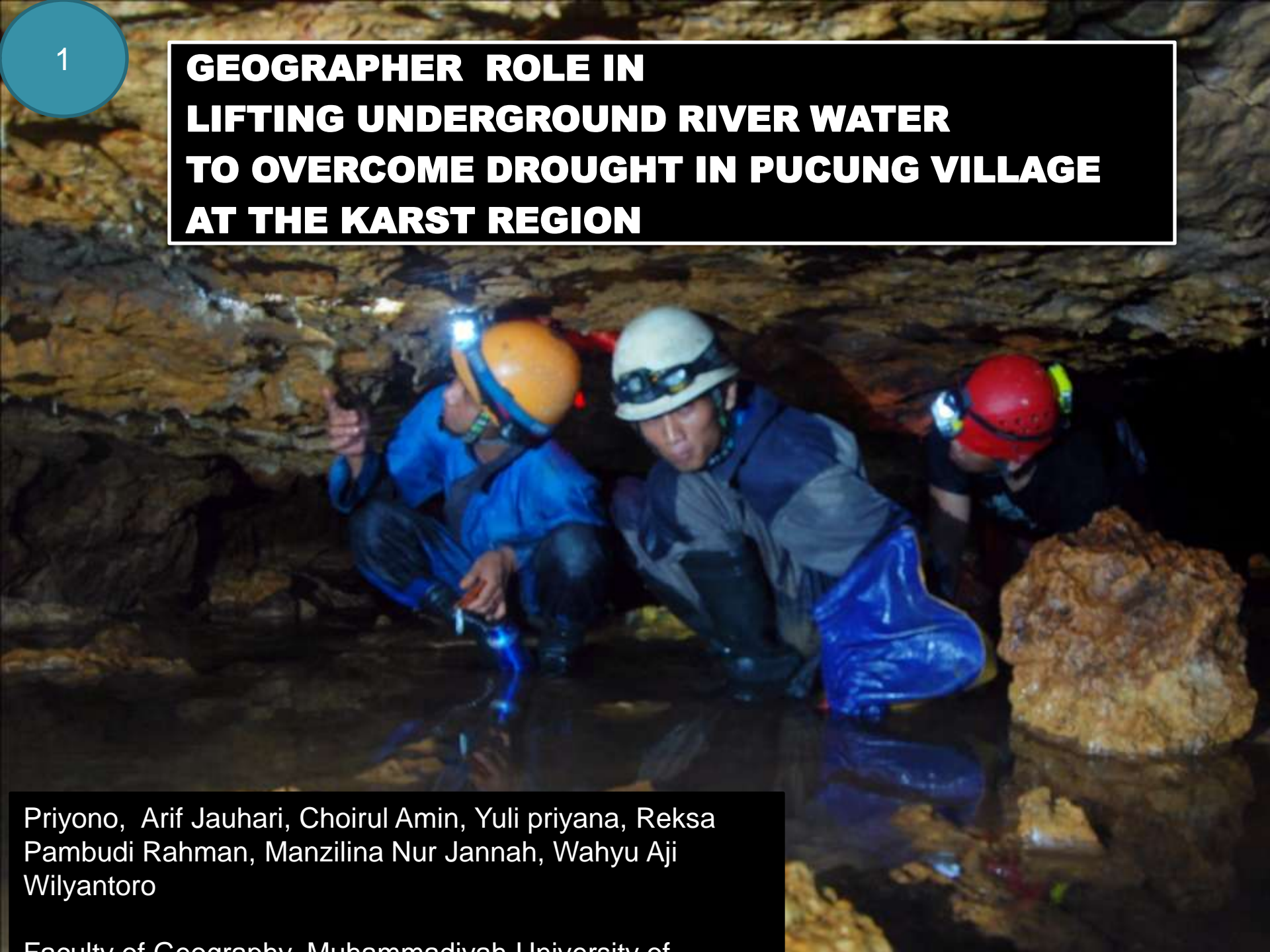
