

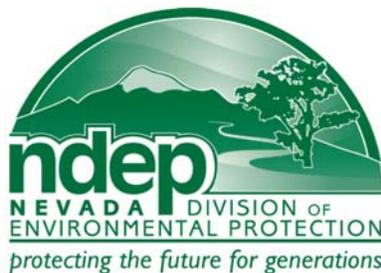
**Below are changes made to the Rationale/Petition following the public workshops and comment period.**

1. Revised the uses based on research and communication with the Lahontan Water Quality Board staff concerning where the criteria for a S.V.  $\leq 1000$  came from for wildlife and livestock beneficial uses. The reference to this value is in the EPA Criteria (green and blue books) for the irrigation beneficial use only. The primary use (\*) for the wildlife and livestock beneficial uses have been replaced with the secondary use (X) for all of the fecal coliform S.V.  $\leq 1000$  criteria (including: the Snake Basin, Bronco, Gray, and Smoke waterbodies).
2. Revised petition (petition only) by including all tables to be changed rather than using the “example table” process described within this rationale. Every table modified is included in the petition.

**Rationale for Proposed Revisions to the  
Nevada Water Quality Regulations  
NAC 445A.1256 to NAC 445A.2214  
*Statewide Fecal Coliform***



*Upper Dixie Creek, Elko County*



**Prepared by:**  
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Bureau of Water Quality Planning



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# Rationale for Proposed Revisions to the Nevada Water Quality Regulations NAC Numbers 445A.1256 through 2214

## Statewide Fecal Coliform

### Introduction

Section 303 of the Clean Water Act and 40 Code of Federal Regulations (40CFR) Part 131 require that States and authorized tribes routinely review and, as appropriate, update surface water quality standards that protect the designated uses of a water body and provide a basis for controlling discharges or releases of pollutants. The following rationale discusses the statewide revisions proposed by the Nevada Division of Environmental Protection, Bureau of Water Quality Planning (NDEP-BWQP) to the fecal coliform water quality regulations for Nevada waterbodies.

### Background

Water quality criteria for bacteria are concentrations of indicator organisms that should not be exceeded in order to protect human health from pathogen-caused illness. Water bodies may contain many different pathogens that cannot be measured directly; therefore, indicator organisms are used to predict the health risks from pathogens residing in water bodies. These indicator organisms are often not the direct cause of an illness, but have demonstrated characteristics that make them good predictors of whether harmful pathogens, such as viruses, protozoa, bacteria, and other disease-causing microorganisms, are present in the water bodies.

The Clean Water Act requires the United States Environmental Protection Agency (EPA) to periodically update ambient water quality criteria. EPA's most recent recommended water quality criteria for bacteria are set forth in the Ambient Water Quality Criteria for Bacteria – 1986 guidance document. The guidance document recommends that either *Escherichia coli* (*E. coli*) or enterococci be used to predict the presence of gastrointestinal illness-causing pathogens in freshwater. EPA obtained the data supporting the recommended bacterial water quality criteria from a series of research studies examining the relationship between swimming-associated illness and the microbial quantity in the waters used for swimming and other

recreational activities. The results of these studies demonstrated that fecal coliforms, the indicator organism originally recommended in 1968 by the Federal Water Pollution Control Administration did not provide a good correlation to swimming-associated illnesses. Other indicator organisms such as *E. coli* or enterococci were determined to provide a better correlation in fresh waters. Consequently, EPA recommended that *E. coli* or enterococci rather than fecal coliforms be implemented as the bacterial indicator in state, territory, and tribal water quality programs.

In November 2002, NDEP-BWQP completed a statewide revision to the bacteria water quality standards. This revision involved incorporating *E. coli* criteria into the State of Nevada water quality standards to provide a similar level of protection as provided by existing fecal coliform criteria. As recommended in the EPA guidance, both fecal coliform and *E. coli* were included in the water quality standards to ensure consistency and continuity in state's water quality programs for 10 years. EPA's recommendation was to ensure protection of human health during water contact recreational activities and allowed states to establish an adequate database of *E. coli* levels in the waterbodies to support subsequent transition to the recommended *E. coli* protective criteria levels. The *E. coli* water quality standards were adopted by the State Environmental Commission on November 19, 2002 and approved by EPA in March 2003.

### **Proposed Revision to Fecal Coliform Water Quality Standard**

It is proposed to revise the fecal coliform standard that currently exists statewide on most of Nevada's waters containing the *E. coli* water quality standard. The existing fecal coliform criteria (Table 1) will be replaced with a criteria value of single-value (S.V.)  $\leq 1000$  per 100 ml, which is the recommendation of the National Academy of Sciences (Water Quality Criteria 1972) for protection of waterbody beneficial uses other than water contact recreational use. The revised fecal coliform criteria would provide a level of protection for the beneficial uses for these waters which include: propagation of aquatic life and wildlife, recreation involving non-contact with the water, irrigation, watering of livestock, municipal or domestic supply, and industrial supply. The contact recreation beneficial use is protected by the existing *E. coli* bacteria water quality standards which would be in effect as the primary standard to protect the waters for swimming and other recreational activities.

