall submit plans on CD.**  
*Rationale: Reduces the space required to archive engineering documents.*  
*Amends NAC 445A.66715*
- 14. In network hydraulic analysis of a public water system which relies exclusively on wells for source water production, wells shall be credited with maximum operation of 16 hours per day, or two-thirds of their capacity.**  
*Rationale: Provides capacity for source water production facilities to recoup storage during off peak hours. Provides capacity to meet successive days of high demand.*  
*Amends NAC 445A.66725*
- 15. For purposes of network hydraulic analysis, average water consumption of various types of development shall be equal to the following unless the public water system has developed information representative of its service area based on historic data:**  
*Rationale: Provides basis for reasonable water usage estimates based on Las Vegas experience.*  
*Amends NAC 445A.66725*

| CUSTOMER CLASS/ DESCRIPTION             | FLOW RATES   |              |              |              |              |              |
|---|--------------|--------------|--------------|--------------|--------------|--------------|
|   | AVERAGE DAY  |              | MAXIMUM DAY  |              | PEAK HOUR    |              |
|   | GPM PER UNIT | GPM PER ACRE | GPM PER UNIT | GPM PER ACRE | GPM PER UNIT | GPM PER ACRE |
| Single Family Residential               | 0.52*        | 2.3          | 1.18         | 5.2          | 1.81         | 8.0          |
| Residential, Duplex and Triplex         | 0.52         | 2.3          | 1.18         | 5.2          | 1.81         | 8.0          |
| Apartments, Condominiums and Townhouses | 0.21         | 5.7          | 0.53         | 14.0         | 0.63         | 16.8         |
| Mobile Home Parks                       | N/A          | 2.4          | N/A          | 3.7          | N/A          | 5.7          |
| Hotels                                  | 0.29         | N/A          | 0.36         | N/A          | 0.45         | N/A          |
| Golf Courses, Parks and Open Spaces     | N/A          | 4.4          | N/A          | 8.4          | N/A          | 8.4          |
| Industrial Park (Light Industry)        | N/A          | 1.1          | N/A          | 1.5          | N/A          | 2.3          |
| Commercial                              | N/A          | 2.1          | N/A          | 3.0          | N/A          | 4.6          |
| School                                  | N/A          | 1.7          | N/A          | 3.5          | N/A          | 5.4          |

\* 750 gpd

### TREATMENT

16. **No unrelated structures shall be built on, over, or adjacent to a treatment plant which could compromise the effective operation and maintenance of the treatment process, inhibit expansion, or expose the general public to potential hazards associated with an industrial site.**

*Rationale: Protects the public investment in water treatment infrastructure.  
Amends NAC 445A.66785*

17. **A permanent or portable eye wash station shall be required at all locations where chemical addition is practiced per federal Occupational Safety and Health Administration.**

*Rationale: Provides consistency between state requirements and federal requirements.  
Amends NAC 445A.6681*

18. **Coliform sampling shall not take place from frost-free hydrants, swivel faucets, or faucets where the screened aerator has not been removed.**

*Rationale: Eliminates common causes of false positives.  
Amends NAC 445A.66825*

19. **Chlorine gas, sodium hypochlorite, calcium hypochlorite, potassium permanganate, hydrogen peroxide and similar oxidizing chemicals shall not be stored in locations where they can be contaminated with readily oxidized substances such as oils or organic materials, flammable substances or acids.**

*Rationale: Fires and explosions can result.  
Amends NAC 445A.6683*

3/11/2009

20. **At facilities which utilize chlorine gas, a self contained breathing apparatus which fits individually shall be stored with the individual user per federal Occupational Safety and Health Administration.**

*Rationale: Amends state NAC to conform with federal requirements.*

*Amends NAC 445A.66845*

21. **Tanks used to store sodium hypochlorite shall be:**

- 1) **located in a separate room from mechanical and electrical equipment; or**
- 2) **located in a manner where positive ventilation will exhaust chlorine fumes; or**
- 3) **be of the sealed type vented to the outside of any structure.**

*Rationale: Provides flexibility in design.*

*Amends NAC 445A.6685*

22. **Wherever chlorine gas or sodium hypochlorite is used for disinfection, electrical wiring components shall be of explosion proof construction.**

