

2026 Addendum to the South Dakota Statewide Mercury TMDL

Cookstove Lake

1.0 Introduction

The South Dakota Department of Agriculture and Natural Resources (DANR) adopted the Statewide Mercury Total Maximum Daily Load (TMDL) in 2016. Statewide Mercury TMDL currently includes 80 Assessment Units (AUs) covered under its most recent addition. While 70 AUs originate from the original Mercury TMDL, the remaining 10 AU's come from addendums such as this one. Those addended waterbodies include [Sheriff Dam](#), [Clubhouse Lake](#), [James River \(segment 8\)](#), [Stockade](#), [Sheridan](#), [Potts](#), [Stink](#), [Durkee](#), [East Lemmon Lake](#), and [Scott Lake](#). This addendum proposes inclusion of Cookstove Lake under the original Statewide Mercury TMDL in accordance with Section 303(d) of the Clean Water Act (DANR, 2016; EPA, 2026).

$$\text{Annual Statewide Mercury TMDL Calculation}$$
$$\text{TMDL (595.32 Kg/yr)} = \text{WLA (4.84 Kg/yr)} + \text{LA (590.48 Kg/yr)} + \text{MOS (implicit)}$$

This addendum does not modify any aspect of the original Statewide Mercury TMDL. The loading capacity, allocations, and margin of safety remain as presented in the approved statewide mercury TMDL. Refer to [Section 10.0](#) of the original TMDL for additional information on how the annual and daily mercury loads were calculated (DANR, 2016).

Fish tissue samples collected from Cookstove Lake exhibited methylmercury concentrations that exceeded 0.3 milligrams per kilogram (mg/kg) human health criterion identified in the Administrative Rules of South Dakota (ARSD) Chapter [74:51:01](#), [Appendix B](#). Cookstove Lake has been identified as a high priority for TMDL development based on this mercury fish tissue impairment. For purposes of this addendum, any reference to mercury in fish tissue refers to methylmercury (DANR, 2016; EPA, 2001).

For a waterbody to be determined impaired for mercury in fish tissue in South Dakota, a minimum of 10 fish tissue samples is required for assessment. At least three fish tissue samples per species are required. There is no minimum number of sampling events, and all data within 10 years of the most recent Integrated Report (IR) may be used. The composite mean result of each fish species is compared to applicable water quality criteria. If any species mean composite result exceeds the criterion, or if a fish consumption advisory has been issued, the waterbody is considered non-supporting (DANR, 2026).

Refer to the original approved TMDL document for details related to the methods and assumptions used in establishing the South Dakota Statewide Mercury TMDL. For coverage under the Statewide Mercury TMDL, a waterbody must meet the assumptions listed below in [Table 1](#) (DANR, 2016).

Table 1. Conditions necessary for a waterbody to be placed within the South Dakota Mercury TMDL

#	Description	Report Section
1	It falls entirely within state jurisdiction.	2.0 Jurisdiction
2	If jurisdiction is shared, it may only apply to those portions of the water under South Dakota jurisdiction.	2.0 Jurisdiction
3	The standard-length fish (SLF) tissue methylmercury concentration from the water does not exceed 0.878 mg/kg.	3.0 Comparable Existing Conditions
4	There are no potential impacts from current or historic gold mining processes.	4.1 Mining
5	If it is a river or stream, National Pollutant Discharge Elimination System (NPDES) discharges do not exceed permitted limits.	4.3 NPDES Permitted Sources
6	The TMDL will meet water quality standards in the proposed waterbody.	3.0 Comparable Existing Conditions; 6.0 Water Quality Standards
7	The original TMDL assumptions, including source contributions and loading capacity, are still valid.	3.0 Comparable Existing Conditions; 4.0 Source Assessment – Point Sources; 5.0 Source Assessment – Nonpoint Sources; 6.0 Water Quality Standards

The third condition establishes a fish tissue methylmercury cap of 0.878 mg/kg, which was the maximum concentration observed in a SLF from Bitter Lake in the original TMDL. Any waterbody with an SLF tissue concentration exceeding this benchmark is not eligible for coverage under the statewide mercury TMDL and would instead require a waterbody-specific TMDL. Statewide beneficial uses 2, 3, 4, 5, 6, and 9 are considered retained if the mercury reductions identified for Bitter Lake are achieved, because mercury loading is driven almost entirely by atmospheric deposition. This addendum demonstrates that Cookstove Lake meets each of these conditions and therefore is appropriately covered under the original South Dakota Statewide Mercury TMDL (DANR, 2016).

Table 2. Proposed waterbody to be added to the South Dakota Mercury TMDL

Assessment Unit ID	Common Name	Acres/Miles in EPA ADP
SD-BA-L-COOKSTOVE_01	Cookstove Lake	2.42

2.0 Jurisdiction

Figure 1 shows that Cookstove Lake is located within the jurisdiction of the State of South Dakota, which provides the State the authority necessary to manage the lake for the benefit of the public and restore it to full attainment of its designated beneficial uses.

Cookstove Lake Relative to Tribal Country

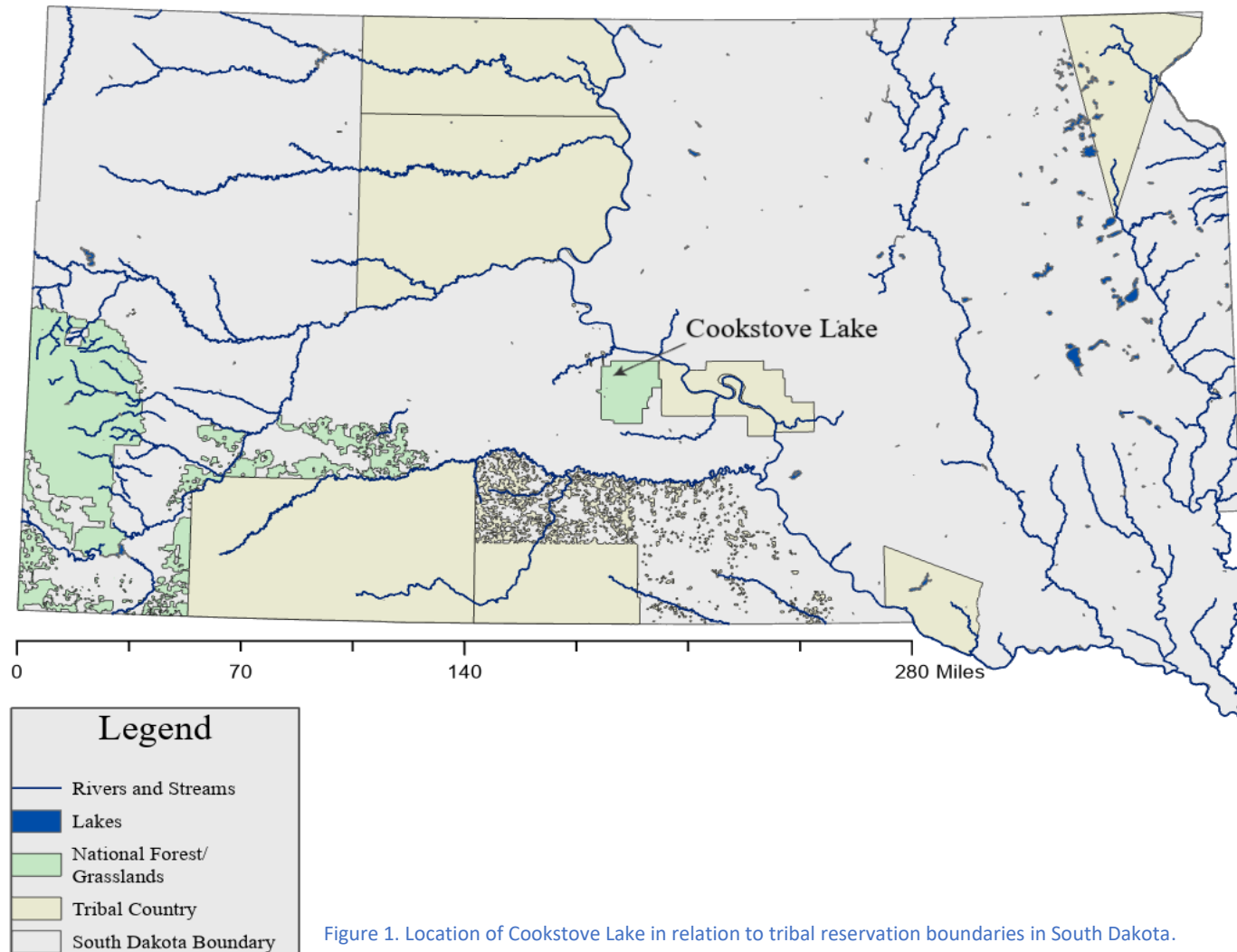


Figure 1. Location of Cookstove Lake in relation to tribal reservation boundaries in South Dakota.

