

NEBRASKA ADMINISTRATIVE CODE

Title 117 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 7 - WATER QUALITY STANDARDS FOR WETLANDS

001 Wetlands serve a multitude of important functions which include, but are not limited to, providing habitat for aquatic life and other wildlife, food production, stormwater control and flood attenuation, erosion control, shoreline stabilization, nonpoint source runoff filtration, groundwater recharge, and aesthetics. Wetlands are characterized by extreme variations in hydrology, soils, vegetation, water quality, and biotic assemblages. The dynamic nature of wetlands requires standards which recognize their variability of natural water quality both through time at individual sites and between sites across the State. Wetland classifications, beneficial uses, and water quality criteria contained in this chapter reflect the unique characteristics of wetlands in Nebraska.

002 Application of Standards to Wetlands.

002.01 These standards apply to all natural wetlands and all artificial wetlands except as provided in paragraph 002.02. Numerical criteria which rely on water in order to be measured, will not be deemed applicable during periods when water is not present.

002.02 These standards do not apply to artificial wetlands constructed for the purpose of wastewater treatment, wastewater retention, or irrigation reuse. However, any discharge to surface waters from artificial wetlands constructed for these purposes is to meet the applicable standards for the receiving water.

002.03 Wastewater from domestic, municipal, or industrial sources authorized by NPDES permits to discharge to wetlands are to meet all applicable standards for the wetland. No mixing zones will be allowed within wetlands.

003 Wetland Classifications

Wetlands are classified into two categories based on hydrological characteristics which affect the attainable beneficial uses. For purposes of these standards, the two general classifications are surface-water overflow wetlands and isolated wetlands. Within each classification, specific wetland complexes and individual wetlands may be identified by their physical, chemical, and biological characteristics and functional values. Wetlands are defined in Chapter 1. Wetlands are identified and delineated using methods contained in the "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterway Experiment Station, Vicksburg, MS.

003.01 Surface-Water Overflow Wetlands.

These are wetlands which exhibit a surface water connection to an adjacent stream or lake on a regular or periodic basis. These wetlands have the potential to provide beneficial uses identical to those of the adjacent stream or lake in addition to the beneficial uses recognized for wetlands (paragraph 004). These wetlands will be protected for the beneficial uses of the adjacent stream or lake as assigned in Chapters 5 or 6 in addition to those identified for wetlands. Water quality criteria associated with assigned beneficial uses of adjacent waterbodies (Chapter 4) apply to surface-water overflow wetlands in addition to criteria associated with wetland beneficial uses. When numerical criteria associated with wetland aquatic life beneficial uses differ with aquatic life criteria associated with the adjacent stream or lake, the more stringent criteria apply.

003.02 Isolated Wetlands.

These are wetlands which have no regular or periodic surface water connection to an adjacent stream or lake. The source of water for these wetlands may be either ground water or surface runoff. These wetlands will be protected for the beneficial uses recognized for wetlands (paragraph 004). Water quality criteria associated with wetland beneficial uses apply to isolated wetlands.

004 Beneficial Uses

Beneficial uses are assigned to wetlands within or bordering upon the State of Nebraska. Assigned beneficial uses are protected by the narrative and numerical water quality criteria listed or referenced in this chapter. Additionally, assigned and existing beneficial uses are protected by the Antidegradation Clause in Chapter 3. Some uses require higher quality water than others. When multiple uses are assigned to the same wetland, all assigned uses will be protected.

Beneficial uses assigned to all wetlands are:

Aquatic Life

Wildlife

Agricultural Water Supply

Aesthetics

These uses are not intended in any way to conflict with the quantitative beneficial uses provided for in Neb. Rev. Stat., Ch 46, regulating irrigation or the authority of the Nebraska Department of Natural Resources.

004.01 Aquatic Life

Wetlands assigned this beneficial use provide, or could provide, habitat capable of supporting aquatic biota on a regular or periodic basis. Aquatic biota are life forms which require water to fulfill basic life functions such as reproduction, growth, and development. Examples of aquatic biota include, but are not limited to, fish, macroinvertebrates, amphibians, and hydrophytic vegetation.

004.01A General Criteria

Water quality criteria are established to protect assigned beneficial uses. However, traditional water quality parameters in wetlands such as pH, temperature, dissolved oxygen, ammonia, chloride, and conductivity may naturally vary outside accepted ranges for other surface waters. Water quality criteria for specific wetlands or wetland complexes, except numerical criteria for toxic substances (paragraph 004.01C1), petroleum oil (paragraph 004.01D), and residual chlorine (paragraph 004.01F), are to be based on natural background values for traditional water quality parameters. However, these criteria are to be no more stringent than those associated with the Class B Warmwater Aquatic Life classification or the General Criteria for Aquatic Life of Chapter 4, Paragraphs 003.01A, 003.01B, 003.01G, and 003.04B.

