# 2010 Water Quality Integrated Report (Draft)

**Nebraska Department of Environmental Quality**

**Water Quality Division**

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## 1.0 Introduction

Section 303(d) of the federal Clean Water Act (CWA), which Congress enacted in 1972 requires states, territories and authorized tribes (states) to identify and establish a priority ranking for all waterbodies in where technology-based effluent limitations required by section 301 are not stringent enough to attain and maintain applicable water quality standards. Once identified states are to establish total maximum daily loads (TMDLs) for the pollutants causing impairment in those waterbodies, and submit, from time to time, the (revised) list of impaired waterbodies and TMDLs to the U.S. Environmental Protection Agency (EPA). The requirements to identify and establish TMDLs apply to all waterbodies regardless of whether a waterbody is impaired by point sources, nonpoint sources, or a combination of both. *Pronsolino v. Marcus*, 2000 WL 356305 (N.D. Cal. March 30, 2000.)

EPA issued regulations governing identification of impaired waterbodies and establishment of TMDLs at § 130.7 in 1985 and revised them in 1992 and again in 2000. However, on March 19, 2003, a final rule to formally and completely withdraw the 2000 regulations was published in the *Federal Register*. Therefore, the 2008 listing of impaired waters will be conducted under the 1985 TMDL regulations, as amended in 1992.

Section 305(b) of the CWA directs states to prepare a report every two (2) years that describes the status and trends of existing water quality, the extent to which designated uses are supported, pollution problems and sources, and the effectiveness of the water pollution control programs.

Section 314 of the CWA requires that each Section 305(b) submittal include an assessment of trends of significant public owned lakes including the extent of point and nonpoint source impacts due to toxics, conventional pollutants and acidification.

On May 09, 2009 EPA issued guidance for the 2010 waterbody assessments and reporting requirements for Section 303(d), Section 305(b) and Section 314 of the Clean Water Act. The final product is again being referred to as an "Integrated Report". EPA's goal for this report is to provide the general public with a comprehensive summary of state and national water quality. The NDEQ has opted to prepare such a report not only for the general public but also for water quality management planning purposes (e.g. future monitoring, TMDL development, best management practice implementation).

To facilitate the waterbody assessment process and accommodate the above recognized needs the Department prepared and utilized the *Methodologies for Waterbody Assessment and Developing the 2010 Integrated Report for Nebraska*. These procedures lay out the step-by-step process that was undertaken to characterize surface waterbodies.

## 2.0 Surface Water Waterbody Categories

Similar to the previous Integrated Reports (IR), the 2008 IR includes multiple categories of waterbodies to present information in a descriptive and comprehensive manner. The five waterbody categories are as follows:

***Category 1*** – Waterbodies where all designated uses are met.

***Category 2*** – Waterbodies where some of the designated uses are met but there is insufficient information to determine if all uses are being met.

***Category 3*** – Waterbodies where there is insufficient data to determine if any beneficial uses are being met.

***Category 4*** – Waterbody is impaired, but a TMDL is not needed. Sub-categories 4A, 4B, 4C and 4R outline the rationale for the waters not needing a TMDL:

***Category 4A*** – Waterbody assessment indicates the waterbody is impaired, but all of the required TMDLs have been completed.

***Category 4B*** – Waterbody is impaired, but "other pollution control requirements" are expected to address the water quality impairment(s) within a reasonable period of time. Other pollution control requirements include but are not limited to, National Pollutant Discharge Elimination System (NPDES) permits and best management practices.

***Category 4C*** – Waterbody is impaired but the impairment is not caused by a pollutant. This category also includes waters where natural causes/sources have been determined to be the cause of the impairment. In general, natural causes/sources shall refer to those pollutants that originate from landscape geology and climactic conditions. It should be noted, this general description does not exclude parameters and can be utilized when appropriate justification is provided.

***Category 4R*** – Waterbody data exceeds the impairment threshold, however a TMDL may not be needed. The category will only be used for nutrient assessments in new or renovated lakes and reservoirs. Newly filled reservoirs usually go through a period of trophic instability – a trophic upsurge followed by the trophic decline (Holdren, et. al. 2001). Erroneous or non representative water quality assessments are likely to occur during this period. To account for this, all new or renovated reservoirs will be placed in this category for a period not to exceed eight years following the fill or re-fill process. After the eighth year monitoring data will be assessed and the waterbody will be appropriately placed into category 1, 2, or 5.

