UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

September 28, 2022

Ms. Erin Holmes, Administrator
Watershed Management Bureau
NH Department of Environmental Services
29 Hazen Drive; P.O. Box 95
Concord, NH 03302-0095

Dear Ms. Holmes,

Thank you for the final submittal of the Total Maximum Daily Load (TMDL) for Total Phosphorus in Shellcamp Pond, NH. As stated in the TMDL report and letter of submittal, Shellcamp Pond is impaired for the aquatic life designated use due to Total Phosphorus and chlorophyll-a.

The U.S. Environmental Protection Agency (EPA) hereby approves the Shellcamp Pond TMDL for Total Phosphorus, which will ultimately address the aquatic life use impairments, including elevated levels of chlorophyll-a. EPA has determined that this TMDL meets the requirements of § 303(d) of the Clean Water Act (CWA) and of EPA's implementing regulations (40 CFR part 130). Attached is a copy of our approval documentation.

We commend your staff's efforts and involvement with our office to develop and finalize this TMDL. My staff and I look forward to continuing our work together to implement the requirements under Section 303(d) of the CWA. Should you have any questions, please do not hesitate to call Steve Winnett at (617) 918-1687.

Sincerely,

/s/

Ken Moraff, Director
Water Division

cc (electronic)
Ted Diers, Assistant Water Division Director, NH DES
Peg Foss, NH DES
Jackie LeClair, EPA
Steve Winnett, EPA

EPA REGION 1'S TOTAL MAXIMUM DAILY LOAD (TMDL) REVIEW

TMDL: Total Maximum Daily Load for Total Phosphorus in Shellcamp Pond, Gilmanton, NH

STATUS: Final

IMPAIRMENT/POLLUTANT: The aquatic life designated use is impaired due to excess chlorophyll-a (chl-a) and total phosphorus (TP). The lake impairments are attributed to excess phosphorus which is causing excess algal growth.

WATERBODY NAME AND SEGMENT ID NUMBER:

Shellcamp Pond: NHLAK700060201-05

REVIEWER: Steven Winnett (617-918-1687) winnett.steven@epa.gov

REVIEW ELEMENTS OF TMDLs

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. § 130 describe the statutory and regulatory requirements for approvable TMDLs. The following information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.

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

The TMDL analytical document must identify the waterbody as it appears on the State/Tribe's 303(d) list, the pollutant of concern and the priority ranking of the waterbody. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for EPA's review of the load and wasteload allocations that are required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and, (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae.

In 2010, the NH Department of Environmental Services (NHDES) identified Shellcamp Pond as a high priority for TMDL development and committed (to EPA) to develop a TMDL as soon as possible. Shellcamp Pond (NHLAK700060201-05) is listed on the 2020-2022 303(d) list as having an aquatic life use impairment due to elevated levels of total phosphorus (TP) and chlorophyll-a (chl-a). TP has been identified as the pollutant of concern. This TMDL is intended to cover the entire lake and its one beach.

The TMDL report includes a description of nonpoint sources. Categories of sources include watershed loading, atmospheric deposition, septic systems, waterfowl, and internal loading (i.e., recycling of phosphorus from benthic sediments). A thorough description of both the waterbody and the watershed (including land use) is also provided in the TMDL report.

Assessment: EPA concludes that the TMDL document meets the requirements for describing the waterbody, pollutant of concern, pollutant sources, and priority ranking. This TMDL is consistent with previously approved lake phosphorus TMDLs. The site-specific information provided in this submission, in conjunction with the documentation on the ENSR-LLRM model used to set the phosphorus target, satisfies the requirements for TMDL submission.

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

The TMDL submittal must include a description of the applicable State/Tribe water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the anti-degradation policy. Such information is necessary for EPA's review of the load and wasteload allocations that are required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable water quality standard is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.

The TMDL report includes a description of the applicable water quality standards, in this case narrative criteria for Class B waters that apply to nutrients (i.e., TP) and excess algal growth. The report also includes applicable designated uses and the State's antidegradation policy. A description of the process used to derive the numeric water quality target is provided in the TMDL report. The numeric water quality target is 12.0 µg/L TP.

A target of 12 µg/L TP is typically used for most lakes in New Hampshire unless the predicted phosphorous concentration under natural (pre-development) conditions is greater. 12.0 µg/L is the target TP concentration for mesotrophic lakes that will result in them meeting water quality criteria for nutrient-related impairments, including chlorophyll-a, low dissolved oxygen, and algal and cyanobacteria blooms. This is consistent with New Hampshire's water quality standards which states that Class B waters shall contain no phosphorus in such concentrations that would impair any existing or designated uses, unless naturally occurring.

Assessment: EPA concludes that NHDES has properly presented and interpreted its narrative water quality standard for phosphorus to set the appropriate load reduction targets. NHDES is directly applying the numeric target from the ENSR-LLRM water quality model to derive the TMDL target with a goal of reducing the phosphorus concentration to reflect natural conditions. This is a reasonable approach and consistent with New Hampshire water quality standards.

