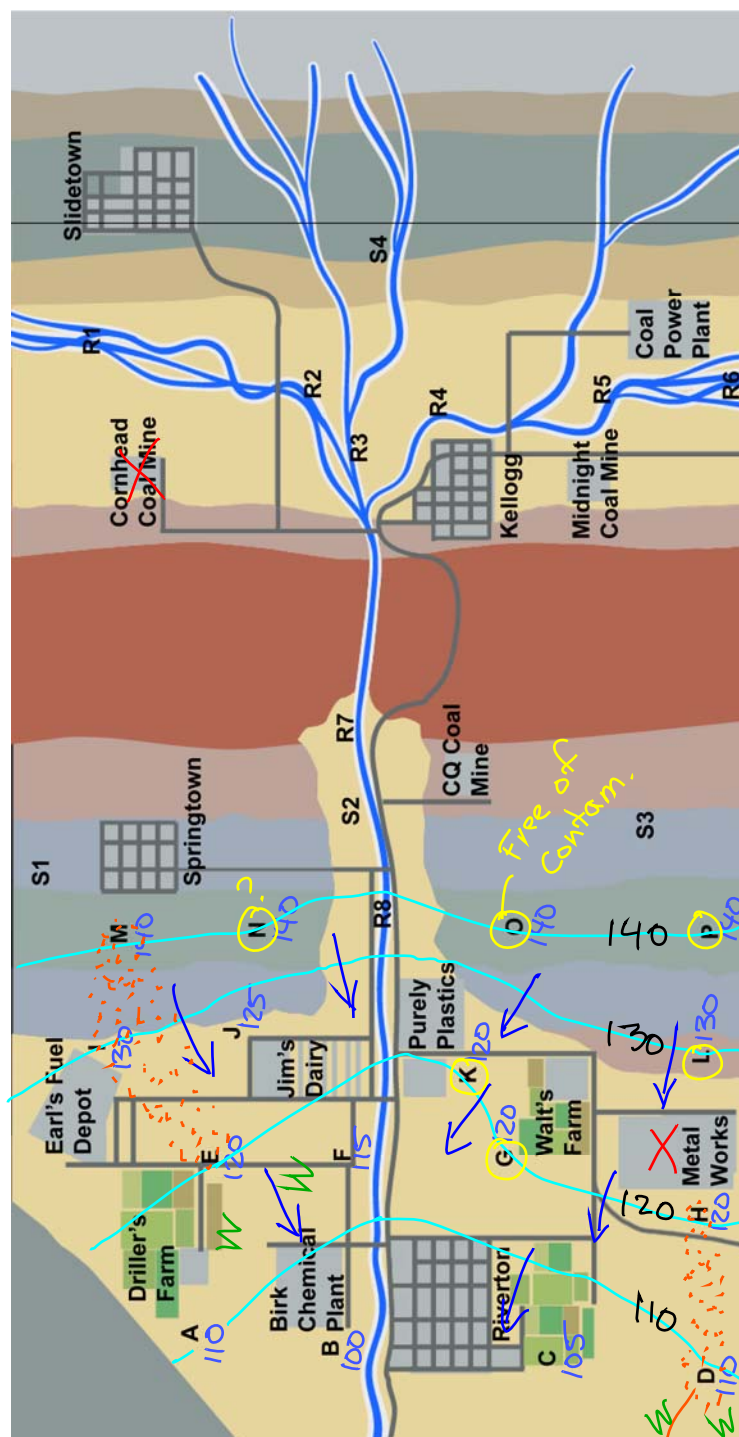


To complete this worksheet, see the instructions in the textbook (Chapter 17 Investigation).

Table 1: Location Map



This map has locations of wells (lettered A to P), samples of river water (labeled R1 to R8), and samples of springs (labeled S1 to S4). Various farms, factories, mines, and other facilities are also shown. Only the roads (gray lines) and outlines of the facilities are shown, not the actual buildings and other details. Colors (or shades of gray) on the worksheet represent in a general way the types of rocks and sediment exposed on the surface; check the cross section in the textbook for details. Do the following: (1) draw on this map contours of water-table elevations and draw large arrows showing the direction of groundwater flow; (2) shade in areas of contamination and use the directions of groundwater flow and stream flow to determine which facilities caused the contamination; (3) draw a large X over these facilities; (4) draw circles around two wells that you predict will remain free of contamination; and (5) write the letter W to mark the location of new wells you propose to drill to intercept the contamination. Reference the textbook for additional information.

Notes: (1) a recent geologic study has shown that Slidetown and Springtown are NOT sources of contamination, and (2) contamination can follow permeable units through the subsurface, but is less likely to travel through less permeable units even though the water table is shown as cutting across the units (which it does).

Table 2. Elevations of the Water Table and Concentrations of Contamination

Well	Elev. WT	mg/L	Well	Elev. WT	mg/L
A	110	0	I	130	30
B	100	0	J	125	0
C	105	0	K	120	0
D	110	20	L	130	0
E	120	10	M	140	50
F	115	0	N	140	0
G	120	0	O	140	0
H	120	50	P	140	0

Spring	mg/L	River	mg/L	River	mg/L
S1	50	R1	0	R5	0
S2	0	R2	20	R6	0
S3	0	R3	0	R7	5
S4	0	R4	0	R8	5

This table shows water-table elevations in meters and concentrations of contamination in milligrams per liter (mg/L) for each of the lettered wells, and the concentration of contamination in samples from four springs and eight river segments. The location of each sample site is marked on the figure.

Table 3. Stratigraphic Section

This stratigraphic section represents the sequence of rock units that underlie the area. Consider how well groundwater would flow through each layer by considering the typical permeability for this rock type, along with the additional information contained within this figure and within the descriptions in the textbook (Chapter 17 Investigation).



Basin Fill—Unconsolidated sand and gravel in the lower parts of the valley
 Upper Sandstone—Well-sorted, permeable sandstone
 Upper Shale—Impermeable, with coal
 Sinkerton Limestone—Porous, cavernous limestone
 Middle Shale—Impermeable shale
 Lower Sandstone—Permeable sandstone
 Lower Shale—Impermeable shale
 Basal Conglomerate—Poorly sorted with salty water
 Granite—Sparsely fractured; oldest rock in area.

Table 4. Proposed Remediation Plan

In the space below, briefly summarize your conclusions about the sources of the contamination, explaining the logic you used to identify facilities that contaminated the water. Briefly summarize how you propose to stop further flow of contaminated water, specifically by drilling wells to intercept and treat the water. Justify your location of the treatment wells.