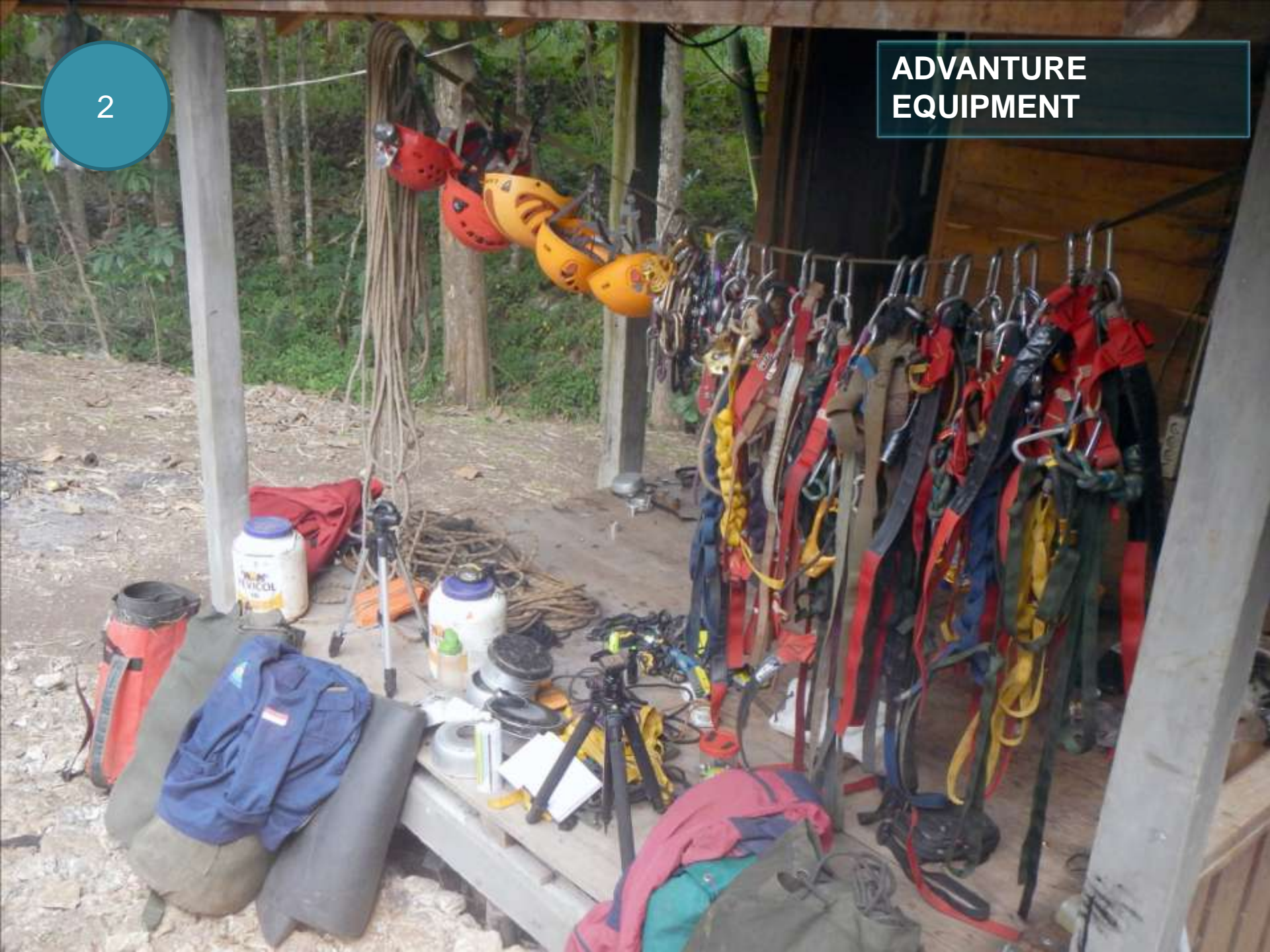


