

## BE ON THE TEAM TO THINK DOWNSTREAM: TOTAL DISSOLVED SOLIDS

### WHAT ARE TOTAL DISSOLVED SOLIDS?

Total dissolved solids (TDS) is a measure of the combined dissolved content, including inorganic and organic substances in water that are smaller than 2 microns. This can include compounds such as calcium, magnesium, sodium, chloride, manganese, sulfur and iron. These compounds are introduced to environmental systems through natural settings and can be present without visible confirmation.

Total dissolved solids are removed during the water purification process. Photo by M.P. Hayes



### WHAT AFFECTS THE PARAMETER?

The primary source of TDS in waterways is from natural (clay and soil), agriculture and residential (or urban) runoff. Though TDS is more associated with minerals and metals, nutrients like nitrate and phosphate, as well as pesticides, can contribute to TDS measurements. These compounds get into waterways during large rain events,

which cause runoff and erosion that allows for particulate matter to dissolve in aqueous systems. The largest distinction in TDS is the ability to be filtered through a 2-micron filter, which would remove any total suspended solids.

### WHERE DOES IT COME FROM BROADLY AND SPECIFICALLY TO LOUISIANA?

In Louisiana, 5.1% of waterways are impaired because of TDS. This can be from various sources that produce a runoff from soil or a clay-based landscape. Additionally, areas of construction where land material is being brought in or mined can contribute to downstream TDS. The Louisiana Department of Environmental Quality uses the Water Quality Integrated Report to identify impairments and sources. The following sources were identified as causing TDS impairments around the state:

- Source unknown
- Agriculture
- Site clearance or construction
- Natural source
- Rural residential areas
- Sewerage discharge in unsewered areas
- Silviculture resuspension or harvesting

## HOW DOES IT AFFECT THE SURROUNDING ENVIRONMENT?

Though TDS can provide minerals to environmental systems, it can also be seen to increase the salinity of systems and contribute to bioaccumulation in soils and plants. In closed systems, like ponds or basins, it can alter the pH and increase the temperature profile for

slow-moving water. High concentrations of TDS can cause corrosion in metal irrigation piping and have an unpleasant odor depending on the compounds that are present.

## WHAT ARE TRADITIONAL MANAGEMENT PRACTICES?

Managing TDS is dependent on the compounds present. From land runoff, mitigation techniques including planting vegetation, using silt fences, reducing soil erosion, planting cover crops, practicing no-till farming, and contour plowing to reduce soil disturbance and runoff from land can all help reduce TDS. For irrigation-based water, a

reverse osmosis system or a ceramic water filter may be used to reduce the concentration of TDS. Though chemical additives can be used to reduce minerals in water, it is best to consult an expert to establish proper dosing for water volume, TDS concentration and compound type.

## RESOURCES

<https://www.deq.louisiana.gov/page/louisiana-water-quality-integrated-report>

[https://cdn.who.int/media/docs/default-source/wash-documents/water-safety-and-quality/chemical-fact-sheets-2022/total-dissolved-solids-fact-sheet-2022.pdf?sfvrsn=28fd63e6\\_2&download=true](https://cdn.who.int/media/docs/default-source/wash-documents/water-safety-and-quality/chemical-fact-sheets-2022/total-dissolved-solids-fact-sheet-2022.pdf?sfvrsn=28fd63e6_2&download=true)

<https://www.sandiegocounty.gov/content/dam/sdc/pds/SGMA/SPV-Nitrate-FactSheet-2022-08-24.pdf>

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