The Constructed Wetland Leachate Treatment System, located on 3.1 acres, remediates leachate collected by the gravity drain collection system on the north face of the closed Center Road Landfill. The normal operating season is during the warmer months from May through October.

The collected leachate is pumped from a submersible duplex pump station to a cascade aerator. The leachate falls through a series of trays where ammonia is stripped off and oxidization of contaminants begins. The aerated sedimentation basin where total suspended solids and formed precipitants settle out. A surface floating aerator is installed in this basin to add in supplemental oxygen to continue removing ammonia.

The system alternates flows from the sedimentation basin to the two vertical flow gravel cells. The clarified leachate percolates through the sand and stone media. Biological activity on the media further reduces the ammonia and other contaminants. A subsurface collection system conveys the leachate to an inlet deep-water channel in the adjacent surface flow wetland cells.

The deep water channels allow the surface flow cells to be flooded evenly and prevent hydraulic short-circuiting. These cells contain cattail vegetation and supports further biological activity. Plant uptake and the microbial activity continue denitrification and the reduction of metals, phosphorous and COD. Both the vertical and surface flow cells are lined with a HDPE liner on top of a compacted clay liner to prevent leakage out of the treatment system to the surrounding groundwater.

After a detention time of approximately 14 days, the treated effluent collects in an outlet deep-water channel and flows by gravity to a recycling manhole with a submersible pump. This pump is capable of sending 24,000 gpd of effluent back to the sedimentation basin to lessen the shock load from high concentrations of influent contaminates or if the cattails show signs of distress. If no recycle is desired, the treated effluent flows to the sampling manhole where it is tested prior to being discharged to the sanitary sewer collection system where it receives further treatment at the Saginaw Township WWTP.

This was the first wetland treatment system in the State of Michigan to treat landfill leachate. The project received the National Finalist – Honorable Conceptor Award in 2000 from ACEC.

SAGINAW CHARTER TOWNSHIP CONSTRUCTED WETLAND LEACHATE TREATMENT SYSTEM CENTER ROAD LANDFILL



