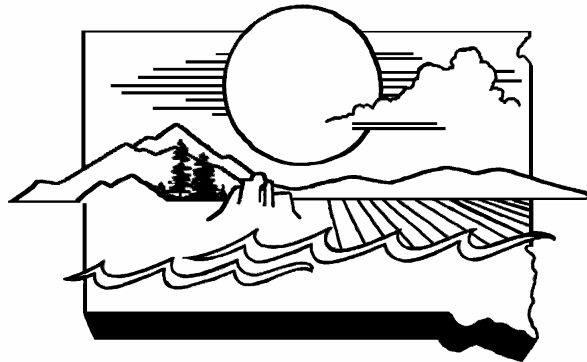


THE 2006 SOUTH DAKOTA INTEGRATED REPORT FOR SURFACE WATER QUALITY ASSESSMENT



*Protecting South Dakota's
Tomorrow...Today*

**Prepared By
SOUTH DAKOTA DEPARTMENT OF
ENVIRONMENT AND NATURAL
RESOURCES**

Steven M. Pirner, Secretary



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
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March 31, 2006

Robbie Roberts, Administrator
US Environmental Protection Agency
Region VIII, Suite 300
999 18th Street
Denver, CO 80202-2466

Re: Final 2006 South Dakota Integrated Report

Dear Mr. Roberts

I am pleased to submit to you the 2006 South Dakota Integrated Report, with supporting documentation, as required under Sections 305(b) and 303(d) of the Clean Water Act.

This submittal represents a large effort by this department as well as interested members of the South Dakota public. The 2006 report is one of the most comprehensive reviews of water quality data completed in South Dakota to date.

We have provided your agency with an electronic copy of the list in addition to this submittal. It will also be available in the near future via our homepage at <http://www.state.sd.us/denr/denr.html>.

We look forward to your agency's approval of our 2006 Integrated Report. We also want to thank members of your staff for their assistance and insights during the development process.

Sincerely,

Steven M. Pirner
Secretary

Enclosure

cc: Max Dodson, USEPA Region VIII
Bruce Zander, USEPA Region VIII
Carol Campbell, USEPA Region VIII



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May 23, 2006



Ref: 8EPR-EP

Steven M. Pirner, Secretary
Department of Environment & Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Re: Clean Water Act Section 303(d) Total
Maximum Daily Load (TMDL) Waterbody
List

Dear Mr. Pirner:

Thank you for your submittal of South Dakota's 2006 Integrated Report for Surface Water Quality Assessment dated March 30, 2006. EPA has conducted a complete review of the Clean Water Act Section 303(d) waterbody list and supporting documentation and information. Based on this review EPA has determined that South Dakota's 2006 list of water quality limited segments (WQLSs) still requiring TMDLs meets the requirements of Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations. Therefore, by this order, EPA hereby APPROVES South Dakota's 2006 Section 303(d) list. Please see the enclosure for a description of the statutory and regulatory requirements and a summary of EPA's review of South Dakota's compliance with each requirement.

EPA's approval of South Dakota's 2006 Section 303(d) list extends to all waterbodies in category 5 of the list with the exception of those waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove the State's list with respect to those waters at this time. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under Section 303(d) for those waters.

The public participation process sponsored by South Dakota DENR included publishing display ads in newspapers across the state requesting public input in developing the draft list and requesting water quality data, official public notices on the list availability, use of the South Dakota DENR website, and a mailing to many entities asking for both comments and additional data or information on waters. We commend the State for its thorough public participation process.



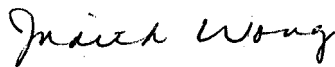
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We wish to inform you that our office has received concurrence from the U.S. Fish and Wildlife Service regarding our biological evaluation of the approval of the State's year 2006 Section 303(d) waterbody list. Our biological evaluation that addressed our approval was submitted to the Service in accordance with Section 7 of the Endangered Species Act. In our evaluation, we assessed the effects of our approval on the threatened, endangered, proposed, and candidate species throughout the State. Our conclusion was that our approval of the State's list would not likely have an adverse effect on the species of concern. Any effect of the list approval was seen as either insignificant or beneficial to the species.

Under current regulations, the next Section 303(d) list is required to be submitted on April 1, 2008. We suggest you stay abreast of EPA TMDL guidance development in the months to come in the event of any changes to that date. Although current regulations require lists to be submitted every 2 years, in April of even years, states may submit Section 303(d) lists more frequently as they deem necessary. All additions, deletions and modifications to the list will require EPA approval.

Again, thank you for the efforts related to the good job of developing the Section 303(d) TMDL waterbody list for the 2006-2008 biennium. If you have questions on any of the above information, feel free to give me, or Vern Berry (303-312-6234) of my staff, a call.

Sincerely,


for Max H. Dodson
Assistant Regional Administrator
Ecosystems Protection and
Remediation

Enclosure

**SOUTH DAKOTA WATER QUALITY
WATER YEARS 2000-2005 (streams) and
WATER YEARS 1989-2005 (lakes)**

**The 2006 South Dakota Integrated Report
Surface Water Quality Assessment**

by the State of South Dakota

**pursuant to
Sections 305(b), 303(d), and 314 of the Federal Water
Pollution Control Act**

**South Dakota Department of Environment and Natural
Resources**

Steven M. Pirner, Secretary

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I. INTRODUCTION

This integrated 305(b) and 303(d) report (Integrated Report) was prepared by the South Dakota Department of Environment and Natural Resources (DENR) pursuant to Sections 305(b), 303(d), and 314 of the Federal Water Pollution Control Act (P.L. 95-217).

The 305(b) report in previous years provided an assessment of the quality of South Dakota's water resources and summarized state programs established to prevent and control water pollution. The 303(d) report identified impaired waterbodies within South Dakota that require the development of Total Maximum Daily Loads (TMDLs). The 305(b) report was routinely used to create the 303(d) impaired waterbody list.

This document combines the 305(b) report and 303(d) list into one Integrated Report, which provides an assessment of the quality of South Dakota's surface water resources and identifies the impaired waterbodies that need TMDLs. It is the intent of this report to inform the citizens of South Dakota and the US Environmental Protection Agency (EPA) of the condition of state surface water resources and to serve as the basis for management decisions by government and other entities for the protection of surface water quality.

EPA will use the information from the Integrated Report to document the state's progress in meeting and maintaining Clean Water Act goals for the ecological health of the nation's surface waters and their domestic, commercial, and recreational uses. DENR will use the information in this report along with population data, economic analyses, program capability assessments, and other appropriate information to plan and prioritize water pollution control activities.

DENR will also use the Integrated Report as a tool to continue to stimulate development of nonpoint source (NPS) projects and to produce a priority waterbody list for the department. The Integrated Report will be available to all state conservation districts and water development districts. Each district can review watershed information for its geographical area of interest. This helps the districts focus on the location, nature, and severity of surface water problems in their areas. This generally leads to public discussions, which start the long process toward nonpoint source pollution control implementation.

This report is also shared with the Nonpoint Source Task Force to help focus its efforts and provide information used in the priority waterbody ranking system. The Nonpoint Source program also uses this document to supplement news articles released through the DENR Information and Education (I&E) program.

The surface water quality assessments listed in this report rely primarily on the analyses of data generated by DENR, the United States Geological Survey (USGS), the Lac Qui Parle –Yellow Bank Clean Water Partnership, personal observations of field samplers, water quality data submitted by the cities of Brookings, Watertown and Sioux Falls, and best professional judgement. While this assessment is as comprehensive as resources

permit, some of the state's surface water quality problems, particularly localized ones, do not appear in this report.

South Dakota Law (SDCL 34A-2-4 and 34A-2-6) authorizes the Department's Secretary to provide this assessment of current state surface water quality to the people of the State of South Dakota and the Environmental Protection Agency (EPA).

II. EXECUTIVE SUMMARY

The purpose of this report is to assess the water quality of South Dakota's water resources and to identify the impaired waterbodies that require TMDLs. This report meets the requirements of Sections 305(b), 303(d), and 314 of the federal Clean Water Act which mandates a biennial report on state water quality to Congress. This report is also intended to inform the citizens of South Dakota on the status of the quality of their water resources and to serve as the basis for management decisions by government staff and local officials for the protection of water quality. DENR will use the information in this report along with population data, economic analyses, program capability assessments, and other appropriate sources to plan and prioritize water pollution control activities.

Surface Water Quality

South Dakota has about 9,289 miles of perennial rivers and streams (Table 1) and about 85,841 miles of intermittent streams. About 7,532 perennial stream miles have been assessed in the past five years (October 2000 to September 2005). During this 5-year interval, 50% of assessed stream miles were found to support all assigned beneficial uses and 50% were nonsupporting of their designated uses. Seventy-eight percent of stream miles designated for immersion recreation supported swimmable uses, 22% did not meet the swimmable criteria, and less than one percent had insufficient data to determine support status. A total of 86 different streams or stream segments are listed as impaired and require TMDL development.

Similar to previous reporting periods, nonsupport for fishable/aquatic life uses was caused primarily by total suspended solids (TSS) from agricultural nonpoint sources (NPS) and natural origin.

In addition to rivers and streams, South Dakota has 573 lakes and reservoirs with specific aquatic life and recreational beneficial use classifications. The four Missouri River mainstem reservoirs were not included in the total lake acres but were included in the monitored river mileage.

Excluding the four mainstem reservoirs, an estimated 140 of the 573 classified lakes have been assessed. The assessed lakes account for 70% of the total classified lake acreage. An estimated 41% of the assessed lake acreage was considered to support all assessed beneficial uses and 59% did not support assessed beneficial uses. A total of 61 lakes are listed as impaired and require TMDL development. Runoff, carrying sediment and nutrients, is the major nonpoint pollution source. Sediment from several major and many minor tributaries is also shortening the useful lives of the four large mainstem reservoirs. Much of the sedimentation is due to natural origin.

DENR continues to conduct special chemical/physical/biological stream surveys and ambient monitoring to assess the quality of receiving streams and to document water quality problem sources and improvements.

Table 1. Atlas

State population (2000 census)	754,844
State surface area (sq. mi.)	77,047
Number of water basins (according to state subdivisions)	14
Total number of river/stream miles	95,130*
Number of perennial river miles (subset)	9,289*
Number of intermittent stream miles (subset)	85,841*
Number of border river miles of shared rivers/streams (subset)	360**
Miles of ditches and canals (man-made waterways)	424**
Number of classified lakes/reservoirs/ponds	573
Acres of lakes/reservoirs/ponds	204,987*
Square miles of estuaries/harbors/bays	0
Number of ocean coastal miles	0
Number of Great Lakes shore miles	0
Acres of freshwater wetlands	1,780,859***
Acres of tidal wetlands	0
Name of border rivers: <u>Missouri River, Big Sioux River, Bois de Sioux River.</u>	

* Estimated from the National Hydrography Dataset (1:100,000 scale)

** (EPA, 1991)

*** National Wetlands Inventory

Wetlands

South Dakota has an estimated 1.78 million acres of small depressional wetlands with shallow water habitat. South Dakota Surface Water Quality Standards, contain provisions to include wetlands as “waters of the state.” Wetlands are assigned the beneficial use of fish and wildlife propagation, recreation and stock watering, which provides protection under existing narrative and numeric water quality standards.

North Dakota State University (NDSU) conducted research focused on assessing the ecological health of wetland resources within the prairie pothole region of the eastern Dakotas. Preliminary implications of this study suggest that the ecological health of eastern South Dakota prairie pothole wetlands decrease as you move north to south. This was attributed to greater agricultural intensity in southeast South Dakota (Dekeyser, personal communication).

South Dakota State University in cooperation with the South Dakota Department of Game, Fish, and Parks is also in the beginning stages of developing a wetland rapid assessment protocol for eastern South Dakota. The South Dakota wetland rapid assessment protocol will be used by the State’s Natural Heritage and Wildlife Habitat

Programs (South Dakota Game Fish and Parks) for identifying reference wetlands, monitoring randomly selected sites, and evaluating wetland restoration efforts.

Water Pollution Control Programs

The water quality goals of the state are to: identify water quality problems, set forth effective management programs for water pollution control, alleviate water quality problems, and achieve and preserve water quality for all intended uses.

Point Source Pollution Control (Surface Water Discharge System):

DENR continues to administer the National Pollutant Discharge Elimination System (NPDES) program in South Dakota, referred to as the Surface Water Discharge permitting program. The Surface Water Quality program issues Surface Water Discharge permits and develops the point source TMDLs that are required to ensure water quality standards are maintained. A total of 51 stream segments (waterbodies) will require a review of the already approved point source TMDL that will coincide with a Surface Water Discharge permit renewal this report cycle.

Nonpoint Source Pollution Control:

Nonpoint Source (NPS) pollution originates from diverse and diffuse sources. Nonpoint pollution controls must reflect this by wisely using resources available from various state, federal, and local organizations plus have landowner support and participation. South Dakota primarily uses voluntary measures for the implementation of Best Management Practices (BMPs) to control NPS pollution. During the past 20 years, the program has initiated many development and implementation projects throughout the state. The Clean Water Act section 319 program is the focal point for a majority of the existing NPS control programs.

However, the technical and financial assistance currently available is not sufficient to solve all of the NPS pollution problems in the state. Other solutions must be explored. Landowners have the capability to accomplish much if they understand the problems and the methods to solve them. Many of the solutions involve land management changes that benefit the landowner by making their lands more productive and sustainable.

Educating the public about NPS pollution issues has been effective in prompting many landowners to voluntarily implement activities to control NPS pollution.

A total of 86 stream segments and 61 lakes require nonpoint source TMDLs to address impairments. Fifty-nine percent of the total number of required TMDLs are for streams and 41% are for lakes.

III. SURFACE WATER QUALITY ASSESSMENT

SURFACE WATER QUALITY MONITORING PROGRAM

General Discussion

South Dakota DENR monitors surface waters in the state through an established ambient water quality sampling program, water quality surveys, fish surveys, TMDL assessments, Surface Water Discharge permits, and state non point source implementation projects. Aside from DENR, the United States Geological Survey (USGS) also conducts routine monitoring throughout the state. All data resulting from USGS monitoring efforts are available from the USGS website. Much of the state's data has been entered into the United States Environmental Protection Agency STORET computer system.

Water samples are analyzed for physical, chemical, biological, and bacteriological parameters to provide baseline data for the determination of potential effects of point and nonpoint sources of pollution. Baseline data are also used as a management tool to determine the effectiveness of control programs on existing point and nonpoint sources and for directing future activities. Water samples can show whether or not a waterbody is meeting its assigned water quality beneficial uses.

Water quality standards were first established for all surface waters by the state's Committee on Water Pollution in 1967. The Water Management Board completed the final steps of its most recent triennial review and revisions in July 2004 and the EPA formally approved South Dakota's water quality standard revisions on March 4, 2005. The water quality standards consist of water quality criteria necessary to protect the assigned beneficial uses of state surface waters.

All surface waters in the state are classified for one or more of the following beneficial uses:

- (1) Domestic water supply waters;
- (2) Coldwater permanent fish life propagation waters;
- (3) Coldwater marginal fish life propagation waters;
- (4) Warmwater permanent fish life propagation waters;
- (5) Warmwater semipermanent fish life propagation waters;
- (6) Warmwater marginal fish life propagation waters;
- (7) Immersion recreation waters;
- (8) Limited contact recreation waters;
- (9) Fish and wildlife propagation, recreation, and stock watering waters;
- (10) Irrigation waters; and
- (11) Commerce and industry waters.

All streams in South Dakota are assigned the beneficial uses (9) and (10) unless otherwise stated in the Administrative Rules of South Dakota (ARSD) Chapter 74:51:03.

Lakes listed in ARSD Chapter 74:51:02 are assigned the beneficial uses of (7) and (8) unless otherwise specified. All lakes in South Dakota are also assigned the beneficial use of (9) unless otherwise stated in the same reference (74:51:02) <http://legis.state.sd.us/rules/rules/7451.htm>. Table 2 contains a summary of the established beneficial uses and a partial listing of assigned criteria to protect them. Current state toxic pollutant standards for human health and aquatic life are presented in Table 3.

Fixed Station Ambient Monitoring

The DENR water quality monitoring network is currently made up of 137 stations located on various rivers and creeks within the state. Sampling stations are located within high quality beneficial use classifications, above and below municipal/industrial discharges, or within problem watersheds. Currently, the department collects these samples on a monthly, quarterly, or seasonal basis. This type of water sampling is invaluable for monitoring historical information, natural background conditions, possible runoff events, and acute or chronic water quality problems.

Typically, grab samples are collected mid-stream, either from a bridge or by wading into the stream. Some stations may have to be sampled from the bank depending on conditions. Every station is sampled in the same manner and location each time. When the sample has been collected, the sampler immediately obtains water and air temperatures, pH reading, and dissolved oxygen content. Time of sample, water depth, channel width, and other visual observations are also recorded. The samples are properly preserved and transported to the laboratory for analysis. Sample test results are entered into EPA's computer data storage and retrieval system (STORET).

The most commonly sampled parameters include fecal coliform, conductivity, hardness, alkalinity, residue (total solids, total suspended solids, total dissolved solids), pH, ammonia, nitrates, and phosphorous (total and dissolved). Several stations are sampled for sodium, calcium, and magnesium during the irrigation season. Stations located along streams that receive flows from historic Black Hills mining areas are also analyzed for cyanide, cadmium, lead, copper, zinc, chromium, mercury, nickel, silver, and arsenic.

Ambient station locations, descriptions, and schedules are included in Appendix B. More detailed descriptions of individual stream sites are available from DENR on request.

Intensive Water Quality Monitoring (Point Sources)

Water quality monitoring surveys are performed by the Surface Water Quality Program to document stream improvement areas, stream degradation areas, develop point source TMDLs, or to provide data for developing or verifying Surface Water Discharge permit limits. The major intent of the water quality monitoring program is to monitor instream water quality at critical points to ensure protection of the assigned beneficial uses.

Major wastewater facilities needing greater than secondary treatment are evaluated by conducting an intensive water quality survey both above and below their wastewater discharge. These wasteload allocations are the basis for future treatment needs and Surface Water Discharge permit limits. This information is used to develop a TMDL for the stream segment and allocate a wasteload to the permittee.

With increased emphasis on water quality improvements to justify federal expenditures, the monitoring program will concentrate on showing water quality improvements from the upgrading of wastewater treatment facilities. After wastewater treatment facilities are upgraded, monitoring is used to verify Surface Water Discharge permit limits developed through computer modeling maintain the surface water quality standards in-stream. Surveys provide an evaluation of whether or not the wastewater treatment is adequate to protect the beneficial use(s) of receiving waters.

Intensive Water Quality Monitoring (Special Studies)

Intensive water quality monitoring is sometimes initiated to assess special problem areas, to obtain data for use in site-specific criteria modification studies, or to provide an updated database for a waterbody. In 2004 and 2005, DENR developed a special water quality monitoring plan for the Missouri River reservoirs to aid in determining whether they support their beneficial uses. Intensive sampling of the reservoirs is currently underway and the preliminary results will be included in the 2008 Integrated Report.

Intensive Fish Survey Monitoring

Fish surveys are occasionally conducted by Game, Fish, and Parks and the Surface Water Quality Program to evaluate the impact of wastewater dischargers on the receiving stream and to evaluate the fishery classification. The fish survey results, although they are qualitative in nature, are used in conjunction with water quality surveys to evaluate the impact of pollutants on stream water quality.

Biological Sampling Program

Biological samples are often included as part of a watershed assessment study or a special study. The South Dakota Water Resource Assistance Program incorporates aquatic plant/algae surveys and chlorophyll-*a* testing into lake studies. Stream studies occasionally incorporate bioassessment surveys using fish and aquatic invertebrates as primary water quality indicators.

Toxicity Testing Program

Priority toxic pollutants are relatively expensive to analyze and are not routinely monitored except for special situations. Whole effluent toxicity tests have been included as permit limits in many municipal and industrial Surface Water Discharge permits.

Parameters (mg/L) except where noted	(1) Domestic water supply	(2) Coldwater permanent fish life propagation	(3) Coldwater marginal fish life propagation	(4) Warmwater permanent fish life propagation	(5) Warmwater semipermanent fish life propagation	(6) Warmwater marginal fish life propagation	(7) Immersion recreation	(8) Limited-contact recreation	(9) Fish, wildlife propagation, recreation & stock watering	(10) Irrigation	(11) Commerce and Industry
Alkalinity (CaCO ₃)									750 ¹ /1,313 ²		
Barium	1.0										
Chloride	250 ¹ /438 ²	100 ¹ /175 ²									
Chlorine, total residual		0.019 acute 0.011chronic	0.019 acute 0.011chronic	0.019 acute 0.011chronic	0.019 acute 0.011chronic	0.019 acute 0.011chronic					
Coliform, total (per 100 mL)	5,000 (mean); 20,000 (single sample)										
Coliform, fecal (per 100 mL)							200 (mean); 400 (single sample)	1,000 (mean); 2,000 (single sample)			
Conductivity (uohms/cm @ 25°C)									4,000 ¹ /7,000 ²	2,500 ¹ / 4,375 ²	
Fluoride	4.0										
Hydrogen sulfide, undissociated		0.002	0.002	0.002	0.002	0.002					
Nitrogen, total ammonia as N		Equation-based limit ^{1,2}	Equation-based limit ^{1,2}	Equation-based limit ^{1,2}	Equation-based limit ^{1,2}	Equation-based limit ^{1,2}					
Nitrogen, nitrates as N	10.0								50 ¹ /88 ²		
Oxygen, dissolved		≥ 6.0; ≥ 7.0 (during spawning season)	≥ 5.0	≥ 5.0; ≥ 6.0 (in Big Stone Lk & Lk Traverse during Apr & May)	≥ 5.0	≥ 4.0	≥ 5.0	≥ 5.0			
pH (standard units)	6.5 – 9.0	6.6 – 8.6	6.5 – 8.8	6.5 – 9.0	6.5 – 9.0	6.0 – 9.0			6.0 – 9.5		6.0 – 9.5
Sodium Adsorption Ratio										10	
Solids, suspended		30 ¹ /53 ²	90 ¹ /158 ²	90 ¹ /158 ²	90 ¹ /158 ²	150 ¹ /263 ²					
Solids, total dissolved	1,000 ¹ /1,750 ²								2,500 ¹ /4,375 ²		2,000 ¹ /3,500 ²
Sulfate	500 ¹ /875 ²										
Temperature (°F)		65	75	80	90	90					
Total Petroleum Hydrocarbons	≤ 1.0								≤ 10		
Oil and Grease									≤ 10		

Table 2: Numeric Criteria Assigned to Beneficial Uses of Surface Waters of the State ARSD 74:51:01

¹ 30-day average ² daily maximum

Table 3: Surface Water Quality Standards for Toxic Pollutants ARSD 74:51:01

Pollutant	Human Health Value Concentrations in ug/L		Freshwater Aquatic Life Value Concentrations in ug/L Uses 2-3-4-5-6-9		Pollutant	Human Health Value Concentrations in ug/L		Freshwater Aquatic Life Value Concentrations in ug/L Uses 2-3-4-5-6-9	
	Use 1 ⁽³⁾	Uses 2-3-4-5-6-9 ⁽⁴⁾	Acute (CMC)	Chronic (CCC)		Use 1 ⁽³⁾	Uses 2-3-4-5-6-9 ⁽⁴⁾	Acute (CMC)	Chronic (CCC)
Acenaphthene	670	990			2,4-Dimethylphenol	380	850		
Acenaphthylene (PAH) ⁽⁶⁾					Dimethyl Phthalate	270,000	1,100,000		
Acrolein	190	290			Di-n-Butyl-Phthalate	2,000	4,500		
Acrylonitrile ⁽⁵⁾	0.051	0.25			2-Methyl-4,6-Dinitrophenol	13	280		
Aldrin ⁽⁵⁾	0.000049	0.000050	1.5		2,4-Dinitrophenol	69	5,300		
Anthracene (PAH) ⁽⁶⁾	8,300	40,000			Dioxin (2,3,7,8-TCDD) ⁽⁵⁾	5.0E-9	5.1E-9		
Antimony	5.6	640			2,4-Dinitrotoluene ⁽⁵⁾	0.11	3.4		
Arsenic ⁽⁵⁾	0.018 ⁽⁵⁾⁽¹³⁾	0.14 ⁽⁵⁾⁽¹³⁾	340	150	1,2-Diphenylhydrazine ⁽⁵⁾	0.036	0.20		
Asbestos ⁽⁵⁾	7,000,000 fibers/L				alpha-Endosulfan	62	89	0.11	0.056
alpha-BHC ⁽⁵⁾	0.0026	0.0049			beta-Endosulfan	62	89	0.11	0.056
beta-BHC ⁽⁵⁾	0.0091	0.017			Endosulfan Sulfate	62	89		
gamma-BHC (Lindane) ⁽⁵⁾	0.98	1.8	0.95		Endrin	0.059	0.060	0.086	0.036
Benzene ⁽⁵⁾	2.2	51			Endrin Aldehyde	0.29	0.30		
Benzidine ⁽⁵⁾	0.000086	0.00020			Ethylbenzene	530	2,100		
Benzo(a)Anthracene ⁽⁵⁾	0.0038	0.018			Flouranthene	130	140		
Benzo(a)Pyrene ⁽⁵⁾	0.0038	0.018			Fluorene ⁽⁶⁾	1,100	5,300		
Benzo(b)Fluoroanthene ⁽⁵⁾	0.0038	0.018			Heptachlor ⁽⁵⁾	0.000079	0.000079	0.26	0.0038
Benzo(k)Flouroanthene ⁽⁵⁾	0.0038	0.018			Heptachlor epoxide ⁽⁵⁾	0.000039	0.000039	0.26	0.0038
Beryllium ⁽⁵⁾	4 ⁽¹⁴⁾				Hexachlorobenzene ⁽⁵⁾	0.00028	0.00029		
Bis(2-Chloroethyl)Ether ⁽⁵⁾	0.030	0.53			Hexachlorobutadiene ⁽⁵⁾	0.44	18		
Bis(2-Chloroisopropyl)Ether	1,400	65,000			Hexachlorocyclopentadiene	40	1,100		
Bis(2-Ethylhexyl)Phthalate ⁽⁵⁾	1.2	2.2			Hexachloroethane ⁽⁵⁾	1.4	3.3		
Bromoform ⁽⁶⁾	4.3	140			Ideno(1,2,3-cd)Pyrene	0.0038	0.018		
Butylbenzyl Phthalate	1,500	1,900			Isophorone ⁽⁵⁾	35	960		
Cadmium			2.0 ⁽⁹⁾	0.25 ⁽⁹⁾	Lead			65 ⁽⁹⁾	2.5 ⁽⁹⁾
Carbon Tetrachloride ⁽⁵⁾	0.23	1.6			Mercury	0.050	0.051	1.4	0.012 ⁽¹⁰⁾
Chlordane ⁽⁵⁾	0.00080	0.00081	1.2	0.0043	Methyl Bromide	47	1,500		
Chlorine			19	11	Methyl Chloride ⁽⁶⁾				
Chlorobenzene	130	1,600			Methylene Chloride ⁽⁵⁾	4.6	590		
Chlorodibromomethane ⁽⁵⁾	0.40	13			N-Nitrosodimethylamine ⁽⁵⁾	0.00069	3.0		
Chloroform ⁽⁵⁾	5.7	470			N-Nitrosodi-n-Propylamine ⁽⁵⁾	0.0050	0.51		
2-Chloronaphthalene	1,000	1,600			N-Nitrosodiphenylamine ⁽⁵⁾	3.3	6.0		
2-Chlorophenol	81	150			Nickel	610	4,600	470 ⁽⁹⁾	52 ⁽⁹⁾
Chromium(III)			570 ⁽⁹⁾	74 ⁽⁹⁾	Nitrobenzene	17	690		
Chromium(VI)			16	11	Polychlorinated Biphenyls, PCBs ⁽²⁾⁽⁵⁾⁽⁷⁾⁽¹¹⁾	0.000064	0.000064		0.014
Chrysene ⁽⁵⁾	0.0038	0.018			Pentachlorophenol	0.27	3.0	19 ⁽⁸⁾	15 ⁽⁸⁾
Copper	1,300		13 ⁽⁹⁾	9.0 ⁽⁹⁾	Phenanthrene ⁽⁶⁾				
Cyanide (weak acid dissociable)	140	140	22	5.2	Phenol	21,000	1,700,000		
4,4'-DDD ⁽⁵⁾	0.00031	0.00031			Pyrene ⁽⁶⁾	830	4,000		
4,4'-DDE ⁽⁵⁾	0.00022	0.00022			Selenium ⁽⁷⁾	170	4,200	⁽¹²⁾	4.6
4,4'-DDT ⁽⁵⁾⁽⁷⁾	0.00022	0.00022	0.55	0.001	Silver			3.2 ⁽⁹⁾	
Dibenzo(a,h)Anthracene ⁽⁵⁾	0.0038	0.018			1,2,4-Trichlorobenzene	35	70		
1,2-Dichlorobenzene	420	1,300			1,1,2,2-Tetrachloroethane ⁽⁵⁾	0.17	4.0		

Pollutant	Human Health Value Concentrations in ug/L		Freshwater Aquatic Life Value Concentrations in ug/L Uses 2-3-4-5-6-9		Pollutant	Human Health Value Concentrations in ug/L		Freshwater Aquatic Life Value Concentrations in ug/L Uses 2-3-4-5-6-9	
	Use 1 ⁽³⁾	Uses 2-3-4-5-6-9 ⁽⁴⁾	Acute (CMC)	Chronic (CCC)		Use 1 ⁽³⁾	Uses 2-3-4-5-6-9 ⁽⁴⁾	Acute (CMC)	Chronic (CCC)
1,3-Dichlorobenzene	320	960			Tetrachloroethylene ⁽⁶⁾	0.69	3.3		
1,4-Dichlorobenzene	63	190			Thallium	0.24	0.47		
3,3'-Dichlorobenzidine ⁽⁵⁾	0.021	0.028			Toluene	1,300	15,000		
Dichlorobromomethane ⁽⁶⁾	0.55	17			Toxaphene ⁽⁵⁾	0.00028	0.00028	0.73	0.0002
1,2-Dichloroethane ⁽⁵⁾	0.38	37			1,2-Trans-Dichloroethylene	140	10,000		
1,1-Dichloroethylene ⁽⁵⁾	330	7,100			1,1,1-Trichloroethane				
2,4-Dichlorophenol	77	290			1,1,2-Trichloroethane ⁽⁵⁾	0.59	16		
1,2-Dichloropropane ⁽⁵⁾	0.50	15			Trichloroethylene ⁽⁵⁾	2.5	30		
1,3-Dichloropropene	0.34	21			2,4,6-Trichlorophenol ⁽⁵⁾	1.4	2.4		
Dieldrin ⁽⁵⁾	0.000052	0.000054	0.24	0.056	Vinyl Chloride ⁽⁵⁾	0.025	2.4		
Diethyl Phthalate	17,000	44,000			Zinc	7,400	26,000	120 ⁽⁹⁾	120 ⁽⁹⁾

SOUTH DAKOTA Surface Water Quality Standards⁽¹⁾ for Toxic Pollutants

- (1) The aquatic life values for arsenic, cadmium, chromium (III), chromium (VI), copper, lead, mercury (acute), nickel, selenium, silver and zinc given in this document refer to the dissolved amount of each substance unless otherwise noted. All surface water discharge permit effluent limits for metals shall be expressed and measured in accordance with § 74:52:03:16.
- (2) Apply to the beneficial uses as designated but do not supersede those standards for certain toxic pollutants as previously established in §§ 74:51:01:31, 74:51:01:32, 74:51:01:44 to 74:51:01:54, inclusive, and § 74:51:01:56.
- (3) Based on two routes of exposure - ingestion of contaminated aquatic organisms and drinking water.
- (4) Based on one route of exposure - ingestion of contaminated aquatic organisms only.
- (5) Substance classified as a carcinogen with the value based on an incremental risk of one additional instance of cancer in one million persons (10^{-6}).
- (6) Chemicals which are not individually classified as carcinogens but which are contained within a class of chemicals with carcinogenicity as the basis for the criteria derivation for that class of chemicals; an individual carcinogenicity assessment for these chemicals is pending.
- (7) Also applies to all waters of the state.

- (8) pH-dependent criteria. Value given is an example only and is based on a pH of 7.8. Criteria for each case must be calculated using the following equation taken from National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047, November 2002):

Pentachlorophenol (PCP), ug/L

$$\text{Chronic} = e^{[1.005(\text{pH}) - 5.134]} \quad \text{Acute} = e^{[1.005(\text{pH}) - 4.869]}$$

- (9) Hardness-dependent criteria in ug/L. Value given is an example only and is based on a CaCO₃ hardness of 100 mg/L. Criteria for each case must be calculated using the following equations taken from National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047, November 2002):

Cadmium, ug/L

$$\text{Chronic} = (*0.909)e^{(0.7409[\ln(\text{hardness})]-4.719)}$$

$$\text{Acute} = (*0.944)e^{(1.0166[\ln(\text{hardness})]-3.924)}$$

*Conversion factors are hardness-dependent. The values shown are with a hardness of 100 mg/L as calcium carbonate (CaCO₃). Conversion factors (CF) for any hardness can be calculated using the following equations:

$$\text{Chronic: CF} = 1.101672 - [(\ln \text{ hardness})(0.041838)]$$

$$\text{Acute: CF} = 1.136672 - [(\ln \text{ hardness})(0.041838)]$$

Chromium (III), ug/L

$$\text{Chronic} = (0.860)e^{(0.8190[\ln(\text{hardness})]+0.6848)}$$

$$\text{Acute} = (0.316)e^{(0.8190[\ln(\text{hardness})]+3.7256)}$$

Copper, ug/L

$$\text{Chronic} = (0.960)e^{(0.8545[\ln(\text{hardness})]-1.702)}$$

$$\text{Acute} = (0.960)e^{(0.9422[\ln(\text{hardness})]-1.700)}$$

Lead, ug/L

$$\text{Chronic} = (*0.791)e^{(1.273[\ln(\text{hardness})]-4.705)}$$

$$\text{Acute} = (*0.791)e^{(1.273[\ln(\text{hardness})]-1.460)}$$

*Conversion factors are hardness-dependent. The values shown are with a hardness of 100 mg/L as calcium carbonate (CaCO₃). Conversion factors (CF) for any hardness can be calculated using the following equations:

$$\text{Acute and Chronic: CF} = 1.46203 - [(\ln \text{ hardness})(0.145712)]$$

Nickel, ug/L

$$\text{Chronic} = (0.997)e^{(0.8460[\ln(\text{hardness})]+0.0584)}$$

$$\text{Acute} = (0.998)e^{(0.8460[\ln(\text{hardness})]+2.255)}$$

Silver, ug/L

$$\text{Acute} = (0.85)e^{(1.72[\ln(\text{hardness})]-6.59)}$$

Zinc, ug/L

$$\text{Chronic} = (0.986)e^{(0.8473[\ln(\text{hardness})]+0.884)}$$

$$\text{Acute} = (0.978)e^{(0.8473[\ln(\text{hardness})]+0.884)}$$

- (10) These criteria are based on the total-recoverable fraction of the metal.
- (11) This criterion applies to total pcbs, (e.g. the sum of congener or all isomer or homolog or Aroclor analyses.
- (12) The $(0.996)\text{CMC} = 1/[f1/\text{CMC1}) + (f2/\text{CMC2})]$ where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 $\Phi\text{g/L}$ and 12.82 $\Phi\text{g/L}$, respectively.
- (13) This criterion for arsenic refers to the inorganic form only.

Total Maximum Daily Loads (TMDLs) and Section 303(d)

Overview of TMDLs

TMDLs are an important tool for the management and protection of South Dakota's surface water quality. The goal of TMDLs is to ensure that waters of the state attain and maintain water quality standards, and support their beneficial uses. EPA defines a TMDL as "the sum of the individual waste load allocations for point sources and load allocations for both nonpoint sources and natural background sources established at a level necessary to achieve compliance with applicable surface water quality standards." In simple terms, a TMDL is the amount of pollution a waterbody can receive and still support its assigned beneficial uses.

TMDLs must be developed for impaired waters or for waters that may not meet water quality standards after technology-based requirements have been applied to point source dischargers. Each TMDL should address a specific waterbody or watershed, and specify quantifiable targets and associated actions that will enable a given waterbody to support its assigned beneficial uses.

Section 303(d) of the federal Clean Water Act (CWA) requires states to develop and submit for approval a list of waters targeted for TMDL development every two years. This is referred to as the 303(d) list. Items that must accompany this list include targeted pollutants and timeframes for TMDL development.

Once identification of TMDL waters are completed, states are to develop TMDLs at a pace necessary to complete all the TMDLs during a 13 year period. TMDLs must allow for seasonal variations and a margin of safety that accounts for any lack of knowledge concerning the relationship between pollutant loadings and water quality.

Types of Waters Listed

The following information and data sources were used to determine which waterbodies require TMDLs based on the requirements of section 303(d) of the federal Clean Water Act:

- Waters included in the Integrated Report that are identified as "not supporting" or also known as "impaired" waters;
- Waters for which modeling indicates nonattainment of water quality standards;
- Waters for which documented water quality problems have been reported by local, state, or federal agencies; the general public; or academic institutions; and
- Waters that receive discharges from point sources where water quality-based effluent limits are required to maintain surface water quality standards.

Impaired Waters

Waters that are considered impaired for meeting its assigned beneficial uses require a TMDL. This includes waters that are identified under the "not supporting" beneficial use categories in this report unless the waterbody has a recent TMDL approved by EPA that addresses the impairments.

Waters with Surface Water Discharge-Related Wasteload Allocations

In December 1993, DENR was delegated authority to administer the National Pollutant Discharge Elimination System. At that time, EPA withheld program authorization within Indian Country. DENR's program is called the Surface Water Discharge (SWD) Program. SWD permits are used to control discharges of pollutants from point sources. Most SWD permits contain technology-based effluent limits, which are usually attained using the best available technology that is economically achievable. In cases where technology-based limits are not sufficient to protect water quality standards, water quality-based effluent limits are incorporated into permits via wasteload allocations. In many cases, the development and implementation of water quality-based limits includes the development of a TMDL for the receiving water. The portion of the TMDL allocated to the point source discharger is the "wasteload allocation." The portion of the TMDL allocated to upstream background and nonpoint sources is the "load allocation." Most SWD permits are issued with a duration of five years, after which the effluent limits and TMDL are re-evaluated.

Waters with SWD-related TMDLs fall into the category of waters "*for which dilution calculations or predictive modeling indicate nonattainment of water quality standards.*" This does not mean that the waterbody segment to which any particular SWD permittee discharges is impaired. It simply means that without water quality-based limits, predictive modeling would indicate probable impairment. Most segments for which SWD-related TMDLs are being developed are in fact **not impaired**, because the majority of these TMDLs are already in place, and are merely being reviewed during this two year time-frame.

Waters Reported by Government Agencies; Members of the General Public; or Academic Institutions

DENR did not receive comments on specific waterbodies that should be included as impaired from organizations or citizens during the public participation period for this report cycle.

Prioritization of TMDL Waters

Regulatory Requirements

Section 303(d) of the federal CWA requires that "*each state shall establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.*" Little other guidance is offered for states to use in the prioritization process.

A system of prioritization has been developed by DENR based on several factors. Included in these factors are the required elements of "*the severity of the pollution and the uses to be made of such waters.*" The highest priorities are given to waters meeting the following criteria (priority 1):

- Waters with new Surface Water Discharge permits that require TMDL development;
- Imminent human health problems;
- Waters where TMDL development is expected during the next two years;
- Waters listed for four or more listing criteria; or
- Waters with documented widespread local support for water quality improvement.

Priority 2 waters meet the following criteria:

- Waters with an increasing trend towards eutrophy or enrichment, with consideration given to the rapidity of the declining water quality;
- Waters listed for three or less listing criteria;
- Waters where local support for TMDL development is expected but not documented;
- Waters listed for aquatic life impairment;
- Waters with no evident local support for water quality improvements; or
- Waters where impairments are believed to be due largely to natural causes.

These criteria are a guide. If a waterbody met any one criteria in a category that did not necessarily mean the waterbody was prioritized as such, since many waterbodies fit one or more criteria from the lists above.

Section 319-Related Waters

Section 319 TMDL assessments are developed based upon the prioritization criteria listed above. Implementation projects for completed TMDL assessments hinge upon whether adequate local support exists.

Surface Water Discharge-Related Waters

By federal law, SWD permits cannot be issued with a permit life greater than five years. One hundred eighty (180) days prior to permit expiration, a discharger must apply for a permit renewal. By rule, permit renewals are prepared and public noticed for 30 days by DENR. SWD-related TMDLs are considered a high priority in South Dakota.

The majority of parameters for which SWD-related TMDLs are developed include ammonia and dissolved oxygen. As can be seen from this report, very few streams have impairments for ammonia or dissolved oxygen. The priorities for SWD-related TMDLs are not based upon the severity of waterbody impairment but upon the importance of maintaining water quality improvements made through the permits.

Summary of the State TMDL Waterbodies

Using the methodologies, data, information, and public input described for the surface water quality assessments, DENR included the waterbodies that require TMDLs (previously known as the 303(d) list) in Tables 17 - 30. The tables include waterbody names, pollutants of concern, basis for listing, and other information. A total of 147 different waterbodies require TMDLs (Table 5). Each waterbody may contain several different pollutants and thereby may constitute several TMDLs. In addition, some streams are listed more than once due to TMDLs identified for different segments of the same stream (even for the same pollutant).

If a specific waterbody required a TMDL for several different pollutants, all pollutants were grouped into one TMDL for that waterbody. In reality, it may not be possible to incorporate each pollutant into a single TMDL for each waterbody segment, but this assumption was made for planning purposes. There may be other cases where widespread support for water quality

improvement, large single-entity landholders (federal lands, state lands, etc.), or other factors allow several waterbodies to be targeted for improvement under a single TMDL. Possible scenarios such as these make TMDL numbers difficult to project. Notwithstanding this fact, the implications of the list are that a monumental work effort will be required to complete the number of TMDLs in the time frame suggested by the list.

Future List Development

Significant federal and state effort has gone into establishing the future direction of the TMDL program. EPA drafted revisions to the regulations that resulted in a large volume of conflicting public comment. States were given a choice to submit a 2000 303(d) list or submit a list for 2002. South Dakota chose to develop a 2002 list. It was determined that resources would be better spent developing TMDLs to meet the 1998 303(d) schedule than re-develop a list that would not be much different than the 1998 list due to only two more years of data.

After several months of review and public input, EPA published final rules in the *Federal Register* on July 13, 2000. A Congressional rider placed in a FY 2000 military construction / supplemental appropriations bill prohibited EPA from implementing the rule during FY 2000 and 2001. Therefore, the TMDL program continued to operate under requirements specified in section 303(d) of the Clean Water Act and in the 1992 TMDL regulations.

EPA has also initiated the Consolidated Assessment and Listing Methodology (CALM) program to integrate the 305(b) and 303(d) reports for 2002. The Integrated Water Quality Monitoring and Assessment Report guidance was available November 19, 2001. Based on the timing of the guidance, EPA granted states the option of completing separate reports or one combined report. South Dakota chose to complete separate reports for 2002.

On July 21, 2003, EPA issued, "Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 305(b) and 303(d) of the Clean Water Act" and again gave states the choice of developing separate reports or an Integrated Report that combines the two. South Dakota chose to complete an Integrated Report for 2004 and will continue to do so until further notice.

Resource Implications

TMDL issues span a wide range of activities within DENR. Nonpoint source assessments, clean lakes assessments, discharge permitting, water quality monitoring, water quality standards, water rights, feedlot regulations, and other areas are involved in, or affect TMDL development and implementation. Because of this, the development and implementation of TMDLs will rely on existing programs, resources, and activities. Effective TMDL development requires good coordination within all DENR water programs. In addition, the development and implementation of effective TMDLs that will result in improving the quality of South Dakota's waters must have the support, input, and coordination of affected government agencies, local groups, and citizens. As such, the TMDL effort will involve the coordination of many diverse groups and the public with the common goal of improving water quality.

It is not possible to develop TMDLs for every waterbody within two years. The time frame to develop TMDLs on each biennial list is 13 years in accordance with EPA guidelines.

Delisting of Certain 2004 TMDL Waters and Other Exclusions

Status of 2004 Integrated Report

South Dakota's 2004 list contained 164 different waterbodies or waterbody segments for TMDL development. A total of 53 TMDLs have been completed or determined to be unnecessary by DENR since April 1, 2004. Table 4 and Figure 1 below show the status of waters that required TMDLs in the 2004 Integrated Report.

