

# Quality Management of Potable Water System (POWAS) in Barangay Bagong Sikat San Jose City

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**Abstract**— This study investigates the application of Total Quality Management (TQM) principles in the management of potable water systems, with a focus on ensuring the provision of safe and high-quality drinking water to communities. By employing a multifaceted approach, to enhance the efficiency, reliability, and sustainability of water system operations. Key components of the study include rigorous quality control measures implemented at every stage of the water treatment and distribution process to encompass comprehensive risk assessment strategies to identify and mitigate potential hazards, ensuring compliance with regulatory standards and safeguarding public health. Strategies such as continuous monitoring of water quality parameters using advanced technology, investing in workforce development, community engagement as a fundamental aspect of effective water system management. Establishing transparent communication channels and soliciting feedback from water consumers enables stakeholders to voice concerns and contribute to decision-making processes. Overall, this study underscores the importance of integrating TQM principles into potable water system management to achieve continuous improvement, stakeholder involvement, and regulatory compliance. By embracing both technical excellence and community engagement, the study aims to pave the way for resilient and sustainable water systems that meet the evolving needs of society.

**Index Terms**— Total Quality Management (TQM), Potable Water System (POWAS), Transparency, Consumable, Quality Control Measure, Regulatory Compliance, Customer Satisfaction

## 1. Introduction and Review of Related Literature

Water has a crucial role in sustaining life on Earth, and its importance will only increase in the future due to population expansion and economic development. In the face of water shortages, poor infrastructure and limited access to water, habitat loss and pollution, all of which impact water quality and quantity, there is an increasing and competing need for water for household, agricultural, and industrial uses making water resource management has become a top concern in the majority of nations where water supply shortages threaten economic growth. The objective of the water use and supply management program is to enhance the quantity of water accessible to

consumers while simultaneously safeguarding water resources, water-dependent natural processes, and interdependent ecosystems.

Total Quality Management (TQM) is a comprehensive and structured approach to organizational management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback. Implementing TQM in the management of potable water systems ensures the delivery of safe, clean, and reliable water to communities. This is particularly critical in Barangay Bagong Sikat, San Jose City, Barangay Bagong Sikat, a bustling community within San Jose City, where access to quality potable water is a vital concern for public health and well-being.

This study explores the application of TQM in the potable water system of Barangay Bagong Sikat. It examines the current state of water quality, identifies key areas for improvement, and evaluates the effectiveness of implemented TQM practices. The goal is to establish a model that not only meets regulatory standards but also exceeds community expectations through efficient, reliable, and sustainable water management practices.

The quantity of water delivered and used for households is an important aspect of domestic water supplies, which influences hygiene and therefore public health (Howard, G., et al. 2003). Potable water supply refers to the source, treatment, and transportation equipment used to provide water for human consumption, such as drinking, washing, bathing, food preparation, or laundering. According to Li and Wu (2019), the quality of drinking water is one of the most important aspects that determines a person's overall health. However, the quality of drinking water in many nations, particularly in developing countries, is not up to par, and this substandard quality of drinking water is a contributing factor in the rise of many waterborne diseases. Each year, the number of management systems standards (MSSs) increases. Standards are strongly related with common requirements and distinctions for several

service providers and manufacturers, among others. Undoubtedly, the drinking water supply management system is one of the most essential services (Cvelihárová and Paulíková, 2021).

According to BGS (2021), water supplies are usually short in certain regions of the Philippines, and as a result, supplies are routinely shut off to conserve capacity. Six to eight months of the year are primarily dry; during these months, severe water shortages occur and residents must rely on potentially unsafe drinking water sources. In addition, they may lack sufficient water for washing to maintain basic hygiene and avoid disease transmission.

Groundwater now provides more than fifty percent of potable water and eighty-five percent of piped water in the Philippines. The primary source of dry season river flows, which are frequently used for drinking water, is groundwater, which is strategically and economically vital to the existing and future water supply.