# **GEOGRAPHER ROLE IN LIFTING UNDERGROUND RIVER WATER TO OVERCOME DROUGHT IN PUCUNG VILLAGE AT THE KARST REGION**

A photograph showing three people in a cave. They are wearing helmets with headlamps and are crouching in a shallow, dark pool of water. The cave walls are rocky and uneven. One person in the center is wearing a white helmet and a blue jacket, looking towards the camera. Another person on the left is wearing an orange helmet and a blue jacket, also looking towards the camera. A third person on the right is wearing a red helmet and a black jacket, looking down. The water is dark and reflects the light from the headlamps.

Priyono, Arif Jauhari, Choirul Amin, Yuli priyana, Reksa  
Pambudi Rahman, Manzilina Nur Jannah, Wahyu Aji  
Wilyantoro

# ADVENTURE EQUIPMENT



3



# CAVING ACTIVITY

Merapi Volcano

# The Karst region

Lawu Mountain

Yogyakarta

Wonogiri

Pucung

Wonosari

Pegunungan Karst Gunungsewu

Pacitan

4



THE KARST REGION IS NOT  
FLATTENED, HILLY AND VALLEY



6

➤ The Pucung village has population of 4,190 people which more than half have difficulty getting fresh water for daily use.





- With an average farmer family income of IDR 600.000 per month they have to buy water for IDR 300,000 for dry season, thereby increasing the economic burden/economic pressure

OH GOD,  
WHEN DO MY FAMILY  
GET THE FRESH  
WATER ?

