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IMPACT OF FISH AUCTION SITE WASTE ON GROUNDWATER POLLUTION LEVEL IN LAMPULO VILLAGE

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ABSTRACT

Waste generated from activities at the fish auction site in Lampulo Village has the potential to degrade environmental quality, particularly groundwater quality. This study aims to assess the impact of waste from fish auction sites on groundwater quality in Lampulo Village. Groundwater quality was evaluated using electrical conductivity (EC) and salinity parameters to indicate pollution levels. The results show that groundwater quality in the study area has significantly declined due to waste generated from fish auction activities. Groundwater pollution levels are classified as very high, with EC values exceeding 4,500 µS/cm, indicating very saline groundwater conditions. Electrical conductivity is the ability of groundwater to conduct an electric current and reflects the concentration of dissolved ions, which serves as an important indicator of groundwater contamination. Elevated EC values observed in Lampulo Village suggest a substantial contribution from dissolved salts originating from waste from the fish auction site. Furthermore, groundwater salinity classification reveals that most groundwater wells in the study area fall within the brackish and salty water categories. These conditions indicate that groundwater surrounding the fish auction site has been contaminated and is no longer suitable for domestic use, including drinking, cooking, and bathing. This study emphasises the need for effective waste management strategies at the fish auction site to mitigate groundwater pollution and to support environmental sustainability and public health protection in coastal settlement areas.

Keywords: *waste; pollution; groundwater quality*

INTRODUCTION

Groundwater is a vital water resource that supports human life, particularly for domestic needs, agriculture, and community economic activities. In coastal areas, groundwater often serves as the primary source of clean water due to limited surface water availability and the high dependence of communities on dug and drilled wells (Todd & Mays, 2005). However, increasing human activities and uncontrolled coastal development can degrade groundwater quality through pollution from various waste sources (Fetter, 2001). One

economic activity with significant potential to cause environmental pollution in coastal areas is the operation of fish auction sites. Fish auction sites play a strategic role in supporting the coastal community's economy by serving as centres for the distribution and marketing of fishery products (Rizwan et al., 2020). In Lampulo Village, Banda Aceh City, the fish auction site functions as a hub for fishermen and fish traders and contributes significantly to the local community income. Nevertheless, fish auction activities also generate substantial amounts of organic and liquid waste, including fish residues, wastewater from washing activities, and processing waste, which may pollute the surrounding environment if not properly managed (Afif, 2022).

Lampulo Village is a coastal area with hydrogeological conditions that are highly vulnerable to groundwater contamination. The relatively flat coastal morphology, dominance of alluvial materials, and high intensity of human activities make groundwater in this area susceptible to contamination from domestic waste and economic activities (Foster et al., 2013). Several previous studies conducted in the coastal area of Lampulo indicate variations in groundwater quality influenced by both natural factors and human activities. Afriyani et al. (2020) reported indications of declining groundwater quality in the Lampulo coastal area, as indicated by several physical and chemical parameters. A subsequent study by Afriyani et al. (2023) also revealed variations in the quality of freshwater groundwater for domestic use at several observation points in the Lampulo area.

Organic waste generated from fish auction activities can undergo decomposition, producing hazardous compounds such as ammonia sulfide and methane. These compounds may infiltrate the soil and contaminate groundwater, particularly in areas with shallow groundwater levels and high soil permeability (Freeze & Cherry, 1979). If such waste is not managed correctly, these hazardous substances can seep into the ground and pollute surrounding groundwater, thereby reducing water quality and posing risks to human health and organisms that depend on these water sources. Therefore, proper and sustainable waste management is essential to prevent adverse environmental and human health impacts

(Nursabrina et al., 2021). Groundwater pollution from organic waste may lead to deterioration in water quality, characterised by increased electrical conductivity, changes in odour, taste, and colour, and elevated concentrations of contaminants harmful to human health and other living organisms (Appelo & Postma, 2005).

