Environmental Geology Report: Groundwater and Saltwater Intrusion in the Floridan Aquifer

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Introduction

This report explores saltwater intrusion in the Floridan Aquifer, one of the most productive groundwater systems in the United States. The intrusion of saltwater into freshwater aquifers has become a growing concern due to over-pumping and rising sea levels.

Key Concepts

- Aquifer Depletion: Over-extraction of groundwater causes pressure imbalance, leading to saltwater migrating inland.
- Saltwater Intrusion: Saltwater encroachment into freshwater zones reduces water quality and impacts drinking water supplies.
- Hydrologic Balance: The delicate interaction between recharge rates, withdrawal, and hydraulic head is crucial in maintaining freshwater dominance.

Data Analysis

Using topographic and hydrogeological maps from the USGS and class datasets, I identified:

- Coastal zones with high susceptibility to saltwater intrusion.
- Temporal changes in water quality measured through chloride concentration data.

Conclusions

The Floridan Aquifer is at risk due to continued groundwater withdrawal exceeding recharge rates. If unmanaged, this could lead to irreversible saline contamination. Recommendations include:

- Reducing groundwater pumping.

- Using alternate water sources.

- Installing monitoring wells in vulnerable areas.

Reflection on Writing Skills

This report showcases my ability to:

- Conduct and synthesize scientific research.

- Present data using visual aids.

- Write in a clear, academic tone while addressing a real-world environmental issue.