# Dry on the surface, but wet on the





infrared aerial  
photograph

9

PUCUNG

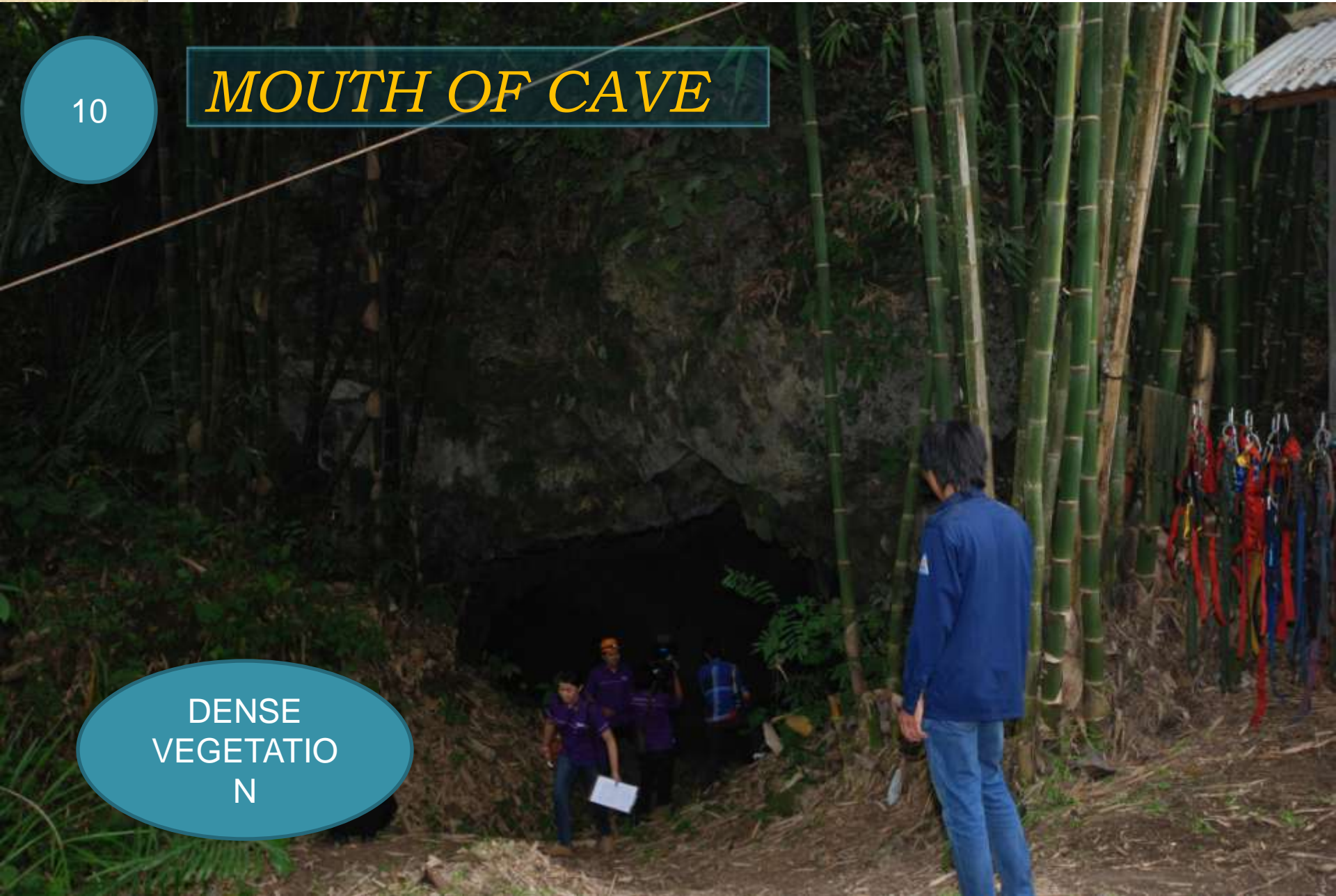
8-28



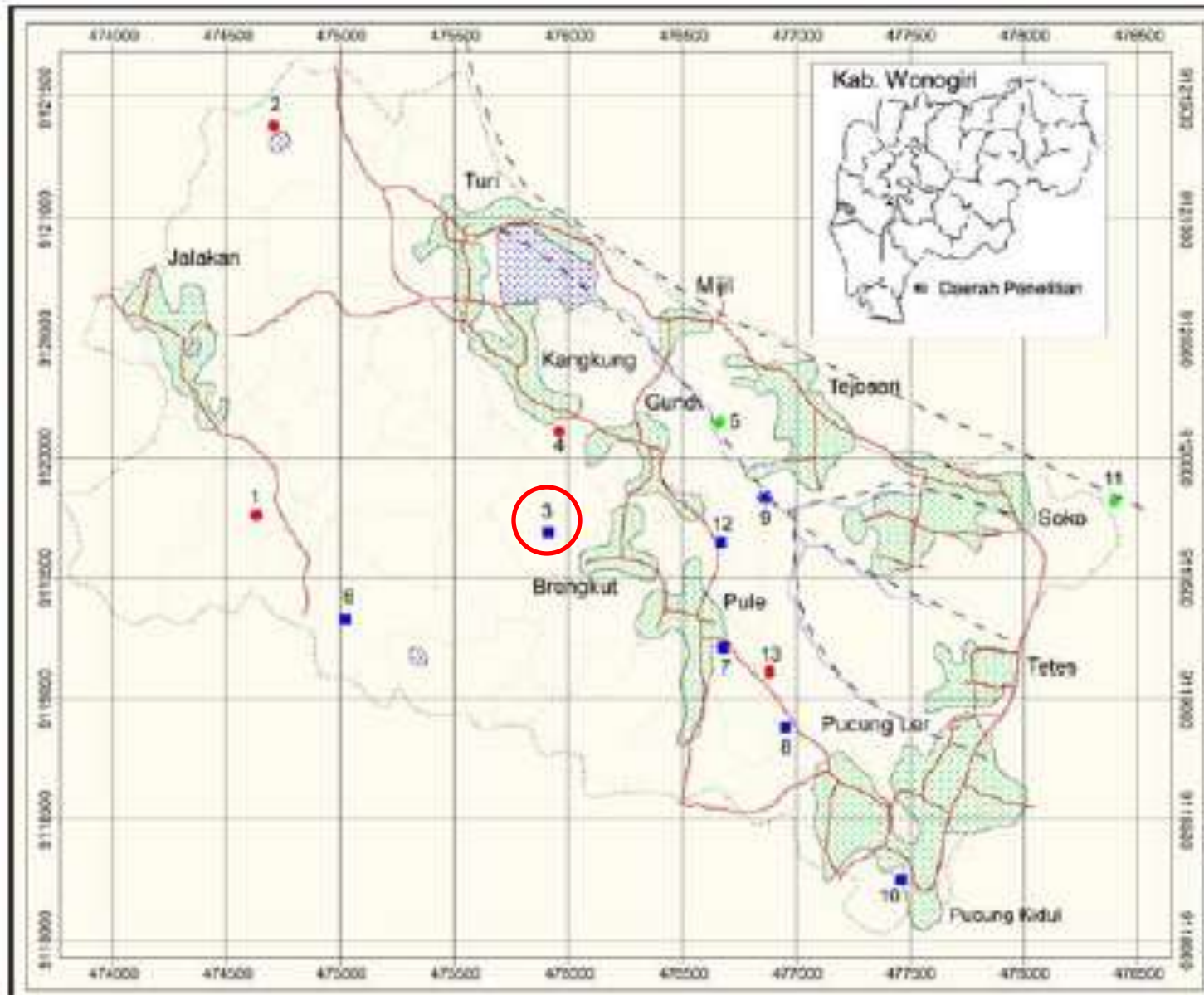