***Category 5*** – Waterbodies where one or more beneficial uses are determined to impaired by one or more pollutants and all of the TMDLs have not been developed. ***Category 5 waters constitute the Section 303(d) list subject to EPA approval/disapproval***.

## 3.0 Surface Water Data Sources

40 CFR Part 130.7 requires that "each state assemble and evaluate all existing and readily available water quality related data and information" to make the listing and assessment decisions. To facilitate this requirement, data was requested via email on October 01, 2009 from several sources, including federal, state and local agencies and other entities. A copy of the data request email will be submitted to EPA Region 7 as an attachment to this Integrated Report.

## 4.0 Surface Water Assessment Outcomes and Interpretation

Based on the procedures cited above, a waterbody beneficial use assessment can have one of four outcomes:

S = Supported Beneficial Use
I = Impaired Beneficial Use
NA = Not assessed
A blank cell in the tables will indicate the beneficial use is not assigned.

The format of the Integrated Report is set to allow the user to navigate through a river basin, similar to the tables found in Title 117 – Nebraska Surface Water Quality Standards. The tables list the waterbody identification number, name and applicable beneficial uses.

## 5.0 Surface Water Waterbody Beneficial Uses

Beneficial uses are assigned to all surface waters within or bordering the State and descriptions of each can be found in Title 117 – Nebraska Surface Water Quality Standards (Title 117), Chapter 4. All uses are not assigned to all waters and use attainability analyses are utilized on a waterbody by waterbody basis to determine whether or not the use(s) are applicable. The beneficial uses defined by Title 117 are:

- Primary Contact Recreation
- Aquatic Life – Coldwater A, Coldwater B, Warmwater A and Warmwater B
- Water Supply – Public Drinking Water, Agriculture and Industrial
- Aesthetics

Title 117 includes 1558 designated stream segments and 522 lakes/impounded waters. Table 5.0a presents the beneficial use totals by river basin for streams and 5.0b presents the beneficial use totals by river basin for the lakes/impounded waters.

**Table 5a – Beneficial Use Totals for Streams**

| | Big Blue | Elkhorn | Little Blue | Loup | Lower Platte | Middle Platte | Missouri Tributaries | Nemaha | Niobrara | North Platte | Republican | South Platte | White River-Hat Creek | Total Segments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Segments** | 63 | 135 | 38 | 107 | 126 | 29 | 136 | 326 | 269 | 136 | 102 | 28 | 63 | 1558 |
| **Primary Contact Recreation** | 10 | 23 | 6 | 37 | 16 | 13 | 21 | 20 | 53 | 42 | 33 | 16 | 18 | 308 |
| **Aquatic Life – Coldwater Class A** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 21 | 0 | 1 | 15 | 51 |
| **Aquatic Life – Coldwater Class B** | 0 | 1 | 0 | 36 | 1 | 3 | 3 | 0 | 164 | 79 | 19 | 13 | 36 | 355 |
| **Aquatic Life – Warmwater Class A** | 16 | 38 | 14 | 26 | 13 | 12 | 15 | 40 | 15 | 7 | 24 | 11 | 1 | 232 |
| **Aquatic Life – Warmwater Class B** | 47 | 96 | 24 | 45 | 112 | 14 | 118 | 286 | 76 | 29 | 59 | 3 | 11 | 920 |
| **Water Supply – Public Drinking Water** | 0 | 0 | 1 | 0 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 7 | 15 |
| **Water Supply – Industrial** | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 4 | 0 | 10 |
| **Water Supply – Agriculture Class A** | 63 | 135 | 38 | 107 | 121 | 29 | 136 | 326 | 269 | 136 | 102 | 28 | 63 | 1553 |
| **Water Supply – Agriculture Class B** | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| **Aesthetics** | 63 | 135 | 38 | 107 | 126 | 29 | 136 | 326 | 269 | 136 | 102 | 28 | 63 | 1558 |
| **Total** | | | | | | | | | | | | | | **1558** |

