



**University of Idaho**


College of Agricultural  
and Life Sciences

# **LOW-COST WATER WELLS FOR DEVELOPING COUNTRIES**

**RUSSELL QUALLS, PH.D., P.E.  
ASSOCIATE PROFESSOR &  
IDAHO STATE CLIMATOLOGIST  
DEPT OF CHEM & BIOL ENGR**

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- [WaterforAllInternational.org](http://WaterforAllInternational.org) (drilling method training)





Children/Women:  
Vulnerability





Limited water quantity



# ALTERNATIVE CONTAMINATED WATER SOURCES







Typical Water Source





**COMMUNITY-DRIVEN PROBLEM SOLVING**



# APPROPRIATE TECHNOLOGY: PERCUSSION HYDRAULICS





A close-up photograph of a manual drilling operation. A person's hands are visible, gripping a wooden handle that is part of a drill rig. A large, thick splash of brown drilling mud is being ejected from the end of a metal drill pipe, creating a wide, horizontal spray. The background is a blurred outdoor setting with green vegetation and a clear sky. The text "Passive ejection of cuttings in drilling mud" is overlaid in yellow on the right side of the image.

Passive ejection of cuttings in drilling mud



# DRILL TIP

Drill Tip: Leaf spring  
from automobile

Bell  
Reducer

2 Straight  
couplers







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# FINISHED WELL INFRASTRUCTURE



## Supplementary Material





**PUMP**



# FINISHED-WELL INFRASTRUCTURE CRITICAL CHARACTERISTICS

- Locally available components
- Repairable (no proprietary parts)
- Inexpensive materials (\$150-\$200 USD)
- Simple construction



# **SOCIO-CULTURAL ASPECTS OF THE WELL PROJECT**



# **POVERTY**

**LACK OF RESOURCES AND/OR  
KNOWLEDGE**

**VERSUS**

**SHAME & POWERLESSNESS**



A group of approximately 20 men are gathered outdoors in a grassy area under the shade of a large, thick-trunked tree. One man stands in the center, wearing a light-colored suit and holding a hat. The other men are seated on the grass, some wearing hats and casual clothing. The background shows more trees and a wooden fence. The scene suggests a community meeting or a public gathering in a rural or semi-rural setting.

**COMMUNITY ENGAGEMENT**




# COMMUNITY-IDENTIFIED CHALLENGES

- Personal Safety
- Distance & Time
- Children's Education
- Water Quantity & Hygiene
- Disproportionate Impact on Women & Children



# Well Cooperatives



Ten Households:

- Provide Labor
- Buy materials

We:

- Provide drill equipment
- Training (first two wells)





My goal is not to rescue or create dependency but to equip and empower communities to provide clean, accessible water for themselves.