3.0 Comparable Existing Conditions

To determine the applicability of the South Dakota Statewide Mercury TMDL for an additional waterbody, a review of existing conditions must be completed. This review discusses fishery, loading analysis, and potential point and nonpoint sources in a manner consistent with the original statewide mercury TMDL (DANR, 2016).

3.1 Cookstove Lake

Cookstove Lake, also identified as Cookstove Dam, is a small impoundment in Stanley County, South Dakota, located south-southwest of Fort Pierre within the National Grasslands. Fisheries records identify the lake as a 2.42-acre impoundment. South Dakota's Game, Fish and Parks (GFP) survey documentation describes the lake as a shallow system with extensive aquatic and shoreline vegetation, including cattails, rushes, and pondweed around much of the shoreline (GFP, 2026).

Fisheries records characterize Cookstove Lake as a warmwater, multi-species fishery centered on bluegill, yellow perch, and largemouth bass. Earlier fisheries survey information lists largemouth bass and bluegill as primary game species, with yellow perch listed as a secondary species. More recent survey summaries similarly identify largemouth bass, bluegill, and yellow perch as the dominant fish communities (GFP, 2026).

Overall, the fishery is best described as a small but quality public warmwater fishery that supports bluegill, perch, and largemouth bass angling during both open-water and ice-fishing seasons. Fisheries management and assessment are influenced by the lake's small size, heavy vegetation, and limited boat access (GFP, 2026).

Fish tissue mercury data collected from Cookstove Lake demonstrate a positive relationship between fish length and mercury concentration in largemouth bass, which is consistent with the bioaccumulation pattern used in the statewide mercury analysis. The available species data also indicates that largemouth bass exhibit the highest mercury concentrations among species sampled in the lake. This supports the use of largemouth bass as the primary indicator species for evaluating mercury impairment in Cookstove Lake.

The statewide mercury reductions were based on a 15.1-inch SLF and a methylmercury target of 0.878 mg/kg. Based on the Cookstove Lake regression relationship, a 15.1-inch (384 mm) fish is estimated to contain approximately 0.505 mg/kg methylmercury. Available Cookstove Lake results indicate that fish at or near 15.1 inches remain below 0.878 mg/kg, which means the lake remains within the same reduction benchmark used in the statewide mercury TMDL framework. At the same time, the mean mercury concentration in the primary predatory sportfish exceeds 0.3 mg/kg, confirming continued impairment and supporting inclusion of Cookstove Lake under the statewide mercury implementation strategy (DANR, 2016).

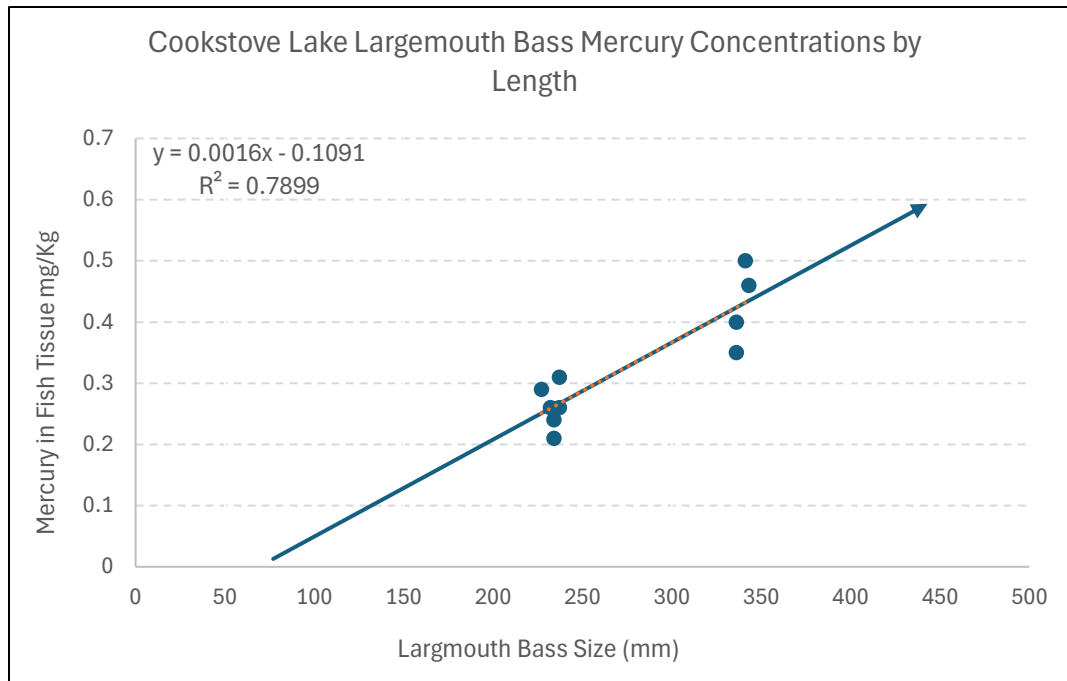


Figure 2. Cookstove Lake Mercury (mg/kg) Concentrations vs Length (mm).
A linear regression line has been drawn showing the approximate trend of mercury in Largemouth Bass as fish grow.

Figure 2 illustrates the relationship between largemouth bass length and fish tissue mercury concentration in Cookstove Lake. The scatter plot shows a positive trend, indicating that mercury concentrations generally increase with fish size. A linear regression was fitted to the data ($y = 0.0016x - 0.1091$; $R^2 = 0.7899$), where fish length (mm) is the predictor variable and mercury concentration (mg/kg) is the response variable. The slope of the regression indicates an estimated increase of 0.16 mg/kg in tissue mercury concentration for every 100 mm increase in largemouth bass length. The relatively high R^2 value indicates a strong relationship between fish length and mercury concentration in Cookstove Lake largemouth bass. Based on the regression equation, the predicted fish length at which mercury concentration exceeds 0.3 mg/kg is approximately 256 mm (about 10.1 inches).