Table 4: Status of TMDLs from the 2004 Integrated Report

TMDL Status	Number and Percentage of TMDLs
Completed or determined to be unnecessary	53 (33%)
In progress	89 (54%)
Planned	22 (13%)
Total:	164

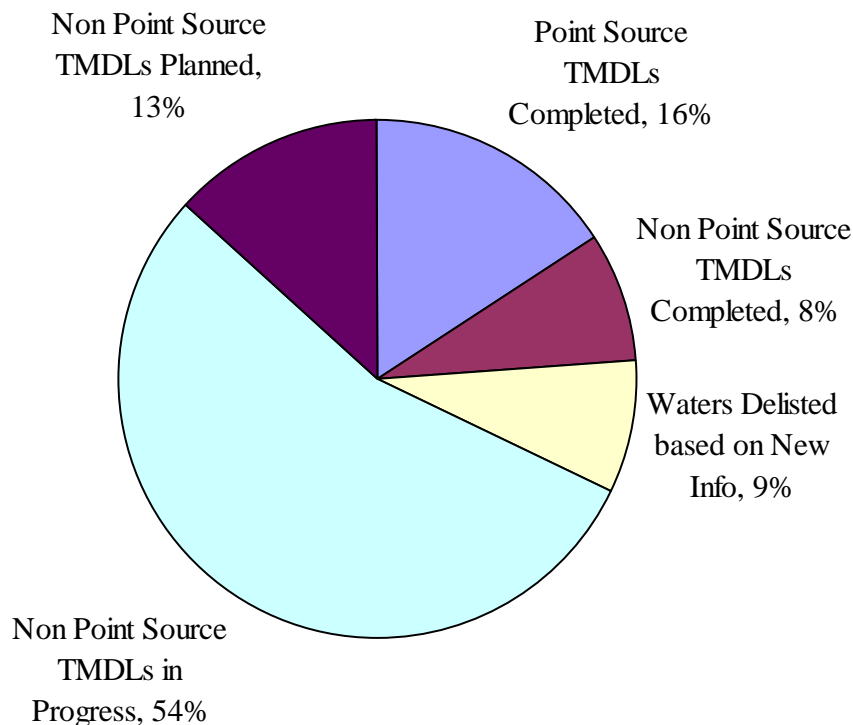


Figure 1: Status of TMDLs from the 2004 Integrated Report

Delisting of Waterbodies

Waters were delisted using the following criteria:

- EPA-approved TMDL(s) in place for all pollutants of concern;
- Water quality standards now being met because:
 - New monitoring data show attainment; or
 - New-modeling results show no potential for exceedance of standards.
- Water was listed in error;
- Additional state effluent controls address water quality problems;
- Reservoir has been breached and is no longer a viable waterbody; or
- Data assessment methodologies have been modified.

Table 5: 2006 Summary of TMDLs by Basin

Basin	Projected Number of TMDLs required	Pollutants of Concern
Bad River Basin	3	Nutrients, total suspended solids, total dissolved solids, conductivity
Belle Fourche River Basin	14	Bacteria, metals, pH, temperature, total suspended solids
Big Sioux River Basin	27	Bacteria, mercury, dissolved oxygen, nutrients, accumulated sediment, total suspended solids
Cheyenne River Basin	35	Bacteria, nutrients, pH, temperature, sodium adsorption ratio, total suspended solids, total dissolved solids, sulfates, dissolved oxygen
Grand River Basin	9	Bacteria, mercury, nutrients, sodium adsorption ratio, temperature, total suspended solids, total dissolved solids
James River Basin	19	Ammonia, bacteria, dissolved oxygen, nutrients, pH, total suspended solids
Little Missouri River Basin	1	Sodium adsorption ratio
Minnesota River Basin	0	Dissolved oxygen, nutrients
Missouri River Basin	16	Bacteria, mercury, dissolved oxygen, nutrients, accumulated sediment, total suspended solids, total dissolved solids, conductivity, temperature, pH
Moreau River Basin	6	Bacteria, nutrients, dissolved oxygen, total suspended solids, sodium adsorption ratio, total dissolved solids
Niobrara River Basin	2	Nutrients, total suspended solids
Red River Basin	2	Nutrients
Vermillion River Basin	6	Bacteria, nutrients, total suspended solids
White River Basin	7	Bacteria, total suspended solids, total dissolved solids, conductivity
Totals	147	

METHODOLOGY

Two major types of assessments were used to determine use support status of waterbodies; one based on monitoring and the other based on qualitative evaluations. Monitoring data were primarily obtained from South Dakota DENR, United States Geological Survey (USGS), the Lac Qui Parle –Yellow Bank Clean Water Partnership, the city of Watertown, the city of Sioux Falls, and the city of Brookings. Sources of quantitative and qualitative lake assessment data was acquired from the Statewide Lakes Assessment project and individual assessment studies.

The DENR maintains a Quality Assurance/Quality Control (QA/QC) Program to ensure that all environmental water quality data generated or processed meets standard accepted requirements for precision, accuracy, completeness, representativeness, and comparability. This entails the preparation and periodic review and revision of the DENR Quality Assurance Program and individual project plans. It also includes the preparation of periodic reports to DENR management and EPA; the review of contracts, grants, agreements, etc., for consistency with QA/QC requirements; and the administration of QA/QC systems and performance audits. The latter activity requires the establishment of schedules for the collection of the duplicate and blank samples, periodic testing of field sampling techniques, and liaison with contracted labs to ensure compliance with QA/QC objectives. In 1998, the Water Resources Assistance Program created a QA/QC document and protocol for its Clean Lakes and NPS programs. An updated Standard Operating Procedure manual was completed and published in June 2003.

The ambient monitoring station assessment network provides useful information on overall stream water quality. Only a brief summary of water quality is included because of the large volume of data and reports. A more detailed description of the stream ambient monitoring program is found in the preceding Surface Water Quality Monitoring Program chapter of this document.

Fixed station monitoring data were assessed by dividing major streams into segments that contain the same or similar designated beneficial uses, water quality standards criteria, and environmental and physical influences. Data obtained during the current reporting period were analyzed by utilizing the EPA STORET data storage/retrieval system. The data for each monitored segment were compared to state water quality standards applicable to the beneficial uses assigned to the segment in question (Tables 2 and 3).

For this report, monitored stream course mileages and lake acreages were measured using EPA Reach Indexing Tool software. All nonsupporting stream segments for which the data were available are also listed as requiring TMDLs.

Specific criteria were developed to define how data for streams would be evaluated to determine the status of each stream segment (waterbody). The following criteria were used:

Table 6: Sample Criteria for Determining Support Status

Description	Criteria Used
<p>FOR CONVENTIONAL PARAMETERS (such as dissolved oxygen, total suspended solids, pH, water temperature, etc)</p> <p>Number of observations (samples) required to consider data representative of actual conditions</p>	<p>STREAMS: at least 20 samples for any one parameter are usually required at any site. The sample threshold was reduced to 10 samples if greater than 25% of samples exceed water quality standards since impairment is more likely. In addition, the sample threshold was reduced to five samples if 100% of the samples indicated full or nonsupport for that parameter.</p> <p>LAKES: 2 separate years of samples for Trophic State Index, which must include at least one Secchi disk and chlorophyll-a value. Sample dates must be between May 15 and September 15.</p>
<p>FOR CONVENTIONAL PARAMETERS</p> <p>Required percentage of samples exceeding water quality standards in order to consider segment water quality-limited</p>	<p>STREAMS: >10% (>25% if less than 20 samples available).</p> <p>LAKES: >10% of surface samples (>25% if less than 20 samples available).</p> <p>Profile data was used to make final listing determinations for parameters (temperature, pH and dissolved oxygen) specific to the fish life propagation beneficial use. When 10% or 25% surface violations were observed for temperature, dissolved oxygen or pH; profile data was used to evaluate whether violations also occur throughout the water column. Lakes were considered fully supporting the aquatic life beneficial use if profile data indicate a region within the water column where temperature, pH, and dissolved oxygen were meeting numeric water quality criteria.</p>
<p>FOR TOXIC PARAMETERS (such as metals, mercury, total ammonia, etc)</p> <p>Number of observations (samples) required</p>	<p>STREAMS: At least one water quality sampling event.</p> <p>LAKES: At least one fish flesh sampling event.</p>
<p>FOR TOXIC PARAMETERS</p> <p>Required percentage of samples exceeding water quality standards in order to consider segment water quality-limited</p>	<p>STREAMS: More than one violation of toxic criteria within the past 3 years.</p> <p>LAKES: If fish flesh samples are above the Federal Drug Administration's recommended action levels (such as 1 part per million for mercury).</p>
<p>Data age (for both traditional and toxic parameters)</p>	<p>STREAMS: Data must be less than five years old.</p> <p>LAKES: All historic data</p> <p>Unless there is justification that data is (or is not) representative of current conditions. While a data age of two years matches the report cycle, it does not allow for enough samples to accurately portray variability.</p>
<p>Quality Assurance/Quality Control (for both traditional and toxic parameters)</p>	<p>STREAMS and LAKES: There must be a consensus that the data meets QA/QC requirements similar to those outlined in DENR protocols. QA/QC data was encouraged to be submitted.</p>

Waterbodies were also considered nonsupporting if beach closures were attributable to pollution-related causes. Waterbodies were listed as nonsupporting through beach closures where there were more than three beach closures per season in a consecutive three-week sampling period based on fecal coliform concentrations.

Deviations from the above criteria were allowed in specific cases, and are generally discussed in the proceeding tables listing the surface water quality summaries. Use support assessment for all assigned uses was based on the number of violations of water quality standards for the following parameters: total suspended solids, total dissolved solids, pH, water temperature, dissolved oxygen, fecal coliform (May 1 - September 30), and others. Violations of more than one parameter were not considered additive in determining overall use-support status for any given waterbody. A stream segment with only a slight exceedance (< 10% violations for one or more parameters) is considered fully supporting. Complete listings of relevant parameters appear in Tables 2 and 3. South Dakota has established the following general criteria for determining use support of monitored streams:

For Conventional Parameters (such as TSS, DO, pH, water temperature, etc.)

Fully supporting	<1 - 10% of values violate acute water quality standards
Not supporting	>10% of values violate acute water quality standards

For Toxic Parameters (such as metals, total ammonia, etc)

Fully supporting	≤ 1 violation of the acute water quality standard within the past three years or fish flesh sampling events that do not contain levels greater than FDA's action level
Not supporting	>1 violation of the acute water quality standards within the past three years or one fish flesh sampling event that contains levels greater than FDA's action level (such as 1 ppm for mercury)

In order to ensure a sufficient number of samples was available for each stream segment (usually a minimum of 20) to arrive at an assessment that would be statistically acceptable, the period of record considered for this report was from October 1, 2000 to September 30, 2005 (5 years).

Much of the waterbody impairment information is summarized in Tables 7 through 16. More detailed information on each river basin and the assessed lakes within each drainage is presented in Tables 17 through 30.

In addition to the use support assessment above, South Dakota has chosen to use the assessment categories that EPA recommends in its guidance that was issued on July 21, 2003. South Dakota's assessment categories are as follows:

- Category 1: All designated uses are met;
- Category 2: Some of the designated uses are met but there is insufficient data to determine if remaining designated uses are met;
- Category 3: Insufficient data to determine whether any designated uses are met;

- Category 4A: Water is impaired but has an EPA approved TMDL;
- Category 4B: Water is impaired but implementation project (best management practices) is in place;
- Category 4C: Water is impaired by a parameter that is not considered a “pollutant”;
- Category 5: Water is impaired or threatened and a TMDL is needed;
- Category 6A: Water is not impaired but requires a review of an approved point source TMDL in order to maintain water quality standards; and

- Category 6B: Water has an existing point source TMDL approval, which does not require a review.

Support assessment for fishable (fish and aquatic life propagation) use primarily involved monitoring the following major parameters: dissolved oxygen, total ammonia, water temperature, pH, and total suspended solids.

Support assessment for swimmable use (immersion recreation and limited contact recreation) involved monitoring fecal coliform and dissolved oxygen from May 1 through September 30 of each year (Table 2).

South Dakota adopted numeric surface water quality criteria with the 1967 “Water Quality Standards for the Surface Waters for the State of South Dakota”. The main intent of numeric water quality criteria is to regulate discharges of wastewater from industries and municipal wastewater treatment facilities. Numeric criteria are needed to develop numeric effluent limits for facilities that discharge wastes to surface water. However, since South Dakota has numeric water quality criteria, a strict interpretation of the water quality standards could imply that a waterbody could potentially be listed as “impaired” or “nonsupporting” even if only one violation occurred within a five year period. South Dakota and even EPA have traditionally viewed the 10% approach (as stated in the criteria for determining support status in Table 6) as an appropriate measuring tool to determine waters that require further in-depth study and TMDL development. Factors such as drought, high precipitation events, and other environmental factors can cause significant variation in water quality. One violation of a conventional parameter, such as pH or water temperature, does not indicate a water body is not supporting its beneficial use. The methodology employed by the department in the interpretation of the data for the 2006 Integrated Report is consistent with DENR’s interpretation of the South Dakota Surface Water Quality Standards. Therefore, for the Integrated Report purposes, DENR defines “impairment” or “nonsupport” of a beneficial use of a water body by the criteria found in Table 6.

Lake water quality data was acquired from the DENR’s Statewide Lakes Assessment (SWLA) project. Lakes are sampled on a four year rotation (i.e. about 31 lakes annually) twice during the growing season, at one to three predetermined site locations. The number of site locations assigned to each lake was dependent on basin size. Field measurements were collected and water samples were composited from each site. Lake data was available from 1989 through the 2005 sampling seasons.

Data collected during the growing season from individual lake assessment projects was also used to supplement the SWLA data. Project specific data was usually collected monthly throughout the growing season (May 15 - September 15) from site locations consistent with those established during the SWLA project. Field measurements and water samples were usually collected at each site. Additional chlorophyll-a data was also acquired from citizens monitoring efforts.

A group of 17 standard water quality parameters were measured or analyzed. Water temperature, dissolved oxygen, conductivity, specific conductance, pH and Secchi disk transparency were measured on site. Chlorophyll-a was extracted from 50-1000 ml of lake sample and analyzed by spectrophotometer as described by APHA (1995). The remaining samples were preserved, iced and shipped to the State Health Laboratory in Pierre, South Dakota for individual parameter analysis.

For the 2006 reporting cycle, support status of lakes and reservoirs was evaluated based on trophic state indicators and water quality standard limits. The Trophic State Index (TSI) approach (Carlson 1977), represents an impairment targeting criteria, designed to augment narrative criteria for making lake support determinations. All available Secchi transparency and chlorophyll-a data from 1989-2005 was used to calculate the median TSI value for each lake based on a minimum of two years data.

The fishery beneficial use designation was used as a classification tool to define the support status of lakes. This approach differs from the ecoregion approach used in previous reporting cycles (Stueven et al. 2000). A document explaining the rationale and methodology of the current TSI approach for Targeting Impaired Lakes in South Dakota is located on the DENR website at:

<http://www.state.sd.us/denr/DFTA/WatershedProtection/WQInfo.htm#Information>.

Use support (full and non-support) determinations based on the median Secchi-chlorophyll-a TSI were derived from statistical analysis and Best Professional Judgment (BPJ). TSI values are based on a median of all available data and not individual data values. If the median TSI value exceeded the support criteria in Table 7, the waterbody was listed as non-supporting the fishery beneficial use.

Table 7: South Dakota Fishery Beneficial Use Support Determination Range For Lakes

<i>Ecoregion Support Determination</i>		
<i>TSI Range</i>		
Beneficial Use	Fully Supporting	Not Supporting
Coldwater Permanent Fish Life Propagation	≤ 48.4	≥ 48.5
Coldwater Marginal Fish Life Propagation	≤ 53.4	≥ 53.5
Warmwater Permanent Fish Life Propagation	≤ 58.4	≥ 58.5
Warmwater Semi-Permanent Fish Life Propagation	≤ 63.4	≥ 63.5
Warmwater Marginal Fish Life Propagation	≤ 68.4	≥ 68.5

In addition to the TSI values, lake support status was evaluated using state water quality standards. State water quality standard numeric limits provide a benchmark for making listing decisions. However, water quality is variable and dependent on the environmental conditions present during sample collection. To account for variability, all available surface data collected during the growing season from 1989-2005 was used to identify parameter specific impairments for individual assessed lakes.

Lakes were listed based on the following criteria.

- 10% surface exceedances, based on ≥ 20 sample points; or
- 25% surface exceedances, based on < 20 sample points.

Profile data was used to make final listing determinations for parameters (temperature, pH and dissolved oxygen) specific to the fish life propagation beneficial use. Fish and other aquatic life are relatively mobile and can move vertically within the water column to escape adverse conditions. When 10% or 25% surface violations were observed for temperature, dissolved oxygen or pH; profile data was used to evaluate whether violations also occur throughout the water column. Lakes were considered fully supporting the aquatic life beneficial use, if profile data indicate a region within the water column where temperature, pH, and dissolved oxygen were meeting numeric water quality standards.

Parameters such as nitrate, ammonia-nitrogen (as N), specific conductance, total dissolved solids, total suspended solids and alkalinity not collected in the profile were listed based on the criteria found in Table 6 depending on the number of data available for a given lake.

Waterbodies were also evaluated based on beach closures, fish kills, and fish consumption advisories. Beach closure information collected during this reporting period (2004-2005) was used to make impairment decisions (Table 32). Lakes were listed if three beach closures per season occurred in a consecutive three-week sampling period. A public beach is recommended for closure if the following fecal coliform levels are not met.

- (1) Any three consecutive samples exceed 200 fecal coliform per 100 milliliters;
- (2) Any two consecutive samples exceed 300 fecal coliform per 100 milliliters; or
- (3) Any single sample exceeds 1,000 fecal coliform per 100 milliliters.

Long-term trends in TSI were estimated from data collected during the 1989 through 2005 statewide lake assessments and from individual assessment projects. A slope of \pm five units between respective TSI values was selected as signifying a legitimate change in lake water quality over the course of data availability. Long-term trends covering the period from 1989 through 2005 are summarized in the Lake Water Quality Assessment chapter of this section (Table 16).

STATEWIDE SURFACE WATER QUALITY SUMMARY

South Dakota has a total of about 9,289 miles of perennial rivers and streams (Table 1). Major or significant streams in this context are waters that have been assigned aquatic life use support in addition to the beneficial uses of fish and wildlife propagation, recreation, stock watering, and irrigation (9) and (10). This definition includes primary tributaries and, less frequently, subtributaries of most state rivers and larger perennial streams. In a few cases, lower order tributaries may be included, for example in the Black Hills area, which has a relatively large number of permanent streams.

Approximately 7,532 miles of perennial streams have been assessed to determine water quality status for a period covering the last five years (October 2000 through September 2005). Data needed to be evaluated over this longer time span to ensure enough data points were available for each stream segment (usually 20) to properly characterize existing stream conditions. Since some stream segments had only four (or fewer) samples available per year, evaluation of a data set covering at least five years of sampling was required to adequately portray the natural variability in water quality that is typical of stream environments.

Currently, 50% of the assessed stream miles fully support all their assigned beneficial uses and 50% do not presently support one or more of their uses. The high percentage of impairment can be attributed largely to high levels of total suspended solids (TSS) and fecal coliform.

During this reporting cycle, 7,150 designated miles were assessed for goal attainment of fishable (aquatic life) use which includes 2,256 miles also assessed for swimmable goal attainment. During this assessment period, 36% of assessed stream miles fully met fishable/aquatic life criteria, 41% did not meet fishable/aquatic life criteria, and 23% had insufficient information to determine the attainment status. Seventy-eight percent of 2,256 stream miles fully supported swimmable uses, 22% did not meet swimmable criteria, and less than one percent had insufficient information to determine attainment status.

Nonsupport was caused primarily by Total Suspended Solids from agricultural nonpoint sources and natural origin. In terms of total stream miles affected, the second most frequent cause of impairment this reporting period was fecal coliform, the third cause of impairment was due to elevated sodium adsorption ratio, and the fourth cause of impairment was due to specific conductivity. Additional causes of impairment this reporting cycle included total dissolved solids (TDS), water temperature, and low concentrations of dissolved oxygen in approximate order of frequency. Natural pollutant sources of dissolved and suspended solids are exemplified by erosive soils that occur in western South Dakota badlands and within the Missouri River basin (including considerable exposed marine shale formations) and in extreme southeastern South Dakota (including large areas of highly erodible loess soils).

Higher than average annual precipitation can produce considerable suspended sediment problems over large areas of the state, particularly in the west and southeast. Fecal coliform concentrations also increase significantly during times of above normal rainfall. Appropriate best

management practices should be applied to treat the sources of these and other parameters whose effects are likely to be masked during periods of low precipitation.

In addition to rivers and streams, South Dakota has 573 classified publicly owned lakes and reservoirs totaling nearly 205,000 acres. The above 573 waterbodies are listed in ARSD Chapter 74:51:02 and classified for aquatic life and recreation beneficial uses. GF&P presently manages 450 state lakes for fishing.

Excluding the four mainstem reservoirs, an estimated 24% (140 lakes) of the 573 lakes have been assessed, accounting for 70% of the total lake acreage. An estimated 41% (54 lakes) of the lake acreage was considered to support all assessed beneficial uses and 59% (84 lakes) did not support assessed beneficial uses. Two of the 140 lakes assessed had insufficient information to make support determinations. Approximately 98% of use nonsupport for lakes can be attributed to nonpoint sources. Most lakes in the state are characterized as eutrophic to hypereutrophic. They tend to be shallow and turbid and are well-supplied with dissolved salts, nutrients, and organic matter from often sizeable watersheds of nutrient-rich glacial soils that are extensively developed for agriculture. Runoff, carrying sediment and nutrients from agricultural land, is the major nonpoint pollution source.

The mileage/acreage of use support for assessed surface waters in South Dakota during this reporting cycle is summarized in Tables 8 through 13.

Table 8: Designated Overall Use Support Status for Rivers and Streams in South Dakota

Type of Waterbody: Rivers and Streams (miles)			
Degree of Use Support	Assessment Basis		Total Assessed
	Evaluated	Monitored	
Size Fully Supporting	-	3,735	3,735
Size Fully Supporting but Threatened	-	-	-
Size Not Supporting	-	3,797	3,797
TOTAL	-	7,532	7,532

Table 9: Designated Overall Use Support Status for Lakes and Reservoirs in South Dakota

Type of Waterbody: Lakes and Reservoirs (acres)			
Degree of Use Support	Assessment Basis		Total Assessed
	Evaluated	Monitored	
Size Fully Supporting	-	59,117	59,117
Size Fully Supporting but Threatened	3,729	-	3,729
Size Not Supporting	-	80,071	80,071
TOTAL	3,729 ^a	139,188	142,917

^a These lakes were only evaluated by fish flesh data, no water quality data was taken for this report cycle.

Table 10: Individual Use Support Summary for Rivers and Streams

Use (Miles)	Size Fully Supporting	Size Not Supporting	Size Threatened with Insuff. Info.	Size With Insuff. Info. Or Not Assessed	Size Assessed
Overall Use Support	3,735	3,797	-	20 (not assessed)	7,532
Coldwater Permanent Fish Life	138	257	11	984 (insuff info)	1,390
Coldwater Marginal Fish Life	161	68	-	29 (insuff info)	258
Warmwater Permanent Fish Life	600	490	-	11 (not assessed)	1,090
Warmwater Semipermanent Fish Life	1,094	1,654	-	261 (insuff info)	3,009
Warmwater Marginal Fish Life	592	440	-	371 (insuff info)	1,403
				76 (not assessed)	
Immersion Recreation	1,769	487	-	13 (not assessed)	2,256
Limited Contact Recreation	4,321	721	-	1,144 (insuff info)	6,186
				1,050 (not assessed)	
Fish/Wldlf. Prop., Rec., and Stock Watering	6,355	388	-	438 (insuff info)	7,181
				389 (not assessed)	
Irrigation	5,900	1,356	-	276 (insuff info)	7,532
				37 (not assessed)	
Commerce and Industry	1,414	-	-	-	1,414
Domestic Water Supply	1,826	59	-	-	1,885

Table 11: Individual Use Support Summary for Lakes and Reservoirs

Use (Acres)	Size Fully Supporting	Size Not Supporting	Size Threatened with Insuff. Info.	Size With Insuff. Info. Or Not Assessed	Size Assessed
Overall Use Support	59,117	80,071	3,729	-	142,917
Coldwater Permanent Fish Life	1,189	456	368	31 (insuff info)	2,044
Coldwater Marginal Fish Life	148	15	-	-	163
Warmwater Permanent Fish Life	32,619	37,004	106	752 (insuff info)	70,481
Warmwater Semipermanent Fish Life	12,919	24,017	-	1,063 (insuff info)	37,999
Warmwater Marginal Fish Life	1,905	19,937	-	8,556 (insuff info)	30,398
Immersion Recreation	48,974	-	-	91,637 (not assessed)	48,974
Limited Contact Recreation	48,974	-	-	90,389 (not assessed)	48,974
Fish/Wldlf. Prop., Rec., and Stock Watering	137,936	55	8,421	5,378 (insuff info)	151,790
				72 (not assessed)	
Irrigation	22,958	5,070	-	16,999 (not assessed)	28,028
Drinking Water Supply	7,597	4,196	-	1,528 (not assessed)	11,793

Table 12: Total Sizes of Water Impaired by Various Cause Categories in South Dakota

Rivers/Streams	
Cause/Stressor Category	Miles
Cadmium	2
Copper	2
Fecal Coliform	1,208
Mercury	1
Nitrates	22
Nitrogen, Ammonia	103
Dissolved Oxygen	453
pH	96
Salinity/SAR	789
Specific Conductivity	767
Temperature, Water	409
Total Dissolved Solids	473
Total Suspended Solids	2,058
Zinc	2
Lakes/Reservoirs	
Cause/Stressor Category	Acres
Dissolved Oxygen	5,301
Fecal Coliform	1,621
Fish Consumption Advisories (Mercury)	3,843
Nitrates	55
pH	3,814
Sedimentation/Siltation	13,225
Selenium	55
Sulfates	4,196
Temperature, Water	425
Total Dissolved Solids (TDS)	4,251
Total Suspended Solids (TSS)	296
Trophic State Index (TSI)	81,330
Turbidity	296

Table 13: Total Sizes of Waters Impaired by Various Source Categories in South Dakota

Rivers/Streams	
Source Category	Miles
Acid Mine Drainage	6
Animal Feeding Operations (NPS)	444
Combined Sewer Overflow	1
Crop Production (including irrigated and non-irrigated crop production)	2,805
Grazing in Riparian or Shoreline Zones	715
Flow Modification	236
Industrial Point Source Discharge	22
Livestock (Grazing or Feeding Operations)	2,284
Managed Pasture Grazing	24
Mine Tailings	6
Municipal (Urbanized High Density Area)	5
Municipal Point Source Discharge	72
Natural Sources (including drought-related impacts)	2,470
On-Site Treatment Systems	81
Other Recreation Pollution Sources	50
Rangeland (Unmanaged Pasture) Grazing	551
Residential Districts	10
Source Unknown	1,170
Streambank Modifications/Destabilization	109
Wet Weather Discharges	20
Wildlife	23
Lakes/Reservoirs	
Source Category	Acres
Natural Sources	5,267
Non-Point Sources	95,167
Source Unknown	3,846

LAKE WATER QUALITY ASSESSMENT

A total of 573 lakes are currently listed for beneficial uses in South Dakota. Lake monitoring and assessment efforts have been conducted routinely since 1989 as part of the SDDENR's Statewide Lakes Assessment (SWLA) program. Additional assessment data have also been acquired from individual assessment projects. When quantitative data was incomplete, a qualitative evaluation of lake water quality was provided. Approximately 24% of the 573 lakes have been assessed or are part of the SWLA cycle, accounting for 70% of the total lake acreage. Twelve assessed lakes in South Dakota have a surface area greater than 4,000 acres and have a combined surface area of 91,134 acres. The remaining lakes (433) did not meet the assessment criteria listed below.

- Publicly owned,
- Public access, and
- Are of regional significance.

The TSI provides a measure of water quality for targeting impaired lakes (Carlson 1977, 1991). The SDDENR has recently adopted a TSI methodology based on Secchi depth transparency and chlorophyll-*a* using the fishery beneficial use as a classification tool to define support status. The rationale and methodology of this TSI approach entitled "Targeting Impaired Lakes in South Dakota" is located on the DENR web site at:

<http://www.state.sd.us/denr/DFTA/WatershedProtection/WQInfo.htm#Information>

In addition, water quality standard limits designed to protect designated beneficial uses were evaluated for each individual lake. Based on these two listing components 54 fully supported their designated uses and 84 failed to support one or more of their assigned uses (Table 11). Of the 140 lakes, two did not meet the requirements for sufficient data to be listed in this report.

The TSI approach was used to determine the trophic state of assessed lakes (Carlson 1977). Parameters used to generate the median TSI value included Secchi depth and chlorophyll-*a*. Phosphorus was not included into the index value despite being used in previous reporting cycles (1998-2004). The phosphorus component of the TSI was found to deviate more than ± 5 points from the chlorophyll-*a* TSI (median 11.3) in 82% of the assessed lakes. Carlson (1991) suggests that at this magnitude of deviation, the phosphorus component of the TSI will contribute to the misclassification of a lakes trophic state. Table 14 depicts the trophic status of assessed lakes across South Dakota.

Table 14: Trophic Status of Significant Publicly Owned Lakes

Trophic Status	Number of lakes	Acreage of Lakes
Total with Beneficial Use Criteria	573	204,987
Total Assessed*	140	143,842
Oligotrophic	1	822
Mesotrophic	16	18,294
Eutrophic	70	73,393
Hypereutrophic	46	45,566
Unknown	7	5,767

* May 15, 1989 to September 15, 2005

The major problems of South Dakota lakes continue to be excessive nutrients, algae, and siltation due to nonpoint source pollution (primarily agricultural). Over the years, internal loading from phosphorus has become more of a problem as watershed loadings have decreased due to better agricultural practices. Aging reservoirs have also become more eutrophic as many are now approaching their expected life spans. Water quality degradation due to acid precipitation, acid mine drainage, or toxic pollutants, is presently not a problem in South Dakota lakes. Lake-specific data is tabulated in the River Basin Assessments section.

Water Resource Assistance Program

The approach used by the South Dakota Water Resource Assistance Program for addressing nonpoint source pollution is to first, identify and target sources of pollution and determine alternative restoration methods; and second, to control the sources of pollution and restore the quality of impacted waterbodies. Most phases of the program are state and local efforts, with supplemental technical and financial assistance from EPA and other federal agencies used whenever possible.

The watershed assessment phase encompasses a series of procedures to assess the current condition of selected waterbodies. Included in this phase are water quality, water quantity and watershed data collection. The state provides the local sponsor with technical assistance, training, and equipment to conduct the assessment portion of the project. Generally, the local project sponsor is responsible for collecting the data using 319 federal funding, state grant funding, and existing local resources. Following the collection of sufficient data, the state evaluates the data and prepares a report which details baseline information, identifies sources of pollution, describes alternative pollution control methodologies and outlines implementation costs. A Total Maximum Daily Load (TMDL) is then developed using this information. Prior to the implementation of specific pollution control and restoration alternatives, the project sponsor is responsible for the preparation of a watershed/lake restoration plan based on recommendations from the assessment. Technical assistance for this process is provided by the state. If the plan is then approved, the project sponsors are eligible to apply for appropriate state and federal funding.

The majority of the pollution sources that have affected the lakes in South Dakota are agricultural nonpoint sources. The methods used to control these sources are selected on a case-by-case basis. The selection of methods is based on the evaluation of individual watersheds using the Annualized Agricultural Nonpoint Source Model (USDA-ARS, 1998) or a manual inventory of land use, soil type, and nonpoint sources. The AGNPS model delineates critical cells within the watershed and is then used to predict which control methods would be the most effective. The AGNPS model is also used to track success of Best Management Practices (BMP's).

Following this evaluation, coordination with state and federal agricultural agencies is solicited to verify the critical nature of the identified cells and the selected control methods. For those areas targeted as critical, the owners/operators are contacted to request their voluntary participation in the control program. The state does have in effect the Sediment and Erosion Control Act of 1976 which is implemented by individual state conservation districts. However, any action under the Act is based strictly in response to complaints. There are no provisions for forcing compliance on identified problem areas. Specific practices currently recommended for nonpoint source pollution control include; large and small sediment control structures, stream bank erosion control, grazing management systems, and the installation of manure management systems. The DENR Surface Water Quality program generally prohibits point source discharges to lakes.

Lake management in South Dakota is dependent upon many resource management programs and agencies. The Department of Environment and Natural Resources, the Department of Agriculture, U.S. Natural Resources Conservation Service, Department of Game, Fish and Parks and many local agencies and special purpose districts are all crucial to the protection or restoration of lakes in the state. These groups provide financial and/or technical assistance essential for accomplishing lake water quality goals. Local and county land-use zoning ordinances exist in South Dakota and are considered local responsibilities.

In conjunction with the development of recommended pollution control alternatives, the watershed assessment study data evaluation is also designed to provide recommendations for in-lake restoration alternatives. The primary recommendations provided for lake restoration include, but are not limited to, natural flushing, reducing or eliminating sources of pollution, in-lake alum treatments, and shoreline stabilization. Restoration methods employed in the past also include aeration, sediment removal, weed harvesting, and chemical weed control.

A list of current assessment and implementation projects can be found on the DENR website:

<http://www.state.sd.us/denr/DFTA/WatershedProtection/WQInfo.html#information>.

Impaired Lakes

A description of each impaired lake is included in the section of this document titled *River Basin Assessments*. The lakes are listed by their location in each major river basin in the state.

All 573 state lakes presently listed in ARSD Chapter 74:51:02 have been assigned the beneficial use of fish and wildlife propagation, recreation, and stock watering (9). The lakes listed in the ARSD may also be assigned two or more of the following beneficial uses:

- (1) Domestic water supply waters;
- (2) Coldwater permanent fish life propagation waters;
- (3) Coldwater marginal fish life propagation waters;
- (4) Warmwater permanent fish life propagation waters;
- (5) Warmwater semipermanent fish life propagation waters;
- (6) Warmwater marginal fish life propagation waters;
- (7) Immersion recreation waters;
- (8) Limited contact recreation waters;
- (9) Fish and Wildlife propagation, recreation and stock watering waters;
- (10) Irrigation waters; and
- (11) Commerce and industry waters.

Acid Effects on Lakes

During the Lake Water Quality Assessment, each lake was measured for field pH. As a result of this monitoring, one lake was found to have a single pH reading less than 6.5 standard units (su). The pH within this lake usually ranges from 7.7 - 8.8 su and was not considered impacted or vulnerable to high acidity based on one sample. DENR is not aware of any lakes in South Dakota that are currently being impacted by acid deposition. This is attributed to a lack of industrialization and a natural buffering capacity of the soils.

Table 15: Acid Effects on Lakes

	Number of Lakes	Acreage of Lakes
Assessed for pH	140	143,842
Impacted by High Acidity	0	0
Vulnerable to High Acidity	0	0

Trends in Lake Water Quality

The trophic state of a lake can be monitored over time to track changes in water quality for prioritizing management decisions. Long-term trends were determined for South Dakota lakes using all available data collected during the lake water quality assessments

and the Statewide Lakes Assessment (SWLA) project. The TSI using the chlorophyll- *a*, and Secchi transparency were calculated for each individual sample. The slope of a regression line was calculated for each TSI measurement overtime, for all assessed lakes. If a lake was sampled less than two years it was not included due to insufficient data.

Most lakes TSI values were within 5% slope range indicating stable or non-significant change (Table 16). Five lakes indicated negative slopes exceeding 5% and were considered degrading. In addition, five lakes showed positive slopes above 5% suggesting improvement. Due to limited timeframe it is difficult to describe the significance of these conditions. However, it is likely due to natural hydrologic conditions. In general, most assessed lakes display relatively stable trophic status.

The maximum long-term rate of change for any lake was approximately one TSI point every 125 years. Many of the lakes and reservoirs had much smaller changes. With only 16 years or less of data, it is difficult to draw any definite conclusions on the water quality trend of a lake. To have better trend analysis, more data over time will be needed.

A number of short-term, cyclical changes or fluctuations were observed between monitoring periods. With the extreme drought experienced in the past 5 years, water levels have decreased and nutrients are being concentrated at higher levels. However, results of this recently revised long-term trend analysis indicate that no major changes have occurred in the monitored lakes.

Table 16: Long-Term Trends in Public Lakes (1989-2005)

	Number of Lakes	Lake Acreage
Assessed for Trends	140	129,864
Improving	5	14,223
Stable	113	114,903
Degrading	5	738
Insufficient Data	17	13,978

RIVER BASIN ASSESSMENTS

South Dakota has fourteen major river basins, most of which drain into the Missouri River (Figure 2). The following sections contain brief narratives that discuss noteworthy waterbodies and pollution problems. A detailed state map showing assessed lakes and streams provides general use support information (Figure 3). More specific information is provided in the accompanying river basin tables for the monitored waterbodies in each river basin that is identified in Figure 2 and shown in Figure 3.

Much of the information necessary for River Basin Assessments is obtained from the DENR stream ambient monitoring program. This fixed ambient network presently consists of 137 active in-stream stations. The collected data is evaluated to define water quality in the state, identify pollution, and report changes in the state's water quality.

Sampling station locations are determined by assessing areas located within high quality beneficial use classifications, located above and below municipal/industrial discharges, or within problem watersheds. Currently, DENR collects samples at those locations on either a monthly, quarterly, or seasonal basis for nutrient, bacterial, and general physical and chemical parameters. Stations that are located near historic hard rock mines sites are also analyzed for cyanide and ten metals including arsenic. Several stations are sampled for sodium, calcium, and magnesium during the irrigation season. The samples are handled in accordance with DENR's QA/QC Plan. Sample test results are then entered into STORET. This type of water sampling is used to track historical sampling information, natural background conditions, runoff events, and can indicate possible acute or chronic water quality problems.

Lake monitoring within each river basin is conducted in conjunction with the Watershed Assessment Program's Statewide Lake Assessment project. Many of the standard parameters measured in streams are also evaluated for state lakes with the addition of Secchi disk transparency, chlorophyll *a* level, oxygen/water temperature profiles, and total volatile solids. Similarly, in the course of sampling lakes as well as streams, any pollution sources or environmental conditions that may affect water quality are noted by field personnel. Lake trophic state and trends are estimated with Carlson's (1977) Trophic State Indices (TSI).

Baseline data show whether or not a waterbody is meeting its assigned water quality beneficial uses. A description of the procedure involved is found in the methodology section of this document. Baseline data evaluations are used as a management tool to determine the effectiveness of control programs on existing point and nonpoint sources and for directing future control activities.

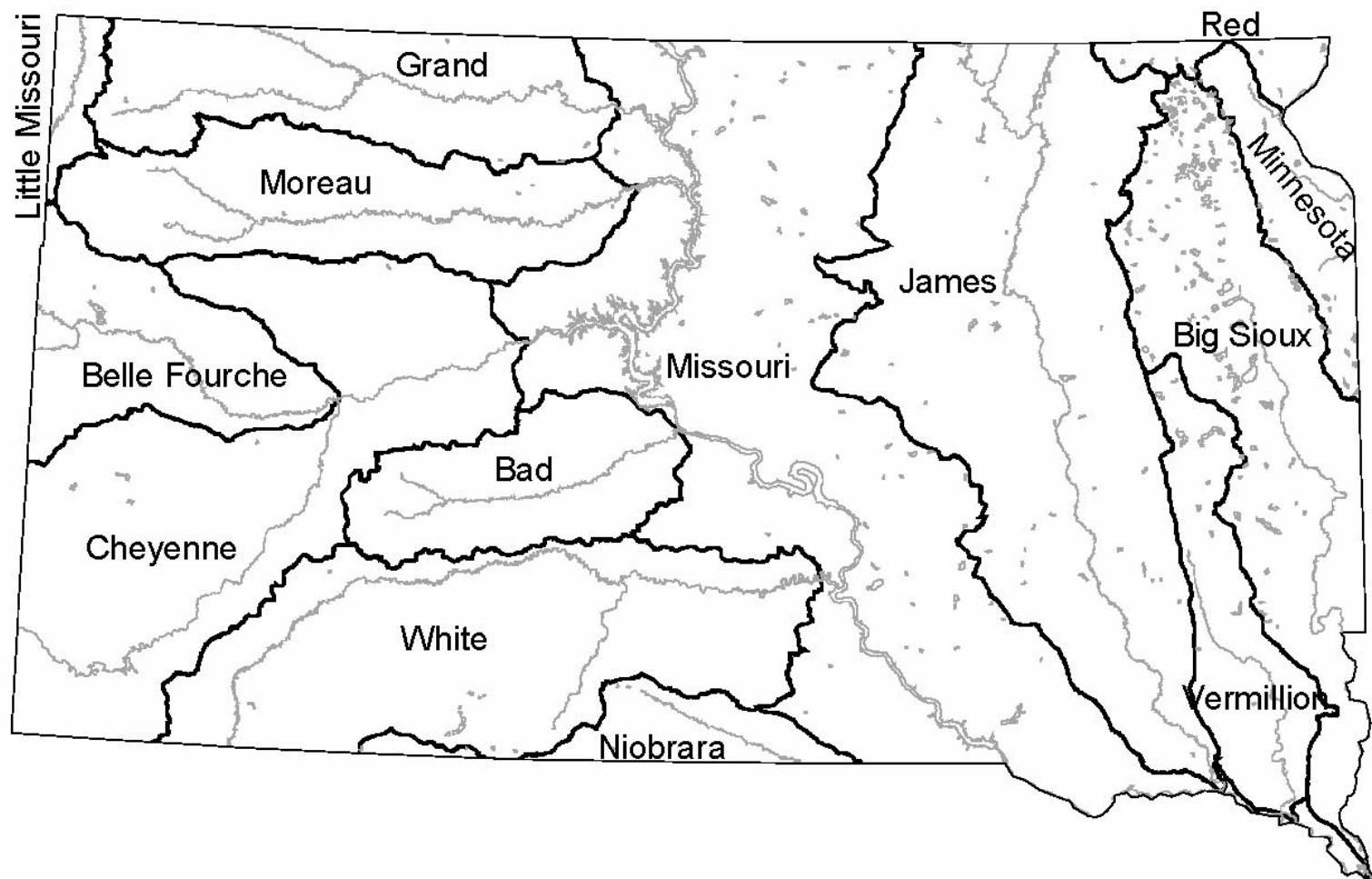


Figure 2: Major River Basins in South Dakota

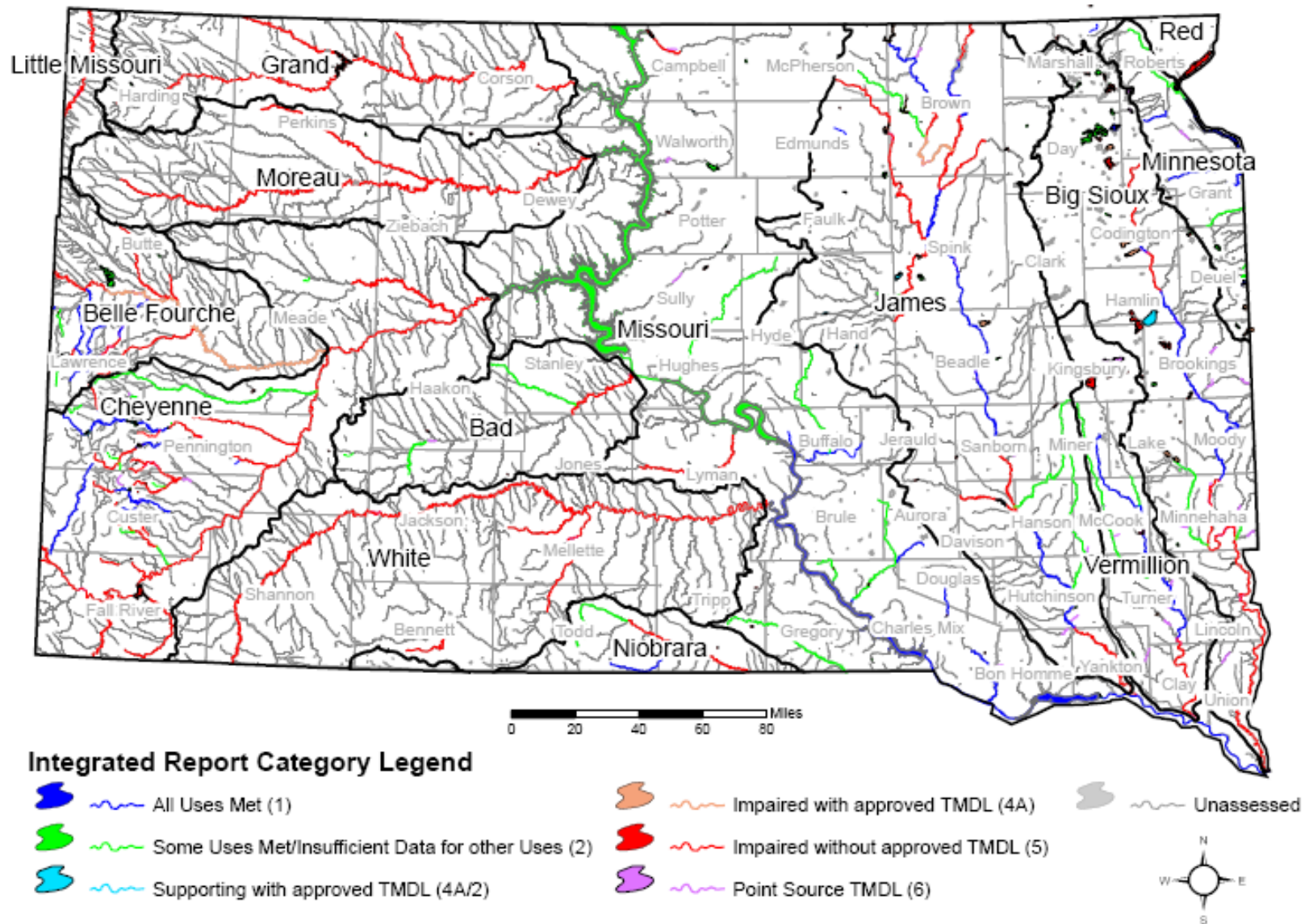


Figure 3: 2006 South Dakota Waterbody Status

KEY FOR RIVER BASIN INFORMATION TABLES

Name -	Name of waterbody
Location -	Best available description
Map ID -	Map identification
Basis -	Monitoring agency/program and sampling site identification/WQM number or Surface Water Discharge Permit Number.
Use -	Beneficial use assigned to waterbody or TMDL status of Surface Water Discharge Permit

EPA Category - EPA Support Category

Category 1:	All designated uses are met;
Category 2:	Some of the designated uses are met but there is insufficient data to determine if remaining designated uses are met;
Category 3:	Insufficient data to determine whether any designated uses are met;
Category 4A:	Water is impaired but has an EPA approved TMDL;
Category 4B:	Water is impaired but implementation project (best management practices) is in place;
Category 4C:	Water is impaired by a parameter that is not considered a "pollutant";
Category 5:	Water is impaired or threatened and a TMDL is needed;
Category 6A:	Water is not impaired but approved point source TMDL will be reviewed during the permit renewal cycle to ensure existing TMDL will maintain water quality standards; and
Category 6B:	Water has an existing point source TMDL approval, which does not need a review.