Buffaloe (2021) concluded that to tackle water insecurity, government entities, non-governmental organizations (NGOs), and independent parties in the Philippines have worked to guarantee that all residents have access to clean drinking water. Without access to clean water, communities are deprived of employment opportunities, exposed to sickness, and suffer disproportionately from the impacts of poverty.

With all of these findings taken into account, this research aims to assess the effectiveness of potable water system management in Barangay Bagong Sikat, San Jose. What are the ways they ensure that they won't spoil the water quality and their different usage of the potable water.

#### A. Total Quality management

The historical foundations of TQM are attributed to quality management pioneers such as W. Edwards Deming, Joseph M. Juran, and Philip B. Crosby, who emphasized the importance of systematic, customer-focused, and process-oriented approaches to quality improvement (Goetsch & Davis, 2014). The core principles of TQM include a strong customer focus, continuous improvement, employee involvement, and a process-oriented approach (Oakland, 2014). These principles are operationalized through strategies such as the Plan- Do-Check-Act (PDCA) cycle, Six Sigma, and benchmarking (Evans & Lindsay, 2017).

However, challenges such as resistance to change, lack of management commitment, and insufficient training can impede successful implementation (Dale, 2015). Case studies from companies like Toyota, Motorola, and Xerox highlight the practical benefits and effectiveness of TQM in real-world settings. The future of TQM is expected to evolve with advancements in technology, such as artificial intelligence and smart manufacturing, which promise to further enhance quality management practices (Antony, 2021).

#### B. Water Management

Water plays a critical role in sustaining life and supporting various activities essential for human well-being, including drinking, cooking, sanitation, and hygiene (Cosgrove & Loucks, 2015). Access to clean and safe drinking water is fundamental to public health, as poor water quality can lead to the spread of waterborne diseases (Li & Wu, 2019). In many regions, including the Philippines, inadequate infrastructure and water supply shortages pose significant challenges to ensuring universal access to clean water (Mishra et al., 2021). As a response, governments and organizations have implemented various initiatives to improve water management and enhance access to safe drinking water (Faulmino & Rola, 2023). Effective water management requires a multi-faceted approach, involving public education, community engagement, and infrastructure development (Springer, 2009). Studies have shown that community-based water conservation programs can play a crucial role in promoting sustainable water use and ensuring the long-term availability of water resources (Jain, 2012). However, achieving sustainable water management requires ongoing monitoring, evaluation, and adaptation of management practices to address emerging challenges and ensure the resilience of water systems (White, 2006).

For adequate living standards as in western and industrialized countries, a renewable water supply of at least 2000 m<sup>3</sup> per person per year is necessary. If only 1000±2000 m<sup>3</sup> is available, the country is water stressed, while below 500 m<sup>3</sup> per person per year it is water scarce. (Bouwer, 2000).

By examining these factors within the context of Barangay Bagong Sikat, the study aims to provide valuable insights into the strengths and weaknesses of current water management practices and identify opportunities for improvement to ensure the provision of clean and safe water for all residents.

Alternative supply methods that encourage more sustainable consumption of water may need to be considered in the future. Many studies in Australia and overseas have researched and analyzed the options for the future (ASTECC, 1995; Anderson, 1996; Otterpohl, 1997; Terpstra, 1999; UWRAA, 1996). Along with conservation strategies, solutions are required to reduce the cost of infrastructure. Because the pipeline network in the water supply system conservatively accounts for around 75% (WSAA, 1999a) of the total infrastructure costs associated with water collection, treatment and distribution, this is the area where major savings in infrastructure costs can occur with advances in technology or operational methods. Only small savings in infrastructure costs can be made in the area of water treatment and storage and, in fact, with increasing concerns over water quality, it is expected that the costs of water treatment infrastructure will increase in the future rather than decrease, as technologies such as membrane filtration are required. The responsibility of meeting these challenges lies with the water authorities.