Waste management efforts that can be implemented to reduce pollution impacts include: (1) the application of waste treatment systems, such as aerobic, anaerobic, and physicochemical treatments, aimed at reducing hazardous substances so that the waste becomes safer for disposal; (2) the utilization of organic waste as raw material for biogas production or organic fertilizer, which can reduce waste volume while generating environmentally friendly alternative energy; and (3) the implementation of environmentally friendly technologies, such as sustainable fishing gear, recyclable packaging materials, and alternative energy sources, to minimize the environmental impact of fish auction activities (Arsawan et al., 2007).

The objective of this study is to assess the impact of waste generated at the fish auction site on groundwater pollution in Lampulo Village. This research extends a study by Afriyani et al. (2020) on groundwater quality analysis for domestic use in the coastal area of Lampulo, Banda Aceh City. The previous study focused on groundwater quality analysis using several physical parameters, showing that approximately 80% of groundwater samples were clear, 100% were odourless, and 80% were tasteless (Afriyani et al., 2023). In contrast to earlier studies, this research explicitly emphasises the influence of fish auction site waste as a pollution source on groundwater contamination levels in Lampulo Village.

Nevertheless, studies that specifically address the impact of fish auction site waste on groundwater pollution levels in Lampulo Village remain limited. The results of this study are expected to provide scientific information on groundwater pollution levels, serve as a basis for planning more effective waste management strategies at fish auction sites, and support groundwater resource protection and sustainable development in coastal areas.

Although previous studies have investigated groundwater quality in coastal areas and identified the influence of natural and anthropogenic factors,

most fisheries-related waste studies have primarily focused on surface water pollution and its ecological impacts. In Lampulo Village, earlier research has analysed groundwater quality for domestic use. However, it has not specifically examined fish auction site waste as a pollution source or its contribution to groundwater contamination. Therefore, a clear research gap exists regarding the spatial and physicochemical impacts of waste from fish auction sites on groundwater quality in coastal environments. This study addresses this gap by providing a spatially explicit and comprehensive analysis of groundwater contamination from fish auction site waste, based on key physicochemical parameters within the coastal hydrogeological context of Lampulo.

MATERIALS AND METHODS

This study employed a quantitative approach through field surveys, interviews, and a literature review (Sürücü et al., 2020). The study focused on phreatic groundwater. Sampling locations were determined based on variations in electrical conductivity (EC) values, groundwater flow patterns, and landform units within the study area. Mapping techniques were implemented using a Geographic Information System by processing and analysing spatial data, including the preparation of landform unit maps, flownet (groundwater flow network) maps, and electrical conductivity (EC) zoning maps. Landform unit maps were developed based on interpretations of topographic data, slope gradients, and geomorphological conditions, while flownet maps were derived from hydraulic gradient directions and groundwater table elevations. Furthermore, EC zoning maps were generated by spatially interpolating EC values from field measurements to represent the spatial distribution of groundwater quality. Groundwater sampling locations were determined based on the overlay results of all thematic maps.

The instruments used in this study included a GPS to determine the coordinates of sampling points, a pH meter, and a water quality checker to measure electrical conductivity (EC), total dissolved solids (TDS), pH, and water temperature. Data analysis used descriptive and spatial approaches to examine relationships between groundwater quality parameters (EC,

TDS, pH, and temperature) and landform conditions, as well as groundwater flow patterns.

Field measurement data were analysed using descriptive statistics to identify the characteristics and variations in groundwater quality, and the results were subsequently visualised in the form of thematic maps to illustrate the spatial distribution patterns of phreatic groundwater quality. This analysis aimed to present the research findings systematically and to support the achievement of the stated research objectives (Herdayati & Syahrial, 2019). The data sources in this study included primary data from field measurements and observations, as well as secondary data such as base maps, topographic data, and relevant supporting literature. Lampulo well water data is shown in **Table1.**

