Source Water Assessment Summary Report for
East Cocalico Township Authority
PWSID # 7360113
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The Pennsylvania Department of Environmental Protection (DEP), Bureau of Water Supply Management, conducted an assessment of potential contamination sources to the twelve wells that comprise the public drinking water supply of East Cocalico Township Authority. The objectives of this assessment were 1) to identify all **potential** pollutants within the area that contributes water to each drinking water source and 2) to prioritize the **potential** pollutants' influence upon each drinking water source. This assessment evaluated contaminants that **may** enter the ground water or surface water supplying East Cocalico Township Authority's drinking water sources. With this information, East Cocalico Township Authority may develop an effective source water protection program.

To begin the assessment of all potential pollutants of each drinking water source, a study area was defined. DEP uses a three-tiered wellhead protection area approach for wells, springs, and infiltration galleries. *Zone I* is the innermost protective zone around the wellhead and ranges from a 100- to a 400-feet radius. *Zone II*, the capture zone, is the surface area overlying the portion of the groundwater aquifer through which groundwater is diverted to the drinking water well during pumping. Approximate Zone II areas for each well are delineated using groundwater modeling. *Zone III* is the land area beyond Zone II that contributes recharge to the aquifer within the first two areas via surface water or groundwater.

Within East Cocalico's assessment areas, the land uses that typically contain pollutants were mapped. The Zone I Wellhead Protection Area (WHPA) land usage around all the sources is largely undeveloped. The Zone II WHPA for most of the sources is largely undeveloped, forested or used for agriculture although a portion of the Zone II WHPA is developed for some of the wells.

The potential pollutants associated with each land usage were then identified. For example, "automobile repair shops and gasoline stations" typically use, store, or handle petroleum hydrocarbons (gasoline), volatile organic chemicals (solvents), heavy metals, and other metals. Industrial facilities can generate hazardous waste products. Farming, through application of manure and herbicides/pesticides, may add nitrates, bacteria, and organic chemicals to the soil. Household hazardous waste, lawn care chemicals, and discharges from on-lot sewage disposal systems are only a few of the potential contaminants connected with residential areas. Transportation corridors create potential for spills of petroleum and hazardous wastes in addition to road salt applications. Staff from the DEP visited the Zone I and II areas to identify potential contamination sources and their associated pollutants.

Each potential pollutant was then evaluated employing a Susceptibility Analysis Matrix, which compares *Time of Travel* versus *Fate and Transport* (Persistence) versus *Quantity* to find the *Potential for Contamination*. The *Potential Impact* is then determined by weighing the *Potential for Contamination* value against the *Sensitivity* of the source. Finally, *Potential Impact* is then compared with the *Potential for Release* to generate a Susceptibility Rating for each potential contaminant ranging from A (High) through F (Low). Wellhead protection priorities are thus developed; contaminants with "A" ratings result in a higher protection priority than contaminants with "F" ratings (see Tables 1 Appendix D).

For East Cocalico Township Authority, the source sensitivity for all sources is high, because of the sources raw water quality. Therefore, the potential impact for the sources is either high or medium depending on the potential for contamination.

The Department identified 38-point sources and four non-point activities in the Zone I & II WHPA that could be potential sources of contamination to East Cocalico's sources. The point sources ranged from heavy and light manufacturing facilities to dry cleaners and gas stations. The non-point activities included agricultural activities (fertilizer and manure application), residential activities (home heating oil tanks, herbicide and pesticide use), transportation corridors and sewer lines located throughout the Zone II WHPA.

The point and non-point potential sources of contamination were assigned a protection priority. The protection priorities ranged from "A" to "C" with most of the potential sources of contamination being "A" protection priority.