## 2. Statement of the Problem

In Brgy. Bagong Sikat, San Jose City, effective management system is crucial for ensuring sustainable access to clean water resources and mitigating the impact of water-related challenges. However, it is needed to measure the effectiveness of the Management System of Potable Water System (POWAS) efforts in Barangay Bagong Sikat, considering factors such as residents' perceptions, management system practices, and actual outcomes in terms of water availability and sustainability. It specifically aims to answer the following:

- What are the problem encounters related to the management system of POWAS?
- What is the existing system revolving in the management of POWAS?
- What is the total quality management system of POWAS in Brgy. Bagong Sikat San Jose City?

## 3. Scope and Limitation of the Study

The purpose of the study is to assess and improve the Total Quality Management (TQM) practices within the potable water system of Brgy. Bagong Sikat, San Jose City. This includes evaluating the effectiveness of existing quality management initiatives, identifying areas for enhancement in water treatment, distribution, and monitoring processes, and proposing strategies to ensure the consistent delivery of safe and reliable drinking water to residents.

Data will be collected through survey questionnaires, and interviews from a total of 200 respondents residing in Barangay Bagong Sikat where the total household number in the barangay is 782 where the 30% of it will be the total respondents. The study will investigate various aspects of the management system, including but not limited to, water usage patterns, management system practices, and perceptions resident regarding the management in POWAS. However, the findings may be limited by the sample size, as the 200 respondents may not fully represent the diversity of perspectives within the barangay. Also, an interview in the management to identify the practices circulating inside the organization.

## 4. Methodology

This section describes the research design, environment, respondents, instrument, data collection processes, and statistical analysis of the collected data. In order to provide a vivid explanation endeavor, these components are thoroughly explained.

### A. Research Design

The research design involves employing a mixed-method approach, integrating both quantitative surveys to assess the functionality and satisfaction levels of the Potable Water System (POWAS) and qualitative interviews to delve into community perceptions and experiences, thus providing a comprehensive evaluation the quality of management system of the POWAS within Barangay Bagong Sikat, San Jose City.

### B. Data Collection Methods

This research will make use of a research survey questionnaire that will be divided into four parts according to the respective variables. The first part will contain the demographic profile of the student particularly their age, gender, monthly income and the number of household members which will be in a fill in the blank style. The second part will be the different uses of the POWAS which will be put into the questionnaire via checklist. The third part will be the management practices in place to ensure that the water quality is such that it is clean enough to consume by the residents. Lastly, is the portion that will be measured through Likert scale which will measure the effectiveness of the management practices of the residents of Bagong Sikat. The research questionnaire will be given to the residents through print. Also, conduction of observation for the management practices of the POWAS consumer, lastly to evaluate the difference of the water consumed through water metrics from previous year to present of the resident who is practicing water management.

### C. Data Analysis Procedures

Since the study employs causal-comparative / quasi experimental research design, the first part of the data which are the demographic profile of the respondents will be tabulated with the use of descriptive research, same thing will happen to the second part of the questionnaire which is the checklist part, all of the information will be tabulated and will go through descriptive method. The third part will assess the management practices in place by the residents which they will be writing on the questionnaire.

For the last part The Likert scale is used to evaluate the responses provided by participants in the survey. It consists of a series of statements or questions to which respondents indicate their level of agreement or disagreement on a predetermined scale. In the context of this research, the Likert scale is employed to assess residents' perceptions of various aspects related to water management effectiveness in Barangay Bagong Sikat. Participants rate their agreement or disagreement with statements about water usage, management practices, and awareness on a scale typically ranging from "Strongly Disagree" to "Strongly Agree" or from "Very Dissatisfied" to "Very Satisfied". The responses obtained through the Likert scale are then quantitatively analyzed to determine the prevailing attitudes and opinions of residents, providing valuable insights into their perspectives on water management in the barangay.

## 5. Results and Discussion

This section contains the presentation, analysis and interpretation of data gathered by the researcher. The ages 31 to 50 years old have the highest number of respondents meanwhile the age 71 to 100 years old has the lowest number of respondents.