Source categories -

Point Sources

Controlled by permit
 Industrial
 Municipal
 Combined sewer (end-of-pipe)
 Storm sewers (end-of-pipe)

Nonpoint Sources (includes agriculture sources) Residential districts

Agriculture Sources

Non-irrigated crop production
 Irrigated crop production
 Pasture land
 Range land
 Feedlots - all types
 Animal holding/management areas

Hydromodification

Channelization
 Dredging
 Dam construction
 Flow regulation/modification
 Bridge construction
 Removal of riparian vegetation
 Streambank modification/destabilization

Support status (lakes and streams):

Full = Full support, Non = Nonsupport, Insuff. Info. = Insufficient sampling information (had limited sample data and fewer than 25% water quality standard violations)

Unknown = No sample data for the given beneficial use

Bad River Basin (Figure 4, Table 17).

The Bad River basin lies in west-central South Dakota between the Cheyenne and White River basins and drains approximately 3,151 square miles. Historically, a main characteristic of the basin has been a general lack of constant river flow. The upper portion of the Bad River receives water from several artesian wells in the Philip area so water is present most of the year. There are prolonged periods of low flow in the Bad River reach from Midland to the Missouri River.

DENR has assessed four lakes within the basin and also has one water quality monitoring site located on the Bad River.

The USGS has water quality monitoring sites on the Bad River and on some of the intermittent streams in the basin on Plum Creek, the South Fork of the Bad River, and an unnamed tributary of Cottonwood Creek. However, the data is very limited and for most sites the only parameters that were sampled were conductivity and water temperature. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 17: Bad River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Freeman Lake	Jackson County	L1	Lk Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Non	Nitrates Conductivity TDS Selenium	Nonpoint Source Natural Sources	5 / 4A *	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI			
Hayes Lake	Stanley County	L2	Lk Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A **	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				
Murdo Dam	Jones County	L3	Lk Assessment	Domestic Water Supply	Full			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
Waggoner Lake	Haakon County	L4	Lk Assessment	Domestic Water Supply	Full			5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	Nonpoint Source		
Streams									
Bad River	Stanley County line to mouth	R1	DENR 460850	Fish/Wildlife Prop, Rec, Stock Waters	Non	TDS	Crop Production	5 / 4A *	Yes – 2
				Irrigation Waters	Non	Conductivity	Livestock		
				Limited Contact Recreation Waters	Full		Natural Sources		
				Warmwater Marginal Fish Life	Non	TSS			
Plum Creek	Near and below Hayes	R2	USGS 6441100 & 6441110	Fish/Wildlife Prop, Rec, Stock Waters	Unknown			2	No
				Irrigation Waters	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA	On 303(d)?
South Fork Bad River	Near Cottonwood	R3	USGS 6440200	Fish/Wildlife Prop, Rec, Stock Waters	Unknown			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Full				
Unnamed Tributary of Cottonwood Creek	Near Quinn	R4	USGS 6440300	Fish/Wildlife Prop, Rec, Stock Waters	Unknown			2	No
				Irrigation Waters	Full				
Surface Water Discharge Permits					PARAMETER				
Bad River	Near Ft. Pierre	P1	SD0023582	Approved TMDL		Ammonia		6B	No
Bad River	Near Philip	P2	SD0020303	Approved TMDL		Ammonia		6B	No

* This waterbody has an approved TMDL for some parameters but still requires TMDL development for other parameter(s).

** Hayes Lake has an approved TMDL for TSI but updated assessment methodology shows full support.

Bad River Basin

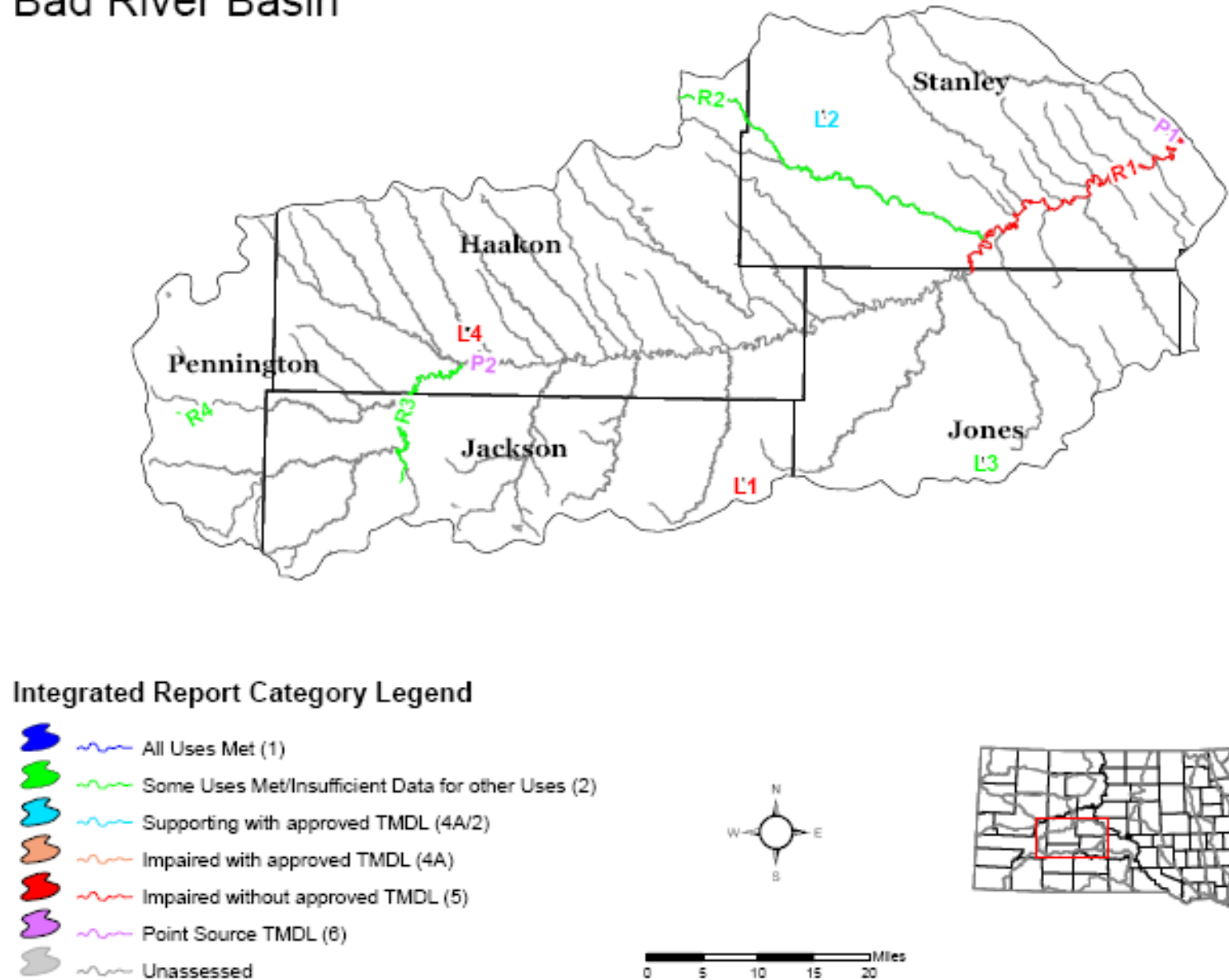


Figure 4: Bad River Basin

Belle Fourche River Basin (Figure 5, Table 18).

The Belle Fourche River basin lies in western South Dakota between the Cheyenne and Moreau River basins and drains approximately 3,200 square miles in South Dakota. The upper portion of the basin contains one active and several historic hard-rock mining operations. The middle and lower portion of the basin is mainly used for livestock watering and irrigation purposes.

DENR has assessed five lakes and maintains 30 water quality monitoring sites on several streams within the Belle Fourche basin. Five water quality monitoring sites are located on the Belle Fourche River, six are located on Spearfish Creek, and seven are located on Whitewood Creek. The rest are located on various other streams. Most of the streams are routinely monitored for toxic pollutants such as heavy metals since a number of hardrock mining operations are or were located in this basin.

The USGS has water quality monitoring sites on the Belle Fourche River, Crow Creek, Horse Creek, Little Spearfish Creek, and Willow Creek within the basin. The data on some streams is fairly extensive and includes information on dissolved oxygen, pH, conductivity, water temperature, sodium adsorption ratio, and suspended sediment. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

Past and current assessments show Spearfish Creek generally supports its beneficial uses. However, two segments near Elmore, South Dakota show elevated pH. The higher pH is due largely to the limestone formations located along the course of the stream (natural conditions).

Strawberry Creek is impacted by historic mine tailings and acid mine drainage. One of the contributing sources of impairment was from Brohm Mining Corporation's Gilt Edge Mine. In July 1999 Brohm Mining Corporation's parent corporation, Dakota Mining, declared bankruptcy, and the State of South Dakota took over water treatment at the site. On July 31, 2000, EPA took over site operations including water treatment and on December 1, 2000, the site was listed on the National Priorities List as a Superfund Site. Strawberry Creek continues to be nonsupporting for high levels of zinc, cadmium, copper, TDS, specific conductivity, and pH.

The middle segments of Whitewood Creek continue to be nonsupporting for fecal coliform. Sources of the high fecal coliform numbers in the stream's middle reach may be due to aging septic and sewer systems and from the combined sewer overflow (CSO) in Lead. A SWD permit has been issued to the city of Lead for the CSO, requiring compliance with EPA's nine minimum controls for the CSO. The segment of Whitewood Creek near Deadwood has also been listed as impaired for mercury, which is new this cycle.

The Belle Fourche River implementation project is currently on-going.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 18: Belle Fourche River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Iron Creek Lake	Lawrence County	L1	Lk Assessment	Coldwater Permanent Fish Life	Full			2	No
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Mirror Lake East	Lawrence County	L2	Lk Assessment	Coldwater Permanent Fish Life	Non	Water Temp	Source Unknown	5	Yes – 2
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Mirror Lake West	Lawrence County	L3	Lk Assessment	Coldwater Permanent Fish Life	Full			2	No
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Newell Lake	Butte County	L4	Lk Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
Newell City Pond	Butte County	L5	Lk Assessment	Coldwater Marginal Fish Life	Full			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Orman Dam (Belle Fourche Reservoir)	Butte County	L6	Lk Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Annie Creek	Headwaters to Spearfish Creek	R1	DENR 46MN31	Coldwater Marginal Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Full Full Full Full			1	No
Bear Butte Creek	Headwaters to Strawberry Creek	R2	DENR 460126	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Full	Water Temp	Source Unknown	5 * (see footnote on pg. 55)	Yes – 1
Bear Butte Creek	Strawberry Creek to near Bear Den Mountain	R3	DENR 460125	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Full	TSS	Source Unknown	5 * (see footnote on pg. 55)	Yes – 1
Belle Fourche River	WY border to near Fruitdale	R4	DENR 460130	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Non Full Full Non	Fecal Coliform	Grazing in Riparian Zones Livestock Crop Production	5 / 4A ** (see footnote on pg. 55)	Yes – 1
Belle Fourche River	Near Fruitdale to Whitewood Creek	R5	DENR 460683	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Full Full Full Non		RangelandGrazing Crop Production Natural Sources Managed Pasture Grazing	4A	No
Belle Fourche River	Whitewood Creek to Willow Creek	R6	DENR 460681	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Full Full Full Non			4A	No
						TSS	Crop Production		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Belle Fourche River	Willow Creek to Alkali Creek	R7	DENR 460880	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full		Livestock		
				Limited Contact Recreation Waters	Full		Crop Production		
				Warmwater Permanent Fish Life	Non	TSS			
Belle Fourche River	Alkali Creek to mouth	R8	DENR 460676	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full		Rangeland Grazing		
				Limited Contact Recreation Waters	Full		Crop Production Grazing in Riparian Zones		
				Warmwater Permanent Fish Life	Non	TSS			
Cleopatra Creek (formerly Squaw Creek)	Confluence with East Branch Cleopatra Creek to mouth	R23	DENR46MN39	Coldwater Permanent Fish Life	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Crow Creek	Near Beulah, WY	R9	USGS 6430532	Coldwater Permanent Fish Life	Insuff Info			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Unknown				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
Deadwood Creek	Rutabaga Gulch to Whitewood Creek	R10	DENR 460127	Coldwater Marginal Fish Life	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
False Bottom Creek	Headwaters to St. Onge	R11	DENR 46MN38	Coldwater Marginal Fish Life	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Fantail Creek	Headwaters to Nevada Gulch	R12	DENR 460119	Coldwater Permanent Fish Life	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Horse Creek	Near Vale and Newell	R13	USGS 6436760	Fish/Wildlife Prop, Rec, Stock Waters	Insuff Info			5 / 4A **	Yes – 2
				Irrigation Waters	Non	Conductivity	Natural Sources		
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSS			
Little Spearfish Creek	Near Lead	R14	USGS 6430850	Coldwater Permanent Fish Life	Full			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
Murray Ditch	At WY-SD state line	R15	USGS 6429997	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
Redwater River	US Hwy 85 to mouth	R16	DENR 460895	Coldwater Marginal Fish Life	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Spearfish Creek	Intake Gulch to Annie Creek	R17	DENR 46MN32	Coldwater Permanent Fish Life	Full			1	No
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Spearfish Creek	Annie Creek to McKinley Gulch	R18	DENR 46MN33	Coldwater Permanent Fish Life	Non	pH	Natural Sources	5	Yes – 2
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Spearfish Creek	McKinley Gulch to Cleopatra Creek	R19	DENR 46MN34	Coldwater Permanent Fish Life	Non	pH	Natural Sources	5	Yes – 2
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Spearfish Creek	Cleopatra Creek to Fish Hatchery Gulch	R20	DENR 46MN 35	Coldwater Marginal Fish Life	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Spearfish Creek	Fish Hatchery Gulch to Higgens Gulch	R21	DENR 460900	Coldwater Permanent Fish Life	Full			1	No
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Spearfish Creek	Higgens Gulch to mouth	R22	DENR 460689	Coldwater Permanent Fish Life	Full			1	No
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Stewart Gulch	Headwaters to mouth	R24	DENR 460124	Limited Contact Recreation	Full			1	No
				Coldwater Permanent Fish Life	Full				
				Irrigation Waters	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Strawberry Creek	Headwaters to mouth	R25	DENR 460116	Coldwater Marginal Fish Life	Non	Cadmium	Acid Mine Drainage Impacts from Abandoned Mines Mine Tailings	5	Yes – 1
						Copper			
						pH			
						Zinc			
West Strawberry Creek	Headwaters to mouth	R26	DENR 460675	Fish/Wildlife Prop, Rec, Stock Waters	Non		Source Unknown	5	Yes – 1
				Irrigation Waters	Non				
				Limited Contact Recreation Waters	Full				
Whitetail Creek	Headwaters to mouth	R27	DENR 460118	Coldwater Permanent Fish Life	Full	Water Temp		1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Whitewood Creek	Whitetail Summit to Gold Run Creek	R28	DENR 460686	Coldwater Permanent Fish Life	Non	Water Temp	Source Unknown	5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Whitewood Creek	Gold Run Creek to Deadwood Creek	R29	DENR 460122	Coldwater Permanent Fish Life	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Whitewood Creek	Deadwood Creek to Spruce Gulch	R30	DENR 460123	Coldwater Permanent Fish Life	Non	Fecal Coliform	Combined Sewer Overflow Grazing in Riparian Zones	5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Non				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Whitewood Creek	Spruce Gulch to Sandy Creek	R31	DENR 460685	Coldwater Permanent Fish Life	Full	Fecal Coliform	Aging Septic Systems	5***	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Non				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Whitewood Creek	Sandy Creek to I-90	R32	DENR 460684	Coldwater Marginal Fish Life	Non	pH	Natural Sources	5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Whitewood Creek	I-90 to Crow Creek	R33	DENR 460652	Warmwater Semipermanent Fish Life	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Limited Contact Recreation	Full				
				Irrigation Waters	Full				
Whitewood Creek	Crow Creek to mouth	R34	DENR 460682	Limited Contact Recreation	Full			1	No
				Warmwater Semipermanent Fish Life	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
Willow Creek	Near Vale, SD	R35	USGS Site	Fish/Wildlife Prop, Rec, Stock Waters	Full	Conductivity	Natural Sources	5	Yes – 2
				Irrigation Waters	Non				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Surface Water Discharge Permits					PARAMETER	Category	On 303(d)?
Belle Fourche River	Near Nisland	P3	SD0020109	Review approved TMDL	Ammonia	6A	No
Whitewood Creek	Near Lead-Deadwood	P2	SD0020796	Review approved TMDL	Ammonia, Dissolved Oxygen	6A	No
Whitewood Creek	Near Lead	P1	SD0000043	Facility is no longer discharging - delist			No
Whitewood Creek	Near Lead	P1	SD0025933	Mine site reclamation - delist			No
Whitewood Creek	Near Whitewood	P4	SD0021466	Review approved TMDL	Ammonia	6A	No

* Bear Butte Creek showed impairment for Total Suspended Solids during an assessment on the lower reach that does not have a DENR water quality monitoring site. The creek showed impairment for temperature on the upper reach during the same assessment. DENR WQM data shows no impairment. A TMDL is currently being written for TSS and water temperature.

** This waterbody has an approved TMDL for some parameter(s) but still requires TMDL development for other parameter(s).

*** Whitewood Creek was listed as nonsupporting for water temperature in 2004. New water quality data now shows Whitewood Creek is fully supporting for water temperature.

Belle Fourche River Basin

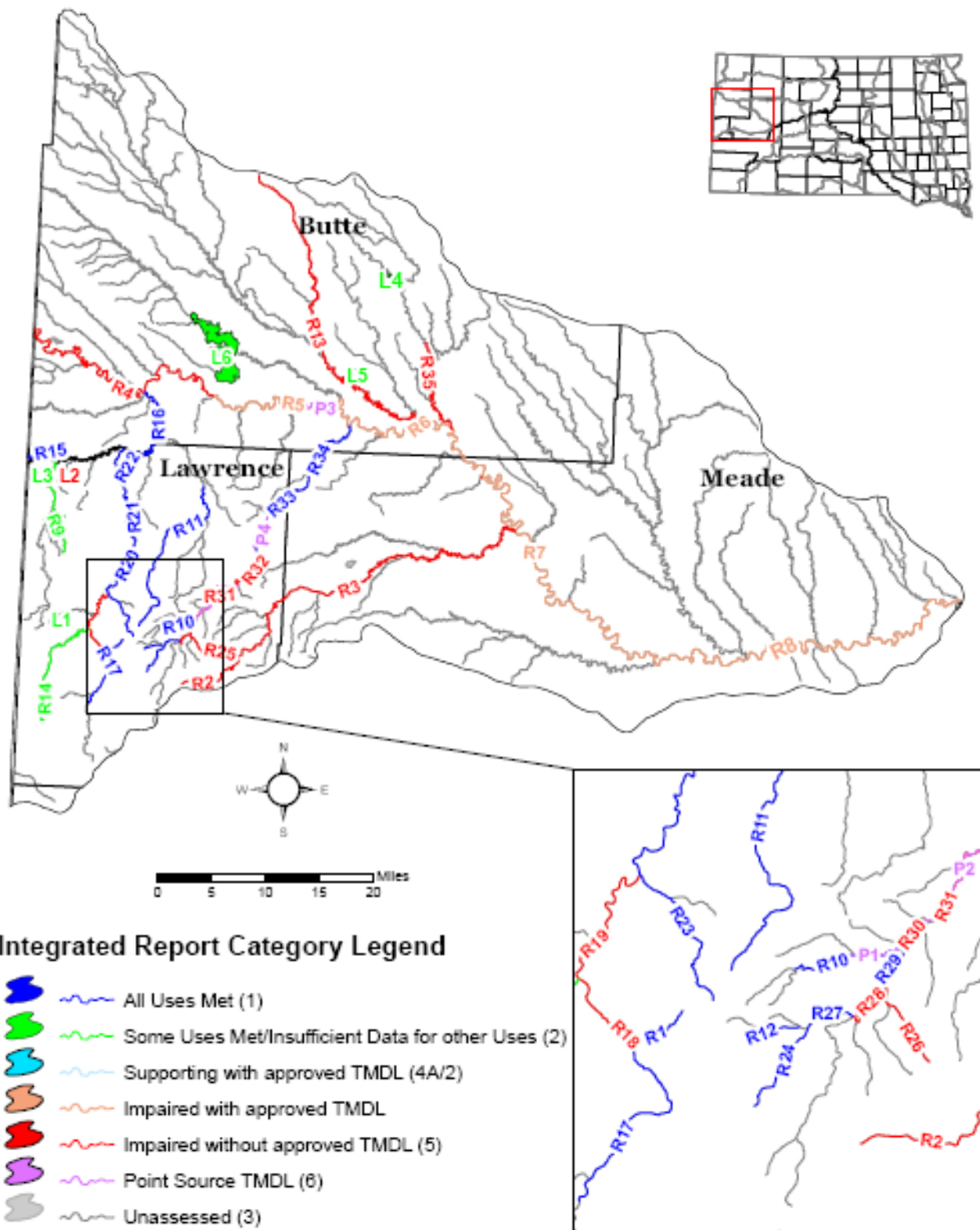


Figure 5: Belle Fourche River Basin

Big Sioux River Basin (Figures 6 and 7, Table 19).

The Big Sioux River basin is located in eastern South Dakota. The lower portion of the river forms the Iowa-South Dakota border. The basin drains an approximate 4,280 square miles in South Dakota and an additional 3,000 square miles in Minnesota and Iowa. The basin's primary source of income is agriculture, but it also contains a majority of the state's light manufacturing, food processing, and wholesaler industries. Four state educational institutions, several vocational schools, and Sioux Falls, the state's largest city, are located within this basin making this the heaviest populated basin in the state.

DENR has assessed 37 lakes and maintains 18 water quality monitoring sites within the Big Sioux basin. Seventeen of the 18 sites are located on the Big Sioux River and one is located on Skunk Creek.

The USGS has water quality monitoring sites on the Big Sioux River and Split Rock Creek within the basin. The data on the Big Sioux River is fairly extensive and includes information on dissolved oxygen, pH, conductivity, water temperature, sodium adsorption ratio, and suspended sediment. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

The main causes of nonsupport within the Big Sioux River basin are due to fecal coliform and total suspended solids. The presence of fecal coliform in the Big Sioux is mainly due to runoff from feedlots/animal holding sites, wet weather discharges within municipal areas, and from the presence of wildlife. Sediment sources are overland runoff from nearby croplands and feedlots, inflow from tributaries, and streambank erosion.

With one or two possible exceptions, lakes in the Big Sioux River basin are eutrophic due to algae, nutrient enrichment, and siltation. Nearly 41% of the monitored lakes can be considered hypereutrophic (highly eutrophic) at the present time. Hypereutrophic conditions are also related to the moderate size of some of the waterbodies and the shallow depth of most of the basin lakes. These lakes are susceptible to rapid changes produced by large nutrient and sediment loads from often sizeable agricultural watersheds comprised of nutrient-rich glacial soils.

Watershed management programs are attempting to reduce sediment and nutrient loads from both manmade and natural sources within the basin.

On-going watershed implementation projects include Blue Dog Lake, Lake Poinsett, and the central and upper Big Sioux River. Watershed assessment projects that are currently underway are the north central and lower Big Sioux River, Lake Norden, Lake Albert, Lake St. John, and the Marshall and Deuel County lakes.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 19: Big Sioux River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Lake Albert	Kingsbury County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Full Unknown Unknown Non			5	Yes – 1
						TSI	Non-Point Source		
Lake Alvin	Lincoln County	L2	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Non Full Non			4A	No
						Fecal Coliform			
						TSI	Non-Point Source		
Bitter Lake	Day County	L3	Fish Flesh Sampling	Fish/Wildlife Prop, Rec, Stock Waters	Insuff Info	Mercury	Source Unknown	5	Yes – 2
Blue Dog Lake	Day County	L4	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Non Full Non			4A	No
						Fecal Coliform			
						TSI	Non-Point Source		
Brant Lake	Lake County	L5	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Unknown Unknown Non			4A	No
						TSI	Non-Point Source		
Bullhead Lake	Deuel County	L6	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Unknown Unknown Full			2	No
Bullhead Lake	Marshall County	L7	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Unknown Unknown Non			5	Yes – 1
						pH			
						TSI	Non-Point Source		
Lake Campbell	Brookings County	L8	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Full Unknown Unknown Non			5	Yes – 1
						TSI	Non-Point Source		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Cattail Lake	Marshall County	L9	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
Clear Lake	Deuel County	L10	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A * (See footnote on pg. 67)	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	Non-Point Source		
Clear Lake	Marshall County	L11	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
Cottonwood Lake	Marshall County	L12	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				
Covell Lake	Minnehaha County	L38	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	Non-Point Source		
Dry Lake	Codington County	L13	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Full				
Lake Drywood North	Roberts County	L39	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Insuff Info			3	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
East Oakwood Lake	Brookings County	L14	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	TSI	Non-Point Source		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Lakes									
Enemy Swim Lake	Day County	L15	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Full				
Four Mile Lake	Marshall County	L16	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Full				
Lake Herman	Lake County	L17	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A *	No
				Immersion Recreation Waters	Full			(See footnote on pg. 67)	
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
Lake Kampeska	Codington County	L18	Lake Assessment	Domestic Water Supply	Full			4A **	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full			(See footnote on pg. 67)	
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Non	TSI	Non-Point Source		
Lake Madison	Lake County	L19	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	Non-Point Source		
Lake Marsh	Hamlin County	L20	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
Minnewasta Lake	Day County	L21	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	Non-Point Source		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
North Buffalo Lake	Marshall County	L22	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				
Nine Mile Lake	Marshall County	L23	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	Non-Point Source		
Lake Norden	Hamlin County	L24	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	Non-Point Source		
Pelican Lake	Codington County	L25	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full	TSI			
				Warmwater Semipermanent Fish Life	Non	Sedimentation	Non-Point Source		
Pickerel Lake	Day County	L26	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
Lake Poinsett	Hamlin County	L27	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A *	No
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
Roy Lake	Marshall County	L28	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Non	TSI	Non-Point Source		
South Red Iron Lake	Marshall County	L29	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown	TSI			
				Warmwater Permanent Fish Life	Non	pH	Non-Point Source		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
School Lake	Deuel County	L30	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	Non-Point Source		
Lake Sinai	Brookings County	L31	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Insuff Info				
South Buffalo Lake	Marshall County	L32	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown	TSI			
				Warmwater Semipermanent Fish Life	Non	pH	Non-Point Source		
Lake St. John	Hamlin County	L33	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Irrigation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	Non-Point Source		
Twin Lake/W. Hwy 81	Kingsbury County	L34	Fish Flesh Sampling	Fish/Wildlife Prop, Rec, Stock Waters	Insuff Info	Mercury	Source Unknown	5	Yes – 2
West Oakwood Lake	Brookings County	L35	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	Non-Point Source		
Wall Lake	Minnehaha County	L36	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				
Waubay Lake	Day County	L37	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Big Sioux River	SE of Ortley to Lake Kampeska	R1	DENR 46BSA1	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Full Non			5	Yes – 1
						Diss Oxygen	Source Unknown		
Big Sioux River	Lake Kampeska to Willow Creek	R2	DENR 460655	Domestic Water Supply Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Full Full Full			1	No
Big Sioux River	Willow Creek to Stray Horse Creek	R3	DENR 460740	Domestic Water Supply Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Non Full Full Non Full	Nitrates Fecal Coliform	Crop Production Livestock Municipal discharge Industrial discharge	5	Yes – 1
Big Sioux River	Stray Horse Creek to near Volga	R4	DENR 46BS08	Domestic Water Supply Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Full Full Full			1	No
Big Sioux River	Near Volga to Brookings	R5	DENR 460662	Domestic Water Supply Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Full Full Full			1 *** (See footnote on pg. 67)	No
Big Sioux River	Brookings to I-29	R6	DENR 460702	Domestic Water Supply Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Full Full Full			1 *** (See footnote on pg. 67)	No

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Big Sioux River	I-29 to near Dell Rapids	R7	DENR 46BS18	Domestic Water Supply	Full			1 ***	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full			(See	
				Irrigation Waters	Full			footnote	
				Limited Contact Recreation Waters	Full			on pg. 67)	
				Warmwater Semipermanent Fish Life	Full				
Big Sioux River	Near Dell Rapids to below Baltic	R8	DENR 460703	Domestic Water Supply	Full			5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Non	Fecal Coliform	Livestock (Grazing or Feeding Operations)		
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Big Sioux River	Below Baltic to Skunk Creek	R9	DENR 46BS23	Domestic Water Supply	Full			5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Non	Fecal Coliform	Livestock		
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Big Sioux River	Skunk Creek to diversion return	R10	DENR 460664	Domestic Water Supply	Full			5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Non	Fecal Coliform	Residential Districts		
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Big Sioux River	Diversion return to SF WWTF	R11	DENR 46BS29	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Non	Fecal Coliform	Municipal (Urbanized Area)		
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Big Sioux River	SF WWTF to above Brandon	R12	DENR 460117	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Non	Fecal Coliform	Livestock		
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
Big Sioux River	Above Brandon to Nine Mile Creek	R13	DENR 460831	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Non	Fecal Coliform	Animal Feeding Operations		
				Irrigation Waters	Full		Grazing in Riparian Zones		
				Limited Contact Recreation Waters	Full		Livestock		
				Warmwater Semipermanent Fish Life	Full				
Big Sioux River	Nine Mile Creek to near Fairview	R14	DENR 460665	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Non	Fecal Coliform	Hydrostructure Flow modification		
				Irrigation Waters	Full		Livestock		
				Limited Contact Recreation Waters	Full		Rangeland Grazing		
				Warmwater Semipermanent Fish Life	Full				
Big Sioux River	Near Fairview to near Alcester	R15	DENR 460666	Fish/Wildlife Prop, Rec, Stock Waters	Full		Animal Feeding Operations	5	Yes – 1
				Immersion Recreation Waters	Non	Fecal Coliform	Crop Production		
				Irrigation Waters	Full		Grazing in Riparian Zones		
				Limited Contact Recreation Waters	Full		Hydrostructure Flow modification		
				Warmwater Semipermanent Fish Life	Non	TSS			

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Big Sioux River	Near Alcester to Indian Creek	R16	DENR 460667	Fish/Wildlife Prop, Rec, Stock Waters	Full		Animal Feeding Operations	5	Yes – 1
				Immersion Recreation Waters	Non	Fecal Coliform	Grazing in Riparian Zones		
				Irrigation Waters	Full		Hydrostructure Flow modification		
				Limited Contact Recreation Waters	Non	Fecal Coliform	Livestock		
				Warmwater Semipermanent Fish Life	Non	TSS	Rangeland Grazing Non-irrigated Crop Production		
Big Sioux River	Indian Creek to mouth	R17	DENR 460832	Fish/Wildlife Prop, Rec, Stock Waters	Full		Grazing in Riparian Zones	5	Yes – 1
				Immersion Recreation Waters	Non	Fecal Coliform	Livestock		
				Irrigation Waters	Full		Animal Feeding Operations		
				Limited Contact Recreation Waters	Non	Fecal Coliform	Crop Production Hydrostructure Flow modification		
				Warmwater Semipermanent Fish Life	Non	TSS	Streambank Modifications/destablization		
Skunk Creek	Brandt Lake to mouth	R18	DENR 460121	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Marginal Fish Life	Full				
Split Rock Creek	At Corson, SD	R19	USGS6482610	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown	Fecal Coliform			
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Unknown	TSS			
Surface Water Discharge Permits									On 303(d)?
PARAMETER								Category	
Beaver Creek	Near Valley Springs	P17	SD0020923	Review approved TMDL	Ammonia			6A	No
Big Sioux River	Near Baltic	P3	SD0022284	Review approved TMDL	Ammonia			6A	No
Big Sioux River	Near Brookings and Volga	P4	SD0023388	Review approved TMDL	Ammonia,			6A	No
			SD0021920		Dissolved Oxygen				
Big Sioux River	Near Canton	P5	SD0022489	Review approved TMDL	Ammonia			6A	No

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Surface Water Discharge Permits					PARAMETER	Category	On 303(d)?
Big Sioux River	Near Dell Rapids	P8	SD0022101	Review approved TMDL	Ammonia	6A	No
Big Sioux River	Near Egan	P9	SD0022462	Review approved TMDL	Ammonia	6A	No
Big Sioux River	Near Estelline	P11	SD0022144	Review approved TMDL	Ammonia	6A	No
Big Sioux River	Near Flandreau	P12	SD0021831	Review approved TMDL	Ammonia	6A	No
Big Sioux River	Near Sioux Falls and Brandon	P14	SD0000078 SD0022128 SD0022535	Review approved TMDL	Ammonia, Dissolved Oxygen	6A	No
Big Sioux River	Near Watertown	P19	SD0027324 SD0023370 SD0026786	Approved TMDL	Ammonia, Dissolved Oxygen	6B	No
East Brule Creek	Near Alcester	P1	SD0021695	Review approved TMDL	Ammonia	6A	No
Hidewood Creek	Near Clear Lake	P7	SD0020699	Approved TMDL	Ammonia	6B	No
Medary Creek	Near Aurora	P2	SD0021661	Review approved TMDL	Ammonia	6A	No
Six Mile Creek	Near White	P20	SD0021636	Approved TMDL	Ammonia	6B	No
Skunk Creek	Near Chester	P6	SD0020338	Review approved TMDL	Ammonia	6A	No
Skunk Creek	Near Hartford	P13	SD0021750	Review approved TMDL	Ammonia, Ammonia, Metals, Cyanide	6A	No
Split Rock Creek	Near Corson	P16	SD0000299	Approved TMDL		6B	No
Spring Creek	Near Elkton	P10	SD0020788	Review approved TMDL	Ammonia	6A	No
Big Ditch	Near Vermillion	P21	SD0027456	Approved TMDL	Ammonia	6B	No

* The waterbody has an approved TMDL, but updated assessment methodology shows full support.

** Lake Kampeska was listed in error for fecal coliform in the 2004 Integrated Report.

*** Was previously listed in the 2004 Integrated Report as nonsupporting, however new water quality information indicates full support.

Upper Big Sioux River Basin

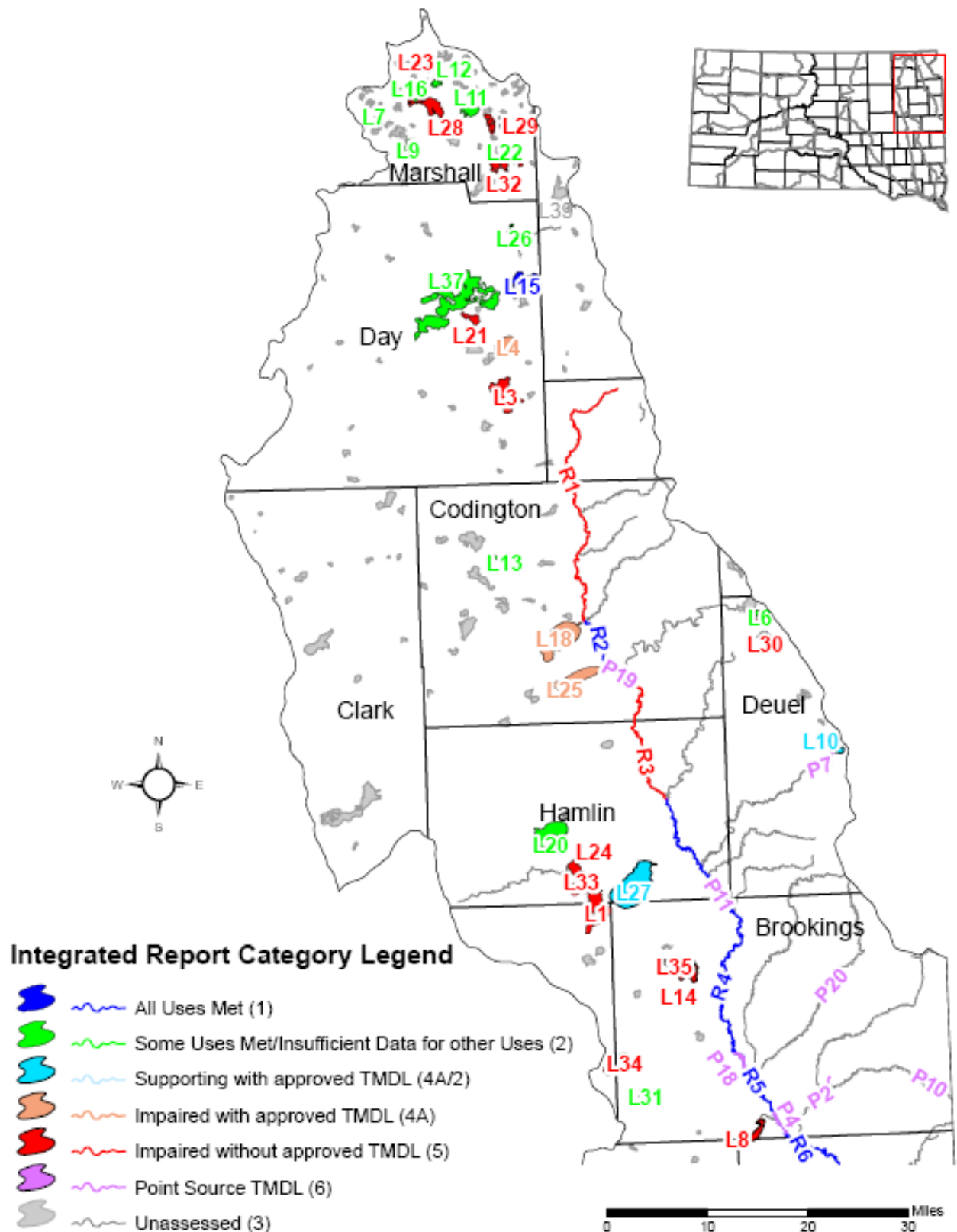


Figure 6: Upper Big Sioux River Basin

Lower Big Sioux River Basin

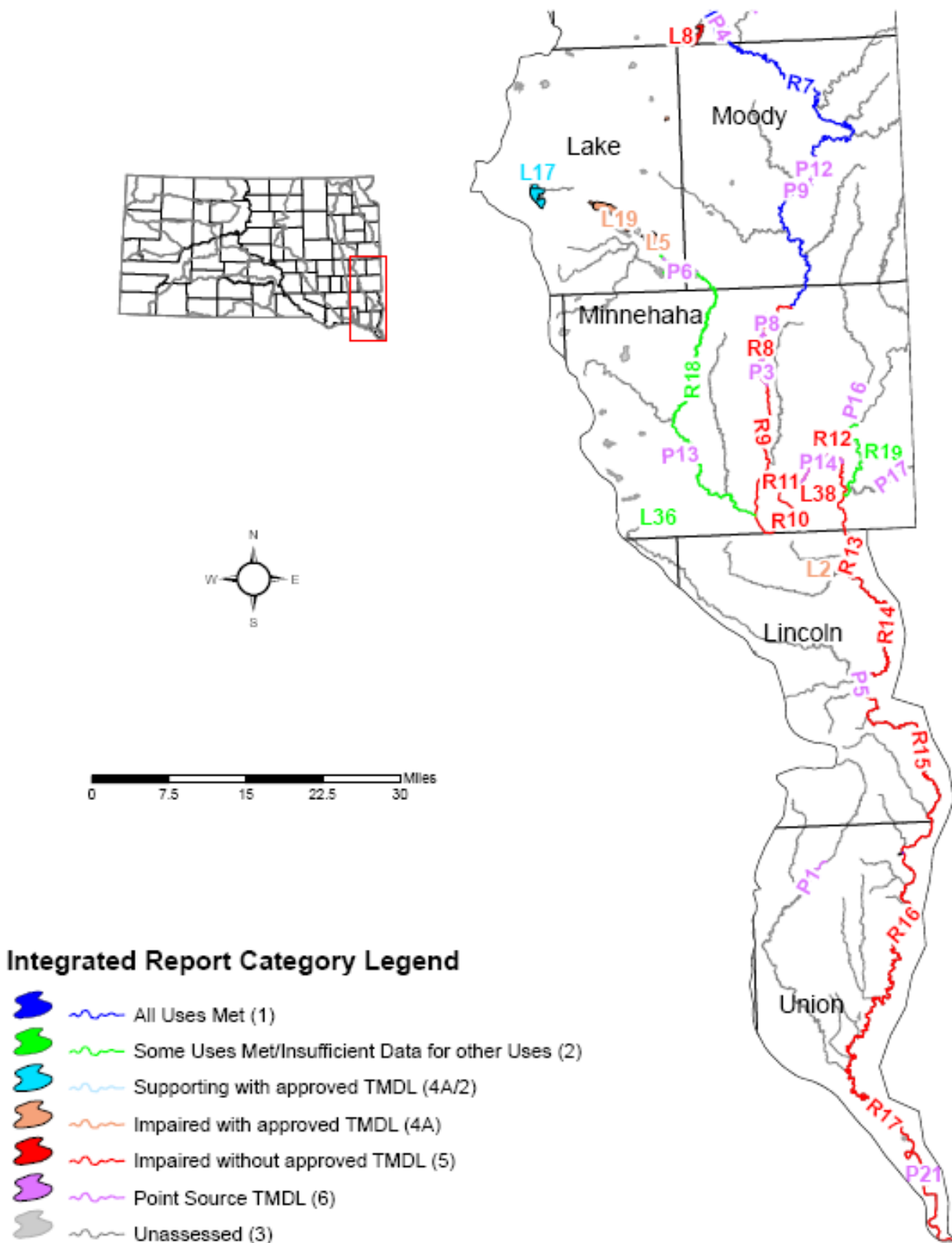


Figure 7: Lower Big Sioux River Basin

Cheyenne River Basin (Figures 8 and 9, Table 20).

The portion of the Cheyenne River Basin that lies in southwestern South Dakota drains about 16,500 square miles within the boundaries of the state. The area in this basin is very diverse. It includes part of the Black Hills and Badlands, rangeland, irrigated cropland, and some mining areas. After traversing the western half of the state from southwest to northeast, the Cheyenne River flows into Lake Oahe, a reservoir on the Missouri River.

DENR has assessed 16 lakes and maintains 26 water quality monitoring sites within the Cheyenne basin. Six monitoring sites are located on the Cheyenne River, three are located on French Creek, and five are located on Rapid Creek. The other sites are located on various other streams in the basin.

The USGS also maintains a number of water quality monitoring sites and several sites located on 18 different streams were used in the current reporting cycle. The USGS data is limited and for most sites the only parameters that were sampled were conductivity and water temperature. Some sites (such as the Beaver Creek sites) had additional dissolved oxygen and pH information. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

The Cheyenne River water quality continues to be generally poor. The lower Cheyenne drainage, in general, contains a high percentage of erodible cropland and rangeland in west-central South Dakota. This cropland may contribute additional amounts of eroded sediment during periods of heavy rainfall. Irrigation return flows, cropland, and rangeland also contribute to water quality problems. The latter two sources are particularly prevalent in the lower half of the river course.

Rapid Creek water quality typically ranges from good to satisfactory in its upper reaches with fair to poor quality downstream of Rapid City. A major recurring problem in the downstream segments of Rapid Creek is excessive fecal coliform bacteria levels.

The Black Hills region traditionally has some of the best surface water quality in the state. This is due in a large part to a cooler climate and higher rainfall than the surrounding plains as a result of greater elevation and forest cover. Also contributing to the water quality in this region is the nature of local bedrock formations which are much less erodible than the highly erosive and leachable marine shales and badlands on the surrounding plains. However, the Black Hills streams are vulnerable to losses of flow exacerbated by periodic droughts. Grazing of streamside vegetation, which increases stream bank erosion, water temperature and nutrient loading, also continues to be a problem in some streams in this area.

Canyon Lake was not considered impaired despite exceeding TSI. Rapid City continues to implement restoration activities as part of a sediment removal project. These efforts will improve the trophic state of Canyon Lake. Current assessment projects are the upper and lower Cheyenne River, Spring Creek, upper and lower Rapid Creek, and the lakes located within Custer State Park.