Parameter	Existing Criteria	Footnote
Fecal Coliform -No./100 ml	$\leq 200/400$	Must not exceed a geometric mean of 200 per 100 milliliters based on a minimum of samples during any 30-day period, nor may more than 10 percent of total samples during any 30-day period exceed 400 per 100 milliliters.
Fecal Coliform -No./100 ml	$\leq 200/400$	Based on the minimum of not less than 5 samples taken over a 30-day period, the fecal coliform bacterial level may not exceed a geometric mean of 200 per 100 milliliters, nor may more than 10 percent of the total samples taken during any 30-day period exceed 400 per 100 milliliters.
Fecal Coliform -No./100 ml	footnote	The more stringent of the following apply: 1 The fecal coliform concentration must not exceed a geometric mean of 1,000 per 100 milliliters, nor may more than 20 percent of total samples exceed 2,400 per 100 milliliters. 2 The fecal coliform concentration must not exceed the 95th percentile of the annual geometric mean or the 95th percentile of n, where n equals a certain number of single value samples as determined by the Division.
Fecal Coliform -No./100 ml	A.G.M. $\leq 1000$ S.V. $\leq 2000$	None

**Table 1.** Existing fecal coliform bacteria criteria proposed to be changed to single value (S.V.)  $\leq 1000$  per 100 ml.

There are seven (7) waterbodies in this rationale and petition (see Example Tables 7 and 8) that have an existing fecal coliform standard annual geometric mean (A.G.M.) of  $\leq 1000$  per 100 ml and a S.V. of  $\leq 2000$  per 100 ml. This standard is less stringent than the proposed fecal coliform criteria of S.V.  $\leq 1000$  per 100 ml. The latest water quality assessment data (7 years) shows that 2 of these 7 waterbodies (Muddy River at Lake Mead and Virgin River at Lake Mead) would not meet the proposed fecal coliform S.V. of  $\leq 1000$  per 100 ml standard. These are the only two waterbodies being updated that are exceeding the new criteria. In the DRAFT 2008-10 Integrated Report, the Muddy River at Lake Mead already exceeds the existing standard of an A.G.M. of  $\leq 1000$  per 100 ml and a S.V. of  $\leq 2000$  per 100 ml standard and is listed as impaired for non-contact recreation.

NDEP-BWQP proposes to update the fecal coliform standard for these waters to current EPA criteria and to remain consistent across all waters within the state having the E. coli standard protecting the contact recreation beneficial use.

At this time, NDEP is proposing to revise the bacterial criteria in the water quality standards for all waters of the state to S.V.  $\leq 1000$  per 100 ml except Lake Mead (NAC 445A.2152 and 445A.2154) and Las Vegas Wash (NAC 445A.2156 and 445A.2158). The fecal coliform water

quality standards on Lake Mead and Las Vegas Wash will be reviewed in the next comprehensive water quality assessment and standards review of these waters.

### Summary and Example Tables

This is a statewide change to the fecal coliform parameter which affects most of the water quality standards tables within NAC 445A.1256 to NAC 445A.2214. There are 226 tables to be changed with variations of the fecal coliform standard. An example table (representing the first occurrence of a different version of the fecal coliform standard) illustrates the changes to be made to a select group of tables. The select group of tables are listed following each example table and are identified by the NAC 445A number. Each table in the select group will require the modifications illustrated in the example table. Each change to the table also includes deletion of the applicable footnote as illustrated. Note: an example table and group of tables have been created for each occurrence of a different footnote identifier.

#### EXAMPLE TABLE 1

**NAC 445A.1256 Northwest Region: Boulder Reservoir. (NRS 445A.425, 445A.520)** The limits of this table apply to the entire body of water known as Boulder Reservoir. Boulder Reservoir is located in Washoe County.

#### STANDARDS OF WATER QUALITY Boulder Reservoir

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>											
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh	
Beneficial Uses			X	X	X	X	X	X		X				
Aquatic Life Species of Concern														
Temperature - °C $\Delta T^b$ - °C		S.V. $\leq$ 20 $\Delta T = 0$			*	X								
pH - SU		S.V. 6.5 - 9.0	X	X	*	*		X		*				
Total Phosphorus (as P) - mg/l		S.V. $\leq$ 0.025			*	*	X	X						
Dissolved Oxygen - mg/l		S.V. $\geq$ 6.0	X		*	X	X	X		X				
Total Ammonia (as N) - mg/l		<sup>c</sup>			*			X						

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
Total Dissolved Solids - mg/l		S.V. ≤ 500 or the 95th percentile (whichever is less).	X	X					*						
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X								
Fecal Coliform - No./100 ml		≤ 200/400 <sup>d</sup> S.V. ≤ 1000	X	X*		*	X	X		X					

\* = The most restrictive beneficial use.

X = Beneficial use.

<sup>a</sup> Refer to NAC 445A.122 and 445A.1252 for beneficial use terminology.

<sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.

<sup>c</sup> The ambient water quality criteria for ammonia are specified in NAC 445A.118.