Table.1. Demographic Profile: Gender

Gender	Frequency	Percentage
Male	103	51.5
Female	97	48.5
<b>TOTAL</b>	<b>200</b>	<b>100</b>

Table.2. Demographic Profile: Age

Age (years old)	Frequency	Percentage
10-30	41	20.5
31-50	88	44.0
51-70	61	30.5
71-100	10	5.0
<b>TOTAL</b>	<b>200</b>	<b>100</b>

Table.3. Demographic Profile: Family Monthly Income

Family Monthly Income (P)	Frequency	Percentage
Below 10,000	134	67.0
10,000 – 15,000	55	27.5
15,000 – 20,000	8	4.0
Above 20,000	3	1.5
<b>TOTAL</b>	<b>200</b>	<b>100</b>

Table.4. Demographic Profile: Number of the Family in a Household

Number of Members	Frequency	Percentage
1-5	149	74.5
6-10	42	21.0
11-15	9	4.5
<b>TOTAL</b>	<b>200</b>	<b>100</b>

Table.5. Potable Water Supply (POWAS) as Alternative Water Supply

	Mean	Interpretation
Consumable	2.4375	Agree
Cooking	3.4850	Strongly Agree
Hygiene	3.5625	Strongly Agree
Laundry	3.7250	Strongly Agree
Medication	3.3050	Strongly Agree
<b>TOTAL</b>	<b>3.3030</b>	<b>Strongly Agree</b>

There are more men respondents which is equivalent to 103 in counting and 3% more than women.

The basic income of family per household at Brgy. Bagong Sikat, San-Jose City, Nueva Ecija is below P10,000 pesos.

1-5 members is the common number of members per household equivalent to 149 or 74.50 of the respondents.

The water from the Potable Water System is consumable specially for cooking, and can be used in hygiene, laundry and as a wound cleaner as per the resident perception through the survey questionnaire. According to Phistar (2014), 44 percent of Novo Ecijano households have no domestic potable water

Table.6. Water Quality Management Awareness

	Mean	Interpretation
Public Education	3.344	Strongly Agree
Public Awareness	3.304	Strongly Agree
Community-Based Water Conservation Programs	3.267	Strongly Agree
<b>TOTAL</b>	<b>3.305</b>	<b>Strongly Agree</b>

supply which is a serious problem considering that one of the cases of morbidity is water-borne. This shows that Potable

Water has a huge impact on how it can help a household to manage its supply of water properly.

The residents are knowledgeable about management practices to ensure that the water is safe and clean to use.

The level of effectiveness of the management practices of the Bagong Sikat Resident in terms of Relative Advantage. Based on the data, Indicator 5 which states that water management practices of the resident is highly effective, has the highest weighted mean with 3.267 interpreted as agree. This shows that the respondent resident agreed that the water management practices are effective having an average weighted mean of 3.267 interpreted as Agree, which is based on the study of Salo et.al (2023). These results implied that the respondents were able to agree that the water management practices are effective to lessen the usage of water to help the potable water system maintain the water supply to each household.

The research written by Kasim et.al (2014) agrees with this result. It states that water management can save billions of liters of water collectively if they maintain practicing water management like conservation. This is also supported by the study of Bouman and Tuong (2001) Reducing water consumption and continuous practicing water conservation can result in a ponded water level that produces water productivity. Similarly, Mini et.al (2014) says that the restriction of outdoor watering to two days per week with a price increase is a more effective approach to conserve water also, These conservation measures also seemed logistically easier to implement, to enforce, and to deliver a clear message to customers. Non-price conservation program efforts can significantly reduce residential water use, the effectiveness of nonprice programs appear to exhibit diminishing returns (Michelsen et.al., 1999) Based on the data gathered from the study, the Potable Water System (POWAS) management practices in Barangay Bagong Sikat show varying levels of effectiveness across different aspects. Functionally, POWAS proves highly effective for essential activities like cooking, hygiene, laundry, and medication, as evidenced by strong agreement among respondents. Operationally, while public education efforts are rated highly effective, there's a moderate level of effectiveness in raising public awareness about water emergencies and pollution control measures, suggesting opportunities for improvement. Economic effectiveness is explicitly addressed, improvements in management practices could lead to long-term cost savings. Socially, there's a positive perception of POWAS, with active community participation in conservation efforts contributing to social cohesion. While environmental considerations are not directly addressed, recommendations for infrastructure enhancements and research into environmentally friendly techniques indicate a commitment to sustainability. Overall, continued efforts to improve operational efficiency, enhance economic considerations, and integrate environmental sustainability principles will contribute to more comprehensive and sustainable water management in Barangay Bagong Sikat.