*Rationale: Minimizes or negates corrosion of the electrical system.*

*New. Follows NAC 445A.6685*

#### WELLS

23. **Well casings shall exhibit no holes which potentially could serve as entry points for contamination. Of particular concern are the following: improper size or type of well cap, open vent hole, uncapped gravel or sounding tubes, improperly seated line shaft turbine base plate, caps and base plates on irregular torch cut casings, unsealed electrical access ports and miscellaneous perforations such as bullet holes. Holes in wells shall be plugged using grommets, split flanges, boiler plugs, silicon caulking, or other suitable measures.**

*Rationale: Addresses major problem with well installations encountered during sanitary surveys.*

*New. Follows NAC 445A.6689*

24. **In cases where an existing well has no sanitary seal and is proposed for inclusion in a public water system, the well may be brought up to NAC requirements by overboring the well casing and installing an acceptable sanitary seal.**

*Rationale: Allows substandard existing wells to be brought up to required standards.*

*Amends NAC 445A.66905*

25. **Well casing height for existing wells may not extend 18-inches above grade if there exists no danger of flooding or opportunity for submergence.**

*Rationale: Imparts common sense to NAC requirements.*

*Amends NAC 445A.66915*

26. **The well head shall not be insulated with loosely packed fiberglass or cellulose insulation. Should insulation be required, fiberglass batts shall be attached to a suitable enclosure which covers the well head.**

*Rationale: Loose insulation promotes rodent infestation.*

*Amends NAC 445A.66915*

27. **A concrete slab shall not be required on well casing installations which utilize a submersible pump and a pitless adapter.**  
*Rationale: Clarifies an issue on which current NAC is silent.*  
*Amends NAC 445A.66915*
28. **Vents may not be required on small production source water wells with the approval of the Division or appropriate district board of health.**  
*Rationale: Such wells will vent through the well cap and the presence of a vent may exacerbate source water contamination depending upon the specific well characteristics.*  
*Amends NAC 445A.6692*
29. **A hydrant may be an acceptable means of accomplishing well-to-waste as long as an isolation valve is present to stop flow into the distribution system.**  
*Rationale: Provides flexibility in design.*  
*Amends NAC 445A.66925*
30. **Well houses and booster stations shall be rodent and bird proof.**  
*Rationale: Eliminates major source of contamination.*  
*New. Follows NAC 445A.6693*
31. **Hay shall not be used to insulate well heads and piping.**  
*Rationale: Eliminates source of contamination.*  
*New. Follows NAC 445A.6693*
32. **Well houses and booster stations shall be kept free of any chemicals such as solvents, oils, gasoline, herbicides and pesticides that represent potential sources of contamination.**  
*Rationale: Eliminates potential contamination sources of VOC's and SOC's identified during sanitary surveys.*  
*New. Follows NAC 445A.6693*
33. **The well house shall be constructed with an access hatch in the roof vertically above the well head which facilitates the removal of the motor, column pipe, and pump for maintenance, repair, or replacement.**  
*Rationale: Provides access without knocking down the well house.*  
*New. Follows NAC 445A.6693*
34. **The engineer shall provide architectural, structural, mechanical and electrical plans of the well house or booster station.**  
*Rationale: Ensures that facilities are properly designed and constructed.*  
*New. Follows NAC 445A.6693*

#### SPRINGS

35. **Springs shall be kept free of tree roots. Roots shall be eliminated manually or mechanically, rather than chemically.**  
*Rationale: Roots pose an avenue for contaminants to enter the spring.*  
*Amends NAC 445A.6696*

36. **Unless the spring water is subject to subsequent treatment equivalent to that of a surface water source, no wood structures shall be used to capture, measure, filter or screen the spring.**

*Rationale: Wood structures provide a substrate for the growth of bacteria and other microorganisms.*

*Amends NAC 445A.6696*

#### PUMPING

37. **Prefabricated booster stations may be allowed at the discretion of the Division or appropriate district board of health and consent of the supplier of water. The design engineer shall compute and submit the extra operating costs associated with increased head loss at installations that don't meet NAC criteria, and compare them to any savings in capital costs.**

