



NEVADA DIVISION OF  
**ENVIRONMENTAL  
PROTECTION**



Nevada Department of  
**CONSERVATION &  
NATURAL RESOURCES**

# BSDW WATER PROJECTS AND COMPLIANCE

Presentation to ASCE NV Capitol Branch

~~March 1~~ April 5, 2023

**Presented by**

Brendon Grant

BSDW Engineering Branch Supervisor

# OVERVIEW OF TODAY'S PRESENTATION

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- What is the BSDW?
- Department of Conservation and Natural Resources (DCNR)
- Nevada Division of Environmental Protection (NDEP)
- Bureau of Safe Drinking Water (BSDW)
  - Compliance Branch
  - Engineering Branch
  - Water Project Submittals
  - Statutes and Regulations
  - New Water Systems
- Wrap/Conversation/Questions



## WHAT IS THE BUREAU OF SAFE DRINKING WATER?

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The BSDW has primacy to implement and enforce the Safe Drinking Water Act in the State of Nevada.

*Our mission is to protect public health and the environment by providing oversight, guidance, and support, while fostering collaboration with safe drinking water partners.*

# DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR)



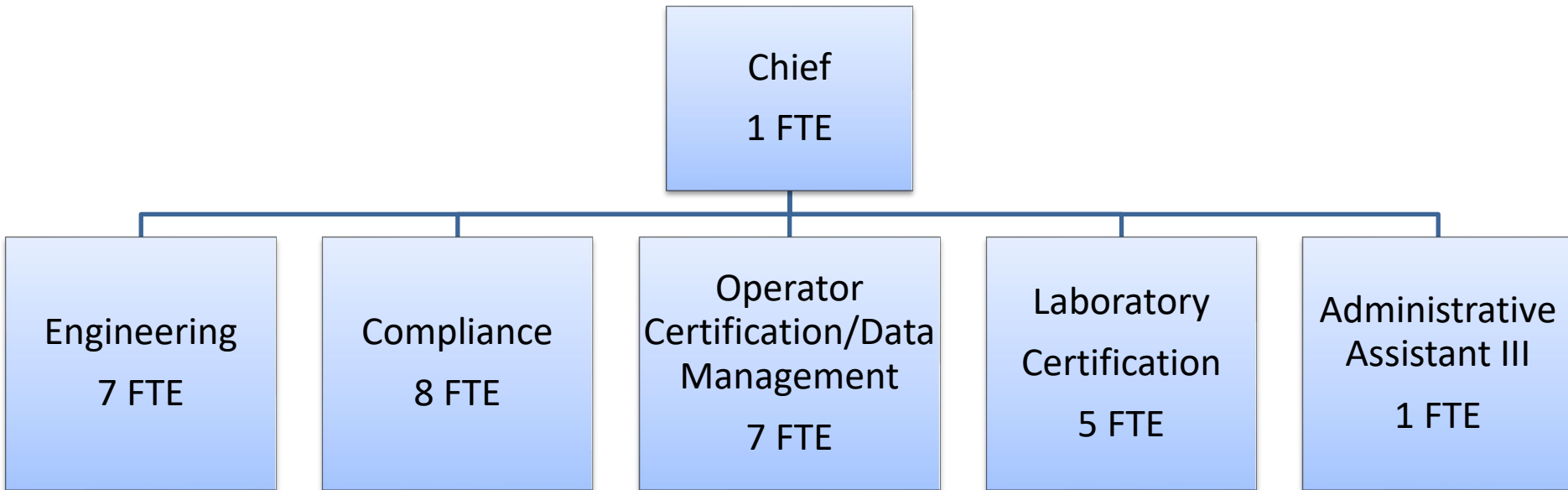
# NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP)

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# BUREAU OF SAFE DRINKING WATER ORGANIZATION CHART

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# COMPLIANCE BRANCH SANITARY SURVEYS



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# NRS AND NAC

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## Law

NRS 445A.800 to NRS 445A.955, inclusive.