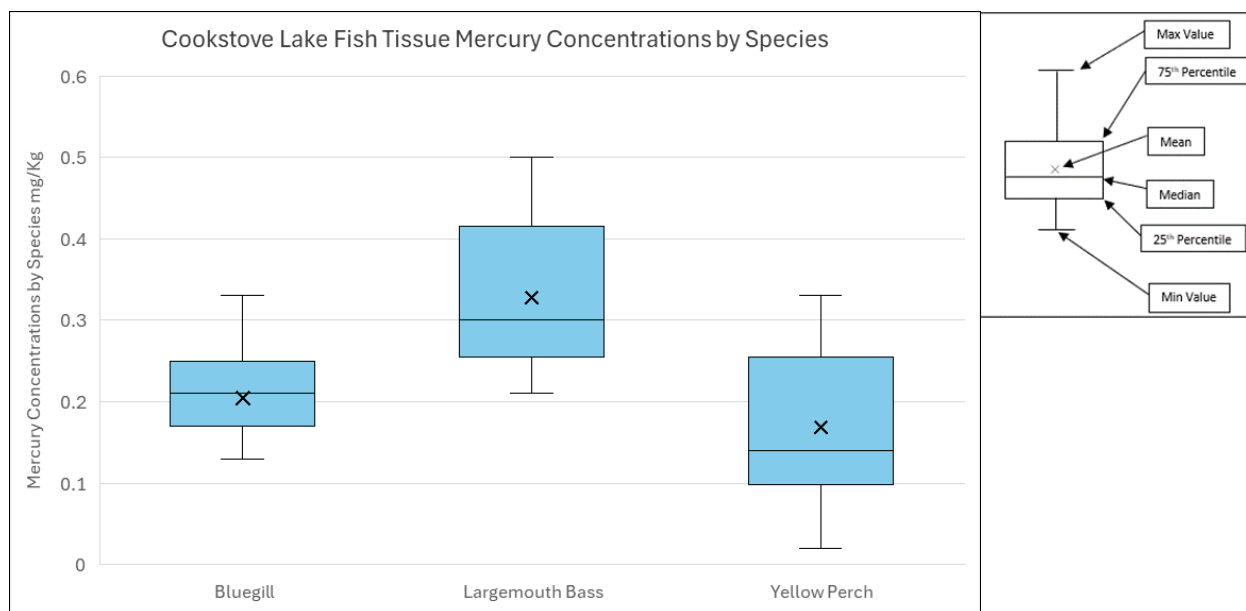


Figure 3. Mercury concentrations per species in Cookstove Lake.

Figure 3 summarizes fish tissue mercury concentrations by species in Cookstove Lake using box-and-whisker plots. The figure shows clear differences among species, with largemouth bass exhibiting the highest mercury concentrations and the highest central tendency, while bluegill and yellow perch generally exhibit lower concentrations. Most importantly, the mean mercury concentration for largemouth bass (denoted by the “X”) is above the 0.3 mg/kg fish tissue criterion, indicating that mean mercury concentrations in the surrogate predatory sportfish exceed the applicable threshold. This species-level pattern is consistent with expected bioaccumulation dynamics and supports the use of largemouth bass as the primary indicator species for evaluating mercury impairment in Cookstove Lake.

The fish tissue data shows why Cookstove Lake fits under the South Dakota Statewide Mercury TMDL through this addendum. The scatter plots show positive linear relationships for the primary predator species (largemouth bass in Cookstove Lake), and the box-and-whisker plots show that the largemouth bass have the highest mean mercury concentrations in each fish community. Those are the same statistical patterns the statewide TMDL uses to evaluate mercury impairment and response to reductions.

The statewide mercury reductions were based on a 15.1-inch SLF and a methylmercury target of 0.878 mg/kg. Based on the Cookstove Lake regression relationship, a 15.1-inch (384 mm) fish is estimated to contain approximately 0.505 mg/kg methylmercury, which is below the 0.878 mg/kg benchmark used in the statewide TMDL framework. At the same time, the boxplot shows that the mean mercury concentration in the primary predator species remains above 0.3 mg/kg, which confirms continued impairment concerns and supports inclusion of Cookstove Lake in the statewide mercury implementation strategy.

4.0 Source Assessment – Point Sources

Point sources of water pollution are grouped as mining, municipal separate storm sewer systems (MS4s), and National Pollutant Discharge Elimination System (NPDES) permitted facilities. Although the mercury in fish tissue impairment for Cookstove Lake is not related to any specific point source, a transparent review of these sources demonstrates that the waterbody meets the conditions necessary for acceptance under the statewide mercury TMDL (EPA, 2026).

4.1 Mining

Mercury mining and the historical use of mercury for gold extraction are potential point sources of inorganic mercury. Although mercury mining ceased in the United States in 1992 and mercury amalgamation for gold extraction has largely been replaced by cyanide leaching, deposits from these processes remain a localized concern in portions of the country. South Dakota has no record of mercury or gold mining occurring within Stanley County, and mining is not considered a concern for Cookstove Lake in terms of mercury-related point source pollution. This supports the fourth condition discussed earlier in this document (USGS, 2024; Wentz et al., 2014).

4.2 Municipal Separate Storm Sewer Systems (MS4s)

MS4 permits are intended to control anthropogenic pollutant loads in stormwater discharges. MS4s are considered point sources under the Clean Water Act and are typically included within the waste load allocation of a TMDL. Factoring out atmospheric deposition, which is accounted for separately in the statewide mercury TMDL, and illicit discharges, which are already regulated, there should be no substantial anthropogenic mercury source from MS4-covered areas beyond atmospheric deposition (EPA, 2026).

The MS4 permit areas included in the original statewide mercury TMDL were already incorporated into the measured and modeled deposition results used in that analysis. No MS4 is expected to materially affect Cookstove Lake, but these sources are acknowledged here to demonstrate that potential stormwater-related point sources were considered (DANR, 2016).

Table 3. MS4 permits, phase, and acreages in South Dakota (2016)

MS4	Permit	Phase	Area (acres)	Km ²	Estimation Description
City of Sioux Falls	SDS0001	I	48429	196	Provided by permittee
City of Vermillion	SDR41A001	II	2410	10	The permittee provided the area within city limits, which is covered by the MS4
City of Pierre	SDR41A002	II	8340	34	Provided by permittee
City of Brookings	SDR41A003	II	7450	30	The area within Brookings, minus the SDSU campus, was provided by the permittee
Pennington County	SDR41A004	II	27320	111	Provided by permittee using GIS mapping
City of Mitchell	SDR41A005	II	7256	29	The area within Mitchell, minus Lake Mitchell, was provided by the permittee
City of Sturgis	SDR41A006	II	3100	13	The permittee provided the area within city limits, which is covered by the MS4
City of Rapid City	SDR41A007	II	35200	142	Provided by permittee
City of Aberdeen	SDR41A008	II	8960	36	Provided by permittee
SD DOT	SDR41A009	II	0	0	Already included
City of Watertown	SDR41A010	II	16596	67	Provided by permittee
City of North Sioux City	SDR41A011	II	1693	7	Provided by permittee
City of Huron	SDR41A012	II	6400	26	Provided by permittee
City of Yankton	SDR41A013	II	5278	21	Provided by permittee
City of Spearfish	SDR41A014	II	10250	41	Provided by permittee
Meade County	SDR41A015	II	3670	15	Provided by permittee

4.3 NPDES Permitted Sources

South Dakota Administrative Rule 74:51:01:27 states that point source discharges to lakes must meet applicable water quality standards at the point of discharge because lakes are not allowed a mixing zone. As a result, NPDES permit limits for lake discharges serve as the primary regulatory mechanism for controlling point source-related mercury inputs and preventing localized exceedances of mercury water quality standards in lake systems (South Dakota Legislature, n.d.).

For this addendum, the relevant HUC12 watershed is the Porcupine Creek Watershed (HUC12 101401022005). There are no NPDES facilities in the Cookstove Lake watershed. This supports inclusion of Cookstove Lake under the original statewide mercury TMDL assumptions.

5.0 Source Assessment – Nonpoint Sources

Nonpoint source mercury pollution in South Dakota consists predominantly of atmospheric deposition and represents the overwhelming majority of mercury loading to the state's waterbodies. The load analysis in the original TMDL was based on wet and dry mercury deposition data developed through work at the South Dakota School of Mines and Technology, along with data from the Mercury Deposition Network. The original statewide mercury TMDL concluded that the

reductions necessary to meet water quality standards would ultimately come from nonpoint sources (DANR, 2016).

The original statewide mercury TMDL also explains that a portion of mercury emissions is natural and not subject to direct control. To meet water quality standards, reductions in anthropogenic mercury sources are necessary. Within the anthropogenic fraction, only a small portion of the nonpoint source load originates within South Dakota. Those in-state sources are already addressed within the original statewide mercury and are listed in [Table 4](#) below. This demonstrates the TMDL would remain subject to applicable state and federal controls (DANR, 2016).