*Rationale: A utility should be aware of the increased burden of operating costs compared to any savings in capital costs.*

*Amends NAC 445A.66965*

38. **Canned turbine pumps may be a suitable alternative to conventional booster pump station construction if designed by an engineer, and approved by the Division or appropriate district board of health.**

*Rationale: Provides flexibility in design.*

*Amends NAC 445A.66965*

39. **At the discretion of the supplier of water, booster stations and wells may not be equipped with a generator for standby power if the booster station or well is electrically wired in such a manner that it will readily accept a plug-in connection from a portable generator. The supplier of water must own or contractually control a portable generator capable of supplying startup and operating power requirements of the booster station or well.**

*Rationale: Provides flexibility in responding to power outages.*

*Amends NAC 445A.6705*

40. **Permanent generators shall be provided with structural provisions for fuel containment that meet the requirements of the Uniform Fire Code. Secondary containment for outdoor storage areas shall be designed to contain a spill from the largest individual vessel. If the area is open to rainfall, secondary containment shall be designed to include the volume of a 24-hour rainfall as determined by a 25-year storm and provisions shall be made to drain accumulations of ground water and rainwater.**

*Rationale: Provides consistency between state regulations.*

*Amends NAC 445A.6705*

#### STORAGE

41. **Used tanks shall be prohibited for use as water storage tanks.**

*Rationale: Tank history can be convoluted, despite the best of intentions. NAC presently requires "virgin" tanks by AWWA reference, but the item isn't specifically addressed.*

*Amends NAC 445A.67065*

42. **Galvanized grain tanks shall be prohibited for use as water storage tanks.**  
*Rationale: Grain tanks typically have too much vented area beneath the attached roof, a source of potential contamination.*  
*Amends NAC 445A.67075*
43. **Concrete reservoirs shall not be lined with tile or other materials or coatings which attach to the surface of the concrete.**  
*Rationale: Such materials or coatings provide a substrate for the growth of bacteria and other microscopic organisms.*  
*Amends NAC 445A.67075*
44. **Concrete reservoirs with wooden roofs shall be prohibited.**  
*Rationale: Wooden structures are extremely difficult to protect from infestation by rodents, birds, lizards, insects and other pests.*  
*Amends NAC 445A.67075*
45. **Duct tape shall not be considered an approved material for construction or repair.**  
*Rationale: Even though it is highly regarded, duct tape is not a durable material for use in public water systems.*  
*Amends NAC 445A.67075*
46. **Once the tank is sampled for volatile organic chemicals and found compliant with drinking water standards, it may be introduced into service. If found to be non-compliant with drinking water standards, the public water system shall contact BSDW to ascertain how much fresh water dilution is required to achieve drinking water quality.**  
*Rationale: Provides guidance to public water systems.*  
*Amends NAC 445A.67075*
47. **Boiler plugs, rather than redwood or similar wooden pegs, shall be used to plug holes in water tanks.**  
*Rationale: Boiler plugs are designed for this application. Wooden pegs provide a substrate for the growth of bacteria and other microorganisms.*  
*Amends NAC 445A.67075*
48. **Eliminate reference to ANSI/NSF Standard 54 for lining/flexible membrane for floating reservoir covers.**  
*Rationale: Standard 54 has been rescinded and incorporated into AWWA Standard D130.*  
*Amends NAC 445A.67075*
49. **Flexible membrane floating reservoir covers shall be prohibited for new construction.**  
*Rationale: Floating reservoir covers have an extremely poor performance record in Nevada for protecting stored water from exterior surface water contamination.*  
*Amends NAC 445A.67075*

