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# *Analysis Of River Water Qualitty And Community Perception Along The Banks Of The Batang Lembang River And The Batang Gawan River In Solok City*

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**Abstract: The Batang Lembang River and the Batang Gawan River play a significant role for the community of Solok City in social, economic, and ecological aspects. However, the increasing range of activities generating domestic, agricultural, and industrial waste has exerted substantial pressure on the water quality of these rivers. This condition poses a risk of pollution that may degrade water quality and threaten the sustainability of natural resources.This study aims to analyze the water quality of the Batang Lembang River and the Batang Gawan River in Solok City, as well as to examine community perceptions of the occurring pollution and to estimate the associated economic losses. The research methods employed include physical, chemical, and biological water quality analyses through laboratory testing, assessment of community perceptions using a Likert scale, and estimation of economic losses using the replacement cost and cost of illness approaches.The results indicate that both rivers have experienced pollution pressures characterized by predominantly organic contamination (high BOD), dominant biological pollution (very high fecal coliform levels), and increased TDS, TSS, COD dan T-Phosfat. The highest Pollution Index (PI) value was identified in the downstream section of the Batang Lembang River, which is classified as moderately polluted, whereas the downstream section of the Batang Gawan River falls into the lightly polluted category. Community perceptions reveal that respondents strongly agree that the Batang Lembang River has been polluted and have observed noticeable changes in river conditions due to pollution, while respondents along the Batang Gawan River generally express agreement.The estimation of economic losses indicates a significant additional financial burden on households residing near the rivers. This study underscores the importance of sustainable water quality management, as well as the need to enhance public awareness and community participation in preserving river ecosystems in order to mitigate the impacts of pollution in the future.**

**Keywords: Water Quality; River Pollution; Community Perception; Pollution Index; Economic Losses**

## I. Introduction

Solok City is one of the small cities in West Sumatra with a strategic position, as it is located at the intersection of intercity routes along the Trans-Sumatran highway. In 2025, the population of Solok City increased to 81,059 people (BPS, 2025). This growth has led to the need for the expansion of residential areas and the conversion of riverbank land into settlements, which has further degraded ecosystem conditions (Guo et al., 2025).

These conditions indirectly affect the environmental carrying capacity, particularly in the rivers flowing through Solok City, which are facing increasing pressure on their capacity to accommodate pollutant loads (Azhar & Dewata, 2018). Over the past few years, the water conditions along the Batang Lembang and Batang Gawan rivers have changed. In fact, these rivers provide

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numerous benefits for the surrounding communities (Masita & Afdal, 2022). Prior to pollution, local residents utilized these rivers as sources of clean water, agricultural irrigation, and fisheries resources (Sulandari et al., 2023).

Research findings indicate that the carrying capacity for organic pollutant loads in the Solok City segment needs to be reduced. Industrial activities can also have negative impacts when waste containing hazardous and toxic chemical compounds is discharged into rivers without proper treatment, ultimately leading to water pollution (Pratiwi et al., 2023).

These negative impacts directly affect the welfare and comfort of the community, thereby triggering negative perceptions toward the activities or parties responsible (Lin et al., 2022). Communities with limited understanding of river utilization tend to show less concern regarding the impacts and management of river ecosystem degradation (Ubaidillah et al., 2023; Masita & Afdal, 2023; Sulandari et al., 2023). As a consequence, communities bear various losses, including economic, social, and environmental damages.

Based on the above explanation, the Batang Lembang and Batang Gawan rivers play an important role for the people of Solok City in social, economic, and ecological aspects. However, the increase in various activities generating domestic, agricultural, and industrial waste has placed significant pressure on river water quality. This condition poses a risk of pollution that may reduce water quality and threaten the sustainability of natural resources. Therefore, research is needed to analyze water quality, assess community perceptions to provide a comprehensive understanding of environmental conditions, and identify potential economic losses experienced by affected communities. The results of this study are expected to serve as a basis for sustainable water resource management and utilization.

## II. theoretical framework

Environmental carrying capacity refers to the ability of an ecosystem to support living organisms and absorb pollutant loads without experiencing significant degradation. In aquatic systems, the capacity to accommodate pollutant loads is a key indicator in determining water quality sustainability (Azhar & Dewata, 2018). Water pollution occurs when substances, energy, or other components enter water bodies and degrade their quality beyond acceptable standards. Domestic, agricultural, and industrial activities are major contributors to water pollution, particularly through the discharge of organic matter and hazardous chemical compounds (Pratiwi et al., 2023).