Cookstove Lake does not present any unique nonpoint source condition that would invalidate the assumptions used in the original statewide mercury TMDL. The same atmospheric deposition framework and statewide source analysis remain applicable (DANR, 2016).

[Table 4. 2020-2022 Emission Sources in South Dakota \(USEPA 2020-2022\)](#)

Facility	Facility Type	Mercury Emissions in (lbs./Yr) Most Recent Reporting Cycle 2020- 2022
GCC Dakota	Cement	40.82
Otter Tail Power Company (Big Stone)	Coal Power	9.87
Pete Lien & Amp; Sons Inc.	Concrete	0.81
Nieman Enterprises Inc.	Timber	0.67
Spearfish Forest Products	Timber	0.24
Sioux Falls Sanitary Landfill	Landfill	0.2
Wharf Resources Co.	Gold Mine	0.18
Midwest Manufacturing DBA Dakota Panel	Timber	0.1
Concrete Materials Co.	Concrete	0.1
Poet Biorefining	Ethanol	0.03

6.0 Water Quality Standards

[Chapter 74:51](#) All waters (both lakes and streams) are assigned the beneficial use of fish and wildlife propagation, recreation, and stock watering. All streams are assigned to the beneficial use of irrigation. The state assigns additional uses based on a beneficial use analysis of each waterbody. Each beneficial use has a set of water quality criteria (WQC) to protect those uses. The Administrative Rules of South Dakota (ARSD) contains the WQC in [Chapter 74:51](#). South Dakota WQC specifically addresses mercury concentrations in the water column designed to protect human health and aquatic health. More restrictive mercury concentrations were established for human health. [Table 5](#) shows the beneficial use classifications in South Dakota and the numeric

criteria assigned to those uses. All criteria are reported in the total recoverable mercury or total methylmercury (for fish tissue) fraction. Additional water quality regulations which apply to mercury impairments include the biological integrity of waters and are displayed in [Table 5](#) (South Dakota Legislature, n.d.).

Table 5. Beneficial Uses for Human and Aquatic Life Criteria

Use Classification	Use Description	Human Health		Aquatic Life	
		Water Column Hg	Fish Tissue CH ₃ Hg ⁺	Acute (CMC) Hg	Chronic (CCC) Hg
		µg/L	mg/kg	µg/L	µg/L
(1)	Domestic water supply waters	0.050			
(2)	Coldwater permanent fish life propagation waters	0.051	0.3	1.4	0.77
(3)	Coldwater marginal fish life propagation waters	0.051	0.3	1.4	0.77
(4)	Warmwater permanent fish life propagation waters	0.051	0.3	1.4	0.77
(5)	Warmwater semipermanent fish life propagation waters	0.051	0.3	1.4	0.77
(6)	Warmwater marginal fish life propagation waters	0.051	0.3	1.4	0.77
(7)	Immersion recreation waters				
(8)	Limited contact recreation waters				
(9)	Fish and wildlife propagation, recreation, and stock watering waters	0.051	0.3	1.4	0.77
(10)	Irrigation waters				
(11)	Commerce and industry waters				

[74:51:01:1274:51:01:55](#) ARSD Section [74:51:01:12](#) states that all waters of the state must be free from substances, whether attributable to human-induced point source discharges or nonpoint source activities, in concentrations or combinations which will adversely impact the structure and function of indigenous or intentionally introduced aquatic communities. Additionally, ARSD Section [74:51:01:55](#) also states that toxic pollutants (including mercury) may not exist at levels that are or may become injurious to public health, safety, or welfare. Protection of these narrative criteria is best accomplished by meeting the most stringent numeric water column criteria 0.050 µg/L of total mercury (South Dakota Legislature, n.d.).

As a part of the 2014 triennial review, DANR proposed the Water Management Board adopt WQC, including a fish flesh methylmercury (MeHg) criterion of 0.3 mg/kg. This concentration is the EPA recommended human health criterion applicable to beneficial uses 2, 3, 4, 5, 6, and 9. The

waterbody included in this addendum and its beneficial uses are shown in [Table 6](#) (EPA, 2001; South Dakota Legislature, n.d.).

[Table 6. Beneficial Uses for Cookstove](#)

Common Name	County	Beneficial Uses
Cookstove Lake	Stanley	9

The original TMDL identified a target of 0.3 mg/kg based on the approved EPA human health criterion (and approved by the State of South Dakota). This fish flesh concentration criterion and target required a linkage to protect the existing mercury water quality criteria. This linkage was accomplished by applying a Bioaccumulation Factor (BAF) discussed in [Section 2.0](#) of the original TMDL. Bioaccumulation refers to the uptake and retention of a chemical by an aquatic organism from all surrounding media, including water, sediment, and the food it consumes. The Statewide TMDL used a BAF to verify that the target and the human health criterion of 0.3 mg/kg would translate back to total mercury levels in the water column below the most stringent South Dakota WQC (0.050 µg/L). For more detail on these calculations, please refer to [Section 2.0](#) in the original TMDL (DANR, 2016; EPA, 2001).

The original TMDL used 0.669 mg/kg as the existing condition from which reductions were calculated. This value was based on the SLF calculation process outlined in [Section 3.0](#) of the original mercury TMDL. The reduction factor was derived from that existing condition and the applicable fish tissue criterion of 0.3 mg/kg. WE38 in the following equation refers to a walleye SLF of 15.1 inches. The reduction calculation is shown as: reduced concentration = existing concentration x (1 - reduction factor). Consistent with the original statewide mercury TMDL, reducing methylmercury concentrations in fish tissue in Cookstove Lake by 55.2 percent is expected to achieve the applicable water quality criterion (DANR, 2016). Based on the Cookstove Lake regression relationship in [Figure 2](#), a 15.1-inch SLF is predicted to contain approximately 0.505 mg/kg methylmercury. Applying the reduction factor gives: 0.505 mg/kg x (1 - 0.552) = 0.226 mg/kg. Because 0.226 mg/kg is below the applicable 0.3 mg/kg fish tissue criterion, the reduction target established in the original statewide mercury TMDL is expected to be sufficient to achieve attainment in Cookstove Lake.

7.0 Conclusion

Cookstove Lake satisfies the conditions necessary for inclusion under the South Dakota Statewide Mercury TMDL. The lake lies entirely within state jurisdiction, and the available fish tissue data confirms that mercury impairment is present in a manner consistent with the framework used in the original statewide mercury TMDL. Largemouth bass, the primary predatory sportfish in Cookstove Lake, exhibit mean methylmercury concentrations above the 0.3 mg/kg fish tissue criteria, confirming non-support of the applicable beneficial use. At the same time, fish at or near the 15.1-inch SLF remain below the 0.878 mg/kg benchmark established in the original statewide mercury TMDL, demonstrating that Cookstove Lake remains within the comparable existing conditions and reduction framework already approved by EPA.

Further, no evidence was identified indicating that mining-related mercury sources, NPDES-permitted discharges, or other waterbody-specific source conditions would invalidate the assumptions of the original statewide mercury TMDL. As with other waters covered under that

TMDL, atmospheric deposition remains the dominant mercury source pathway affecting Cookstove Lake. Because the original assumptions, source analysis, and reduction framework remain applicable, development of a separate lake-specific mercury TMDL is not warranted at this time. Therefore, Cookstove Lake should be added to the South Dakota Statewide Mercury TMDL through this addendum.

8.0 Public Participation

A 30-day public comment period was issued for the draft TMDL Addendum. A public notice letter was published in the following local newspapers: Pierre Capitol Journal, Rapid City Journal, and the Sioux Falls Argus Leader. The draft TMDL addendum document and ability to comment was made available on DANR's One-Stop Public Notice Page: <https://danr.sd.gov/public/default.aspx>. The public comment period began July 10th, 2026 and ended August 15th, 2026. No public comments were received during the 30-day comment period.

