

# INSTALLATION OF DRILL WELLS TO OBTAIN CLEAN WATER IN THE JARING HALUS VILLAGE SECANGGANG DISTRICT LANGKAT REGENCY

Ivan Indrawan<sup>1\*</sup>, Ika Puji Hastuty<sup>1</sup>, Adina Sari Lubis<sup>1</sup>, and Nursyamsi Nursyamsi<sup>1</sup>

<sup>1</sup>Civil Engineering, Faculty of Engineering, Universitas Sumatera Utara, Jl. Perpustakaan Kampus  
USU Padang Bulan, Medan 20154, Indonesia

\*e-mail: ivan.indrawan@usu.ac.id

## Abstract

Human daily activities can not be separated from clean water, ranging from bathing, washing, drinking and cooking. Groundwater is one of the sources of water used to obtain clean water. In coastal areas or river estuaries in developing countries, villagers generally have difficulty getting clean water. Jaring Halus Village is located in Secanggang district, Langkat regency, North Sumatra Province. The village is bordered by the ocean and mangrove forests, where transportation access is difficult and limited. This village has received clean water services from the PDAM government, but the water flowing into people's homes has been increasingly choked. Several drill wells have been provided by the government but can only be found at a distance of 100-200 m from the beach. This cause underlies the Community Service Program team choosing a location in The Village of Jaring Halus. This activity aims to obtain clean water. This activity aims to get the clean water needs of residents by making drill wells, providing water storage tanks and installing water faucet installations in designated locations. With this facility, all village communities can accommodate and utilise clean water for daily needs.

**Keywords:** *clean water, drill well, water tank, Desa Jaring Halus*

## 1. Introduction

The Jaring Halus Village is one of the coastal villages in Secanggang Subdistrict, Langkat Regency in North Sumatra Province. It is a village bordering the Strait of Malacca to the north and east, south to Selotong Village, and west bordering Tapal Kuda Village. This village is far from the city centre, located on the relatively isolated coast. To reach it takes about 3 hours from the centre of Medan City. Two modes of transportation are needed, namely land transportation and sea transportation. It takes about 2 hours for land transportation. After that, it is connected



using a boat about  $\pm 45$  minutes that will cross from Batang Buluh to Jaring Halus Village (Figure 1).

Figure 1. Jaring Halus Village

There is no access other than by sea because the village is on the coast. The Jaring Halus village is about 68 km from the University of North Sumatra. The Jaring Halus village is inhabited by 3800 souls consisting of about 785 households and divided into five hamlets. The Jaring Halus Village community consists of several tribes and most people with livelihoods as fishermen. When arriving at The Jaring Halus Village, there is a narrow road condition with tiny houses that line each other. Most of the houses of the residents are shaped like stilt houses.

Another visible thing is the environmental conditions of the settlement filled with garbage. Much garbage is buried under the house, ranging from plastic waste, cans, and shells. In addition to being a citizen's garbage, the garbage is also garbage carried by the tide. In addition, in The Jaring Halus village, there

are also problems with the availability of clean water. The Jaring Halus village has received clean water services from the PDAM government, but the water flowing into people's homes has been increasingly choked in recent years. The government provides some drill wells but can only be found at 100200 m from the coast [2]. The need for clean water is very urgent because residents do not get certainty when PDAM water flows steadily. Even if the water flows, the discharge is minimal. During this time, residents must buy refillable water to cook, drink, and wash dishes. This situation further complicates the economy of the citizens.

Based on several problems found during the survey in Jaring Halus Village, it was agreed with partners that the problem of the availability of clean water became a priority problem to be resolved. Then it is recommended that a solution in the installation of drill wells.

## 2. Methods

The steps for the implementation of the activity are as follows:

- Literature Studies aimed at determining the correct working methods and problems in partner locations [3].
- Analysis that is done is: determine the location of the drill well, prepare a water tank buffer made of paralon pipes and Seawood, determine the location of the water pump and the capacity of the tank [4].
- Socialisation to the residents and determine the location of an exemplary drill well so that all residents can use it.
- Preparation tools and materials are required to install drill wells [5]. The tools and materials are conditioned according to the availability on site.
- Installation of all the clean water equipment on-site.