Environmental degradation generates not only ecological consequences but also social and economic impacts. Socially, pollution influences community perceptions toward environmental conditions and responsible actors (Lin et al., 2022). The level of public understanding regarding river utilization significantly affects their awareness and response to environmental degradation (Ubaidillah et al., 2023). From an environmental economics perspective, economic losses due to environmental degradation can be estimated using several approaches. The **replacement cost method** assesses the value of natural resources based on the cost required to restore or replace them (Garrod & Kenneth, 1990). Meanwhile, the **cost of illness method** evaluates the economic burden associated with health problems caused by environmental factors, including direct medical costs and indirect productivity losses (Zahra, 2024).

## III. MÉTHODOLOGIE

This study was conducted in Lubuk Sikarah District and Tanjung Harapan District, Solok City, West Sumatra Province. The research locations were selected purposively by considering areas negatively affected by waste pollution in the Batang Lembang and Batang Gawan rivers. The study was carried out from December 2025 to January 2026. The sampling locations for water quality in each river are presented in the location map figure below.

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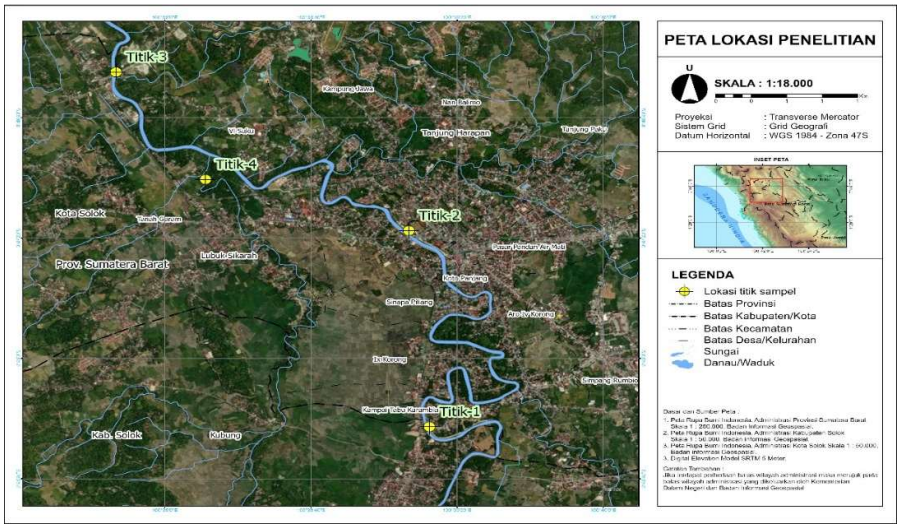



Figure 1. Map of River Water Sampling Locations

More detailed research locations in each river can be seen in the table below.

Table 1. River Water Sampling Locations

| No | Sample Point | Location | |
|---|---|---|---|
| | | Coordinate Points | Address |
| 1 | Headwaters of the Batang Lembang River | S: 00° 48' 22,7" E: 100° 39' 12,4" | KTK Bridge, Bypass, KTK Subdistrict, Lubuk Sikarah District |
| 2 | Middle of Batang River, Lembang | S : 00° 47' 17,54"E : 100° 39' 06,78" | Army Hospital Bridge, Sinapa Village, Lubuk Sikarah District |
| 3 | Downstream of the Batang River in Lembang | S: 00° 46' 24,84" E: 100° 37'46,63" | Bandar Pandung Bridge, Tanah Garam Village, Lubuk Sikarah District |
| 4 | Downstream of the Batang Gawan River | S: 00° 47' 00,55" E: 100° 38' 11,15" | Behind Dormitory 12, Tanah Garam Subdistrict, Lubuk Sikarah District |

**Tools and materials**

Tools and materials used in study This is equipment taking water samples such as buckets, dippers , ropes , conductors , bottles glass , *cool box* , water quality testing equipment such as pH meter, DO meter, thermometer, camera , tools writing , distilled water , tissue and label paper .

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**Sampling Method**

Some water quality parameters such as pH, water temperature and oxygen Dissolved water (DO) was measured in the field ( *in situ* ). While other parameters were analyzed at the West Sumatra Provincial Health Laboratory .Taking technique water samples used in the study This that is *grab sampling* with take sample in a way direct from deep water bodies something period time certain at the sampling points that have been determined moreover Previously , the Technique of Taking Water samples refer to SNI 6989.57:2008. *Purposive sampling* method was used to select respondents , ensuring that the respondents were residents living near the research location and had direct experience with river conditions. Furthermore, *a quota sampling approach was used* , targeting a minimum of 30 respondents per location. rivers so that the distribution of data between locations is relatively balanced and can be analyzed using descriptive statistics.