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Table 20: Cheyenne River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Angostura Reservoir	Fall River County	L1	Lake Assessment	Domestic Water Supply	Non	Sulfates	Natural Sources	5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full	TDS			
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Full				
Bismark Lake	Custer County	L2	Lake Assessment	Coldwater Marginal Fish Life	Full			2 *	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full			(See	
				Immersion Recreation Waters	Unknown			footnote	
				Limited Contact Recreation Waters	Unknown			on pg. 80)	
Canyon Lake	Pennington County	L3	Lake Assessment	Coldwater Permanent Fish Life	Insuff Info			2	No
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Center Lake	Custer County	L4	Lake Assessment	Coldwater Permanent Fish Life	Non	pH	NonPoint Source	5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full	TSI			
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Cold Brook Reservoir	Fall River County	L5	Lake Assessment	Coldwater Permanent Fish Life	Non	Water Temp	Natural Sources	5	Yes – 2
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
Cottonwood Springs Lake	Fall River County	L6	Lake Assessment	Domestic Water Supply	Full			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Curlew Lake	Pennington County	L7	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Deerfield Lake	Pennington County	L8	Lake Assessment	Coldwater Permanent Fish Life	Full			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Horsethief Lake	Pennington County	L9	Lake Assessment	Coldwater Permanent Fish Life	Non	Diss Oxygen		5	Yes – 2
				Fish/Wildlife Prop, Rec, Stock Waters	Full	pH	NonPoint Source		
				Immersion Recreation Waters	Unknown	Water Temp			
				Limited Contact Recreation Waters	Unknown	TSI			
Lakota Lake	Custer County	L10	Lake Assessment	Coldwater Marginal Fish Life	Non	TSI	NonPoint Source	5	Yes – 2
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
Legion Lake	Custer County	L11	Lake Assessment	Coldwater Marginal Fish Life	Non	pH		5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full	TSI	NonPoint Source		
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
New Wall Lake	Pennington County	L12	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Pactola Reservoir	Pennington County	L13	Lake Assessment	Coldwater Permanent Fish Life	Full			2	No
				Domestic Water Supply	Unknown				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Unknown				
				Limited Contact Recreation Waters	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Sheridan Lake	Pennington County	L14	Lake Assessment	Coldwater Permanent Fish Life	Non	Diss Oxygen		5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full	pH			
				Immersion Recreation Waters	Full	Water Temp			
				Limited Contact Recreation Waters	Full	TSI	NonPoint Source		
Stockade Lake	Custer County	L15	Lake Assessment	Coldwater Marginal Fish Life	Full			2 *	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full			(See	
				Immersion Recreation Waters	Unknown			footnote	
				Limited Contact Recreation Waters	Unknown			on pg. 80)	
Sylvan Lake	Custer County	L16	Lake Assessment	Coldwater Permanent Fish Life	Non	TSI	NonPoint Source	4A	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
Streams									
Battle Creek	Near Horsethief Lake to Teepee Gulch Creek	R1	DENR 460103	Coldwater Permanent Fish Life	Non	Water Temp	Natural Sources	5	Yes – 2
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Battle Creek	Teepee Gulch Creek to SD Hwy 79	R2	DENR 460905	Coldwater Permanent Fish Life	Non	Water Temp	Natural Sources	5 **	Yes – 2
				Fish/Wildlife Prop, Rec, Stock Waters	Full			(See	
				Irrigation Waters	Full			footnote	
				Limited Contact Recreation Waters	Full			on pg. 80)	
Bear Gulch	Near Hayward	R3	USGS 6405800	Coldwater Marginal Fish Life	Full			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
Beaver Creek	WY border to mouth	R4	DENR 460128	Coldwater Marginal Fish Life	Non	Water Temp	Source Unknown	5	Yes – 2
						TSS			
				Fish/Wildlife Prop, Rec, Stock Waters	Non	TDS			
				Irrigation Waters	Non	SAR			
						Conductivity			
				Limited Contact Recreation Waters	Non	Fecal Coliform			

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Beaver Creek	Near Buffalo Gap	R5	USGS6402500	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Full Unknown Insuff Info			2	No
Beaver Creek	Near Wind Cave Natl Park	R6	USGS Multiple sites	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Unknown	pH Water Temp	Source Unknown	5	Yes – 2
Box Elder Creek	Headwaters to near Bogus Jim Creek	R8	DENR 460679	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Full	Water Temp	Source Unknown	5	Yes – 2
Box Elder Creek	Above Box Elder to Owanka	R7	DENR 460925	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Full Full Unknown Unknown			2	No
Castle Creek	Deerfield Reservoir to Rapid Creek	R9	DENR 460646	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Full Full Full Full			1	No
Cherry Creek	Headwaters to mouth	R10	DENR 460131 USGS 6439000	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Insuff Info Non Insuff Info Insuff Info	Conductivity	Natural Sources	5	Yes – 2
Cheyenne River	WY border to Beaver Creek	R11	DENR 460156	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Non Non Insuff Info Insuff Info	TDS SAR Conductivity	Natural Sources	5	Yes – 2

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Cheyenne River	Beaver Creek to Angostura Reservoir	R12	DENR 460875	Fish/Wildlife Prop, Rec, Stock Waters	Non	TDS	Crop Production	5	Yes – 2
				Irrigation Waters	Non	SAR	Livestock		
				Limited Contact Recreation Waters	Full	Conductivity	Natural Sources		
				Warmwater Semipermanent Fish Life	Non	TSS			
Cheyenne River	Angostura Reservoir to Rapid Creek	R13	DENR 460132	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full		Crop Production		
				Warmwater Semipermanent Fish Life	Non	TSS	Livestock		
Cheyenne River	Rapid Creek to Belle Fourche River	R14	DENR 460865	Fish/Wildlife Prop, Rec, Stock Waters	Full		Crop Production	5	Yes – 2
				Immersion Recreation Waters	Non	Fecal Coliform	Livestock		
				Irrigation Waters	Full		Natural Sources		
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	TSS	Rangeland Grazing		
Cheyenne River	Belle Fourche River to Bull Creek	R15	DENR 468860	Fish/Wildlife Prop, Rec, Stock Waters	Full		Crop Production	5	Yes – 2
				Immersion Recreation Waters	Non	Fecal Coliform	Livestock		
				Irrigation Waters	Full		Natural Sources		
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Non	TSS	Rangeland Grazing		
Cheyenne River	Bull Creek to mouth	R16	DENR 460133	Fish/Wildlife Prop, Rec, Stock Waters	Full		Crop Production	5	Yes – 2
				Immersion Recreation Waters	Non	Fecal Coliform	Livestock		
				Irrigation Waters	Full		Natural Sources		
				Limited Contact Recreation Waters	Non	Fecal Coliform			
				Warmwater Permanent Fish Life	Non	TSS	Rangeland Grazing		
Cold Springs Creek	Near SD Hwy 385	R17	USGS Multiple sites	Coldwater Permanent Fish Life	Full			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Elk Creek	Near Roubaix, Rapid City, and Elm Spr.	R18	USGS 6424000 6425100 6425500	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Unknown Full Unknown Full			2	No
Elm Creek	Near Fairpoint, Red Owl	R19	USGS 6437650 6438800	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Full Full Unknown Full			2	No
Fall River	Hot Springs to mouth	R20	DENR 460657	Coldwater Marginal Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Full	Water Temp	Natural Sources	5	Yes – 2
Flynn Creek	Near SD Hwy 87 to mouth	R21	DENR 460111	Coldwater Marginal Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Full Full Full Full			1	No
French Creek	Headwaters to Custer	R22	DENR 460102	Coldwater Marginal Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Full	Diss Oxygen	Drought-related Impacts Natural Sources	5	Yes – 2
French Creek	Custer to Stockade Lake	R23	DENR 460653	Coldwater Marginal Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Full Full Full Full			1	No
French Creek	Stockade Lake to SD Hwy 79	R24	DENR 460651	Coldwater Marginal Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Full Full Full Full			1	No

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Grace Coolidge Creek	Headwaters to Battle Creek	R25	DENR 460650	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Full	Water Temp	Drought-related Impacts	5	Yes – 1
Grizzly Bear Gulch	Near Keystone	R26	USGS 6403850	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Unknown	Water Temp	Drought-related Impacts	5	Yes – 1
Hat Creek	Near Edgemont	R27	USGS 6400000	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Insuff Info Non Unknown Insuff Info	Conductivity	Natural Sources	5	Yes – 2
Highland Creek	Wind Cave Natl Park and near Pringle, SD	R28	USGS Multiple sites	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Unknown	pH Water Temp	Natural Sources	5	Yes – 2
Horsehead Creek	At Oelrichs	R29	USGS 6400875	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Insuff Info Non Unknown Full	Conductivity	Natural Sources	5	Yes – 2
Hot Brook Creek	Headwaters to mouth	R30	Watershed Assessment	Coldwater Marginal Fish Life Domestic Water Supply Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters	Non Unknown Unknown Unknown	Water Temp	Natural Sources	5	Yes – 2
Lime Creek	At Rapid City	R31	USGS 6413650	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Insuff Info Full Full Unknown			2	No
Lindsey Draw	Near Farmingdale	R32	USGS 6421800	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters	Full Full			1	No

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Pass Creek	Near Dewey	R33	USGS 6394450	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters	Full Full			1	No
Rapid Creek	Headwaters to Pactola Reservoir	R34	DENR 460647	Coldwater Permanent Fish Life Domestic Water Supply Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Irrigation Waters Limited Contact Recreation Waters	Full Full Full Full Full Full			1	No
Rapid Creek	Pactola Reservoir to Lower Rapid City	R35	DENR 460669	Coldwater Permanent Fish Life Domestic Water Supply Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Irrigation Waters Limited Contact Recreation Waters	Full Full Full Full Full Full			1	No
Rapid Creek	Lower Rapid City to RC WWTF	R36	DENR 460110	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Non Full Full Full	Fecal Coliform	Crop Production Livestock On-site Treatment Systems Wet Weather Discharges	5	Yes – 1
Rapid Creek	RC WWTF to above Farmingdale	R37	DENR 460692	Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Full Non Full Full Full	Fecal Coliform	Animal Feeding Operations On-site Treatment Systems	5	Yes – 1

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Rapid Creek	Above Farmingdale to mouth	R38	DENR 460910	Fish/Wildlife Prop, Rec, Stock Waters	Full	Fecal Coliform	Livestock	5	Yes – 1
				Immersion Recreation Waters	Non				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Full				
Rapid Creek, N Fork	Above mouth	R39	BH Natl Forest Data	Coldwater Permanent Fish Life	Insuff Info	Water Temp	Source Unknown	5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Unknown				
				Irrigation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Reno Gulch	Near Hill City	R40	USGS 6406760	Coldwater Marginal Fish Life	Insuff Info			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
Rhoads Fork	Near Rochford	R41	USGS 6408700	Coldwater Permanent Fish Life	Insuff Info			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
Spring Creek	Headwaters to Sheridan Lake	R42	DENR 460654	Coldwater Marginal Fish Life	Full	Fecal Coliform	Livestock On-site Treatment Systems	5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Non				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Spring Creek	Sheridan Lake to SD Hwy 79	R43	DENR 460649	Coldwater Marginal Fish Life Fish/Wildlife Prop, Rec, Stock Waters Immersion Recreation Waters Irrigation Waters Limited Contact Recreation Waters	Full Full Full Full Full			1	No
Sunday Gulch	Below Johnson Canyon, near Hill City	R44	USGS 6406740	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Insuff Info Full Full Unknown			2	No
Victoria Creek	Near Rapid City	R45	USGS 6412220 6412250	Coldwater Permanent Fish Life Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters	Non Full Full Unknown	Water Temp	Source Unknown	5	Yes – 2
Surface Water Discharge Permits					PARAMETER				
Battle Creek	Near Hermosa	P4	SD0022349	Review approved TMDL		Ammonia		6A	No
Battle Creek	Near Keystone	P5	SD0024007	Review approved TMDL		Ammonia		6A	No
Box Elder Creek	USFS-Box Elder CCCC	P7	SD0020834	Approved TMDL		Ammonia		6B	No
Box Elder Creek	Near Box Elder & Ellsworth AFB	P9	SD0025186 SD0000281	Approved TMDL		Ammonia		6B	No
Cheyenne River	Edgemont	P1	SD0023701	Review approved TMDL		Ammonia		6A	No
French Creek	Near Blue Bell Lodge	P2	SD0024228	Review approved TMDL		Ammonia		6A	No
Lafferty Gulch	Near Keystone	P8	SD0021610	Review approved TMDL		Ammonia, Dissolved Oxygen		6A	No
Rapid Creek	Near Rapid City	P6	SD0023574	Review approved TMDL				6A	No
Willow Creek	Near Sylvan Lake	P3	SD0024279	Approved TMDL		Ammonia		6B	No

* The waterbody is fully supporting based on updated assessment methodology.

** Battle Creek was listed as nonsupporting for pH in 2004. New water quality data now shows Battle Creek is fully supporting for pH.

Upper Cheyenne River Basin

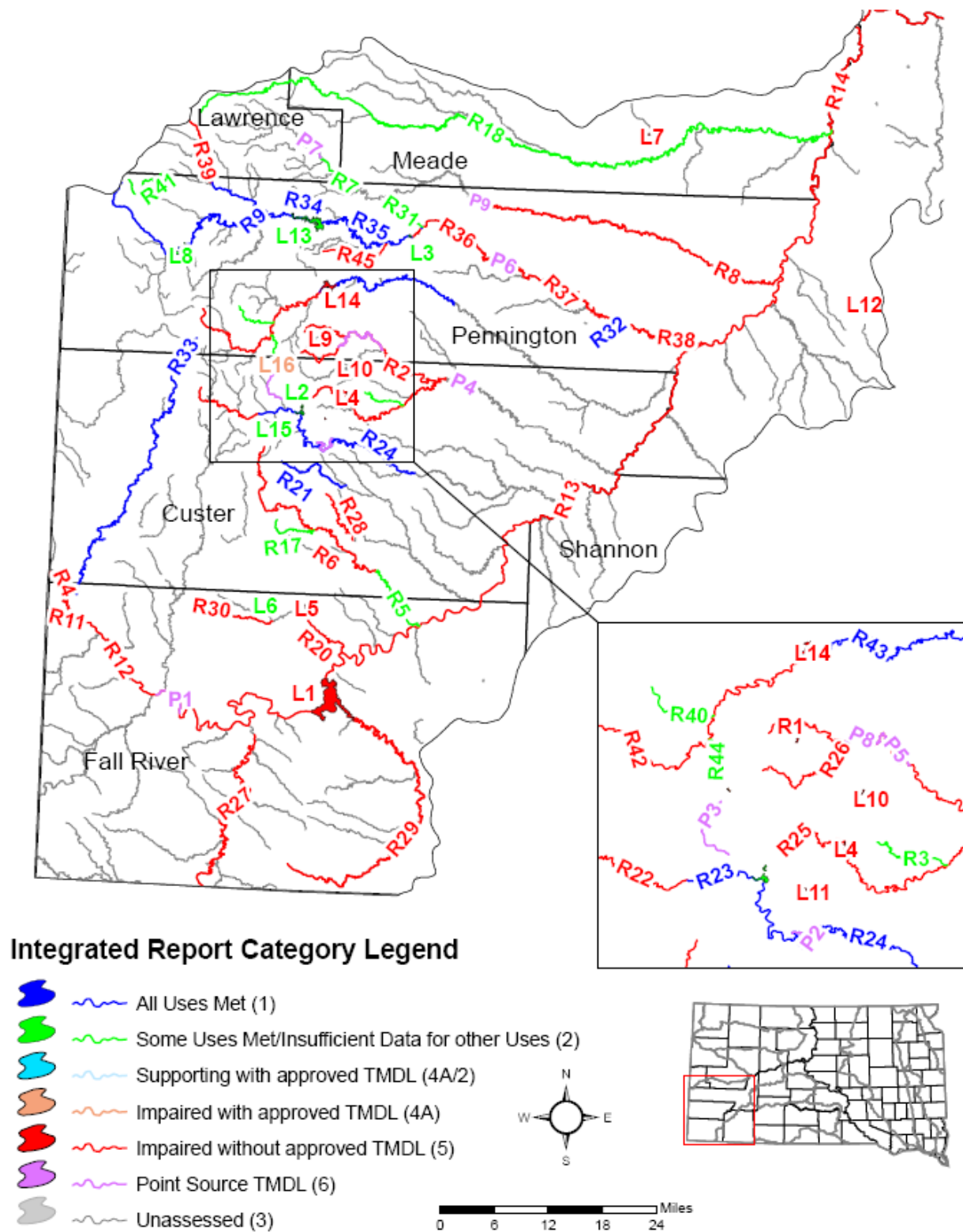
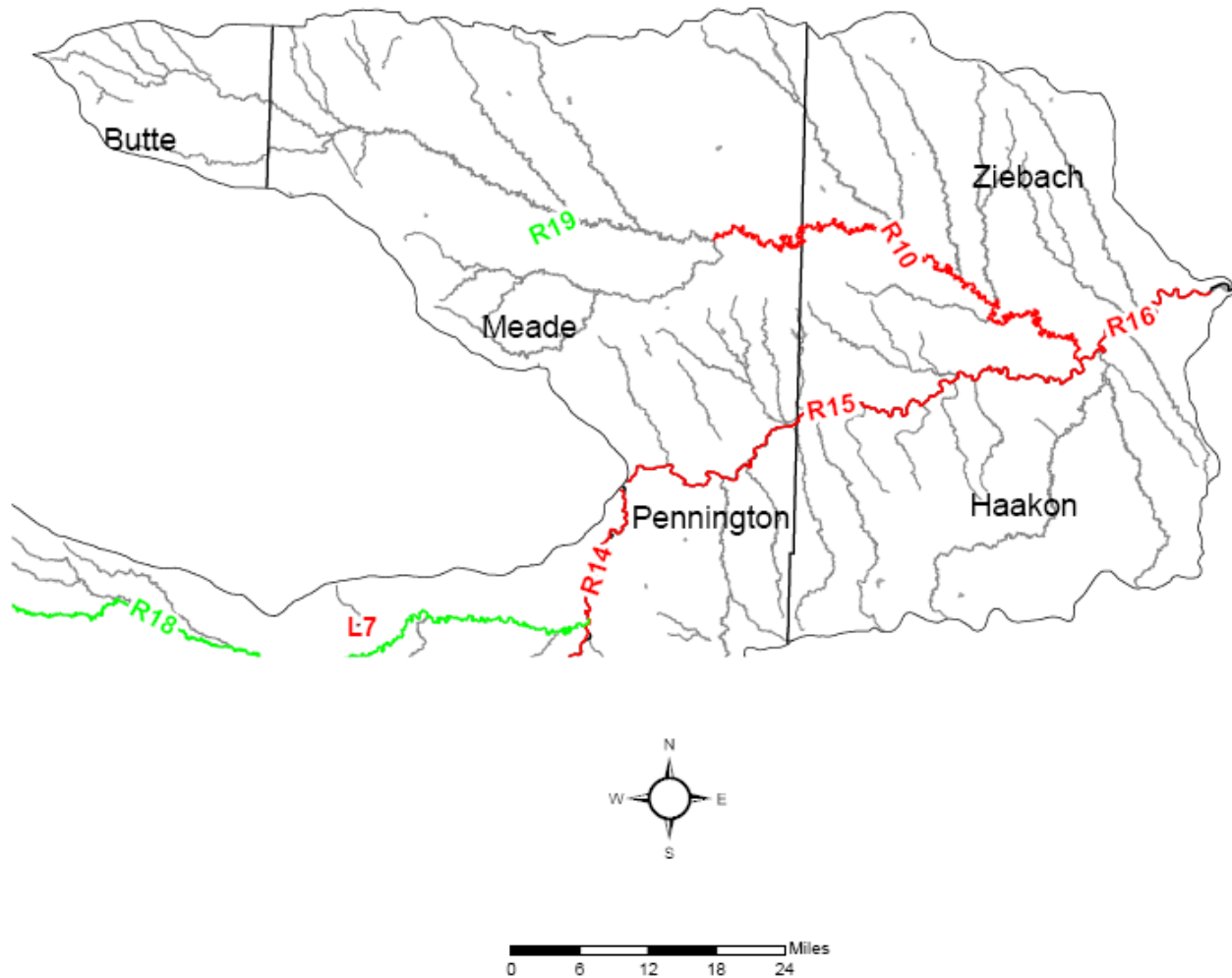


Figure 8: Upper Cheyenne River Basin

Lower Cheyenne River Basin



Integrated Report Category Legend

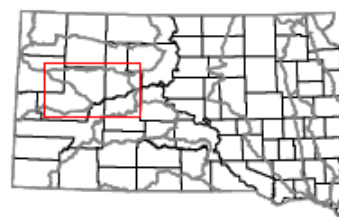
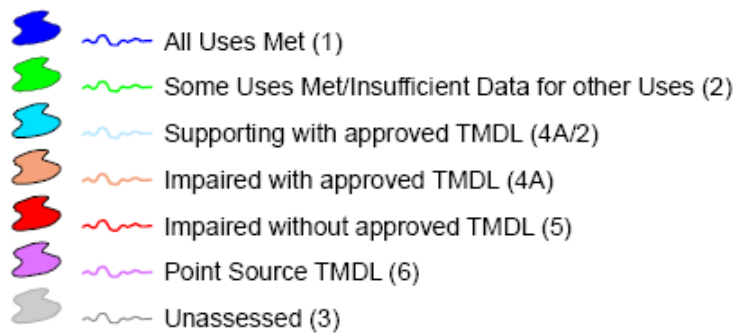


Figure 9: Lower Cheyenne River Basin

Grand River Basin (Figure 10, Table 21).

The Grand River basin covers 5,680 square miles in northwest South Dakota and southwest North Dakota. This is a sparsely populated region with a population density of approximately one person per square mile. The major income is derived from agriculture (83%). However, this basin possesses energy resources in commercial quantities.

DENR has assessed four lakes and maintains six water quality monitoring sites within the Grand basin.

The USGS data is very limited and no sites were specifically listed within the basin. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

High conductivity and TDS concentrations along with high sodium adsorption ratios (SAR) are more or less typical of the entire basin. The North Fork watershed drains the southern periphery of the North Dakota badlands which may be a major source of high levels of TDS and TSS. The South Fork drainage contains erosive soils, which contribute sediment and suspended solids that often produce high TSS levels in the South Fork. These largely natural sources are aggravated by agricultural and grazing practices.

Shadehill Reservoir and the Grand River are considered impaired for irrigation use due to natural limitations imposed by local soil-water incompatibility. High sodium concentration combined with the clayey characteristics of most soils in this region significantly reduce the acreages suitable for continuous irrigation. This condition is measured by the SAR. A SAR value of 10 or greater indicates that a build-up of sodium will break down soil structure and cause serious problems for plant growth.

There are no on-going assessment or implementation projects occurring within the basin at this time.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 21: Grand River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Flat Creek Dam	Perkins County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Lake Gardner	Harding County	L2	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 *	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
Lake Isabel	Dewey County	L3	Lake Assessment	Domestic Water Supply	Full			5	Yes – 2
				Fish Flesh	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown	Mercury	Source Unknown		
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Shadehill Reservoir	Perkins County	L4	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Full				
				Irrigation Waters	Non	SAR	Natural Sources		
				Limited Contact Recreation Waters	Full	TDS/chlorides			
				Warmwater Permanent Fish Life	Full				
Streams									
Grand River	Shadehill Reservoir to Corson County line	R1	DENR 460640	Coldwater Marginal Fish Life	Non	pH	Natural Sources	5 **	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Non	SAR			
				Limited Contact Recreation Waters	Insuff Info				
Grand River	Corson County line to Bullhead	R2	DENR 460138	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Irrigation Waters	Non	SAR	Natural Sources		
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Permanent Fish Life	Non	TSS			

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Grand River	Bullhead to mouth	R3	DENR 460945	Fish/Wildlife Prop, Rec, Stock Waters	Full	SAR	Livestock	5	Yes – 1
				Irrigation Waters	Non	Fecal Coliform	Crop Production Grazing in Riparian Zones		
				Limited Contact Recreation Waters	Non	Water Temp			
				Warmwater Permanent Fish Life	Non	TSS	Natural Sources		
North Fork Grand River	ND border to Shadehill Reservoir	R4	DENR 460677	Fish/Wildlife Prop, Rec, Stock Waters	Non	TDS	Natural Sources	5	Yes – 1
				Irrigation Waters	Non	SAR			
				Limited Contact Recreation Waters	Insuff Info	Conductivity			
				Warmwater Marginal Fish Life	Full				
South Fork Grand River	Jerry Creek to Skull Creek	R6	DENR 460139	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Irrigation Waters	Non	SAR	Crop Production Grazing in Riparian Zones		
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	TSS	Natural Sources		
South Fork Grand River	Skull Creek to Shadehill Reservoir	R7	DENR 460678	Fish/Wildlife Prop, Rec, Stock Waters	Full		Crop Production Grazing in Riparian Zones	5	Yes – 1
				Irrigation Waters	Non	SAR			
				Limited Contact Recreation Waters	Insuff Info		Natural Sources		
				Warmwater Semipermanent Fish Life	Non	TSS			
Surface Water Discharge Permits				PARAMETER					
South Fork Grand River	Near Buffalo	P1	SD0023400	Review approved TMDL		Ammonia		6A	No

* The waterbody is fully supporting based on updated assessment methodology.

** This segment of the Grand River was listed as nonsupporting for water temperature and TSS in 2004. New water quality data now shows this segment is fully supporting for water temperature and TSS.

Grand River Basin

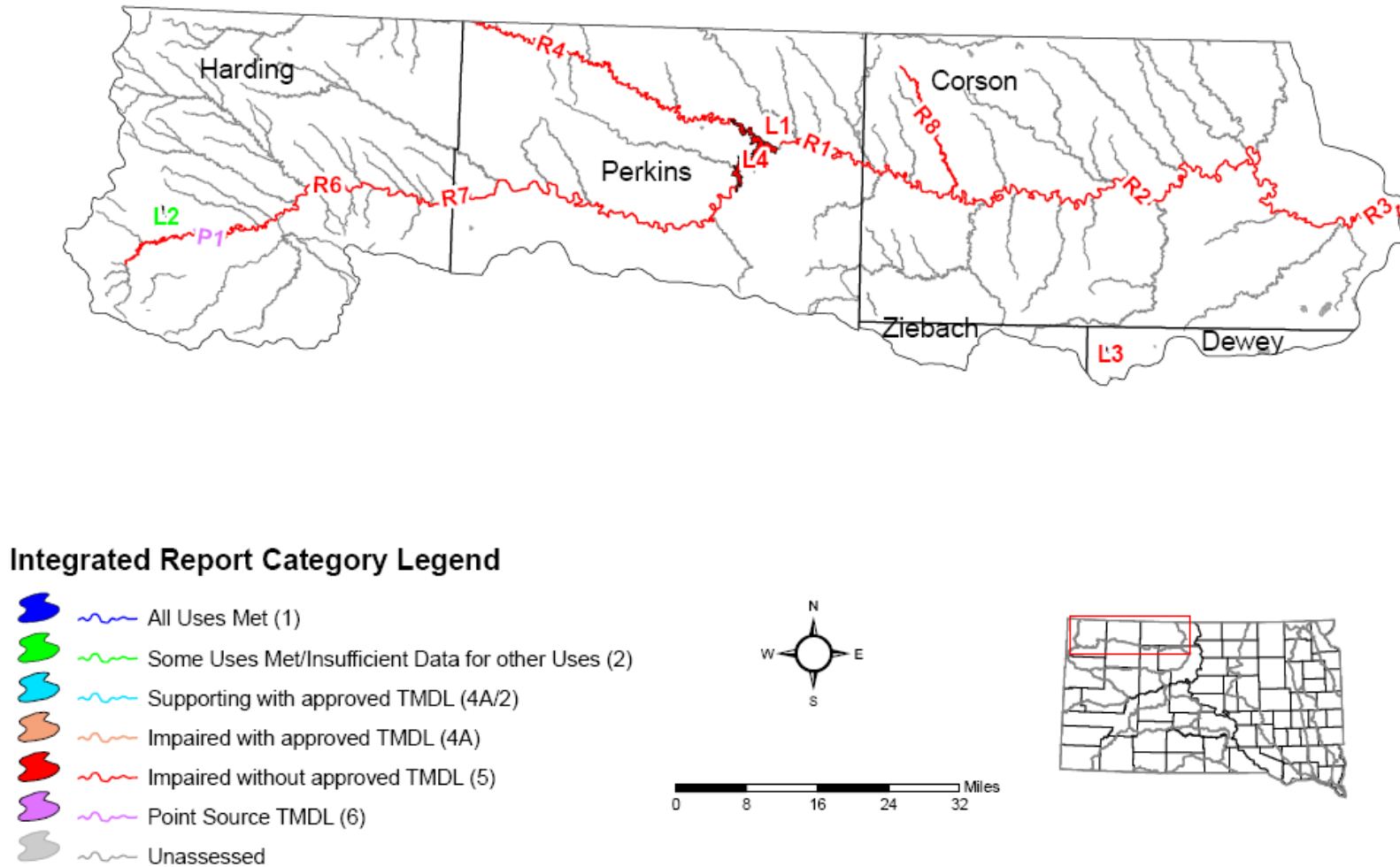


Figure 10: Grand River Basin

James River Basin (Figures 11 and 12, Table 22).

The James River drainage is the second largest river basin in the state. It drains approximately 12,000 square miles stretching from the northern to the southern state borders. It is located in east-central South Dakota. Agriculture and related businesses are the predominant sources of income.

DENR has assessed 28 lakes and maintains 21 water quality monitoring sites within the James basin. Eleven monitoring sites are located on the James River. The other sites are located on various other streams in the basin.

The USGS has a couple of water quality monitoring sites on the James River and some intermittent streams in the basin on Foot Creek, Rock Creek, and several unnamed tributaries in the basin. However, the data is very limited and for most sites the only parameters that were sampled were conductivity and water temperature. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

Low dissolved oxygen (DO) was observed during this current reporting cycle within segments of the James River and other creeks within the basin. Decay of organic matter in low flow conditions during winter and under ice cover may temporarily deplete oxygen supplies. A source of this organic matter may be wetlands within the upper basin. Organic loading may also occur during periods of runoff. Winter and summer oxygen deficits have not been uncommon in the slow-flowing upper reach of the James River.

Lakes in the basin are highly eutrophic because of nutrient enrichment and siltation. Agricultural activities such as livestock operations and row crops are considered major pollution sources.

Current assessment projects that are underway are Wilmarth Lake, Twin Lakes, Richmond Lake, Amsden Dam, and the Lower James River. On-going implementation projects include Lake Hanson, Lake Faulkton, Cottonwood and Louise Lakes, Elm Lake, and Lake Mitchell, and Firesteel Creek.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 22: James River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Amsden Dam	Day County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Beaver Lake	Yankton County	L2	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	NonPoint Source		
Bierman Lake	Spink County	L3	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Lake Byron	Beadle County	L4	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Irrigation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown	Sedimentation			
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Lake Carthage	Miner County	L5	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Lake Cavour	Beadle County	L6	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
Cottonwood Lake	Spink County	L7	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A * (See footnote on pg. 96)	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	NonPoint Source		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Cresbard Lake	Faulk County	L8	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A *	No
				Immersion Recreation Waters	Unknown			(See	
				Limited Contact Recreation Waters	Unknown			footnote	
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source	on pg. 96)	
Elm Lake	Brown County	L9	Lake Assessment	Domestic Water Supply	Full			4A	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Lake Faulkton	Faulk County	L10	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown	Sedimentation			
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Lake Hanson	Hanson County	L11	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Jones Lake	Hand County	L12	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5 / 4A **	Yes
				Immersion Recreation Waters	Unknown			(See	
				Limited Contact Recreation Waters	Unknown	pH		footnote	
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source	on pg. 96)	
Lake Louise	Hand County	L13	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A *	No
				Immersion Recreation Waters	Full			(See	
				Limited Contact Recreation Waters	Full			footnote	
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source	on pg. 96)	
Loyalton Dam	Edmunds County	L14	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Menno Lake	Hutchinson County	L15	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Insuff Info				
Mina Lake	Edmunds County	L16	Lake Assessment	Domestic Water Supply	Unknown			4A	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Lake Mitchell	Davison County	L17	Lake Assessment	Domestic Water Supply	Full			2 / 4A *	No
				Immersion Recreation Waters	Full			(See	
				Irrigation Waters	Full			footnote	
				Limited Contact Recreation Waters	Full			on pg. 96)	
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
North Scatterwood Lake	Edmunds County	L18	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
Pierpont Lake	Day County	L19	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
Ravine Lake	Beadle County	L20	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Lake Redfield	Spink County	L21	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown	Sedimentation	NonPoint Source		
				Warmwater Marginal Fish Life	Non	TSI			

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Richmond Lake	Brown County	L22	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Rose Hill Lake	Hand County	L23	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Rosette Lake	Edmunds County	L24	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	NonPoint Source		
Twin Lakes	Sanborn County	L25	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Twin Lakes	Spink County	L26	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Insuff Info				
Wilmarth Lake	Aurora County	L27	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Wylie Pond	Brown County	L28	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Unknown			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Full				

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Elm River	Elm Lake to mouth	R1	DENR 460136	Domestic Water Supply	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
Firesteel Creek	W Fork Firesteel Creek to mouth	R2	DENR 460137	Domestic Water Supply	Non	TDS		5	Yes – 2
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Non	Water Temp			
Foot Creek	Near Aberdeen	R3	USGS 6471800	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Unknown				
James River	ND border to Mud Lake Reservoir	R6	DENR 460805	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	pH	Source Unknown		
James River	Mud Lake Reservoir	R7	DENR 460112	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	pH	Source Unknown		
James River	Columbia Road Reservoir	R8	DENR 460113	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
James River	Columbia Road Reservoir to near US Hwy 12	R9	DENR 460733	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
James River	US Hwy 12 to Mud Creek	R10	DENR 460734	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	Diss Oxygen	NonPoint Source		
James River	Mud Creek to James River diversion dam	R11	DENR 460140	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
James River	James River diversion dam to Huron 3rd St. Dam	R12	DENR 460735	Domestic Water Supply	Full			1	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
James River	Huron 3rd St. Dam to Sand Creek	R13	DENR 460736	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
James River	Sand Creek to I-90	R14	DENR 460737	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full		Crop Production		
				Warmwater Semipermanent Fish Life	Non	TSS	Livestock		
James River	I-90 to Yankton County line	R15	DENR 460707	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
James River	Yankton County line to mouth	R16	DENR 460761	Fish/Wildlife Prop, Rec, Stock Waters	Full			5 ***	Yes – 2
				Irrigation Waters	Full		Crop Production	(See	
				Limited Contact Recreation Waters	Full		Grazing in Riparian Zones	footnote	
				Warmwater Semipermanent Fish Life	Non	TSS		on pg. 96)	
Moccasin Creek	Headwaters to Aberdeen	R17	DENR 460694	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Non	Fecal Coliform			
				Warmwater Marginal Fish Life	Non	Diss Oxygen	Source Unknown		
Moccasin Creek	Aberdeen to Warner	R18	DENR 460695	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A****	No
				Irrigation Waters	Full			(See	
				Limited Contact Recreation Waters	Full			footnote	
				Warmwater Marginal Fish Life	Non	Total Ammonia	Municipal Point Source Discharges	on pg. 96)	
Mud Creek	SD Hwy 73 to mouth	R19	DENR 460145	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Marginal Fish Life	Non	Diss Oxygen	Source Unknown		
Preachers Run Tributary	At Ipswich	R20	USGS 6473300	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
Rock Creek	Near Fulton	R21	USGS 6477150	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
Snake Creek	Headwaters to mouth	R22	DENR 460146	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Semipermanent Fish Life	Non	Diss Oxygen	Source Unknown		

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Turtle Creek	Hand County line to mouth	R23	DENR 460148	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Insuff Info Full Insuff Info Non		Source Unknown	5	Yes – 2
Wolf Creek	Above Wolf Creek Colony	R24	DENR 460157	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Full Full Insuff Info Full			2	No
Wolf Creek	Just above Wolf Creek Colony to mouth	R25	DENR 460158	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Full Full Insuff Info Full			2	No
Wolf Creek	Spink County near Burdette to mouth	R26	DENR 460151	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Insuff Info Insuff Info Insuff Info Insuff Info			3	No
Surface Water Discharge Permits						PARAMETER			
Dawson Creek	Near Scotland	P14	SD0022853	Approved TMDL		Ammonia		6B	No
Foot Creek	Near Aberdeen	P16	SD0025976	Approved TMDL		Ammonia		6B	No
James River	Near Ashton	P3	SD0022276	Review approved TMDL		Ammonia		6A	No
James River	Near Columbia	P5	SD0022926	Review approved TMDL		Ammonia		6A	No
James River	Near Frankfort	P8	SD0020869	Went to "no discharge" permit-delist		Ammonia			No
James River	Near Huron	P10	SD0023434	Review approved TMDL		Ammonia		6A	No
James River	Near Mitchell	P13	SD0023361	Approved TMDL		Ammonia		6B	No
James River	Near Menno	P11	SD0020087	Review approved TMDL		Ammonia		6A	No
Jim Creek	Near Artesian	P2	SD0021733	Review approved TMDL		Ammonia		6A	No
Maple River	Near Frederick	P9	SD0022152	Review approved TMDL		Ammonia		6A	No
Moccasin Creek	Near Aberdeen	P1	SD0020702	Review approved TMDL		Ammonia		6A	No
Moccasin Creek	Near Warner	P15	SD0020389	Review approved TMDL		Ammonia		6A	No

Surface Water Discharge Permits					PARAMETER		
Snake Creek	Near Mina Lake	P12	SD0026344	Review approved TMDL	Ammonia	6A	No
South Fork Snake Creek	Near Faulkton	P7	SD0021971	Review approved TMDL	Ammonia	6A	No
Wolf Creek	Near Bridgewater	P4	SD0021512	Approved TMDL	Ammonia	6B	No
Wolf Creek	Near Emery	P6	SD0021741	Review approved TMDL	Ammonia	6A	No

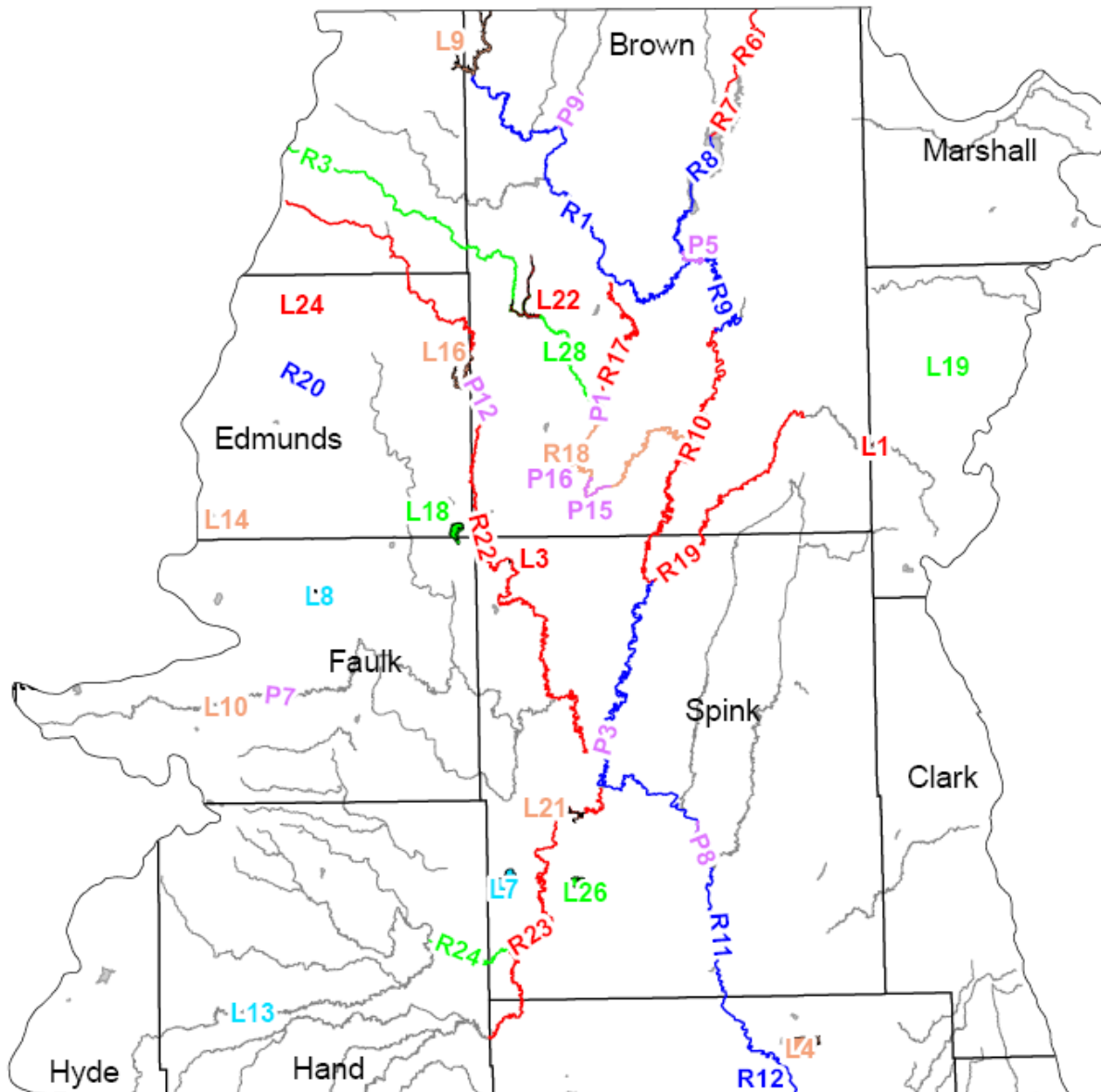
* The waterbody has an approved TMDL, but updated assessment methodology shows full support.

** This waterbody has an approved TMDL for some parameter(s) but still requires TMDL development for other parameter(s).

*** This segment of the James River was listed as nonsupporting for fecal coliform in 2004. New water quality data now shows this segment is fully supporting for fecal coliform.

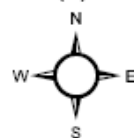
**** Moccasin Creek had additional beneficial uses for warmwater marginal fish life and limited-contact recreation added in December 2002. The city is now upgrading its wastewater treatment facility to meet new effluent limits for ammonia and is required to come into compliance with the approved TMDL by January 1, 2008.

Upper James River Basin



Integrated Report Category Legend

- All Uses Met (1)
- Some Uses Met/Insufficient Data for other Uses (2)
- Supporting with approved TMDL (4A/2)
- Impaired with approved TMDL
- Impaired without approved TMDL (5)
- Point Source TMDL (6)
- Unassessed (3)



0 6 12 18 24 Miles

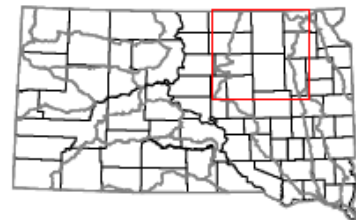


Figure 11: Upper James River Basin

Lower James River Basin

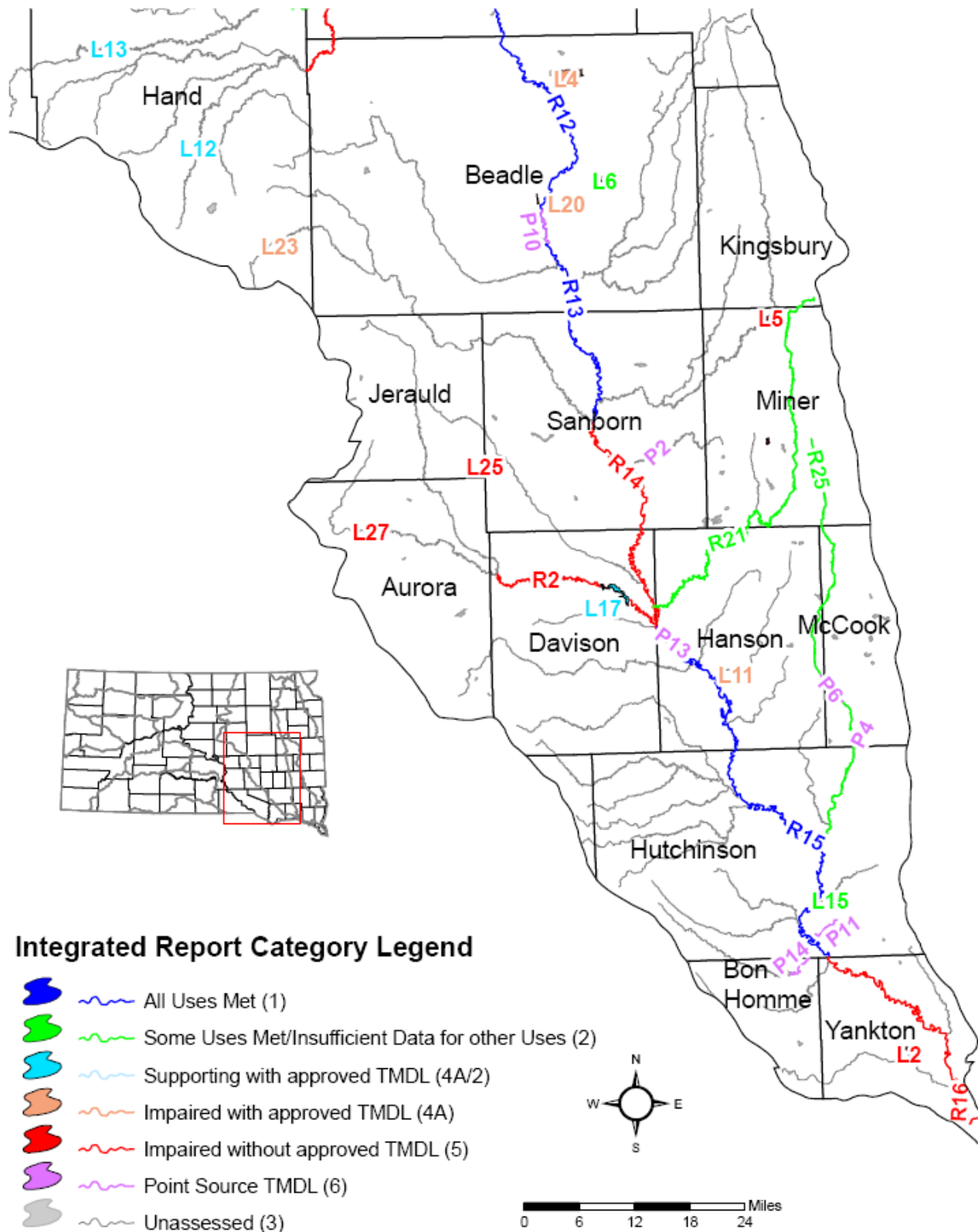


Figure 12: Lower James River Basin

Little Missouri River Basin (Figure 13, Table 23).