**Table 5b – Beneficial Use Totals for Lakes/Reservoirs**

| | Big Blue | Elkhorn | Little Blue | Loup | Lower Platte | Middle Platte | Missouri Tributaries | Nemaha | Niobrara | North Platte | Republican | South Platte | White River-Hat Creek | Total Lakes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Lakes** | 31 | 31 | 13 | 47 | 75 | 95 | 29 | 33 | 65 | 48 | 20 | 13 | 27 | 522 |
| **Primary Contact Recreation** | 31 | 31 | 13 | 47 | 75 | 95 | 29 | 33 | 65 | 48 | 20 | 13 | 27 | 522 |
| **Aquatic Life – Coldwater Class A** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Aquatic Life – Coldwater Class B** | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 3 | 1 | 1 | 14 | 23 |
| **Aquatic Life – Warmwater Class A** | 31 | 31 | 13 | 46 | 74 | 95 | 29 | 33 | 63 | 45 | 19 | 12 | 13 | 499 |
| **Aquatic Life – Warmwater Class B** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Water Supply – Public Drinking Water** | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| **Water Supply – Industrial** | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 2 | 1 | 0 | 2 | 0 | 10 |
| **Water Supply – Agriculture Class A** | 31 | 31 | 13 | 47 | 75 | 95 | 29 | 33 | 65 | 48 | 20 | 13 | 27 | 522 |
| **Water Supply – Agriculture Class B** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Aesthetics** | 31 | 31 | 13 | 47 | 75 | 95 | 29 | 33 | 65 | 48 | 20 | 13 | 27 | 522 |
| **Total** | | | | | | | | | | | | | | **522** |

## 6.0 Surface Water Waterbody Assessment Results

The results of the assessments by river basin and the state as a whole can be found on Table 6.0a for stream segments and 6.0b for lakes/reservoirs. As well, table 6.0c provides a summary of the monitoring and assessment activities for the number and sizes of waterbodies designated in Title 117.

**Table 6a – Results of 2010 Assessments for Streams**

| Basin | Category 1 | Category 2 | Category 3 | Category 4A | Category 4B | Category 4C | Category 5 | Basin Total |
|---|---|---|---|---|---|---|---|---|
| **Big Blue** | 0 | 15 | 32 | 0 | 0 | 0 | 16 | 63 |
| **Elkhorn** | 0 | 18 | 103 | 4 | 0 | 2 | 10 | 135 |
| **Little Blue** | 0 | 5 | 24 | 0 | 0 | 0 | 9 | 38 |
| **Loup** | 7 | 12 | 63 | 11 | 0 | 6 | 11 | 107 |
| **Lower Platte** | 3 | 19 | 76 | 4 | 1 | 9 | 15 | 126 |
| **Middle Platte** | 4 | 3 | 14 | 2 | 0 | 0 | 6 | 29 |
| **Missouri Tributaries** | 3 | 23 | 94 | 4 | 0 | 1 | 11 | 136 |
| **Nemaha** | 3 | 27 | 284 | 3 | 0 | 0 | 9 | 326 |
| **Niobrara** | 5 | 23 | 223 | 7 | 0 | 1 | 11 | 269 |
| **North Platte** | 1 | 16 | 100 | 5 | 0 | 5 | 10 | 136 |
| **Republican** | 4 | 11 | 54 | 4 | 0 | 2 | 28 | 102 |
| **South Platte** | 1 | 10 | 11 | 0 | 0 | 0 | 6 | 28 |
| **White-Hat** | 3 | 10 | 46 | 1 | 0 | 0 | 3 | 63 |
| **Total** | **34** | **192** | **1124** | **45** | **1** | **26** | **145** | **1558** |