004.01B Biological Criteria

The biological integrity of wetlands is to be maintained and protected. Any human activity causing water pollution which would significantly degrade the biological integrity of wetlands is a violation of these Standards. Upland soil and water conservation practices or normal farming, silviculture, and ranching activities involving tilling, seeding, cultivating, harvesting, and grazing for the production of food, fiber, and forest products, will not be considered to cause significant degradation of biological integrity in wetlands. However, the criteria in section 004.01C for toxic substances are applicable to wetlands where such toxic substances are the result of activities listed within this subsection.

004.01B1 Any human activity causing water pollution which would cause a significant adverse impact to an identified “key species” is a violation of these Standards.

004.01B1a Key Species

Key aquatic species are identified endangered or threatened species. The following list defines the aquatic species considered by the Department to be key species. In addition to this list, any key species listed in Chapter 5 for a waterbody adjacent to a surface-water overflow wetland will be considered a key species for the wetland.

COMMON NAME

SCIENTIFIC NAME

Endangered Species

Saltwort

Salicornia rubra

Colorado Butterfly Plant

Gaura neomexicana
ssp. coloradensis

Threatened Species:

Western Prairie Fringed
Orchid

Platanthera praeclara

Ute Ladies’-tresses

Spiranthes diluvialis

Small White Lady’s
Slipper

Cypripedium candidum

004.01C Toxic Substances

Wetlands are to be free from toxic substances, alone or in combination with other substances, in concentrations that result in acute or chronic toxicity to aquatic life, except as specified in Chapter 2. Toxic substances are not to be present in concentrations that result in bioaccumulation or biomagnification in aquatic organisms which renders them unsuitable or unsafe for consumption.

004.01C1 Criteria for the protection of aquatic life and their uses are found in Title 117, Chapter 4, 003.01C1 with the exception of the following. These criteria are not to be exceeded. Unless otherwise noted, criteria are based on total concentrations.

<u>POLLUTANT</u>	<u>CRITERIA (µg/L)</u>		<u>CAS No.*</u>
	<u>Acute</u>	<u>Chronic</u>	
<u>Metals and Inorganics¹ :</u>			
Cadmium ²	$(ACF)e^{(0.9789[\ln hardness]-3.421)}$ a	$(CCF)e^{(0.7977[\ln hardness]-3.909)}$ b	7440-43-9
Chromium (III)	$(0.316)e^{(0.819[\ln hardness]+3.764)}$ a	$(0.860)e^{(0.819[\ln hardness]+0.724)}$ b	16065-83-1
Chromium (VI)	16 ^c	11 ^d	18540-29-9
Cyanide	41.3 ^a	9.8 ^b	57-12-5
Selenium	See 004.01C3		7782-49-2

^aOne-hour average concentration

^bFour-day average concentration

¹ Criteria for metals and inorganics apply to dissolved concentrations

² The conversion factors for cadmium are hardness dependent and defined by:

$$ACF = 1.136672 - [\ln hardness (0.041838)]$$

$$CCF = 1.101672 - [\ln hardness (0.041838)]$$

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004.01C2 The following criteria for the protection of human health based on consumption of fish and other aquatic organisms are not to be exceeded. These criteria are expressed as fish tissue concentrations (mg/kg fish).

<u>POLLUTANT</u>	<u>CRITERIA (mg/kg)</u>	<u>CAS No.*</u>
Methylmercury	0.215	22967-92-6

* Chemical Abstract Services Registry Number

004.01C3 The following Selenium criteria are for the protection of aquatic life. These criteria are expressed preferentially as fish tissue concentrations (mg/kg fish), followed by water column concentrations (mg/L) in the absence of fish tissue information.

<u>POLLUTANT</u>			<u>CAS No.*</u>	
Selenium			7782-49-2	
	<u>FISH TISSUE¹ CRITERIA</u>		<u>WATER COLUMN⁴ CRITERIA</u>	
Criterion Element	Egg/Ovary ²	Fish Whole Body or Muscle ³	Thirty-day average	Intermittent Exposure ⁵
Magnitude	15.1 mg/kg	8.5 mg/kg whole body or or 11.3 mg/kg muscle	1.5 µg/L	$WOC_{int} = \frac{WQC_{30\text{-day}} - C_{bkgrnd}(1 - f_{int})}{f_{int}}$
Duration	Instantaneous measurement ⁶	Instantaneous measurement ⁶	30 days	Number of days/month with an elevated concentration
Frequency	Not to be exceeded	Not to be exceeded	Not more than once in three years on average	Not more than once in three years on average

¹. Fish tissue elements are expressed as steady-state.