The Little Missouri River Basin is a small basin located in the northwestern corner of the state. The river enters the state from southeastern Montana and drains some 605 square miles before exiting into North Dakota. The basin's economy is dominated by agriculture with approximately 90 percent of the land being used for agricultural production. The majority of this land is used for rangeland, due to limited rainfall.

There are no monitored lakes within this basin and DENR has one water quality monitoring station located on the Little Missouri River.

There are no on-going assessment or implementation projects occurring within the basin at this time.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 23: Little Missouri River Basin Information

WATERBODY	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA	On 303(d)?
Streams								Category	& Priority
Little Missouri River	MT border to ND border	R1	DENR 460955	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Non	SAR	Natural Sources		
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Semipermanent Fish Life	Full				
Surface Water Discharge Permits									
					PARAMETER				
Little Missouri River	Near Camp Crook	P1	SD0024759	Review approved TMDL		Ammonia		6A	No

Little Missouri River Basin

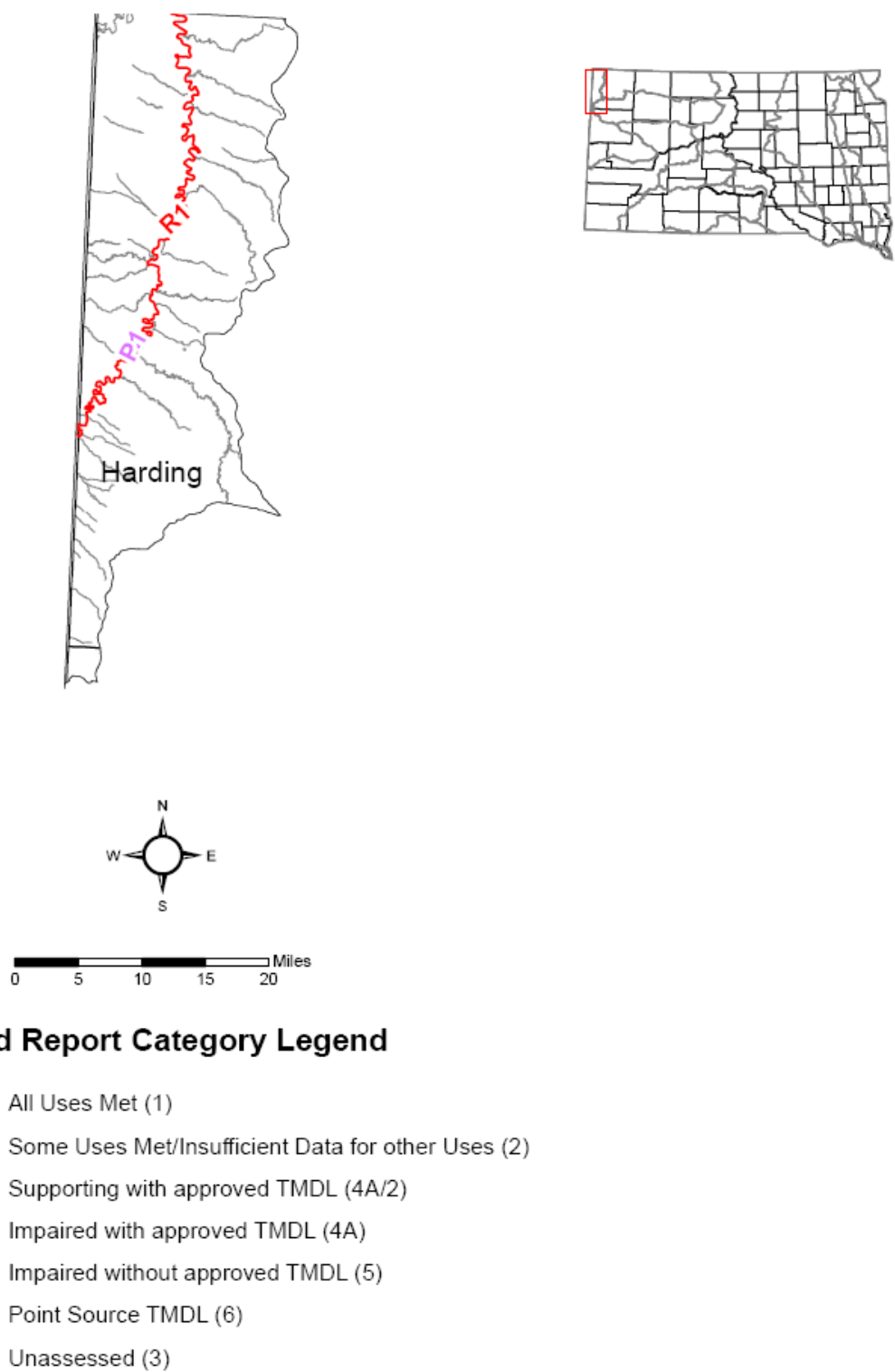


Figure 13: Little Missouri River Basin

Minnesota River Basin (Figure 14, Table 24).

The Minnesota River Basin is found in the northeastern corner of the state. It is bordered on the north by the Red River tributaries, on the west by the Prairie Coteau Pothole region, on the south by the Big Sioux River, and on the east by the South Dakota/Minnesota border. The basin drains an area of 1,572 square miles within South Dakota.

DENR has assessed eight lakes and maintains seven water quality monitoring sites within the Minnesota basin.

The USGS has water quality monitoring sites on Cobb Creek and Big Coulee Creek in the basin. However, the data is very limited and the only parameters sampled were conductivity and water temperature. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

The upper half of the South Fork Whetstone River fully supported its assigned beneficial uses during the current assessment. In the downstream half, water quality degradation occurred during low river flow due to low DO. During dry periods, Milbank wastewater treatment facility discharge makes up most or all of the flow volume of the lower South Fork. The city of Milbank had several SWD permit violations of Five-Day Biochemical Oxygen Demand (BOD₅) during the current monitoring period, which is likely the reason for the impairment of this segment of the river. DENR issued an enforcement action against the city of Milbank and they are now in the process of upgrading the wastewater treatment facility, which should prevent future violations. The stream should recover in the future.

Lake Traverse is the only on-going assessment project at this time. Current implementation projects include Big Stone Lake, Fish Lake, and Lake Alice.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 24: Minnesota River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Lake Alice	Deuel County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A *	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				
Big Stone Lake	Roberts County	L2	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			1 / 4A *	No
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Full				
Lake Cochrane	Deuel County	L3	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Full				
Fish Lake	Deuel County	L4	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	NonPoint Source		
Lake Hendricks	Brookings County	L5	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Oak Lake	Brookings County	L6	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
Lake Oliver	Deuel County	L7	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A * (See footnote on pg.105)	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Lakes									
Punished Woman Lake	Codington County	L8	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Streams									
Big Coulee Creek	Near Peever	R1	USGS 5289985	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
Cobb Creek	Near Gary	R2	USGS 5299700	Coldwater Marginal Fish Life	Full			2 **	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full			(See	
				Irrigation Waters	Full			footnote	
				Limited Contact Recreation Waters	Unknown			on pg.105)	
West Branch Lac Qui Parle River	Above Gary to MN border	R3	DENR 460645	Coldwater Marginal Fish Life	Insuff Info			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Insuff Info				
Little Minnesota River	Near Claire City to MN border	R4	DENR 460710	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Semipermanent Fish Life	Full				
Whetstone River	Headwaters to MN border	R5	DENR 460700	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
South Fork Whetstone River	Headwaters to Lake Farley	R6	DENR 460690	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Marginal Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
South Fork Whetstone River	Lake Farley to mouth	R7	DENR 460691	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Marginal Fish Life	Non	Diss Oxygen	Municipal PS Discharge		
North Fork Yellow Bank River	Grant County Hwy 35 to MN border	R8	DENR 460688	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Full				
South Fork Yellow Bank River	Near Caine Creek to MN border	R9	DENR 460687	Coldwater Marginal Fish Life	Insuff Info			2	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Surface Water Discharge Permits					PARAMETER				
Whetstone River	Near Big Stone City	P1	SD0023663	Review approved TMDL		Ammonia		6A	No
South Fork Whetstone River	Near Milbank	P2	SD0020371	Approved TMDL		Ammonia; Diss. Oxygen		6B	No
North Fork Whetstone River	Near Wilmot	P3	SD0021024	Approved TMDL		Ammonia		6B	No

* This waterbody has an approved TMDL and updated assessment methodology indicates full support.

** New sampling information indicates full support.

Minnesota River Basin

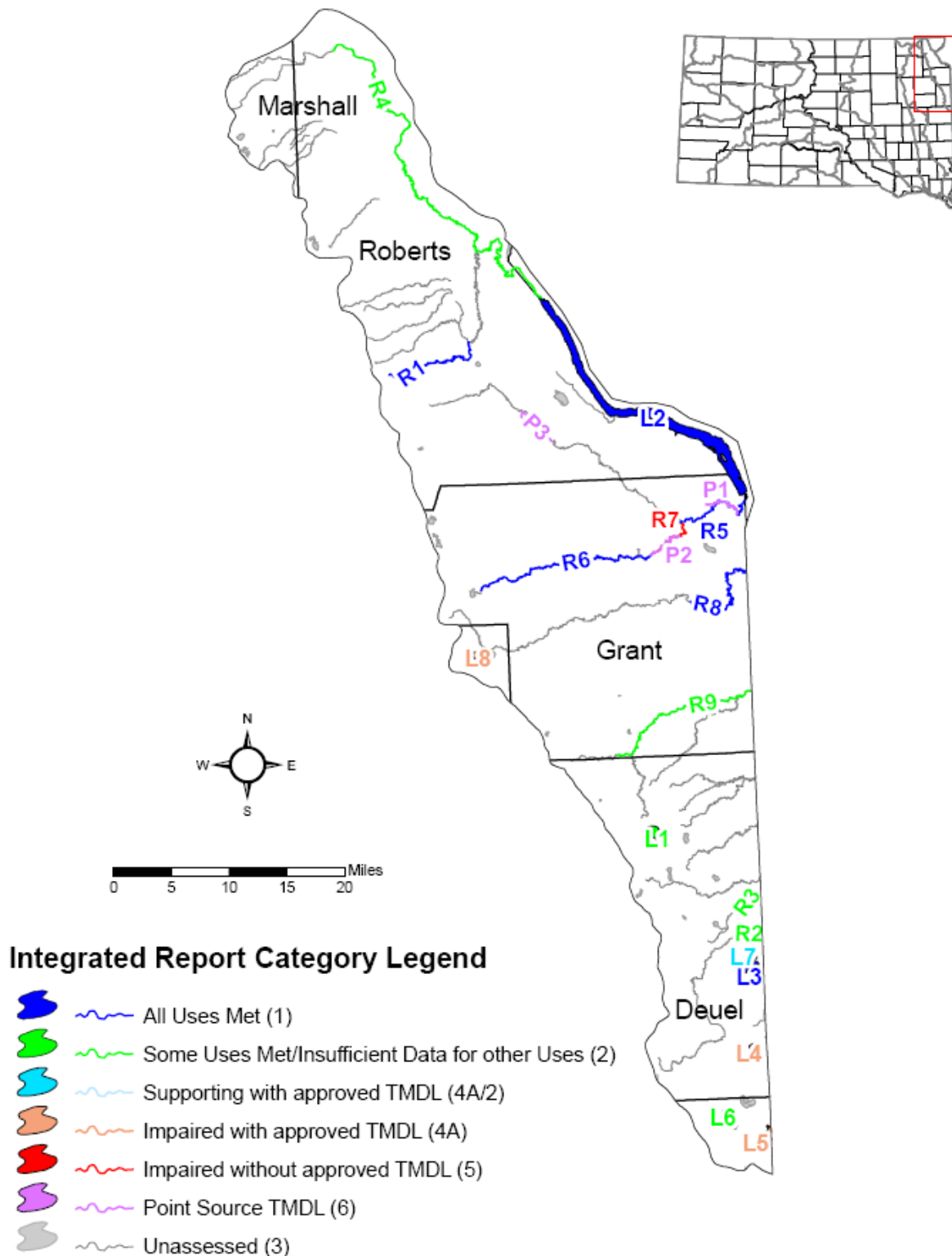


Figure 14: Minnesota River Basin

Missouri River Basin (Mainstem) (Figures 14 and 15, Table 25).

The Missouri River is the largest body of water in South Dakota. It flows through the middle of the state to form what is commonly referred to as either “east or west” river. The river enters the state on the north from North Dakota and flows south until it reaches the vicinity of Pierre. Along this southern course it receives significant flows from the Grand, Moreau, and Cheyenne River basins. From Pierre the river flows generally east-southeast until it exits the state on the southeast tip after receiving contributing flows from the Bad, White, James, Vermillion, Niobrara, and Big Sioux River basins.

The dominant feature of the Missouri River in South Dakota is the presence of four impoundments; Lake Oahe at Pierre (Oahe Dam), Lake Sharpe at Fort Thompson (Big Bend Dam), Lake Francis Case at Pickstown (Ft. Randall Dam), and Lewis and Clark Lake at Yankton (Gavins Point Dam). The largest of these is Lake Oahe with 22,240,000 acre-feet of storage capacity. The impoundments serve for flood control, hydroelectric generation, irrigation, municipal water use, water related recreation, and downstream navigation. The 70-mile reach from the Gavins Point Dam to Sioux City, Iowa is the last major free-flowing segment of the Missouri River in the state.

DENR has assessed 24 lakes and maintains ten water quality monitoring stations within the Missouri River basin. USGS also has several water quality sites located on the mainstem of the Missouri River and several tributaries. USGS data on the Missouri itself is fairly extensive and includes data for dissolved oxygen, pH, water temperature, sodium adsorption ratio, alkalinity, fluoride, sulfate, nitrates, and suspended sediment.

Water quality remains good although violations of the surface water quality standards for temperature, pH, and total suspended solids has exceeded the 10% criteria found in Table 6. However, these samples are taken from the power houses and are not considered representative of actual water quality within the river. More extensive monitoring is required for these large reservoirs to properly characterize the present water quality and reliably determine use-support. DENR is currently conducting a water quality monitoring study of all reservoirs on the Missouri River to be completed in 2008. At that time, the water quality data will be analyzed to determine if the river is fully supporting its current beneficial uses.

Most lakes in the Missouri River basin are highly eutrophic because of nutrient enrichment and siltation. Agricultural activities are the problem sources.

Two lakes were not considered impaired despite exceeding numeric water quality criteria. The Water Resources Assistance Program is currently developing a TMDL for Lake Andes for TSI and recent sampling data indicates full support for other numeric water quality criteria. Sully Lake had pH exceedances. However, this lake has suffered low water levels attributable to the recent drought. The lake is currently being assessed for TSI and pH will be addressed based on current assessment data.

During this reporting period, assessments underway in the Missouri River basin include projects for the South Central lakes (including Academy, Dante, Geddes, Andes, and Platte), Burke Lake,

Okobojo Creek, and Spring Creek watersheds. On-going implementation projects are located in the Medicine Creek and Lewis and Clark watersheds.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 25: Missouri River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Academy Lake	Charles Mix County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Lake Andes	Charles Mix County	L2	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	NonPoint Source		
Brakke Dam	Lyman County	L3	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Burke Lake	Gregory County	L4	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown	Diss Oxygen			
				Limited Contact Recreation Waters	Unknown	pH			
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Byre Lake	Lyman County	L5	Lake Assessment	Domestic Water Supply	Full			2 / 4A *	No
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
Lake Campbell	Campbell County	L6	Lake Assessment	Warmwater Permanent Fish Life	Non	TSI	NonPoint Source	5	Yes – 2
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Corsica Lake	Douglas County	L7	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Cottonwood Lake	Sully County	L8	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		
Dante Lake	Charles Mix County	L9	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Eureka Lake	McPherson County	L10	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				
Fairfax Lake	Gregory County	L11	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				
Fate Dam	Lyman County	L12	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A *	No
				Immersion Recreation Waters	Unknown			(See	
				Limited Contact Recreation Waters	Unknown			footnote	
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source	on pg 115)	
Geddes Lake	Charles Mix County	L13	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Non	TSI	NonPoint Source		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Lake Hiddenwood	Walworth County	L14	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2 / 4A *	No
				Immersion Recreation Waters	Full			(See	
				Limited Contact Recreation Waters	Full	Sedimentation	NonPoint Source	footnote	
				Warmwater Semipermanent Fish Life	Non	TSI		on pg 115)	
Lake Hurley	Potter County	L15	Fish Flesh Sampling	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Insuff Info	Mercury	Source Unknown		
McCook Lake	Union County	L16	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full	Sedimentation	NonPoint Source	4A	No
				Immersion Recreation Waters	Unknown	TSS			
				Limited Contact Recreation Waters	Unknown	TSI			
				Warmwater Semipermanent Fish Life	Non	Turbidity			
Platte Lake	Charles Mix County	L17	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	NonPoint Source		
Lake Pocasse	Campbell County	L18	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Potts Dam	Potter County	L19	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Insuff Info				
Roosevelt Lake	Tripp County	L20	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
			Fish Consumption Advisory	Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	Mercury	Source Unknown		

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Sully Lake	Sully County	L21	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Insuff Info			3	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info		NonPoint Source		
Sully Dam	Tripp County	L22	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	NonPoint Source		
Swan Lake	Walworth County	L23	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
Lake Yankton	Yankton County	L24	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Andes Creek	Near Armour	R1	USGS 6452380	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
Campbell Creek	Near Lee's Corner	R2	USGS 6442718	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
Choteau Creek	Wagner to mouth	R3	DENR 460134	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
			USGS 6453200	Irrigation Waters	Full				
			USGS 6453300	Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Crow Creek	Bedashosha Lake to Jerauld County line	R4	DENR 460135	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
East Fork Platte Creek	Near Aurora Ctr	R5	USGS 6452290	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
Elm Creek	Near Gann Valley	R6	USGS 6442900	Fish/Wildlife Prop, Rec, Stock Waters	Unknown			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				
Missouri River (Lake Francis Case)	Big Bend Dam to Ft. Randall Dam	R7	DENR 460673	Commerce and Industry Waters	Full			1	No
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Full				
Missouri River (Lewis and Clark Lake)	Ft. Randall Dam to North Sioux City	R8	DENR 460674	Commerce and Industry Waters	Full			1	No
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Missouri River (Lake Sharpe)	Oahe Dam to Big Bend Dam	R15	DENR 460674	Coldwater Permanent Fish Life	Insuff Info			2	No
				Commerce and Industry Waters	Full				
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Missouri River (Lake Oahe)	ND Border to Oahe Dam	R11	DENR 460671	Coldwater Permanent Fish Life	Insuff Info			2	No
				Commerce and Industry Waters	Full				
				Domestic Water Supply	Full				
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Full				
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
Medicine Creek	US Hwy 83 to mouth	R9	DENR 460141	Fish/Wildlife Prop, Rec, Stock Waters	Non	TDS	Natural Sources	5	Yes – 1
				Irrigation Waters	Non	Conductivity			
				Limited Contact Recreation Waters	Non	Fecal Coliform	NonPoint Source		
				Warmwater Marginal Fish Life	Non	TSS			
Medicine Knoll Creek	Headwaters to mouth	R10	DENR 460142	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Insuff Info				
				Limited Contact Recreation Waters	Full				
				Warmwater Marginal Fish Life	Full				
Platte Creek	Near Platte	R13	USGS 6452320	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Insuff Info				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Ponca Creek	Gregory to near St. Charles	R14	DENR 460670	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Insuff Info Insuff Info			2	No
Snake Creek	Near Bijou Hills	R16	USGS 6452275	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Marginal Fish Life	Unknown Full Unknown Insuff Info			2	No
Spring Creek	US Hwy 83 to mouth	R17	DENR 460155	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Full Non	Diss Oxygen	NonPoint Source	5	Yes – 2
Surface Water Discharge Permits		MAP ID	BASIS		PARAMETER			EPA Category	On 303(d)? & Priority
Dry Choteau Creek	Near Avon	P3	SD0022730	Approved TMDL	Ammonia			6B	No
Medicine Creek	Near Kennebec	P7	SD0022861	Review approved TMDL	Ammonia			6A	No
Medicine Creek	Near Presho	P9	SD0020117	Approved TMDL	Ammonia			6B	No
Okobojo Creek	Near Agar	P1	SD0022241	Review approved TMDL	Ammonia			6A	No
Platte Creek	Near Platte	P8	SD0020354	Approved TMDL	Ammonia			6B	No
Ponca Creek	Near Colome	P4	SD0023230	Approved TMDL	Ammonia			6B	No
Ponca Creek	Near Gregory	P5	SD0022179	Review approved TMDL	Ammonia			6A	No
Spring Creek	Near Herreid	P6	SD0022900	Review approved TMDL	Ammonia			6A	No
Swan Creek	Near Akaska	P2	SD0022250	Review approved TMDL	Ammonia			6A	No

* This waterbody has an approved TMDL and updated assessment methodology indicates full support.

Upper Missouri River Basin

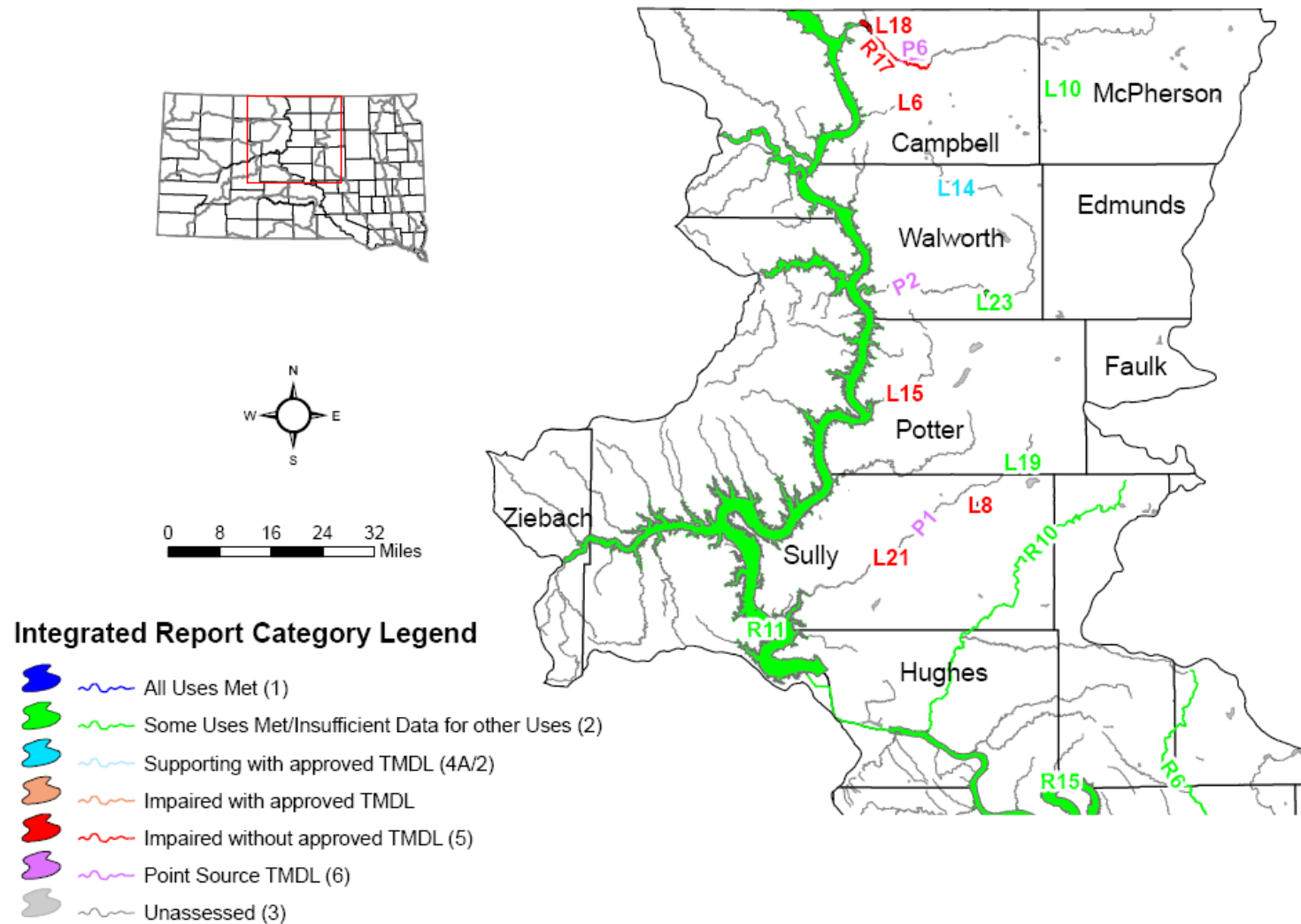


Figure 15: Upper Missouri River Basin

Lower Missouri River Basin

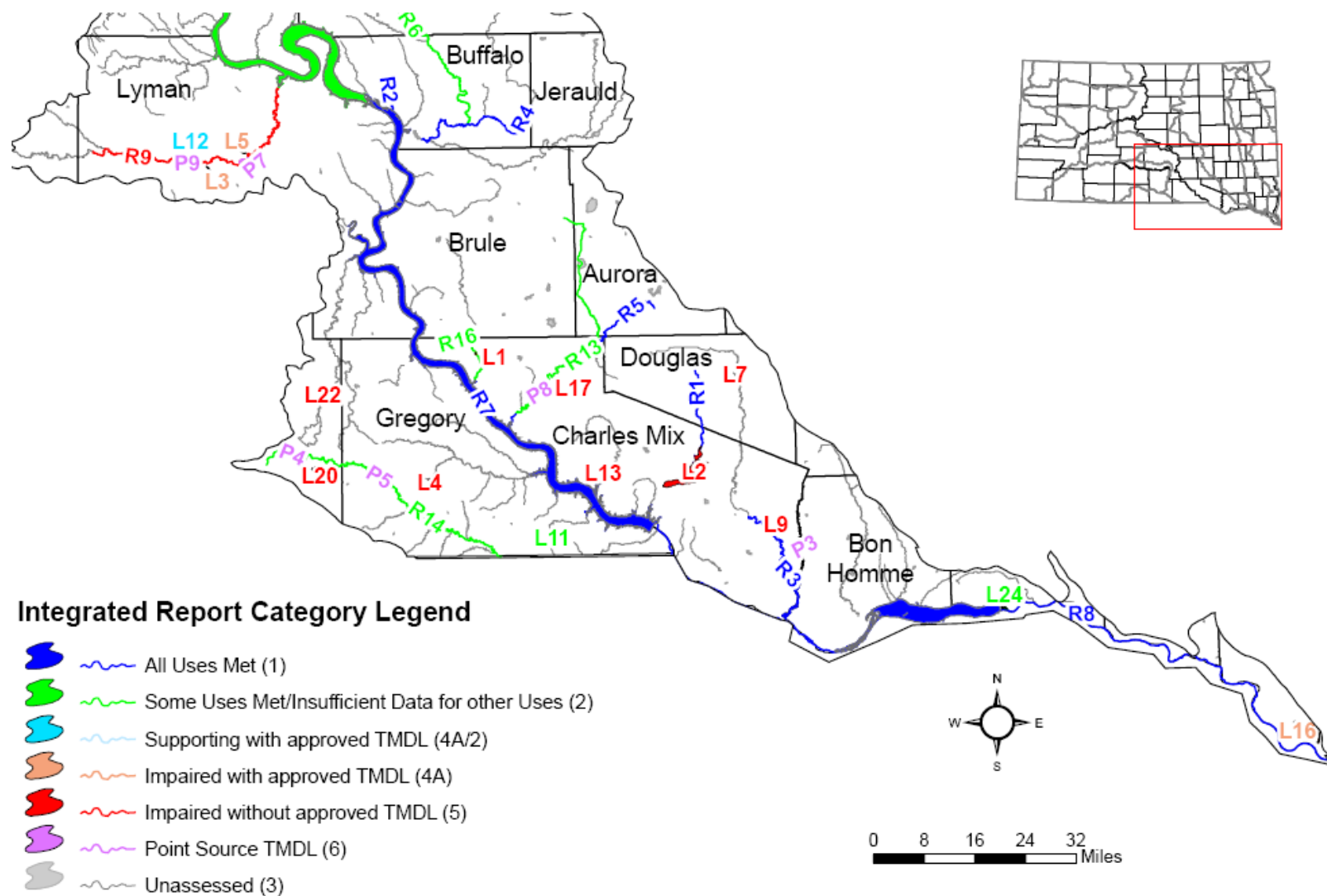


Figure 16: Lower Missouri River Basin

Moreau River Basin (Figure 17, Table 26).

This basin is located in the northwest part of South Dakota and drains an area of 5,037 square miles. As with the Grand River basin to the north, agriculture is the mainstay of this sparsely populated basin. Population density is approximately two persons per square mile. Approximately two-thirds of the basin's land is devoted to ranching operations.

DENR has assessed two lakes and maintains five water quality monitoring sites within this basin. Three of the five monitoring sites are located on the Moreau River, one is located on the South Fork Moreau, and one is located on Thunder Butte Creek.

The USGS has water quality monitoring sites in the basin. However, the data is very limited and the only parameters that were sampled were conductivity and water temperature. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

Water quality within this basin is marginal. Much of the sediment in the drainage comes from erosive Cretaceous shales that also mineralize the water. As in the adjoining Grand River basin to the north, this leads to high levels of TDS in the water of local streams, primarily sulfate, iron, manganese, sodium, and other minerals.

Dewberry Lake had temperature and pH exceedances that occurred in 1989 and 1991. Recent data collected in 2003 suggests no exceedances for both parameters. Overall there is limited data (1989, 1991 and 2003) to make an impairment determination for this reporting period. Dewberry Lake is currently listed for TSI. A future assessment project for TSI will likely provide a better dataset for evaluating potential impacts of temperature and pH in Dewberry Lake.

There are no on-going assessment or implementation projects occurring within the basin at this time.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

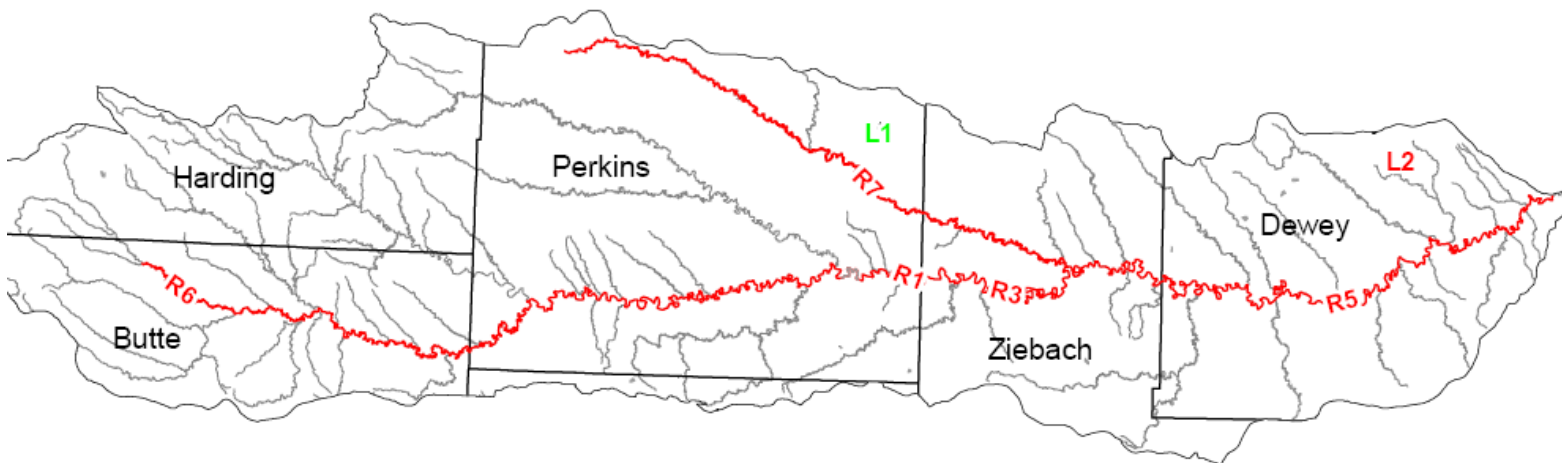
Table 26: Moreau River Basin Information

WATERBODY	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Lakes									
Coal Springs Reservoir	Perkins County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
Dewberry Dam	Dewey County	L2	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Unknown			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Streams									
Moreau River	Headwaters to near Iron Lightning	R1	DENR 460039	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Non	SAR	Natural Sources		
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	TSS			
Moreau River	Iron Lightning to Green Grass	R3	DENR 460143	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Non	SAR	Natural Sources		
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Semipermanent Fish Life	Insuff Info	TSS			
Moreau River	Green Grass to mouth	R5	DENR 460935	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Non	SAR	Crop Production		
				Limited Contact Recreation Waters	Non	Fecal Coliform	Livestock		
				Warmwater Semipermanent Fish Life	Non	TSS	Natural Sources		
South Fork Moreau River	Alkali Creek to mouth	R6	DENR 460144	Fish/Wildlife Prop, Rec, Stock Waters	Non	TDS	Natural Sources	5	Yes – 2
				Irrigation Waters	Non	Conductivity			
				Limited Contact Recreation Waters	Full				
				Warmwater Marginal Fish Life	Full				

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Streams									
Thunder Butte Creek	Headwaters to mouth	R7	DENR 460147	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Insuff Info				
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Marginal Fish Life	Non	Diss Oxygen	Source Unknown		

Moreau River Basin



Integrated Report Category Legend

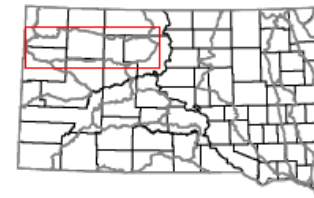
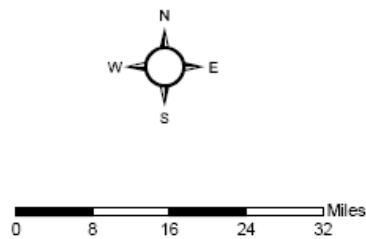
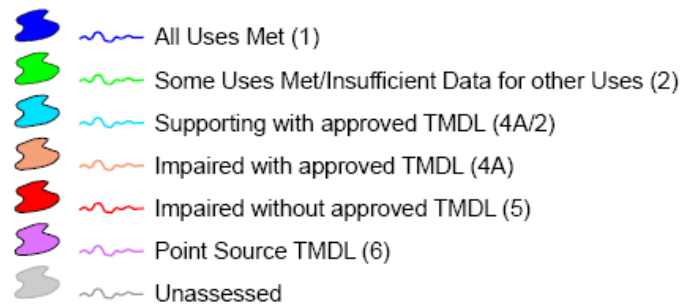


Figure 17: Moreau River Basin

Niobrara River Basin (Figure 18, Table 27).

The tributaries of this basin that lie in South Dakota are located in the very south-central part of the state. These tributaries include the Keya Paha River and the Minnechadusa River. These streams drain approximately 2,000 square miles in South Dakota. Agriculture is the leading source of income to the basin.

DENR has assessed Rahn Dam and maintains one water quality monitoring site on the Keya Paha River. USGS sites that had water quality information within this basin were located on Antelope Creek and Sand Creek.

Rahn Dam, the only assessed lake in the basin, was sampled in 2000 and found to be hypereutrophic due to nutrient enrichment and siltation. These problems were caused by agricultural activities.

An on-going assessment project is being conducted for Rahn Dam (Lewis and Clark assessment). There are no implementation projects occurring within the basin at this time.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 27: Niobrara River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Rahn Lake	Tripp County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Streams									
Antelope Creek	Near Mission	R1	USGS 6463900	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Semipermanent Fish Life	Full				
Keya Paha River	Keyapaha to NE border	R2	DENR 460815	Domestic Water Supply	Full			5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Irrigation Waters	Full		Crop Production Livestock (Grazing or Feeding Operations)		
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Non	TSS			
Sand Creek	Near Olsonville	R3	USGS 6464120	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				

Niobrara River Basin

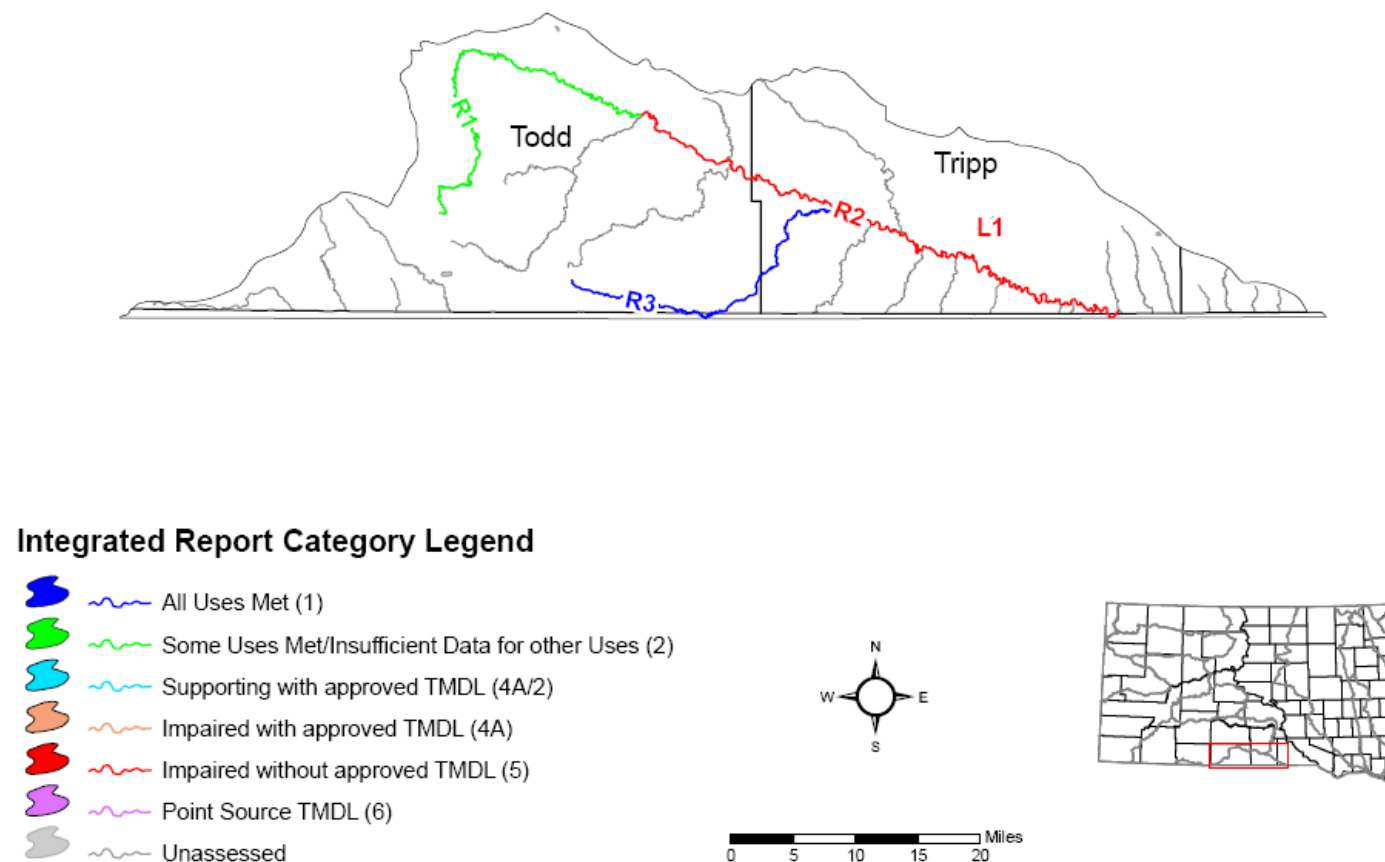


Figure 18: Niobrara River Basin

Red River Basin (Figure 19, Table 28).

The Red River basin covers the extreme northeastern corner of the state. The tributaries of the Red River that are in South Dakota drain a total of 600 square miles. Agriculture, with all its activities, is the main economic industry.

DENR has assessed two lakes and does not maintain any water quality monitoring sites. One USGS site had adequate data for analysis on La Belle Creek in this basin.

A lake assessment has been completed for White Lake Dam and a TMDL is currently being written. An assessment of Lake Traverse and its watershed has begun.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 28: Red River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Lake Traverse	Roberts County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Irrigation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
White Lake	Marshall County	L2	Lake Assessment	Domestic Water Supply	Full			5	Yes – 1
				Fish/Wildlife Prop, Rec, Stock Waters	Full				
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	NonPoint Source		
Streams									
La Belle Creek	Near Veblen	R1	USGS 5051650	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				

Red River Basin

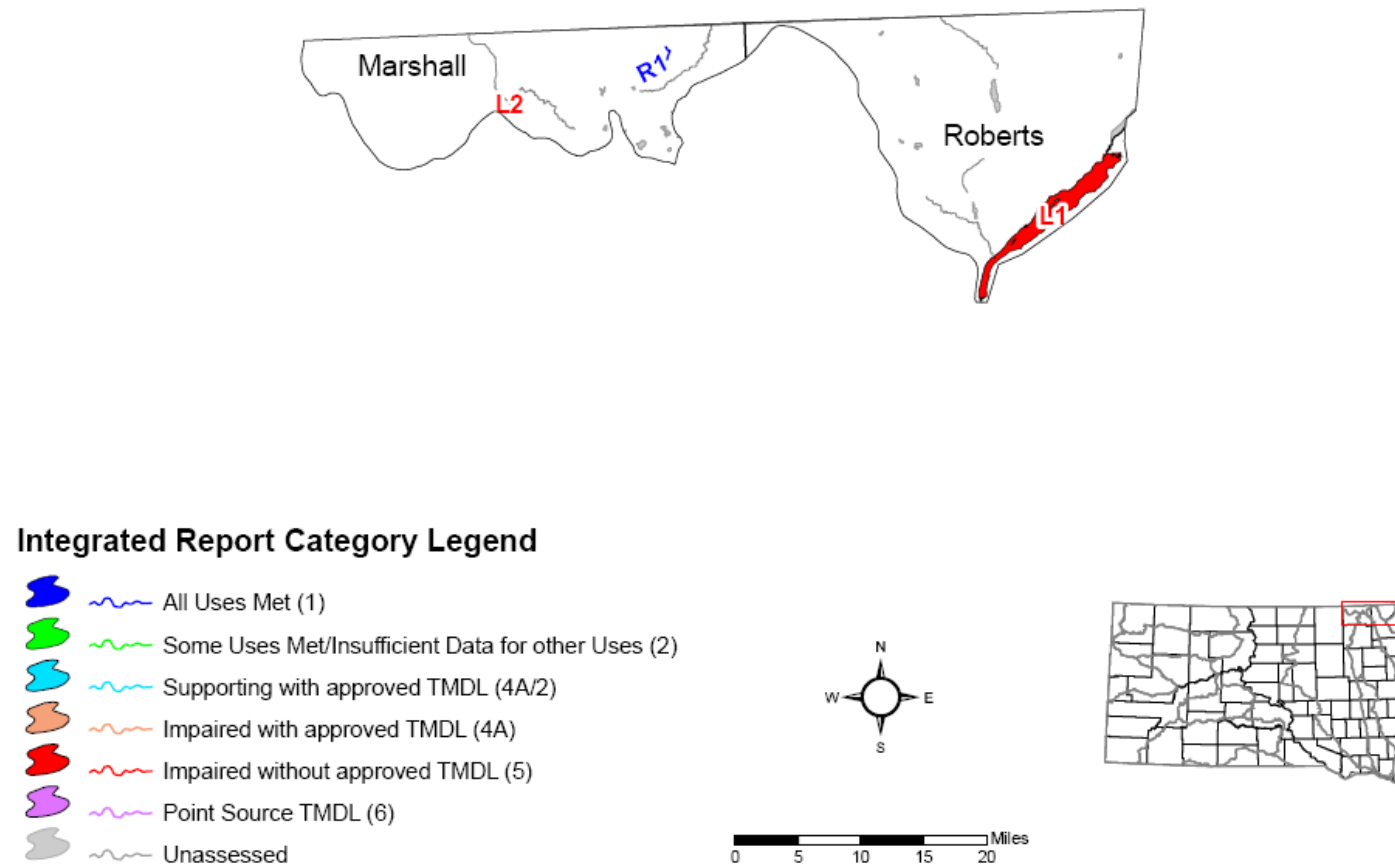


Figure 19: Red River Basin

Vermillion River Basin (Figure 20, Table 29).

The Vermillion River basin covers an area of 2,652 square miles in southeastern South Dakota. The basin is about 150 miles in length and varies in width from 12 miles in the north to 36 miles in the south. Much of the lower 22 miles of the river is channelized. The major economic pursuit is agriculture. It is estimated that 96 percent of the total surface area is devoted to agriculture. The remaining areas contain municipalities, sand and gravel operations, and other uses.

DENR has assessed seven lakes and maintains five water quality monitoring sites within this basin. Three of the five monitoring sites are located on the Vermillion River and the other two are located on the East Fork Vermillion River.

The USGS has water quality monitoring sites in the basin. However, the data is very limited and the only parameters that were sampled were conductivity and water temperature. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

Two lakes, Silver Lake and Whitewood Lake, were not considered impaired despite exceeding numeric water quality criteria for pH. Both lakes have experienced low water levels attributable to the recent drought. These lakes are currently being assessed for TSI and pH will be addressed based on current assessment data.

The Vermillion River watershed is currently being assessed and on-going implementation projects include the Turkey Ridge Creek and Kingsbury Lakes (which includes Lakes Preston, Thompson, Whitewood, and Henry) watersheds.

