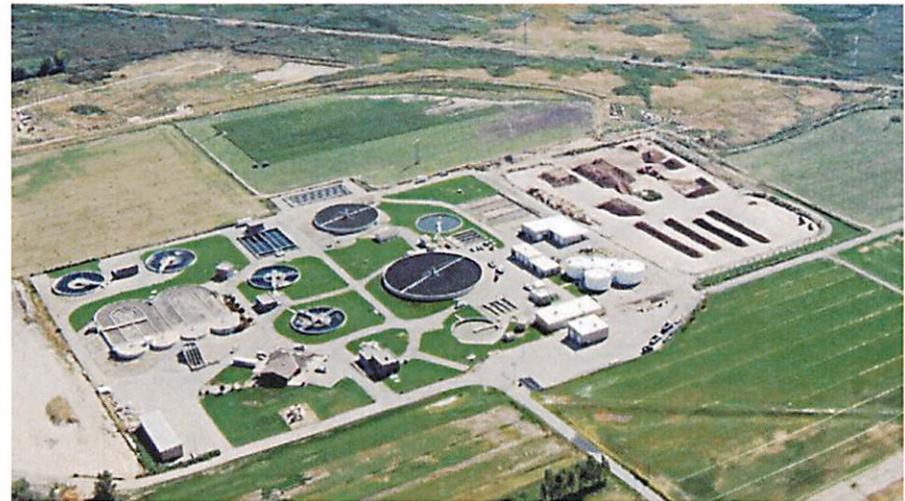


# UDWQ's Approach to Reducing Phosphorus Loading

## Non-Lagoon Treatment Works (Mechanical Plant)

### Criteria:

1. Discharge to waters of the state
2. Technology-based Phosphorus Effluent Limits (TBPEL)
  1. Produce effluent less than or equal to the annual mean of 1.0 mg/l if TP
3. Meet limit by Jan.1, 2020



# UDWQ's Approach to Reducing Phosphorus Loading

## Variations for TBPEL and Phosphorus Loading Cap

### Criteria:

1. An existing TMDL has allocated a total phosphorus wasteload to a treatment works.
  1. No TBPEL applied
  2. No loading cap applied
2. Owner can demonstrate a financial hardship greater than 1.4% of MAGI after inclusion of grants and loans
3. Owner can demonstrate that TBPEL or loading cap is clearly unnecessary to protect water of the state



Utah Department of Environmental Quality  
 Division of Water Quality  
 TMDL Section  
 Beaver River Watershed TMDL

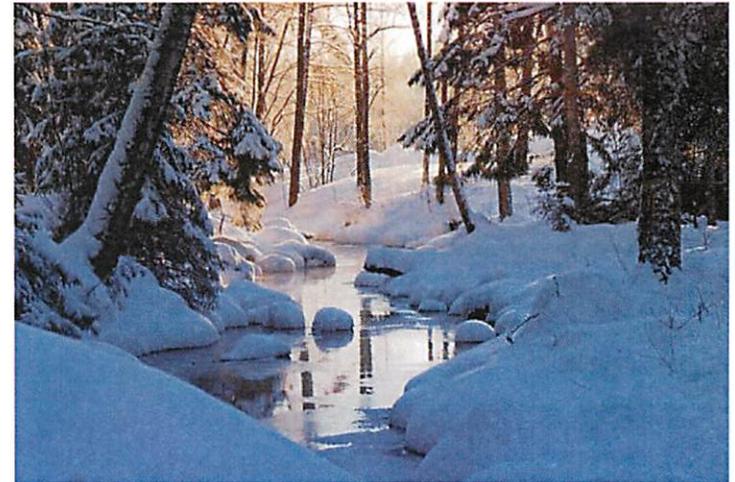
Waterbody ID	Beaver River, Minersville Reservoir, Puffer Lake, LaBaron Reservoir, and Kents Lake
Location	Beaver County, Southwest Central Utah
Pollutants of Concern	Total Phosphorus, Noxious Aquatic Plants, Riparian Habitat Alteration, Dissolved Oxygen, and Temperature
Impaired Beneficial Uses	Class 3A: Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.
Loading Assessment	Total Phosphorus in Minersville Reservoir
Current Load	8986 kg/yr
TMDL Target Load	2719 kg/yr
Load Reduction	6187 kg/yr
Defined Targets/Endpoints	<ul style="list-style-type: none"> <li>- Develop 80 Animal Waste Mgt. Systems</li> <li>- 0.05 mg/L Total phosphorus concentration in stream and 0.025 mg/L in lakes</li> <li>- Trophic State Index values of 40-50 for lakes</li> <li>- Shift from blue-green algal dominance (noxious aquatic plants)</li> <li>- Shift from sediment and organic enrichment tolerant macroinvertebrates in Beaver River</li> <li>- No grazing below Minersville Res. high water line</li> <li>- Stabilize 24 miles of streambank and restore 65 miles of riparian areas along Beaver River</li> <li>- Dissolved oxygen &gt; 4.0 mg/L, one day average (for &gt;50% of water column in lakes)</li> </ul>
Implementation Strategy	<ul style="list-style-type: none"> <li>Develop Comprehensive Nutrient Management Plans</li> <li>Improve irrigation efficiency</li> <li>Install instream structures to protect streambanks</li> <li>Establish filter strips of vegetation in riparian areas</li> <li>Implement best grazing management principles</li> </ul>
This document is identified as a TMDL for waters in the Beaver River drainage and is officially submitted to U.S. EPA to act upon and approve as TMDLs for those waters.	