Appendix A:

Individual Fish Collected from Cookstove

Waterbody	County	Sample Date	Species	Length (mm)	Mercury (ppm)
Cookstove	Stanley	06/08/2021	Bluegill	164	0.13
Cookstove	Stanley	06/08/2021	Bluegill	162	0.13
Cookstove	Stanley	06/08/2021	Bluegill	184	0.14
Cookstove	Stanley	06/08/2021	Bluegill	192	0.17
Cookstove	Stanley	06/08/2021	Bluegill	211	0.25
Cookstove	Stanley	06/08/2021	Bluegill	223	0.21
Cookstove	Stanley	06/08/2021	Bluegill	200	0.22
Cookstove	Stanley	06/08/2021	Bluegill	230	0.25
Cookstove	Stanley	06/08/2021	Bluegill	220	0.23
Cookstove	Stanley	06/08/2021	Bluegill	215	0.21
Cookstove	Stanley	06/08/2021	Largemouth Bass	232	0.26
Cookstove	Stanley	06/08/2021	Largemouth Bass	343	0.46
Cookstove	Stanley	06/08/2021	Largemouth Bass	227	0.29
Cookstove	Stanley	06/08/2021	Largemouth Bass	336	0.4
Cookstove	Stanley	06/08/2021	Largemouth Bass	234	0.21
Cookstove	Stanley	06/08/2021	Largemouth Bass	237	0.26
Cookstove	Stanley	06/08/2021	Largemouth Bass	237	0.31
Cookstove	Stanley	06/08/2021	Largemouth Bass	234	0.24
Cookstove	Stanley	06/08/2021	Yellow Perch	257	0.33
Cookstove	Stanley	06/08/2021	Yellow Perch	218	0.12
Cookstove	Stanley	06/08/2021	Yellow Perch	212	0.14
Cookstove	Stanley	06/08/2021	Yellow Perch	212	0.09
Cookstove	Stanley	06/08/2021	Yellow Perch	208	0.27
Cookstove	Stanley	06/08/2021	Yellow Perch	208	0.19
Cookstove	Stanley	06/08/2021	Yellow Perch	198	0.02
Cookstove	Stanley	06/08/2021	Bluegill	236	0.18
Cookstove	Stanley	06/08/2021	Bluegill	242	0.28
Cookstove	Stanley	06/08/2021	Bluegill	226	0.17
Cookstove	Stanley	06/08/2021	Bluegill	245	0.33
Cookstove	Stanley	06/08/2021	Bluegill	220	0.17
Cookstove	Stanley	06/08/2021	Yellow Perch	244	0.26
Cookstove	Stanley	06/08/2021	Yellow Perch	211	0.09
Cookstove	Stanley	06/08/2021	Yellow Perch	201	0.13
Cookstove	Stanley	06/08/2021	Yellow Perch	208	0.24
Cookstove	Stanley	06/08/2021	Yellow Perch	211	0.14
Cookstove	Stanley	06/08/2021	Largemouth Bass	341	0.5
Cookstove	Stanley	06/08/2021	Largemouth Bass	336	0.35

References

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<https://www.usgs.gov/tools/legacy-mercury-contamination-historical-gold-mining>
- Wentz, D. A., Brigham, M. E., Chasar, L. C., Lutz, M. A., & Krabbenhoft, D. P. (2014). Mercury in the nation's streams: Levels, trends, and implications. U.S. Geological Survey Circular 1395. <https://doi.org/10.3133/cir1395>



REGION 8

DENVER, CO 80202

SENT VIA EMAIL

Hunter Roberts, Secretary
South Dakota Department of Agriculture & Natural Resources
Hunter.Roberts@state.sd.us

Re: Approval of 2026 Addendum to the South Dakota Mercury TMDL – Cookstove Lake

Dear Secretary Roberts:

The U.S. Environmental Protection Agency (EPA) has completed review of the 2026 addendum to the South Dakota Mercury total maximum daily load (TMDL) for Cookstove Lake submitted by your office on August 18, 2026. In accordance with the Clean Water Act (33 U.S.C. §1251 *et. seq.*) and the EPA's implementing regulations at 40 C.F.R. Part 130, the EPA hereby approves South Dakota's TMDL for Cookstove Lake in the Bad River basin, with the exception of waters within lands of exclusive federal jurisdiction. The EPA has determined that the separate elements of the TMDL listed in the enclosure adequately address the pollutant of concern, are designed to attain and maintain applicable water quality standards, consider seasonal variation and include a margin of safety. The EPA's rationale for this action is contained in the enclosure.

We appreciate the South Dakota Department of Agriculture & Natural Resources efforts to complete this TMDL. If you have any questions, please contact Amy King on my staff at (303) 312-6708.

Sincerely,

**SARAH
BAHRMAN**

Digitally signed by
SARAH BAHRMAN
Date: 2026.09.18
11:20:09 -06'00'

Sarah Bahrman, Director
Water Division

Enclosure

cc: Paul Lorenzen, Watershed Protection Program Administrator, South Dakota DANR
Alan Wittmuss, TMDL Team Leader, South Dakota DANR

EPA TOTAL MAXIMUM DAILY LOAD (TMDL) DECISION RATIONALE

TMDL: 2026 Addendum to the South Dakota Statewide Mercury TMDL – Cookstove Lake

ATTAINS TMDL ID: R8-SD-2026-04

LOCATION: Stanley County, South Dakota

IMPAIRMENTS/POLLUTANTS: The TMDL submittal addresses one lake that is impaired due to high concentrations of mercury in fish tissue. Designated uses that are not being attained include fish and wildlife propagation, recreation, and stock watering.

WATERBODY/POLLUTANTS ADDRESSED IN THIS TMDL ACTION

Assessment Unit ID	Waterbody Description	Pollutants Addressed
SD-BA-L-COOKSTOVE_01	Cookstove Lake	Mercury in fish tissue

BACKGROUND: The South Dakota Department of Agriculture and Natural Resources (DANR) submitted to the EPA the final 2026 Addendum to the South Dakota Statewide Mercury TMDL (Addendum) for Cookstove Lake, with a letter requesting review and approval dated August 18, 2026. The Addendum addresses one new assessment unit not approved as part of the original South Dakota Statewide Mercury TMDL on March 1, 2016 (also referred to as the Statewide Mercury TMDL).

The submittal included:

- Letter requesting the EPA’s review and approval of the TMDL
- Final TMDL report for 2026 Addendum to the South Dakota Statewide Mercury TMDL – Cookstove Lake

ACTION: Based on the EPA’s review of South Dakota’s TMDL submittal and other relevant information in the administrative record, the EPA approves the final mercury TMDL for Cookstove Lake

TMDL Approval Summary	
Number of TMDLs Approved:	1
Number of Parameters Addressed by TMDLs:	1

The following explains how the TMDL submission meets the statutory and regulatory requirements of TMDLs in accordance with CWA Section 303(d), and the EPA’s implementing regulations in 40 C.F.R. Part 130.

This TMDL decision rationale sets forth the EPA’s reasoning for approving South Dakota’s mercury TMDL for Cookstove Lake. The EPA has conducted a complete review of the state’s TMDL and supporting documentation and information. This document tracks the EPA’s guidelines (USEPA, 2002) that summarize the effective statutory and regulatory requirements relating to TMDLs (CWA Section 303(d) and 40 C.F.R. Part 130).

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

Cookstove Lake in Stanley County or SD-BA-L-COOKSTOVE_01 (sometimes referred to as Cookstove Dam) is a 2.42-acre impoundment in the Bad River basin in central South Dakota. The lake is located in National Grasslands south-southwest of Fort Pierre (Figure 1) and is one of many lakes in the nearly 16,000-acre Porcupine Creek watershed (hydrologic unit code [HUC] 12 101401022005). This shallow system with extensive shoreline vegetation is a multi-species warmwater fishery, including bluegill, yellow perch, and largemouth bass, and supports angling during both open-water and ice-fishing seasons (Section 3.1, *Cookstove Lake*).

