

## ABSTRACT

This study aims to map the distribution of seawater intrusion in water sources used by coastal communities in Banda Sakti District, Lhokseumawe City. Seawater intrusion is the phenomenon of seawater entering the groundwater layer, which can contaminate clean water sources and threaten water availability for communities, especially in coastal areas. The method used in this study was spatial interpolation with a kriging approach, based on groundwater quality parameters such as salinity, electrical conductivity (EC), and pH. Data were collected from nine well points and then analyzed using ArcGIS software to produce a map of seawater intrusion distribution. The results of the analysis show that seawater intrusion was identified at three locations, namely Pusong Lama with an electrical conductivity value of 3428.67  $\mu\text{S}/\text{cm}$  and salinity of 2333.33 ppm, Kampong Jawa Baru with an electrical conductivity value of 2962  $\mu\text{S}/\text{cm}$  and salinity of 1666.67 ppm, and Banda Masen with an electrical conductivity value of 2500  $\mu\text{S}/\text{cm}$  and salinity of 1666.67 ppm. These values indicate a low level of seawater intrusion, characterized by the mixing of fresh water and seawater (brackish water conditions). Thus, although the groundwater at these three locations has not yet completely turned into salt water, there are already indications of seawater contamination. As a follow-up, further research is recommended to identify the main factors causing seawater intrusion in this region. This information is important for designing appropriate and sustainable groundwater resource prevention and management strategies.

**Keywords:** ArcGIS, Banda Sakti, coastal area, groundwater, kriging interpolation, Seawater intrusion, water quality.