50. **Drain and overflow piping for water storage tanks shall not be hard-piped to any storm drain or sewer.**  
*Rationale: Eliminates a common cross connection in urban areas.*  
*Amends NAC 445A.6708*
51. **Once the design of a storage tank is approved by the Division or appropriate district board of health and the construction project contract has been awarded by the supplier of water, the design engineer for the tank manufacturer shall submit structural calculations to the Division or appropriate district board of health.**  
*Rationale: Structural calculations complete the project file.*  
*Amends NAC 445A.6708*
52. **Elastomer duck bill-type valves may be substituted for angled flapper valves on tank drains and overflows, well-to-waste discharge lines, and similar-type applications which discharge to atmosphere. The valve must close tightly in a manner which excludes entry of potential contamination. Such valves shall not be considered to be an approved method of backflow prevention.**  
*Rationale: Provides design flexibility.*  
*Amends NAC 445A.6708*
53. **Stand pipes, and tanks which exhibit height greater than width, shall be analyzed by an engineer for susceptibility to earthquake damage and associated need for restraint using wire supports or grade ring restraints.**  
*Rationale: Nevada is extremely active from a seismic standpoint.*  
*Amends NAC 445A.6708*
54. **Storage tank water projects shall include calculations used to design the tank overflow during conditions of maximum inflow.**  
*Rationale: Ensures that this component is engineered rather than eye-balled.*  
*Amends NAC 445A.6708*
55. **“J” vents which protrude above the roof or over the roof perimeter of a water storage tank may be an acceptable alternative or addition to a mushroom vent or side wall vents and are a preferable option in areas where heavy snow loads may be encountered.**  
*Rationale: Provides flexibility in design.*  
*Amends NAC 445A.6708*
56. **Side wall vents, if utilized, shall be shrouded.**  
*Rationale: Prevents wind borne contamination from entering storage tank.*  
*Amends NAC 445A.6708*
57. **The engineer shall specify the design parameters for the storage tank including dimensions, dead load, capacity, snow load, live load, wind load and earthquake load.**  
*Rationale: Provides contractor’s or manufacturer’s structural engineer with necessary details to comply with the designer’s intent.*  
*Amends NAC 445A.6708*

**58. Conform disinfection of storage structures protocol to that of AWWA C652.**

*Rationale: NAC needs to be modified to match AWWA.*

*Amends NAC 445A.67085*

DISTRIBUTION

**59. The service area of the public water system shall extend to the limit of the utility's jurisdiction, generally represented by the location of the meter or pit setter on the service line. Design and construction of infrastructure downstream from this location shall be governed by the Uniform Plumbing Code.**

*Rationale: Clarifies regulatory authority of BSDW.*

*Amends NAC 445A.67105*

**60. Pressure reducing stations shall be designed with two parallel pressure reducing valves: one for maximum flows and one for minimum flows. Pressure reducing valves shall be constructed with isolation valves located upstream and downstream.**

*Rationale: Isolation valves facilitate removal of pressure reducing valves for maintenance, repair, or replacement. The presence of the small pressure reducing valve precludes the need for the large pressure reducing valve to constantly adjust to varying flow conditions.*

*Amends NAC 445A.6711*

**61. Four inch water mains may be allowed on small cul-de-sacs or small streets serving sixteen or less single family residential lots if fireflow is provided from a main in the cross street. Mines and other industrial operations in rural settings may be exempt from the requirement for 6-inch minimum diameter water mains. Associated bedding requirements may not be applicable if welded joint high density polyethylene pipe is used.**

*Rationale: Addresses potential problem of poor turnover in oversized mains.*

*Amends NAC 445A.67115*

**62. When operating a fire hydrant, the hydrant operating nut shall not be used to throttle fire hydrant flow. The operating nut shall be fully opened or fully closed. Should throttling be desired, this may be accomplished through use of a valve intended for this purpose which is attached to the fire nozzle.**

*Rationale: Eliminates undermining of fire hydrant by weep hole discharge under pressure when hydrant is only partially opened.*

*Amends NAC 445A.67115*

**63. Where a dead end cannot be eliminated:**

- a. If located in a cul-de-sac where the line will not be extended in the future and if the pipeline is on a positive slope it shall terminate with an air release valve and a flush valve assembly.
- b. If located in a cul-de-sac where the line will not be extended in the future and if the pipeline is on a negative slope it shall terminate with a flush valve assembly.
- c. If there is a possibility of extending the line in the future and if the pipeline is on a positive slope it shall terminate in order with an air release valve, a flush valve

assembly, a gate valve the same size as the water main, a full segment of pipe and a blind flange.