Table 29: Vermillion River Basin Information

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
East Vermillion Lake	McCook County	L1	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Permanent Fish Life	Non	TSI	Non-Point Source		
Lake Henry	Kingsbury County	L2	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Full				
Marindahl Lake	Yankton County	L3	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Full				
Silver Lake	Hutchinson County	L4	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	Non-Point Source		
Swan Lake	Turner County	L5	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			4A	No
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown	Sedimentation	Non-Point Source		
				Warmwater Semipermanent Fish Life	Non	TSI			
Lake Thompson	Kingsbury County	L6	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Permanent Fish Life	Non	TSI	Non-Point Source		

WATERBODY Lakes	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Whitewood Lake	Kingsbury County	L7	Lake Assessment	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 1
				Immersion Recreation Waters	Unknown				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Non	TSI	Non-Point Source		
Streams									
Little Vermillion River	Near Salem	R1	USGS 6478540	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
Vermillion River	Headwater to Turkey Ridge Creek	R2	DENR 460661	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Semipermanent Fish Life	Full				
Vermillion River	Turkey Ridge Creek to Baptist Creek	R3	DENR 460755	Fish/Wildlife Prop, Rec, Stock Waters	Full			5 *	Yes – 1
				Irrigation Waters	Full		Crop Production		
				Limited Contact Recreation Waters	Full		Hydrostructure flow modification		
				Warmwater Semipermanent Fish Life	Non	TSS	Streambank Modifications/destablization		
Vermillion River	Baptist Creek to mouth	R4	DENR 460745	Fish/Wildlife Prop, Rec, Stock Waters	Full		Livestock	5	Yes – 1
				Irrigation Waters	Full		Crop Production		
				Limited Contact Recreation Waters	Non	Fecal Coliform	Grazing in Riparian Zones		
				Warmwater Semipermanent Fish Life	Non	TSS	Hydrostructure flow modification		
East Fork Vermillion River	McCook/Lake County line to Little Vermillion River	R5	DENR 460150	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Insuff Info				
				Warmwater Marginal Fish Life	Insuff Info				

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
East Fork Vermillion River	Little Vermillion River to mouth	R6	DENR 460154	Fish/Wildlife Prop, Rec, Stock Waters	Full			1	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Full				
				Warmwater Marginal Fish Life	Full				
West Fork Vermillion River	Near Parker	R7	USGS 6478690	Fish/Wildlife Prop, Rec, Stock Waters	Full			2	No
				Irrigation Waters	Full				
				Limited Contact Recreation Waters	Unknown				
				Warmwater Marginal Fish Life	Full				
Surface Water Discharge Permits							PARAMETER		
Turkey Creek	Near Irene	P5	SD0022454	Review approved TMDL		Ammonia		6A	No
Turkey Ridge Creek	Near Viborg	P10	SD0020541	Review approved TMDL		Ammonia		6A	No
Vermillion River	Near Centerville	P2	SD0022527	Approved TMDL		Ammonia		6B	No
Vermillion River	Near Chancellor	P3	SD0023639	Approved TMDL		Ammonia		6B	No
Vermillion River	Near Hurley	P4	SD0021997	Review approved TMDL		Ammonia		6A	No
Vermillion River	Near Vermillion	P9	SD0020061	Review approved TMDL		Ammonia; Diss. Oxygen		6A	No
West Fork Vermillion River	Near Canistota	P1	SD0022497	Review approved TMDL		Ammonia		6A	No
West Fork Vermillion River	Near Marion	P6	SD0020311	Review approved TMDL		Ammonia		6A	No
West Fork Vermillion River	Near Parker	P7	SD0020940	Approved TMDL		Ammonia		6B	No
West Fork Vermillion River	Near Salem	P8	SD0020966	Review approved TMDL		Ammonia		6A	No

* This segment of the Vermillion River was listed as nonsupporting for fecal coliform in 2004. New water quality data now shows this segment is fully supporting for fecal coliform.

Vermillion River Basin

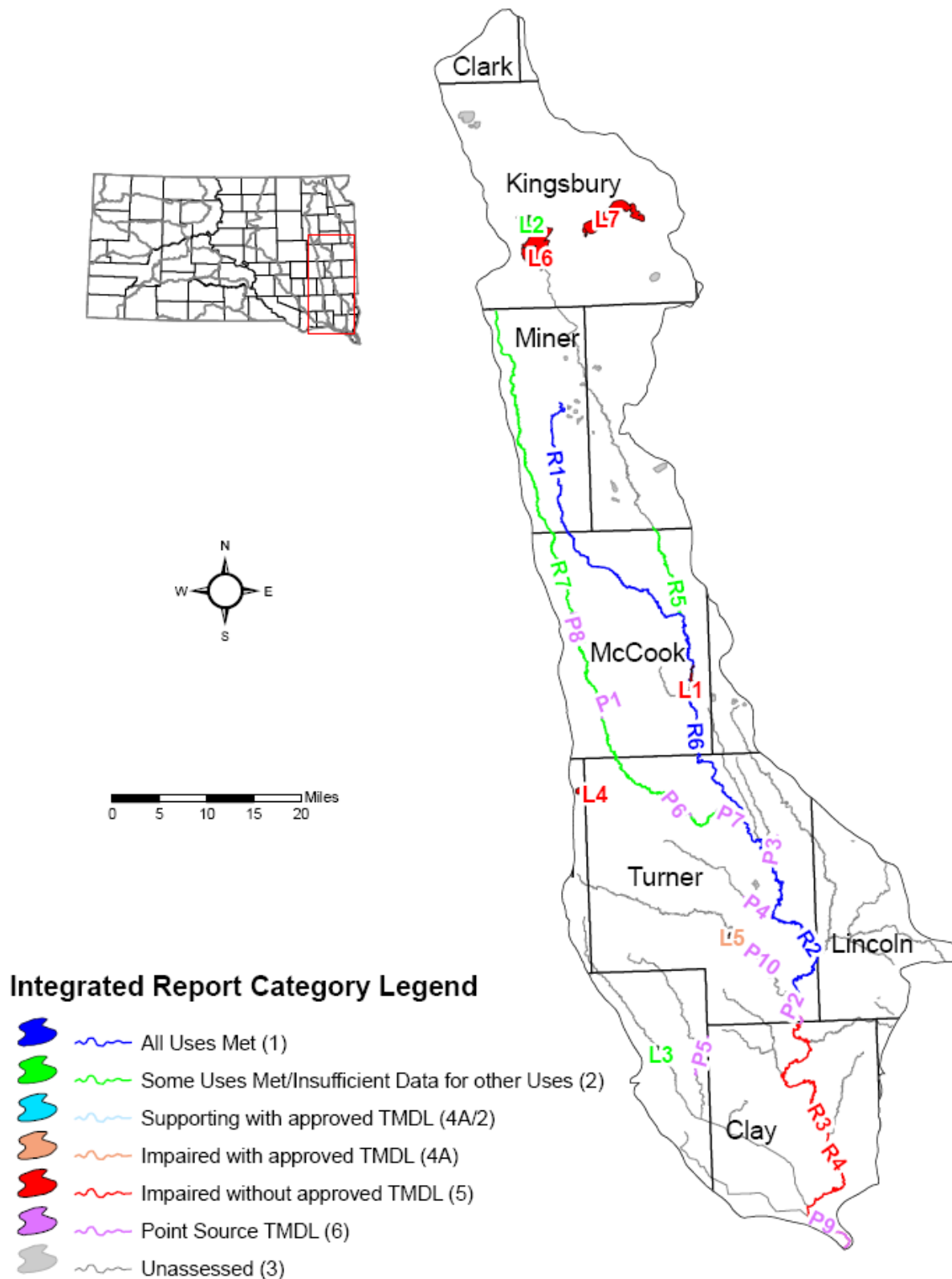


Figure 20: Vermillion River Basin

White River Basin (Figure 21, Table 30).

The White River basin is the most southern of the five major drainages in South Dakota that enters the Missouri River from the west. The total drainage area of the basin in the state is 8,250 square miles. Agriculture dominates the basin's economy with the majority of the land used as rangeland or cropland.

DENR maintains six water quality monitoring sites within this basin. Four of the six monitoring sites are located on the White River, one is located on Cottonwood Creek, and the other is located on the Little White River.

The USGS has water quality monitoring sites in the basin. However, the data is very limited and the only parameters that were sampled were conductivity and water temperature. Data collected on all USGS sites was analyzed for this report. However, if the site was located on a river or creek in conjunction with a DENR site, the data was analyzed but the USGS site name may not have been specifically listed within the tables.

Based on current water quality standards, water quality within this basin has a high occurrence of exceedances. The single most important source of this poor quality is the highly erosive soil within the river drainage. This basin receives the majority of the runoff and drainage from the western badlands. The exposed badlands are a major natural source of both suspended and dissolved solids to the river. Severe erosion and leaching of soils occurs in the badlands and throughout the entire length of the basin. DENR is currently reviewing a study to develop site-specific water quality criteria for the White River to address naturally occurring total suspended solids.

On-going assessment projects include the White River, Cottonwood Creek, and Little White River watersheds.

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

Table 30: White River Basin Information

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
Cottonwood Creek	Headwaters to White River	R3	DENR 460153	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters	Non Non	TDS Conductivity	Natural Sources	5	Yes – 2
Lake Creek	Above & below refuge near Tuthill	R4	USGS 6448000 6449000	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Permanent Fish Life	Unknown Full Unknown Non	Water Temp	Source Unknown	5	Yes – 2
Little White River	Rosebud Creek to mouth	R5	DENR 460840	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Full Non	TSS	Crop Production Livestock Natural Sources	5	Yes – 1
White River	NE border to Interior	R6	DENR 460842	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Full Non	TSS	Crop Production Livestock Natural Sources	5	Yes – 2
White River	Interior to Black Pipe Creek	R7	DENR 460835	Fish/Wildlife Prop, Rec, Stock Waters Irrigation Waters Limited Contact Recreation Waters Warmwater Semipermanent Fish Life	Full Full Non Non	Fecal Coliform TSS	Crop Production Livestock Natural Sources	5	Yes – 2

Category (1) All uses met (2) Some uses met but insufficient data to determine support of other uses (3) Insufficient data (4a) Water impaired but has an approved TMDL (5) Water impaired/requires a TMDL (6a) Water not impaired but approved point source TMDL will be reviewed (6b) Water not impaired and has an existing point source TMDL approval, which does not need review

WATERBODY Streams	LOCATION	MAP ID	BASIS	USE	SUPPORT	CAUSE	SOURCE	EPA Category	On 303(d)? & Priority
White River	Black Pipe Creek to Oak Creek	R8	DENR 460152	Fish/Wildlife Prop, Rec, Stock Waters	Full			5	Yes – 2
				Irrigation Waters	Full		Livestock		
				Limited Contact Recreation Waters	Non	Fecal Coliform	Crop Production		
				Warmwater Semipermanent Fish Life	Non	TSS	Natural Sources		
White River	Oak Creek to mouth	R9	DENR 460825	Fish/Wildlife Prop, Rec, Stock Waters	Full		Livestock	5	Yes – 2
				Irrigation Waters	Full		Crop Production		
				Limited Contact Recreation Waters	Non	Fecal Coliform	Natural Sources		
				Warmwater Semipermanent Fish Life	Non	TSS	Rangeland Grazing		
Surface Water Discharge Permits						PARAMETER	Category		
White River	Near Interior	P1	SD0021857	Review approved TMDL		Ammonia	6A	No	
Little White River	Near White River	P2	SD0022063	Review approved TMDL		Ammonia	6A	No	

White River Basin

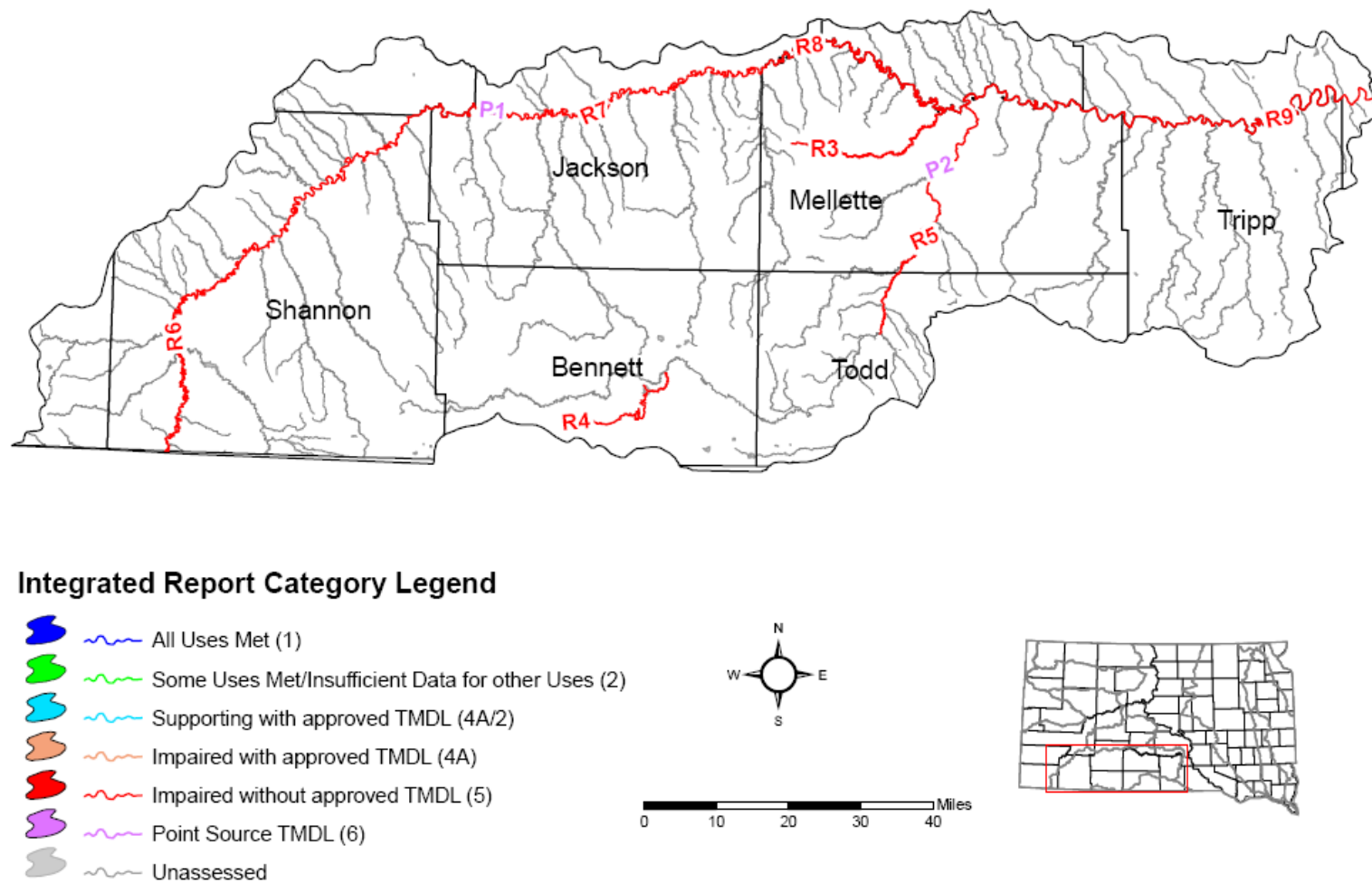


Figure 21: White River Basin

WETLANDS

Wetlands are a common feature in the glaciated prairie pothole region of eastern South Dakota (Figure 18). However, these systems are commonly considered a nuisance with regards to agricultural production and travel (Johnson and Higgins 1997). Upon settlement, wetland drainage became a common practice across the glaciated plains of eastern South Dakota. Considerable advances were made in the 1940's and 1950's to drain wetlands for increased agricultural production. Several government agencies including the U.S. Department of Agriculture (USDA) once promoted wetland drainage as a responsible land-use practice (Johnson and Higgins 1997). As a result, an estimated 35% of the natural wetland area in South Dakota, prior to European settlement has been destroyed by human modification (Dahl 1990). However, federal legislation and other programs have since decreased the rate of natural wetland destruction in South Dakota (Johnson and Higgins 1997).



Figure 22: Map Depicting Prairie Pothole Region

Wetland resources across the prairie pothole region of eastern South Dakota provide many ecological services (Rickeral et al. 2000). Wetlands provide hydrologic services such as water and nutrient storage and flood relief. They also enhance waterfowl production and promote biodiversity. Growing awareness of the importance of wetlands prompted the U.S. Fish and Wildlife Service (USFWS) in 1974 to conduct an inventory of U.S. wetlands, also known as the National Wetlands Inventory (NWI). The Cowardin et al. (1982), classification system was adopted by the USFWS to classify wetlands based on hydrologic, geomorphologic, biologic and chemical characteristics. The NWI efforts conducted in South Dakota provide documentation regarding identity and extent, characteristics and distribution of wetland resources. In short, eastern South Dakota has an estimated 2.2 million acres of wetlands and deep water habitat. Of this total and estimated 80.1% or 1.8 million acres are palustrine systems. Palustrine wetlands (prairie potholes) represent small depressional wetlands with shallow water habitat. Results of the latest NWI survey conducted in eastern South Dakota are summarized by Johnson and Higgins (1997).

South Dakota defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (ARSD 74:51:01). Wetlands are designated the beneficial use of fish and wildlife propagation, recreation and stock watering, which provides protection under existing narrative and numeric water quality standards. The U.S. Army Corp of Engineers (COE) is responsible for the control of activities which place fill in wetlands. The Corps' authority stems from Section 404 of the Clean Water Act. For purposes of Federal 404 identification and delineation, wetlands must have each of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly hydric soil, and (3) the substrate is saturated with water or covered by shallow water at some time during the growing season of each year. Before exercising its authority on a particular action, the COE issues a public notice, taking into consideration the comments of the EPA, US Fish and Wildlife Service, South Dakota Game, Fish, and Park, DENR, and other resource agencies. Projects must receive certification from DENR under Section 401 of the Clean Water Act that the project will not violate South Dakota Surface Water Quality Standards. DENR regulates the discharge of pollutants to wetlands under the Surface Water Discharge permitting program.

The US Fish and Wildlife Service and private entities such as Ducks Unlimited work to protect and preserve wetland resources in South Dakota. An estimated 700 US Fish and Wildlife Service Waterfowl Production Areas (WPAs) covering about 183,000 acres of uplands and wetlands were purchased in South Dakota by 1994 (Johnson and Higgins 1997). The US Fish and Wildlife Service has also obtained easements on an estimated 613,000 acres of eastern South Dakota wetlands through 1994. Approximately 51,000 acres of wetlands are currently owned by the South Dakota Game, Fish, and Parks and managed as State Game Production Areas and Public Shooting Areas.

Despite regulatory programs and other protective measures, human impacts are a concern for wetland resources across eastern South Dakota. North Dakota State University (NDSU) conducted research within the prairie pothole region of the eastern Dakotas. This research focused on assessing the ecological health of wetland resources. Researchers collected data related to riparian land-use, hydrologic functionality, habitat condition and biotic composition. Using scoring criteria and index development these efforts will provide a measure of ecological integrity for many eastern South Dakota wetlands including reference or those of superior quality. Results from this effort will be summarized in the 2008 Integrated Report as results were not available for this reporting cycle. However, preliminary implications from this study suggest that the ecological health of eastern South Dakota prairie pothole wetlands decrease from north to south. This was attributed to greater agricultural intensity in southeast South Dakota (Dekeyser, personal communication).

Further advances are being made to define the ecological condition of prairie pothole wetlands in eastern South Dakota. South Dakota State University in cooperation with South Dakota Game, Fish, and Parks is in the infant stages of developing a wetland rapid assessment protocol for eastern South Dakota. The proposed approach will use a similar protocol developed by the South Florida Water Management District (Miller and Gunsalus 1999), for evaluating wetland

condition. Florida's wetland rapid assessment procedure uses a scoring convention to quantify the condition of six variables including; 1) wildlife utilization; 2) wetland over-story/shrub canopy; 3) wetland vegetative ground cover; 4) adjacent upland/wetland buffer; 5) field indicators of wetland hydrology; and 6) water quality input and treatment systems. The South Dakota wetland rapid assessment protocol is basically in the developmental stage and will likely require modification specific to eastern South Dakota wetlands (Chipps, personal communication). The South Dakota wetland rapid assessment protocol will be used by the State's Natural Heritage and Wildlife Habitat Programs (South Dakota Game, Fish, and Parks) for identifying reference wetlands, monitoring randomly selected sites and evaluating wetland restoration efforts. Future development and implementation of the South Dakota wetland rapid assessment protocol will follow in future IR reports.

PUBLIC HEALTH/AQUATIC LIFE CONCERNS

The cost of routinely monitoring most toxic pollutants is prohibitive. At present, priority toxins (heavy metals) are routinely monitored at several WQM stream sites located near historic or current mining activities in the northern Black Hills. Ammonia, which is a 307(a) toxic pollutant, is frequently monitored throughout the DENR fixed station monitoring network (Table 31).

Table 31: Total Size Affected by Toxics

WATERBODY	SIZE MONITORED FOR TOXICS*	SIZE WITH ELEVATED LEVELS OF TOXICS**
Rivers (miles)	6,255	106
Lakes (acres)	142,917	3,843

* Ammonia, cyanide, chlorine, and metals including arsenic.

** Elevated levels are defined as exceedances of state water quality standards, 304(a) criteria, and/or FDA action levels, or levels of concern (where numeric criteria do not exist).

Aquatic Life (Fish Kills)

There were 28 separate aquatic life concern incidents investigated from October 1, 2003 to September 30, 2005. Of these incidents, eight were the result of a winter kill. The remaining fish kills occurred for a variety of other reasons but mostly due to natural conditions and biological processes during the warm weather months.

The US Fish and Wildlife Service Field Manual for the Investigation of Fish Kills, offers the following guide for reporting fish kills:

Minor Kill:	less than 100 fish
Moderate Kill:	100 to 1,000 fish in 1.6 km of stream or equivalent lentic area.
Major Kill:	more than 1,000 fish in 1.6 km of stream or equivalent lentic area.

By these standards, from October 1, 2003, to September 30, 2005, there were 12 minor fish kills in South Dakota. During this same time period, there were five moderate fish kills and four major fish kills.

It is extremely important that the initial phases of a fish kill investigation be performed at the earliest indication of a die-off. The need for such urgency is due to the fact that fish degrade rapidly and the cause of death may become unidentifiable within a very short time. Unfortunately, DENR is often notified days after an incident has occurred. For this reason, the department is occasionally unable to positively identify the event that caused the fish kill.

The DENR reviews the cause(s) of a fish kill, the waterbody's designated beneficial uses, and the water quality sample data to determine impairment. Marginal fisheries may experience frequent fish kills, while semi-permanent fisheries may experience occasional fish kills due to natural environmental conditions. DENR would consider a waterbody as impaired due to a fish kill if water quality data suggests that the cause of impairment is related to human influence.

Table 31: Summary of Fish Kill Investigations (October 1, 2003 - September 30, 2005)

Date Reported	Fish Species	Number Dead Fish Observed	Kill Classification	Waterbody	Conclusions /Cause of Fish Kill
9/1/2005	Trout	25	Minor	Whitewood Creek	Undetermined
8/15/2005	Walleye	20-25	Minor	Fate Dam	Undetermined
8/5/2005	White Bass	Average of 41 – 248 per mile of shoreline	Moderate	Lake Oahe	Bacterial infection
7/27/2005	Carp and Bullheads	Undetermined. Reported as “far less than found on Brant.”	Moderate	Lake Hendricks	Carp symptoms same as found on Brant Lake. Possible Aeromonas outbreak. Algae blooms were also occurring during this period, so low nocturnal dissolved oxygen levels may have contributed.
7/18/2005	Carp	Thousands	Major	Brant Lake, Lake County	Aeromonas outbreak related to warm water and spawning and other related stress factors.
7/14/2005	Brown and Rainbow Trout	Undetermined	Minor	Spearfish Creek	Low flows and high water temperatures.
7/10/2005	Walleye, Northern Pike, Catfish and rough fish	Thousands	Major	James River	Summer kill – low dissolved oxygen
7/8/2005	Carp and Catfish	Undetermined. Reported as “a lot”.	Moderate	Cheyenne River from Belle Fourche River confluence to Cherry Creek	Undetermined
7/6/2005	Carp	Undetermined.	Minor	Ravine Lake in Beadle County at Huron	Summer kill
7/1/2005	Catfish	Undetermined	Minor	Merkwan Dam	Summer kill
6/28/2005	White Bass	Approximately 276 per mile of shoreline	Moderate	Lake Sharpe	Undetermined. Most likely an infection related to spawning stress and warm water temperatures.
4/12/2005	Crappie and Buffalo	Undetermined. Reported as “not large”	Minor	McCook Lake	Possibly stress related. The crappies were in poor condition.

Date Reported	Fish Species	Number Dead Fish Observed	Kill Classification	Waterbody	Conclusions /Cause of Fish Kill
8/27/2004	Carp:	A few	Minor	Ravine Lake in Beadle County - at Huron	Summer Kill – Low Dissolved oxygen
7/27/2004	Brown Trout:	100 in 100 yard segment of creek	Minor for creek as a whole but major for segment	Whitewood Creek at Deadwood	Fire-fighting foam runoff
7/26/2004	Walleye:	A few	Minor	Ravine Lake in Beadle County - at Huron	Summer Kill – Low Dissolved oxygen
6/21/2004	Common Carp & White Crappie:	A few	Moderate	Lake Alvin	Low dissolved oxygen and summer conditions lead to a stress-related bacterial infection (gram negative bacteria, Aeromonas hydrophila and Flavobacterium columnaris with some Saporlegnia fungus).
5/11/2004	Turtles:	150		Private Stockdam in Mellette County	Poor post-hibernation physical condition lead to mortality.
4/29/2004	Snapping Turtles: Painted Turtles:	4 16+	No fish kill	Creek in Lake County	Poor post-hibernation physical condition lead to mortality.
4/26/2004	Painted Turtles: Fish: Snails:	250 turtles - 1000+ a few	Major	Unnamed wetland in Douglas County	Poor post-hibernation physical condition lead to mortality of turtles. Low water level lead to a summer-kill and a winter-kill of fish.
4/7/2004	Crappie and others:	1000's	Major	Bear Butte Reservoir in Meade County	Low water level lead to a winter-kill.
3/30/2004	Common Carp:	Many	Unknown	Snow Dam in Tripp County	Low dissolved oxygen levels in water under ice and snow cover lead to a winterkill.
3/23/2004	Unidentified:	Kill not confirmed	Unknown	Eagle Butte in Dewey County	Low dissolved oxygen levels in water under ice and snow cover lead to a winterkill.

Date Reported	Fish Species	Number Dead Fish Observed	Kill Classification	Waterbody	Conclusions /Cause of Fish Kill
3/23/2004	Unidentified:	Kill not confirmed	Unknown	Lake Wannalain in Brule County	Dissolved oxygen testing indicated a probable winterkill because levels fell below 1ppm. The water level is dropping due to drought conditions GF&P may not restock the lake due to extremely low water levels.
3/23/2004	Unidentified:	Not documented	Unknown	Lantry Lake in Dewey County	The lake froze to the bottom during winter.
3/23/2004	black bullheads and northern pike:	A few	Minor	Trail City Railroad Lake in Corson County	Low dissolved oxygen levels in water under ice and snow cover lead to a winterkill.
3/23/2004	Unidentified:	Not documented	Unknown	Red Lake in Brule County	Low dissolved oxygen levels in water under ice and snow cover lead to a winterkill.
3/19/2004	black bullhead: northern pike:	A few 1	Minor	Weisensee GPA in Minnehaha County	Low dissolved oxygen levels in water under ice and snow cover lead to a winterkill. GF&P anticipated due to winter conditions and investigated to confirm.
3/19/2004	common carp: northern pike:	15 5	Minor	Grass Lake in Codington County	Low dissolved oxygen levels in water under ice and snow cover lead to a winterkill. GF&P anticipated due to winter conditions and investigated to confirm.

Unsafe Beaches

Recent monitoring data compiled for swimming beaches by the DENR Drinking Water Program appear in Table 32. Monitoring of the approximately 58 designated beach areas in the state is conducted weekly during the swimming season from May to September. Water quality samples are collected by the municipality or governmental agency charged with managing the given waterbody. The South Dakota Department of Game, Fish and Parks is often the monitoring agency responsible for managing lake swimming beaches in the state. Following analysis of such samples by an approved lab, the Drinking Water Program will close a beach area if fecal bacteria concentrations exceed Beach Closure Standards. Beach closings are controlled by the entity regulating the swimming areas.

Waterbodies were listed if three beach closures per season occurred in a consecutive three-week sampling period. A public beach is recommended for closure if the following fecal coliform levels are not met.

- (1) Any three consecutive samples exceed 200 fecal coliform per 100 milliliters;
- (2) Any two consecutive samples exceed 300 fecal coliform per 100 milliliters; or
- (3) Any single sample exceeds 1,000 fecal coliform per 100 milliliters.

Table 32: Waterbodies Affected by Swimming Beach Closures

Name of Waterbody	Waterbody Type	Date of Closure	Cause of Pollutant	Conc. of Pollutant	Source of Pollutant	Number of Events
Lake Alvin	Lake	5/26/2004 7/9/2004 6/6/2005 6/9/2005	Fecal Coliform	4,300 1,100 1,070 520	Non Point Source	3
West Whitlock Bay	Missouri River (Mainstem Reservoir)	8/18/2004	" "	1,300	" "	1
West Indian Creek	Missouri River (Mainstem Reservoir)	8/23/2005	" "	1,600	" "	1
Gavins Point West	Missouri River	6/20/2005 6/27/2005	" "	910 380	" "	1
Big Stone Lake (Hartford Beach)	Lake	6/4/2004 6/20/2005	" "	400 2,400	" "	2
Game Lodge Beach	" "	7/25/2005 7/27/2005	" "	10,000 400	" "	2
Lake Vermillion	" "	6/13/2005 7/5/2005	" "	1,500 4,900	" "	2
Lake Thompson	" "	8/30/2005	" "	1,700	" "	1
Coldbrook Lake	" "	6/25/2004	" "	2,900	" "	1
Richmond Lake	" "	6/13/2005	" "	2,300	" "	1
Eureka Lake	" "	6/13/2005	" "	3,400	" "	1
Sylvan Lake	" "	7/25/2005	" "	2,000	" "	1
Wall Lake	" "	8/31/2005	" "	2,100	" "	1

Surface Drinking Water and Fish Consumption Restrictions

During the years 2004 and 2005, the Surface Water Quality Program, in partnership with the South Dakota Department of Game, Fish and Parks sampled fish from a variety of sites. DENR has been collecting and actively studying fish flesh analysis data since 1994. The purpose of this work is to determine the concentration of various contaminants in fish from locations throughout the state.

In 2004 and 2005, fish were collected from a total of 20 different sites:

Waterbody	County	Years Sampled
Amsden Dam	Day	2004
Diamond Lake	Minnehaha	2004
Lake Hiddenwood	Walworth	2004
Newell Lake	Butte	2004
Potts Dam	Potter	2004
Richmond Dam	Brown	2004
Shadehill Reservoir	Perkins	2004
Simons Dam	Potter	2004
Twin Lakes	Sanborn	2004
Waggoner Lake	Haakon	2004
Whitewood Creek	Lawrence	2004
Lake Byre	Lyman	2005
Curlew Lake	Meade	2005
Fate Dam	Lyman	2005
Island Lake	Minnehaha	2005
Roy Lake	Marshall	2005
Simons Dam	Potter	2005
South Buffalo Lake	Marshall	2005
South Red Iron Lake	Marshall	2005
Wilmarth Lake	Aurora	2005

All samples are composites of fillets from five fish. Initial fish analysis for each waterbody typically includes the parameters listed below. Following receipt and study of initial data, intensive sampling for specific parameters may be performed. The parameters sampled are listed below.

PCB's	Pesticides		Metals
Aroclor 1016	DDT	DDD	Total Cadmium
Aroclor 1221	DDE	Aldrin	Total Selenium
Aroclor 1232	BHC alpha	Dieldrin	Total Mercury
Aroclor 1242	BHC-beta	Endosulfan I	
Aroclor 1248	BHC-delta	Endosulfan II	
Aroclor 1254	BHC-gamma	Endosulfan Sulfate	
Aroclor 1260	Heptachlor	Chlorodane	
Total PCB's	Heptachlor Epoxide	Toxaphene	
	Hexachlorobenzene	Endrin	
	Methoxychlor	Andrin Aldehyde	

The Food and Drug Administration (FDA) has set 1 ppm (part per million) total mercury as the action level for commercial fish. In South Dakota, the Department of Health is responsible for issuing fish consumption advisories. Please refer to Table 33 for specific fish consumption guidelines.

Table 33: Waterbodies Affected by Fish and Shellfish Consumption Restrictions

Name of Waterbody	Pollutant of Concern	Size Affected (acres)	Type of Fishing Restriction				Consumption Guidelines
			Non Consumption		Limited Consumption		
			General Population	Sub-Population	General Population	Sub-Population	
Bitter Lake	Mercury	3,228	-	-	1	1	Adults should eat no more than 7 ounces of fish per week.
Lake Hurley	Mercury	106	-	-	1	1	
Lake Isabel	Mercury	113	-	-	1	1	
Roosevelt Lake	Mercury	93					Women who plan to become pregnant, are pregnant or are breast-feeding, should eat no more than 7 ounces per month.
Twin Lakes W. Hwy 81, Kingsbury County	Mercury	303	-	-	1	1	Children under age 7 should eat no more than 4 ounces per month.

Table 34: Waterbodies Affected by Surface Drinking Water Restrictions

Name of Waterbody	Waterbody Type	Type of Restriction			Cause(s) (Pollutant(s)) of Concern	Source(s) of Pollutant(s)
		Closure ^a (Y/N)	Advisory ^b (Y/N)	Other (explain)		
NONE	-	-	-	-	-	-

^a Closures restrict all consumption from a drinking water supply.

^b Advisories require that consumers disinfect water (through boiling or chemical treatment before ingestion).

Table 35: Summary of Waterbodies Not Fully Supporting Drinking Water Use

Waterbodies (List)	Source(s) of Data (√)			Characterization	Major Causes
	Ambient	Finished	Use Restrictions		
River and Streams					
Big Sioux River near Watertown	√	√	None	Not Supporting	Nitrates
Firesteel Creek	√	√	None	Not Supporting	Total Dissolved Solids
Lakes and Reservoirs					
Angostura Reservoir	√	√	None	Not Supporting	Sulfates

Table 36: State-Level Summary of Drinking Water Use Assessments for Streams

Total Miles Designated for Drinking Water Use <u>total unknown^a</u>				
Total Miles Assessed for Drinking Water Use <u>1,885</u>				
Miles Fully Supporting Drinking Water Use	1,826	% Fully Supporting Drinking Water Use	97%	Major Causes
Miles Fully Supporting but Vulnerable For Drinking Water Use	-	% Fully Supporting but Vulnerable for Drinking Water Use	-	-
Miles Not Supporting Drinking Water Use	59	% Not Supporting Drinking Water Use	3%	Nitrates; Total Dissolved Solids
Total Miles Assessed for Drinking Water Use	1,885			

^aIncludes the Missouri River (mainstem reservoirs and flowing river)

Table 37: State-Level Summary of Drinking Water Use Assessment for Lakes

Total Waterbody Area designated for Drinking Water Use <u>13,321 acres</u>				
Total Waterbody Area Assessed for Drinking Water Use <u>11,793 acres</u>				
Acres Fully Supporting Drinking Water Use	7,597	% Fully Supporting Drinking Water Use	64%	Major Causes
Acres Fully Supporting but Vulnerable For Drinking Water Use	-	% Fully Supporting but Vulnerable for Drinking Water Use	-	-
Acres Not Supporting Drinking Water Use	4,196	% Not Supporting Drinking Water Use	36%	Total Dissolved Solids; Sulfates
Total Acres Assessed for Drinking Water Use	11,793		100%	

IV. POLLUTION CONTROL PROGRAMS

POINT SOURCE POLLUTION CONTROL PROGRAM

The state received delegation of the federal National Pollutant Discharge Elimination System (NPDES) program from the United States Environmental Protection Agency (EPA) on December 30, 1993. The NPDES permits issued by the state are referred to as Surface Water Discharge (SWD) permits. EPA continues to issue NPDES permits in South Dakota for facilities over which they retained jurisdiction. As of September 30, 2005, a total of 362 SWD permits have been issued in South Dakota.

Technology-based controls are placed in most SWD and NPDES permits. However, technology-based controls alone do not necessarily protect waters of the state from toxic pollutants. Therefore, water quality-based limits and toxicity testing requirements are also placed in many of the permits.

Water quality-based limits are developed when technology-based limits alone are not adequate to protect the beneficial uses of the receiving stream. In these cases, the state develops a total maximum daily load (TMDL). The TMDL is implemented through the use of water quality-based effluent limits in the SWD permits. TMDLs are generally developed for water bodies that are not fully supporting their beneficial uses or that would not support their uses with technology-based controls alone.

The state continues to require whole effluent toxicity testing for all major SWD permittees. The goal of the whole effluent toxicity approach is to ensure that point source discharges do not contain toxics in toxic amounts. If toxicity is found, the discharger is required to conduct an evaluation of the discharge to determine the source of the toxicity and identify ways to eliminate the toxicity.

To help ensure that wastewater collection and treatment systems in the state are in compliance, the department provides cost share funding for their planning, design, and construction. The department administers the Clean Water State Revolving Fund (CWSRF) Loan Program which provides low interest loans to publicly-owned wastewater facilities. The department's CWSRF Intended Use Plan establishes the criteria the department uses for fund awards. The Intended Use Plan can be accessed at:

<http://stage.state.sd.us/denr/DFTA/WWFunding/CWSRF/CWSRFprogram.htm>

Between October 1, 2003, to September 30, 2005, the department's Board of Water and Natural Resources awarded a total of 27 loans for a total amount of \$61,874,297. These funds were used for the design and construction of collection systems, wastewater treatment plants, storm sewers, and nonpoint source implementation Best Management Practices (BMPs).

EPA issued revised regulations in December 2003 for Concentrated Animal Feeding Operations (CAFOs). DENR adopted the federal regulations and was the first state in the nation to get EPA approval of their regulations. In addition, to assist CAFO operators to achieve compliance with

these new regulations, the department allocated \$698,860 for the cost share of Confined Animal Feeding Operation (CAFO) engineering designs. The completion of engineering designs then enabled the CAFO owners to apply for U.S. Department of Agriculture's Environmental Quality Incentive Program grant funds for construction.

The current interest rates are 2.5% for up to 10 year loans and 3.25% for up to 20 year loans. There is also a nonpoint source incentive loan rate for select communities that are sponsoring a nonpoint source implementation project. The loan rate for these projects ranges from 1.5% for up to 10 years and 2.25% for up to 20 years.

To encourage responsible and proactive engineering planning, the department also uses some of its CWSRF administrative surcharge funds to cost share engineering planning for small communities (2,500 population and below). Between October 1, 2003, and September 30, 2005, the department awarded a total of \$254,639 for 40 engineering studies.

In addition, South Dakota has a state water planning process that was established in 1972. This establishes an orderly planning process for water development. In addition, the state also developed a dedicated water funding program in 1993. The dedicated funding totals approximately \$8 million annually. Between October 1, 2003, and September 30, 2005, \$3.64 million in state grants were awarded to 31 wastewater collection or treatment projects.

COST/BENEFIT ASSESSEMENT

A cost/benefit analysis is a requirement of the Integrated Report.

The cost data is included in this section (*POLLUTION CONTROL PROGRAMS*). In addition the South Dakota Department of Environment and Natural Resources provides the Governor and the Legislature annual reports summarizing water and wastewater development activities for the preceding calendar year. The 2004 and 2005 annual reports can be accessed at <http://www.state.sd.us/denr/document.htm#Water%20and%20Waste%20Funding>.

Information on operation and maintenance costs for local unites of governments is not readily available.

The benefit data is not readily available, but what is available has been included in the *STATEWIDE SURFACE WATER QUALITY SUMMARY* section of this report.

NONPOINT SOURCE POLLUTION CONTROL PROGRAM

South Dakota's nonpoint source (NPS) pollution management activities are implemented through the South Dakota Nonpoint Source Pollution Management Program. The primary focus of the program is the control of nonpoint source pollution through the use of voluntary implementation of best management practices (BMPs) and holistic resource management plans. The major sources of NPS pollution in South Dakota are summarized in Table 39.

The program coordinates its NPS control activities with local, state, and federal agencies and stakeholder organizations. These agencies and organizations provide BMPs and financial and technical assistance that increase the program's capacity to develop and implement NPS management projects.

The remainder of this section provides a summary which describes the South Dakota Nonpoint Source Pollution Management Program and the types of NPS projects that are being developed and implemented. Additional information concerning the program and projects may be obtained by consulting the South Dakota Nonpoint Source Management Program Plan and annual reports. Copies of these documents are available from the DENR, the South Dakota State Library, or by visiting:

<http://www.state.sd.us/denr/DFTA/WatershedProtection/wporg.htm>

South Dakota Nonpoint Source Management Program

The South Dakota Nonpoint Source Pollution (NPS) Management Program is housed in the DENR Water Resources Assistance Program (WRAP). The NPS Program, along with the Pollution Prevention (P2) Program, comprise the WRAP's Watershed Protection activities. NPS pollution activities completed by program staff are selected to improve, restore, and maintain the water quality of the state's lakes, streams, wetlands, and ground water in partnership with other agencies, organizations, and citizen groups.

Implementation of the NPS Pollution Management Program is guided by the South Dakota Nonpoint Source Management Plan. South Dakota's revised NPS Management Plan was approved by EPA during March 2000. The revised plan:

- addresses the nine mandated elements required to access Section 319 incremental funds,
- expands on activities included in previous editions of the plan, and
- continues to achieve improved water quality through voluntary actions developed in partnership with the landowners and managers.

The primary tools selected to accomplish the tasks outlined in the plan include:

- technical and financial assistance delivered through program staff and project partnerships, and
- a comprehensive information and education effort.

A copy of the management plan is available upon request or by visiting:

<http://www.state.sd.us/denr/watershedProtection>

The water quality assessment and implementation strategy outlined in the management plan has been amended to address the development and implementation of TMDLs. The department established a goal of developing 11 TMDLs and implement five work plans each year to complete the NPS TMDLs for all of the state's impaired waters within 13 years of initial listing.

A key element in implementing the South Dakota NPS Management Plan is the South Dakota Nonpoint Source Task Force. The task force is a citizen's advisory group is composed of approximately 29 agencies, organizations and tribal representatives. The task force:

- provides a forum for the exchange of information on activities which impact nonpoint source pollution control,
- prioritizes water bodies for NPS control activities,
- provides guidance and application procedures for funding NPS control projects,
- reviews project applications,
- recommends projects to the South Dakota Board of Water and Natural Resources for funding approval,
- serves as the coordinating body for the review and direction of federal, state, and local government programs to ensure that the programs will achieve NPS pollution control efficiently,
- serves as a focal point for information, education, and public awareness regarding NPS pollution control,
- provides oversight of NPS control activities and prioritize the activities, and
- provides a forum for discussion and resolution of program conflicts.

For additional information about the task force visit:

<http://www.state.sd.us/denr/DFTA/WatershedProtection/npstf.htm>

South Dakota Nonpoint Source Projects

Since the reauthorization of the Clean Water Act during 1987, the South Dakota NPS Pollution Management Program has used Section 319, 104(b)(3), 106, and 604(b), Pollution Prevention and state and local funding to support more than 170 NPS projects. There are currently 39 NPS projects in progress. The total includes 10 watershed assessment/total maximum daily load (TMDL) development, 19 watershed/TMDL implementation, three statewide BMP planning technical assistance, and seven information and education (I & E) projects. The technical assistance projects provide watershed project and TMDL development project sponsors with technical assistance for planning and arranging funding for livestock feeding and grazing management and other sediment and nutrient reduction BMP installation. The I & E projects include four projects focusing on development of manure management BMPs.

A list of the projects funded is contained in the South Dakota Nonpoint Source Management Program Annual Report. A copy of the report may be obtained from the South Dakota

Department of Environment and Natural Resources, the South Dakota State Library, or by visiting:

http://www.state.sd.us/denr/DFTA/WatershedProtection/NPS_ANNUAL_REPORTS.htm

Project implementation plans, reports of project progress/results, and final reports for completed project are available on the EPA Grants Reporting and Tracking System (GRTS). Copies of final reports are also available by contacting DENR or the South Dakota State Library. Electronic copies of the final report for many of the more recently completed project are available on either the DENR or State Library web site.

While the size, target audience, and structure of the projects vary; all share common elements:

- increase awareness of NPS pollution issues,
- identify, quantify, and locate sources of nonpoint source impairment,
- reduce/prevent the delivery of NPS pollutants to waters of the state with emphasis on meeting targets established through total maximum daily loads (TMDLs), and
- disseminate information about effective solutions to NPS pollution.

Although most of the projects fit into one of three categories:

- assessment/development,
- information and education (I&E), or
- watershed implementation;

most include components of each category.

A portion of the Section 319 funds awarded to the state has also been used to assess major aquifers in the state and promote and implement practices that prevent ground water contamination.

Historically, the majority of the projects developed and implemented focused on reducing NPS pollution originating from agricultural operations. More recently, increased resources have been directed toward local initiatives that:

- evaluate water quality conditions,
- determine sources and causes of NPS pollution within priority watersheds, and
- develop and implement total maximum daily loads (TMDLs) for impaired water bodies.

Water bodies assessed are selected from those on the 303(d) list of impaired water bodies. Activities included in implementation project work plans are selected to reach the TMDLs developed as part of the assessment process.

The primary purposes of assessment/development projects are:

- identify beneficial use impairments or threats to specific water bodies, and

- determine the extent to which the threats or impairments are from NPS pollution.