10

## *MOUTH OF CAVE*

DENSE  
VEGETATIO  
N



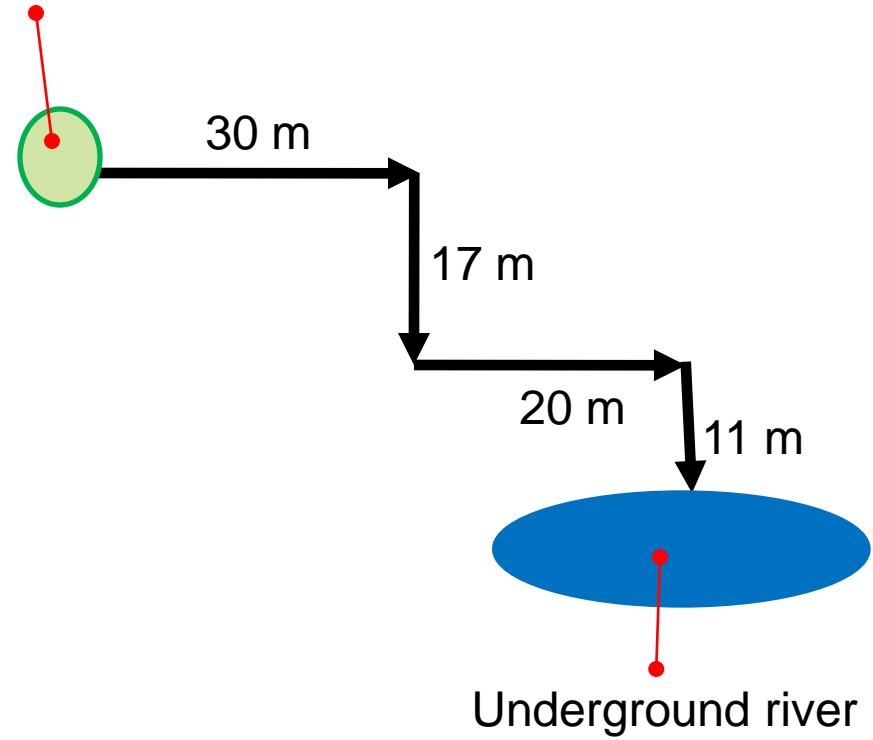
# Cave Distribution Map In Pucung Village