². Egg/Ovary supersedes any whole-body, muscle, or water column element when fish egg/ovary concentrations are measured.

³. Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water column concentrations are measured.

⁴. Water column values are based on dissolved total selenium in water and are derived from fish tissue values via bioaccumulation modeling. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data.

⁵. Where $WQC_{30\text{-day}}$ is the water column monthly element, for either a lake or stream; C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to 1 day).

⁶. Fish tissue data provide instantaneous point measurements that reflect integrative accumulation of selenium over time and space in fish populations at a given site.

* Chemical Abstract Services Registry Number

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004.01D Petroleum Oil.

Not to exceed 10 mg/L.

004.01E Alkalinity

No less than 20 mg/L as CaCO₃ except where natural background is less.

004.01F Residual Chlorine

004.01F1 One-hour average concentration not to exceed 19 µg/L.

004.01F2 Four-day average concentration not to exceed 11 µg/L.

004.02 Wildlife

Wetlands assigned this beneficial use provide, or could provide, habitat capable of supporting wildlife on a regular or periodic basis. Wildlife are undomesticated terrestrial or avian life forms which may utilize wetlands to support life functions such as watering, feeding, loafing, predator protection, and nesting. Examples of wildlife include, but are not limited to, furbearers, waterfowl, shorebirds, migratory birds, and reptiles.

004.02A General Criteria

Because wildlife utilizing wetlands rely on aquatic biota in many cases for food and habitat, general criteria and toxic criteria listed for the protection of aquatic life (paragraphs 004.01A and 004.01C) also apply for the protection of wildlife.

004.02B Biological Criteria

Any human activity causing water pollution which would cause a significant adverse impact to an identified “key species” is a violation of these Standards.

004.02B1 Key Species

Key wildlife species are identified endangered, threatened, or sensitive species. The following list defines the wildlife species considered by the Department to be key species.

COMMON NAMESCIENTIFIC NAMEEndangered Species:

Whooping Crane	<i>Grus americana</i>
Interior Least Tern	<i>Sternula antillarum athalassos</i>
River Otter	<i>Lontra canadensis</i>
American Burying Beetle	<i>Nicrophorus americanus</i>
Salt Creek Tiger Beetle	<i>Cicindela nevadica lincolniana</i>

Threatened Species:

Piping Plover	<i>Charadrius melodus</i>
Rufa Red Knot	<i>Calidris canutus rufa</i>
Western Massasauga	<i>Sistrurus tergeminus</i>

Sensitive Species

A freshwater snail	<i>Fossaria techella</i>
American Toad	<i>Anaxyrus americanus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Blanding's Turtle	<i>Emydoidea blandingii</i>
Graham's Crayfish Snake	<i>Regina grahamii</i>
Great Plains Narrowmouth Toad	<i>Gastrophryne olivacea</i>
Niobrara ambersnail	<i>Ostyloma haydeni</i>
Platte River Caddisfly	<i>Ironoquia plattensis</i>
Red-eared Slider	<i>Trachemys scripta elegans</i>
Smallmouth Salamander	<i>Ambystoma texanum</i>
Smooth Soft Shelled Turtle	<i>Apalone mutica</i>

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004.03 Agricultural Water Supply

Wetlands assigned this beneficial use are used or have the potential to be used for general agricultural purposes (e.g., irrigation and livestock watering) without treatment. In some cases, however, natural background water quality may limit their use for agricultural purposes.

004.03A General Criteria

Wastes or toxic substances introduced directly or indirectly by human activity in concentrations that would degrade the use (i.e., would produce undesirable physiological effects in crops or livestock) will not be allowed. Where natural background water quality limits the use of a wetland for agricultural purposes, water quality criteria for conductivity and selenium are to be based on the natural background condition.

004.03B Conductivity.

Not to exceed 2,000 umhos/cm between April 1 and September 30.

004.03C Nitrate and Nitrite as Nitrogen.

Not to exceed 100 mg/L.

004.03D Selenium.

Not to exceed 0.02mg/L.

004.04 Aesthetics.

This use applies to all wetlands of the state. To be aesthetically acceptable, wetlands are to be free from human-induced pollution which causes: 1) noxious odors; 2) floating, suspended, colloidal, or settleable materials that produce objectionable films, colors, turbidity, or deposits; and 3) the occurrence of undesirable or nuisance aquatic life (e.g., algal blooms). Wetlands are also to be free of junk, refuse, and discarded dead animals.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1501(1) and 81-1505(1)(2)

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