**Data Analysis Methods**

The data obtained in the study were analyzed quantitatively and qualitatively. The following is a matrix of the relationships between the research objectives, data types and sources, and the data analysis methods used in the study. The data analysis methods used can be seen in Table 2.

Table 2. Data Analysis Method Matrix

| No | Research purposes | Data Types | Data source | Analysis Method |
|---|---|---|---|---|
| 1 | Analyze water quality of the Batang Lembang rivers and Batang Gawan ivers | Primary data | Laboratory Test Results , | Analysis descriptive quantitative , Index Pollution |
| 2 | Analyze perception public to pollution waste from the Batang Lembang rivers and Batang Gawan rivers | Primary and secondary data | Questionnaire interview with selected community become respondents | Analysis descriptive qualitative use scale Likert |
| 3 | Count size cost the loss that covered public consequence pollution of the Batang Lembang rivers and Batang Gawan rivers | Primary Data | Questionnaire interview with selected community become respondents | Replacement costs and costs of illness |

For measurement water quality based on physical parameters chemistry with method Index Pollution (Minister of Environment and Forestry Regulation No. 27 of 2021), namely with counted water sample laboratory test results every the river that will compared to with standard water quality standards , namely:

$$P1j = \frac{\sqrt{\left(\frac{C_i}{Lij}\right)^2 M - \left(\frac{C_i}{Lij}\right)^2 R}}{2}$$

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Information :

P1 : Index Pollution for j allocation

Ci : Concentration of water quality parameter I

Lij : Concentration of water quality parameter I listed in the standard Water allocation j

M : Maximum

R : Average

J : Water allocation (class)

Public perception of the surrounding conditions in the Batang Lembang River and Batang Gawan River was analyzed using qualitative descriptive analysis with a Likert scale. The instrument trial was conducted to see the validity and reliability of the instrument in order to meet the requirements of the research instrument. *The Likert* scale assessment score has 5 (five) assessment scales, including Strongly Agree (SS) given a score of 5, Agree (S) given a score of 4, Doubt (R) given a score of 3, Disagree (TS) given a score of 2, and Strongly Disagree (STS) given a score of 1.

Table 3. Likert Scale Assessment Scores

| No | Statement | Public Perception | | | | |
|---|---|---|---|---|---|---|
| | | Strongly Agree (SS) | Agree (S) | Doubt (R) | Disagree (TS) | Strongly Disagree (STS) |
| Pollution Aspects | | | | | | |
| 1 | The color of the water of the Batang Lembang River/ Batang Gawan River is cloudy | | | | | |
| 2 | The Batang Lembang River / Batang Gawan River emits a disturbing (unpleasant) odor | | | | | |
| 3 | There is a lot of rubbish around the Batang Lembang River/ Batang Gawan River | | | | | |
| Basic Aspects of Pollution | | | | | | |
| 4 | Many organisms (fish or plants) died in the Batang Lembang River / Batang Gawan River | | | | | |
| 5 | The beauty or aesthetic value of the Batang Lembang River/ Batang | | | | | |

| | |
|---|---|
| | Gawan River is disturbed |
| 6 | Water that comes from the river cannot be used |
| Pollution Management Aspects | |
| 7 | Disposal of industrial waste has not been managed properly |
| 8 | Supervision of the use of chemicals by factories around the Batang Lembang River / Batang Gawan River |
| 9 | The local government has not optimally handled waste pollution in the Batang Lembang River/Batang Gawan River |

Source: Zahra (2024)

The estimated value of economic losses to the community due to waste pollution that occurred in the Batang Lembang River and the Batang Gawan River was estimated using the replacement cost and medical costs ( cost of illness ) methods. The replacement cost method in this study is the economic loss in the form of costs that must be incurred by the affected community for the use of other sources due to the contamination of the water source they use. Based on research conducted by Pamilih (2022) , the average costs incurred by each respondent were calculated using the following equation:

$$RBP = \frac{\sum_{In}^{N} BPI}{n}$$

Information:

RBP : Average cost of water replacement (Rp/family/year)

BPI : Replacement costs by respondent i (Rp/year)

N : Number of respondents (KK)

I : Respondent i (1,2,3….,n)

The cost of illness method is a method used to estimate the cost of economic losses incurred by respondents for treatment due to diseases arising from waste pollution. Based on research conducted by Jaya (2018), the average cost is obtained from the total amount of money spent by the affected community for treatment divided by the number of respondents who spent money for treatment. The calculation of this value uses an approach using the following equation:

$$RBP = \frac{\sum_{In}^{N} BBI}{n}$$

Information:

RBP : Average medical costs (Rp/family/year)

BBI : Medical expenses by respondent i (Rp/year)

N : Number of respondents (KK)

I : Respondent i (1,2,3,….,n)

Furthermore, data calculations using these methods are completed using the Microsoft Office Excel program.

