

DEVELOPING TOTAL MAXIMUM DAILY LOADS

SUITABLE EXAMPLES FOR APPLICATION WITH PUBLIC LAND WATER QUALITY LIMITED SEGMENTS

Total Maximum Daily Loads (TMDLs) are endpoints set for a particular water body so it can meet its beneficial uses (established by the State of Wyoming).

The TMDLs are established for each pollutant, are the amount that a specific pollutant needs to be reduced, or the maximum loading of that pollutant, which allow the TMDL endpoint(s) to be met. Best Management Practices (BMPs) are implemented in the TMDL process to reduce Nonpoint Source (NPS) pollutant loading and attain the TMDL goal. They can be based on concentrations of a pollutant or quantifiable standards such as habitat or stream condition. EPA and Wyoming Department of Environmental Quality (WDEQ) are favoring the latter approach to describing TMDLs. Some sources where TMDLs might be defined may include EISs, National Pollution Discharge Elimination System (NPDES) permits, NPS Control Plans, Section 404 Mitigation Plans, allotment management or watershed plans, etc.

The State's list of impaired stream segments includes waterbodies where water quality standards will not be attained or maintained (threatened waters included) after the application of technology-based requirements for Point Sources.

TMDL MINIMUM REQUIREMENTS

TMDLs:

- can be described as: mass per time (e.g., pounds per day); toxicity (e.g., toxic units); or, other measures (e.g., percent reduction).
- are a waste load allocation (point sources) + a load allocation (nonpoint sources and background)
- apply to all pollutants, are pollutant specific and several may be required for a waterbody.
- must contain a margin of safety and consider seasonality
- include a quantified pollutant reduction target
- consider all significant pollution sources
- must be supported by an appropriate level of technical analysis
- must have a quantified target or endpoint (e.g., WQ standard)
- apportion responsibility for taking action (however, allocations do not have to be made to all sources)
- involve public involvement and review

WHERE TMDLS FIT IN THE WATER QUALITY PROCESS

Water Quality Standards (WQS) are comprised of use classifications, numeric standards, narrative standards and anti-degradation provisions. Water Quality Controls (WQC) involve technology-based control for NPDES (point) sources and water quality-based controls for point and nonpoint sources. A TMDL provides a linkage between the standards and controls.

• GENERAL EXAMPLES:

WQS	→ →	TMDL	→ →	WQC
phosphorus and nitrogen loading		percentage reduction in pollutants		BMPs for grazing and farming practices
* target temperature		% reduction in solar gain		riparian restoration in target areas
* target turbidity (<= 10 nephelometric turbidity units [NTU] increase)		% reduction in total suspended sediment		streambank stabilization in target reaches
				grazing prescriptions to increase vegetative cover on the uplands
total suspended sediment load (as compared to a reference stream relative to anti-degradation provisions)		% reduction in erosive banks		riparian restoration and grazing BMPs
		% increase in channel length		tree revetments
				Rosgen-type channel mods

• SPECIFIC EXAMPLES:

A TMDL is established for the stream segment from Smith's Bridge to the confluence of Clear Creek (a Class 2 cold water fishery) as follows :

*-maximum daily temperature 20-22° C	50% reduction in solar gain	establish a 1/4 mile wide riparian pasture
	60% average increase in streambank shrub cover (from 10% cover to 70%)	implement a three pasture rotational grazing system
cobble embeddedness of 32%	25% average reduction (16 mg/l to 12 mg/l) in sediment concentration over a 3 year period	rehabilitate and abandon 5 miles of eroding 2-track road/year (within contributing subwatersheds) over a 3 year period
*-turbidity of 11 NTU		

*-e.g., for a Class 2 cold water fishery which has, under natural conditions (call it background measured on established reference streams at lower base flow), 85% shading of the water surface, a temperature of 19° C, and a turbidity of 3 NTU.