Cookstove Lake was first listed as impaired due to elevated concentrations of mercury in fish tissue and placed on South Dakota's 303(d) list for non-attainment of the fish and wildlife propagation, recreation, and stock watering waters designated use in 2022. It was assigned a high priority (i.e., 1) for TMDL development on the EPA-approved 303(d) list (SD DANR, 2026). DANR documented this priority ranking information on page 1 of the submittal. There are no other known impairments for Cookstove Lake (SD DANR, 2026).

In 2016 DANR adopted and the EPA approved a Statewide Mercury TMDL (DANR, 2016). The Statewide Mercury TMDL currently includes 80 assessment units (AUs) – 70 AUs from the original 2016 TMDL submittal and an additional 10 AUs incorporated in subsequent addenda. Incorporating Cookstove Lake will result in 81 AUs covered by the Statewide Mercury TMDL (Section 1.0, *Introduction*). There are seven conditions that waterbodies must meet to obtain coverage under the Statewide Mercury TMDL (SD DANR, 2016). The seven conditions, or applicability criteria, are used to confirm that the assumptions and calculations of the original TMDL are valid and applicable for new AUs. The submittal addresses these conditions and demonstrates that Cookstove Lake is within South Dakota's jurisdiction, exhibits comparable conditions to the Statewide Mercury TMDL, and is expected to meet water quality standards when the Statewide Mercury TMDL and targets are met. Table 1 (page 2) of the submittal identifies each condition and where the condition is addressed in Cookstove Lake TMDL report.

The lake location is shown in Figure 1 and described in Section 2.0 (*Jurisdiction*) of the Addendum, which confirms there are no jurisdictional concerns for Cookstove Lake (meeting applicability criteria one and two). Sources of mercury loading to Cookstove Lake were described in Sections 4 (*Source Assessment – Point Sources*) and 5 (*Source Assessment – Nonpoint Sources*), building on the pollutant source analysis from the Statewide Mercury TMDL.

The statewide analysis of point sources conducted in Section 4 of the original Statewide Mercury TMDL found that permitted point sources account for 0.36% of the total existing statewide load and 0.81% of the total allowable load. The Addendum reviews the potential contribution from abandoned mines and point sources near Cookstove Lake. As noted in the Addendum, Cookstove Lake is not influenced by current or historic mining as there is no record of mining within Stanley County (Section 4.1, *Mining*; this meets applicability criterion four).

DANR also evaluated potential mercury loading from municipal separate storm sewer systems (MS4s) and other National Pollutant Discharge Elimination System (NPDES) permits (Section 4.2, *Municipal Separate Storm Sewer Systems*, and Section 4.3, *NPDES Permitted Sources*, respectively). The MS4s in the state (Table 3) have no direct impact on Cookstove Lake and are therefore not a potential source of mercury. In the Statewide Mercury TMDL, DANR assumed that permitted point sources are not causing localized mercury impairments to lakes because state permitting requirements (ARSD 74:51:01:27) mandate that water quality standards be met at the point of discharge (i.e., no mixing zone allowed) if the point source discharges to a lake (SD DANR, 2016) (meeting acceptability criterion five, since Cookstove Lake is not a river or stream). No permitted facilities are located in the Porcupine Creek watershed (HUC12 101401022005) that contributes to Cookstove Lake; therefore, the statewide aggregated wasteload allocations (WLAs) remain unchanged and no additional WLAs are included in this Addendum.

As described in the Statewide Mercury TMDL, DANR investigated nonpoint sources of mercury by monitoring and modeling atmospheric deposition rates. This information was used to understand geographical and seasonal patterns of mercury deposition and derive annual loading rates. Monitoring results can be found in Appendix B of the Statewide Mercury TMDL and REMSAD model results are summarized in Figures 21-22 and Table 21 (SD DANR, 2016). Modeling runs were conducted by the EPA and provided to DANR for TMDL analysis. The results indicated that the largest (93%) source of mercury either originates from outside the modeling domain (continental U.S. plus parts of Canada and Mexico) or originates within the modeling domain but is transported outside to become part of the global pool. In-state emission sources were shown to account for only 0.12% of South Dakota's total atmospheric mercury deposition. DANR assumed that 30% of the total atmospheric mercury deposition is non-anthropogenic in origin and represents natural background conditions, which is consistent with other statewide mercury TMDLs and scientific literature (SD DANR, 2016). DANR summarizes these nonpoint sources in Section 5.0 (*Source Assessment – Nonpoint Sources*) and finds that Cookstove Lake does not have any unique nonpoint sources that differ from the Statewide Mercury TMDL.

DANR's conclusion that mining activities, MS4s, and NPDES permitted sources are not causing a localized mercury impairment is supported by the fish tissue comparison discussed in Section 3.1 (*Cookstove Lake*). Fish tissue mercury concentrations in Cookstove Lake are similar to the statewide dataset used in the Statewide Mercury TMDL, thereby suggesting similar sources of mercury and TMDL assumptions for all waters (meeting acceptability criterion seven).

Three fish species were sampled from the lake, including largemouth bass which was identified as the primary indicator species as it exhibits the highest mercury concentrations. Fish tissue mercury data collected from Cookstove Lake demonstrate a positive relationship between fish length and mercury concentration in largemouth bass, which is consistent with the bioaccumulation pattern used in the statewide mercury analysis. The slope of the regression indicates an estimated increase of 0.16 milligram per kilogram (mg/kg) in tissue mercury concentration for every 100 mm increase in largemouth bass length (Figure 2). Of the ten largemouth bass collected in 2021, half exceeded the numeric target for methylmercury of 0.3 mg/kg (Appendix A, *Individual Fish Collected from Cookstove*) and the average methylmercury concentration was also above the target (Figure 2).

A fish tissue concentration was estimated for the largemouth bass standard length fish (Standard Length Fish [SLF]; defined in the Statewide Mercury TMDL as 384 millimeters) using the regression line in Figure 2. The estimated Cookstove Lake concentration of 0.505 mg/kg methylmercury is below the 0.878 mg/kg maximum SLF fish tissue concentration from the Statewide Mercury TMDL, demonstrating that conditions in Cookstove Lake are comparable to the rest of the state. This ensures that the original TMDL and load reduction factor will be sufficient to meet water quality standards in Cookstove Lake, meeting applicability criteria three and six.

Assessment: The EPA concludes that DANR adequately identified the impaired waterbody; the pollutant of concern; the priority ranking; the identification, location and magnitude of the pollutant sources; and the important assumptions and information used to develop the TMDL.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The *Water Quality Standards* section (Section 6.0) describes the water quality standards applicable to the impaired segment with citations to the relevant South Dakota regulations. SD-BA-L-COOKSTOVE_01 is designated the following beneficial use:

- fish and wildlife propagation, recreation, and stock watering.

Section 2.0 of the Statewide Mercury TMDL also contains a full discussion of water quality standards including beneficial uses and criteria in South Dakota (ARSD 74:51) (SD DANR, 2016). In 2016, the EPA approved DANR's request to recognize 0.3 mg/kg total methylmercury in fish tissue as a water quality criterion for Clean Water Act purposes assigned to designated use categories 2, 3, 4, 5, 6, and 9. South Dakota also retained existing numeric criteria for mercury as measured in the water column for human health and aquatic life designated use categories (summarized in Table 5). To ensure that the fish tissue criterion is protective of all uses and water column criteria, DANR conducted a bioaccumulation factor (BAF) analysis, as discussed in Section 2.0 of the Statewide Mercury TMDL. This analysis confirmed that the human health criterion of 0.3 mg/kg translates to total mercury levels in the water column below the most stringent South Dakota water quality criterion (0.050 micrograms per liter [µg/L]). Establishing the TMDL to meet the methylmercury criterion will result in protection of all other mercury related criteria and uses (SD DANR, 2016).