- d. If there is a possibility of extending the line in the future and if the pipeline is on a negative slope it shall terminate in order with a flush valve assembly, a gate valve the same size as the water main, a full segment of pipe and a blind flange.
- e. A fire hydrant may be used as both an air release valve and a flush valve assembly.

*Rationale: Allows for air release and water flushing. Facilitates future water line extension without interrupting service to existing customers.*

*Amends NAC 445A.6712*

- 64. When a hose is used in lieu of a pipe for conveyance of water within a public water system, such hose shall be of materials determined to be compatible with drinking water.**

*Rationale: Not intended to include fire hose, which conveys water from a public water system. Addresses unique application that may be encountered.*

*Amends NAC 445A.67125*

- 65. An air release valve or air and vacuum valve may be installed in a vault at the discretion of the supplier of water if it is equipped with an inflow preventer on the discharge side of the valve equal to or better than that of the Val'matic "Floodsafe" inflow preventer.**

*Rationale: Provides design flexibility in cold climates.*

*Amends NAC 445A.67135*

- 66. A water service lateral shall not be connected to a high point on the water main where it would function to relieve air.**

*Rationale: Eliminates the potential for water hammer or milky water at the customer's residence.*

*Amends NAC 445A.67135*

- 67. On-site water supply infrastructure for condominiums, townhouses, and time-shares shall be considered part of the public water system up to the point of installation of a master backflow preventer or installation of individual backflow preventers on building services. Water supply infrastructure that serves subdivisions which are created from existing motels, hotels, condominiums, townhouses or apartments shall be considered acceptable if the initial construction complied with the Uniform Plumbing Code and was originally approved by the local city or county building department.**

*Rationale: Addresses a common design consideration.*

*Amends NAC 445A.67145*

- 68. Conform disinfection of water main protocol to that of AWWA C651.**

*Rationale: NAC needs to be modified to match AWWA.*

*Amends NAC 445A.67145*

SEPARATION OF LINES

69. **Mains that carry water which does not meet drinking water standards, including poor quality ground water, ditch water and Class A and B reclaimed wastewater, shall be considered sewers for purposes of water main/sewer main separation.**

*Rationale: Clarifies issues not specifically addressed by NAC.*

*Amends NAC 445A.6715*

70. **The sewer manhole shall not be considered to be a sewer main.**

*Rationale: Clarifies an issue on which NAC is currently silent.*

*Amends NAC 445A.6715*

71. **For purposes of implementing separation requirements between water mains and sewer mains at locations involving a sewer manhole, separation requirements shall be from the outside wall of the water main to the outside wall of the sewer main where it penetrates the sewer manhole.**

*Rationale: Clarifies an issue on which NAC is currently silent.*

*Amends NAC 445A.67155*

72. **Vertical Crossing Conflicts Summary**

*Rationale: Clarifies issues not specifically addressed by NAC.*

*Amends NAC 445A.67165*

**Definitions**

- *Use of a “sleeve” is an acceptable alternative to centering the water and sewer at the point of crossing. “Sleeve” means encasing the water or sewer with a 20’ length of AWWA C900 Class 100 or greater water quality pipe, centered at the point of water/sewer crossing. To avoid being grouted in place, the water main inside the sleeve must have a diameter equal to or greater than 2/3 the diameter of the sleeve.*
- *“Restrain” means using mechanical couplings to restrict joint movement or separation of pipe joints within 10’ each side of the point of crossing.*
- *“Special Construction” identifies acceptable mitigation or protection that addresses physically constrained environments where the requirements of NAC 445A.6715 through 445A.67175 inclusive cannot be met.*
- *Areas of “Special Construction” are to be identified on the plans in plan view using cross-hatching and in profile view using cross-hatching and by referencing a Standard Detail.*
- *Vertical separation in all cases shall not be less than 6”.*
- *“Concrete encasement” of the water as mitigation or protection is discouraged.*
- *At the discretion of NDEP, public water system improvement projects with excessive use of “special construction” may be required to sewer with C900 water quality pipe, green striped, manhole to manhole.*

**Every effort is to be made to keep water main or water lateral 18” above sewer main and water main 12” above sewer lateral. Otherwise, the following special construction methods apply:**

***Sewer main above water main, or sewer main below water main by less than 18”:***

- 1) Sleeve or center sewer main and sleeve water main or center & restrain water main.