**Table 6b – Results of 2010 Assessments for Lakes/reservoirs**

| Basin | Category 1 | Category 2 | Category 3 | Category 4A | Category 4B | Category 4C | Category 4R | Category 5 | Basin Total |
|---|---|---|---|---|---|---|---|---|---|
| **Big Blue** | 0 | 8 | 13 | 0 | 0 | 0 | 0 | 10 | 31 |
| **Elkhorn** | 0 | 8 | 18 | 0 | 0 | 0 | 2 | 3 | 30 |
| **Little Blue** | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 6 | 13 |
| **Loup** | 0 | 7 | 31 | 0 | 0 | 0 | 1 | 8 | 48 |
| **Lower Platte** | 3 | 9 | 38 | 0 | 0 | 0 | 4 | 21 | 75 |
| **Middle Platte** | 1 | 19 | 63 | 0 | 0 | 0 | 0 | 12 | 94 |
| **Missouri Tributaries** | 0 | 3 | 14 | 0 | 0 | 0 | 1 | 12 | 29 |
| **Nemaha** | 1 | 2 | 23 | 0 | 0 | 0 | 0 | 7 | 33 |
| **Niobrara** | 0 | 18 | 37 | 0 | 0 | 1 | 0 | 9 | 66 |
| **North Platte** | 1 | 7 | 32 | 1 | 0 | 2 | 1 | 5 | 48 |
| **Republican** | 0 | 4 | 6 | 0 | 0 | 0 | 1 | 9 | 18 |
| **South Platte** | 2 | 2 | 2 | 0 | 0 | 1 | 0 | 6 | 13 |
| **White-Hat** | 0 | 3 | 19 | 0 | 0 | 0 | 0 | 5 | 26 |
| **Total** | **8** | **94** | **299** | **1** | **0** | **4** | **10** | **113** | **522** |

**Table 6c – Statewide Monitoring and Assessment Summary**

| ***Streams*** | **Number of Segments** | **Percentage of Total Segments** | **Size Stream = miles, Lakes = acres** | **Percentage of Total Size** |
|---|---|---|---|---|
| **Total** | **1,558** | | **16,483** | |
| Category 1 | 34 | 2% | 793 | 5% |
| Category 2 | 192 | 12% | 2,636 | 16% |
| Category 3 | 1,124 | 72% | 7,475 | 45% |
| Category 4A | 45 | 3% | 1,359 | 8% |
| Category 4B | 1 | 0.1% | 3.4 | 0% |
| Category 4C | 26 | 2% | 516 | 3% |
| Category 5 | 113 | 7% | 3,700 | 22% |
| **Assessed** | **434** | **28%** | **9,008** | **55%** |
| | | | | |
| ***Lakes*** | | | | |
| **Total** | **522** | | **148,920** | |
| Category 1 | 8 | 2% | 6,038 | 4% |
| Category 2 | 94 | 18% | 13,902 | 9% |
| Category 3 | 299 | 57% | 10,083 | 7% |
| Category 4A | 1 | 0.2% | 435 | 0.3% |
| Category 4B | 0 | 0% | 0 | 0% |
| Category 4C | 4 | 0.8% | 619 | 0.4% |
| Category 4R | 10 | 2% | 1287 | 0.9% |
| Category 5 | 113 | 22% | 116,555 | 78% |
| **Assessed** | **223** | **43%** | **138,837** | **93%** |

## 7.0 Completed TMDLs and TMDLs Targeted for Completion in Next 2 Years

Section 303(d) of the CWA required that TMDLs be established for all identified impaired waters and set at a level to achieve the applicable water quality standards and assigned beneficial uses. Over the last several listing cycles the Department has made significant progress in the preparation and completion of the needed TMDLs. Table 7 provides a listing of the completed TMDLs within each river basin.

As required by 40 CFR Part 130.7, the TMDLs targeted for development within the next two years include all waterbodies in the Big Blue, Little Blue, Middle Platte, and Republican river basins. TMDLs may also be completed for additional waterbodies not in these basins in order to accompany Section 319 or other water quality improvement projects.

**Table 7 – Waterbodies With Established/Approved TMDLs**

| River Basin | Stream TMDLs | Lake/Reservoir TMDLs | Total |
|---|---|---|---|
| Big Blue | 3 | 2 | 5 |
| Elkhorn | 8 | 0 | 8 |
| Little Blue | 2 | 0 | 2 |
| Loup | 11 | 0 | 11 |
| Lower Platte | 12 | 9 | 21 |
| Middle Platte | 4 | 1 | 5 |
| Missouri Tributaries | 5 | 9 | 14 |
| Nemaha | 10 | 4 | 14 |
| Niobrara | 8 | 0 | 8 |
| North Platte | 8 | 1 | 9 |
| Republican | 5 | 0 | 5 |
| South Platte | 0 | 0 | 0 |
| White-Hat | 1 | 0 | 1 |
| **Total** | **77** | **26** | **103** |

# 8.0 Surface Water Quality Trends

## 8.1 Streams and Rivers

In 2001, the Department re-established a fixed station ambient network whereby several streams across the state would be systematically monitored. In 2002, the network was expanded by the inclusion of additional monitoring locations.