## IV. RÉSULT and ANALYSES

### Water Quality Conditions of the Batang Lembang River and the Batang Gawan River

Overall, both rivers exhibited pollution pressure, with several parameters exceeding the quality standards stipulated in Government Regulation Number 22 of 2021 Class II. to be clear can seen in the table following :

Table 4. Results of River Water Quality Tests Batang Lembang River and Batang Gawan River

| No | Parameters | Water Quality Test Results | | | | Quality Standards | Unite |
|---|---|---|---|---|---|---|---|
| | | Average Point 1 | Average Point 2 | Average Point 3 | Average Point 4 | | |
| 1 | Temperature | 28.45 | 28.15 | 28.6 | 28.75 | Dev 3 | °C |
| 2 | Ph | 8.6 | 8.05 | 8.55 | 8.25 | 6-9 | |
| 3 | TDS | 1000 | 1105.7 | 1195.4 | 1192.6 | 1000 | mg/L |
| 4 | TSS | 55.3 | 95.7 | 128.05 | 110.45 | 50 | mg/L |
| 5 | DO | 3.8 | 3.2 | 2.6 | 2.9 | 4 | mg/LO |
| 6 | BOD | 6,285 | 7.55 | 10,335 | 7.5 | 3 | mg/L |
| 7 | COD | 23.4 | 35.6 | 46.8 | 32.25 | 25 | mg/L |
| 8 | T-Phosphate | 0.077 | 0.231 | 0.337 | 0.279 | 0.2 | mg/L |
| 9 | Nitrate | 0.6295 | 0.767 | 0.5805 | 0.579 | 10 | mg/L |
| 10 | Nitrite | 0.017 | 0.0165 | 0.0175 | 0.018 | 0.06 | mg/L |
| 11 | Ammonia | 0.02675 | 0.02475 | 0.03 | 0.0215 | 0.2 | mg/L |
| 12 | Oils and Fats | 0.8 | 0.9 | 0.9 | 1 | 1 | mg/L |
| 13 | Fecal Coliform | 4180 | 3700 | 7360 | 5460 | 1000 | CFU/100 mL |

Based on the overall results of water quality testing, the Batang Lembang River and the Batang Gawan River have experienced pollution pressure which is: predominantly organic (high BOD), predominantly biological ( very high *Fecal Coliform*

) and accompanied by Increased TDS, TSS, COD, and T-Phosphate levels indicate that the main sources of pollution are domestic and residential activities along the riverbanks.

TDS values at several points, particularly the downstream Batang Lembang River (Point 3) at 1195.4 mg/L and the downstream Batang Gawan River (Point 4) at 1192.4 mg/L, and other observation points showed a tendency to slightly exceed quality standards. This indicates an increase in dissolved substances in the water, likely stemming from domestic activities and organic runoff.

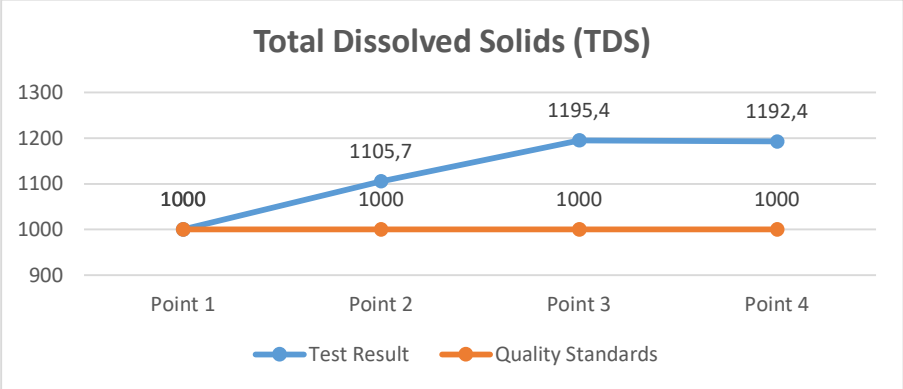



Figure 2. Graph of TDS Parameter Test Results

Excessively high TDS levels can indicate pollution that can limit the growth of aquatic organisms and pose a risk of death for aquatic life (Nurbaya, 2024). High TDS levels can affect the taste of water and the health of organisms (Pratiwi, 2023).

