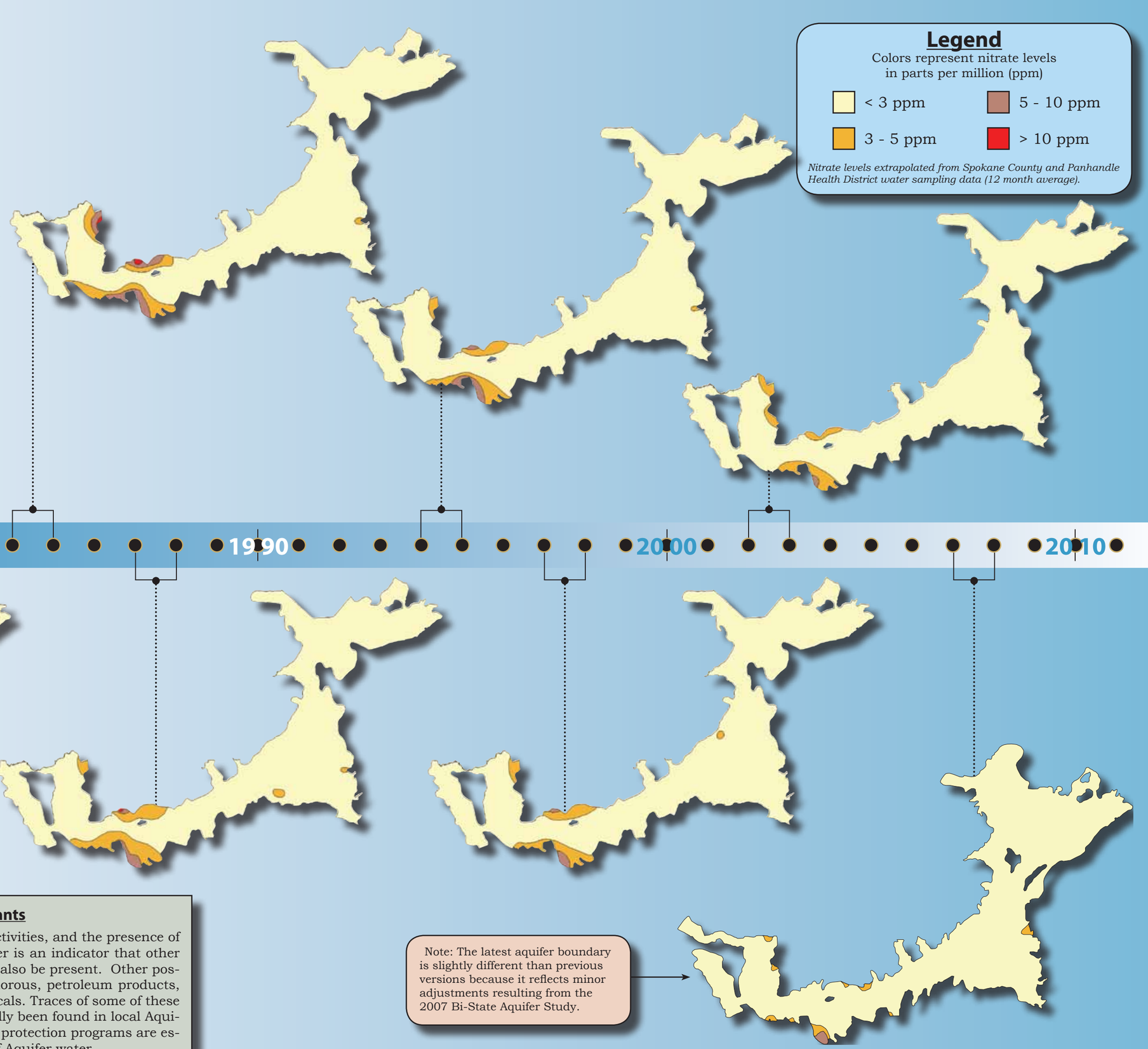
Water Quality

The illustrations on this page show concentrations of nitrate in the Aquifer through time. Nitrate is composed of nitrogen and oxygen and is highly stable in the water in soil and aquifer sediments. Under natural conditions in our Aquifer, nitrate occurs in low concentrations, typically 1 to 2 parts per million (ppm). Nitrate in drinking water above 10 ppm may cause illness. Septic systems, fertilizer, and stormwater are major causes of elevated nitrate levels in the Aquifer.

The earliest nitrate concentration map is from the water year October 1977 to September 1978, which represents earlier stages of Aquifer protection activities in Washington and Idaho. The peak of observed nitrate degradation in the entire Aquifer was in the water year 1984-85. In 1985 a major effort on both sides of the state line was initiated to reduce septic system contamination of the Aquifer through installation of piped sewer collection systems. On all the maps, certain areas near the edge of the Aquifer show high levels of nitrate. These locations represent "eddy" areas where incoming contaminants from side hill development are not easily or quickly mixed with better quality water recharging from the east.

As the maps indicate, on-going Aquifer protection programs have decreased the nitrate contamination despite significant population increases. These programs include installation of sewers and stormwater management. The groundwater in the Aquifer remains some of the best quality water available anywhere.



Contaminants

Nitrate is a by-product of human activities, and the presence of high levels of nitrate in groundwater is an indicator that other by-products of human activity may also be present. Other possible contaminants include phosphorous, petroleum products, heavy metals, and industrial chemicals. Traces of some of these other contaminants have occasionally been found in local Aquifer wells. On-going monitoring and protection programs are essential to protect the high quality of Aquifer water.

Note: The latest aquifer boundary is slightly different than previous versions because it reflects minor adjustments resulting from the 2007 Bi-State Aquifer Study.