<sup>d</sup> ~~Must not exceed a geometric mean of 200 per 100 milliliters based on a minimum of 5 samples during any 30-day period, nor may more than 10 percent of total samples during any 30-day period exceed 400 per 100 milliliters.~~

The following tables identified by the NAC 445A number are to be changed pursuant to the Example Table 1 shown above:

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1256	Boulder Reservoir	1578	Starr Creek
1258	Blue Lakes	1704	Hunter Creek @ Hunter Lake
1262	Catnip Reservoir	1706	Hunter Lake
1264	Wall Canyon Reservoir	1708	Hunter Creek @ Truckee River
1266	Knott Creek Reservoir	1728	Franktown Creek Upper
1268	Onion Valley Reservoir	1732	Franktown Creek @ Washoe Lake
1288	Squaw Creek Reservoir	1734	Hobart Reservoir and Tributaries
1292	Negro Creek	1736	Ophir Creek @ State Route 429
1294	Summit Lake	1738	Ophir Creek @ Washoe Lake
1296	Mahogany Creek	1742	Price's Lakes
1298	Leonard Creek	1744	Davis Lake
1302	Bilk Creek, Upper	1746	Galena Creek Upper
1304	Bilk Creek @ Bilk Creek Reservoir	1748	Galena Creek Middle
1306	Bilk Creek Reservoir	1754	White's Creek Upper

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1308	Bottle Creek	1756	White's Creek @ Steamboat Ditch
1312	Quinn River, East and South Forks	1758	White's Creek @ Steamboat Creek
1364	Salmon Falls Creek, North Fork	1828	Daggett Creek
1366	Salmon Falls Creek, South Fork	1832	Genoa Creek
1368	Camp Creek @ National Forest Boundary	1834	Sierra Canyon Creek
1372	Camp Creek @ South Fork Salmon Falls Creek	1836	Clear Creek @ Gaging Station
1374	Cottonwood Creek @ National Forest Boundary	1838	Clear Creek @ Carson River
1376	Cottonwood Creek @ South Fork Salmon Falls Creek	1842	Kings Canyon
1378	Canyon Creek @ National Forest Boundary	1844	Ash Canyon
1382	Canyon Creek @ South Fork Salmon Falls Creek	1926	Cottonwood Creek
1384	Bear Creek	1928	Squaw Creek
1386	76 Creek	1932	Rose Creek
1388	Owyhee River above Wildhorse Reservoir	1934	Corey Creek
1392	Deep Creek	1966	Star Creek
1394	Penrod Creek, including Tributaries	1968	Willow Creek Reservoir
1396	Hendricks Creek	1972	Peavine Creek
1398	Wildhorse Reservoir	1974	Jett Creek
1402	Brown's Gulch	1976	SF Twin River
1404	Jack Creek	1978	NF Twin River
1406	Harrington Creek	1982	Kingston Creek @ Groves Lake
1408	Bull Run Reservoir	1984	Groves Lake
1412	Wilson Reservoir	1986	Kingston Creek below Groves Lake
1456	NF Humboldt River & Tribs @ National Forest Boundary	1988	Birch Creek @ National Forest Boundary
1458	NF Humboldt River @ Beaver Creek	1992	Birch Creek below National Forest Boundary
1462	NF Humboldt River @ Humboldt River	1994	Skull Creek
1464	SF Humboldt River and Tributaries @ Lee	1996	Steiner Creek
1466	SF Humboldt River @ Humboldt River	1998	Pine Creek (Nye County)
1472	NF Little Humboldt River @ National Forest Boundary	2002	Barley Creek
1474	NF Little Humboldt River @ SF Humboldt River	2004	Mosquito Creek

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1476	SF Little Humboldt River @ Elko-Humboldt County Line	2006	Stoneberger Creek
1478	SF Little Humboldt River @ NF Humboldt River	2008	Roberts Creek @ Roberts Creek Reservoir
1482	Mary's River Upper	2012	Roberts Creek below Roberts Creek Reservoir
1484	Mary's River @ Humboldt River	2014	Fish Springs Pond
1486	Tabor Creek	2016	Illipah Reservoir
1488	Maggie Creek Tributaries	2018	Ruby Marsh
1492	Maggie Creek @ Jack Creek	2022	Angel Lake
1498	Secret Creek @ National Forest Boundary	2024	Pole Canyon Creek
1502	Secret Creek @ Humboldt River	2026	Goshute Creek
1504	Lamoille Creek @ Gaging Station	2038	North Creek
1506	Lamoille Creek @ Humboldt River	2042	East Creek
1512	Denay Creek @ Tonkin Reservoir	2044	Bird Creek
1514	Tonkin Reservoir	2046	Timber Creek
1516	Denay Creek below Tonkin Reservoir	2048	Berry Creek
1518	Rock Creek @ Squaw Valley Ranch	2052	Duck Creek
1524	Willow Creek	2054	Cleve Creek
1526	Willow Creek Reservoir	2056	Cave Creek
1528	Pole Creek	2058	Cave Lake
1532	Water Canyon Creek	2062	Pine Creek (White Pine County)
1534	Martin Creek @ National Forest Boundary	2064	Ridge Creek
1536	Martin Creek below National Forest Boundary	2066	Currant Creek @ National Forest Boundary
1538	Dutch John Creek	2068	Currant Creek @ Currant
1542	Huntington Creek @ White Pine-Elko County Line	2102	Baker Creek
1544	Huntington Creek @ Smith Creek	2104	Lehman Creek
1546	Huntington Creek @ SF Humboldt River	2106	Silver Creek
1548	Green Mountain Creek @ National Forest Boundary	2108	Silver Creek Reservoir
1552	Green Mountain Creek @ Corral Creek	2112	Hendry's Creek
1554	Toyn Creek	2184	White River @ National Forest Boundary
1556	Reese Creek @ Indian Creek	2186	White River @ Ellison Creek
1558	Reese River @ State Route 722	2188	Dacey Reservoir
1564	San Juan Creek	2192	Sunnyside Creek