The TSS value shows a quite clear increase in the downstream part of the Batang Lembang River (Point 3) of 128.05 mg/L and downstream of the Batang Gawan River (Point 4) the TSS value also exceeded the quality standard, namely 110.45 mg/L. From the upstream of the Batang Lembang River (Point 1) to downstream everything show values that exceed standard limits quality . TSS is particle congested suspended in water that affects clarity and can disrupts aquatic habitats (Wijaya, 2024). High TSS causes Water turbidity has increased and can be visually observed by the public. This condition is thought to be caused by surface runoff, post-flood riverbank erosion, and domestic activities around the river.

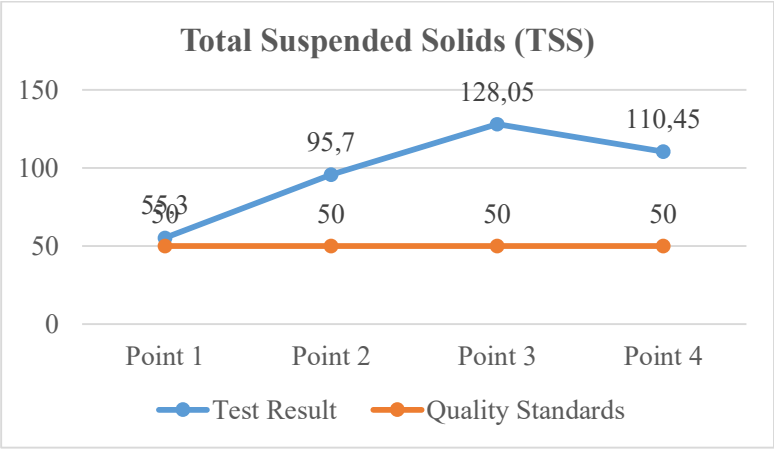



Figure 3. Graph of TSS Parameter Test Results

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The BOD parameter shows mark The ratio is above the quality standard at most points, especially in the downstream area of the river. The BOD value measured in the downstream Batang Lembang River (Point 3) was 10.335 mg/L. The high BOD indicates a high organic content in the water. This confirms that the primary source of pollution is organic and closely related to domestic waste . with Alfatihah (2022) which states high BOD shows high levels of organic pollution

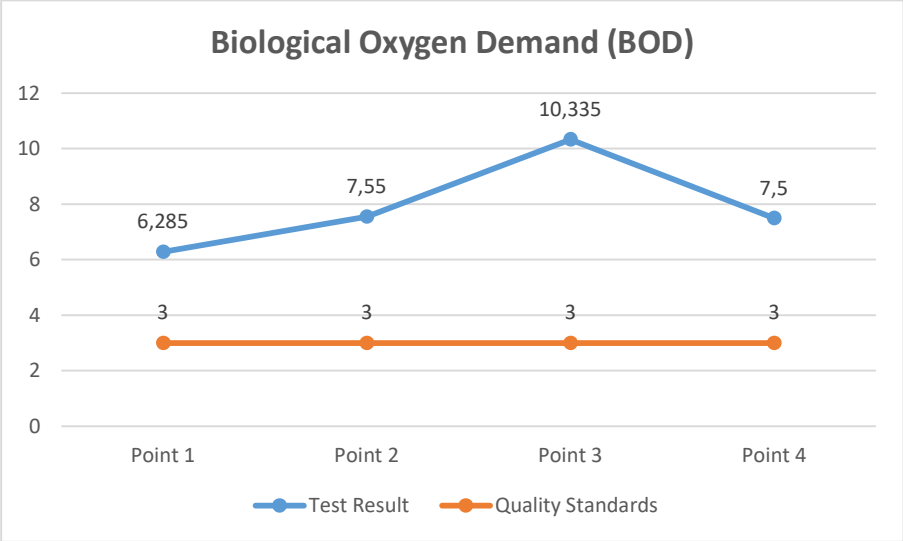



Figure 4. Graph of BOD Parameter Test Results

The COD test results showed that only 1 point, namely (Point 1) which is the upstream of the Batang Lembang River, met the quality standard of 23.4 mg/L, in addition, the COD test results obtained results exceeding the quality standard. The highest COD value was in the downstream of the Batang Lembang River (Point 3) at 46.8 mg/L, while in the downstream of the Batang Gawan River the COD test results were 32.25 mg/L. The COD quality standard for river water is set at a maximum of 25 mg/L. COD values are used to indicate the presence of pollutants from non-organic toxic waste originating from domestic and industrial waste (Ramayanti 2019). The main sources of increased COD concentrations are household waste and industrial waste (Ramayanti 2019).

