

**Table 2-2.** Summary of Common Pollutants and Sources

Pollutant	Potential Sources		Impacts on Waterbody Uses
	Point Sources	Nonpoint Sources	
Pathogens	<ul style="list-style-type: none"> <li>• WWTPs</li> <li>• CSOs/SSOs</li> <li>• Permitted CAFOs</li> <li>• Discharges from meat-processing facilities</li> <li>• Landfills</li> </ul>	<ul style="list-style-type: none"> <li>• Animals (domestic, wildlife, livestock)</li> <li>• Malfunctioning septic systems</li> <li>• Pastures</li> <li>• Boat pumpout facilities</li> <li>• Land application of manure</li> <li>• Land application of wastewater</li> </ul>	<ul style="list-style-type: none"> <li>• Primarily human health risks</li> <li>• Risk of illness from ingestion or from contact with contaminated water through recreation</li> <li>• Increased cost of treatment of drinking water supplies</li> <li>• Shellfish bed closures</li> </ul>
Metals	<ul style="list-style-type: none"> <li>• Urban runoff</li> <li>• WWTPs</li> <li>• CSO/SSOs</li> <li>• Landfills</li> <li>• Industrial facilities</li> <li>• Mine discharges</li> </ul>	<ul style="list-style-type: none"> <li>• Abandoned mine drainage</li> <li>• Hazardous waste sites (unknown or partially treated sources)</li> <li>• Marinas</li> <li>• Atmospheric deposition</li> </ul>	<ul style="list-style-type: none"> <li>• Aquatic life impairments (e.g., reduced fish populations due to acute/chronic concentrations or contaminated sediment)</li> <li>• Drinking water supplies (elevated concentrations in source water)</li> <li>• Fish contamination (e.g., mercury)</li> </ul>
Nutrients	<ul style="list-style-type: none"> <li>• WWTPs</li> <li>• CSOs/SSOs</li> <li>• CAFOs</li> <li>• Discharge from food-processing facilities</li> <li>• Landfills</li> </ul>	<ul style="list-style-type: none"> <li>• Cropland (fertilizer application)</li> <li>• Landscaped spaces in developed areas (e.g., lawns, golf courses)</li> <li>• Animals (domestic, wildlife, livestock)</li> <li>• Malfunctioning septic systems</li> <li>• Pastures</li> <li>• Boat pumpout</li> <li>• Land application of manure or wastewater</li> <li>• Atmospheric deposition</li> </ul>	<ul style="list-style-type: none"> <li>• Aquatic life impairments (e.g., effects from excess plant growth, low DO)</li> <li>• Direct drinking water supply impacts (e.g., dangers to human health from high levels of nitrates)</li> <li>• Indirect drinking water supply impacts (e.g., effects from excess plant growth clogging drinking water facility filters)</li> <li>• Recreational impacts (indirect impacts from excess plant growth on fisheries, boat/swimming access, appearance, and odors)</li> <li>• Human health impacts</li> </ul>
Sediment	<ul style="list-style-type: none"> <li>• WWTPs</li> <li>• Urban stormwater systems</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture (cropland and pastureland erosion)</li> <li>• Silviculture and timber harvesting</li> <li>• Rangeland erosion</li> <li>• Excessive streambank erosion</li> <li>• Construction</li> <li>• Roads</li> <li>• Urban runoff</li> <li>• Landslides</li> <li>• Abandoned mine drainage</li> <li>• Stream channel modification</li> </ul>	<ul style="list-style-type: none"> <li>• Fills pools used for refuge and rearing</li> <li>• Fills interstitial spaces between gravel (reduces spawning habitat by trapping emerging fish and reducing oxygen exchange)</li> <li>• When suspended, prevents fish from seeing food and can clog gills; high levels of suspended sediment can cause fish to avoid the stream</li> <li>• Taste/odor problems in drinking water</li> <li>• Impairs swimming/boating because of physical alteration of the channel</li> <li>• Indirect impacts on recreational fishing</li> </ul>
Temperature	<ul style="list-style-type: none"> <li>• WWTPs</li> <li>• Cooling water discharges (power plants and other industrial sources)</li> <li>• Urban stormwater systems</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of riparian shading</li> <li>• Shallow or wide channels (due to hydrologic modification)</li> <li>• Hydroelectric dams</li> <li>• Urban runoff (warmer runoff from impervious surfaces)</li> <li>• Sediment (cloudy water absorbs more heat than clear water)</li> <li>• Abandoned mine drainage</li> </ul>	<ul style="list-style-type: none"> <li>• Causes lethal effects when temperature exceeds tolerance limit</li> <li>• Increases metabolism (results in higher oxygen demand for aquatic organisms)</li> <li>• Increases food requirements</li> <li>• Decreases growth rates and DO</li> <li>• Influences timing of migration</li> <li>• Increases sensitivity to disease</li> <li>• Increases rates of photosynthesis (increases algal growth, depletes oxygen through plant decomposition)</li> <li>• Causes excess plant growth</li> </ul>

Note: WWTP = wastewater treatment plant; CSO = combined sewer overflow; SSO = sanitary sewer overflow; CAFO = concentrated animal feeding operation; DO = dissolved oxygen.