# UDWQ's Approach to Reducing Phosphorus Loading

## Variations for TBPEL and Phosphorus Loading Cap

### Criteria:

4. Owner can demonstrate that phosphorus reduction can be achieved using innovative alternatives approaches such as:
  1. Water Quality trading
  2. Seasonal offsets
  3. Effluent reuse
  4. Land application
  
5. Any variations must be made by January 1, 2018

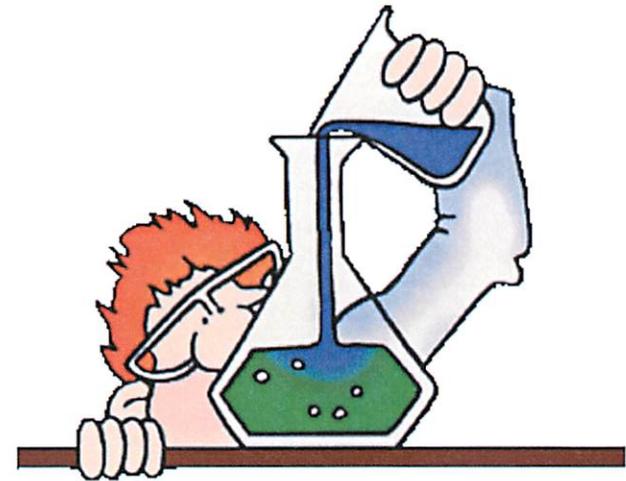


# UDWQ's Approach to Reducing Phosphorus Loading

## Monitoring

### A Minimum of Monthly Monitoring

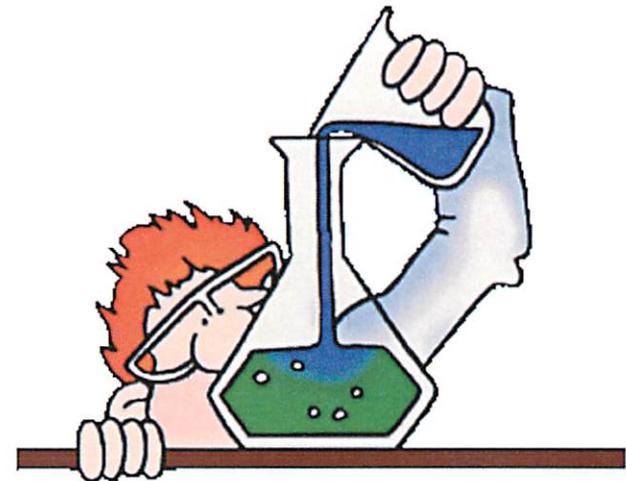
1. Influent Stream
  - Total Phosphorus (as P)
  - Total Kjeldahl Nitrogen (as N)
2. Effluent Stream
  - Total Phosphorus and orthophosphate (as P)
  - Ammonia
  - Nitrate-nitrite
  - Total Kjeldahl Nitrogen (as N)