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1566	Big Creek @ Forest Service Campground	2194	Adams McGill Reservoir
1568	Big Creek below Forest Service Campground	2196	Hay Meadow Reservoir
1572	Mill Creek	2206	Eagle Valley Creek
1574	Lewis Creek	2208	Eagle Valley Reservoir
1576	Iowa Canyon Reservoir	2214	Clover Creek

**EXAMPLE TABLE 2**

**NAC 445A.1436 Humboldt Region: Humboldt River near Osino. (NRS 445A.425, 445A.520)** The limits of this table apply to the body of water known as the Humboldt River from the upstream source of the main stem to Osino. This segment of the Humboldt River is located in Elko County.

**STANDARDS OF WATER QUALITY  
Humboldt River near Osino**

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
Beneficial Uses			X	X	X	X	X	X	X	X					
Aquatic Life Species of Concern			Warm-water fishery.												
Temperature - °C $\Delta T^b$ - °C	$\Delta T = 0$	$\Delta T \leq 2$			*	X									
pH - SU	A-Avg. 7.0 - 8.3 S.V. 7.0 - 8.5	S.V. 6.5 - 9.0 $\Delta pH \pm 0.5$	X	X	X	*		X	X	*					
Dissolved Oxygen - mg/l		S.V. $\geq 5.0$	X		*	X	X	X		X					
Chlorides - mg/l	A-Avg. $\leq 22$ S.V. $\leq 25$	S.V. $\leq 250$	X	X				*		X					
Total Phosphorus (as P) - mg/l		Apr-Nov Seasonal Avg. $\leq 0.1$			*	X	X	X							
Nitrogen species (as N) - mg/l	Total Nitrogen A-Avg. $\leq 1.5$ S.V. Apr-Nov $\leq 2.4$	Nitrate S.V. $\leq 10$ Nitrite S.V. $\leq 1.0$	X	X	X			*		X					
Total Ammonia (as N) - mg/l		<sup>c</sup>			*										
Total Dissolved Solids - mg/l	A-Avg. $\leq 370$ S.V. $\leq 385$	A-Avg. $\leq 500$	X	X				*							
Suspended Solids - mg/l		Annual Median $\leq 80^d$			*										
Sulfate - mg/l		S.V. $\leq 250$						*							
Color - PCU	<sup>e</sup>	No Adverse Effects						*							
Turbidity - NTU		S.V. $\leq 50$			*			X							
E. coli - No./100 ml		A.G.M. $\leq 126$ S.V. $\leq 410$				*	X								

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
Fecal Coliform -No./100 ml	A.G.M. ≤ 75 S.V. ≤ 200	≤ 200/400 <sup>f</sup> S.V. ≤ 1000	X	X*		*	X	X			X				
Sodium – SAR		A-Avg. ≤ 8		*				X							

\* = The most restrictive beneficial use.

X = Beneficial use.

<sup>a</sup> Refer to NAC 445A.122 and 445A.1432 for beneficial use terminology.

<sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone.

<sup>c</sup> The ambient water quality criteria for ammonia are specified in NAC 445A.118.

<sup>d</sup> The maximum allowable point source discharge is S.V. ≤ 80 mg/l of suspended solids.

<sup>e</sup> Increase in color must not be more than 10 PCU above natural conditions.

<sup>f</sup> ~~Based on the minimum of not less than 5 samples taken over a 30-day period, the fecal coliform bacterial level may not exceed a geometric mean of 200 per 100 milliliters, nor may more than 10 percent of the total samples taken during any 30-day period exceed 400 per 100 milliliters.~~

The following tables identified by the NAC 445A number are to be changed pursuant to the Example Table 2 shown above:

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1436	Humboldt River near Osino	1448	Humboldt River @ Woolsey
1438	Humboldt River @ Palisade	2146	Colorado River below Davis Dam
1442	Humboldt River @ Battle Mountain	2148	Colorado River below Hoover Dam
1444	Humboldt River @ State Highway 789	2178	Beaver Dam Wash
1446	Humboldt River @ Imlay		

### EXAMPLE TABLE 3

**NAC 445A.1682 Truckee Region: Truckee River at the state line. (NRS 445A.425, 445A.520)** The limits of this table apply to the body of water known as the Truckee River at the California-Nevada state line. This segment of the Truckee River is located in Washoe County.