## Road to Underground River

Cave mouth



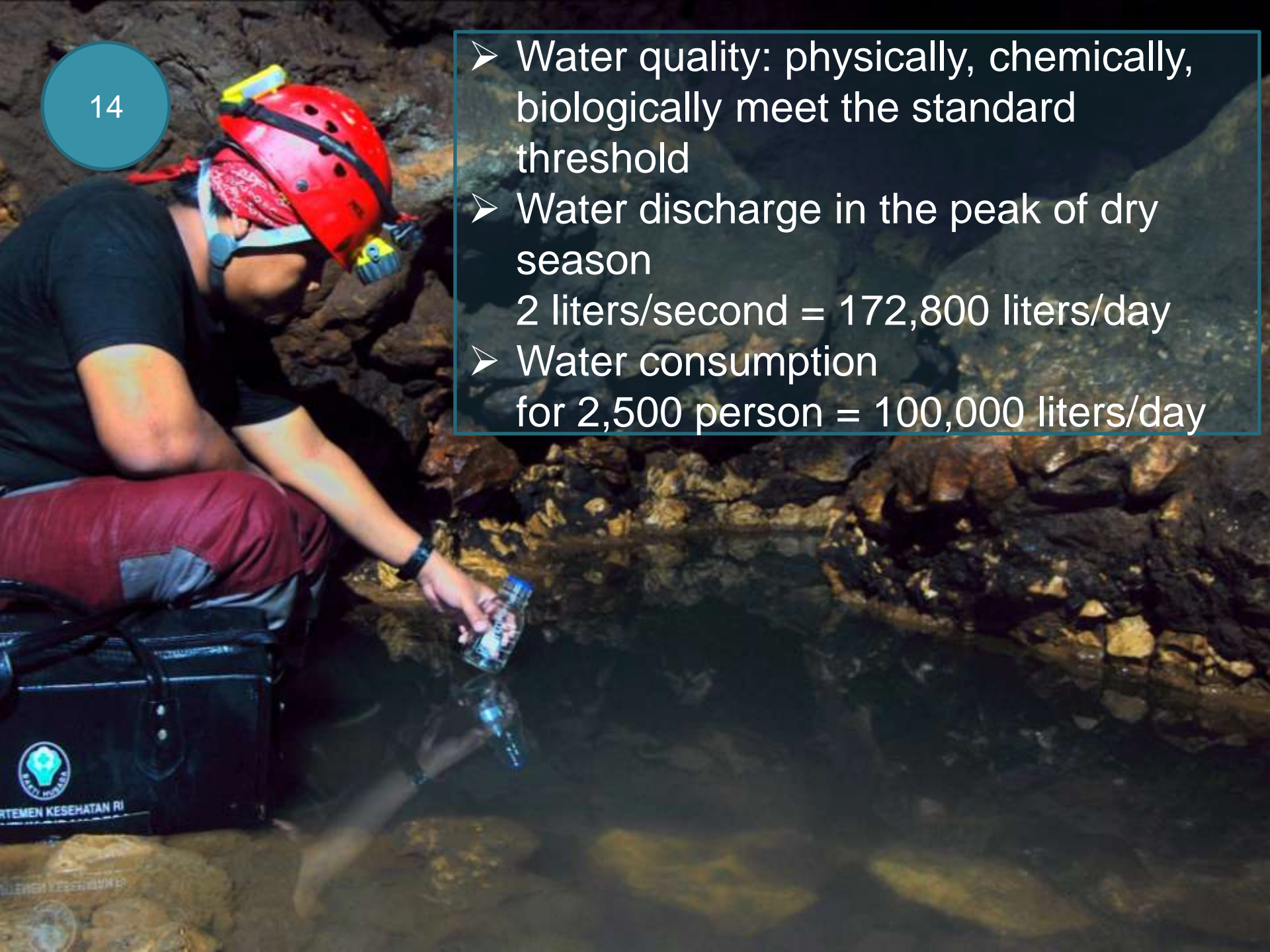
**UNDER GROUND RIVER**  
*in Suruh Cave Coridor, Pucung Village*