3. **Loading Capacity - Linking Water Quality and Pollutant Sources**

As described in EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating water quality standards (40 C.F.R. § 130.2(f) The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. § 130.2(i) The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for EPA's review of the load and wasteload allocations that are required by regulation.

In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 C.F.R. § 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet water quality standards. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that result in attaining and maintaining the water quality criterion and have an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards.

The loading capacity was established by running the ENSR-LLRM model with an in-lake target phosphorus concentration of 12.0 µg/L. Use of the ENSR-LLRM model represents an established and well documented procedure for calculating loading capacity in New England lakes. Further documentation of the ENSR-LRM model is provided in appendices to the TMDL report. The loading capacity was expressed as both an annual and daily load.

Critical conditions in Shellcamp Pond typically occur during summertime, when the potential for nuisance algal blooms is greatest. The loading capacity for total phosphorus was set to achieve desired water quality standards during this critical time-period and also provides adequate protection for designated uses throughout the year. This was accomplished by using a target concentration based on summer epilimnetic data and applying it as mean annual concentration in

the predictive models used to establish the mean annual maximum load. Since summer epilimnetic values are typically about 14% to 40% less than mean annual concentrations (Nurnberg 1996, 1998), an annual load allocation based on summer epilimnetic concentrations will be sufficiently low to protect designated uses impacted by total phosphorus during critical summer period.

Assessment: EPA concludes that the loading capacity was appropriately determined using an established and recognized water quality model applicable to the New England region. EPA New England also concludes that achieving the loading capacity will result in attainment of water quality standards during the critical summer season, when potential for nuisance algal blooms is greatest.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 C.F.R. § 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. § 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.

If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero (0) load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable water quality standard, and all nonpoint and background sources will be removed.

The entire TMDL load of 119.7 kg/yr or 0.33 kg/day, is included in the Load Allocation portion of the TMDL. Allocations and percent reductions for each source category are provided in the TMDL report. Source categories include watershed sub-basin loading, atmospheric deposition, septic systems, waterfowl, and internal recycling.

Assessment: EPA concludes that NHDES has identified and appropriately allocated loading to nonpoint sources of pollution in the watershed.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 C.F.R. § 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable water quality standard, and all point sources will be removed.

In preparing the wasteload allocations, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. But it is necessary to allocate the loading capacity among individual point sources as necessary to meet the water quality standard.

The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the State/Tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.

Since the Town of Gilmanton, NH is not regulated under the Municipal Separate Storm Sewer System (MS4) general permit, the WLA in this TMDL is set to zero. There are no other point sources in the watershed.

Assessment: EPA concludes that the WLA has been appropriately set to zero as the contributing watersheds are not within the MS4 community designation and there are no permitted point sources in the pond's watershed.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)). EPA guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

As discussed in the TMDL report, an in-lake target concentration of 12.0 µg/L of total phosphorus was used to determine the TMDL. Setting the TMDL based on an in-lake target concentration of 12.0 µg/L includes an implicit MOS because the target of 12.0 µg/L is primarily based on summer epilimnetic concentrations in the natural/predevelopment condition. This TMDL, however, is based on empirical models that predict mean annual TP lake concentrations assuming fully mixed conditions. Studies on other lakes indicate that mean annual concentrations can be 14% to 40% higher than summer epilimnetic concentrations (Nurnberg 1996, 1998). A value of approximately 15 µg/L could have been used in the models to determine the TMDL. However, to include a MOS, 12.0 µg/L was used. By setting the target equal to 12.0 µg/L in the model runs, an implicit MOS of approximately 20% is provided.

Assessment*:* EPA concludes that adequate margin of safety (MOS) is provided in the TMDL.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)).

As explained in the TMDL report, the Shellcamp Pond TMDL accounts for seasonal variation because the target load was developed to be protective of the most sensitive (i.e., biologically responsive) time of year (summer), when conditions most favor the growth of algae.

Assessment: EPA concludes that seasonal variation was appropriately considered in developing the TMDL.

8. Monitoring Plan

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), and EPA's 2006 guidance, Clarification Regarding "Phased" Total Maximum Daily Loads, recommend a monitoring plan when a TMDL is developed using the phased approach. The guidance indicates that a State may use the phased approach for situations where TMDLs need to be developed despite significant data uncertainty and where the State expects that the loading capacity and allocation scheme will be revised in the near future. EPA's guidance provides that a TMDL developed under the phased approach should include, in addition to the other TMDL elements, a monitoring plan that describes the additional data to be collected and a scheduled timeframe for revision of the TMDL.

NHDES recommends that Shellcamp Pond would benefit from continuing to participate in the NHDES Volunteer Lake Monitor Program (VLAP). It is also recommended that NHDES is consulted prior to implementation of any new monitoring requirements to help ensure that monitoring will achieve desired objectives.

Assessment: EPA agrees that continuing to have Shellcamp Pond in the VLAP would be beneficial to achieving the goals of the TMDL. EPA also acknowledges that having a monitoring plan in place at time of TMDL approval is not a required element for TMDL approval.

9. Implementation Plans

On August 8, 1997, Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist States/Tribes in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus

on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by EPA, they help establish the basis for EPA's approval of TMDLs.