## Regulations

- ❖ NAC 445A.450 to NAC 445A.492  
(Section Title: ***Water Quality***)
- ❖ NAC 445A.495 to NAC 445A.540  
(Section Title: ***Treatment of Water: Generally***)
- ❖ NAC 445A.54022 to NAC 445A.5405  
(Section Title: ***Treatment of Water: Groundwater***)
- ❖ NAC 445A.542 to NAC 445A.54296  
(Section Title: ***Certification of Laboratories to Analyze Drinking Water***)
- ❖ NAC 445A.591 to NAC 445A.5926  
(Section Title: ***Operation of Community Water System or Nontransient Water System***)
- ❖ NAC 445A.595 to NAC 445A.614  
(Section Title: ***Permits to Operate Privately Owned System***)
- ❖ NAC 445A.617 to NAC 445A.652  
(Section Title: ***Certification of Operators***)
- ❖ NAC 445A.65505 to NAC 445A.6731  
(Section Title: ***Design, Construction, Operations, and Maintenance***)



# PUBLIC WATER SYSTEM DEFINITION

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**NRS 445A.235 “Public water system” defined.** “Public water system” means a system, regardless of ownership, that provides the public with water for human consumption through pipes or other constructed conveyances, if the system has 15 or more service connections, as defined in [NRS 445A.843](#), or regularly serves 25 or more persons. The term includes:

1. A facility for the collection, pumping, treatment, storage or distribution of water which is controlled by the operator of the system and used primarily in connection with the system; and
2. A facility for the collection or storage before treatment of water which is not controlled by the operator of the system but is used primarily in connection with the system.



# THREE TYPES OF PUBLIC WATER SYSTEMS

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**NRS 445A.808 “Community water system” defined.** “Community water system” means a public water system that:

1. Has at least 15 service connections used by year-round residents of the area served by the system; or
2. Regularly serves at least 25 year-round residents of the area served by the system.

**NRS 445A.829 “Nontransient water system” defined.** “Nontransient water system” means a noncommunity water system that regularly serves at least 25 of the same persons for more than 6 months per year.

**NRS 445A.848 “Transient water system” defined.** “Transient water system” means a noncommunity water system that does not regularly serve at least 25 of the same persons for more than 6 months per year.

# WATER PROJECT DEFINED

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**“Water project” defined.** “Water project” means any renovation, modification or expansion, of:

1. **Each portion** of a public water system that begins operation after February 20, 1997; or ...
  - Source (collection)
  - Treatment
  - Disinfection
  - Storage
  - Pumping
  - Distribution
  - Backflow Prevention Assembly\*

# ENGINEERING BRANCH

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## Review:

- Water projects for public water systems throughout the State of Nevada
- Operations and Maintenance Manuals
- Emergency Response Plans
- Cross-Connection Control Programs
- Plan to Operate Community and Non-Transient Non Community Water Systems
- Plan to Permit Privately Owned Community Water Systems

# WATER PROJECT SUBMITTAL REQUIREMENTS

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- Two Copies of the following
  - Application for Approval of a Water Project
  - Plans
  - Specifications
  - Fire Authority Letter or Signed Form
  - Network Hydraulic Analysis
  - Design Report
- Electronic Copy
- Review Fees



# DESIGN AND CONSTRUCTION STANDARDS

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## **NAC 445A.6685 Standards for design and construction of system**

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(a) NAC 445A.65505 to 445A.6731, inclusive

(b) AWWA Standards

(c) NSF Standards 14, 42, 44, 53, 55, 58, 60, 61 and 372

(d) Manual of Water Supply Practices M14 Backflow Prevention and Cross-Connection Control, Recommended Practices

(e) Recommended Standards for Water Works (Ten State Standards)

(f) For public water systems in Carson City, Fallon, Reno, Sparks, Yerington, Douglas County, Lander County, Lyon County, Nye County or Washoe County, Standard Specifications for Public Works Construction, also known as the “Orange Book”

# DESIGN AND CONSTRUCTION STANDARDS

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## **NAC 445A.6685 Standards for design and construction of system**

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(g) For public water systems in Boulder City, Henderson, North Las Vegas, the Big Bend Water District or the Las Vegas Valley Water District, Uniform Design and Construction Standards for Potable Water Systems (UDACS)

(h) Uniform Plumbing Code (UPC)

(i) Hydraulic Institute 9.6.6 Standard

(j) Any other engineering standards approved by the Division

2. Any conflict between standards, the most stringent prevails unless a special exception has been granted.

# WATER TREATMENT

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- Groundwater
  - Preliminary Engineering Report
    - Alternatives: Capital Cost, Annual O&M Cost, Operator Certification, and Pilot Study/Letter from Treatment Manufacture
- Surface Water
  - Engineering Report
  - Water Quality Monitoring
  - Log Removal/Inactivation of Giardia, Cryptosporidium, and Viruses
- Water Design Project



# WATER TREATMENT DESIGN

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- Total Capacity
- Design Parameters
- Site Selection
- Redundancy
- Emergency Shutoff
- Color Coding of Pipe
- Specifications of Chemicals Used
- HVAC
- Lighting
- Disposal of Waste