Stream monitoring locations can be segregated into one of two categories; basin *integrator* sites and basin *indicator* sites. Basin integrator sites are chosen to represent water-quality conditions of rivers and streams in large heterogeneous basins that are affected by complex combinations of land use settings and natural and human influences. Only one basin integrator site shall be selected for each major river basin. Basin indicator sites are those sites selected to characterize one or more factors influencing water quality such as significant point and non-point sources. A consideration given to site selection is the presence of a stream gauging station.

In 2004, the frequency of sampling was increased from once per month to twice per month during the months of April through September. The increase was aimed at obtaining data across the hydrograph.

For the purposes of evaluating trends in stream water quality, 4 parameters where considered: Dissolved oxygen, conductivity, atrazine and ammonia. Time series trends analysis was conducted for each of the four parameters at the basin integrator site and one basin indicator site.

A summary is provided in Table 8.0. The results of the analysis can be: increasing trend observed, decreasing trend observed and stable water quality (not increasing or decreasing). The Department considers a trend to be significant when the p-value is $\leq 0.05$.

## 8.2 Lakes and Reservoirs

Trend information was evaluated for seven waterbodies and were targeted for trend analysis based on the quality and quantity of the existing data set. Future IR will include additional waterbodies as the data sets are updated. Trend analysis for five parameters of importance for Nebraska lakes can be found in Table 8.2. Similar to streams, significant trends are those with a p-value of $\leq 0.05$.

### 8.3 Assessment of Lake Trophic Status

Along with the reporting on the beneficial use status of lakes and reservoirs, Section 314 of the CWA requires that states submit information on the eutrophic condition of publicly owned lakes. While the Department has not monitoring all classified and public lakes, there is sufficient information to report on 92 waterbodies. The assessment and classification was conducted using Carlson's Trophic State Index and the definitions of each trophic status. Table 8.3 contains this information.

## 9.0 Cost/Benefit Assessment

The cost of protecting and improving water quality can be measured or estimated using grant, loans and other programs. In contrast, estimating the monetary value of the benefits of water quality protection and improvements is more difficult. Rather than attempt to identify specific monetary values the, overwhelming belief that the ecological and societal benefits outweigh the costs will be accepted. Following is information on some of the costs associated with water quality protection and improvement.

#### 9.1 Clean Water State Revolving Loan Fund

The Clean Water State Revolving Loan Fund provides low interest loans to municipalities for construction of wastewater treatment facilities and sanitary sewer collection systems. The sources of funding for this program include federal grants, an initial state general fund appropriation and funds from Nebraska Investment Financial Authority (NIFA) through bond issuance. In FY2008, loans totaling $12 million were allocated, and $15 million was disbursed.

#### 9.2 Nebraska Environmental Partnerships (NEP)

NEP used CWSRF administrative cash funds to provide financial assistance to eligible municipalities for facility planning reports for wastewater treatment system improvement projects that will seek funding through the Water Wastewater Advisory Committee (WWAC) Common Pre-application Process. This financial assistance is being provided to communities to identify capital improvement needs as well as increase their readiness to proceed in accomplishing these improvements.

Facility planning grants may be provided to municipalities with populations of 10,000 or fewer people that are identified with a financial hardship. This includes any city, town, village, sanitary improvement district, natural resource district, or other public body created by or pursuant to state law having jurisdiction over a wastewater treatment facility. Privately owned wastewater treatment systems are not eligible for assistance.

Grants are provided for up to 90% of the eligible facility plan project cost, but cannot exceed $20,000. Grant awards for SFY2008, totaling $155,200, were awarded to eight communities: Ansley, Auburn, Duncan, Ewing, Lewiston, Madrid, Ohiowa and Ulysses.
Since its inception in SFY2004, NEP, through the CWSRF, has awarded planning grants to 36 communities, for a total of $504,340.