LIMSTONE  
NATURAL PAINTING  
IN THE CAVE

WATER IS  
DRIPPING



- Water quality: physically, chemically, biologically meet the standard threshold
- Water discharge in the peak of dry season  
 $2 \text{ liters/second} = 172,800 \text{ liters/day}$
- Water consumption  
for 2,500 person = 100,000 liters/day







The installation of submersible pump



# GUA SURUH

**LOKASI** : DESA PUCUNG KECAMATAN EROMOKO KABUPATEN WONOGIRI  
**TAHUN SURVEY** : 2001 -2002  
**GRADE SURVEY** : 4C  
**SURVEYOR** : ARIF JAUHARI, DWI ROCHMADI, BAMBANG P, ARIS W, SUROTO, JOKO W, JOKO S



## PENAMPANG 3 DIMENSI PENGANGKATAN SUMBER AIR BAWAH TANAH GUA SURUH



### KETERANGAN

-  : ARAH ALIRAN AIR
-  : CONTINUE EKSPLORE
-  : BATU
-  : RESEVOAR
-  : PIPA ELASTIS

SUMBER : PETA GUA SURUH TAHUN 2001 KMPA GIRI BAHAMA

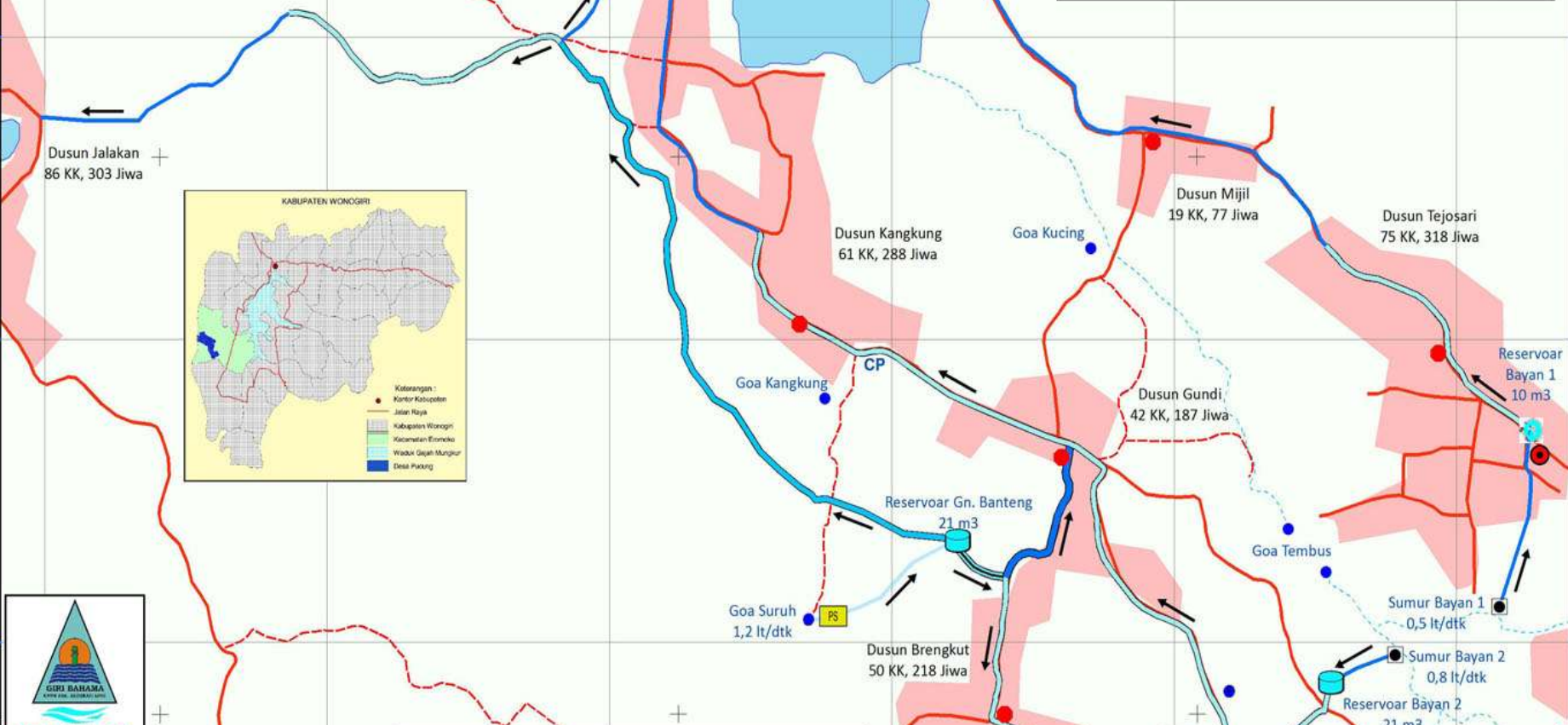
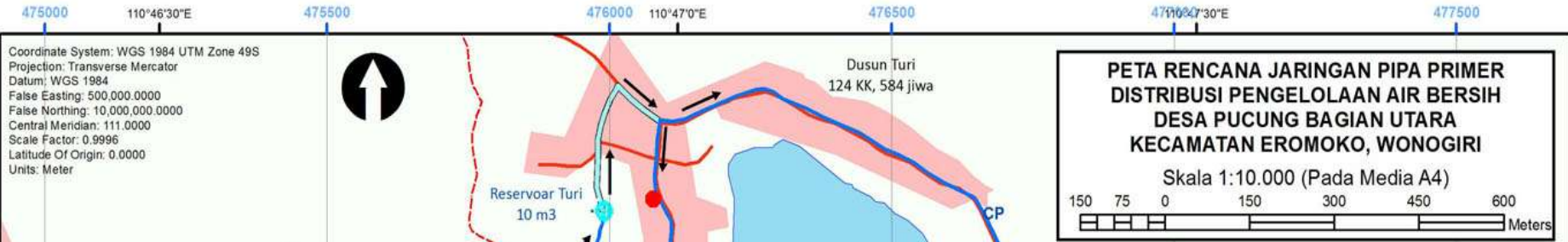
Gambar 8. Penampang Tiga dimensi Pengangkatan Sumber Air

