

# PA DEP Small Drinking Water Systems Engineering Services Program (ESP) Case Study

Client Name: Nelson Township Authority  
Location: Nelson Township, Tioga County  
Project Name: Source Yield and Feasibility Studies

## Background:

The Nelson Township Authority (NTA) Public Water System serves approximately 287 people through 120 service connections to meet average demands of 21,700 gallons per day (gpd). They utilize ground water sources (2 wells) which are treated by greensand filtration with disinfection. The water system was constructed in 1979 after the U.S. Army Corps of Engineers constructed a flood control dam on the Cowanesque River and relocated the Village of Nelson.

## Public Health Challenges:

Since the construction of the water system, there have been water quantity (low yield) and quality (high iron and manganese) problems. In recent years and during times of drought, the NTA has had to truck in water for their customers because they were unable to meet demand, even with implementation of mandatory conservation measures.

## Capacity Issues:

**Technical** – The groundwater source is not providing a sufficient yield to meet demand. The poor quality requires greensand filtration.

**Managerial** – Mandatory conservation measures were implemented over the past few years. A shortfall in well production has led to trucking water in for their customers and created a financial burden.

**Financial** – Due to the small customer base, NTA had limited financial capabilities to raise capital funds for new source development and additional treatment.



## Actions:

A Source Yield Study was completed to examine the existing sources, identify potential new sources, and provide a system evaluation based on available information. The study concluded that the NTA should consider using the Cowanesque River as their primary source of water. A Feasibility Study was completed to determine the most viable alternative to convey and treat the surface water source to provide safe drinking water. Options evaluated included interconnection with an adjacent water system, development of ground water sources, and filtration of surface water. Based on the Feasibility Study, NTA selected a conventional filtration package plant utilizing a river intake structure. Conventional filtration does not require pilot studies, saving valuable time for NTA.

## Outcomes:

These Studies have provided an assessment of the existing water system, evaluated technical, managerial, and financial capabilities, projected future consumption and demands, and identified and evaluated alternatives to meet compliance requirements. Design services of the river intake and conventional package treatment plant will follow to provide NTA with an abundant source and safe drinking water to meet current and future customer needs 365 days a year.