## 6. Conclusion

The survey reveals that while the Potable Water System (POWAS) is perceived as a useful alternative for essential activities such as cooking, hygiene, and laundry, there are concerns regarding its suitability for drinking. Management practices aimed at ensuring water quality and promoting conservation are generally perceived as effective, with strong agreement among respondents.

Residents' suggestions for water management include conservation measures, water reuse, infrastructure improvements, and promoting responsible usage. However, challenges such as insufficient water distribution during peak hours and the non-potability of water for drinking are evident. Interviews with POWAS management highlight ongoing efforts to address maintenance issues and ensure water quality, including regular meetings and water testing.

Analysis of water consumption trends indicates fluctuating patterns over the years, with corresponding fluctuations in expenses. This suggests a need for continued monitoring and adaptation of water management strategies to address changing consumption habits and external factors.

In conclusion, while there are effective management practices and community awareness initiatives in place, challenges remain in ensuring equitable access to clean drinking water and addressing fluctuations in water consumption. Continued collaboration between stakeholders, proactive maintenance, and community engagement will be essential in achieving sustainable water management in Barangay Bagong Sikat.

## 7. Recommendation

Based on the findings of the study assessing water management effectiveness in Barangay Bagong Sikat, San Jose, the following recommendations are proposed to further enhance water management practices in the community:

### A. QUALITY MANAGEMENT SYSTEM (QMS) OF POTABLE WATER SYSTEM (POWAS) IN BRGY. BAGONG SIKAT SAN JOSE CITY PLAN

#### 1) Delivering of Vision, Mission and its Scope, Limitation and Boundaries

##### Vision:

"To be the leading provider of safe, reliable, and sustainable potable water solutions, renowned for our commitment to excellence, innovation, and customer satisfaction."

##### Mission:

"Our mission is to ensure the highest standards of water quality and service reliability through the principles of Total Quality Management. We strive to exceed customer expectations by continuously improving our processes, embracing innovative technologies, and promoting sustainable practices to contribute to a better future."

## 2) Scope and Limitation for the Management

### Regulatory Compliance:

- The QMS must operate within the framework of local, national, and international water quality standards and regulations. This includes adherence to guidelines set by bodies such as the World Health Organization (WHO), Environmental Protection Agency (EPA), and local health authorities.

### Scope of Coverage:

- The QMS is limited to processes directly related to the provision of potable water. This includes water sourcing, treatment, distribution, and quality monitoring, but may not extend to unrelated aspects such as non-potable water services or wastewater treatment.

### Resource Allocation:

- The QMS is bound by the resources allocated to it, including financial budgets, human resources, and technological infrastructure. Resource constraints can limit the extent and speed of quality improvements.

### Technological Capabilities:

- The effectiveness of the QMS is tied to the current state of technology used in water treatment and monitoring. The system's capabilities are limited by the available technology for detecting and addressing contaminants.

### Geographical and Environmental Factors:

- The QMS must account for geographical variations and environmental conditions, which can influence water quality and availability. For example, areas with scarce water sources or significant pollution challenges may face additional constraints.

## 3) Limitations

### Human Factors:

- The success of the QMS depends heavily on the competence, commitment, and cooperation of the workforce. Training gaps, resistance to change, or lack of engagement can limit the system's effectiveness.

