

PROJECT OVERVIEW

The St. Johns Landfill is located in Section 36, Township 2N, Range 1W, at the address 9363 N Columbia Boulevard in Portland. The landfill is part of the Smith and Bybee Lakes Management Area on the North Portland Peninsula, near the confluence of the Columbia River and the Willamette River. Bybee Lake and Smith Lake border the 236 acre site on the north and the east and the Columbia Slough borders the landfill on the south and west.

The landfill began operation in 1932 and was closed to disposal in 1991. The site is now owned and operated by the Metropolitan Service District (Metro). The landfill accepted municipal and industrial waste and ash from an adjacent incinerator (on a site now owned by the City of Portland-see ECSI# 2101) which operated until approximately 1982.

From 1958 to 1962 industrial waste included approximately 5,000 drums of pesticide manufacturing waste from the nearby Rhone-Poulenc facility. This waste included distillation residues of chlorophenols and may have contained the herbicides 2,4-D, 2,4,5-T, and MCPA. Dioxins and furans are common byproducts of these compounds and are also byproducts of incineration.

Before waste disposal began the landfill area was a shallow, ephemeral lake and its bottom was composed of relatively impermeable silt. Below the silt (known as the Overbank Silt) is a laterally discontinuous Pleistocene sand unit of moderate permeability and below that is a Pleistocene sand and gravel unit of high permeability. The sand and gravel is a productive, area-wide aquifer and a potential drinking water supply source.

As environmental concern surrounding the landfill increased and waste management technology advanced, the operation of the site was modified to reduce environmental impacts. The natural levees that surround the landfill have been enhanced to provide flood protection and reduce infiltration of landfill leachate to surface water. In 1980 a landfill expansion area in the northeast corner was built with an engineered bottom liner and perimeter dike. Leachate from this part of the landfill is collected and routed to the Portland sewer system in Columbia Boulevard.

The original landfill (approximately 75% of the total area) has no bottom liner except for the relatively impermeable lake sediments. This means that leachate could be migrating downward into groundwater as well as horizontally through the perimeter dike. To control leachate seepage from the landfill a "roof" or cover of compacted clay/silt, a plastic membrane, drain sand, and topsoil, was placed over the entire landfill in the 1990s. The cover serves to minimize moisture within the landfill and reduce the buildup of leachate which can flow out to surface water or groundwater. The landfill closure incorporates a landfill gas collection system to contain and control landfill gas. Collected gas is routed to a high temperature flare to piped to Ash Grove Cement for use as an energy source.

Groundwater quality next to the landfill has been monitored since the 1970s and a network of 30 wells are now sampled semi-annually. Additional wells within the landfill monitor the leachate



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and landfill gas. Water samples from groundwater monitoring wells surrounding the site and within the landfill area are analyzed for leachate indicator parameters such as chloride and nitrate as well as contaminants such as metals, volatile and semi-volatile organic compounds (VOCs and SVOCs), PCBs, and pesticides. Certain leachate indicator parameters are faster moving than other contaminants and act as indicators to show potential movement of landfill contaminants. In 1995 DEQ placed the site on the Confirmed Release and Inventory Lists. As of 2003, a group of 29 hazardous substances have been released from the site to groundwater. The list includes 19 VOCs and SVOCs, seven trace metals, and two pesticides. Various groups of substances in this list exceed DEQ numerical groundwater quality reference levels, EPA drinking water standards, and EPA Region 9 Preliminary Remediation Goals (PRGs) for tapwater. Samples of landfill leachate are also collected from wells screened in landfill waste. These samples often contain higher concentrations of contaminants but since the leachate has not left the landfill, this does not constitute a release.

In the early 1990s a three-dimensional groundwater model of the site and surrounding area was prepared by Portland State University to better understand the groundwater system below the landfill and predict future conditions. The model was used to predict the locations where leachate is more likely to migrate into groundwater and how fast it might move.

PROJECT STATUS

The landfill is currently managed under a DEQ landfill closure permit that was renewed on October 31, 2003. In conjunction with the new permit Metro also entered into a Consent Order with DEQ for the completion of a Remedial Investigation and Feasibility Study (RI/FS) to address the issues of environmental contamination at the site. The objectives of the RI/FS are to:

- Identify hazardous substances that have been released to the environment.
- Determine the extent and distribution of hazardous substances in all affected media both on- and off-site.
- Determine the direction and rate of migration of hazardous substances in groundwater.
- Identify migration pathways and receptors and determine the risk to human health and the environment.
- Develop the information necessary to evaluate remedial action alternatives and select a remedial action.

The RI/FS process will verify the predictions of the groundwater model and will quantify the human health and ecological risks from landfill releases to surrounding groundwater, surface water, sediment, and air.