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**COLORADO RIVER COMMISSION**  
**OF NEVADA**

December 11, 2018

**RECEIVED**

DEC 13 2018

ENVIRONMENTAL PROTECTION

John Heggeness, Branch Supervisor  
Nevada Division of Environmental Protection  
Bureau of Water Quality Planning  
901 S. Stewart Street, Suite 4001  
Carson City, NV 89701

Dear Mr. John Heggeness,

The Colorado River Commission of Nevada (CRCNV) appreciates the opportunity to comment on the Nevada Division of Environmental Protection's "2018 Triennial Review Public Process to Solicit Comments on Nevada's Water Quality Standards." The CRCNV is the agency of the State of Nevada responsible for protecting the rights and interests of the State of Nevada's allocated share of Colorado River water.

CRCNV welcomes the opportunity provided by the Nevada Division of Environmental Protection (NDEP) to offer input on aspects of Nevada's water quality standards that should be considered for potential revision. CRCNV sees four main areas that need to be addressed. First, due to the drought in the Colorado River and subsequent lowering lake levels in Lake Mead, many of the current standards associated with the Las Vegas Bay will be difficult to apply because the locations will be in the open water of Boulder Basin. Second, when 62% of the volume of the reservoir is lost or the background concentration changes due to changes in the water quality from Lake Powell, it may be impossible to preserve the Requirements to Maintain Existing Higher Quality (RMHQ). Third, Lake Mead is a very large reservoir with three inflow area. Standards for the open water of a reservoir, by their very nature, cannot apply to inflowing transitional areas. In future Water Quality Integrated Reports please apply the language from NAC 445A.2152, "The Commission recognizes that at entrances of tributaries to Lake Mead, localized violations of standards may occur." Fourth, some of the beneficial uses, especially those that deal with aquatic life, should take into consideration the native endangered fish in the river rather than the introduced non-native fish.

**Colorado Region: Lake Mead (NAC445A.2152)**

Lake Mead is currently at elevation 1078 ft. ASL and full pool elevation is 1220 ft. ASL. With the drought in the southwest the elevation is only expected to decline further in the future. The inner Las Vegas Bay location is 1.2 miles from the confluence of the Las Vegas Wash and Lake Mead. This is a moveable station. As lake elevations decline this location has the potential to move into the open water of Boulder Basin, which has its own set of standards. The water quality 1.2 miles from the confluence of the Las Vegas Wash and Lake Mead may not meet the open water standard for the following:

**Water Quality Standard (WQS) – Nitrate – S.V. < 10 mg/L**  
**WQS – Total Dissolved Solids – S.V. < 1 000 mg/L**  
**WQS – Chloride – S.V. < 400 mg/L**  
**WQS – Sulfate – S.V. < 500 mg/L**

The Inner Las Vegas Bay designation and associated water quality standards should remain no matter how far the site may move into Boulder Basin.

**RMHQ – Chlorophyll a – Not more than 1 monthly mean in a calendar year at Station LWLVB 1.85 may exceed 45 µg/L.**

**The mean for chlorophyll a in summer (July 1 – September 30) must not exceed 40 µg/L at Station LWLVB 1.85, and the mean for 4 consecutive summer years must not exceed 30 µg/L.**

**The mean for chlorophyll a in the growing season (April 1 – September 30) must not exceed 16 µg/L at Station LWLVB 2.7 and 9 µg/L at Station LWLVB 3.5.**

The chlorophyll standards for sites 1.85 miles, 2.7 miles, and 3.5 miles from the confluence of the Las Vegas Wash and Lake Mead should take precedence over whether or not the site is in the open water of Boulder Basin.

**RMHQ – Chlorophyll a – The mean for chlorophyll a in the growing season (April - September 30) must not exceed 5 µg/L in the open water of Boulder Basin, Virgin Basin, Gregg Basin, and Pierce Basin. The single value must not exceed 10 µg/L for more than 5 percent of the samples.**

The open water of Boulder Basin designation should be changed to more than 3.5 miles from the confluence of the Las Vegas Wash and Lake Mead.

The language from NAC 445A.2152 should be applied to the areas of the Gregg and Virgin Basins closest to the inflows of the Colorado River and the Virgin and Muddy Rivers where the chlorophyll concentrations can exceed 10 µg/L for more than 5 percent of the samples and the growing season average can exceed 5 µg/L. The inflow areas receive the non-point source nutrients from the Colorado River and the Virgin and Muddy Rivers. Algal growth occurs near the confluence of the inflows and Lake Mead as the nutrients are consumed by the algae. The language "The Commission recognizes that at entrances of tributaries to Lake Mead, localized violations of standards may occur." should apply.

**RMHQ – Total Inorganic Nitrogen – 95% of S.V. samples < 4.5 mg/L**

The RMHQ for Total Inorganic Nitrogen may need modification to reflect the loss of 62% of the volume of Lake Mead. Changes in elevation alter the volume of water available for mixing. The background concentration of nitrogen in Lake Mead could also change due to changes in the inflowing water from Lake Powell due to the drought. There are also operational changes expected in Hoover Dam with lower lake levels. Currently, there are two elevations at which water is withdrawn from Lake Mead. In the future, if the lake falls below 1060 ft. ASL, this will change to one withdrawal point very deep in the reservoir. This change in withdrawal point has the potential to alter the water quality in lake Mead in ways that have not been previously seen.

