



Case Study

A CASE STUDY ON THE COMMUNITY INVOLVEMENT SURVEY OF THE DRINKING WATER CONCERNS FROM HINAPLANON PRODUCTION WELLS IN ILIGAN CITY, LANA DEL NORTE

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Abstract

Hinaplanon production well is the only deep well water source in Iligan City. However, it was destroyed upon the occurrence of Typhoon Sendong in December 2011. The aftermath of the typhoon had created various forms of contamination such as dead bodies of humans and animals and several forms of debris. Hence, the community was asked if the conditions of the production wells could still be used for various domestic uses. Results revealed that the respondents had no choice except on using the said production wells particularly for drinking purposes. It is therefore recommended that the Department of Health must regularly monitor the conditions of the quality of drinking water as well as the health conditions of the consumers.

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Keywords: community survey, deep wells, Iligan City, water quality



Introduction

Typhoon Sendong occurred in December 2011 in Iligan City that devastated many barangays, claimed many lives and brought immeasurable destruction of properties. Based on the initial survey conducted right after Sendong occurrence, water of the deep well was not in good condition. In particular, there is a strong possibility that the water was contaminated given that the flood brought in mud and other forms of contaminants. As a consequence, Barangay Hinaplanon was severely damaged, including the Hinaplanon Pumping Station which is situated near the Mandulog River. The control room failed to withstand the raging force of the water from the river. Fortunately, the pumps were only partially damaged. Thus, rehabilitation followed.

The assessment of the water was derived from the deep wells of Barangay Hinaplanon based on the physico-chemical and bacteriological characteristics of the water, namely odor, color, taste, turbidity, total dissolved solids (TDS), pH, acidity, alkalinity, nitrate, nitrite, total hardness, mercury, and *Escherichia coli* (*E. coli*) as the essential indicator of fecal contamination. *E.coli* count was the only bacteriological parameter considered. For mercury analysis, samples were collected at specific sampling point in a large pipe which received all the water drawn from Wells 1, 2 3, and 5.

All the results of the selected physical, chemical and bacteriological parameters in a study conducted were within the Philippine National Standard of Drinking Water 2007 and World Health Organization 2011 for both dry and wet periods. It was concluded that the water in Hinaplanon Production Wells is safe for the consuming public to drink and for other domestic uses as far as the dates of sampling were concerned. Now with these results, this still needs constant monitoring of the water quality of Hinaplanon deep wells.

Although these results may show the safety of Hinaplanon deep wells, consumers experience in using the water is one of the most important parameters in this study.

Methods

Consumer's involvement survey: The survey questionnaires consisted of questions regarding the usage of water, domestic or drinking use, were distributed to the households that used this water supply. These questionnaires also consisted some concerns that they had experienced.

Results and Discussion

Data obtained in the drinking and domestic water uses were being compared through the results from the different barangays in Iligan City but used only from one water source which is the Hinaplanon deep well. The results were from a 10-respondent survey in every barangay subjected. The deep well is categorized by 3 wells. The water source was constructed with the drilling of two wells (Well 1 and Well 2) to supply water to the four barangays of Iligan City, namely, Upper Hinaplanon, Luinab, Del Carmen and a portion of Pala-o which are situated in the southern part of the City. The other well (Well 3) was constructed to cater five additional barangays which are Sto. Rosario, Sta. Felomina, Bagong Silang, San Roque and some part of Barangay Santiago. In summary, the Hinaplanon deep well were able to supply 9 barangays in the City of Iligan.

As a result of the Wells 1 and 2 given from the data of survey, 15% indicated as the highest percent based on the response of the residents in Brgy. Upper Hinaplanon (Table 1, Figure 1). The respondents claimed that they used the source of water as their drinking water. Meanwhile the lowest percentage goes to the Brgy. Pala-o, therefore 2.5% of the residents of the area used this source as their drinking water. In Well 3, given from the data of survey, 14% was obtained as the highest percent based on the response from the residents in Brgy. Sto. Rosario (Table 2, Figure 2). Similarly, the residents were using this water source as drinking water.



Table 1. Response of the residents based on Wells 1 and 2 Result (4-Brgy) in Iligan City.