Table 1. Lampulo Well Water Data

Point	TMA	Suhu	DHL	Ph	Altitude	Explanation
1	1,42 m	31,2	198,4	7,3	3 m	Little Salty, Cloudy, No Smell
2	3,61 m	31,3	194,4	7,8	5 m	Fresh, Clear, No Smell
3	1,75 m	31,1	193,6	7,2	3 m	Fresh, Clear, No Smell
4	1,06 m	30,9	193,0	7,4	2 m	Fresh, Clear, No Smell
5	3,66 m	30,8	181,7	7,3	5 m	Fresh, Clear, No Smell
6	1,97 m	31,1	185,0	7,4	3 m	Fresh, Clear, No Smell
7	3,99 m	31,1	199,7	7,4	5 m	Fresh, Clear, No Smell
8	3,07 m	33,3	188,9	6,8	4 m	Fresh, Clear, No Smell
9	2,68 m	33,0	185,9	7,2	4 m	Fresh, Clear, No Smell
10	6,37 m	33,0	181,6	7,3	7 m	Fresh, Clear, No Smell
11	4,2 m	32,1	185,9	7,2	5 m	Fresh, Clear, No Smell
12	6,03 m	32,1	188,8	7,4	7 m	Fresh, Clear, No Smell
13	6,78 m	31,9	192,4	6,9	8 m	Fresh, Clear, No Smell
14	6,31 m	33,1	184,6	7,4	7 m	Fresh, Clear, No Smell
15	4,47 m	31,5	143,1	7,3	5 m	Fresh, Clear, No Smell
16	4,15 m	31,2	152,8	7,6	5 m	Little Salty, Clear, No Smell
17	4,83 m	31,4	195,6	7,3	6 m	Fresh, Clear, No Smell
18	6,14 m	31,0	185,2	7,3	7 m	Fresh, Clear, No Smell
19	4,99 m	29,3	196,0	7,0	6 m	Little Salty, Clear, No Smell
20	3,3 m	29,2	193,5	7,4	4 m	Fresh, Clear, No Smell
21	6,24 m	30,9	169,7	7,1	8 m	Little Salty, Cloudy, No Smell
22	4,92 m	31,0	180,5	6,9	7 m	Little Salty Cloudy, No Smell
23	3,72 m	28,7	185,7	6,7	5 m	Salty, Clear, No Smell
24	2,36 m	31,2	185,7	7,2	4 m	Fresh, Clear, No Smell
25	1,67 m	29,6	184,9	6,3	3 m	Salty, No Smell, Cloudy
26	6,13 m	29,4	195,2	7,5	7 m	Fresh, Cloudy, No Smell
27	2,24 m	33,1	193,0	7,2	4 m	Slightly salty, Cloudy, No Smell
28	3,66 m	34,4	177,6	7,0	5 m	Fresh, Clear, No Smell
29	2,59 m	32,4	197,6	7,2	5 m	Fresh, Clear, No Smell
30	3,385 m	31,1	189,1	7,5	5 m	Salty, Clear, No Smell
31	4,9 m	31,0	197,9	7,4	6 m	Salty, Clear, No Smell

Point	TMA	Suhu	DHL	Ph	Altitude	Explanation
32	3,55 m	31,3	197,4	7,0	5 m	Fresh, Clear, No Smell
33	4,72 m	30,5	196,6	7,3	6 m	Fresh, Cloudy, No Smell
34	2,09 m	30,4	186,3	7,1	3 m	Fresh, Cloudy, No Smell
35	3,53 m	30,2	172,3	7,0	5 m	Fresh, Clear, No Smell
36	4,205 m	30,1	172,5	6,9	6 m	Fresh, Clear, No Smell
37	3,42 m	29,9	194,1	6,9	5 m	Fresh, Clear, No Smell
38	5,34 m	29,6	138,1	6,8	7m	Fresh, Clear, No Smell
39	3,51 m	32,2	196,6	7,1	6m	Fresh, Yellow, No Smell
40	2,26 m	31,2	198,8	7,3	4m	Fresh, Cloudy, No Smell
41	4,54 m	31,3	198,2	7,3	5m	Fresh, Clear, No Smell
42	3,92 m	32,4	184,3	7,9	7m	Fresh, Clear, No Smell
43	2,16 m	31,0	191,2	7,3	3m	Fresh, Clear, No Smell
44	2,38 m	31,2	192,7	7,1	4m	Fresh, Clear, No Smell
45	4, 81 m	31,2	198,4	7,7	6m	Fresh, Clear, No Smell
46	3,74 m	30,5	197,3	7,3	5m	Fresh, Clear, No Smell
47	5 06 m	30,5	183,1	7,8	6m	Fresh, Clear, No Smell
48	5 92 m	30,4	189,1	7,9	7m	Fresh, Clear, No Smell
49	3,67 m	30,0	199,1	7,9	5m	Fresh, Salty, No Smell
50	4,07 m	30,4	197,4	7,5	5m	Fresh, salty, No Smell