**STANDARDS OF WATER QUALITY**  
Truckee River at the state line

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>													
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh			
Beneficial Uses			X	X	X	X	X	X	X	X	X					
Aquatic Life Species of Concern			All life stages of mountain whitefish, rainbow trout and brown trout.													
Temperature - °C ΔT <sup>b</sup> - °C	ΔT = 0	S.V. Nov-Mar ≤ 7 S.V. Apr-May ≤ 13 S.V. Jun ≤ 17 S.V. Jul ≤ 21 S.V. Aug ≤ 22 S.V. Sep-Oct ≤ 23 ΔT ≤ 2			*	X										
pH - SU	S.V. 7.0 - 8.3	S.V. 6.5 - 9.0 ΔpH ± 0.5	X	X	X	*			X	X	*					
Total Phosphates (as P) - mg/l	A-Avg. ≤ 0.03	A-Avg. ≤ 0.10			*	*		X	X							
Ortho Phosphate (as P) - mg/l	S.V. ≤ 0.01	S.V. ≤ 0.05			*	*		X	X							
Nitrogen Species (as N) - mg/l	Total Nitrogen A-Avg. ≤ 0.3 S.V. ≤ 0.43	Nitrate S.V. ≤ 2.0 Nitrite S.V. ≤ 0.04			*	*		X	X							
Total Ammonia (as N) - mg/l		c			*											
Dissolved Oxygen - mg/l		S.V. Nov-Mar ≥ 6.0 S.V. Apr-Oct ≥ 5.0	X		*	X	X	X			X					
Suspended Solids - mg/l	A-Avg. ≤ 15.0	S.V. ≤ 25			*											
Turbidity - NTU	A-Avg. ≤ 5.0 S.V. ≤ 9.0	S.V. ≤ 10.00			*			X								
Color - PCU	d	S.V. ≤ 75							*							
Total Dissolved Solids - mg/l	A-Avg. ≤ 70.0 S.V. ≤ 85.0	A-Avg. ≤ 500	X	X					*							
Chlorides - mg/l	A-Avg. ≤ 7.0 S.V. ≤ 10.0	S.V. ≤ 250	X	X					*		X					
Sulfate - mg/l	A-Avg. ≤ 7.0 S.V. ≤ 8.0	S.V. ≤ 250							*							
Sodium - SAR	A-Avg. ≤ 0.5 S.V. ≤ 0.6	A-Avg. ≤ 8		*				X								
Alkalinity (as CaCO <sub>3</sub> ) - mg/l		< 25% change from natural conditions			*						X					
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X									
Fecal Coliform - No./100 ml	A.G.M. ≤ 30.0 S.V. ≤ 150.0	≤ 200/400 <sup>e</sup> <i>S.V. ≤ 1000</i>	X	X	*	*	X	X			X					
BOD - mg/l		A-Avg. ≤ 2.5 S.V. ≤ 3.0							*							

\* = The most restrictive beneficial use.

X = Beneficial use.

- <sup>a</sup> Refer to NAC 445A.122 and 445A.1622 for beneficial use terminology.
- <sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.
- <sup>c</sup> The ambient water quality criteria for ammonia are specified in NAC 445A.118.
- <sup>d</sup> Increase in color must not be more than 10 PCU above natural conditions.
- <sup>e</sup> ~~Based on the minimum of not less than 5 samples taken over a 30-day period, the fecal coliform bacterial level may not exceed a geometric mean of 200 per 100 milliliters, nor may more than 10 percent of the total samples taken during any 30-day period exceed 400 per 100 milliliters.~~

The following tables identified by the NAC 445A number are to be changed pursuant to the Example Table 3 shown above:

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1682	Truckee River @ Stateline	1814	Carson River @ Mexican Ditch Gage
1684	Truckee River @ Idlewild	1816	Carson River near New Empire
1686	Truckee River @ McCarran	1818	Carson River @ Dayton Bridge
1796	WF Carson River @ Stateline	1822	Carson River @ Weeks
1798	Bryant Creek	1824	Carson River @ Lahontan Dam
1802	EF Carson River @ Stateline	1956	Chiatovich Creek
1804	EF Carson River @ U.S. Highway 395	1958	Indian Creek
1806	EF Carson River @ Muller Lane	1962	Leidy Creek
1808	Carson River @ Genoa Lane	2096	Snake Creek above Fish Hatchery
1812	Carson River @ Cradlebaugh Bridge		

**EXAMPLE TABLE 4**

**NAC 445A.1688 Truckee Region: Truckee River at Lockwood Bridge. (NRS 445A.425, 445A.520)** The limits of this table apply to the body of water known as the Truckee River from the East McCarran Boulevard Bridge to the Lockwood Bridge. This segment of the Truckee River is located in Storey and Washoe Counties.