#### 9.3 Nonpoint Source Management

The Nonpoint Source Management program provides pass through funding for the prevention and abatement of nonpoint source water pollution and the restoration of watershed resources under Section 319 of the federal Clean Water Act. This funding is provided to units of government, educational institutions, and non-profit organizations, for projects that facilitate implementation of the state Nonpoint Source Management Plan. During the period 2003 through 2009, 53 individual projects utilizing $12,135,806 in Section 319 funds were funded by the NDEQ. Of The 53 projects, 42 dealt with surface water, 6 with ground water, and 5 with both surface and ground water. Also of the 53 projects 23 focused on a specific watershed, 2 focused on a specific area, 18 focused on a specific waterbody, 8 had a statewide focus, and 2 had a regional focus.

## 10.0 Groundwater Monitoring and Assessment

The 2001 Nebraska Legislature passed LB329 (Neb. Rev. Stat. §46-1304) which, in part, directed the Nebraska Department of Environmental Quality (NDEQ) to report on groundwater quality monitoring in Nebraska. Specifically:

"The Department of Environmental Quality shall prepare a report outlining the extent of ground water quality monitoring conducted by natural resources districts during the preceding calendar year. The department shall analyze the data collected for the purpose of determining whether or not ground water quality is degrading or improving and shall present the results to the Natural Resources Committee of the Legislature beginning December 1, 2001, and each year thereafter. The districts shall submit in a timely manner all ground water quality monitoring data collected to the department or its designee. The department shall use the data submitted by the districts in conjunction with all other readily available and compatible data for the purpose of the annual ground water quality trend analysis."

Rather than regenerate this information, a copy of the *2009 Groundwater Quality Report* has been included as an appendix.

## 11.0 Public Participation

On October 1, 2009 NDEQ submitted a request for all existing and readily available surface water quality data to Federal, State, and Local agencies, members of the public, and academic institutions. Data was received from the United States Fish and Wildlife Service and is included in Appendix B. Additionally, the availability of the draft version of this document and a request for comments and corrections was published in the Omaha World Herald, Lincoln Journal Star, Grand Island Independent, Norfolk Daily News, North Platte Telegraph, McCook Gazette, and Scottsbluff Star-Herald.

**Table 8.1 – Stream Water Quality Trend Information for Four Parameters**

| Waterbody ID | Waterbody Name | Dissolved Oxygen | | Conductivity | | Atrazine | | Ammonia | |
|---|---|---|---|---|---|---|---|---|---|
| | | Trend Status | P-value | Trend Status | P-value | Trend Status | P-value | Trend Status | P-value |
| BB1-10000 | Big Blue River | Stable | 0.097 | Stable | 0.086 | Stable | 0.627 | Stable | 0.372 |
| BB3-10000 | W. Fork Big Blue River | Stable | 0.833 | Decrease | 0.064 | Decrease | 0.326 | Stable | 0.431 |
| EL1-10000 | Elkhorn River | Stable | 0.056 | Stable | 0.957 | Stable | 0.344 | Decrease | 0.056 |
| EL1-20100 | Pebble Creek | Stable | 0.499 | Increase | 0.223 | Decrease | 0.308 | Decrease | 0.01 |
| LB1-10000 | Little Blue River | Stable | 0.74 | Stable | 0.89 | Stable | 0.443 | Stable | 0.916 |
| LB2-10100 | Big Sandy Creek | Stable | 0.365 | Decrease | 0.009 | Stable | 0.328 | Stable | 0.919 |
| LO1-20200 | Loup River Power Canal | Decrease | 0.162 | Increase | 0.05 | Increase | 0.159 | Increase | 0.121 |
| LO4-10000 | South Loup River | Increase | 0.07 | Stable | 0.436 | Stable | 0.571 | Stable | 0.07 |
| LP1-10000 | Platte River | Stable | 0.774 | Stable | 0.491 | Stable | 0.765 | Stable | 0.91 |
| LP2-10000 | Salt Creek | Increase | 0.01 | Increase | 0.009 | Stable | .493 | Decrease | 0.001 |
| MP1-20000 | Platte River | Stable | 0.271 | Stable | 0.605 | Stable | 0.216 | Increase | 0.139 |
| MP2-20000 | Platte River | Stable | 0.932 | Stable | 0.129 | Increase | 0.02 | Stable | 0.414 |
| MT1-10000 | Missouri River | Stable | 0.882 | Decrease | 0.15 | Decrease | 0.237 | Decrease | 0.114 |
| MT1-10100 | Papillion Creek | Stable | 0.824 | Stable | 0.584 | Decrease | 0.406 | Increase | 0.246 |
| NE2-10000 | Big Nemaha River | Stable | 0.957 | Stable | 0.175 | Stable | 0.389 | Stable | 0.802 |
| NE3-10000 | Little Nemaha River | Increase | 0.663 | Stable | 0.898 | Decrease | 0.512 | Stable | 0.386 |
| NI2-10000 | Niobrara River | Stable | 0.679 | Stable | 0.441 | Stable | 0.692 | Stable | 0.643 |
| NI2-13100 | Plum Creek | Stable | 0.658 | Stable | 0.551 | Stable | 0.158 | Increase | 0.036 |
| NP1-10000 | North Platte River | Increase | 0.006 | Stable | 0.882 | Decrease | 0.003 | Stable | 0.148 |
| NP3-12600 | Winters Creek | Stable | 0.525 | Increase | 0.17 | Stable | 0.238 | Increase | 0.025 |
| RE1-10000 | Republican River | Stable | 0.06 | Stable | 0.184 | Increase | 0.191 | Stable | 0.347 |
| RE3-10200 | Medicine Creek | Stable | 0.403 | Stable | 0.01 | Increase | 0.021 | Increase | 0.03 |
| SP1-20000 | South Platte River | Stable | 0.124 | Stable | 0.087 | Decrease | 0.087 | Stable | 0.10 |
| SP2-50000 | Lodgepole Creek | Decrease | 0.07 | Stable | 0.073 | Decrease | 0.073 | Stable | 0.87 |
| WH1-10000 | White River | Decrease | 0.051 | Stable | 0.02 | Stable | 0.811 | Stable | 0.334 |
| WH1-11300 | Chadron Creek | Decrease | 0.14 | Stable | 0.131 | Stable | 0.657 | Stable | 0.064 |