**WQS – Suspended Solids – S.V. < 25 mg/L**  
**WQS Turbidity – S>V> < 25 NTU**

The suspended solids and turbidity standards are inappropriate for the areas closest to the inflow of the Virgin, Muddy, and Colorado Rivers. As the lake declines the sediment in the deltas are resuspended and moved into Lake Mead. In future Water Quality Integrated Reports please apply the language from NAC 445A.2152, "The Commission recognizes that at entrances of tributaries to Lake Mead, localized violations of standards may occur." The compliance point should allow for a transitional zone and be a distance from the end of the delta so that there is time for the larger particles to settle into the reservoir. Also, researchers have found that razorback suckers spawn close to these inflows due to the turbidity. The turbidity provides cover for the juvenile razorback suckers, so they have a chance to grow to a size where they cannot be eaten by predators. It is unfortunate that there is not more flexibility in water quality standard determinations that allow for consideration of the needs of endangered species.

**Colorado Region: Inner Las Vegas Bay (NAC 445A.2154)**

**RMHQ – Total Inorganic Nitrogen – 95% of S.V samples <5.3 mg/L**

The RMHQ for Total Inorganic Nitrogen may need modification to reflect the loss of 62% of the volume of Lake Mead. Changes in elevation alter the volume of water available for mixing. The background concentration of nitrogen in Lake Mead could also change due to changes in the inflowing water from Lake Powell due to the drought. There are also operational changes expected in Hoover Dam with lower lake levels. Currently, there are two elevations at which water is withdrawn from Lake Mead. In the future, if the lake falls below 1060 ft. ASL, this will change to one withdrawal point very deep in the reservoir. This change in withdrawal point has the potential to alter the water quality in Lake Mead in ways that have not been previously seen.

**WQS – Suspended Solids – S.V. < 25 mg/L**  
**WQS – Turbidity – S.V. < 25 NTU**

The suspended solids and turbidity standards are inappropriate for the areas closest to the Las Vegas Bay delta. As the lake declines the sediment in the deltas are resuspended and moved into Lake Mead. In future Water Quality Integrated Reports please apply the language from NAC 445A.2152, "The Commission recognizes that at entrances of

tributaries to Lake Mead, localized violations of standards may occur." The compliance point should allow for a transitional zone and be a distance from the end of the delta so that there is time for the larger particles to settle into the reservoir. Also, researchers have found that razorback suckers spawn close to the Las Vegas Wash and Lake Mead confluence due to the turbidity. The turbidity provides cover for the juvenile razorback suckers, so they have a chance to grow to a size where they cannot be eaten by predators. It is unfortunate that there is not more flexibility in water quality standard determinations that allow for consideration of the needs of endangered species.

**Colorado Region: Colorado River below Hoover Dam (NAC 445A.2148)**

The description of the reach regulated by this NAC is from Hoover Dam to the Lake Mohave Inlet. This description needs clarification. Please clarify if this reach covers from Hoover Dam to where Lake Mohave widens into a bowl or includes all of Lake Mohave. If the reach only covers from where below Hoover Dam to where Lake Mohave widens into a bowl, then the point where the lake widens to Davis Dam has no standards.

**RMHQ – Total Nitrogen – A. Avg < 1.0 mg/L  
S.V. < 1.5 mg/L**

The RMHQ for Total Nitrogen may need modification to reflect the loss of 62% of the volume of Lake Mead. Changes in elevation alter the volume of water available for mixing. The water quality in Lake Mohave and downstream is directly impacted by the water quality in Lake Mead.

**WQS – Temperature – S. V. Nov – Apr < 13 °C  
S. V. May – Jun < 17 °C  
S. V. Jul – Oct < 23 °C**

The temperature beneficial use standard should take into consideration the native endangered fish in Lake Mohave rather than the introduced non-native fish. The Colorado River below Hoover Dam is designated as critical habitat for the endangered razorback sucker and Lake Mohave contains the primary genetic brood stock for all remaining razorback suckers. The brood stock population target is 50,000 adults. The current temperature standards were developed for the cold-water non-native trout produced at the Willow Beach Fish Hatchery. Endangered razorback suckers are river fish and prefer warm turbid water.

Please consider segmenting the reach below Hoover Dam between the river section and the section where the river widens into a bowl and making the upper section a cold-water fishery and the lower section a warm-water fishery or returning the temperature standard to the pre-1985 change in standards. The pre-1985 standards were:

Avg. Jun - Sep < 20 °C  
S.V. Jun - Sep < 25°C  
S. V. Oct - May < 16 °C

Temperatures in the summer in this part of Nevada routinely exceed 100 °F. A standing body of water, such as a lake, cannot meet cold-water temperature standards in the summer.

**Colorado Region: Colorado River below Davis Dam (NAC 445A.2146)**

**WQS – Temperature –**     **S. V. Nov – Apr < 13 °C**  
                                      **S. V. May – Jun < 17 °C**  
                                      **S. V. Jul – Oct < 23 °C**

The temperature beneficial use standard should take into consideration the native endangered fish in the Colorado River below Davis Dam rather than the introduced non-native fish. Trout are not spawning below Davis Dam. The Lower Colorado River Multi-Species Conservation Program is stocking 6,000 razorback suckers annually for 45 years into this reach of the Colorado River to restore the species. The current temperature standards were developed for the stocked cold-water non-native trout. Endangered razorback suckers are river fish and prefer warm turbid water. Please consider changing the temperature standard to the pre-1985 standards. The pre-1985 standards were:

Avg. Jun - Sep < 20 °C  
S.V. Jun - Sep < 25°C  
S. V. Oct - May < 16 °C

If you have any questions about these comments please do not hesitate to contact me at 702-486-2669 or [proefer@crc.nv.gov](mailto:proefer@crc.nv.gov)

Sincerely,



Peggy Roefer  
Environmental Program Manager