

NORTH MARION COUNTY Disposal Facility Area

UPDATE JUNE 2010

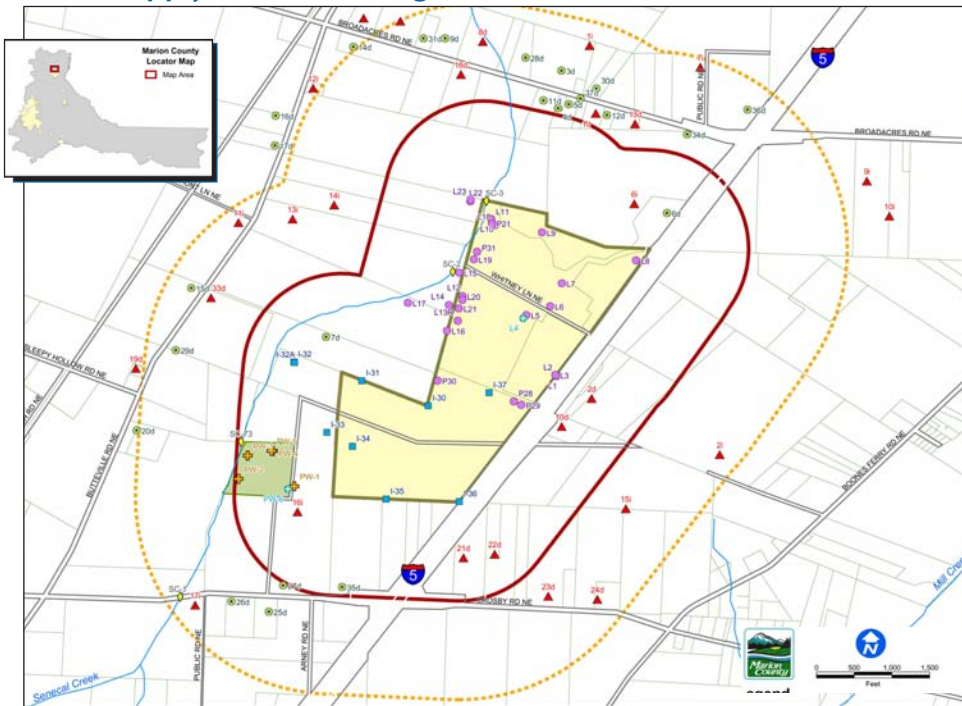


Senecal Creek

Monitoring Results

Environmental monitoring at the North Marion County Disposal Facility (NMCDF) is conducted twice a year consistent with permit requirements. Water quality monitoring at the facility is performed in the spring and fall consistent with the Oregon Department of Environmental Quality-approved Environmental Monitoring Plan. The spring sampling event for 2010 was recently completed in early May and the fall sampling event will be completed in October. During permit-required sampling events, a total of 55 groundwater samples, 10 surface water samples, and 16 leachate collection and removal inspection point samples are scheduled to be collected and analyzed for contaminants.

Water Supply and Monitoring Well Locations



LEGEND

- Landfill Boundary
- 1973 Landfill
- Tax Lots
- Roads
- Rivers & Streams

On-Site Wells

- Monitoring Well
- Monitored On-Site Water Supply Well
- Land Application Monitoring Well

- 73 Landfill Monitoring Well
- Senecal Creek Water Quality Sample Locations

Off-Site Wells

- Monitored
 - Not Monitored
- Buffer**
- 1/4 Mile Buffer
 - 1/2 Mile Buffer

On-Site Groundwater Quality

Monitoring wells in the upper Willamette Silt Aquifer and the deeper Troutdale Formation Aquifer are tested during each sampling event.

Willamette Silt Aquifer: Water quality impacts are observed primarily in wells located adjacent to the west side of the closed sanitary landfill. Several of these wells are showing consistent and notable improving groundwater quality conditions. As an example, there continues to be an overall decrease in the number and concentrations of volatile organic compounds detected. Groundwater flow in this aquifer is westward toward Senecal Creek. Overall, water quality conditions in the Willamette Silt aquifer continue to improve over time.

Troutdale Formation Aquifer: Water quality conditions in the Troutdale Formation aquifer continue to be constant over time. Water quality conditions observed at the site are similar to conditions observed off the site. Groundwater flow in this aquifer is primarily to the north/northeast but some variability and

Continued on back

drawdown has been observed in the summer when irrigation pumping is occurring in the region of the site.

Off-Site Groundwater Quality

Sampling of off-site drinking water supply wells was conducted annually from 1999 to 2006 to develop a characterization data set. Sampling of off-site drinking water supply wells is currently scheduled to be completed every five years. The most recent sampling was conducted in July 2009. These water supply wells produce from the Troutdale Formation aquifer. Sample results found that iron and manganese concentrations are generally present above their secondary drinking water standards. Several wells were also found to produce water with a sulfur odor. Natural aquifer conditions account for the concentrations detected. Concentrations detected in off-site water supply well samples were found to be similar to concentrations detected in samples from Troutdale Formation monitoring wells at the NMCDF. The map on the front of this page identifies known water supply wells in the area surrounding the NMCDF, along with 1/4-mile and 1/2-mile site radius buffers.

Surface Water Quality

Senecal Creek is a north/south trending surface water drainage located west of the site. As indicated on the location map (front page), water quality samples from the creek are collected from five locations. The creek is typically found to be flowing only during the spring sampling event. The creek receives base flow from groundwater discharge. The creek's water quality



Well purging and monitoring

conditions have been observed to differ from year to year in part by the volume of water flowing in the creek during a given sampling event as well as potential impacts to the creek's water quality caused by activities occurring up-stream of the site. Overall, water quality of Senecal Creek in the area adjacent to the NMCDF has improved particularly since spray irrigation of untreated wastewater was discontinued in the application area in 1998.

Marion County also samples the on-site drainage ditches that flow to Senecal Creek as part of the site's National Pollutant Discharged Elimination System (NPDES) Permit. No permit parameters were exceeded in 2009.

TECHNICAL TERMS

Aquifer: A water-bearing layer of rock, sand, or gravel that is sufficiently permeable to conduct groundwater and yield water to wells.

Water-Bearing Formations: There are two water-bearing formations or aquifers in the area: The Willamette Silt and The Troutdale Formation.

Willamette Silt: A shallow, sandy silt formation that is most affected by landfill-related activities. Wells in this formation have moderate to low productivity. Consequently, local wells generally do not draw water from this formation.

Troutdale Formation: A deeper productive formation, consisting of gravel, sand and silt. Local wells produce water from this formation.

Monitoring Wells: Typically constructed of 2" diameter PVC. Used to collect water quality samples from the two water-bearing formations at the site.

Landfill Gas Extraction/Management



Underground gas wells connect to flare, which burns up methane.

The site's active landfill gas extraction system has been in operation since 1999. The system consists of eight gas extraction wells in the closed demolition/bypass landfill and 13 gas extraction trenches in the eastern portion of the closed sanitary landfill. Extracted landfill gas is thermally destroyed and gas condensate is pumped to the leachate storage lagoon. Monitoring for subsurface gas migration at the site is conducted at six gas probes. Five of the gas probes function as perimeter boundary compliance points, and the sixth probe is used to supplement gatehouse structure monitoring.

Monitoring of the gas probes is performed on a quarterly basis. During 2009, methane was not detected at any of the perimeter boundary compliance points. These results indicate that landfill gas is not migrating beyond the NMCDF property and demonstrate that the gas extraction system is functioning properly.

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