

Menomonee River Valley (Milwaukee, Wisconsin) Brownfield Redevelopment

Introduction:

The day-to-day work of professional hydrogeologists is often done within the context of social issues and environmental laws and regulations. The Menomonee River Valley in Milwaukee, Wisconsin is a brownfield redevelopment site. An impediment to development can be concern on the part of present landowners and future developers about liability for groundwater contamination. As groundwater does not respect property boundaries, problems from one location can lead to problems at other downgradient locations. A scientific study requires voluntary access to property for sampling, which may not be forthcoming because of the potential for litigation. To sidestep a large number of cumbersome negotiations, the City of Milwaukee with the EPA and the USGS as partners decided to develop a flow model of the region first. This information could then be used to ascertain where sampling would be required and hence require fewer negotiations.

A key feature in the hydrogeologic model is the very significant influence of a deep sewer tunnel that parallels the Menomonee River and acts as a drain to capture recharge from a large area of the brownfield. The deep sewer system itself was constructed to reduce the dumping of raw sewage into Lake Michigan. The problem arises because the sanitary and storm sewers are combined. During periods of intense rainfall, the discharge overwhelms the capacity of the sewage treatment plant and hence the overflow of untreated storm/sewer discharge was simply dumped untreated into Lake Michigan. A system of deep tunnels acts as a reservoir for the storm runoff.

Questions:

- 1) Look at the US EPA website for primary environmental laws.
 - What are RCRA and CERCLA?

- 2) Look at the EPA's Brownfields Program website: <http://www.epa.gov/brownfields/index.html>
 - What is the definition of a "brownfield?"

- 3) Examine the 11-page report by the Menomonee River Partners, which describes the background of the redevelopment and provides the context for the groundwater model (<http://www.renewthevalley.org/files/pdf/epareport.pdf>). Then view the report itself: http://pubs.usgs.gov/sir/2004/5031/pdf/2004-5031_Menomonee.pdf . Both documents are also on the course web site.
 - Why did the USGS develop the groundwater model for the Menomonee Valley?
 - What model(s) were used by the USGS?
 - What is the average travel time from the surface to the deep tunnel?
 - What are the key findings about the groundwater flow system with regard to contamination? Are you reassured by the travel time result or not?

4) The final part of this activity is to think about the issue of environmental equity, that is, how are burdens of environmental pollution distributed? Visit the website of the EPA's Office of Environmental Justice (<http://www.epa.gov/compliance/environmentaljustice/index.html>).

- What is the definition of environmental justice?
- What are the five facilities releasing the greatest quantity of toxic substances on or off site in zip code 53204 and what substance is being released in the greatest quantity? Use the EPA's Toxics Release Inventory (TRI), which is available on the web.
- What is the percentage of families below the poverty level in zip code 53204? Use the census bureau website (<http://www.census.gov>) and type in the zip code in the "Population Finder" dialogue box to get started.