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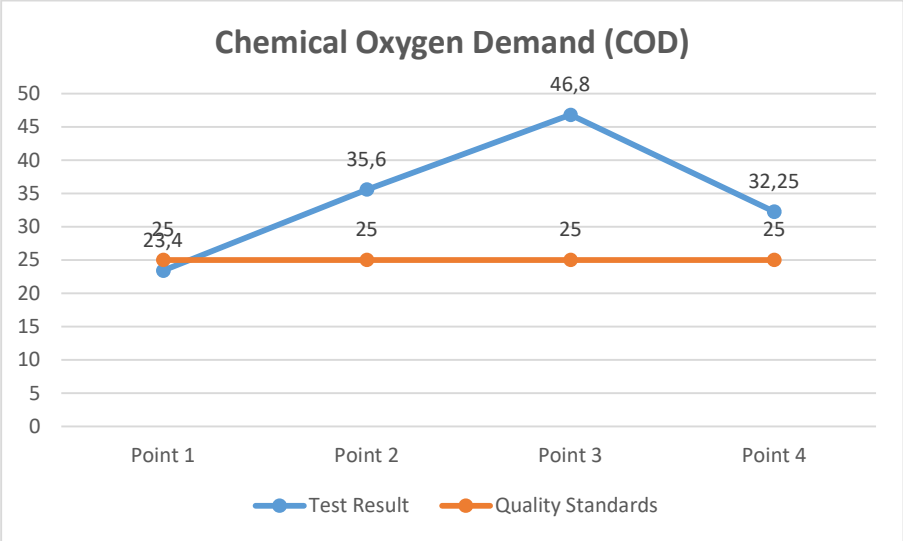



Figure 5. COD Parameter Test Results Graph

The T-Phosphate value showed a significant increase at several midstream points. High phosphate content has the potential to trigger eutrophication if it occurs continuously. The test results showed the highest T-Phosphate value was in the downstream of the Batang Lembang River (Point 3) at 0.337 mg/L and downstream of the Batang Gawan River (Point 4) at 0.279 mg/L. The increase in phosphate values was caused by the increase in various pollution loads entering the water body. Phosphate pollution loads in water generally come from fertilizers, livestock waste, synthetic detergents, and industrial activities (Rembet *et al.* , 2024). Another source of phosphorus in the river comes from the erosion of rocks around the river by currents which then settle (Jatiswari *et al* ., 2022). The permissible phosphate level limit for waters according to Government Regulation Number 22 of 2021 concerning the Implementation of Environmental Protection and Management is ≤ 0.2 mg/l for classes I and II.

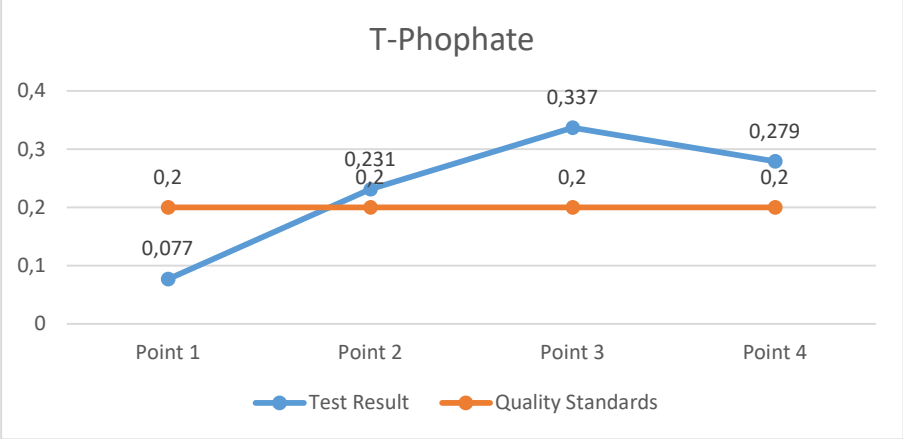



Figure 6. Graph of T-Phosphate Parameter Test Results

*Fecal Coliform* parameter shows the highest value compared to other parameters , especially at the point downstream river Batang Lembang ( Point 3) had 7,360 CFU/100 mL, and downstream Batang Gawan (Point 4) had 5,460 CFU/100 mL. The concentration of these indicator bacteria significantly exceeded Class II quality standards. High levels of *fecal coliform* indicate

fecal contamination from domestic waste, such as household wastewater disposal and suboptimal sanitation . This parameter was the main contributor to the increase in the Pollution Index at almost all observation points.