STANDARDS OF WATER QUALITY  
Truckee River at Lockwood Bridge

PARAMETER	REQUIREMENTS	WATER QUALITY	Beneficial Use <sup>a</sup>
-----------	--------------	---------------	-----------------------------

	TO MAINTAIN EXISTING HIGHER QUALITY	STANDARDS FOR BENEFICIAL USES	Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X	X	X	X	X	X			
Aquatic Life Species of Concern			Juvenile and adult rainbow trout and brown trout.										
Temperature - °C		S.V. Nov-Mar ≤ 13 S.V. Apr ≤ 21 <sup>c</sup> S.V. May ≤ 22 <sup>c,d</sup> S.V. Jun-Oct ≤ 23 <sup>c,d</sup> ΔT ≤ 2			*	X							
ΔT <sup>b</sup> - °C	ΔT = 0												
pH - SU	S.V. 7.1 - 8.5	S.V. 6.5 - 9.0 ΔpH ± 0.5	X	X	X	*		X	X	*			
Total Phosphates (as P) - mg/l		A-Avg. ≤ 0.05			*	*	X	X					
Nitrogen Species (as N) - mg/l		Total N A-Avg. Total N ≤ 0.75 S.V. ≤ 1.2 Nitrate S.V. ≤ 2.0 Nitrite S.V. ≤ 0.04			*	*	X	X					
Total Ammonia (as N) - mg/l		<sup>e</sup>			*								
Dissolved Oxygen - mg/l		S.V. Nov-Mar ≥ 6.0 S.V. Apr-Oct ≥ 5.0	X		*	X	X	X		X			
Suspended Solids - mg/l	A-Avg. ≤ 25.0	S.V. ≤ 50			*								
Turbidity - NTU		S.V. ≤ 10			*			X					
Color - PCU	<sup>f</sup>	S.V. ≤ 75						*					
Total Dissolved Solids - mg/l	A-Avg. ≤ 210.0 S.V. ≤ 260.0	A-Avg. ≤ 500	X	X				*					
Chlorides - mg/l	A-Avg. ≤ 26.0 S.V. ≤ 30.0	S.V. ≤ 250	X	X				*		X			
Sulfate - mg/l	A-Avg. ≤ 39.0 S.V. ≤ 46.0	S.V. ≤ 250						*					
Sodium - SAR	A-Avg. ≤ 1.5 S.V. ≤ 2.0	A-Avg. ≤ 8		*				X					
Alkalinity (as CaCO <sub>3</sub> ) - mg/l		< 25% change from natural conditions			*					X			
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X						
Fecal Coliform - No./100 ml	A.G.M. ≤ 90.0 S.V. ≤ 300.0	≤ 200/400 <sup>g</sup> S.V. ≤ 1000	X	<del>X</del> *		*	X	X		X			

\* = The most restrictive beneficial use.

X = Beneficial use.

<sup>a</sup> Refer to [NAC 445A.122](#) and [445A.1622](#) for beneficial use terminology.

<sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard. The ΔT of ≤ 2°C is only for the Reno and Sparks Joint Wastewater Treatment Plant.

- <sup>c</sup> When flows are adequate to induce spawning runs of cui-ui and Lahontan cutthroat trout, the standard is 14°C from April through June.
- <sup>d</sup> The desired temperature for the protection of juvenile Lahontan cutthroat trout is 21°C, even though that temperature is not attainable at all times.
- <sup>e</sup> The ambient water quality criteria for ammonia are specified in [NAC 445A.118](#).
- <sup>f</sup> Increase in color must not be more than 10 PCU above natural conditions.
- ~~<sup>g</sup> Based on the minimum of not less than 5 samples taken over a 30-day period, the fecal coliform bacterial level may not exceed a geometric mean of 200 per 100 milliliters, nor may more than 10 percent of the total samples taken during any 30-day period exceed 400 per 100 milliliters.~~

The following tables identified by the NAC 445A number are to be changed pursuant to the [Example Table 4](#) shown above:

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1688	Truckee River @ Lockwood Bridge	1694	Truckee River @ Wadsworth Gage
1692	Truckee River @ Derby Dam		

### **EXAMPLE TABLE 5**

**NAC 445A.1452 Humboldt Region: Humboldt River at Rodgers Dam. (NRS 445A.425, 445A.520)** The limits of this table apply to the body of water known as the Humboldt River from Woolsey to Rodgers Dam. This segment of the Humboldt River is located in Pershing County.

#### STANDARDS OF WATER QUALITY Humboldt River at Rodgers Dam

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>											
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh	
Beneficial Uses			X	X	X	X	X	X	X	X	X			
Aquatic Life Species of Concern														
Temperature - °C $\Delta T^b$ - °C		S.V. $\leq$ 34 $\Delta T \leq$ 3			*	X								
pH – SU		S.V. 6.5 - 9.0	X	X	*	*		X	X	*				
Total Phosphorus (as P) - mg/l		S.V. $\leq$ 0.33			*	*	X	X						
Dissolved Oxygen - mg/l		S.V. $\geq$ 5.0	X		*	X	X	X		X				
Total Ammonia (as N) - mg/l		<sup>c</sup>			*			X						

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
Total Dissolved Solids - mg/l		S.V. ≤ 500 or the 95th percentile (whichever is less).	X	X					*						
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X								
Fecal Coliform - No./100 ml		<b>d</b> <i>S.V. ≤ 1000</i>	X	<del>X</del> *		*	X	X		X					

\* = The most restrictive beneficial use.