Source: Measurement of wells, 2023

RESULTS AND DISCUSSION

1. The Impact of Fish Auction Waste on Groundwater Quality in Lampulo Village.

Waste generated at the fish auction site can negatively affect groundwater quality in Lampulo Village. Some of the impacts that can occur as a result of this waste include:

a. Declining groundwater quality

The waste generated at the fish auction site contains hazardous chemicals, including heavy metals, pesticides, and organic matter. (Okereafor, 2020) If not managed properly, this waste can seep into the ground and contaminate the surrounding groundwater. This can degrade groundwater quality and render it unfit for consumption. (Widyaningsih, 2022).

Decreasing groundwater quality can result from various factors, including sewage contamination. Waste generated at the fish auction site contains hazardous chemicals, including heavy metals, pesticides, and organic matter. If waste is not managed properly, it can seep into the ground and contaminate surrounding groundwater (Rao et al., 2005). Decreasing groundwater quality can make it unfit for consumption. Contaminated groundwater can contain substances harmful to human health, such as bacteria, viruses, pesticides, heavy metals and organic matter. If polluted groundwater is used for daily

needs such as bathing, washing or cooking, it can hurt human health.

In addition, declining groundwater quality can damage the ecosystem around the fish auction site. Contaminated groundwater can damage plants and animals that use it, and can disrupt the balance of the surrounding ecosystem (Chakraborti et al., 2011)

In this case, it is necessary to make efforts to prevent contamination of groundwater by fish auction waste. (Sampat, 2021) These efforts can be carried out through effective, environmentally friendly waste treatment and the use of technologies that help reduce the impact of waste on groundwater quality. If waste is managed correctly, it can prevent declines in groundwater quality and maintain human health and environmental sustainability.

b. Threatening human health

Groundwater pollution caused by fish auction waste can threaten human health. Using polluted groundwater for daily needs such as bathing, washing, or cooking can have a negative impact on human health. (Mrozik et al., 2021) Groundwater polluted by waste from a fish auction site can contain substances harmful to human health, such as bacteria, viruses, pesticides, heavy metals, and organic matter. If polluted groundwater is used for daily needs such as bathing, washing or cooking, it can have a negative impact on human health.

Some of the health impacts that can occur as a result of groundwater contamination by fish auction waste include: (Anwar Daud et al., 2023)

1) Gastrointestinal Disturbances: Contaminated groundwater may contain bacteria or viruses that can cause gastrointestinal disturbances, such as diarrhoea, nausea, and vomiting.
2) Respiratory problems: Groundwater contamination can also affect air quality in the surrounding area. This can cause breathing problems such as asthma or allergies.
3) Poisoning: Groundwater contaminated with heavy metals or other hazardous chemicals can cause poisoning in the human body.
4) Skin and eye infections: Contamination of groundwater can also cause skin and eye infections, especially if the water is used for bathing or washing.

c. Damaging the ecosystem

Groundwater contamination can also damage the ecosystem around the fish auction site. (Pradhan, 2023) If polluted groundwater is used for agricultural irrigation or for livestock, it can damage affected crops and livestock. Polluted groundwater can affect the life of the surrounding flora and fauna. Some of the impacts that can occur as a result of groundwater contamination by fish auction site waste include:

1) Damage to plants: Contaminated groundwater can damage the plants that use it. This can result in plant death or unhealthy plant growth. As a result, this can disrupt the balance of the surrounding ecosystem.
2) Disturbance to animals: Contaminated groundwater can also affect the health of animals that use it. This can cause animals to become sick or die from exposure to hazardous substances in groundwater.
3) Disturbance to the ecosystem: Pollution of groundwater from fish auctions can disrupt the surrounding ecosystem's balance. This can result in various species of animals and plants becoming endangered because they are unable to survive in unbalanced conditions.
4) Declining environmental quality: Damage to the ecosystem around the fish auction site from contaminated groundwater can degrade environmental quality. This can result in an unhealthy environment for humans and animals living in the vicinity.

d. Reducing the carrying capacity of the environment

Groundwater contamination can also reduce the carrying capacity of the environment around the fish auction site. This can affect the preservation of flora and fauna around the fish auction site. Pollution of groundwater by fish auction waste can reduce the surrounding environment's carrying capacity. The carrying capacity of the environment is the ability of the environment to support human life and other living things. If the environment is polluted by waste, its carrying capacity decreases. Some of the impacts that can occur because of groundwater contamination by fish auction site waste include:

1) Decreased agricultural productivity: Contaminated

groundwater can impair soil quality. This can result in decreased agricultural productivity, which depends on good soil quality.

2) Declining fisheries productivity: Pollution of groundwater can also affect water quality in surrounding waters. This can result in decreased productivity of fisheries that depend on good water quality.
3) Decreased availability of clean water: Contaminated groundwater can reduce the availability of clean water in the vicinity. This can lead to difficulties in meeting the clean water needs of humans and animals living in the vicinity.
4) Decreased economic value: Pollution of groundwater can also reduce the economic value of the surrounding area. This can result in decreased public interest in developing the economic potential around the fish auction site. Thus, effective, environmentally friendly waste management at the fish auction site is crucial to prevent adverse impacts on groundwater quality in Lampulo Village. Efforts such as good waste management and the use of environmentally friendly technologies can help reduce the impact of waste on groundwater quality and maintain human health and environmental sustainability. (Wibowo et al., 2022)

2. The High Level of Groundwater Pollution Due to Fish Auction Site Waste in Lampulo Village

The *flow net* map illustrates groundwater flow patterns in two dimensions. Groundwater flows from areas with higher groundwater levels to areas with lower groundwater levels. Areas with higher groundwater levels function as recharge areas, while areas with lower groundwater levels serve as discharge areas. Groundwater level measurements in the study area indicate that groundwater levels range from 1.42 to 6.78 meters above sea level (masl)**.** The direction of phreatic groundwater flow follows the regional topographic conditions. In the study area, groundwater flows from south to north, originating from residential areas as recharge zones and moving toward coastal areas as discharge zones.

Phreatic groundwater flow patterns in the study area were analysed using a *flow net* map to describe the direction and characteristics of groundwater flow. The distribution of groundwater levels and their flow direction from recharge areas to discharge areas are presented in **Figure 1**.

