I. Project Introduction

- Tuni Grande is a small farming community in Pucara, Peru with a population of 250 people.
- Residents of Tuni Grande receive approximately 3 gallons of water per person per day.
- The water is highly contaminated with arsenic. Concentrations reach as high as 50 µg/L.
- The goal of this project was to provide the people of Tuni Grande a reliable and clean water source.

II. Design Criteria

- The World Health Organization recommends 100 L of clean water per person per day.
- Design must produce enough water for current demand and allow for population to double over the next 15 years.
- Drinking water must meet EPA standard of 10 µg/L of arsenic.
- Design must be simple and constructed from locally available materials.
- Design criteria dictates that the project must be affordable and reliable to limit maintenance and operational costs.

III. Alternatives Considered

- Ceramic Filters
  - Cheap and easy to produce
  - Effective arsenic removal
  - Difficult to make with local materials
  - Requires frequent maintenance and replacement
- Reverse Osmosis Filters
  - Best filtration method
  - Easy to use
  - High maintenance
  - Requires electricity
  - Very expensive and difficult to implement
- Well N°02
  - Provides additional water to residents
  - Reduces arsenic concentration by dilution
  - Difficult to install
  - Requires maintenance
  - Very expensive
- No Action Alternative
  - Current health risks
  - Current cost of maintenance
  - Water shortage
  - Baseline comparison

IV. Proposed Design

- Drilled well with driven well casing, approximately 45 feet deep
- Goulds 10GS05 1.5 horsepower submersible pump
- 9 1/4 foot 1.5 inch PVC pipeline extending from the well to the tank
- Steel culvert pipe sleeve
- Proper grout slurry and ground cover
- Community curriculum to maintain system
- Material cost opinion of $5,500

V. Results & Conclusion

- The findings from Engineers Without Borders show that the community of Tuni Grande must find an alternative water source.
- Andes Engineering has concluded that the best alternative in terms of cost, safety, feasibility, and environmental impact is a supplemental well and pipeline.
- In their design, Andes Engineering has provided the specifics in how and where the well and pipeline should be located.
- Calculations were done to prove that the pipe and pump sizing were optimal for the design.
- Plans and calculations are ready upon request to be delivered to the client.