TMDLs are prepared as a part of an assessment project. Activities completed during an assessment project include an inventory of existing data and information and supplemental monitoring, as needed, to allow an accurate assessment of the watershed. Through these efforts, local project sponsors are able to:

- determine the extent to which beneficial uses are impaired,
- identify specific sources and causes of the impairments,
- establish preliminary pollutant reduction goals or TMDL endpoints, and
- identify management practices and alternatives that will reduce the pollution at its source(s) and restore or maintain the beneficial uses of the water body.

The project period for assessment/development projects generally ranges from one to three years.

DENR has 47 EPA-approved TMDLs on 31 waterbodies and is currently assessing 61 waterbodies.

Information and education (I & E) projects are designed to provide information about NPS pollution issues and solutions. Information transfer tools typically used by the department and its project partners include brochures, print and electronic media, workshops, BMP implementation manuals, tours, exhibits, and demonstrations. I & E projects usually range from one to five years in length. During recent years the NPS Program has:

- focused a portion of its I & E efforts on the development of BMPs to improve management of nutrients originating from livestock operations through a partnership with the academic community; and
- formed a partnership with the South Dakota Discovery Center and Aquarium for the implementation of the statewide, coordinated I & E effort that target a wider cross section of the state's population.

Watershed projects are the most comprehensive type of project implemented through the South Dakota NPS Pollution Management Program. Watershed projects are typically long-term in duration and designed to implement TMDLs that address NPS pollution sources and beneficial use impairments identified during the completion of an assessment project. Common watershed project objectives include:

- protect/restore impaired beneficial uses through the promotion and voluntary implementation of best management practices (BMPs) that prevent/reduce NPS pollution,
- disseminate information about NPS pollution and effective solutions, and
- evaluate project progress toward use attainment or NPS pollutant reduction goals.

Watershed projects typically range from four to ten years in length with the duration being dependant on the size of the watershed and extent of the NPS pollution impacts that must be addressed.

Nonpoint Source Pollution Control Program Funding Strategy

DENR receives approximately \$3.2 million Section 319 funds annually from EPA. Administrative costs total about \$600,000. The remaining \$2.6 million is made available for project awards. DENR attempts to package the funding for TMDL assessment and implementation projects using a variety of other department, state, federal, or private funding.

Other department funds used for cost share include department fee funds, 604(b) funds, 106 funds, dedicated water development funding, Clean Water SRF administrative surcharge funds, and Clean Water SRF conventional loan funds.

State financial resources from other programs commonly used in implementing NPS projects include the Department of Agriculture's Soil and Water Conservation Grant funds, Game, Fish & Parks funds, and Water Development District funds. Private funds include Ducks Unlimited and Izaak Walton League funding.

For many TMDL assessment and implementation projects, DENR attempts to fund about half of the 40 percent nonfederal share needed to match the Section 319 funds.

Other federal funding sources commonly used in completing NPS projects includes U.S. Bureau of Reclamation funds (or services); U.S. Department of Agriculture's Environmental Quality Incentive, Wildlife Habitat Incentives, Wetlands Reserve, Grasslands Reserve and Conservation Reserve Programs; and EPA Pollution Prevention Program Grants. Local project partners are also encouraged to apply for EPA Region VIII Consolidated Funding Process and Information and Education Grant Program funds.

DENR is on schedule to complete the TMDL assessments for those water bodies on the 1998, 2002, and 2004 303(d) lists. The department typically moves completed TMDLs to implementation within a year after completion.

The implementation projects can be expensive. To ensure that timely progress is made; DENR typically awards funds for an initial two-three year implementation project. A second, phase is funded only if sufficient progress is made during the first.

Implementation projects funded are typically designed to implement multiple TMDLs in a geographic or river basin area. This practice increases efficiency in the use of limited financial resources and provides the local sponsor and its partners with the opportunity to hire a more highly skilled project staff.

Since the TMDL assessments in eastern South Dakota are showing high numbers of Animal Feeding Operations (AFOs) needing upgrades, DENR is now limiting Section 319 funding to AFOs, riparian areas, and some managed grazing systems. The department's project partners are urged to seek funding for other BMPs from the EQIP and other state and federal programs referenced previously.

Implementation projects typically begin at about \$200,000 and can run as high as several million dollars. The cost depends on the size of the watershed and the estimated number and the types of BMPs needed to attain the project' TMDL goal(s).

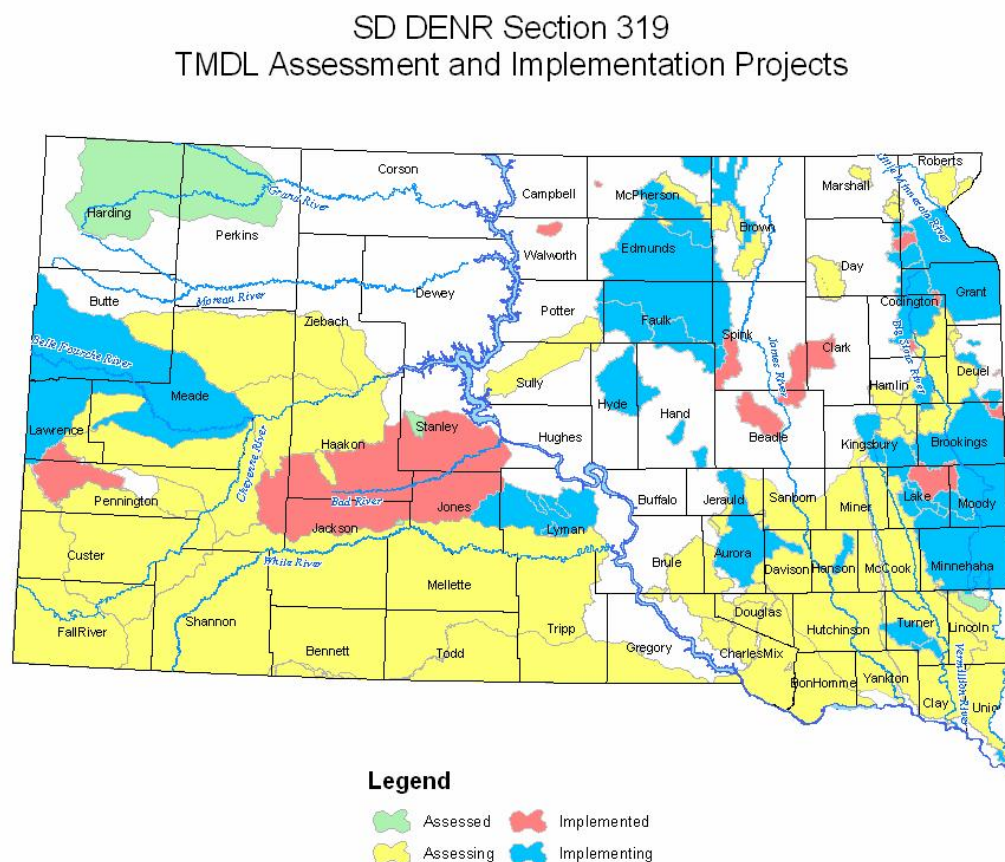
For information about specific South Dakota NPS projects funded using Clean Water Act Section 319 funds, contact the South Dakota Department of Environment and Natural Resources or access the US EPA Grants Reporting and Tracking System (GRTS) database.

Table 38: South Dakota Categories and Subcategories of NPS Pollution Sources

<u>Agriculture</u>	<u>Resource Extraction/Exploration/Development</u>
Non-irrigated crop production	Surface Mining
Irrigated crop production	Subsurface Mining
Pasture grazing – riparian and upland	Petroleum activities
Animal feeding operations	
Rangeland – riparian and upland	<u>Habitat Modification</u>
	Removal of riparian vegetation
	Drainage/filling of wetlands
<u>Silviculture</u>	<u>Hydromodification</u>
Harvesting, restoration, residue management	Dredging
Forest management	Upstream impoundment
Logging road construction/maintenance	
Bank or shoreline modification/destabilization	<u>Urban Runoff</u>
<u>Construction Runoff</u>	Surface runoff
<1 acre highway/road/bridge construction projects	Highway/road/bridge runoff
Land development	
Channelization	
<u>Other</u>	
Dam construction	
Golf courses	
Atmospheric deposition	
Waste storage/storage tank leaks	
Spills	
Erosion and sedimentation	

Future Nonpoint Source Program Directions

NPS pollution originates from diverse sources. Nonpoint pollution controls must reflect this by using all of the resources available from the various state, federal, and local organizations and in addition have landowner support and participation. The technical and financial assistance currently available is not sufficient to solve all of the NPS pollution problems in the state. Additional solutions must be tried. Landowners have the capability to accomplish much if they understand the problems and the ways to solve them. Educating the public about NPS pollution issues may prompt landowners to voluntarily implement activities to control NPS pollution. New federal programs must also be developed to supplement existing programs. The continuation of existing activities coupled with the addition of innovative new programs will ensure that South Dakota remains a leader in nonpoint source pollution control.



6/28/05

Figure 23: Status of TMDL Assessment and Implementation Projects

V. PUBLIC PARTICIPATION PROCESS

To fulfill the requirements of the federal Clean Water Act, and involve the affected community and stakeholders in the water quality improvement process, a public participation process was implemented. Summarized below are the procedures employed by DENR to involve the public.

Process Description

First Public Review/Input Period

On or around June 1, 2005, an ad was published in 11 statewide daily newspapers, announcing the DENR was developing the Integrated Report and requesting water quality data that would aid in the assessment of South Dakota's waters. This announcement was also sent to approximately 70 individuals and organizations.

Second Public Review Period

Data received after the first public review period, and additional data gathered by DENR were reviewed, and a draft Integrated Report was developed. The draft report was released for a 30-day public review and comment period on February 22, 2006. The announcement on the availability of the draft report was again published in the 11 daily newspapers. The draft report was also made available on DENR's web page at: <http://www.state.sd.us/denr/DraftIR2006.pdf>. At this time, the draft list was also provided to USEPA Region VIII for review and comment.

Personnel from DENR responded to inquiries and were available to meet with interested groups about the list and listing process. Copies of public participation documents and responses to oral and written comments received during the comment period are included in Appendix C.

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VII. KEY TO ABBREVIATIONS

AGNPS - agricultural nonpoint source computer model
ARSD - Administrative Rules of South Dakota
BMP - best management practice
COE - United States Army Corps of Engineers
CWA - Clean Water Act
DENR - Department of Environment and Natural Resources
DO - dissolved oxygen
EPA - Environmental Protection Agency
GF&P - Game Fish and Parks
NPDES - National Pollutant Discharge Elimination System
NPS - nonpoint source
NRCS - Natural Resources Conservation Service (formerly SCS)
NWI - National Wetlands Inventory
QA - quality assurance
QC - quality control
SDGF&P - South Dakota Department of Game, Fish and Parks
SDSWQS - South Dakota Surface Water Quality Standards
STORET - EPA computer data storage and retrieval system
SWD - Surface Water Discharge
SWLA - Statewide Lakes Assessment
TDS - total dissolved solids
TMDL - Total Maximum Daily Load
TSI - Carlson's (1977) Trophic State Indices
TSS - total suspended solids
USDA - United States Department of Agriculture
USGS - United States Geological Survey
WQM - ambient water quality monitoring
WQS - water quality standards

APPENDICES

APPENDIX A – Waterbodies from the 2004 Integrated Report to be Delisted

Basin Name	Waterbody	Location	Parameter	Information to Support Delisting	EPA Approved
Bad River Basin	Hayes Lake	Stanley County	TSI	EPA Approved TMDL. Change in WQS assessment methodology; now meets water quality standard.	9/29/2004
	Freeman Lake	Jackson County	Nitrates/Selenium	EPA Approved TMDL	2/7/2001
	Bad River	Stanley County line to mouth	TSS	EPA Approved TMDL	2/7/2001
Belle Fourche River Basin	Iron Creek Lake	Lawrence County	TSI	Change in WQS assessment methodology; now meets water quality standard.	NA
	Belle Fourche River	WY border to near Fruitdale	TSS	EPA Approved TMDL	2/5/2005
	Belle Fourche River	Near Fruitdale to Whitewood Creek	TSS	EPA Approved TMDL	2/5/2005
	Belle Fourche River	Whitewood Creek to Willow Creek	TSS	EPA Approved TMDL	2/5/2005
	Belle Fourche River	Willow Creek to Alkali Creek	TSS	EPA Approved TMDL	2/5/2005
	Belle Fourche River	Alkali Creek to mouth	TSS	EPA Approved TMDL	2/5/2005
	Horse Creek	Near Vale and Newell	TSS	EPA Approved TMDL	2/5/2005
	Whitewood Creek	Spruce Gulch to Sandy Creek	Water Temperature	New information indicates full support	NA
Big Sioux River Basin	Lake Herman	Lake County	TSI	EPA Approved TMDL. Change in WQS assessment methodology; now meets water quality standard.	9/29/2004
	Lake Kampeska	Codington County	Fecal coliform	Listed in error on 2004 Integrated Report	NA
	Big Sioux River	Near Volga to Brookings	TSS	New information indicates full support	NA
	Big Sioux River	Brookings to I-29	TSS	New information indicates full support	NA

Basin Name	Waterbody	Location	Parameter	Information to Support Delisting	EPA Approved
Big Sioux River Basin	Big Sioux River	I-29 to near Dell Rapids	TSS	New information indicates full support	NA
	Big Sioux River	Diversion return to SF WWTF	TSS	New information indicates full support	NA
	Big Sioux River	SF WWTF to above Brandon	TSS	New information indicates full support	NA
	Big Sioux River	Above Brandon to Nine Mile Creek	TSS	New information indicates full support	NA
	Big Sioux River	Nine Mile Creek to near Fairview	TSS	New information indicates full support	NA
Cheyenne River Basin	Bismarck Lake	Custer County	TSI; pH	Change in WQS assessment methodology; now meets water quality standard.	NA
	Lakota Lake	Custer County	pH	Change in WQS assessment methodology; now meets water quality standard.	NA
	Stockade Lake	Custer County	TSI	Change in WQS assessment methodology; now meets water quality standard.	NA
	Sylvan Lake	Custer County	TSI	EPA Approved TMDL	9/1/2005
	Battle Creek	Teepee Gulch Creek to SD Hwy 79	pH	New information indicates full support	NA
	Lindsey Draw	Near Farmingdale	Conductivity	New information indicates full support	NA
	Rapid Creek	Above Farmingdale to mouth	TSS	New information indicates full support	NA
	Lake Gardner	Harding County	TSI	Change in WQS assessment methodology; now meets water quality standard.	NA
Grand River Basin	Grand River	Shadehill Reservoir to Corson County line	Water temperature; TSS	New information indicates full support	NA

Basin Name	Waterbody	Location	Parameter	Information to Support Delisting	EPA Approved
James River Basin	Lake Hanson	Hanson County	TSI	EPA Approved TMDL	6/3/2004
	James River	I-90 to Yankton County line	TSS	New information indicates full support	NA
	James River	Yankton County line to mouth	Fecal coliform	New information indicates full support	NA
Minnesota River Basin	Fish Lake	Deuel County	TSI	EPA Approved TMDL	9/29/2004
	Cobb Creek	Near Gary, SD	Water Temperature	New information indicates full support	NA
Missouri River Basin	Brakke Dam	Lyman County	TSI	EPA Approved TMDL	9/29/2004
	Byre Lake	Lyman County	TSI	EPA Approved TMDL	6/3/2004
	Fate Dam	Lyman County	TSI	EPA Approved TMDL	1/14/2005
	Roosevelt Lake	Tripp County	TSI	Change in WQS assessment methodology; now meets water quality standard.	NA
	Sully Lake	Sully County	pH, TSI	Insufficient information to list based on dry basin conditions attributable to a severe drought.	NA
	Sully Dam	Tripp County	pH	Change in WQS assessment methodology; now meets water quality standard.	NA
	Choteau Creek	Wagner to mouth	TSS; Dissolved Oxygen	New information indicates full support	NA
Moreau River Basin	Coal Springs Reservoir	Perkins County	TSI	Change in WQS assessment methodology; now meets water quality standard.	NA
Vermillion River Basin	East Vermillion Lake	McCook County	pH	Change in WQS assessment methodology; now meets water quality standard.	NA
	Lake Preston	Kingsbury County	TSI	Listed in error in 2004 Integrated Report	NA

Basin Name	Waterbody	Location	Parameter	Information to Support Delisting	EPA Approved
Vermillion River Basin	East Fork Vermillion River	McCook/Lake County line to Little Vermillion River	TSS	New information indicates full support	NA
	Vermillion River	Turkey Ridge Creek to Baptist Creek	Fecal coliform	New information indicates full support	NA

All Surface Water Discharge permit waters were de-listed due to the fact that they all have EPA-approved TMDLs.

APPENDIX B – Surface Water Quality Monitoring Schedule and Sampling Site Description

Surface Water Quality Monitoring Schedule and Laboratory Analysis Parameters *for streams:*

		Analysis Group							
		1	2	3	4	5	6	7	8
Field Analysis Parameters:									
	Water Temperature	X	X	X	X	X	X	X	X
	Air Temperature	X	X	X	X	X	X	X	X
	Dissolved Oxygen	X	X	X	X	X	X	X	X
	pH	X	X	X	X	X	X	X	X
	Waterbody Depth	X	X	X	X	X	X	X	X
	Waterbody Width	X	X	X	X	X	X	X	X
Laboratory Analysis Parameters:									
	Alkalinity	X	X	X	X	X	X	X	X
	Conductivity	X	X	X	X	X	X	X	X
	Hardness	X	X	X	X	X	X	X	X
	Dissolved Solids	X	X	X	X	X	X	X	X
	Suspended Solids	X	X	X	X	X	X	X	X
	Total Phosphorous	X	X	X	X	X	X	X	X
	Dissolved Phosphorous	X	X	X	X	X	X	X	X
	Ammonia	X	X	X	X	X	X	X	X
	Nitrate-Nitrite	X	X	X	X	X	X	X	X
	TKN	X	X	X	X	X	X	X	X
	BOD				X				X
	E-Coli	*	*	*	*	*		*	
	Fecal Coliforms	M/S	M/S	M/S	M/S	M/S	M/S	M/S	X
	Calcium	M/A	M/A		M/A		M/A	X	M/A
	Chloride	X						X	
	Magnesium	M/A	M/A		M/A		M/A	X	M/A
	Sodium	M/A	M/A		M/A		M/A	X	M/A
	Sulfates	X						X	X
	Total Cyanide					X	X		
	WAD Cyanide					X	X		
	Total Arsenic					X	X		
	Dissolved Arsenic					X	X		
	Total Cadmium					X	X		
	Dissolved Cadmium					X	X		
	Total Chromium					X	X		
	Dissolved Chromium					X	X		
	Total Copper					X	X		
	Dissolved Copper					X	X		
	Total Lead					X	X		
	Dissolved Lead					X	X		
	Total Mercury					X	X		
	Dissolved Mercury					X	X		
	Total Nickel					X	X		
	Dissolved Nickel					X	X		
	Total Selenium					X	X		
	Dissolved Selenium					X	X		
	Total Silver					X	X		
	Dissolved Silver					X	X		
	Total Zinc					X	X		
	Dissolved Zinc					X	X		

		Analysis Group							
		1	2	3	4	5	6	7	8
M/A = May through August. M/S = May through September. X=Every Station Visit									
*Perform E-Coli analysis May through September at only the following sites:									
	WQM-1	WQM-3	WQM-5	WQM-6	WQM-8	WQM-10	WQM-11	WQM-12	
	WQM-14	WQM-16	WQM-17	WQM-19	WQM-24	WQM-25	WQM-29	WQM-32	
	WQM-33	WQM-34	WQM-35	WQM-40	WQM-65	WQM-66	WQM-67	WQM-71	
	WQM-79	WQM-90	WQM-112	WQM-116	WQM-117	WQM-123	WQM-BS29		

ALL WQM SITES
IN ORDER BY WATERBODY NAME

Waterbody	Station	Storet ID	County	Sampling Frequency	Analysis Group	Region
Annie Creek	WQM -MN31	46MN31	Lawrence	Quarterly [@]	5	Black Hills
Bad River	WQM -29	460850	Stanley	Quarterly*	4	Central
Battle Creek	WQM -17	460905	Pennington	Monthly	3	Black Hills
Battle Creek	WQM -103	460103	Pennington	Seasonal**	3	Black Hills
Bear Butte Creek	WQM -125	460125	Lawrence	Monthly	5	Black Hills
Bear Butte Creek	WQM -126	460126	Lawrence	Monthly	5	Black Hills
Beaver Creek	WQM -128	460128	Fall River	Monthly	7	Black Hills
Belle Fourche River	WQM -21	460880	Meade	Quarterly*	2	Black Hills
Belle Fourche River	WQM -76	460676	Meade	Monthly	2	Black Hills
Belle Fourche River	WQM -81	460681	Butte	Quarterly*	6	Black Hills
Belle Fourche River	WQM -83	460683	Butte	Quarterly*	6	Black Hills
Belle Fourche River	WQM -130	460130	Butte	Monthly	7	Black Hills
Big Sioux River	WQM -1	460740	Codington	Monthly	1	Northeast
Big Sioux River	WQM -2	460702	Brookings	Monthly	1	Southeast
Big Sioux River	WQM -3	460703	Minnehaha	Monthly	1	Southeast
Big Sioux River	WQM -31	460831	Minnehaha	Monthly	2	Southeast
Big Sioux River	WQM -32	460832	Union	Monthly	3	Southeast
Big Sioux River	WQM -55	460655	Codington	Monthly	2	Northeast
Big Sioux River	WQM -62	460662	Brookings	Monthly	1	Southeast
Big Sioux River	WQM -64	460664	Minnehaha	Monthly	4	Southeast
Big Sioux River	WQM -65	460665	Lincoln	Monthly	2	Southeast
Big Sioux River	WQM -66	460666	Lincoln	Monthly	2	Southeast
Big Sioux River	WQM -67	460667	Union	Monthly	2	Southeast
Big Sioux River	WQM -117	460117	Minnehaha	Monthly	4	Southeast
Big Sioux River	WQM -BSA1	46BSA1	Grant	Monthly	1	Northeast
Big Sioux River	WQM -BS08	46BS08	Hamlin	Monthly	1	Northeast
Big Sioux River	WQM -BS18	46BS18	Moody	Monthly	1	Southeast
Big Sioux River	WQM -BS23	46BS23	Minnehaha	Monthly	4	Southeast
Big Sioux River	WQM -BS29	46BS29	Minnehaha	Monthly	4	Southeast
Box Elder Creek	WQM -30	460925	Lawrence	Monthly	3	Black Hills
Box Elder Creek	WQM -79	460679	Pennington	Quarterly [@]	2	Black Hills
Castle Creek	WQM -46	460646	Pennington	Monthly	3	Black Hills
Cherry Creek	WQM -131	460131	Meade	Quarterly*	2	Central
Cheyenne River	WQM -14	460875	Fall River	Monthly	7	Black Hills
Cheyenne River	WQM -15	460865	Pennington	Monthly	2	Black Hills
Cheyenne River	WQM -16	468860	Ziebach	Monthly	2	Central
Cheyenne River	WQM -132	460132	Custer	Monthly	2	Black Hills
Cheyenne River	WQM -133	460133	Haakon	Monthly	2	Central
Cheyenne River	WQM -156	460156	Fall River	Monthly	7	Black Hills
Choteau Creek	WQM -134	460134	Bon Homme	Quarterly*	2	Southeast
Cleopatra Creek	WQM -MN39	46MN39	Lawrence	Quarterly [@]	5	Black Hills
Cottonwood Creek	WQM -153	460153	Mellette	Monthly	2	Central
Crow Creek	WQM -135	460135	Buffalo	Quarterly*	2	Central

Waterbody	Station	Storet ID	County	Sampling Frequency	Analysis Group	Region
Deadwood Creek	WQM -127	460127	Lawrence	Monthly	5	Black Hills
Elm River	WQM -136	460136	Brown	Monthly	2	Northeast
Fall River	WQM -57	460657	Fall River	Quarterly*	1	Black Hills
False Bottom Creek	WQM -MN38	46MN38	Lawrence	Quarterly@	5	Black Hills
Fantail Creek	WQM -119	460119	Lawrence	Quarterly*	5	Black Hills
Firesteel Creek	WQM -137	460137	Davison	Quarterly*	2	Southeast
Flynn Creek	WQM -111	460111	Custer	Quarterly*	3	Black Hills
French Creek	WQM -51	460651	Custer	Quarterly*	3	Black Hills
French Creek	WQM -53	460653	Custer	Quarterly*	3	Black Hills
French Creek	WQM -102	460102	Custer	Monthly	2	Black Hills
Grace Coolidge Creek	WQM -50	460650	Custer	Quarterly*	3	Black Hills
Grand River	WQM -25	460945	Corson	Monthly	2	Central
Grand River	WQM -40	460640	Perkins	Quarterly*	2	Central
Grand River	WQM -138	460138	Corson	Quarterly*	2	Central
Grand River, N Fork	WQM -77	460677	Perkins	Quarterly*	2	Central
Grand River, S Fork	WQM -78	460678	Perkins	Quarterly*	2	Central
Grand River, S Fork	WQM -139	460139	Harding	Quarterly*	2	Central
James River	WQM -6	460805	Brown	Monthly	2	Northeast
James River	WQM -7	460707	Hanson	Quarterly*	2	Southeast
James River	WQM -8	460761	Yankton	Monthly	2	Southeast
James River	WQM -33	460733	Brown	Monthly	2	Northeast
James River	WQM -34	460734	Brown	Quarterly*	2	Northeast
James River	WQM -35	460735	Beadle	Quarterly*	2	Southeast
James River	WQM -36	460736	Beadle	Quarterly*	2	Southeast
James River	WQM -37	460737	Davison	Quarterly*	2	Southeast
James River	WQM -112	460112	Brown	Monthly	2	Northeast
James River	WQM -113	460113	Brown	Monthly	2	Northeast
James River	WQM -140	460140	Spink	Monthly	2	Northeast
Keya Paha River	WQM -10	460815	Tripp	Quarterly*	1	Central
Lac Qui Parle River, W Branch	WQM -45	460645	Deuel	Biennial***	3	Northeast
Little Minnesota River	WQM -27	460710	Roberts	Quarterly*	3	Northeast
Little Missouri River	WQM -26	460955	Harding	Quarterly*	2	Central
Little White River	WQM -13	460840	Mellette	Monthly	2	Central
Medicine Creek	WQM -141	460141	Lyman	Monthly	2	Central
Medicine Knoll Creek	WQM -142	460142	Hughes	Quarterly*	2	Central
Missouri River	WQM -71	460671	Hughes	Quarterly*	2	Central
Missouri River	WQM -72	460672	Lyman	Quarterly*	2	Central
Missouri River	WQM -73	460673	Charles mix	Quarterly*	2	Southeast
Missouri River	WQM -74	460674	Yankton	Quarterly*	2	Southeast
Moccasin Creek	WQM -94	460694	Brown	Monthly	3	Northeast
Moccasin Creek	WQM -95	460695	Brown	Monthly	3	Northeast
Moreau River	WQM -24	460935	Dewey	Monthly	2	Central
Moreau River	WQM -39	460039	Perkins	Quarterly*	2	Central
Moreau River	WQM -143	460143	Ziebach	Quarterly*	2	Central
Moreau River, S Fork	WQM -144	460144	Perkins	Quarterly*	2	Central
Mud Creek	WQM -145	460145	Brown	Quarterly*	2	Northeast
Ponca Creek	WQM -70	460670	Gregory	Quarterly*	1	Central
Rapid Creek	WQM -19	460910	Pennington	Monthly	2	Black Hills

Waterbody	Station	Storet ID	County	Sampling Frequency	Analysis Group	Region
Rapid Creek	WQM -47	460647	Pennington	Monthly	1	Black Hills
Rapid Creek	WQM -69	460669	Pennington	Monthly	1	Black Hills
Rapid Creek	WQM -92	460692	Pennington	Monthly	2	Black Hills
Rapid Creek	WQM -110	460110	Pennington	Monthly	3	Black Hills
Redwater River	WQM -23	460895	Butte	Monthly	2	Black Hills
Skunk Creek	WQM -121	460121	Minnehaha	Quarterly*	4	Southeast
Snake Creek	WQM -146	460146	Spink	Quarterly*	2	Northeast
Spearfish Creek	WQM -22	460900	Lawrence	Monthly	3	Black Hills
Spearfish Creek	WQM -89	460689	Lawrence	Monthly	3	Black Hills
Spearfish Creek	WQM -MN32	46MN32	Lawrence	Quarterly@	5	Black Hills
Spearfish Creek	WQM -MN33	46MN33	Lawrence	Quarterly@	5	Black Hills
Spearfish Creek	WQM -MN34	46MN34	Lawrence	Quarterly@	5	Black Hills
Spearfish Creek	WQM -MN35	46MN35	Lawrence	Quarterly@	5	Black Hills
Spring Creek	WQM -49	460649	Pennington	Quarterly*	3	Black Hills
Spring Creek	WQM -54	460654	Pennington	Monthly	3	Black Hills
Spring Creek	WQM -155	460155	Campbell	Monthly	2	Central
Stewart Gulch	WQM -120A	460124	Lawrence	Quarterly*	5	Black Hills
Strawberry Creek	WQM -116	460116	Lawrence	Monthly	5	Black Hills
Thunder Butte Creek	WQM -147	460147	Perkins	Quarterly*	2	Central
Turtle Creek	WQM -148	460148	Spink	Quarterly*	2	Northeast
Vermillion River	WQM -4	460755	Clay	Monthly	2	Southeast
Vermillion River	WQM -5	460745	Clay	Monthly	2	Southeast
Vermillion River	WQM -61	460661	Turner	Monthly	2	Southeast
Vermillion River, E Fork	WQM -150	460150	McCook	Quarterly*	2	Southeast
Vermillion River, E Fork	WQM -154	460154	McCook	Quarterly*	2	Southeast
West Strawberry Creek	WQM -75	460675	Lawrence	Quarterly*	3	Black Hills
Whetstone River	WQM -28	460700	Grant	Quarterly*	3	Northeast
Whetstone River, S Fork	WQM -90	460690	Grant	Quarterly*	3	Northeast
Whetstone River, S Fork	WQM -91	460691	Grant	Quarterly*	3	Northeast
White River	WQM -11	460835	Jackson	Monthly	2	Central
White River	WQM -12	460825	Lyman	Monthly	2	Central
White River	WQM -42	460842	Shannon	Quarterly*	2	Black Hills
White River	WQM -152	460152	Mellette	Monthly	2	Central
Whitetail Creek	WQM -118	460118	Lawrence	Monthly	5	Black Hills
Whitewood Creek	WQM -52	460652	Lawrence	Monthly	3	Black Hills
Whitewood Creek	WQM -82	460682	Butte	Monthly	5	Black Hills
Whitewood Creek	WQM -84	460684	Lawrence	Monthly	5	Black Hills
Whitewood Creek	WQM -85	460685	Lawrence	Quarterly*	5	Black Hills
Whitewood Creek	WQM -86	460686	Lawrence	Quarterly*	5	Black Hills
Whitewood Creek	WQM -122	460122	Lawrence	Monthly	5	Black Hills
Whitewood Creek	WQM -123	460123	Lawrence	Monthly	5	Black Hills
Wolf Creek	WQM -151	460151	Spink	Quarterly*	2	Northeast
Wolf Creek	WQM -157	460157	Hutchinson	Monthly	8	Southeast
Wolf Creek	WQM -158	460158	Hutchinson	Monthly	8	Southeast
Yellow Bank River, N Fork	WQM -88	460688	Grant	Biennial***	3	Northeast
Yellow Bank River, S Fork	WQM -87	460687	Grant	Biennial***	3	Northeast

Number of Monthly Stations:

72

Number of Quarterly* Stations:	53
Number of Quarterly@ Stations:	8
Number of Seasonal** Stations:	1
Number of Biennial*** Stations:	3
Total Number of WQM Stations:	137

* = Quarterly WQM sites sampled in January, April, July, and October.

@ = Quarterly WQM sites sampled in February, May, August, and November.

** = Seasonal WQM Sites sampled in May, June, July, and August.

*** = Biennial WQM sites sampled in April and October.

Lakes Sampling Schedule for 2004 – 2008

Water_body	Basin	County	Lake ID	Rotation Year
Albert	Big Sioux	Kingsbury	4202	1
Alvin	Big Sioux	Lincoln	4401	1
Amsden	James	Day	2201	1
Buffalo North	Big Sioux	Marshall	4803	1
Campbell	Big Sioux	Brookings	9606	1
Center	Cheyenne	Custer	2105	1
Cochrane	Minnesota	Deuel	2305	1
Corsica	Missouri	Douglas	2502	1
Cottonwood	Missouri	Sully	5901	1
Dante	Missouri	Charles Mix	1703	1
Deerfield	Cheyenne	Pennington	9207	1
East Oakwood	Big Sioux	Brookings	9613	1
Faulton	James	Faulk	2802	1
Freeman	Bad	Jackson	3907	1
Geddes	Missouri	Charles Mix	1705	1
Jones	James	Hand	3304	1
Mina Parmley	James	Edmunds	2606	1
New Wall No. 1	Cheyenne	Pennington	9243	1
Newell	Belle Fourche	Butte	1501	1
North Waubay	Big Sioux	Day	2226	1
Oliver	Minnesota	Deuel	2315	1
Punished Woman	Minnesota	Codington	9518	1
Richmond	James	Brown	9309	1
Shadehill	Grand	Perkins	5315	1
Silver	Vermillion	Hutchinson	3703	1
Wall	Big Sioux	Minnehaha	9118	1
Wilmarth	James	Aurora	1015	1
Yankton	Missouri	Yankton	9704	1
Alice	Minnesota	Deuel	2301	2
Angostura	Cheyenne	Fall River	2701	2
Buffalo South	Big Sioux	Marshall	4804	2
Bullhead	Big Sioux	Deuel	2303	2
Campbell	Missouri	Campbell	1601	2
Coldbrook	Cheyenne	Fall River	2705	2
Cottonwood	Big Sioux	Marshall	4808	2
Cresbard	James	Faulk	2801	2
Fish	Minnesota	Deuel	2310	2

Year 1	28 Lakes
Year 2	27 Lakes
Year 3	31 Lakes
Year 4	29 Lakes
Total	115 Lakes

Water_body	Basin	County	Lake ID	Rotation Year
Iron Creek	Belle Fourche	Lawrence	9903	2
John St. John	Big Sioux	Hamlin	3211	2
Legion	Cheyenne	Custer	2107	2
Madison	Big Sioux	Lake	4309	2
McCook	Missouri	Union	6202	2
Murdo	Bad	Jones	4102	2
Newell City Pond	Belle Fourche	Butte	1502	2
Orman	Belle Fourche	Butte	1503	2
Pickerel	Big Sioux	Day	2219	2
Platte	Missouri	Charles Mix	1711	2
Ravine	James	Beadle	9406	2
Red Iron South	Big Sioux	Marshall	4834	2
Rose Hill	James	Hand	3307	2
School	Big Sioux	Deuel	2319	2
State (Beaver)	James	Yankton	9701	2
Traverse	Red	Roberts	5521	2
Vermillion	Vermillion	McCook	4613	2
Preston	Vermillion	Kingsbury	4214	2
Andes	Missouri	Charles Mix	1708	3
Big Stone	Minnesota	Roberts	5502	3
Bismarck	Cheyenne	Custer	2103	3
Blue Dog	Big Sioux	Day	2207	3
Carthage Lake	James	Miner	5103	3
Clear	Big Sioux	Deuel	2304	3
Coal Springs	Moreau	Perkins	5303	3
Covell	Big Sioux	Minnehaha	9105	3
Elm	James	Brown	9301	3
Four Mile	Big Sioux	Marshall	4814	3
Hanson	James	Hanson	3404	3
Hayes	Bad	Stanley	5802	3
Herman	Big Sioux	Lake	4306	3
Hiddenwood	Missouri	Walworth	6301	3
Kampeska	Big Sioux	Codington	9508	3
Mirror 1	Belle Fourche	Lawrence	9904	3
Nine Mile	Big Sioux	Marshall	4830	3
Norden	Big Sioux	Hamlin	3214	3
Pierpont	James	Day	2220	3
Pocasse	Missouri	Campbell	1608	3
Poinsett	Big Sioux	Hamlin	3215	3
Rahn	Niobrara	Tripp	6008	3
Sheridan	Cheyenne	Pennington	9233	3
Sully	Missouri	Sully	5908	3
Swan	Vermillion	Turner	6103	3
Swan	Missouri	Walworth	6304	3
Sylvan	Cheyenne	Custer	2111	3
Thompson	Vermillion	Kingsbury	4222	3
Waggoner	Bad	Haakon	3104	3
West Oakwood	Big Sioux	Brookings	9615	3

Year 1	28 Lakes
Year 2	27 Lakes
Year 3	31 Lakes
Year 4	29 Lakes
Total	115 Lakes

Water_body	Basin	County	Lake ID	Rotation Year
White	Red	Marshall	4843	3
Mirror 2	Belle Fource	Lawrence	9908	3
Academy	Missouri	Charles Mix	1701	4
Biltmore	Cheyenne	Custer	2102	4
Brakke	Missouri	Lyman	4502	4
Brandt	Big Sioux	Lake	4302	4
Burke	Missouri	Gregory	3004	4
Byron	James	Beadle	9403	4
Clear	Big Sioux	Marshall	4807	4
Cottonwood	James	Spink	5702	4
Cottonwood Springs	Cheyenne	Fall River	2706	4
Enemy Swim	Big Sioux	Day	2209	4
Eureka No. 1	Missouri	McPherson	4703	4
Fate	Missouri	Lyman	4505	4
Flat Creek	Grand	Perkins	5305	4
Hendricks	Minnesota	Brookings	9609	4
Horsethief	Cheyenne	Pennington	9213	4
Isabel	Grand	Dewey	2408	4
Louise	James	Hand	3305	4
Loyalton Stafford	James	Edmunds	2605	4
Marindahl	Vermillion	Yankton	9702	4
Minnewasta	Big Sioux	Day	2216	4
Mitchell Lake	James	Davison	9801	4
Pactola	Cheyenne	Pennington	9223	4
Pelican	Big Sioux	Codington	9517	4
Redfield	James	Spink	5706	4
Roosevelt	Missouri	Tripp	6009	4
Roy	Big Sioux	Marshall	4835	4
Stockade	Cheyenne	Custer	2110	4
Twin	James	Sanborn	5606	4
Whitewood	Vermillion	Kingsbury	4223	4

Year 1	28 Lakes
Year 2	27 Lakes
Year 3	31 Lakes
Year 4	29 Lakes
Total	115 Lakes

SDDENR Water Quality Monitoring Sites

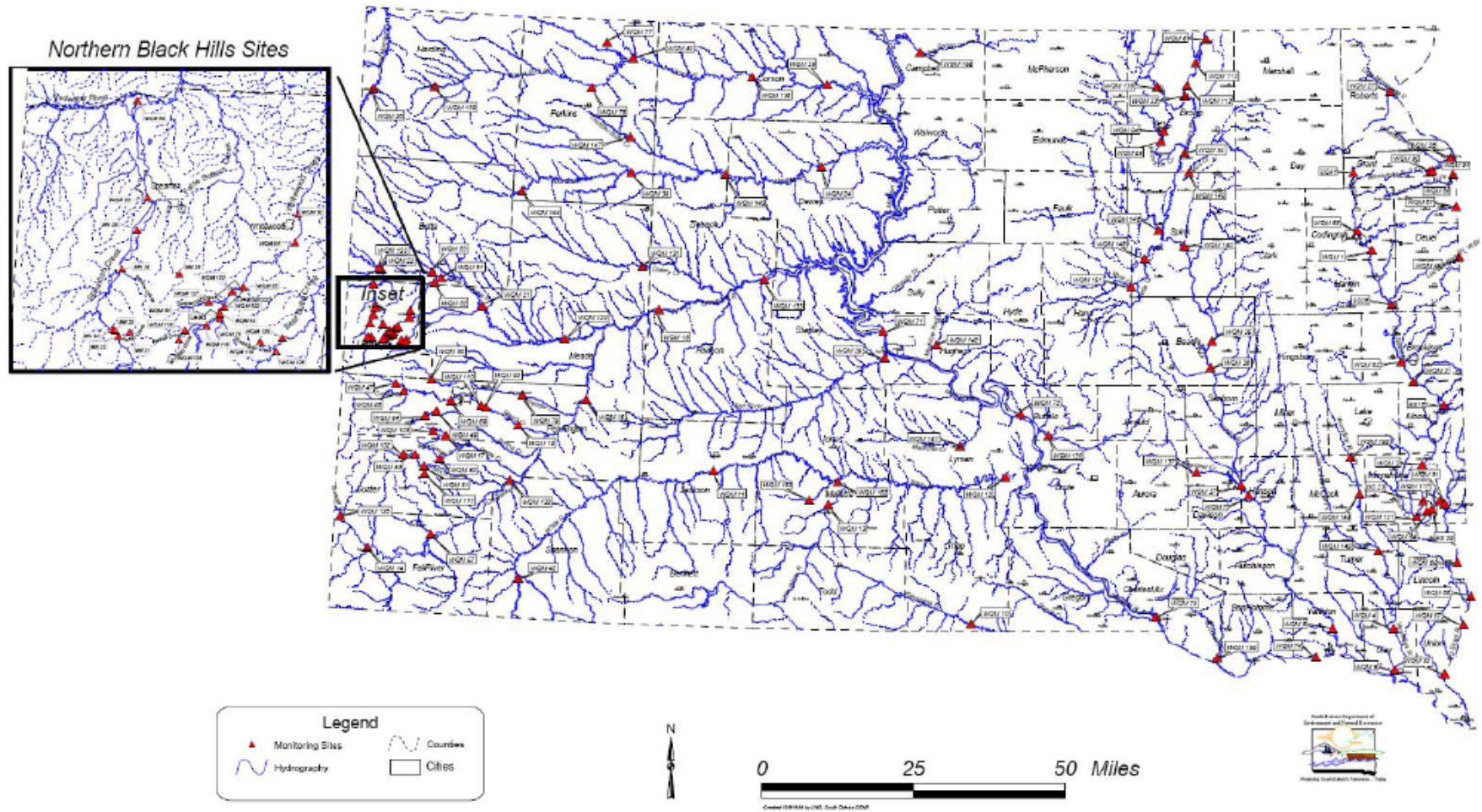


Figure 24: South Dakota DENR Water Quality Monitoring Sites

BACK OF FOLDOUT MAP

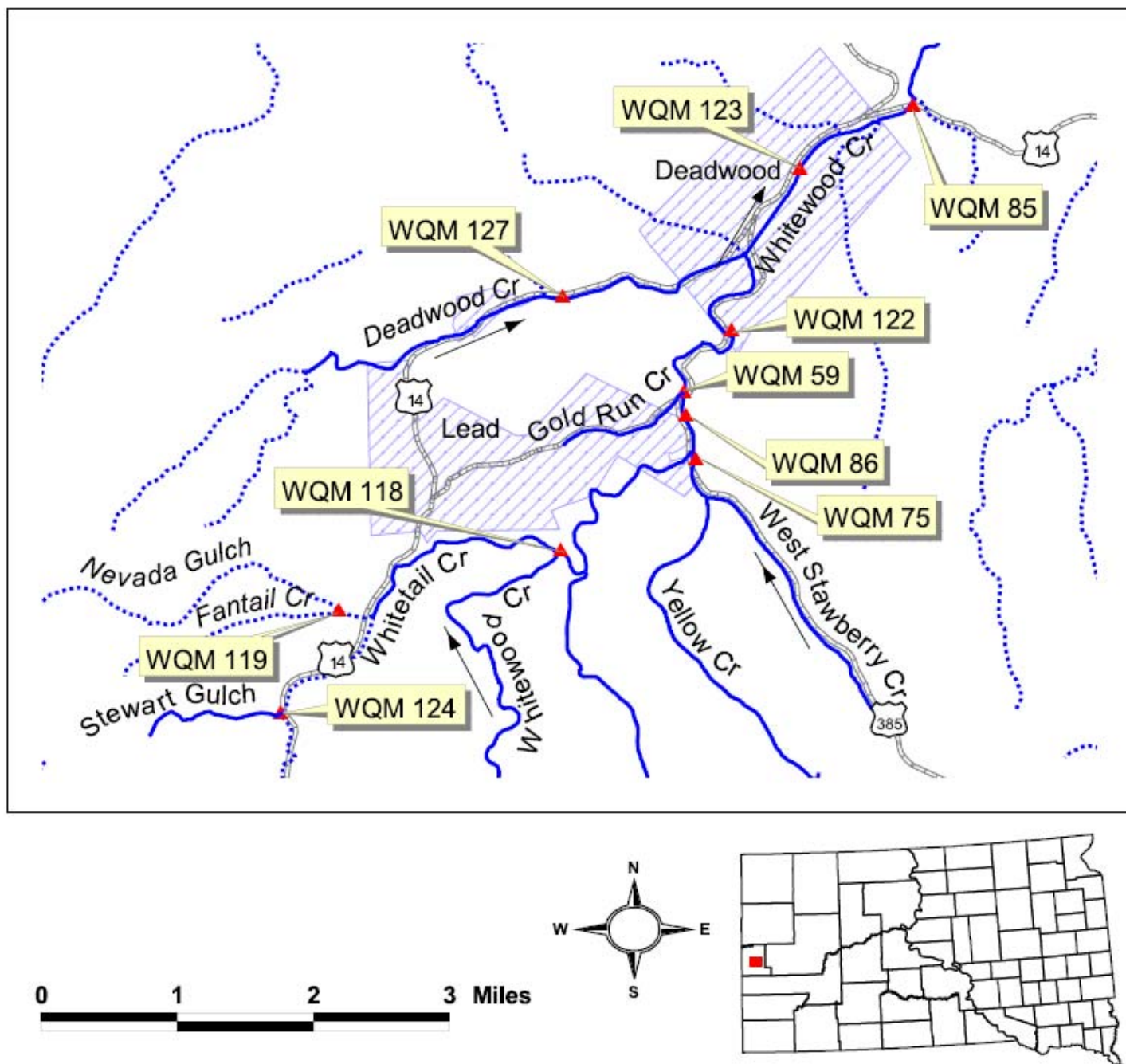


Figure 25: Water Quality Monitoring Sites on Whitewood Creek and Tributaries in Lead-Deadwood Area

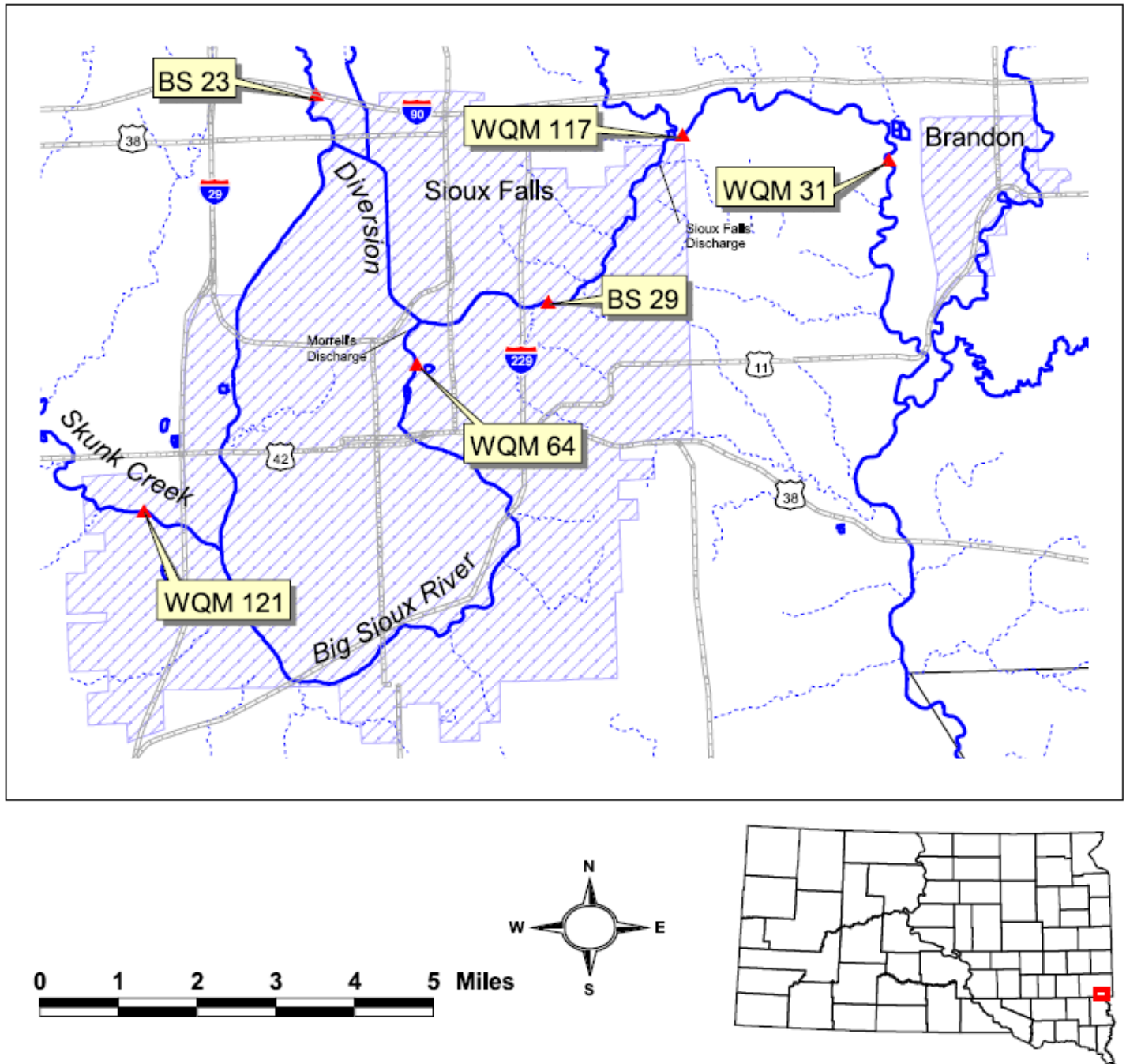


Figure 26: Water Quality Monitoring Sites Located on the Big Sioux River in the Sioux Falls Area

APPENDIX C – Public Participation Displays and Response to Public Comments

**Summary of Public Comments Received on
South Dakota's Draft 2006
Integrated Report
and
DENR's Response to Comments**

Comment: Charmaine White Face, Defender of the Black Hills, Coordinator. Ms. White Face had the following comments:

"Please accept the following as our comments on the 2006 Integrated Report for Surface Water Quality Assessment.