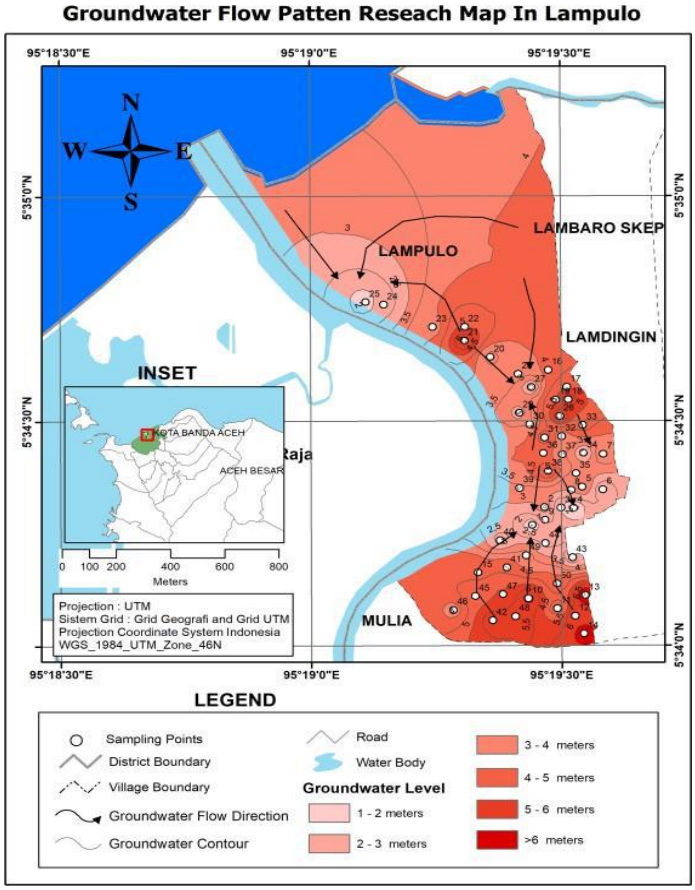

Figure 1. Map of the Movement Pattern of Groundwater in Lampulo Village

Source: Researcher Analysis, 2023

The results of groundwater electrical conductivity (EC) calculations indicate that the majority of wells in the study area fall into the low class, with EC values of < 1,200 µS/cm, which are classified as fresh groundwater, totalling 44 wells**.** These conditions are generally found at locations relatively distant from the Fish Auction Site (FAS) activities, resulting in limited influence of waste on groundwater quality.

A total of 6 wells fall into the moderate class, with EC values ranging from 1,200 to 2,500 µS/cm**,** and are classified as brackish groundwater. Wells in this category are generally located around the FAS activity area and along groundwater flow paths toward the coastal zone. The

increase in EC values at these locations indicates the addition of dissolved ions, presumed to originate from organic and inorganic waste generated by fish auction activities.

No wells were identified in the high (2,500–4,500 µS/cm) or very high (>4,500 µS/cm) classes, which are classified as saline groundwater and very saline groundwater, respectively. This indicates that groundwater pollution levels from FAS waste in the study area have not yet reached extreme levels; however, early signs of groundwater quality degradation have been observed at several locations.

The distribution of EC values suggests that although groundwater quality is generally classified as fresh, the presence of brackish groundwater around the FAS area indicates a potential increase in pollution if proper waste management is not implemented. Therefore, controlling FAS waste is essential to prevent the expansion of groundwater quality degradation in Lampulo Village.

Table 2. Groundwater DHL Data

Class	DHL (Ps/m)	Groundwater Classification	Number of Wells
Low	< 1,200	Fresh Groundwater	44
Currently	1,200-2,500	Brackish Groundwater	6
Tall	2,500-4,500	Saltwater	0
Very High	>4,500	Very Salty Groundwater	0

Source: Research Result, 2023

Table 2 shows the classification of groundwater quality based on electrical conductivity (EC) values. The majority of sampled wells (44) fall into the low EC category (< 1,200 µS/m), corresponding to fresh groundwater**.** A smaller number of wells **(**6 wells**)** are classified in the moderate EC range (1,200–2,500 µS/m)**,** indicating brackish groundwater conditions. No wells were found in the high (2,500–4,500 µS/m) or very high (> 4,500 µS/m) EC categories, which correspond to saltwater and very salty groundwater**, r**espectively. These results indicate that groundwater in the study area is predominantly fresh, with limited occurrences of brackish conditions and no evidence of saline or highly saline groundwater.

