Constructed Wetlands Leachate Treatment Facility

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Leachate is created when rainwater seeps through waste in a landfill and picks up pollutants such as nitrogen, iron, and ammonia. Metro Waste Authority's (MWA) Constructed Wetlands Treatment Facility, which was built in 2000, is the first of its kind in Iowa and one of the first in the nation. MWA won the 2000 Governor's Iowa Environmental Excellence Award for Special Recognition in Water Quality for the constructed wetlands.

This facility carries leachate collected from the Metro Park East (MPE) Landfill through a series of wetland cells that use various plants to remove contaminants. First, an aeration lagoon removes iron from the leachate so the plants can work more effectively. After treatment, the remaining effluent is sprayed on to a constructed prairie.

The wetlands system is lined with an HDPE liner to reduce the likelihood of contaimination or leaks that could affect ground or surface water.

Benefits

The benefits of having on-site leachate treatment at the MPE Landfill include:

- having a "zero-discharge" facility so no leachate or treated effluent reaches groundwater or surface water;
- providing a long-term, low technology treatment of leachate without chemicals;
- reducing truck traffic on local roads, fuel consumption, and risk of spills

Wetland Statistics

- Constructed wetlands area: 15 acres
- Prairie irrigation area: 7 acres (2 sites of 3.5 acres each)
- Wetlands: 3.5 acres, which includes four wetland cells and the aerated pre-treatment, storage and pre-application lagoons
- An average of 16,000 gallons of leachate are produced by the MPE landfill each day
- 13 million gallons of leachate collected in FY 07-08, enough to fill 19 Olympic size swimming pools.
- 1.6 million gallons treated with the wetlands system last year; 3 million gallons recirculate; the rest is sent to a wastewater treatment facility
- Storage capacity: 3.2 million gallons of leachate
- Total prairie plants: 122,000

The wetlands collected about 13 million gallons of leachate from Metro Park East Landfill last year, enough "water" to fill more than 19 Olympic size swimming pools.

The wetlands are expected save $5 million in operating and treatment costs over 30 years.

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Mission Statement
Metro Waste Authority is the leader in environmental stewardship and cost-effective waste

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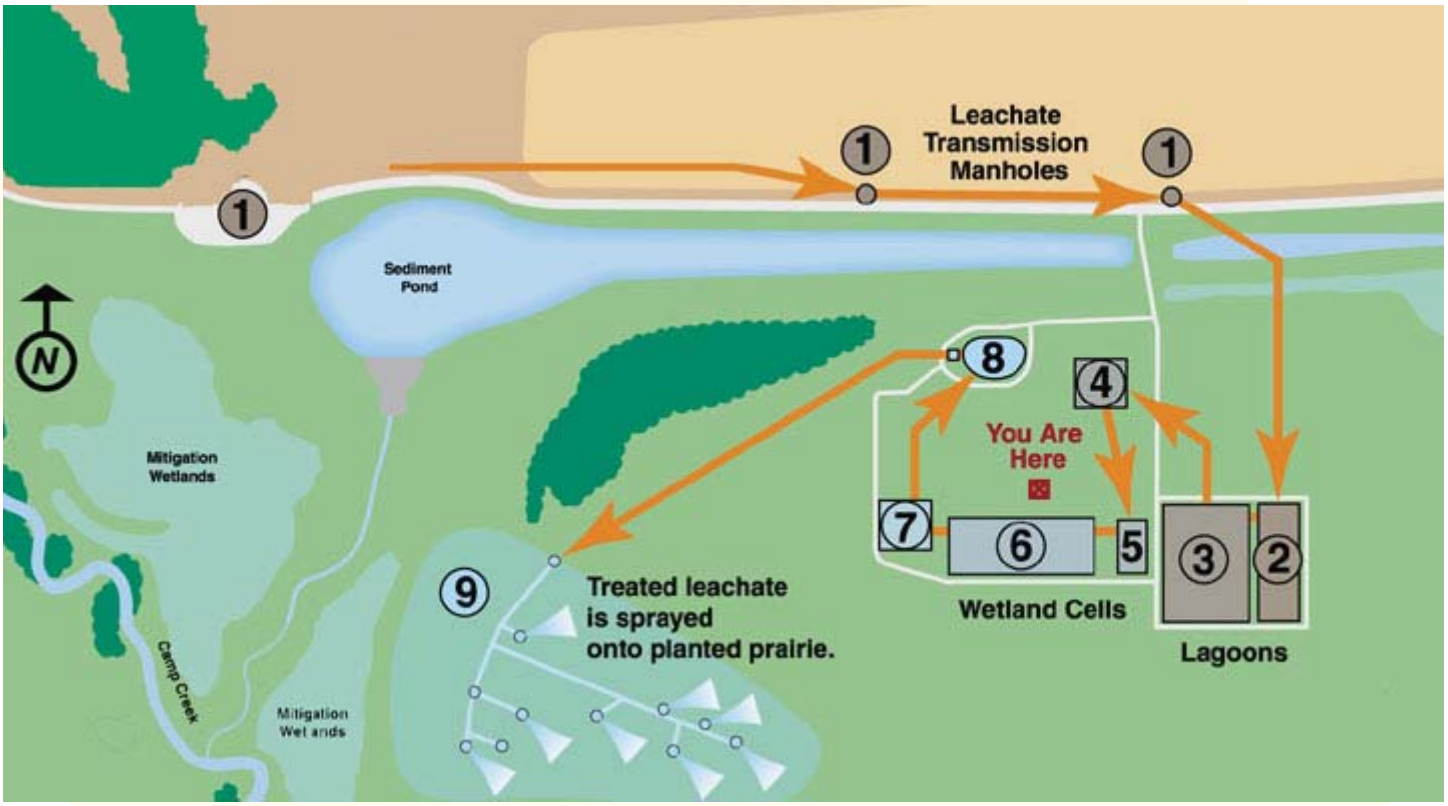
Constructed Wetlands *continued, page 2 of 2*



1. Leachate Trasmission Manholes: Leachate is collected and pumped to the Wetlands Treatment Facility.
2. Aerated Pre-Treatment Lagoon: Removes high concentrations of iron from the leachate, allowing the wetlands plants to work more effectively.
3. Storage Lagoon: Stores partially treated leachate and releases it into the remainder of the treatment process at a controlled rate.
4. Primary Subsurface Wetland Cell: Removes pollutants that would use all of the oxygen found in the liquid. Without oxygen, wetlands plants would not survive.
5. Vertical Filter Wetland Cell: Removes the ammonia (nitrogen) from the leachate. Liquid is not visible from this cell because it trickles below the surface through gravel and plant roots.
6. Free Water Surface Wetland Cell: Nitrogen removal is completed in this cell. Additionally, metal pollutants, such as lead, are absorbed by the soil.
7. Secondary Subsurface Wetland Cell: The wetlands treatment process is completed in this cell. The leachate, now called effluent, is now ready for land application.
8. Pre-Application Lagoon: The effluent is stored here. Levels will vary based on the amount of precipitation.
9. Land Application Area: Effluent is applied to the prairie, depending on moisture levels, which are monitored before application.