X = Beneficial use.

<sup>a</sup> Refer to NAC 445A.122 and 445A.1432 for beneficial use terminology.

<sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.

<sup>c</sup> The ambient water quality criteria for ammonia are specified in NAC 445A.118.

<sup>d</sup> ~~The more stringent of the following apply:~~

<sup>1</sup> ~~The fecal coliform concentration must not exceed a geometric mean of 1,000 per 100 milliliters, nor may more than 20 percent of total samples exceed 2,400 per 100 milliliters.~~

<sup>2</sup> ~~The fecal coliform concentration must not exceed the 95th percentile of the annual geometric mean or the 95th percentile of n, where n equals a certain number of single value samples as determined by the Division.~~

The following tables identified by the NAC 445A number are to be changed pursuant to the Example Table 5 shown above:

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1452	Humboldt River @ Rogers Dam	1854	Diagonal Drain
1468	Little Humboldt River	1856	South Carson Lake
1494	Maggie Creek @ Soap Creek	1858	Harmon Reservoir
1496	Maggie Creek @ Humboldt River	1862	Stillwater Marsh East of Westside Road
1508	J.D. Ponds	1918	Mason Valley WMA Bass, Crappie & North Ponds, Hinkson Slough

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
1522	Rock Creek below Squaw Valley Ranch	1922	Mason Valley Wildlife Management Area
1562	Reese River below State Route 722	1964	Fish Lake
1722	Washoe Lakes	2028	Gleason Creek @ State Highway 485
1724	Steamboat Creek @ Gaging Station	2036	Comins Reservoir
1752	Galena Creek @ Steamboat Creek	2098	Snake Creek below Fish Hatchery
1764	Tracy Pond	2182	Schroeder Reservoir
1826	Lower Carson River	2198	Nesbitt Lake
1846	V-Line Canal	2202	Pahranagat Reservoir
1848	Rattlesnake Reservoir	2212	Echo Canyon Reservoir
1852	Indian Lakes		

**EXAMPLE TABLE 6**

**NAC 445A.2204 Colorado Region: Bowman Reservoir. (NRS 445A.425, 445A.520)** The limits of this table apply to the entire body of water known as Bowman Reservoir. Bowman Reservoir is located in Clark County.

**STANDARDS OF WATER QUALITY  
Bowman Reservoir**

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
Beneficial Uses			X	X	X	X	X	X	X	X					
Aquatic Life Species of Concern															
Temperature - °C $\Delta T^b$		T ≤ 34 $\Delta T \leq 3^\circ C$			*										
pH Units		S.V. 6.5 - 9.0	X	X	*	X	X	X	X	*					
Total Phosphorus (as P) - mg/l		S.V. ≤ 0.33			*	X	X	X							
Dissolved Oxygen - mg/l		S.V. ≥ 5.0	X		*	X	X	X		X					
Total Ammonia (as N) - mg/l		c			*			X							
Total Dissolved Solids - mg/l		d	X	X				*							
Fecal Coliform - No./100 ml		e <i>S.V. ≤ 1000</i>	X	<del>X</del> *		<del>*</del>	X	<del>*</del> X		X					

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 298				*	X								
Fluoride (as total recoverable) – mg/l		S.V. ≤ 2.6	X	*											

\* = The most restrictive beneficial use.

X = Beneficial use.

<sup>a</sup> Refer to NAC 445A.122 and 445A.2142 for beneficial use terminology.

<sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.

<sup>c</sup> The ambient water quality criteria for ammonia are specified in NAC 445A.118.

<sup>d</sup> The salinity standard for the Colorado River System is specified in NAC 445A.143.

<sup>e</sup> ~~The more stringent of the following apply:~~

~~<sup>1</sup> The fecal coliform concentration must not exceed a geometric mean of 1,000 per 100 milliliters, nor may more than 20 percent of total samples exceed 2,400 per 100 milliliters.~~

~~<sup>2</sup> The fecal coliform concentration must not exceed the 95th percentile of the annual geometric mean or the 95th percentile of n, where n equals a certain number of single value samples as determined by the Division.~~

The following tables identified by the NAC 445A number are to be changed pursuant to the Example Table 6 shown above:

NAC 445A.	Waterbody Name
2204	Bowman Reservoir

### EXAMPLE TABLE 7

**NAC 445A.2162 Colorado Region: Virgin River at the state line. (NRS 445A.425, 445A.520)** The limits of this table apply to the body of water known as the Virgin River at the Arizona-Nevada state line, near Littlefield, Arizona. This segment of the Virgin River is located in Clark County.