On Page 8, the report states: "Priority toxic pollutants are relatively expensive to analyze and are not routinely monitored except for special situations."

Although we are aware of many types of pollution of water in South Dakota, and particularly in western South Dakota, our concern is for the amount of radioactive runoff from abandoned open-pit uranium mines within the state, and coming from the surrounding states. This should be considered a "special situation" as nuclear radiation should be considered a "priority toxic pollutant" and no expense should be spared.

Therefore we respectfully request the following studies be completed for radionuclides and any other forms of nuclear radiation that are generated in open-pit uranium mines in addition to the natural uranium that is found in the Upper Midwest region, in the following locations:

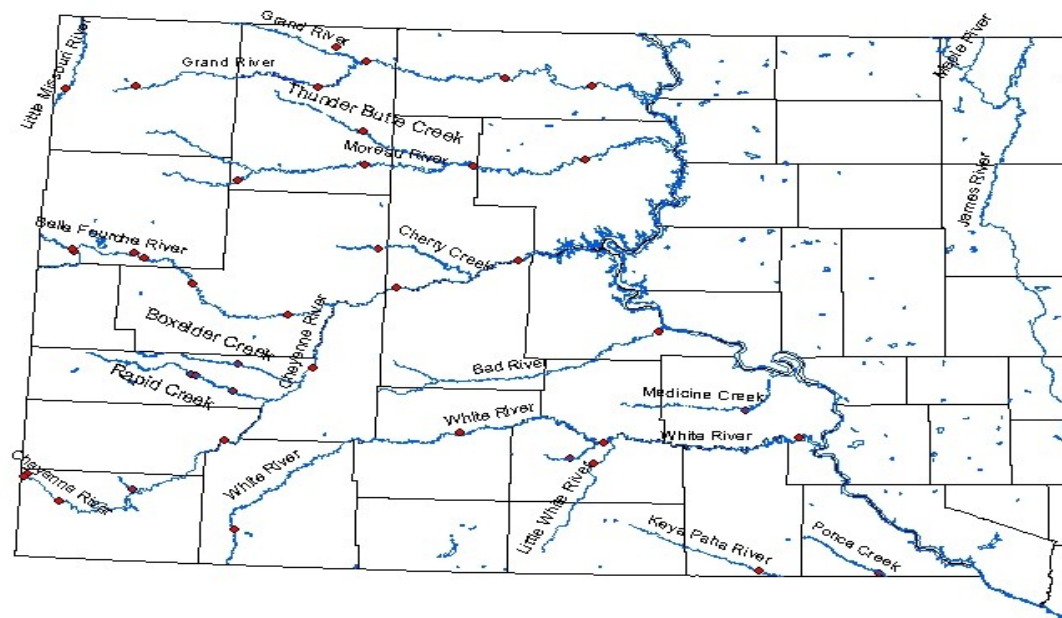
1. The Missouri River where it enters South Dakota at the North Dakota border;
2. The Missouri River where it exits South Dakota at the Nebraska border;
3. The Grand River prior to its entrance to Shadehill Dam;
4. The Grand River at its exit from Shadehill Dam;
5. The Morreau River where it enters the Cheyenne River Indian Reservation;
6. The Morreau River at its mouth to the Missouri River;
7. The Belle Fourche River where it enters South Dakota on the Wyoming border;
8. The Belle Fourche River where it enters the Cheyenne River;
9. The Cheyenne River where it enters South Dakota on the Wyoming border;
10. The Cheyenne River where it enters the Missouri River;
11. The Bad River where it enters the Missouri River;
12. The White River where it enters South Dakota on the Nebraska border;
13. The White River at its mouth to the Missouri River."

Response to Comment: *DENR has developed a sampling plan to conduct water quality monitoring for radioactive elements due to abandoned uranium mine sites in western South Dakota. The sites that will be monitored are shown in the map on page 183. All samples collected will be analyzed by a certified laboratory using EPA approved methods. The purpose of the sampling plan is to sample and analyze surface water downstream from the uranium mining areas to determine if it contains metals and/or other elements above levels of concern. DENR has already started sampling for the parameters of concern, which include Arsenic,*

Vanadium, Molybdenum, Selenium, Copper, Lead, Antimony, Barium, Beryllium, Cadmium, Chromium, Mercury, Nickel, Thallium, and Uranium (all the metals parameters will be analyzed for both the total and dissolved portions). DENR will also be sampling for Radium 226 and Radium 228 isotopes. However, the sampling plan is subject to change depending on initial results. DENR will determine the frequency and distribution of sampling necessary to track long-term trends in water quality. If you have further questions about the sampling plan please feel free to contact Patrick Snyder of the DENR Surface Water Quality Program at (605) 773-3351.

In addition, The US Forest Service, Northern Region and the South Dakota School of Mines and Technology (also collaborating with the Oglala Lakota College) have entered into a Joint Venture Agreement to: “evaluate impacts to air, water and soil resources, as well as, potential impacts to human health stemming from the migration of contaminated material from past mining activities on or adjacent to lands in the North Cave Hills”. According to this agreement other areas, such as South Cave Hills and Slim Buttes, may be added to this agreement as mutually agreed to. For more information related to this joint venture project please contact Laurie Walters-Clark, Sioux Ranger District, PO Box 32, Camp Crook, SD 57724, (P) 605-797-4432, e-mail: lwaltersclark@fs.fed.us

Radiation Monitoring Sites



Explanation

- ◆ WQM Sites
- S.D. Streams
- S.D. Counties



0 40 80 160 Miles

Comment: Harold One Feather. Mr. One Feather had the following comments:

“I would submit my comments on the "The 2006 South Dakota Integrated Report for Surface Water Quality Assessment."

I feel that this report is basically flawed and is therefore very misleading to the public since the SD DENR is well aware of the imminent health threats out at the US Forest Service Riley Pass Abandoned Uranium Mine and the other abandoned uranium mines at the North Cavehills, South Cavehills, and Slim Buttes in Harding County. The fact that these sites are on the Custer National Forest should not be the reason why the SD DENR has not acted to protect its citizens from these dangers. The very fact that the US Forest and US EPA have initiated reclamation efforts at the Riley Pass and have notified previously the State of South Dakota of this CERCLA [Superfund] action should cause the SD DENR to place Harding County as their highest priority in terms of water quality monitoring to determine the levels of radioactivity and other toxic substances leaving the area and contaminating downstream and downwind populations and environments.”

***Response to Comment:** DENR is working with the United States Forest Service to address the reclamation of Riley Pass. Because of concerns with offsite contamination, additional monitoring of several sites in the West River region of the state has been initiated. Please refer to the response given above to Charmaine White Face of the Defender of the Black Hills.*

Comment: Todd A. Duex, Homestake Mining Company, Closure Manager. Mr. Duex had the following comments:

“On behalf of Homestake Mining Company, I would like to submit the following comments in regards to the 2006 Integrated Report for Surface Water Quality Assessment prepared by the SD DENR. These comments are limited to the middle portion of Whitewood Creek in the Belle Fourche River Basin and in particular to the proposed listing of this segment of the stream for mercury impacts.

Since I do not have access to the data from which the report is derived, I would like to know whether the number of samples taken represents a reasonable number of samples showing non-compliance. Is there a statistically valid number of samples to ensure that the public is adequately informed as to the reliability of the data? Is the data showing consistent results that can be statistically validated? What is the confidence level of non-compliance? There is a potential that as few as one sample could lead to the listing of this segment of stream and this sample could be an outlier not representing the true concentration of mercury in Whitewood Creek. What are the sampling protocols that would lead one to believe that the sample accurately represents the entire stream segment, for instance is this one sampling location or is it a composited sample of the entire stream segment? As you know, mercury analysis is extremely difficult and cross contamination can occur between samples. Has a quality assurance program been implemented that assures accurate results?

If there is uncertainty regarding the accuracy of the sampling results, Homestake would recommend that this segment of Whitewood Creek be placed in Category 3 and additional sampling be conducted in this stream in order to more fully assess the concentrations of mercury in the water.”

Response to Comment: *The Homestake Mining Company commented on the state’s listing of Whitewood Creek for mercury. The department had 61 samples during the evaluation period covered by this report. One of these samples was collected on September 20, 2005. The mercury level in this sample was 2.0 µg/L; the daily maximum standard for mercury is 1.4 µg/L.*

The department carefully considers the validity of all samples used in the Integrated Report. The report includes a detailed description of the required specifications for a sample to be considered in the listing decisions. These samples were collected by trained department personnel and analyzed by a qualified laboratory using approved methods. All of the samples on Whitewood Creek met the criteria for consideration in the report. While this single sample is higher than all the other samples collected on Whitewood Creek, the department has no reason to believe the sample does not accurately reflect the conditions at the time of the sampling. Therefore, the department will leave this sample result in the final report.

The Administrative Rules of South Dakota, Section 74:51:01:55, discuss the state’s criteria for toxic pollutants, including mercury. South Dakota’s water quality standards for toxics are based on the National Recommended Water Quality Criteria. The national criteria state the toxic criteria shall not be exceeded more than once every three years. Therefore, the department agrees with Homestake that it would not be necessary to list Whitewood Creek for mercury based on this single sample. The final report will be modified to remove mercury as a cause for listing Whitewood Creek as impaired. Please note, this section of Whitewood Creek will still be listed as non-supporting its beneficial uses based on fecal coliform violations.

Table 6 of the draft report listed the department’s criteria for reviewing the available data to determine support status. Under the section for Toxic Parameters, the department stated the following:

STREAMS: One or more violation(s) of toxic criteria within the past 3 years.

Based on the discussion above, the department will be changing this table in the final report to state:

STREAMS: More than one violation of toxic criteria within the past 3 years.

Comment: Vern Berry, US Environmental Protection Agency, Denver, CO. Mr. Berry had the following comments:

“We have reviewed the Department’s draft 2006 Integrated Report for Surface Water Quality Assessment and appreciate the opportunity to provide comments. We commend the Department of Environment and Natural Resources (DENR) for the continued use of the integrated report

(IR) format to combine the Section 305(b) Water Quality Report to Congress, and the Section 303(d) list of impaired or threatened waterbodies in need of total maximum daily loads (TMDLs) into one cohesive document. DENR's draft IR is well-organized and comprehensive. However, we have several comments that should be addressed prior to finalizing the document."

Comments Related to Categories 1 - 4

We recommend that DENR, with the abundance of regularly monitored fixed stations, conduct a trend analysis for at least some of the stations. This would be useful for determining if water quality is improving or declining, and it would be especially interesting in areas where there are ongoing projects designed to improve water quality.

***Response to Comment:** Temporal and natural variation can greatly effect parameter concentration. Trend analysis would have to be coupled with precipitation and flow to accurately depict changes in water quality. Currently flow information is not collected during ambient water quality monitoring. Without flow information trend analysis would be misleading. Therefore, DENR does not plan on conducting trend analysis at this time.*

A cost/benefit assessment is required as part of the integrated report. The 2006 IR Guidance recommends providing a brief narrative section that includes as much information as possible. It appears that most of the cost information is included in the NPS Control Program Funding Strategy, and benefit information is included in the Statewide Surface Water Quality Summary. We recommend creating a short cost/benefit section that cross references these other sections and provides any other available information (including references to other existing sources of cost/benefit information). See page 16 of the July 2005 IR Guidance for a discussion of what could be included under costs and benefits.

***Response to Comment:** Detailed cost/benefit information is not available. DENR provides the Governor and the Legislature annual reports summarizing water and wastewater development activities for the preceding calendar year. The 2004 and 2005 annual reports can be accessed on-line at DENR's website. Information on operation and maintenance costs for local units of government is not readily available. What is available has been included in the "Statewide Surface Water Quality Summary" section of this report. Additional language has been added to the Integrated Report text.*

The report presents an assessment of most streams in the State classified for fish life. However, a large amount (over 70%) of waters classified for coldwater permanent fish life had insufficient information to assess. Similarly, more than 30% of warmwater marginal fish life waters either had insufficient information or were not assessed. We recommend that DENR develop plans to achieve greater representation of these streams as part of the final South Dakota monitoring strategy.

***Response to Comment:** 961 of the 1,390 stream miles (70%) designated as coldwater permanent fish life are on the Missouri River. Our data on the 961 miles of the Missouri River segments from Big Bend Dam to the North Dakota border was inconclusive because the samples are taken from the power houses and are not considered representative of actual water quality*

within the river. DENR is currently conducting a water quality monitoring study of all reservoirs on the Missouri River to be completed in 2008. At that time, the water quality data will be analyzed to determine if the river is fully supporting its current designated beneficial uses.

It would be useful to consider monitoring other Black Hills streams for metals periodically, in addition to the Belle Fourche tributaries. This would give a greater understanding of the extent of metals issues in the other mountain streams of South Dakota.

Response to Comment: *The major hardrock mining areas in South Dakota are mostly located in the Belle Fourche River basin. However, we will take this comment into consideration in developing our water quality monitoring strategy in the future.*

The IR should include an estimate of the extent to which Clean Water Act programs have improved or will improve water quality. For example, how many miles of stream or acres of lakes now meet beneficial uses as a result of CWA program implementation?

Response to Comment: *At this time, it is extremely difficult to determine or predict the extent to which Clean Water Act programs have improved or will improve water quality. Tables 10 and 11 outline the support status summary for rivers and lakes. DENR will take this comment into consideration when developing future Integrated Reports. Any guidance EPA can give to states to aid in determining these numbers would be greatly appreciated.*

However, it should be noted that only two streams are listed as impaired due to an NPDES-permitted discharges. In one case the stream is impaired as a result of effluent violations from the city of Milbank. The department took an enforcement action against both the city of Milbank and Valley Queen Cheese, an industrial user of Milbank's publicly owned treatment works.

In the other case the department upgraded the stream to a classified fishery and required the city of Aberdeen to upgrade its wastewater treatment facility. The NPDES permit included a compliance schedule to meet the new water-quality based limits for ammonia.

While it is not easy to quantify the improvements due to the NPDES program, the fact that South Dakota's streams are not impacted by these discharges is a testament to the success of the program in South Dakota.

EPA applauds the use of the new toxics criteria in the assessment methodology (one exceedance in the last 3 years). However, it is not clear if the data used was applied to only acute criteria or to both acute and chronic criteria. Many states use a multiplier or percentile ranking for comparing grab sample data to chronic standards. The assessment methodology should describe how the available data is compared to the chronic standards to make impairment decisions.

Response to Comment: *DENR historically and currently only uses the acute water quality standards to determine impairment for both conventional and toxic parameters. Additional*

language has been added to the “Methodology” section to clarify DENR’s assessment methodology.

We recommend that the methodology section include a general statement that the interpretations described are consistent with DENR’s interpretations of their water quality standards.

Response to Comment: *DENR agrees this language is appropriate. The following sentence will be added to the “Methodology” section of the report:*

“The methodology employed by the department in the interpretation of the data for the 2006 Integrated Report is consistent with DENR’s interpretation of the South Dakota Surface Water Quality Standards.”

Categories 5 and 6:

Aquatic life (Fish Kills), pages 137 – 140: We recommend inserting additional text at the beginning of this section to explain how this data was used in by itself or in combination with other available data to make use support determinations. We also recommend indicating whether any of this information was used to list waters in category 5 as impaired (e.g., is the fish kill information the basis for listing a segment of the James River as impaired due to low dissolved oxygen?).

Response to Comment: *The majority of the fish kills occurred on waterbodies that are already listed as impaired for other causes. Historically, waterbodies have not been listed as impaired based solely on a fish kill. DENR reviews the cause(s) of a fish kill, the waterbody’s designated beneficial uses, and the water quality sample data to determine impairment. If the water is classified as a marginal or semi-permanent fishery, occasional fish kills are not considered an impairment. However, if a fish kill is caused by something other than natural causes and is a reoccurring problem in the same waterbody, then DENR would consider listing the water as impaired. Additional text to clarify this has been added to the “Public Health/Aquatic Life Concerns” section of the document.*

Based on the data contained in the assessment reports the following lakes appear to be impaired for dissolved oxygen and therefore included in category 5: Corsica Lake, Sheridan Lake, Sylvan Lake and White Lake.

Response to Comment: *DENR evaluated these waterbodies in accordance with the 2006 IR listing methodology. Based on all available data, the beneficial uses for Corsica Lake, Sylvan Lake and White Lake were met for dissolved oxygen. As a result, these waterbodies were not placed in Category 5 for dissolved oxygen. Sheridan Lake was listed in the final 2006 IR as a category 5 for the following parameters; dissolved oxygen, pH and water temperature.*

The following tables contain those waterbodies where we noticed discrepancies between the 2004 IR and the draft 2006 IR, or where additional information is needed. Please respond to the comments listed in the last column.

Basin / Waterbody	2006 Listing	2004 Listing	Comments
All basins	Categories 5 and 4a	Category 5	<p>For those waterbodies listed in 2006 in both categories 5 and 4a it is very difficult to know which impairments belong in each category. Please indicate which pollutants are associated with each category.</p> <p>Response: For waterbodies that have been placed in both the 5 and the 4A category, DENR has included the parameters that have been delisted due to an approved TMDL in Appendix A.</p>
Belle Fourche / Iron Creek Lake	Category 2	Category 5	<p>The table of delisted waters in Appendix A is missing supporting information for delisting Iron Creek Lake. Please include the delisting information. If the reason is related to the revision to DENR's lake assessment methodology (i.e., "Targeting Impaired Lakes in South Dakota," June 2005), then we recommend that the information supporting delisting include a statement similar to: "Change in WQS assessment methodology; water now meets water quality standard."</p> <p>Note: we recommend using that as the supporting information for delisting all lakes/reservoirs if the revised assessment methodology is the basis for the delisting.</p> <p>Response: DENR agrees with this comment and has added the recommended language to justify delisting Iron Creek Lake in Appendix A.</p>
Belle Fourche / Bear Butte Creek – headwaters to Strawberry Creek; Strawberry Creek to near Bear Den Mountain (both reaches)	Category 5 – temperature	Category 1	<p>The footnote to these waters indicates that the data collected for the assessment report shows impairment for TSS on the lower reach, and that a TMDL is being prepared for TSS. If WQS are not being met for TSS then it should be added as an impairment cause for the same reason temperature is listed.</p> <p>Response: This was a typographical error and has been fixed. The upper reach for Bear Butte Creek (from the headwaters to Strawberry Creek) has been changed to nonsupporting due to water temperature and the lower reach for Bear Butte Creek (from</p>

Basin / Waterbody	2006 Listing	2004 Listing	Comments
			<i>Strawberry Creek to near Bear Den Mountain) has been changed to nonsupporting due to total suspended solids.</i>
Belle Fourche / Whitewood Creek – Spruce Gulch to Sandy Creek	Category 5 - fecal coliform	Category 5 – water temp & fecal coliform	<p>Add water temperature back to the list or provide justification of why it no longer meets criteria for 303(d) listing.</p> <p>Response: <i>New water quality data for the 2006 Integrated Report shows this segment of Whitewood Creek is now fully supporting for water temperature. A footnote has been added to Table 18 for this segment of Whitewood Creek.</i></p>
Big Sioux / Oneroad Lake – Roberts Cnty	Not listed	Category 3	<p>This waterbody is not included in the 2006 IR. Does it no longer exist?</p> <p>Response: <i>Oneroad Lake was inadvertently placed in the 2004 Integrated Report as a Category 3. DENR does not include waterbodies that have not been assessed in the Integrated Report. DENR generally only includes specific waterbodies in the tables that have been assessed. If a waterbody is not specifically named within the tables, then it has not been assessed.</i></p> <p><i>No assessment information was available for Oneroad Lake during this reporting cycle so it was left out of the 2006 Integrated Report tables.</i></p>
Big Sioux / Big Sioux River – near Volga to Brookings	Category 1	Category 5	<p>This segment is part of the upper Big Sioux River. We have not seen draft TMDLs for these segments. Please review the data to ensure that the data supports delisting based on the assessment methodology for TSS, and that WQS are being met.</p> <p>Response: <i>The Big Sioux River from near Volga to Brookings was listed as nonsupporting for Total Suspended Solids in 2004. However, new water quality data for the 2006 Integrated Report shows that this segment of the Big Sioux River is now fully supporting all its designated beneficial uses.</i></p>

Basin / Waterbody	2006 Listing	2004 Listing	Comments
Big Sioux / Big Sioux River – Brookings to I-29	Category 1	Category 5 – TSS	<p>This segment is part of the package of central Big Sioux River TMDLs. A draft TSS TMDL has been prepared which states that both statewide ambient monitoring data and the Central Big Sioux Watershed Assessment found that this segment is not meeting the TSS water quality standard. This listing needs to be changed back to category 5 until a TMDL is approved, or additional data shows that the WQS are being met.</p> <p>Response: <i>The Central Big Sioux River Watershed Assessment did find that this segment of the Big Sioux River was nonsupporting for Total Suspended Solids during their assessment period from 2000-2001. However, more recent water quality data for the 2006 Integrated Report shows that this segment of the Big Sioux River is no longer impaired for Total Suspended Solids. This segment will remain in Category 1.</i></p> <p><i>One reason the new data shows no impairment may be due to the generally dry weather conditions that have occurred for the past couple of years. In South Dakota we tend to see more problems with Total Suspended Solids during high precipitation events. DENR is intending to complete a TMDL for Total Suspended Solids on this segment to improve water quality conditions during high precipitation periods.</i></p>
Big Sioux / Big Sioux River – I-29 to near Dell Rapids	Category 1	Category 5 – TSS	<p>This segment is part of the package of central Big Sioux River TMDLs. A draft TSS TMDL has been prepared which states that 14% of the samples collected exceed the standard, and that the Central Big Sioux Watershed Assessment found that this segment is not meeting the TSS water quality standard. This listing needs to be changed back to category 5 until a TMDL is approved, or additional data shows that the WQS are being met.</p>

Basin / Waterbody	2006 Listing	2004 Listing	Comments
			<p>Response: The Central Big Sioux River Watershed Assessment did find that this segment of the Big Sioux River was nonsupporting for Total Suspended Solids during their assessment period from 2000-2001. However, more recent water quality data for the 2006 Integrated Report shows that this segment of the Big Sioux River is no longer impaired for Total Suspended Solids. This segment will remain in Category 1.</p> <p>One reason the new data shows no impairment may be due to the generally dry weather conditions that have occurred for the past couple of years. In South Dakota we tend to see more problems with Total Suspended Solids during high precipitation events. DENR is intending to complete a TMDL for Total Suspended Solids on this segment to improve water quality conditions during high precipitation periods.</p>
Big Sioux / Big Sioux River – Diversion return to SF WWTF	Category 5 – fecal coliform	Category 5 – fecal coliform & TSS	<p>This segment is part of the package of central Big Sioux River TMDLs. TSS and fecal coliform TMDLs are being drafted for this segment. An earlier draft of the TMDL indicated that the TSS WQS are not being met in this segment. This listing needs to include TSS until a TMDL is approved, or additional data shows that the TSS WQS are being met.</p> <p>Response: The Central Big Sioux River Watershed Assessment did find that this segment of the Big Sioux River was nonsupporting for Total Suspended Solids during their assessment period from 2000-2001. However, more recent water quality data for the 2006 Integrated Report shows that this segment of the Big Sioux River is no longer impaired for Total Suspended Solids.</p> <p>One reason the new data shows no impairment for TSS may be due to the generally dry weather conditions that have occurred for the past couple of years. In South Dakota we tend to see more</p>

Basin / Waterbody	2006 Listing	2004 Listing	Comments
			<i>problems with TSS during high precipitation events. DENR is intending to complete a TMDL for TSS in addition with fecal coliform on this segment to improve water quality conditions during high precipitation periods.</i>
Big Sioux / central Big Sioux River – tributaries (e.g., Beaver Creek, Six Mile Creek, Flandreau Creek, Bachelor Creek, Silver Creek)	Not listed	Not listed	<p>The Central Big Sioux Watershed Assessment found that several tributaries draining into the central Big Sioux River are not meeting WQS for TSS and/or fecal coliform. Was this data considered in preparing the 2006 IR? If so, those segments need to be listed if they meet criteria for impairment based on DENR's assessment methodology. Draft TMDLs are being prepared for several segments which indicate that WQS are not being met.</p> <p>Response: <i>Water quality data from the Central Big Sioux Watershed Assessment was not submitted to DENR by the August 1 deadline. Because of this, the data could not be used to determine support or impairment on these waterbodies. TMDLs will be developed for these waters if DENR determines they are impaired.</i></p>
Big Sioux / Skunk Creek	Category 2	Category 2	<p>This segment is part of the package of central Big Sioux River TMDLs. A draft fecal coliform TMDL has been prepared which states that 28.6% of the samples collected exceed the applicable WQS for fecal coliform. This listing needs to be changed to category 5 until a TMDL is approved, or additional data shows that the WQS are being met.</p> <p>Response: <i>The Central Big Sioux River Watershed Assessment did find that Skunk Creek was nonsupporting for fecal coliform during their assessment period from 2000-2001. However, more recent water quality monitoring data for the 2006 Integrated Report shows that Skunk Creek is not impaired for fecal coliform. This segment will remain in Category 2.</i></p>

Basin / Waterbody	2006 Listing	2004 Listing	Comments
			<i>DENR is still intending to complete a TMDL for Skunk Creek anyway to try to improve water quality conditions on the Big Sioux River.</i>
Big Sioux / Split Rock Creek	Category 2	Not listed	<p>This segment is part of the package of central Big Sioux River TMDLs. TSS and fecal coliform TMDLs are being drafted for this segment which indicate that the TSS and fecal coliform WQS are not being met in this segment. This listing needs to be changed to category 5 for TSS and fecal coliform until a TMDL is approved, or additional data shows that the WQS are being met.</p> <p>Response: <i>The only data that had been submitted for Split Rock Creek was from the USGS. The USGS data was very limited and does not include information for fecal coliform or TSS. However, the Central Big Sioux River Assessment did show exceedances of over 10% for fecal coliform and TSS. DENR agrees with this comment and Split Rock Creek has been changed to a Category 5. It is now listed as impaired for fecal coliform and TSS.</i></p>
Big Sioux / lower Big Sioux River – tributaries	Not listed	Not listed	<p>We understand that the watershed assessment for the lower Big Sioux River found that several tributaries draining into the Big Sioux River are not meeting WQS for TSS and/or fecal coliform. Was this data considered in preparing the 2006 IR? If so, those segments need to be listed if they meet criteria for impairment based on DENR's assessment methodology.</p> <p>Response: <i>There could be several tributaries that may be impaired for TSS and/or fecal coliform in the lower Big Sioux River area. However, this data was not submitted for analysis for the 2006 Integrated Report. The data will be considered for the 2008 Integrated Report.</i></p>
Big Sioux / Beaver Creek (Valley Springs WWTF),	See comment	See comment	These two surface water discharge permits are listed twice – once at the top of the list and once at the bottom of the list. It appears that they are duplicates and one set should be deleted.

Basin / Waterbody	2006 Listing	2004 Listing	Comments
Big Ditch (Vermillion WWTF)			Response: DENR agrees with this comment and the typographical error has been corrected.
Cheyenne / Bismark Lake, Stockade Lake	Category 2	Category 5	<p>The category listing for these two lakes include a “*” indicating a footnote at the end of the basin listing, however no footnote is included. If the reason for the category change is related to the revision to DENR’s lake assessment methodology (i.e., “Targeting Impaired Lakes in South Dakota,” June 2005), then we recommend that the information supporting delisting (Appendix A) include a statement similar to: “Change in WQS assessment methodology; water now meets water quality standard.”</p> <p>Response: DENR has added the appropriate footnote to justify the TSI delisting. The footnote now reads, “The waterbody is fully supporting based on updated assessment methodology.”</p>
Cheyenne / Lakota Lake	Category 5 – TSI	Category 5 – TSI & pH	<p>Add pH back to the list or provide justification of why it no longer meets the criteria for 303(d) listing.</p> <p>Response: DENR provided justification to support the delisting of pH from the 2006 listing cycle. Lakota Lake was added to Appendix A with appropriate justification language. “Change in WQS assessment methodology; water now meets water quality standard.”</p>
Cheyenne / Battle Creek – Teepee Gulch Creek to SD Hwy 79	Category 5 – water temp	Category 5 – water temp & pH	<p>Add pH back to the list or provide justification of why it no longer meets the criteria for 303(d) listing.</p> <p>Response: More recent water quality monitoring data for the 2006 Integrated Report shows that this segment of Battle Creek is no longer impaired for pH. A footnote has been added to the bottom of Table 20 including this information.</p>
Cheyenne / Rapid Creek, North Fork	Category 5 – water temp	Category 5 – water temp	We reviewed a draft assessment report and TMDL for upper Rapid Creek that seemed to indicate that parts of the creek are impaired

Basin / Waterbody	2006 Listing	2004 Listing	Comments
			<p>due to metals in areas of iron bog deposits. Some of the iron deposits were mined. Was this data considered in preparing the 2006 IR? If so, those segments need to be listed if they meet criteria for impairment based on DENR's assessment methodology.</p> <p>Response: <i>The water quality data for the upper Rapid Creek watershed assessment has not been formally submitted to DENR for analysis. This data will be considered for the 2008 Integrated Report.</i></p>
Grand / Grand River – Shadehill Reservoir to Corson County line	Category 5 – pH & SAR	Category 5 – pH, SAR, water temp & TSS	<p>Add pH & TSS back to the list or provide justification of why they no longer meet the criteria for 303(d) listing.</p> <p>Response: <i>More recent water quality monitoring data for the 2006 Integrated Report shows that this segment of the Grand River is no longer impaired for water temperature and TSS. A footnote has been added to the bottom of Table 21 including this information.</i></p>
James / Foster Tributary & Howard Tributary	Not listed	Category 2	<p>These two stream segments no longer appear in the 2006 IR. This is not a 303(d) issue, but we are curious where they went.</p> <p>Response: <i>USGS had limited water quality data (water temperature and conductivity) for the 2004 Integrated Report. However, the sampling at these sites has ended and the water quality data is now outdated for the 2006 Integrated Report. We consider these waters to be “unassessed”. DENR does not generally include waterbodies that have not been assessed to the Integrated Report. DENR generally only includes specific waterbodies in the tables that have been assessed. If a waterbody is not specifically named within the tables, then it has not been assessed.</i></p>
James / James River – I-90 to Yankton County line	Category 1	Category 5 – TSS	<p>This segment is included in Appendix A as being delisted due to new information indicating full support. Please review the data to ensure that the data supports delisting based on the assessment</p>

Basin / Waterbody	2006 Listing	2004 Listing	Comments
			<p>methodology for TSS, and that WQS are being met.</p> <p>Response: More recent water quality monitoring data for the 2006 Integrated Report shows that this segment of the James River is now fully supporting all its designated beneficial uses. It will remain in Category 1.</p>
James / James River – Yankton County line to mouth	Category 5 – TSS	Category 5 – TSS & fecal coliform	<p>Add fecal coliform back to the list or provide justification of why it no longer meets the criteria for 303(d) listing.</p> <p>Response: More recent water quality monitoring data for the 2006 Integrated Report shows that this segment of the James River is no longer impaired for fecal coliform. A footnote has been added to the bottom of Table 22 including this information.</p>
Minnesota / Lake Oliver	Category 2	Category 4a	<p>A TMDL was approved on 11/09/01. To be consistent with similar listings where a TMDL has been approved and new information indicates full support, we recommend changing the categorization to “2 / 4A*”</p> <p>Response: The categorization for Lake Oliver was changed to reflect Lake Oliver as a “2/4A*” in the tables. The appropriate footnote was also added to the end of the basin specific table (*).</p>
Missouri / Roosevelt Lake	Category 5 – mercury	Category 5 – TSI	<p>Add TSI back to the list or provide justification of why it no longer meets the criteria for 303(d) listing.</p> <p>Response: DENR provided justification to delist Roosevelt Lake for TSI based on the appropriate language: “Change in WQS assessment methodology; water now meets water quality standard.</p>
Missouri / Sully Lake & Sully Dam	Category 5 – TSI	Category 5 – TSI & pH	<p>Add pH back to the list for both Sully Lake and Sully Dam or provide justification of why it no longer meets the criteria for 303(d) listing.</p> <p>Response: Sully Lake (Sully County) has suffered low water levels</p>

Basin / Waterbody	2006 Listing	2004 Listing	Comments
			<i>due to a severe drought over the past five years and has completely dried over the past two years. Much of the data used to list Sully Lake (Sully County) in the 2004 IR in particular pH and TSI is reflective of the low water levels attributed to natural drought conditions. Sully Lake (Sully County) was listed as a Category 3. DENR will sample Sully Lake (Sully County) once water levels reach normal levels. Sully Dam (Tripp County) was delisted based on a "Change in WQS assessment methodology; water now meets the pH water quality standard. The appropriate listing information was added to the 2006 IR for both waterbodies.</i>
Vermillion / East Vermillion Lake	Category 5 – TSI	Category 5 – TSI & pH	<p>Add pH back to the list or provide justification of why it no longer meets the criteria for 303(d) listing.</p> <p>Response: DENR delisted East Vermillion Lake for pH based on a "Change in WQS assessment methodology; water now meets the pH water quality standard. The appropriate listing information was added to the 2006 IR for East Vermillion Lake.</p>
Vermillion / Lake Preston	Not listed	Category 5 – TSI	<p>Add Lake Preston back to the list for TSI or provide justification of why it no longer meets the criteria for 303(d) listing.</p> <p>Response: DENR has removed Lake Preston from the 2006 303 (d) list. The TSI listing criteria is based on waterbodies with coldwater permanent (2), coldwater marginal (3), warmwater permanent (4), warmwater semipermanent (5) or warmwater marginal (6) beneficial use designations. Lake Preston has a fish and wildlife propagation and stock watering designation (9) which does not fit the TSI criterion.</p>
Vermillion / Vermillion River – Turkey Ridge Creek to Baptist Creek	Category 5 – TSS	Category 5 – TSS & fecal coliform	<p>Add fecal coliform back to the list or provide justification of why it no longer meets the criteria for 303(d) listing.</p> <p>Response: More recent water quality monitoring data for the 2006 Integrated Report shows that this segment of the Vermillion River is</p>

Basin / Waterbody	2006 Listing	2004 Listing	Comments
			<i>no longer impaired for fecal coliform. A footnote has been added to the bottom of Table 29 including this information.</i>
Vermillion / Vermillion River – McCook/Lake County line to Little Vermillion River	Category 1	Category 5 – TSS	<p>This segment is included in Appendix A as being delisted due to new information indicating full support. Please review the data to ensure that the data supports delisting based on the assessment methodology for TSS, and that WQS are being met.</p> <p>Response: <i>More recent water quality monitoring data for the 2006 Integrated Report shows that this segment of the Vermillion River is now fully supporting all its designated beneficial uses. It will remain in Category 1.</i></p>



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

June 1, 2005

RF Request for Water Quality Data

Dear Interested Party

It is time for the department to begin preparation of the 2006 Integrated Report. The Integrated Report combines the 305(b) report and the 303(d) list into one report, which provides an assessment of the quality of South Dakota's surface water resources and identifies the impaired waters that require Total Maximum Daily Loads (TMDLs). Total Maximum Daily Loads calculate the amount of pollution a water body can receive and still meet water quality standards along with supporting assigned beneficial uses. Once TMDLs are determined, local, state, and federal activities can be directed toward improving the quality of the water body.

To develop an accurate, defensible, and comprehensive list, the department is soliciting water quality data or other information you may have to help us determine the quality of South Dakota's waters. Chemical, physical, or biological data will be considered. Data that represent the condition of a specific water body will be used to update the 303(d) list. Data less than five years old is of the greatest value. Please provide any quality assurance/quality control measures that were used in collecting the data you submit. Specific water quality reports that explain and interpret the data are also requested.

We need to have this information for the 2006 Integrated Report by August 1, 2005. South Dakota's most recent Integrated Report is available at the department's website: <http://www.state.sd.us/denr/document.htm>. If you have questions or water quality data for our list, contact either Stacy Splittstoesser or Gene Stueven at (605) 773-3351, or email an electronic version of the data to Stacy.Splittstoesser@state.sd.us or Gene.Stueven@state.sd.us. Thank you for your help.

Sincerely,

Steven M. Pirner
Secretary

NOTICE OF THE 2006 SOUTH DAKOTA INTEGRATED REPORT FOR SURFACE WATER QUALITY ASSESSMENT AND OPPORTUNITY FOR COMMENT

The Department of Environment and Natural Resources (DENR) is announcing the availability of the draft 2006 South Dakota Integrated Report for Surface Water Quality Assessment (Integrated Report) and the opportunity for public comment on the draft report.

The Integrated Report combines the 305(b) Water Quality Report to Congress and the 303(d) Total Maximum Daily Load list into one document for the purposes of reporting on South Dakota's surface water quality. The Integrated Report also lists those water bodies that require the completion of a Total Maximum Daily Load. This final Integrated Report must be submitted to the U.S. Environmental Protection Agency (EPA) on or before April 1, 2006.

The 2006 Integrated Report contains the following information:

1. An assessment of the surface water quality of South Dakota's waters;
2. A description of South Dakota's water quality monitoring programs;
3. Pollutants causing or expected to cause violations of the applicable water quality standards; and
4. Identification of waters targeted for TMDL development.

The department is providing a public participation process in which the members of the general public, affected organizations, and other interested parties can review and comment on the content of the draft 2006 Integrated Report. A copy of the draft 2006 Integrated Report is available on DENR's web site at: <http://www.state.sd.us/denr/DraftIR2006.pdf>.

Copies of the draft may also be obtained by writing to Stacy Splittstoesser at the address below, emailing Stacy.Splittstoesser@state.sd.us or by calling her at 1-800-438-3367.

Any person desiring to comment on the list should submit comments to the address below. Persons are encouraged to comment electronically by emailing comments to Stacy.Splittstoesser@state.sd.us. The department must receive public comments by March 24, 2006.

At the conclusion of the public comment period, the department will prepare a written response to each comment received and post the response to the department web site or, if requested, by written response to each person who provided comments or requested a copy of the department's response.

The department will finalize the 2006 Integrated Report after consideration of the comments received during the public participation process. The final 2006 Integrated Report will then be sent to EPA for approval. Once EPA approves the list, the Integrated Report will be made available on the department's web site and will be sent to persons who request a copy.

Department of Environment and Natural Resources
Water Resources Assistance Program
523 East Capitol Avenue – Joe Foss Building
Pierre, South Dakota 57501-3181



Steven M. Pirner
Secretary



**DEPARTMENT of ENVIRONMENT
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SD DENR 04-16

For Immediate Release: Wednesday, February 22, 2006

For More Information: Stacy Splittstoesser, 773-3351

DENR Seeks Comments on Waterbody Report

PIERRE – The state Department of Environment and Natural Resources (DENR) is seeking public comments on a draft report the state uses to identify impaired waterbodies in the state.

Public comments from the general public and other interested parties and organizations will be accepted through March 24, 2006. Comments can be emailed to Stacy Splittstoesser at Stacy.Splittstoesser@state.sd.us or by writing:

Department of Environment and Natural Resources
Surface Water Quality Program
523 East Capitol Avenue – Joe Foss Building
Pierre, South Dakota 57501-3181

A copy of the draft 2006 Integrated Report is available by contacting Stacy at either of the above addresses, by phone at 1-800-438-3367, or by visiting DENR's website at www.state.sd.us/denr/DraftIR2006.pdf.

The final Integrated Report must be submitted to the U.S. Environmental Protection Agency (EPA) by April 1, 2006.

"Because the total maximum daily load list drives state water quality programs, it is important that people in South Dakota see the draft report and provide us comments before it is finalized and sent to EPA for approval," said DENR Secretary Steve Pirner.

The draft 2006 South Dakota Integrated Report for Surface Water Quality Assessment combines two earlier reports required under the federal Clean Water Act into a single report. Combined for reporting purposes to EPA are the previous 305(b) Water Quality Report and the 303(d) Total Maximum Daily Load list.

The 2006 Integrated Report contains an assessment of the surface water quality of South Dakota's waters, a description of South Dakota's water quality monitoring programs, pollutants causing violations of the applicable water quality standards, and identification of waters targeted for total maximum daily load development.

The draft 2006 report shows 147 waterbodies or waterbody segments needing a total maximum daily load. Of those listed, 86 (or 59%) are stream and river segments that periodically violate one or more specific water quality standard; and 61 (or 41%) are lakes that have too many nutrients and are prone to excessive algae and aquatic weed growth.

A total maximum daily load is a determination of the amount of pollution a waterbody can receive and still maintain water quality standards.

-more-

INTEGRATED REPORT

2-2-2-2

Pollutant reductions to meet total maximum daily loads can be achieved through many different ways, depending on the type and source of pollutants. For example, if the pollutant is discharged from a wastewater treatment plant, DENR can place enforceable pollutant limits in its surface water discharge permit. If the pollutant comes from runoff, DENR can help conservation districts or other local sponsors seek cost share funding to help landowners install best management practices that will reduce the pollutant in runoff.

Since the last biennial report was completed in 2004, DENR has completed 39 total maximum daily loads and has another 89 in progress.