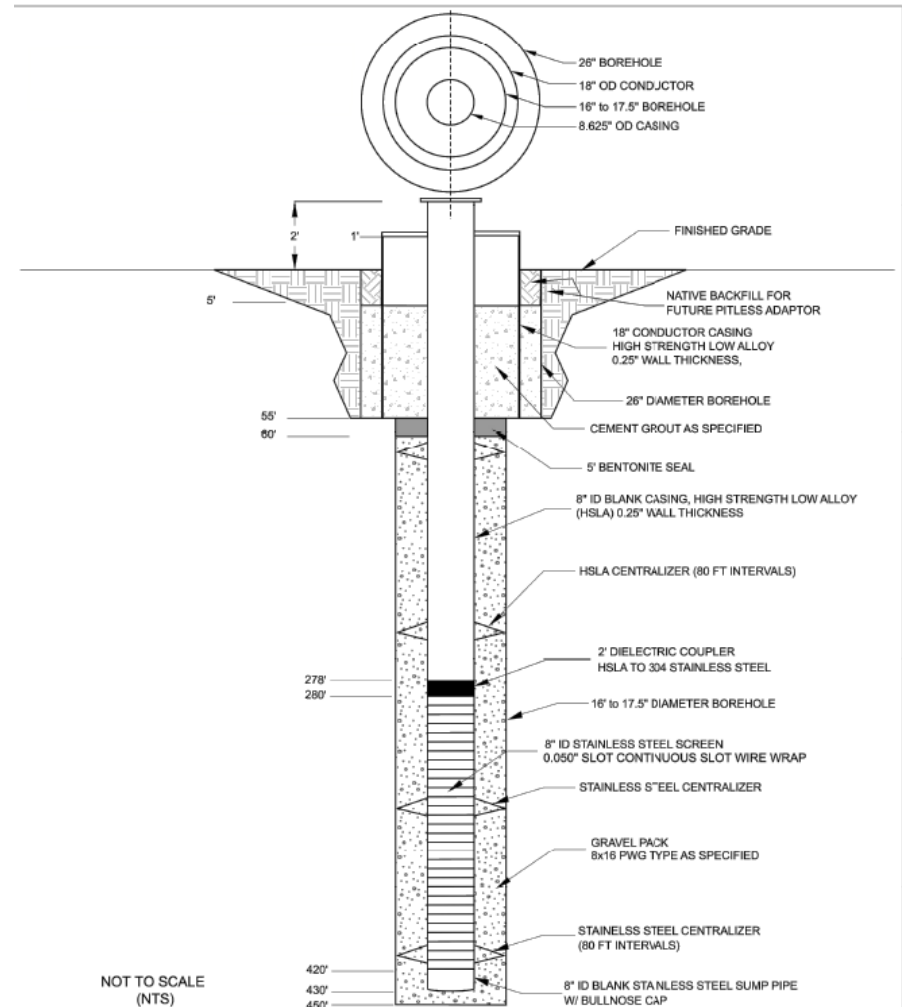




# GROUNDWATER WELLS

## PRIOR TO DRILLING

- Right to Divert Water
- Location
  - Not located within 50 of gravity sanitary sewer or gravity storm sewer; or
  - Not located within 150 feet of wastewater force main, lift station, septic tank, absorption filed, or any other pollution or contamination.
  - Not located in 100-year floodplain.
- Sanitary Seal
- Casing Information



# GROUNDWATER WELLS EQUIPPING

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- Slab and Pedestal for Above-Ground Discharge
- Sounding Tube or Access Port
- Well to Waste
- Smooth Nose Sample Tap
- Yield Characteristics of Well
- Water Quality
- Disinfection and Coliform Samples-AWWA C654-21



# SPRINGS

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- Right to Divert
- Flood Zone Information
- Microscopic Particulate Analysis
- Flow Measurement
- Recorded Zone of Protection Around Spring
- No Vegetation Around Spring
- No Contaminants or Pollution Around Spring
- Collection Box
- Water Quality
- Coliform Testing



# PUMP STATIONS

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- NSF 61 Certified Pump
- Alternative Supply of Power
- Housed-Above Grade
- Sloped Floors to Drain
- Roof Access Hatch
- Lifting Crains
- Gauges and Meters
- Suction Piping
- Discharge Piping
- $NPSH_a > NPSH_r$
- Flood Zone Information





# PUMP STATIONS CONT.

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- Redundancy
- Alarm
- Electrical Design
- Lighting
- HVAC
- Seal Water
- Smooth Nose Sample Taps
- Coliform Tests
- Hydropneumatic Systems