### STANDARDS OF WATER QUALITY Virgin River at the state line

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
Beneficial Uses			X	X	X		X		X	X					
Aquatic Life Species of Concern															

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>												
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh		
Temperature - °C $\Delta T^b$ - °C	$\Delta T = 0$	S.V. Nov-Jun $\leq 21$ S.V. Jul-Oct $\leq 32$ $\Delta T \leq 2$			*										
pH - SU		S.V. 6.5 - 9.0 $\Delta pH \pm 0.5$	X	X	*		X		X	*					
Total Phosphates (as P) - mg/l	A-Avg. $\leq 0.06$ S.V. $\leq 0.1$	A-Avg. $\leq 0.1$			*		X								
Nitrogen Species (as N) - mg/l	Total Nitrogen A-Avg. $\leq 2.4$ S.V. $\leq 3.2$	Nitrate S.V. $\leq 90$ Nitrite S.V. $\leq 5.0$	X		*		X				X				
Total Ammonia (as N) - mg/l		<sup>c</sup>			*										
Dissolved Oxygen - mg/l		S.V. $\geq 5.0$	X		*		X				X				
Turbidity - NTU		<sup>d</sup>			*										
Color - PCU		<sup>e</sup>			*										
Total Dissolved Solids - mg/l		<sup>f</sup>	X	*											
Alkalinity (as CaCO <sub>3</sub> ) - mg/l		< 25% change from natural conditions			*						X				
E. coli - No./100 ml		A.G.M. $\leq 630$						*							
Fecal Coliform - No./100 ml	A.G.M. $\leq 450$ S.V. $\leq 1800$	<del>A.G.M. <math>\leq 1000</math></del> S.V. $\leq$ <del>2000</del> <b>1000</b>	X	<del>X</del> *			<del>*</del> X				X				

\* = The most restrictive beneficial use.

X = Beneficial use.

<sup>a</sup> Refer to NAC 445A.122 and 445A.2142 for beneficial use terminology.

<sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.

<sup>c</sup> The ambient water quality criteria for ammonia are specified in NAC 445A.118.

<sup>d</sup> Increase in turbidity must not be more than 10 NTU above natural conditions.

<sup>e</sup> Increase in color must not be more than 10 PCU above natural conditions.

<sup>f</sup> The salinity standard for the Colorado River System is specified in NAC 445A.143.

The following tables identified by the NAC 445A number are to be changed pursuant to the Example Table 7 shown above:

NAC 445A.	Waterbody Name	NAC 445A.	Waterbody Name
2162	Virgin River @ Stateline	2172	Muddy River @ Wells Siding diversion
2164	Virgin River @ Mesquite	2174	Muddy River @ Lake Mead
2166	Virgin River @ Lake Mead	2176	Meadow Valley Wash

**EXAMPLE TABLE 8**

**NAC 445A.2168 Colorado Region: Muddy River at the Glendale Bridge.** (NRS 445A.425, 445A.520) The limits of this table apply to the body of water known as the Muddy River from the river source to the Glendale Bridge, except for the length of the river within the exterior borders of the Moapa Indian Reservation. This segment of the Muddy River is located in Clark County.

**STANDARDS OF WATER QUALITY  
Muddy River at the Glendale Bridge**

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>													
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh			
Beneficial Uses			X	X	X	X	X	X	X	X	X					
Aquatic Life Species of Concern																
Temperature °C - Source Springs to Warm Springs Bridge		19≤T≤32			*											
Warm Springs Bridge to Glendale Bridge		15≤T≤30														
ΔT <sup>b</sup>	ΔT = 0°C	ΔT ≤ 2°C														
pH Units		S.V. 6.5 - 9.0 ΔpH ± 0.5 Max.	X	X	*	X	X	X	X	X	*					
Total Phosphorus (as P) - mg/l		A-Avg. ≤ 0.1			*	X	X	X								
Nitrogen Species (as N) - mg/l	Total Nitrogen A-Avg. ≤ 1.3 S.V. ≤ 1.4	Nitrate S.V. ≤ 10 Nitrite S.V. ≤ 1.0	X		X	X	X	*			X					
Total Ammonia (as N) - mg/l		c			*											
Dissolved Oxygen - mg/l		S.V. ≥ 5.0	X		*	X	X	X			X					
Turbidity - NTU		d			*			X								
Color - PCU		S.V. ≤ 75			X			*								
Total Dissolved Solids - mg/l		e	X	X				*								
Alkalinity (as CaCO <sub>3</sub> ) - mg/l		< 25% change from natural conditions			*						X					
Fecal Coliform - No./100 ml		<b>A.G.M. ≤ 1000</b> S.V. ≤ <b>2000 1000</b>	X	<del>X</del> *				<del>*</del> X	<del>*</del> X		X					
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	*									
Fluoride (as total recoverable) - mg/l		S.V. ≤ 2.6	X	*												

\* = The most restrictive beneficial use.

X = Beneficial use.

- <sup>a</sup> Refer to NAC 445A.122 and 445A.2142 for beneficial use terminology.
- <sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.
- <sup>c</sup> The ambient water quality criteria for ammonia are specified in NAC 445A.118.
- <sup>d</sup> Increase in turbidity must not be more than 10 NTU above natural conditions.
- <sup>e</sup> The salinity standard for the Colorado River System is specified in NAC 445A.143.

(Added to NAC by Environmental Comm'n by R160-06, eff. 8-26-2008)

The following tables identified by the NAC 445A number are to be changed pursuant to the Example Table 8 shown above:

NAC 445A.	Waterbody Name
2168	Muddy River @ Glendale Bridge