The use associated with Cookstove Lake is presented in Table 6. The Addendum clearly links Cookstove Lake's beneficial uses to numeric and narrative mercury criteria. The Statewide Mercury TMDL and Addendum directly use South Dakota's numeric criterion of 0.3 mg/kg total methylmercury in fish tissue as the TMDL target (Section 6.0, *Water Quality Standards*). This assumes steady-state conditions and relies on the principle of proportionality to determine the load reduction factors needed to meet the fish tissue TMDL target, which EPA recognizes as a reasonable assumption. As explained in Section 3.3 of the Statewide Mercury TMDL, DANR expects that, according to the principle of proportionality, a reduction in mercury emissions will result in a proportional reduction in deposition, mercury loading to waterways, and fish tissue methylmercury concentrations (SD DANR, 2016). Following this logic, DANR

calculated that existing fish tissue methylmercury concentrations statewide require a 55.2 percent reduction to meet the 0.3 mg/kg criterion and then applied that same reduction factor to the existing total source load to derive the TMDL (Section 6.0, *Water Quality Standards*).

The Statewide Mercury TMDL and Addendum are consistent with South Dakota antidegradation policies because they provide recommendations and establish pollutant limits at water quality levels necessary to meet criteria.

Assessment: The EPA concludes that DANR adequately described its applicable water quality standards and numeric water quality target for this TMDL.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

The Addendum relies largely on the technical analysis completed and documented in the Statewide Mercury TMDL. DANR developed the loading capacity at a statewide scale; however, the TMDL is still written to meet water quality standards in individual waters. DANR demonstrated this by relating the loading capacity back to numeric water quality criteria that apply statewide (i.e., there are no unique, basin-specific mercury criteria). Conservative decisions made throughout the process result in a statewide TMDL that may be more protective than necessary to meet water quality standards in some waters. The TMDL loading capacity is equal to the sum of the allocations and can be simplified as: Implicit MOS (0 kilograms per year [kg/yr]) + WLA (4.84 kg/yr) + LA (590.48 kg/yr) = TMDL (595.32 kg/yr). This balanced TMDL equation, additional source category breakouts, and derivation steps are included in Section 10.0 of the original Statewide Mercury TMDL, along with a calculation of daily loads for the TMDL (3.21 kilograms per day [kg/day]) (SD DANR, 2016).

The Addendum demonstrates that Cookstove Lake meets all seven conditions outlined in the Statewide Mercury TMDL's revision process, demonstrating that it is appropriate for coverage under the Statewide Mercury TMDL (Sections 1.0 through 6.0; specific sections are identified in Table 1). The seven conditions, or applicability criteria, are used to confirm that the assumptions and calculations of Statewide Mercury TMDL are valid and demonstrate that the new assessment unit is within South Dakota's jurisdiction, exhibits comparable conditions to the original waters, and is expected to meet water quality standards when the Statewide Mercury TMDL and targets are met. The majority of the Addendum is devoted to comparing mercury concentrations of fish tissue collected from Cookstove Lake to the conclusions in the Statewide Mercury TMDL.

Appendix A of the Addendum provides all fish tissue measurements for Cookstove Lake. These data are summarized in Figure 3 to assess bioaccumulation and compare tissue concentrations by species. The average existing concentration for largemouth bass (the primary indicator species) exceeded the numeric target, while bluegill and yellow perch averages are below the target. Figure 2 evaluates largemouth bass data compared to fish length. The Statewide Mercury TMDL analysis relied primarily on walleye data which was more prevalent statewide than largemouth bass data, however, Cookstove Lake only has largemouth bass data. EPA understands both are predatory species with comparable

methylmercury bioaccumulation rates, and it is acceptable to substitute species depending on data availability.

The Statewide Mercury TMDL accounted for variability in mercury concentrations from fish of different age and length by using the SLF concept. DANR defined the SLF as a 384 mm walleye with a methylmercury concentration of 0.878 mg/kg (SD DANR, 2016). Any waterbody with a fish flesh concentration exceeding this benchmark is void from coverage under the Statewide Mercury TMDL and will need to be addressed under a waterbody specific TMDL.

The SLF for largemouth bass in Cookstove Lake was 0.505 mg/kg, which is below the existing condition of 0.669 mg/kg calculated in the original TMDL, verifying that conditions in Cookstove Lake are similar to the statewide dataset. The Addendum documents that applying a 55.2 percent reduction results in a fish tissue concentration of 0.226 mg/kg, which is below the target (Sections 6.0 and 7.0). This condition ensures that the original TMDL and load reduction factor will be sufficient to meet water quality standards in Cookstove Lake.

The Statewide Mercury TMDL included a discussion on critical conditions and seasonality (Section 9.0 of SD DANR, 2016) and considered wet deposition during periods of rainfall. Other factors that influence mercury methylation and bioaccumulation in the food chain are wetland areas, Secchi depth, and variation in lake levels since wetting and drying impacts the methylation process. The TMDL was initially calculated as an annual load to account for year-round deposition and seasonal characteristics of the lakes and drainages but is also expressed as a daily load (SD DANR, 2016).

Assessment: The EPA concludes that DANR's loading capacity was calculated using an acceptable approach or water quality model, used observed concentration data and a water quality target consistent with numeric water quality criteria, and has been appropriately set at a level necessary to attain and maintain the applicable water quality standards. The pollutant caps have been expressed as daily limits. The critical conditions were described and factored into the calculations and were based on a reasonable approach to establish the relationship between the target and pollutant sources.

4. Load Allocation

Section 5.0 of the Addendum summarizes the nonpoint sources associated with mercury loading. In the Statewide Mercury TMDL, DANR identified and quantified sources of nonpoint source pollution through in-state atmospheric deposition monitoring and the REMSAD computer model. Using this information, DANR estimated the state receives 1,326.3 kg of mercury per year from atmospheric nonpoint sources of pollution statewide (see Section 5.1.2 and Section 10.0 of the Statewide Mercury TMDL; SD DANR, 2016). After attributing 30% of this load to natural background, the remaining human-derived nonpoint source load requires a 79% reduction to meet the atmospheric deposition LA (590.48 kg/yr) and the final TMDL loading capacity (595.32 kg/yr). All reductions in the TMDL are applied to this aggregated statewide LA representing anthropogenic loading from atmospheric deposition and reductions are expected through the implementation of international (Minamata Convention) controls

on mercury emissions, and unrelated operational adjustments to existing facilities in South Dakota (SD DANR, 2016).

Assessment: The EPA concludes that the LA provided in the TMDL submittal is reasonable and will result in attainment of the water quality standards.

5. Wasteload Allocations

DANR expanded upon the point source analysis conducted in Section 4 of the Statewide Mercury TMDL, which calculated the allowable stormwater and non-stormwater WLAs (SD DANR, 2016). Section 4.0 (*Source Assessment – Point Sources*) provides a more detailed review of the potential contribution from mines, MS4s, and other NPDES point sources associated with Cookstove Lake. This review confirmed that point sources are not causing localized mercury impairments; therefore, the WLAs derived in the original Statewide Mercury TMDL are appropriate.

DANR evaluated potential mining sources and found that Cookstove Lake is outside the sphere of influence from historical or present-day mining practices associated with the Black Hills region. Mining does not pose any concern as a mercury source. In the Statewide Mercury TMDL, DANR characterized the existing NPDES-regulated MS4 load based on the percentage of the South Dakota's land surface falling within MS4 boundaries relative to the atmospheric mercury deposition for the entire state. DANR estimated an aggregate allocation for all MS4s in the state, as identified in Table 17 of the Statewide Mercury TMDL, without applying a reduction factor (SD DANR, 2016). The Addendum listed the MS4s in the Statewide Mercury TMDL and confirmed that these permitted areas have no direct impact on Cookstove Lake (Table 3); therefore, MS4 areas do not pose a concern as a mercury source to Cookstove Lake.