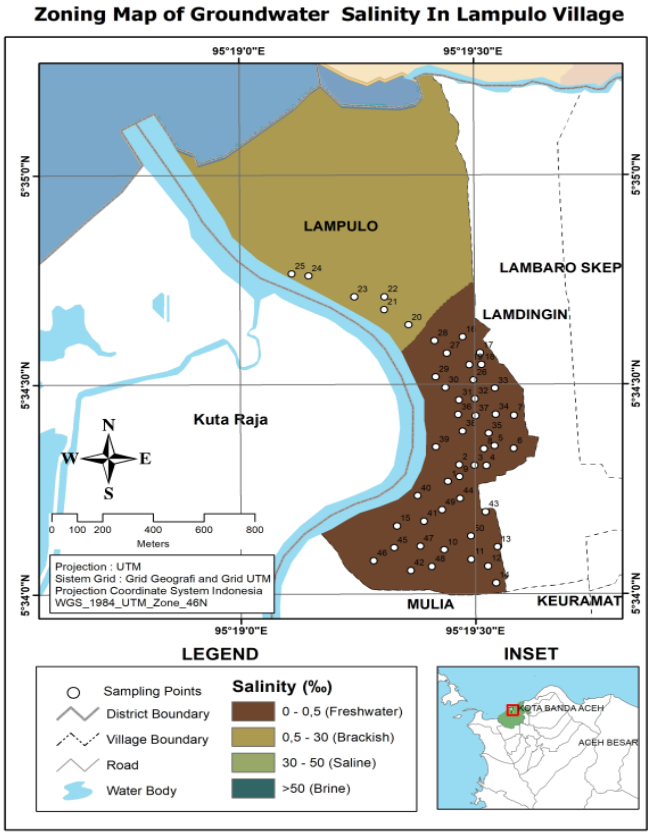

Figure 2. Map of DHL Value Distribution in Lampulo Village

Source: Research Analysis, 2023

The groundwater salinity category in Lampulo Village indicates that most wells are freshwater, with several classified as brackish, particularly around the Fish Auction Site and coastal areas. These conditions indicate increased salt content and dissolved ions at specific locations, likely due to human activities, particularly fish auctions. The distribution of electrical conductivity (EC) values and groundwater salinity levels in the study area is presented in **Figure 2.**

Table 3. Sanitation Analysis of Shallow Well Water Based on Salt Content

Salinity category	Number of wells
Freshwater (<0,5)	44
Brackish Water (0,5-30)	6
Saltwater (30-50)	0
Very Salty (>50)	0

Source: Research Analysis, 2023

Table 3 presents the classification of groundwater salinity based on the number of wells. Most wells **(**44 wells**)** fall into the freshwater category (<0.5

ppt). A smaller number of wells (6 wells) are classified as brackish water (0.5–30 ppt). No wells were found in the saltwater (30–50 ppt) or very salty water (>50 ppt) categories. These results indicate that groundwater in the study area is predominantly freshwater, with a minor portion exhibiting brackish conditions, and no evidence of saline or highly saline groundwater.

