



STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

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Response to EPA Comments on the Proposed Changes to Select Water Quality Standards for Nevada Waters in the Snake River Drainage Basin, NAC 445A.1332-1362; [Comment letter dated June 11, 2010]

EPA Comment 1.

NDEP proposes to add beneficial uses to the water quality standards for 4 new tributaries to waters in the Snake River Drainage Basin. If any of the proposed waters are warm water fisheries, please provide additional information/justification used to support the warm water fishery designation.

NDEP Response:

The four new tributary streams in the Snake River Drainage Basin are all considered cold water streams (based on NDOW Fishable Waters Map for Elko County). Additional language has been included in the rationale document to indicate that these four tributary streams are designated as cold water fisheries-aquatic life.

EPA Comment 2.

NDEP proposed to establish nitrate standards based on Gold Book recommendations for municipal supply. The use of Gold Book recommendations does not really protect the uses. Aquatic life toxicity concerns related to nitrate-nitrite may dictate a more stringent individual criteria. In the past, NDEP has based nitrate numbers on toxicity for aquatic life using the dynamics of the nitrite-nitrate equilibrium. We recommend that you again consider using this method to develop nitrate standards.

NDEP Response:

*The nitrate and nitrite standards proposed for the four tributary waters reflect EPA's recommended water quality criteria for protection of the beneficial uses proposed for these waters. NDEP's proposed **Nutrient Criteria Plan/Strategy** will evaluate the impact of nitrogen compounds (including nitrate and nitrite) in aquatic ecosystem eutrophication problems and will permit development of waterbody-specific nitrogen compound thresholds (over the long term) to protect designated aquatic life uses.*

EPA Comment 3 (paraphrased).

At a minimum, NDEP should consider the 1988 Chloride guidance which recommends concentrations for protection of aquatic life of 230 mg/l.

NDEP Response:

Chloride is a natural mineral salt that is ubiquitous throughout the different Nevada hydrobasins. Natural factors such as an arid climate; periodic drought conditions; and evaporation processes can inherently increase the chloride concentrations in surface waters. Except for select terminal waterbodies (e.g.

Humboldt Sink and Walker Lake), the chloride concentrations routinely measured in Nevada surface waters are generally below the proposed 250 mg/l water quality standard. Although the basis for the proposed chloride criteria is a secondary municipal and domestic supply standard, the 250 mg/l chloride threshold also provides for protection of freshwater fish, invertebrates, and plants that are found in Nevada surface waters. Additionally, the Division's proposed **Antidegradation Policy** would minimize any anthropogenic changes in chloride concentrations from existing water quality levels in the four tributary waters that could impact resident aquatic life.

Chloride is characterized by EPA as a "non-priority" pollutant and the recommended aquatic life protective values were based on work done by EPA in 1988 (Chloride, EPA 440/5-88-001). The appropriateness of the EPA recommended chloride aquatic life standards has been questioned in the scientific literature. The criteria values were based on the toxic effects of sodium chloride to aquatic life because that was the most complete data set and the assumption that chloride in the environment would most likely be due to anthropogenic use of sodium chloride. However, toxicity testing conducted on the chlorides of potassium, calcium, and magnesium indicated that they were generally more acutely toxic to aquatic life organisms than sodium chloride. In a natural environment, it is reasonable to assume that chloride would be associated with other ions than just sodium. Toxicological studies reported in the scientific literature do not provide overwhelming evidence that the toxicity to aquatic life was due to chloride rather than the associated metal ion.

References:

Biesinger, K. E. and G.M. Christensen. 1972. Effects of various metals on survival, growth, reproduction, and metabolism of Daphnia magna. J. Fish. Res. Board Can. 29: 1691-1700.

Dowden, B.F. and H.J. Bennett. 1965. Toxicity of selected chemicals to certain animals. J. Water Pollut. Control Fed. 37:1308-1316.

Hamilton, R.W., J.K. Buttner and R.G. Brunetti. 1975. Lethal levels of sodium chloride and potassium chloride for an oligochaete, a chironomid midge, and a caddisfly of Lake Michigan. Environ. Entomol. 4:1003-1006.

Trama, F.B. 1954. The acute toxicity of some common salts of sodium, potassium and calcium to the common bluegill (Lepomis macrochirus Raginesque). Proc. Acad. Nat. Sci. 106:185-205.

EPA Comment 4.

NDEP is proposing a DO standard for the four new tributaries of 6.0. We are concerned that a DO of 6 would provide less than full protection for cold water aquatic life. The Gold Book recommends 6.5 for protection of early life stages for cold water aquatic life designations.

NDEP Response:

The four new tributaries drain into major rivers in the Snake River Drainage Basin which have a beneficial use standard for dissolved oxygen (DO) of 6.0 mg/l. This beneficial use standard has been adopted by the State Environmental Commission for the majority of major river systems in Nevada and is intended to assure sufficient intragravel DO for protection of early aquatic life stages in coldwater systems. Additionally, the State of Idaho has adopted a DO standard of 6.0 mg/l for the Snake River Drainage Basin waters downstream from Nevada.

EPA Comment 5

EPA supports NDEP's inclusion of a total phosphorus standard in addition to the nutrient narrative standard. This inclusion will provide additional protection to each waterbody.

NDEP Response:

NDEP appreciates EPA support of the effort to develop and refine narrative nutrient standards. We feel that a narrative standard will allow a multiple lines of evidence approach to better evaluate and address nutrient pollution problems in Nevada surface waters.