### Data Accuracy and Availability:

- Effective quality management relies on accurate and timely data.
- Limitations in data collection, reporting, and analysis can impede the ability to monitor and improve water quality.

### Economic Constraints:

- Budget limitations can restrict the implementation of advanced technologies, comprehensive training programs, and extensive infrastructure upgrades. Economic downturns or funding cuts can further exacerbate these limitations.

### Infrastructure Limitations:

- Aging infrastructure can pose significant challenges to maintaining water quality. Limitations in the current infrastructure may require substantial investments to meet quality standards.

#### Climate Change and Environmental Variability:

- Climate change and environmental variability introduce uncertainties and risks that can affect water quality. Extreme weather events, droughts, and changes in water source conditions can disrupt water management processes.

#### Stakeholder Coordination:

- Managing a potable water system involves coordination with multiple stakeholders, including government agencies, community groups, and private entities. Differences in priorities and objectives can create challenges in implementing a cohesive QMS.

#### Continuous Improvement Challenges:

- While continuous improvement is a core principle of TQM, achieving it can be challenging due to the need for ongoing investment, sustained effort, and adaptation to new challenges.

#### Regulatory Changes:

- Changes in regulations and standards can necessitate rapid adjustments to the QMS, which can be challenging to implement without adequate preparation and flexibility.

### 1. Consumer and the Interested Parties

May produce a necessary requirement to avail the water services

- Complete form
- Copy of Valid ID
- 2x2 picture
- Sketch plan of house and direction
- Payment for installation

### 2. Leader Needed

Engineer

- Knowledgeable for maintenance, machine
- Knowledgeable in accounting and financing

### 3. Planning

1st Week: Monthly meeting with organization members and consumers.

2nd Week: Conducting a monthly water test to identify the needed treatment for potable water.

3rd Week: Testing the pH level of water for safety purposes.

4th Week: Maintenance and review week:

- **Water System Maintenance:** Perform routine maintenance on water systems and equipment to ensure they are functioning correctly.
- **Data Review and Reporting:** Compile and review the data collected from the water tests and pH levels. Prepare a report on the findings and any actions taken or needed.
- **Training and Education:** Provide training sessions for staff on water safety and treatment procedures. Educate consumers on water conservation and safety practices.

- **Planning for Next Month:** Plan and prepare for the upcoming month's activities, addressing any issues or improvements needed.

### 4. Support Process

Here are essential support processes needed for TQM in the management of a potable water system:

#### Implementing Training and Development Process

- Provide employees with the necessary knowledge, skills, and competencies to support TQM principles.

Activities:

- Conduct training sessions on TQM concepts, tools, and methodologies.
- Offer specialized training on water treatment processes, quality control techniques, and regulatory requirements.
- Provide ongoing education to keep employees updated on new developments and best practices.

#### Quality Assurance Process

Ensure that quality standards and procedures are adhered to throughout the water management process.

Activities:

- Perform regular inspections and audits of water treatment facilities, distribution systems, and quality control measures.
- Conduct quality checks at various stages of the water management process to identify deviations and non-conformities.
- Implement corrective and preventive actions to address quality issues and improve processes.

#### Supplier Management Process

Ensure that suppliers and vendors meet quality standards and requirements for materials, equipment, and services.

Activities:

- Establish criteria for evaluating suppliers based on quality, reliability, and compliance with regulations.
- Conduct supplier assessments and audits to verify adherence to quality standards.
- Collaborate with suppliers to address quality issues and drive continuous improvement.

#### Documentation and Recordkeeping Process

Maintain accurate and comprehensive documentation of quality management activities, processes, and outcomes.

Activities:

- Develop and maintain documentation of standard operating procedures (SOPs), work instructions, and quality manuals.
- Record quality-related data such as water quality test results, inspection reports, and corrective actions taken.
- Establish a document control system to ensure the integrity, accessibility, and security of quality records.