BEKERJASAMA DENGAN  
 KELUARGA MAHASISWA PECCINTA ALAM GIRI BAHAMA F. GEOGRAFI UMS  
 DI DUKUNG OLEH  
 DEWAN DAKWAH ISLAMIAH INDONESIA (DDI) WILAYAH JATENG

Air Sungai Bawah Tanah Gua Suruh Desa Pucung



**GUNUNG BANTENG  
RESERVOIR**



Sumber:  
 - Survey GPS Jalur Pemetaan 5-7 Oktober 2013  
 - Survey GPS Rencana Reservoir 29-30 April 2014  
 - Peta Rupa Bumi Indonesia Lembar 1408-321 Tahun 2001

Disusun Oleh: Arif Jauhari, Abdul Rohman, M. Syarif H.  
 Kepada: Organisasi Pengelolaan Air Bersih Tim PKM-M KMPA Giri Bahama FG UMS "Tirta Goa Suruh", Desa Pucung, Kec. Eromoko, Wonogiri

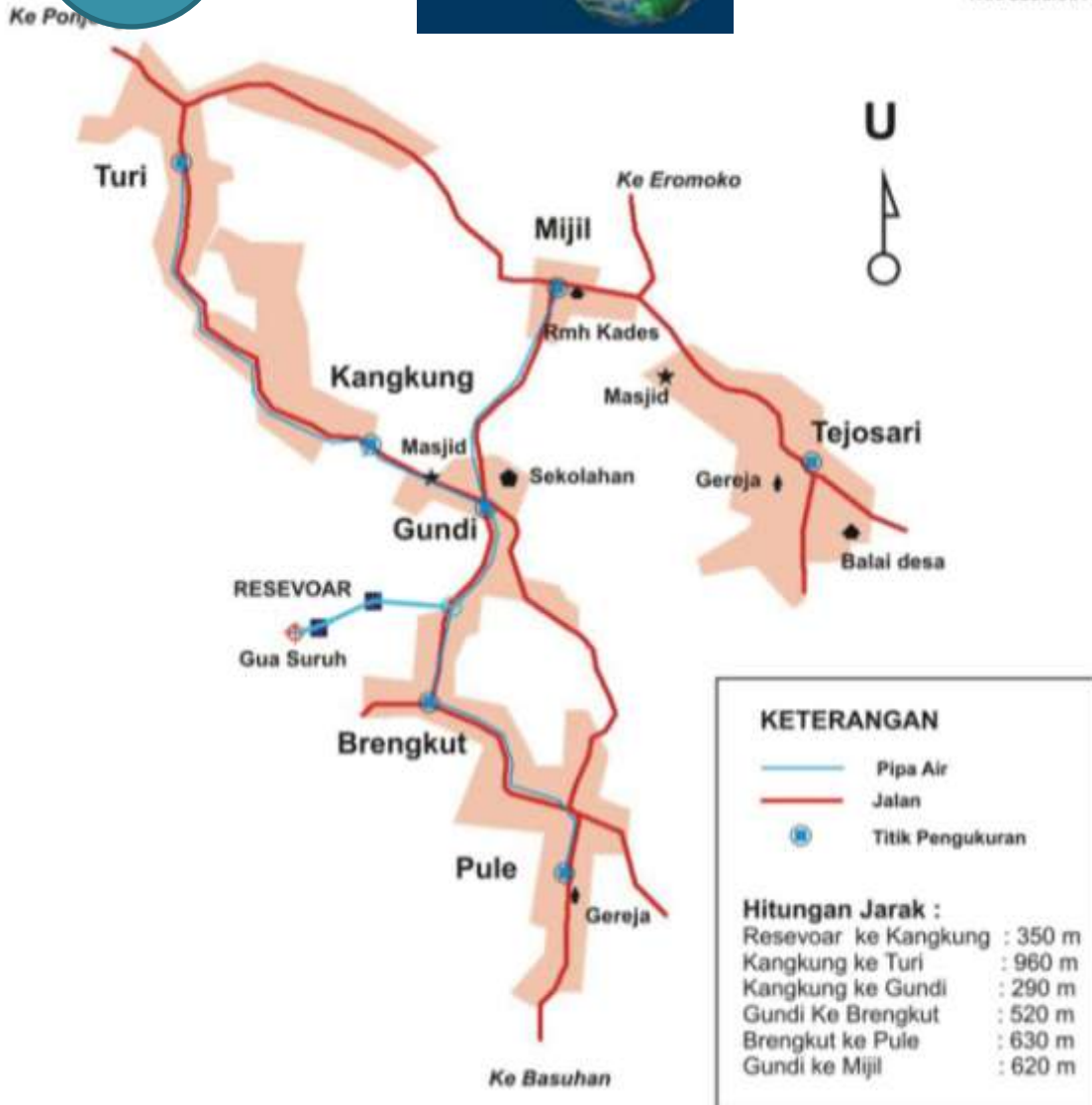
Legenda		
● Kantor Desa	Pipa Primer 4" = 144 m	--- Sungai Musiman
● Dusun	Pipa Primer 3" = 342 m	--- Jalan Desa
● Goa	Pipa Primer 2.5" = 1470 m	--- Jalan Setapak
● Reservoir Bagi	Pipa Primer 2" = 4748 m	■ Danau/Telaga
● Reservoir Induk	Pipa Primer 1.5" = 3888 m	■ Kampung
■ Stasiun Pompa	Pipa HDPE 1,5"	CP Check Valve
● Sumur	→ Arah Aliran	



## The application of GIS technology

This work was greatly helped by the application of GIS, such as:

- planning of distribution pipelines and piping requirements,
- planning of electrical lines,
- planning of the location of the reservoir, etc.



# WATER PIPE



# ELECTRICITY CABLE





This water lifting program are economically provide a very significant expenditure savings, ie 1560 % (the price of water from Rp 50,000/m<sup>3</sup> down to Rp 3,000/m<sup>3</sup>).

# Conclusions

1. Geography role in the provision of fresh water in Pucung is very significant namely through the use of geographic approach
2. There are efficiency for expenditure is very significant by Economically as much as 1,566 %  
(the price of fresh water from Rp 50,000/m<sup>3</sup> down to Rp 3,000/m<sup>3</sup>).
3. Drought in the Pucung village can be solved /overcome but need assistance /mentoring for sustainability



# Recommendation

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1. Distribution of fresh water should be extended to public piping, not only on the public hydrant.
2. Conserve Suruh Cave underground river with reforestation.
3. Expand the use of water for productive activities
4. Pucung community should be able to manage the water distribution independently, not depending on the Faculty of Geography UMS, independent in aspects of equipment maintenance, water distribution, as well as financial management



EXPANSE THE WATER USE

# WATER'S METER