Barangay in Well 1 and 2	Result from 10- Respondent every Brgy who uses these Well as their Drinking Water	Percentage (Result from 10- Respondent/ Total Respondents of 4-Brgy)
Upper Hinaplanon	6	15%
Luinab	3	7.5%
Del Carmen	2	5%
Pala-o	1	2.5%

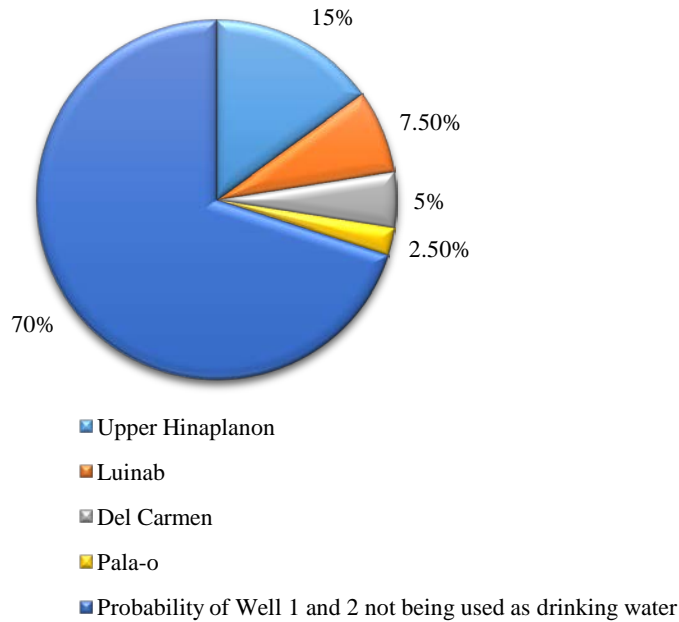


Figure 1. Wells 1 and 2 (4-Brgy) in Iligan City.

Table 2 . Response of the residents based on Wells 3 and 5 Result (5-Brgy) in Iligan City.

Barangay in Well 3	Result from 10- Respondent every Brgy who uses these Well as their Drinking Water	Percentage (Result from 10- Respondent/ Total Respondents of 5-Brgy)
Sto.Rosario	4	8%
Sta.Felomina	4	8%
Bagong Silang	4	8%
San Roque	4	8%
Santiago	7	14%

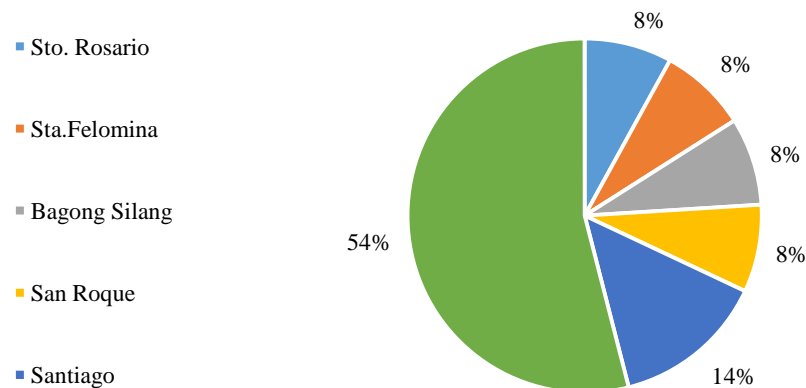


Figure 2. Wells 3 and 5 (5-Brgy) in Iligan City.

Summary and Implications

Results of the survey questionnaires were testified by the laboratory results conducted for water quality analysis. The physical characteristics of Hinaplanon deep well were within the standard tolerable limits set by the Philippine National Standards for Drinking Water and World Health Organization. Similarly, the chemical content (pH, acidity, alkalinity, total hardness, nitrate nitrite and mercury), results showed that chemical content of the water supply were within the required standards for drinking water.

Providing access of drinking water (deep well), through public domain indicates preferential rights to them if the ground water passes along the government installed pumps at Brgy. Hinaplanon, Iligan City, and therefore, can be used as drinking water and domestic consumption purposes.

Based on the results from the community involvement survey, 46% of Well 3 and 30% of Wells 1 and 2 were being used as drinking water. Hence, the 70% of Wells 1 and 2 and 54% of Well 3 were being used as sources of drinking water.

Most of the household that used the water other than drinking experience stains from long storage of water. This might indicate that the water may contain minerals above limits and posed some health hazards. The concerned consumers wanted to know the quality of the water for the assurance of their health.

Conclusion and Recommendations

Despite that the water parameters studied passed through the standard limits, and that the residents used it for drinking purposes, it is therefore imperative that a constant monitoring of the water quality of Hinaplanon production wells be performed by proper authorities. There should be two monitoring activities to be done: namely, compliance monitoring and the operational monitoring. In compliance monitoring, it should be done twice per annum to determine whether water supply complies with the standards set by DOH and WHO. The compliance monitoring samples should be analyzed in accredited laboratories.

In operational monitoring, it should be done at least once a week. The analysis to be used should provide the methods of proper calibration and subject to analytical quality control. Water quality varies with the present and future developments or anthropogenic activities specifically within the watershed and in the nearby areas. So it is important that the quality of the water be rigorously monitored to ensure that proper and prompt remediation be conducted when any water parameter exceeds the PNSDW and WHO standard limits.



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