Toxic Trial

River is barrier, says Beatrice

By DAN KENNEDY

BOSTON — A hydrogeologist hired by Beatrice Foods Co. said Wednesday that the Aberjona River acts as a barrier which prevents groundwater at a Woburn property formerly owned by Beatrice from flowing into two municipal wells.

Ellis Koch of Geraghty & Miller, a groundwater consulting firm, testified in U.S. District Court as part of the Woburn leukemia trial.

The plaintiffs, eight East Woburn families, say chemically contaminated groundwater flowed from the Beatrice site to wells G and H between 1964 and 1979, resulting in six deaths and two illnesses.

Koch, questioned by Beatrice attorney Jerome P. Facher, said a pump test of wells G and H conducted in December 1985 shows the wells pull water from the Aberjona River into the underground aquifer.

That drawdown from the river creates a ridge in the underground water table, Koch said, with groundwater directly under the river at a higher elevation than in the rest of the aquifer.

The result, he said, is that groundwater at the Beatrice site, to the west of the river, cannot flow up over the ridge to get to wells G and H, east of the river.

But plaintiffs' attorney Jan R. Schlichtmann, during cross examination, said Koch based his theory on measurements of the top of the water table, taken at a depth of 15 feet.

Schlichtmann said water-pressure measurements taken from a depth of 40 feet showed groundwater at that level moves from west to east, under the river, when wells G and H are in use.

Such a pattern, Schlichtmann added, would bring contaminants on the Beatrice site directly into wells G and H.

The property in question is a 15-acre site northeast of the Riley Leather Co. tannery, 228 Salem St., which the tannery uses to supply well water. Beatrice owned the Riley tannery and the 15-acre property from 1978 to 1983, and retains legal liability.

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Earlier in the trial, Dr. George Pinder, a hydrogeologist from Princeton University who was hired by the plaintiffs, testified that water table readings showed groundwater at the Beatrice property flows east, under the river and toward wells G and H, when the wells are pumping.

Pinder contended the river does not play a major role in the behavior of the aquifer because the bottom is covered with a layer of relatively impermeable peat. He said it would take 10 to 20 years of continuous pumping before any river water would reach the wells.

But Koch contradicted Pinder's testimony, saying the peat layer on the bottom of the river acts as a "seive" that "lets water pass through very easily." That characteristic makes it possible for the wells to draw river water into the ground, he said, with the highest point in the water table underneath the river.

Wells G and H would create a "cone of depression" in the water table, Koch added, but said that cone of depression could not extend past the groundwater ridge.

In addition, he testified, a well owned by the tannery on the southerly end of the 15-acre site would create its own cone of depression, drawing groundwater — and contaminants — into it, and away from wells G and H.

Schlichtmann, during his cross examination, showed charts and diagrams taken from textbooks that demonstrated it was possible for a well to create a ridge in the water table underneath a river, and yet also draw groundwater from the opposite side of the river.

Koch conceded that was possible in a hypothetical case, but added that was not the case in East Woburn.

Koch also agreed with Schlichtmann that a deep well could produce a different groundwater elevation reading than a shallow well, because water pressure varies with depth.

Then, using a map, Schlichtmann took three well readings that, when measured at a depth of 15 feet, showed groundwater on the west side of the Aberjona River flowing from east to west, supporting Koch's testimony.

By substituting well readings taken from a depth of 40 feet, the flow reversed, from west to east and in the general direction of wells G and H.

Schlichtmann marked the readings on a map as Koch read them off from a list of pump test data. When they were finished, Schlichtmann directed Koch to draw an arrow showing flow direction on the map.

Koch appeared to be upset by Schlichtmann's tactics, saying the data he was using was incomplete and provided an inaccurate picture of groundwater flow. Facher objected repeatedly to Schlichtmann's line of questioning.

But Judge Walter Jay Skinner allowed Schlichtmann to continue.

The plaintiffs charge chemicals disposed of at the Beatrice site and at W.R. Grace & Co.'s Cryovac manufacturing plant, 369 Washington St., contaminated wells G and H, which were closed in 1979 after 15 years of use.

The defendants argue that they did not contaminate the wells, and that even if they did, the chemicals cited by the plaintiffs do not cause leukemia.