

Permit Requirements/Lab/Treatment efficiencies

The Galesburg Sanitary District is regulated by the Illinois Environmental Protection Agency (IEPA) and the U.S. EPA in accordance with the National Pollutant Discharge Elimination System (NPDES). The IEPA has issued a NPDES permit to the Galesburg Sanitary District which allows the District to discharge stormwater and treated wastewater to Cedar Creek. The permit also allows discharges of one wet weather station in East Galesburg and two combined sewer overflows (CSO's) to Court Creek during significant rain events. The permit addresses several other important operational requirements of the Galesburg Sanitary District such as monitoring of industrial users, and monitoring/ reporting of wet weather stations and combined sewer overflows.

The NPDES permit requires the District to monitor the dissolved oxygen and temperature of Cedar Creek during the months of April through November. The permit outlines specific discharge limits for Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), pH, and Ammonia Nitrogen (NH₃-N). All of these parameters are analyzed in the District's treatment plant laboratory to ensure compliance with the permit.

BOD is a laboratory test which measures the rate which organisms use oxygen in the water or wastewater while stabilizing decomposable organic matter under aerobic conditions. Organic matter present in the plant influent such as leaves, woody debris, food processing wastes, household sewer wastes and some industrial wastes are food for living organisms such as bacteria and protozoa. Without adequate oxygen, the health of the receiving water (Cedar Creek) would suffer. The District's treatment plant removes approximately 90-95% of the organic load, or BOD, before the wastewater is discharged to receiving water. The treatment plant's NPDES discharge limit for BOD varies from 17 – 20 mg/L or 1560 - 1835 lbs., as a monthly average, depending on the month of the year. (Pounds, lbs. = concentration in mg/L x 11 MGD x 8.34, where 11 MGD is the design average flow of the treatment plant and 8.34 is a conversion from gallons to pounds)

TSS is a measurement of the amount of floatable, colloidal and settleable solids in the wastewater. These solids consist of inorganic materials such as sand, and organic materials, mentioned earlier. Suspended solids are removed from the wastewater by physical processes such as sedimentation and scum collection mechanisms. The District can discharge no more than 25 mg/L or 2294 lbs. of suspended solids (monthly average), depending upon the month of the year. On average, the treatment plant is able to remove 85 – 95% of the suspended solids from the wastewater before it is discharged to the receiving water.

The measurement of acidity or alkalinity of a solution is called pH. The District's NPDES permit requires the wastewater discharged to receiving waters to be 6-9 units. The wastewater the treatment plant receives is near neutral, pH 7. The pH does not

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change much as it goes through the treatment processes. Typically, the pH of the effluent is 7.5 – 8.0 units, slightly alkaline, which meets discharge limits.

If too much nitrogen is discharged to the receiving water, excessive algae may form, dissolved oxygen may be depleted, and aquatic organisms can die (fish kill). For this reason, Ammonia Nitrogen is another parameter that is limited in the District's NPDES permit. Depending on the month of the year, a maximum of 1.4 – 2.8 mg/L, or 128 - 257 lbs. of ammonia nitrogen (monthly average) can be discharged to the creek. Approximately 85 – 95% of the ammonia nitrogen is removed from the wastewater during treatment.

The Galesburg Sanitary District has more stringent discharge limits in comparison to other municipal wastewater treatment facilities because the receiving stream (Cedar Creek) is such a small body of water compared to other receiving streams (rivers and large lakes). This means there is less water to dilute any contaminants that may be discharged. Another reason for the stringent discharge limits is that Cedar Creek has been identified as an impaired stream by the IEPA. In 1998, the IEPA identified impaired watersheds throughout the state in order to fulfill the requirements of the Federal Clean Water Act (CWA) and the Water Quality Planning and Management regulation at 40 CFR Part 130. Cedar Creek was also included in the list of impaired streams in the Illinois Water Quality Report by the IEPA Bureau of Water in 2004.

The average daily flow to the treatment plant is 7-8 MGD. The treatment plant's design average flow is 11 MGD. While the treatment plant is *physically* able to handle the increased sewage flow that new industries and businesses in Galesburg will produce, Cedar Creek will remain an impaired stream, and the discharge limits imposed by the District's NPDES permit will remain the same. The District's treatment plant is not able to effectively treat increased flows with high organic or solids content from industries such as hog plants, or food processing plants, for example, unless these industries are able to implement their own pretreatment programs, which can be cost prohibitive. Even if the Galesburg area were to build a brand new treatment plant with the most modern treatment technologies, the point of discharge would be the same impaired stream. In addition, with a more efficient treatment plant, the IEPA would likely require even more stringent discharge limits for further protection of the impaired stream.