## 3. Results and Discussions

The Community Service Program implementation results are the installation of drill wells, water tanks, and water faucet installations. Implementations include:

- Location survey was conducted on June 22, 2021. Team (Chief Executive officer

and member with four students) came to the



site to socialise with the citizens about implementing drilling. Then it was agreed where the strategic location of the installation of the drill well (Figure 2).

Figure 2. Location of Drill Well

- Installation of plank activity at the location (Figure 3).



Figure 3. Plank of Activity

- Drilling is carried out for seven days, where after drilling, the water continues to be released for three days to see the quality of the water obtained (Figure 4). The depth of the drill well is until it gets clean, drinkable water [6]. The depth of the drill well is about 96 meters or about nine pipes.

Figure 4. Drilling

- Installation of a water tank buffer made of several columns of paralon pipes filled with concrete mixture, combined with several poles in the form of Seawood (Figure 5). Seawood is used because of its low costs, and considering that Seawood is

a material widely available in the location (supporting local wisdom), it is known that Seawood has good strength. Figure 5. Water Tank Buffer

- e. We placed a weatherproof polyester water tank [7] over a prepared buffer (Figure 6).



Figure 6. Placing a Water Tank

- f. Installation of water faucets by putting the pipes directly connected to the tank. Pipes are planted inside the wall tanks, then streamed into water faucets as many as four pieces (Figure 7). Also prepared a floor made of cement mixture. Walls and floors are covered with ceramic materials to add beauty and facilitate residents in taking water. In implementing the installation of drill wells and installing pumps and water tanks, partners who are the community of Jaring Halus Village participated in helping implement the activities.



Figure 7. Installation of water faucets

- g. Handover to the officials of Jaring Halus Village, carried out by the Community Service team to the Village officials represented by the Secretary of The Jaring

Halus Village, Mr Iskandar and community leaders represented by Mrs Ade Agustiani (Figure 8).



Figure 8. Handover

#### 4. Conclusion

Community Service Program in the Jaring Halus Village provides tangible benefits, among others:

- a. The procurement of clean water facilities can solve one of the problems of the availability of clean water, which is a priority problem of the citizens, so that residents can get clean water quickly, without having to travel 100-200 m to find the government has provided some drill wells.
- b. Furthermore, citizens will maintain and maintain drill wells and water faucet installations for the sake of continuing the availability of clean water.

#### Acknowledgements

We thank all those who have helped in the activities of the Community Service Program, namely: USU Community Service Institute, which has provided Non-PNBP 2021 funds, Village Head and residents of the Jaring Halus Village.

#### 5. References

- Langkat Pedia, *Keindahan Alam di Wisata Jaring Halus*, 2018, <https://langkatpedia.com/jaringhalus/>
- Hafni, R, dkk, *Studi Kelayakan Teknis Pelantar Pendaratan Ikan Di Desa Jaring Halus Kecamatan Secanggang Kabupaten Langkat Sumatera Utara*, 2016, Universitas Riau.
- Linsley, R. K., *Teknik Sumber Daya Air*, Jilid I, terjemahan oleh Djoko Santoso, 1985, Penerbit Erlangga, Jakarta.
- Morimura, T. dan Noerbambang, S.M., *Perancangan dan Pemeliharaan Sistem Plumbing*, 2005, PT. Pradnya Paramita, Jakarta.
- Limantara, L. M, *Hidrologi Praktis*, 2010, Lubuk Agung, Bandung.

Kodoatie, R. J., *Hidrolika Terapan: Aliran Pada Saluran Terbuka dan Pipa*, 2002, Penerbit Andi, Yogyakarta.

Tri Mulyono, *Teknologi Beton*, 2005, Penerbit Andi, Yogyakarta.