DANR characterized the existing non-stormwater, NPDES-permitted, point sources in the Statewide Mercury TMDL and established an aggregate WLA that caps the statewide load at existing conditions (see Sections 4.3 and 6.0 of the Statewide Mercury TMDL; SD DANR, 2016). Appendix E of the Statewide Mercury TMDL lists all the non-stormwater NPDES-permitted facilities in South Dakota included within the aggregate WLA along with permit numbers and geographical locations (SD DANR, 2016). The Addendum confirms that there are no permitted facilities located in the Porcupine Creek watershed surrounding Cookstove Lake (HUC12 101401022005) (Section 4.3, *NPDES Permitted Sources*). Therefore, no additional facilities need to be considered as part of the WLA in the Statewide Mercury TMDL.

The EPA recognizes that aggregated WLAs are reasonable for this TMDL. Although the total contribution from permitted point sources appears to be very small, the EPA expects that while implementing the statewide WLAs, DANR will ensure that permitted point source discharges do not have a reasonable potential to cause or contribute to an exceedance of water quality standards.

Assessment: EPA concludes that the WLAs provided in the TMDL are reasonable, will result in the attainment of the water quality standards and will not cause localized impairments. The Statewide

Mercury TMDL accounts for all point sources contributing loads to impaired segments, upstream segments, and tributaries in the state. No additional WLAs are incorporated based on this Addendum.

6. Margin of Safety

As described in Section 8.0 of the Statewide Mercury TMDL (SD DANR, 2016), the TMDL incorporated an implicit margin of safety by following conservative approaches at numerous steps during TMDL development such as:

- Resampling waters with elevated fish tissue methylmercury concentrations more frequently than other waters. This results in a statewide fish tissue dataset that is biased towards egregiously impaired waters and a load reduction factor that is potentially greater than necessary for many waters. The Addendum notes that fish tissue concentrations below the methylmercury criterion are expected for Cookstove Lake once the loading reduction factor is met. DANR considers the difference between the criterion and projected tissue concentrations to be an added margin of safety.
- Selecting the 90th percentile SLF tissue concentration to represent existing conditions. This also overestimates the loading reductions needed for many waters.
- Focusing target attainment within a top predator species (walleye or a surrogate species such as largemouth bass) where methylmercury concentrations and bioaccumulation rates are highest. This protects humans consuming other fish species.
- Comparing fish tissue analyzed for total mercury concentration directly to the methylmercury TMDL target for listing decisions and TMDL calculations. This affords a level of protection because measurements of total mercury include other forms of mercury in addition to methylmercury.
- Setting allocations without accounting for reductions in sulfur emissions realized under the Clean Air Act which is expected to affect sulfate-reducing bacteria and lower methylation rates.

Assessment: The EPA concludes that the TMDL incorporates an adequate implicit margin of safety.

7. Seasonal Variation

The Addendum relies on the critical conditions and seasonal variation discussion contained in Section 9.0 of the Statewide Mercury TMDL (SD DANR, 2016). DANR supported a monitoring network of atmospheric mercury deposition stations across the state for multiple years to explore temporal and geospatial differences in mercury deposition. Results indicated a positive relationship between deposition and precipitation, but overall DANR determined that deposition rates were sufficiently uniform to establish a single TMDL representative of the entire state. Sediment cores from ten lakes were also reviewed for insight into mercury loading trends, but results indicated that mercury concentrations in upper lakebed sediments were highly variable and no conclusions were drawn from the sediment cores. In addition to a daily load, the loading capacity was expressed as an annual load which incorporates seasonal variation of flow and weather. Lastly, DANR also stated that the use of a

fish tissue TMDL target, representing the bioaccumulation of mercury throughout a fish's lifespan, inherently captures the variability of multiple seasons and critical conditions (SD DANR, 2016).

Assessment: The EPA concludes that seasonal variations were adequately described and considered to ensure the TMDL allocations will be protective of the applicable water quality standards throughout any given year.

8. Reasonable Assurances

DANR's framework restoration strategy is outlined in the Statewide Mercury TMDL (Section 11.0 of SD DANR, 2016). The loading analysis showed that nonpoint sources account for over 99% of the mercury loading to state waterbodies; therefore, the TMDL indicates that all reductions occur through the load allocations. The amount of mercury attributed to point sources (WLA) is small enough that reductions in any form or amount would not yield a measurable effect on fish tissue samples. Section 5.0 of the Statewide Mercury TMDL discusses various sources of mercury, noting an order of magnitude difference between in-state sources and atmospheric sources (SD DANR, 2016).

There are limited reductions that can be achieved in the state, and South Dakota has ranked low in mercury emissions. Various federal mandates are expected to achieve the majority of necessary load reductions. The Statewide Mercury TMDL stresses the importance of international regulatory controls on mercury emissions such as the United Nations Minamata Convention Agreement. This TMDL will largely be implemented through control of atmospheric sources; however, to address remaining smaller sources, DANR identifies implementation opportunities and evaluation programs for point sources (including dental offices, publicly owned treatment works, and MS4s) and solid waste (Section 11.0 of SD DANR, 2016).

Assessment: The EPA considered the reasonable assurances contained in the TMDL submittal and concludes that they are adequate to meet the load reductions. Nonpoint source load reductions are expected to occur through the implementation of best management practices ongoing and planned to begin in the future. Point sources with NPDES permits require that treatment is consistent with assumptions and requirements of WLAs for the discharges in the TMDL.

9. Monitoring Plan

The Addendum relies on the framework monitoring strategy outlined in Section 12.0 of the Statewide Mercury TMDL. DANR identified three monitoring categories. These future sampling efforts will address data gaps and evaluate progress towards meeting the TMDL target. The three categories of mercury monitoring are atmospheric deposition, fish tissue, and water column (SD DANR, 2016). EPA expects DANR to ensure permitted point source discharges do not have a reasonable potential to cause or contribute to an exceedance of water quality standards and stresses that collecting effluent data with sufficiently low detection limits is essential for making these determinations.

Assessment: The TMDL submittal includes a long-term monitoring commitment. Additional monitoring is important to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

10. Implementation

DANR's framework restoration strategy is outlined in the Statewide Mercury TMDL (Section 11.0 of SD DANR, 2016). Because the loading analysis showed that nonpoint sources, largely outside of South Dakota, account for over 99% of the mercury loading to state waterbodies, the TMDL indicates that all reductions occur through the LA and stresses the importance of international regulatory controls on mercury emissions such as the United Nations Minamata Convention Agreement. DANR also highlighted recent emission reductions observed at two South Dakota coal power plants (Ben French and SDSU) and in-state efforts to recycle mercury-containing solid waste products and avoid releases of mercury from these products into the environment. Pretreatment programs implemented by the larger publicly owned treatment plants also evaluate mercury in the wastewater entering their system.

Assessment: DANR discussed how information derived from the TMDL analysis process can be used to support implementation of the TMDL. The EPA is taking no action on the implementation portion of the TMDL submittal because implementation plans are not a required TMDL element.

11. Public Participation

The submittal explains the public engagement process DANR followed during development of the Addendum (Section 8.0). A draft TMDL report was released for public comment from July 10, 2026, to August 15, 2026. The opportunity for public review and comment was posted on DANR's website and announced in three local newspapers: Sioux Falls Argus Leader, Rapid City Journal, and Pierre Capitol Journal. No public comments were submitted.

Assessment: The EPA has reviewed DANR's public participation process. The EPA concludes that the state involved the public during the development of the TMDL and provided adequate opportunities for the public to comment on draft documents. No comments were submitted.

12. Submittal Letter

A transmittal letter with the appropriate information was included with the final TMDL report submission from DANR, dated August 18, 2026, and signed by Alan Wittmuss, Environmental Scientist Manager – TMDL Team Leader, Watershed Protection Program.

Assessment: The EPA concludes that the DANR's TMDL submittal clearly and unambiguously requested the EPA to act on the final TMDL in accordance with the Clean Water Act and the submittal contained all the necessary supporting information.