### Continuous Improvement Process

Foster a culture of continuous improvement by identifying opportunities for enhancing quality and efficiency.

Activities:

- Facilitate regular quality improvement meetings and brainstorming sessions.
- Encourage employees to submit suggestions for process improvements and innovations.
- Implement a systematic approach such as the Plan-Do-Check-Act (PDCA) cycle or Six Sigma methodologies to drive continuous improvement initiatives.

### Customer Feedback and Satisfaction Process

Solicit feedback from customers to assess satisfaction levels and identify areas for improvement.

Activities:

- Collect customer feedback through surveys, complaint forms, and direct communication channels.
- Analyze customer feedback to identify trends, patterns, and opportunities for improvement.
- Take proactive measures to address customer concerns and enhance satisfaction levels.

## 5. Operations

- **Customer Focus:** Understand customer needs and regularly gather feedback from customers to understand their needs and expectations. Engage with customers, hold monthly meetings (as planned in 1st week) to directly involve consumers and gather insights.
- **Leadership:** Establish clear vision and goals. Define clear quality goals and communicate them effectively throughout the organization. Leaders should demonstrate commitment to quality in all actions and decisions.
- **Employee Involvement:** Involve employees in decision-making processes and encourage them to take ownership of quality improvements. Provide training like regular training sessions on quality management principles and practices (e.g., in the 4th week).
- **Process Approach:** Develop standardized procedures for all operations, including water testing, pH testing, and maintenance. Continuous Improvement such as regularly reviewing and improving processes based on data collected and feedback received.
- **Integrated System:** Implement and maintain a Quality Management System (QMS) that aligns with international standards (e.g., ISO 9001).

### Risk Management Process

Identify, assess, and mitigate risks that may impact the quality and reliability of the potable water system.

Activities:

- Conduct risk assessments to identify potential hazards, vulnerabilities, and threats.

- Develop risk mitigation plans and strategies to minimize the likelihood and impact of adverse events.
- Monitor and review risk management activities regularly to ensure effectiveness and responsiveness to changing conditions.

### Regulatory Compliance Process

Ensure compliance with applicable laws, regulations, and standards governing the management of potable water systems.

Activities:

- Stay informed about relevant regulations and standards issued by regulatory agencies and industry organizations.
- Conduct regular assessments to verify compliance with regulatory requirements.
- Implement measures to address compliance gaps and mitigate regulatory risks.

### Performance Measurement and Analysis Process

Collect, analyze, and interpret data to evaluate the effectiveness of management activities and identify areas for improvement.

Activities:

- Define key performance indicators (KPIs) related to water quality, system reliability, and customer satisfaction.
- Collect and compile data on KPIs using monitoring systems, surveys, and other sources.
- Analyze performance data to identify trends, anomalies, and opportunities for improvement.

## 6. Performance Evaluation

It serves as a critical component of the continuous improvement cycle, providing insights into areas of strength, areas for improvement, and opportunities for innovation. Here's how performance evaluation is typically conducted:

### Key Performance Indicators (KPIs)

- **Identification:** Define KPIs relevant to the goals and objectives of the potable water system management company, such as water quality metrics, system reliability indicators, and customer satisfaction scores.
- **Measurement:** Establish methods for collecting and analyzing data related to KPIs, including water quality testing, system monitoring, and customer feedback surveys.
- **Benchmarking:** Compare actual performance against predefined targets, industry benchmarks, and best practices to assess performance levels.

### Data Collection and Analysis

- **Data Gathering:** Collect relevant data from various sources, including operational records, quality reports, customer surveys, and regulatory compliance documentation.
- **Data Validation:** Ensure the accuracy, reliability, and completeness of collected data through validation and verification processes.

- **Data Analysis:** Analyze performance data using statistical techniques, trend analysis, and root cause analysis to identify patterns, trends, and areas for improvement.

