

## **Evaluating Riverbank Filtration (RBF) along the Shoal River as a Future Water Supply Option for Okaloosa County, Florida**

Okaloosa County Water & Sewer (OCWS) is proactively seeking a sustainable, environmentally sound, economical, and long-term water supply to continue the County's success and growth into the foreseeable future. The County currently operates 23 Floridan Aquifer wells with a total permitted capacity of 10.6 MGD. There are two main drivers prompting the search for additional water supply, including future Floridan Aquifer withdrawal restrictions to prevent overdraft and saltwater intrusion and population growth. Military population growth in addition to normal growth will place a substantial demand for additional water supply within the County.

After extensive evaluation and review of cost estimates for potential water supply alternatives, the County has selected three approaches for further investigation and evaluation, which include: riverbank filtration (RBF), direct withdrawal without offline storage, and direct withdrawal with offline storage. The main focus of this paper is research on the feasibility of RBF within the County's 224 acre property along the Shoal River near Crestview, FL. CH2M HILL has compiled and evaluated available data for this area to help advise the County on the capability of this site for RBF or other water supply wells along the River.

RBF is a long-used water treatment and withdrawal method that provides pre-treatment and water quality improvements compared to direct withdrawal. In fact, RBF has been a successful treatment process in Europe for over 100 years. The most common wells used for RBF include vertical wells, horizontal wells, or collector wells. Many utilities select RBF due the treatment cost savings provided by reduced treatment requirements. RBF wells essentially pull groundwater from an alluvial aquifer that is directly fed by a nearby river. Movement of water through alluvial aquifer provides water treatment such as removal of microbes, pesticides, total and dissolved organic carbon, nitrate, and other contaminants.

The main goal of this project is to evaluate all existing data and geological drilling results, and to advise the County of the likely potential for RBF of land within their land purchase along the Shoal River. Site specific characteristics such as water quality, geology, and the hydraulic conductivity of the riverbed and aquifer are greatly influential on the feasibility and capacity of a particular location. These factors and others are attributed to the long-term success and capacity of a RBF well field, which can be divided into three yield limiting factors: riverbed conductance, aquifer transmissivity, well screen dynamics.

In order to evaluate the Shoal River site's geology for RBF suitability, a drilling contractor has constructed temporary borings on the east and west side of the Shoal River along a power line corridor for ease of access. The drilling contractor conducted continuous standard penetration tests (SPT) according to ASTM-D1586 at each boring location. Slug testing of the temporary piezometers was also conducted in order to evaluate hydraulic conductivity of the aquifer in the vicinity of the piezometers. This data, in addition to information compiled in an extensive data and literature review, will help determine the best path forward for the County's future water supply.

Presenter and author:  
Erin Cox  
[erin.cox@ch2m.com](mailto:erin.cox@ch2m.com)  
CH2M HILL