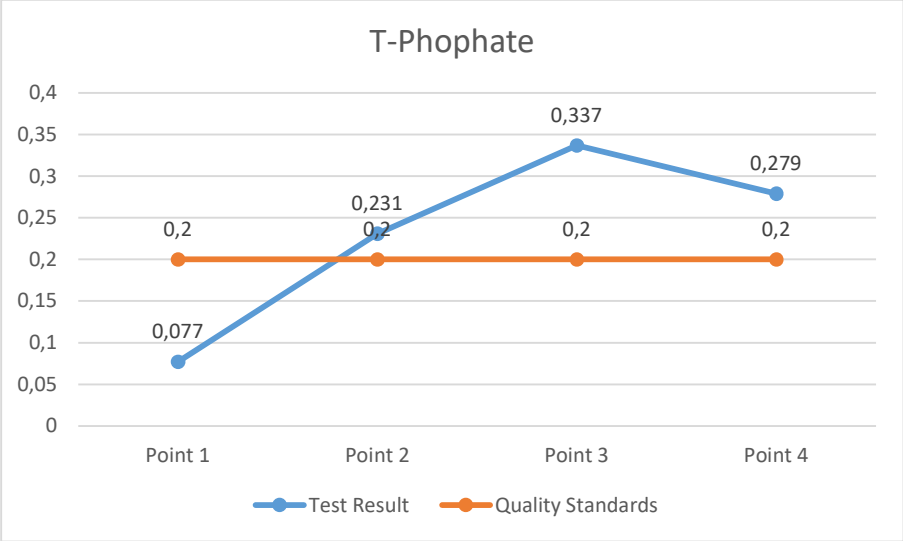



Figure 7. Graph of Fecal Coliform Parameter Test Results

Elevated *coliform counts* in water pose a significant risk to public health, especially when the water is used for consumption, recreation, or fish farming (Yunus, 2017). Based on Government Regulation No. 22 of 2021, the *fecal coliform quality standard* for Class I water is 100 counts per 100 ml of water sample. If the concentration exceeds the threshold, the water is categorized as contaminated by domestic waste.

In addition to water quality, which is generally described based on physical, chemical, and biological characteristics, fish are a highly effective bioindicator for measuring pollution levels in aquatic environments (Nurwijayanti *et al* ., 2017). One factor contributing to the decline of fish species is water pollution (Budiman *et al.,* 2021).

**River Water Quality Status Based on Pollution Index**

Based on results analysis The water quality of the Batang Lembang River and the Batang Gawan River using the Pollution Index (IP) in accordance with the provisions of Government Regulation Number 22 of 2021 concerning the Implementation of Environmental Protection and Management (Class II Water Quality Standards), obtained the water quality status at four observation points in the category of light pollution to moderate pollution, which can be seen in the table below

Table 5. River Water Quality Status Based on Pollution Index

| Point | (Ci/ Li)max | (Ci/ Li)avg | IP Value | Status |
|---|---|---|---|---|
| 1 | 4.18 | 1.09 | 3.05 | Lightly contaminated |
| 2 | 3.70 | 1.31 | 2.78 | Lightly contaminated |
| 3 | 7.36 | 1.91 | 5.38 | Moderately contaminated |
| 4 | 5.46 | 1.54 | 4.01 | Lightly contaminated |

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Value was found in the downstream of the Batang Lembang River (Point 3) with an IP value of 5.38, categorized as moderately polluted. Meanwhile, the downstream of the Batang Gawan River (Point 4) was categorized as lightly polluted with an IP value of 4.01.

**Analysis of Public Perception of Water Quality Pollution in the Batang Lembang River and Batang Gawan River**

Based on the results of the analysis of public perceptions regarding water quality pollution in the Batang Lembang River and the Batang Gawan River, the assessment results were obtained as in the following table.

Table 6. Assessment Results Perception Respondents to Pollutionon the Batang Lembang River

| No | Score Range | Class Range | Interpretation of Results |
|---|---|---|---|
| 1 | 1134-1350 | 126-150 | Strongly Agree (S) |
| | **(1164)** | **(129.3)** | |
| 2 | 918-1134 | 102-126 | Agree (S) |
| 3 | 702-918 | 78-102 | Doubt (R) |
| 4 | 486-702 | 54-78 | Disagree (TS) |
| 5 | 216-486 | 30-54 | Strongly Disagree ( STS) |

Results evaluation perception respondents on table in on show total score 1164 which is in the range The score of 1134-1350 and the average score of 129.3 are in the class range of 126-150 which is included in the category of "strongly agree". So it can be concluded from the 9 questions in the respondent perception assessment that the final result is "strongly agree" that the condition of the Batang Lembang river has polluted, giving negative impact for society and the handling of pollution in the river is not yet optimal.