# STORAGE TANKS

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- NSF 61 Certified Coatings
- Welded Steel AWWA D100
- Bolted Steel AWWA D103
- Prestressed Concrete D110
- Galvanized Steel
- Geotech Report
- Structural Calculations
- Cathodic Protection
- Overflow
- Vents



# STORAGE TANKS CONT.

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- Silt Stop
- Water Level Indicator
- Altitude Control Valves
- Steel Storage Tanks
  - Two Side Manholes
  - Top Manhole
  - Gasket
  - Locked
  - Hinged
- VOC Testing
- Coliform Testing-  
AWWA C652-19





# DISTRIBUTION SYSTEMS

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- Network Hydraulic Analysis
- Fire Hydrants
- Fire Flow/Demand Letter
- Dead Ends
- Materials
- Isolation Valves
- Air Release Valves
- Blow Off Valves
- Plan and Profile



## DISTRIBUTION SYSTEMS CONT.

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- Chambers, Vaults, Pits, Manholes
- Easements
- Bedding
- Burial Depth
- Thrust Block/Restraints
- Marking
- Pressure Testing
- Disinfection and Coliform Sampling AWWA C651-14
- Sealing and Closing Pipes at End of Workday

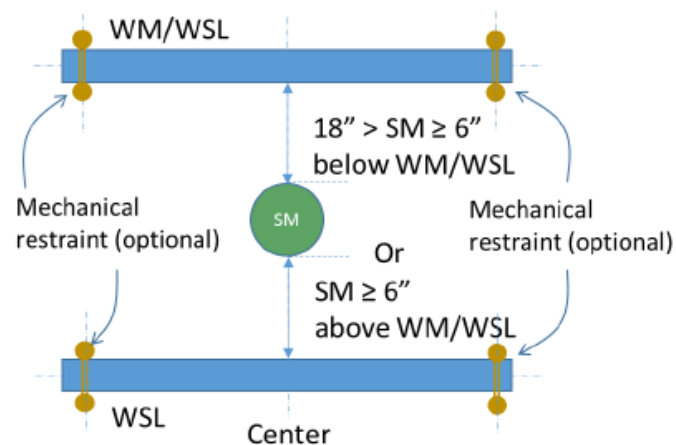




# SEPARATION OF LINES

- Sewer Main Parallel to Water Main/Water Service Lateral
- Sewer Lateral Parallel to Water Main/Water Service Lateral
- Sewer Main Crossing Water Main/Water Service Lateral
- Sewer Lateral Crossing Water Main/Water Service Lateral
- Water Line Crossing Surface Water

## Mitigation Required



# SEPARATION OF LINES CONT.

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*Guidance for Areas Requiring Mitigation for  
Water and Sewer Separation*

*Edition 1.1  
Updated November 2018*



Bureau of Safe Drinking Water

# CROSS CONNECTION CONTROL

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- Backsiphonage and Backpressure
- Fire Service Laterals
- Townhomes and Condos
- Air Gap
- Reduced Pressure Principle Assembly
- Double Check
- Atmospheric Vacuum Breaker
- Pressure Vacuum Breaker
- USC Manual of Cross Connection Control
- USC List of Approved Devices
- Irrigation Systems
- Stop and Waste Valves



# WATER HAULING

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- Not Intended for Permanent Source of Water
- Permitted Water Hauler
- Water Hauled from Permitted Water System
- Coliform Testing
- Chlorine Residual
- Marking of Vehicle



## SUBDIVISION REVIEW (NAC 278)

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- Tentative Map
- Improvement Plans- Three Plan Sets
- Final Map
- Grading
- 30 Day Review
- Review Fees



# THINGS TO CONSIDER

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## Over 600 Active Water Systems

- Hundreds of Projects at Different Stages
- Do Not Construct Prior to Approval
- Do Not Submit Incomplete Projects
- Do Not Call and Ask for Update One Week After Submitting/Resubmitting Project
- Cannot Jump the Review Line Queue
- Do Not Place Projects into Service WITHOUT Approval from BSDW
- Be Familiar with NRS and NAC 445A
- Ask Questions
- Use Chain of Command

# NEW COMMUNITY AND NTNC PWS

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## Two Copies of the Following

- Water Project Application
- Plan to Operate
- O&M, ERP, CCCP (Draft Accepted)

## Review Fee

# NEW PRIVATELY OWNED COMMUNITY PWS

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## Two Copies of the Following

- Water Project Application
- Application to Permit Privately Owned PWS
- O&M, ERP, CCCP (Draft Accepted)
- Letter of Intent From Local Governing Body

## Review Fee

# BSDW ENGINEERING CONTACTS

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Vacant, Plan Review

# Questions?



## Contact

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