

1980

TOTAL MAXIMUM DAILY LOAD

WATER QUALITY MANAGEMENT PLAN COMPONENT
Department of Environmental Quality
811 Southwest Sixth Avenue, Portland, OR 97204
Telephone: (503) 229-5696

Developed pursuant to ORS 468.730 and The Federal Clean Water Act

WATER BODY SEGMENT:

Clear Lake near Florence

RECEIVING SYSTEM INFORMATION:

Basin: Mid Coast
Subbasin: *Siuslaw*
County: Lane

**SPECIAL WATER QUALITY VALUE
TO BE PROTECTED:**

High clarity

APPLICABLE RULES:

OAR 340-41-270
OAR 340-41-006

TMDL PARAMETER:

Total Phosphate as Phosphorus

SOURCES COVERED BY THIS TMDL:

Source Number	Allocation Type	Source Description
001	IA	Collard Lake
002	IA	Clear Lake
003	WIA	Clear Lake Point Sources
004	IA	Department Reserve Allocation and Background

WATER QUALITY MANAGEMENT ACTIVITIES AND IMPLEMENTATION

Until this TMDL is modified, point source permits will be issued only if they include limits complying with the established waste loads. Nonpoint sources will be addressed through specific plans approved by the Department pursuant to the requirements of OAR 340-41-270. (c) All requirements, limitations, and conditions are set forth in the attached schedules as follows:

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X

SCHEDULE A

Pollutant Discharge limits not to be Exceeded

1. Pollutant Discharge Limitations not to be Exceeded After TMDL Issuance (Limits based on existing conditions prior to implementation of any further controls).

ANNUAL PHOSPHORUS LOADS
(pounds per year)

<u>Source Number</u>	<u>Source Description</u>	<u>Limitations</u>
Space → 001	Collard Lake	123
002	Clear Lake	241
003	Clear Lake Point Sources	0.0
004	Department Reserve Allocation/Background (For Clear Lake)	192

- a. The load allocation for Collard Lake is based upon a total phosphorus concentration of 14.4 ug/l in the epilimnion and a Gilliom sensitivity factor of 0.37 [$2.205 \times 14.4 / 0.37 = 86$] and adding to this the anticipated future loading from the existing on-site sewage disposal systems [$86 + (0.88 \times 42) = 123$]. This is based upon 42 existing houses in the Collard Lake subdivisions, 0.88#/yr. of additional phosphorus to be discharged by these systems, and that the Collard Lake subdivisions are the only source of phosphorus into Collard Lake.
- b. The load limitation for Clear Lake is based upon a total phosphorus concentration of 7.8 ug/l in the lake's epilimnion and a sensitivity factor of 0.079 [$2.205 \times 7.8 / 0.079 = 218$] and adding to this the anticipated future loading from the existing on-site sewage disposal systems in the Collard Lake subdivisions and else where in the watershed [$218 + (0.52 \times 42 \times 0.88) + (4 \times 0.88) = 241$]. This is based on the assumptions in a. above and four existing houses elsewhere in the watershed each to add 0.88 #/yr. of phosphorus.
- c. Department Reserve and Background total phosphorus is based upon subtracting the calculated loadings on Clear Lake from existing development from 218.3 pounds per year.

The calculated load for Clear Lake is based adding the contribution from the existing Collard Lake development multiplied by 0.52 (Collard to Clear Lake factor) to that contributed by 4 existing houses located in the watershed, but outside the subdivisions. Each of the 4 existing houses is assumed to contribute 0.88 pounds per year of total phosphorus from on-site sewage disposal systems and 0.28 pounds per year from storm runoff. The storm runoff component assumes one acre of developed land associated with each house outside the subdivisions and areal loading rate of 30 kilograms/km²/year for this residential development.

The calculated load from Collard Lake due to development is based on the assumption of 42 houses each contributing 0.88 pounds per year of total phosphorus into Collard Lake from on-site sewage disposal systems and 0.11 pounds per year being contributed into the lake as a result of storm runoff from residential development in the subdivisions. The runoff loading assumes 1/4 acre development and a 50 kilograms/km²/year areal loading rate.

SCHEDULE B

Minimum Monitoring and Reporting Requirements (unless otherwise approved in writing by the Department)

Ambient Monitoring. A lake water quality monitoring program shall be operated to evaluate the effectiveness of the TMDL and to guide development of any additional control strategies. The ambient monitoring program shall consist of two water sample collections on two separate dates at least a month apart. The sample collections shall occur between May 1 and September 30 and include a minimum of 6 water samples collected within the epilimnion of Clear Lake. The samples shall be analyzed for pH, total phosphorus, dissolved ortho phosphorus, chlorophyll a, NO₂ + NO₃-nitrogen, temperature, and turbidity.