Table 7. Results of Respondents' Perception Assessment of Pollutionon the Batang Gawan River

| No | Score Range | Class Range | Interpretation of Results |
|---|---|---|---|
| 1 | 1134-1350 | 126-150 | Strongly Agree (S) |
| 2 | 918-1134 | 102-126 | Agree (S) |
| | **(1128)** | **(125.33)** | |
| 3 | 702-918 | 78-102 | Doubt (R) |
| 4 | 486-702 | 54-78 | Disagree (TS) |
| 5 | 216-486 | 30-54 | Strongly Disagree ( STS) |

Results evaluation perception respondents on table in on show total score 1128 which is in the score range of 918-1134 and the average score of 125.33 is in the class range of 102-126 which is included in the "agree" category. So it can be concluded from the 9 questions in the respondent perception assessment, the final result shows " agree" that the condition of the Batang Gawan River has polluted, giving negative impact for society and the handling of pollution in the river is not yet optimal.

Community perception reflects their understanding, attention, and concern for the condition of their surrounding environment, as well as how they assess the impact of declining water quality on their daily activities (Alfaiz *et al* ., 2024).

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Communities living around rivers may have varying views regarding water quality conditions, depending on their proximity to the river, their experience with river water, and their level of participation in environmental conservation efforts (Aprisanti and Budijono, 2023). However, limited knowledge about the causes of pollution indicates the need for education and active community participation in environmental management (Alfaiz *et al* ., 2024). Furthermore, Pramaningsih *et al* ., (2023) explained that low levels of knowledge regarding pollution cause communities to be less aware of the serious impacts of water pollution, resulting in minimal participation in pollution control. Rusli (2023) stated that people with higher education tend to be more critical and active in preventive measures and preserving river water quality, while people with lower education have limited awareness. Putri *et al* ., (2024) added that real experiences of the impacts of pollution, such as diseases caused by polluted water and the loss of livelihoods from rivers, increase public awareness while encouraging environmental conservation behavior and active participation in reducing pollution.

Based on results analysis Based on the results of the water quality and public perception survey, it can be concluded that there is a tendency for a relationship between scientific water quality conditions and public perceptions of the aquatic environment. People living in areas with better water quality conditions tend to perceive the river as still clean and suitable for use. Conversely, people living in areas with higher levels of pollution tend to perceive that river water quality has decreased. This indicates that direct community experience with environmental conditions is an important factor in shaping their perceptions of river water quality. Therefore, public perception can be an early indicator in identify change quality environment waters as well as can used as base in effort management and preservation source water power .

**Estimated Economic Losses Suffered by the Community Due to Water Quality Pollution in the Batang Lembang River and Batang Gawan River**

Average loss public every House ladder per year estimated through calculation mathematics involving cost water replacement and costs treatment . The value obtained from multiplication between average costs loss with the population of KK in the area . The total estimate cost loss a year final can seen in Table 8

Table 8. Estimated total costs loss public consequence pollution waste in the Batang Lembang River and Batang Gawan River

| No | External Costs | Average Loss of Batang Lembang River (Rp/family/year) | Average Loss of Batang Gawan River (Rp/family/year) |
|---|---|---|---|
| 1 | Cost water substitute | 6,867,933 | 5,980,267 |
| 2 | Medical expenses | 159,692 | 171,391 |
| | Total | 7,027,625 | 6,151,658 |

Based on results study, total loss economy public overall from component cost that is cost water replacement and costs seek medical treatment consequence pollution waste in river Lembang One Branch year final obtained mark as big as Rp.7,027,625/family/year and river Gawan Rod is obtained value of Rp.6,151,658/family/year .

## V. CONCLUSION

Based on the overall results of water quality testing, the Batang Lembang and Batang Gawan rivers have experienced pollution pressures that are: predominantly organic (high BOD), predominantly biological (very high Fecal Coliform) and accompanied by increased turbidity (TSS). Analysis of the water quality of the Batang Lembang and Batang Gawan rivers using

the Pollution Index (IP), the highest IP value was found in the downstream of the Batang Lembang river (Point 3) with an IP value of 5.38 which is included in the moderately polluted category. Meanwhile, the downstream of the Batang Gawan river is in the lightly polluted category with an IP value of 4.01. Public perception stated "strongly agree" that the Batang Lembang river is polluted and feels that there has been a change in the condition of the river due to pollution. Public perception stated "agree" that the Batang Gawan river is polluted and also feels that there has been a change in the condition of the river due to pollution. The estimated economic losses of the community obtained through the calculation of water replacement costs and medical costs resulted in an average total loss for the community on the banks of the Batang Lembang river of Rp. 7,027,625 per family/year and the results of the average total loss value of the community on the banks of the Batang Gawan River amounted to Rp. 6,151,658 family/ year.

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