**Table 8.2 Lake Water Quality Trend Information**

| Waterbody ID | Waterbody Name | Transparency | | Atrazine | | Chlorophyll a | | Total Phosphorus | | Total Nitrogen | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Trend Status | P-value | Trend Status | P-value | Trend Status | P-value | Trend Status | P-value | Trend Status | P-value |
| BB2-L0020 | Swan 5A | Stable | 0.154 | Decreasing | 0.373 | Increasing | 0.439 | Increasing | 0.154 | Increasing | 0.037 |
| LP2-L0050 | Stagecoach | Decreasing | 0.033 | Increasing | 0.746 | Decreasing | 0.05 | Increasing | 0.63 | Increasing | 0.303 |
| LP2-L0130 | Conestoga | Decreasing | 0.842 | Decreasing | 0.009 | Increasing | 0.72 | Increasing | 0.03 | Increasing | 0.007 |
| MT1-L0030 | Wehrspann | Decreasing | 0.24 | Decreasing | 0.021 | Increasing | 0.364 | Decreasing | 0.11 | Decreasing | 0.03 |
| MT1-L0100 | Standing Bear | Increasing | 0.829 | Decreasing | 0.072 | Increasing | 0.637 | Increasing | 0.75 | Increasing | 0.001 |
| MT1-L0150 | Summit | Decreasing | 0.07 | Increasing | 0.398 | Decreasing | 0.59 | Increasing | 0.02 | Increasing | 0.004 |
| NE2-L0040 | Kirkman's Cove | Decreasing | 0.312 | Decreasing | 0.174 | Increasing | 0.026 | Decreasing | 0.982 | Decreasing | 0.03 |

**Table 8.3 Eutrophic Conditions of Public Lakes**

| Description | Number of Lakes | Waterbody Acres |
|---|---|---|
| Total Identified in Title 117 | 522 | 150,422 |
| Total Assessed for TSI | 92 | 113,047 |
| Oligotrophic (TSI <40) | 0 | 0 |
| Mesotrophic (TSI 40-50) | 11 | 1,813 |
| Eutrophic (TSI (51-70) | 48 | 101,025 |
| Hypereutrophic (TSI >70) | 33 | 10,209 |

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