*Sewer main above existing water main, or sewer main below existing water main by less than 18”:*

- 1) Use AWWA C900 water quality pipe, green striped, for sewer main manhole to manhole and center sewer main at crossing and restrain any exposed water main joints.

*Existing sewer main above water main, or existing sewer main below water main by less than 18”:*

- 1) Polyethylene wrap and concrete encase sewer main joints within 10’ each side of the point of crossing and sleeve water main or center & restrain water main.

*Existing sewer force main above water main, or existing sewer force main below water main by less than 18”:*

- 1) Polyethylene wrap and concrete encase sewer force main joints within 10’ each side of the point of crossing (unless welded HDPE then not necessary) and sleeve water main or center & restrain water main.

*Less than 24” diameter RCP storm drain above water main, or less than 24” diameter RCP storm drain below water main by less than 18”:*

- 1) Polyethylene wrap and concrete encase RCP storm drain joints within 10’ each side of the point of crossing and sleeve water main or center & restrain water main; or
- 2) Use external joint sealants for RCP storm drain diameters from 16”–21” and sleeve water main or center & restrain water main.

*Greater than or equal to 24” diameter RCP/RCB storm drain above water main, or greater than or equal to 24” diameter RCP/RCB storm drain below water main by less than 18”:*

- 1) Polyethylene wrap and concrete encase RCP/RCB storm drain joints within 10’ each side of the point of crossing and sleeve water main or center & restrain water main; or
- 2) Use internal joint sealants or joint gaskets on RCP/RCB storm drain and sleeve water main or center & restrain water main; or
- 3) Use external joint sealants for RCP/RCB storm drain diameters from 24”–168” and sleeve water main or center & restrain water main.

*PVC storm drain above water main, or PVC storm drain below water main by less than 18”:*

- 1) Sleeve or center PVC storm drain and sleeve water main or center & restrain water main.

*Sewer lateral above water main, or sewer lateral below water main by less than 12”:*

- 1) Sleeve water main or center & restrain water main and sleeve or center sewer lateral.

*Sewer lateral above existing water main, or sewer lateral below existing water main by less than 12”:*

- 1) Sleeve or center sewer lateral at crossing and restrain any exposed water main joints.

*Sewer main above water lateral, or sewer main below water lateral by less than 18”:*

- 1) Use PE tubing conforming to AWWA Standard C901-02 and ASTM D2737 for water lateral and sleeve or center sewer main.

*Reclaimed wastewater main above water lateral, or reclaimed wastewater main below water lateral by less than 12”:*

- 1) Use PE tubing conforming to AWWA Standard C901-02 and ASTM D2737 for water lateral and sleeve or center reclaimed wastewater main.

*Reclaimed wastewater lateral above water main, or reclaimed wastewater lateral below water main by less than 12”:*

- 1) Use PE tubing conforming to AWWA Standard C901-02 and ASTM D2737 for reclaimed wastewater lateral and sleeve water main or center & restrain water main.

### BACKFLOW

73. **Backflow preventers shall be installed on distribution systems whenever potable water passes to non-potable, industrial, process, or irrigation uses.**

*Rationale: The potable system is from the well to the faucet. Activities using ancillary non-potable piping must be protected against. Backflow preventers are occasionally installed incorrectly to protect the well from the potable distribution system.*

*Amends NAC 445A.67185*

74. **A barometric loop shall be considered to be an approved method of backflow protection against backsiphonage.**

*Rationale: Provides flexibility in design.*

*Amends NAC 445A.6719*

75. **Single and dual check valves shall not be considered to be an approved method of backflow protection.**

*Rationale: Such devices are often mistakenly believed to be acceptable.*

*Amends NAC 445A.6719*

76. **Potable water may be used for seal water for pumps in sewage lift stations as long as the seal water line is isolated from the potable water system by a reduced pressure principle assembly installed above grade outside the pump vault.**