SCHEDULE C

Compliance Conditions and Schedules

None

SCHEDULE D

Special Conditions

1. Unless otherwise approved by the Commission, the total phosphorus maximum annual loading for the Clear Lake watershed shall be deemed exceeded if the median concentration of total phosphorus from samples collected in the epilimnion between May 1 and September 30 exceed 9 micrograms per liter during two consecutive years. $[(241\#/year/2.205\#/kg) \times 0.079 = 8.6 \text{ rounds up to } 9]$
2. Lane County or any other jurisdiction shall not issue permits allowing connection of new development in the Clear Lake watershed to a sewerage facility and the Department or its contract agent shall not issue on-site sewage system construction installation permits or favorable site evaluation reports for on-site sewage systems to serve property within the Clear Lake watershed until a plan is submitted to and approved by the Department showing how total phosphorus loadings limitations required by OAR 340-41-270 will be achieved and maintained. The plan shall include, but not be limited to, the following:

- a. Projected phosphorus loadings for existing development and future planned development within the Clear Lake watershed. Technical bases for the projections shall be cited. The plan shall include phosphorus loadings from storm runoff during and after construction, on-site sewage disposal systems and other management activities in the watershed including, but not limited to, forest harvesting.
 - b. Adopted ordinances as necessary to carry out the provisions of the plan.
 - c. Agreements, contracts and other information as needed to show how and what entity will effectively implement each provision of the plan.
3. The plan required by condition 2 of this Schedule shall address necessary controls to reduce phosphorus loadings into Collard Lake to levels less than 60# per year. The Department may approve a plan with annual loadings greater than 60 # per year but only if the plan demonstrates that controls necessary to achieve less than 60 # per year are unreasonable and overly burdensome.
 4. If the plan required by condition 2 proposes that Clear Lake and/or Collard Lake loading limits be increased from levels established in Schedule A of this document, the plan shall include the social and economic justification for such increases as required by Oregon Administrative Rule (OAR) 340-41-026. The justification shall show the costs of achieving the loading limits established in Schedule A as well as the economic and social benefits of increasing the loads. The Commission shall not approve any plan that will not achieve a lake loading limit for Collard Lake of 140 # or less of phosphorus per year.¹ The Commission shall not approve any plan that will not achieve a lake loading limit for Clear Lake of 251 # or less of phosphorus per year.²
 5. No construction of a sewerage facility to serve the Clear Lake watershed or a portion thereof shall begin until or unless:

1 The 140 # per year phosphorus loading limitation for Collard Lake was chosen on the basis of maintaining Collard Lake in a mesotrophic state. The Department believes that 60 #/yr. are necessary to reach oligotrophy and 149 #/yr. would cause eutrophy. Loading levels between 60#/yr. and 149 #/yr. will keep Collard Lake in a mesotrophic state. To provide a safety factor, the Department believes it prudent to allow only 90% of the difference in annual loading between oligotrophy and eutrophy. [$0.9 \times (149 - 60) + 60 = 140$]

2 According to Gilliom's equations, a lake loading of 251 pounds per year would create a 9 ug/l phosphorus concentration in Clear Lake. The boundary between oligotrophy and mesotrophy would be 10 ug/l. The figure of 9 ug/l was chosen to provide a 10% safety factor to assure that the boundary of oligotrophy is not reached.

- (a) The facilities plan report and engineering plans and specifications have been approved in writing by the Department,
 - (b) It is constructed and operated by a municipality with authority for the operation and maintenance of sewerage facilities.
 - (c) Before construction starts, the municipality shall demonstrate that it has a reliable source of funding to assure proper construction, operation, maintenance, and replacement of sewerage control facilities.
6. No on-site sewage system construction installation permits, favorable site evaluation reports, or sanitary sewer connection permits shall be issued until the plan required in Schedule B of this document for monitoring the water quality of Clear Lake is submitted to and approved by the Department. The plan shall include contracts or memorandums of agreement that assure that the monitoring will be conducted in perpetuity.
7. Unless it is demonstrated that stormwater runoff treatment and control systems are not necessary to meet the total maximum annual loading limits for phosphorus, any off-site or on-site control facilities for stormwater quality control necessary to comply with this total maximum annual load limits shall be under the control of a municipality.