EPA commends NHDES for providing implementation recommendations in the TMDL report, as this information is very helpful to municipalities and others in achieving the goals of the TMDL.

Assessment: NHDES has provided implementation recommendations in the TMDL report, however, it is not a required element for TMDL approval. EPA is taking no action on the implementation plan.

10. **Reasonable Assurances**

EPA guidance calls for reasonable assurances when TMDLs are developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for EPA to determine that the load and wasteload allocations will achieve water quality standards.

In a waterbody impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, States/Tribes are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997, Perciasepe memorandum, such reasonable assurances should be included in State/Tribe implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."

Reasonable assurance is provided for this TMDL through the following provisions, laws, and programs:

- RSA 485-A:12, which requires persons responsible for sources of pollution that lower the quality of waters below the minimum requirements of the classification to abate such pollution, will be enforced.

- To the extent resources are available; NHDES will work with watershed stakeholders to identify specific phosphorus sources within the watershed. Technical assistance is available to mitigate phosphorus export from existing nonpoint sources. Requests for Clean Water Act Section 319 (nonpoint source pollution program) funding to implement specific BMPs within the watershed typically receive high priority. The NHDES Stormwater Manual provides information on site design techniques to minimize the impact of development on water quality as well as BMPs for erosion and sediment

control and treatment of post-construction stormwater pollutants. Also of use to municipalities is the Innovative Land Use Planning Techniques Handbook, which provides model municipal ordinances including one on post-construction stormwater management. Both documents are accessible on the NHDES website. NHDES staff also provide assistance by working with Lake Associations to identify LID projects that would qualify for 319 funding.

- Per RSA 483-A:7 Lakes Management and Protection Plans, the lakes coordinator and the Office of Energy and Planning, in cooperation with regional planning agencies, and appropriate council on resources and development agencies, shall provide technical assistance and information in support of lake management and local shoreland planning efforts consistent with the guidelines established under RSA 483-A:7, and compatible with the criteria established under RSA 483-A:5**.**

- For lakes included in the NHDES Volunteer Lake Assessment Program, NHDES staff typically meet with participants on an annual basis during field sampling visits and annual workshops at which time discussions can be held regarding TP reduction opportunities and how to secure 319 grants where eligible. Shellcamp Pond would benefit from participation in the NHDES VLAP Program.

Assessment: NHDES has provided adequate reasonable assurance for the reductions in nonpoint source loading required by this TMDL.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each State/Tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 C.F.R. § 130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval must describe the State/Tribe's public participation process, including a summary of significant comments and the State/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. § 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for either by the State/Tribe or by EPA.

Stakeholders including the Town of Gilmanton Officials (Town Administrator, Town Clerk), Conservation Commission members and local stakeholders were contacted in the beginning of 2021 to inform them about the development of this TMDL. Due to Covid 19, the Town did not want a presentation of this TMDL at a public meeting. All information was provided electronically and by phone. The Public Notice of the Draft Report was posted on Town bulletin board and both the Public Notice and the Draft TMDL Report were posted on the Town of

Gilmanton's website. There was a 31-day public comment period that began on August 22, 2022. Paper copies of the report were made available upon request. NHDES received from US EPA, which it satisfactorily responded to in the final submission of the TMDL document.

Assessment: EPA concludes that NHDES has provided adequate opportunities for the public to comment on the TMDL and responded satisfactorily to those it received.

12. Submittal Letter

A submittal letter should be included with the TMDL analytical document and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody, the pollutant(s) of concern, and the priority ranking of the waterbody.

The NHDES provided a letter dated September 26, 2022, formally submitting the Shellcamp Pond TMDL for EPA review and approval.

Assessment:

EPA concludes that the submittal letter and TMDL report includes the necessary information for EPA approval.

	Data for entry in EPA's National TMDL Tracking System								
TMDL Name *			Final Total Maximum Daily Load for Phosphorus for Shellcamp Pond, Gilmanton, NH						
Number of TMDLs*			1						
Type of TMDLs*			Nutrients (phosphorus)						
Number of listed causes/parameters (from 303(d) list)			2						
Lead State			NH						
TMDL Status			Final						
	Individual TMDLs listed below								
Action ID#	Segment name	Segment ID #	TMDL, Protection Plan, OR Alternative*	Pollutant name	Impairment PARAMETERS/Cause(s)name	Pollutant endpoint	Unlisted ?	NH DES Point Source & ID#	Listed for anything else?
R1_NH_2022_1	Shellcamp Pond	NHLAK700060201-05	TMDL	Total Phosphorus	Chlorophyll a Total Phosphorus	12.0 ug/L phosphorus	N	N/A	N
TMDL Type			Nonpoint Sources						
Establishment Date (approval)*			Sep 28, 2022						
Completion (final submission) Date			Sep 26, 2022						
Public Notice Date			Aug 22, 2022						
EPA Developed			No						
Towns affected* (in alphabetical order)			Gilmanton						

*Abbreviations:
TMDL = TMDL
Protection Plan = PP
Alternative Restoration Approach = Alt