# UDWQ's Approach to Reducing Phosphorus Loading

## Monitoring

3. Sampling shall be based on the following
  1. 24-hour composite samples using a automatic sampler
  2. Minimum of four grab samples collected two hours apart.
4. Monitoring is self-implemented beginning July 1, 2015



## **R317. Environmental Quality, Water Quality.**

### **R317-1. Definitions and General Requirements.**

#### **R317-1-3. Requirements for Waste Discharges.**

##### **3.1 Compliance With Water Quality Standards.**

All persons discharging wastes into any of the waters of the State shall provide the degree of wastewater treatment determined necessary to insure compliance with the requirements of Rule R317-2 Water Quality Standards, except that the Director may waive compliance with these requirements for specific criteria listed in Rule R317-2 where it is determined that the designated use is not being impaired or significant use improvement would not occur or where there is a reasonable question as to the validity of a specific criterion or for other valid reasons as determined by the Director.

##### **3.2 Compliance With Secondary Treatment Requirements.**

All persons discharging wastes from point sources into any of the waters of the State shall provide treatment processes which will produce secondary effluent meeting or exceeding the following effluent quality standards.

A. The arithmetic mean of BOD values determined on effluent samples collected during any 30-day period shall not exceed 25 mg/l, nor shall the arithmetic mean exceed 35 mg/l during any 7-day period. In addition, if the treatment plant influent is of domestic or municipal sewage origin, the BOD values of effluent samples shall not be greater than 15% of the BOD values of influent samples collected in the same time period. As an alternative, if agreed to by the person discharging wastes, the following effluent quality standard may be established as a requirement of the discharge permit and must be met: The arithmetic mean of CBOD values determined on effluent samples collected during any 30-day period shall not exceed 20 mg/l nor shall the arithmetic mean exceed 30 mg/l during any 7-day period. In addition, if the treatment plant influent is of domestic or municipal sewage origin, the CBOD values of effluent samples shall not be greater than 15% of the CBOD values of influent samples collected in the same time period.

B. The arithmetic mean of SS values determined on effluent samples collected during any 30-day period shall not exceed 25 mg/l, nor shall the arithmetic mean exceed 35 mg/l during any 7-day period. In addition, if the treatment plant influent is of domestic or municipal sewage origin, the SS values of effluent samples shall not be greater than 15% of the SS values of influent samples collected in the same time period.

C. The geometric mean of total coliform and fecal coliform bacteria in effluent samples collected during any 30-day period shall not exceed either 2000 per 100 ml or 200 per 100 ml respectively, nor shall the geometric mean exceed 2500 per 100 ml or 250 per 100 ml respectively, during any 7-day period; or, the geometric mean of E. coli bacteria in effluent samples collected during any 30-day period shall not exceed 126 per 100 ml nor shall the geometric mean exceed 158 per 100 ml respectively during any 7-day period. Exceptions to this requirement may be allowed by the Director where domestic wastewater is not a part of the effluent and where water quality standards are not violated.

D. The effluent values for pH shall be maintained within the limits of 6.5 and 9.0.

E. Exceptions to the 85% removal requirements may be allowed where infiltration makes such removal requirements infeasible and where water quality standards are not violated.

F. The Director may allow exceptions to the requirements of Subsections R317-1-3.2.A, R317-1-3.2.B, and R317-1-3.2.D where the discharge will be of short duration and where there will be no significant detrimental effect on receiving water quality or downstream beneficial uses.

G. The Director may allow that the BOD5 and TSS effluent concentrations for discharging domestic wastewater lagoons shall not exceed 45 mg/l for a monthly average nor 65 mg/l for a weekly average provided the following criteria are met:

1. the lagoon system is operating within the organic and hydraulic design capacity established by Rule R317-3;
2. the lagoon system is being properly operated and maintained;
3. the treatment system is meeting all other permit limits;
4. there are no significant or categorical industrial users (IU) defined by 40 CFR Part 403, unless it is demonstrated to the satisfaction of the Director that the IU is not contributing constituents in concentrations or quantities likely to significantly affect the treatment works; and
5. a Waste Load Allocation (WLA) indicates that the increased permit limits would not impair beneficial uses of the receiving stream.