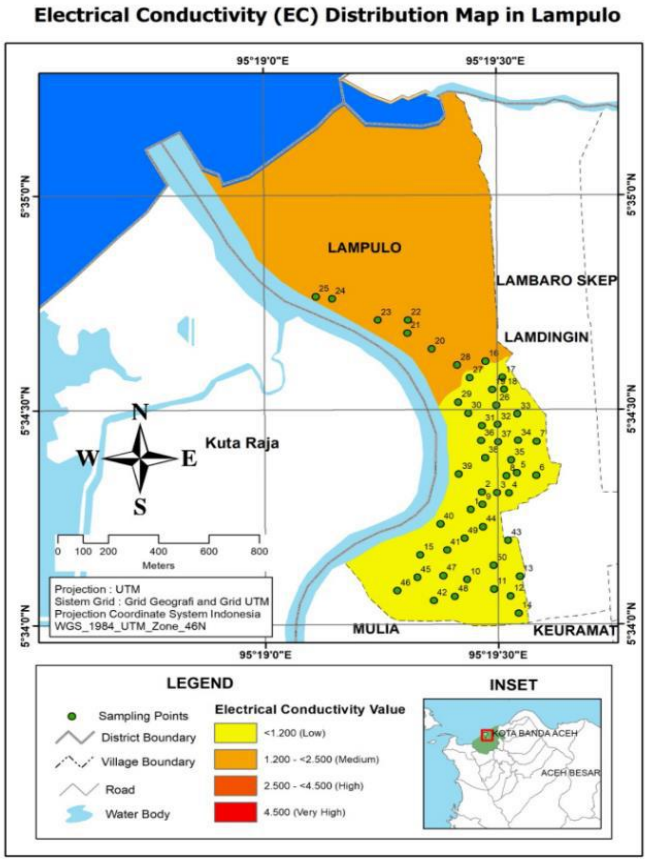

Figure 3. Zoning Map of Groundwater Salinity in Lampulo Village

Source: Research Analysis, 2023

In **Figure 3**, most groundwater wells in Lampulo Village have alkaline pH, but 8 wells have acidic pH. This indicates that waste from the Fish Auction Site can also affect the soil's acidity in the surrounding area. These data suggest that FAS waste has caused severe groundwater contamination, so better waste management is needed to maintain groundwater quality and prevent negative impacts on human health and the environment.

Table 4. Number of Wells

Soil PH category	Number of Wells
Acid >7	8
Neutral 7	8
Base <7	34

Source: Research Analysis, 2023

The table presents the classification of groundwater well locations based on soil pH. Most wells **(**34) are located in areas with alkaline soil (pH > 7)**.** Eight wells are situated in areas with neutral soil (pH = 7**)**, and another eight wells are found in areas with acidic soil (pH <7)**.** These results indicate that although the majority of the study area has environmental factors and human activities, such as waste from the Fish Auction Site, that may influence alkaline soil, localised areas with neutral and acidic conditions also occur.

Based on the data provided, it can be seen that the level of groundwater contamination in Lampulo Village due to fish auction site waste is very high, namely reaching the "Very High" category with DHL (Electrical Conductivity) of more than 4,500 µS/cm and the groundwater classification being "Very Salty Groundwater". This means that the waste generated by the fish auction place has polluted the surrounding groundwater with very high levels of salt and other harmful substances, as shown in

Efforts that can be made to reduce the level of groundwater contamination around the fish auction site in Lampulo Village include:

1) Good, environmentally friendly Waste treatment: Waste from fish auctions must be managed properly and not just dumped into the environment. Good, environmentally friendly waste treatment can be achieved by separating organic and inorganic materials and processing them separately, without damaging the surrounding ecosystem.
2) Use of technologies to reduce the impact of waste: Technologies such as wastewater treatment and biologically based sewage treatment systems can help reduce the environmental impact of waste. The use of these technologies can help treat waste more sustainably and reduce its environmental impact.
3) Increasing public awareness: Protecting the environment and maintaining the quality of

groundwater around fish auctions are also very important. By increasing public awareness, it is hoped that the community will be more concerned about protecting the environment and actively participate in preventing groundwater contamination.

4) Monitoring and supervision: Waste generated at the fish auction site must also be regularly monitored and supervised. This can help identify problems and follow up on necessary actions to prevent groundwater contamination.

5) By making these efforts, it is hoped that the level of groundwater contamination from waste at the fish auction site in Lampulo Village can be reduced and the quality of the surrounding environment properly maintained.

CONCLUSIONS

The impact of fish auction site waste on groundwater quality in Lampulo village includes decreased groundwater quality, threats to human health, and ecosystem destruction. High Level of Groundwater Pollution Due to Fish Auction Waste in Lampulo Village. The level of groundwater contamination in Lampulo Village due to waste from fish auctions is very high, reaching the "Very High" category with a DHL (Electrical Conductivity) of more than 4,500 Ps/cm, and the groundwater classification is "Very Salty Groundwater". This means that the waste generated by the fish auction place has polluted the surrounding groundwater with very high levels of salt and other harmful substances. In addition, the groundwater salinity category in Lampulo Village also shows that most of the groundwater wells in the area have a high level of salinity, which is included in the "Brackish Water" and "Salty Water" categories. This indicates that the groundwater around the fish auction site has been contaminated with salt and other harmful substances, so it can no longer be used for daily needs such as drinking, bathing, or cooking. Based on the research results, the researchers suggest that sound, environmentally friendly waste processing be carried out, the use of technology to help reduce the impact of waste, increased public awareness to protect the environment and water quality, and the monitoring and supervision of waste produced by fish auction sites.

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