*Rationale: Addresses public health concerns.*

*Amends NAC 445A.67195*

77. **At all locations where reclaimed wastewater and potable water exist on the same property, to the extent possible the pressure of the potable water system shall be at least 10 psi greater than that of the reclaimed wastewater system.**

*Rationale: Provides a degree of public health protection in the event of a cross connection.*

*Amends NAC 445A.67205*

78. **Potable water may be used as a source of cooling for a fire driver if incorporated in a sleeve-type conductor which physically separates potable water from internal cooling water. Such a sleeve-type conductor shall be specifically manufactured for this application.**  
*Rationale: Addresses unique application that may be encountered.*  
*Amends NAC 445A.67205*
79. **If the supplier of water is provided access to the private property it serves to assess internal backflow protection, the degree of protection provided at the meter may be relaxed from a RPPA to a DCVA if supported by conclusions of the on-site survey.**  
*Rationale: Rewards cooperation while protecting public health.*  
*Amends NAC 445A.6721*
80. **For single family residential properties built according to and compliant with the Uniform Plumbing Code, backflow protection may not be required at the meter unless warranted by hazardous activities on the property.**  
*Rationale: Imparts common sense to NAC while protecting public health.*  
*Amends NAC 445A.6721*
81. **Properties such as offices or mini-markets which are similar to single family residential properties in that they are built according to and compliant with the Uniform Plumbing Code and house only bathrooms or kitchens may require no backflow protection at the meter.**  
*Rationale: Imparts common sense to NAC while protecting public health.*  
*Amends NAC 445A.6721*
82. **Black pipe fire sprinkler systems that are routinely flushed by a water using appliance such as a toilet or sink may not require backflow protection.**  
*Rationale: Provides flexibility in design.*  
*Amends NAC 445A.67215*
83. **Dedicated fire water storage tanks supplied by a public water system shall be isolated from the public water system by a double check valve assembly or air gap as well as a gate, ball or other suitable isolation valve.**  
*Rationale: Addresses water system configuration typical of Pahrump.*  
*Amends NAC 445A.67215*
84. **An “air break” shall not be an acceptable means of isolating potable and non-potable components of a water system, but may be approved by the Division or appropriate district board of health on a case-by-case basis if supported by hydraulic calculations which demonstrate that it will function during all inflow situations.**  
*Rationale: Some existing water systems incorporate air breaks.*  
*Amends NAC 445A.6723*
85. **An atmospheric vacuum breaker may not be required on individual water services in a recreational vehicle park or a mobile home park.**  
*Rationale: Because of backpressure and a downstream valve, use of an atmospheric vacuum breaker in this application for backflow protection is not appropriate.*  
*Amends NAC 445A.6725*

86. **An atmospheric vacuum breaker shall not be installed in applications where it is subject to backpressure or where it is upstream of a valve.**

*Rationale: If improperly installed, atmospheric vacuum breakers are subject to failure.*  
*Amends NAC 445A.6725*

87. **Trailer dump stations served by a public water system with washdown water shall utilize a Romort Model Number 05400 water tower.**

*Rationale: This device provides a positive air gap not easily defeated.*  
*Amends NAC 445A.67255*

88. **A frost free yard hydrant equipped with a non-discharging tank that works on the venturi principle to evacuate it may be an acceptable alternative to a conventional yard hydrant with a weep hole this is protected by a double check valve assembly.**

*Rationale: Provides flexibility in design.*  
*Amends NAC 445A.67255*

89. **A Hudson valve may be suitable for use as a backflow preventer for applications that control flow to livestock tanks and troughs as long as the Hudson valve is installed vertically, not submerged, and with the air vents above the rim of the trough.**

*Rationale: Provides a cheap, easy means of supplying water to troughs while protecting public health.*  
*Amends NAC 445A.67255*

#### WATER HAULING

90. **A permanent or portable double check valve assembly shall be installed on all fire hydrants used to supply construction water to contractors or potable water to water haulers.**

*Rationale: Eliminates a common source of potential water system contamination.*  
*Amends NAC 445A.6728*