### 3.3 Technology-based Limits for Controlling Phosphorus Pollution.

#### A. Technology-based Phosphorus Effluent Limits (TBPEL)

1. All non-lagoon treatment works discharging wastewater to surface waters of the state shall provide treatment processes which will produce effluent less than or equal to an annual mean of 1.0 mg/L for total phosphorus.

2. The TBPEL shall be achieved by January 1, 2020.

#### B. Discharging Lagoons -Phosphorus Loading Cap

1. No TBPEL will be instituted for discharging treatment lagoons. Instead, each discharging lagoon will be evaluated to determine the current annual average total phosphorus load based on average flows and concentrations. Absent field data to determine these loads, they will be estimated by the Division.

2. A cap of 125% times the current average annual total phosphorus load will be established and referred to as phosphorus loading cap. Once the lagoon's phosphorus loading cap has been reached, the owner of the facility will have five years to construct treatment processes or implement treatment alternatives to prevent the total phosphorus loading cap from being exceeded.

#### C. Variances for TBPEL and Phosphorus Loading Caps

1. The Director may authorize a variance to the TBPEL or phosphorus loading cap under any of the following conditions:

a. Where an existing TMDL has allocated a total phosphorus wasteload to a treatment works, no TBPEL or phosphorus loading cap, as applicable, will be applied.

b. If the owner of a discharging treatment works can demonstrate that imposing the TBPEL or phosphorus loading cap would result in an economic hardship, an alternative TBPEL or phosphorus loading cap that would not cause economic hardship may be applied. "Economic hardship" for a publicly owned treatment works is defined as sewer service costs that, as a result of implementing a TBPEL or phosphorus loading cap, would be greater than 1.4% of the median adjusted gross household income of the service area based on the latest information compiled by the Utah State Tax Commission, after inclusion of grants, loans, or other funding made available by the Utah Water Quality Board or other sources. The Director will consider other demonstrations of economic hardship on a case-by-case basis.

c. If the owner of a discharging treatment works can demonstrate that the TBPEL or phosphorus loading cap are clearly unnecessary to protect waters downstream from the point of discharge, no TBPEL or phosphorus loading cap will be applied.

d. If the owner of the discharging treatment works can demonstrate that a commensurate phosphorus reduction can be achieved in receiving waters using innovative alternative approaches such as water quality trading, seasonal offsets, effluent reuse, or land application.

2. All variances to TBPEL and phosphorus loading caps shall be revisited periodically to determine if the rationale used to justify the conditions in Subsection R317-1-3.3.C remains applicable.

3. For treatment works required to implement TBPEL or a phosphorus loading cap, the demonstration under Subsection R317-1-3.3.C must be made by January 1, 2018. Unless this demonstration is made, the owner of the discharging treatment works must proceed to implement the TBPEL or phosphorus loading cap, as applicable, in accordance with, respectively, Subsections R317-1-3.3.A and R317-1-3.3.B.

#### D. Monitoring

1. All discharging treatment works are required to implement, at a minimum, monthly monitoring of:

a. influent for total phosphorus (as P) and total Kjeldahl nitrogen (as N) concentrations; and

b. effluent for total phosphorus and orthophosphate (as P), and ammonia, nitrate-nitrite, and total Kjeldahl nitrogen (as N).

2. The Director may authorize a variance to the monitoring requirements identified in Subsection R317-1-3.3.D.1.

3. All monitoring under Subsection R317-1-3.3.D shall be based on 24-hour composite samples by use of an automatic sampler or minimum of four grab samples collected a minimum of two hours apart.

4. These monitoring requirements shall be self-implementing beginning July 1, 2015.

#### 3.4 Pollutants In Diverted Water Returned To Stream.

A user of surface water diverted from waters of the State will not be required to remove any pollutants which such user has not added before returning the diverted flow to the original watercourse, provided there is no increase in concentration of pollutants in the diverted water. Should the pollutant constituent concentration of the intake surface waters to a facility exceed the effluent limitations for such facility under a federal National Pollutant Discharge Elimination System permit or a permit issued pursuant to State authority, then the effluent limitations shall become equal to the constituent concentrations in the intake surface waters of such facility. This section does not apply to irrigation return flow.

**KEY: water pollution, waste disposal, nutrient limits, effluent standards**

**Date of Enactment or Last Substantive Amendment: 2014**

**Notice of Continuation: October 2, 2012**

**Authorizing, and Implemented or Interpreted Law: 19-5**