### Evaluation Criteria

- **Quality:** Assess the effectiveness of quality management practices in maintaining water quality standards, preventing contamination, and ensuring compliance with regulatory requirements.
- **Reliability:** Evaluate the reliability and stability of the potable water system, including factors such as uptime, system downtime, and service interruptions.
- **Customer Satisfaction:** Measure customer satisfaction levels through surveys, feedback mechanisms, and complaint resolution processes.
- **Efficiency:** Evaluate the efficiency of operational processes, resource utilization, and cost-effectiveness in delivering potable water services.

### Performance Reviews

- **Regular Reviews:** Conduct periodic reviews of performance data and KPIs to monitor progress, identify trends, and assess performance against targets.
- **Management Reviews:** Hold management review meetings to discuss performance results, review performance against objectives, and make decisions on corrective actions and improvement initiatives.
- **Employee Feedback:** Solicit feedback from employees involved in quality management activities to gather insights, identify challenges, and foster a culture of continuous improvement.

### Continuous Improvement

- **Identify Opportunities:** Use performance evaluation results to identify opportunities for improvement, prioritize improvement initiatives, and allocate resources effectively.
- **Implement Changes:** Implement corrective actions, process improvements, and innovative solutions to address performance gaps and enhance overall performance.
- **Monitor Progress:** Track the implementation of improvement initiatives, monitor their impact on performance, and adjust strategies as needed to achieve desired outcomes.

### Documentation and Reporting

- **Documentation:** Document performance evaluation results, findings, and actions taken to maintain a record of performance improvement efforts.
- **Reporting:** Prepare performance reports and dashboards to communicate performance results, trends, and improvement initiatives to stakeholders, including management, employees, customers, and regulatory authorities.

### Regulatory Compliance

- **Compliance Assessment:** Evaluate performance against regulatory requirements, standards, and guidelines to ensure compliance with legal and regulatory obligations.
- **Gap Analysis:** Identify gaps between current performance and regulatory requirements, and take corrective actions to address compliance deficiencies.

### 7. Continual Improvement

- **Gather relevant data** from various sources, including customer feedback, process performance metrics, and internal audits.
- **Analyze the collected data** to identify trends, patterns, and areas for improvement.
- **Determine the underlying causes** of issues or inefficiencies to address the source of problems.
- **Action Planning:** Develop detailed improvement plans outlining the actions, responsibilities, and timelines for implementing changes.
- **Resource Allocation:** Allocate necessary resources, including personnel, budget, and technology, to support improvement initiatives.
- **Risk Assessment:** Identify potential risks and barriers to implementation and develop strategies to mitigate them.
- **Execution:** Implement planned improvement actions, which may include upgrading treatment facilities, optimizing distribution systems, implementing water conservation measures, or enhancing customer communication channels.
- **Monitoring:** Monitor the progress of improvement initiatives using key performance indicators (KPIs) related to water quality, system reliability, customer satisfaction, and operational efficiency.
- **Feedback Mechanisms:** Establish feedback mechanisms to capture input from stakeholders, including employees, customers, regulators, and community members.
- **Assessment:** Evaluate the effectiveness of improvement initiatives against predefined objectives and targets.
- **Performance Measurement:** Measure and analyze the impact of improvements on relevant performance metrics, such as quality, efficiency, and customer satisfaction.
- **Review Meetings:** Conduct regular review meetings to discuss progress, identify challenges, and make adjustments as needed.
- **Documentation:** Document all improvement activities, including plans, actions taken, results achieved, and lessons learned.
- **Communication:** Communicate improvement progress and outcomes to stakeholders, including management, employees, and customers, to foster transparency and accountability.



## 8. Customer Feedback and Satisfaction

Solicit feedback from customers to assess satisfaction levels and identify areas for improvement.

Activities:

- Collect customer feedback through surveys, complaint forms, and direct communication channels.
- Analyze customer feedback to identify trends, patterns, and opportunities for improvement.
- Take proactive measures to address customer concerns and enhance satisfaction levels.

## 9. Additional Recommendations

- **Enhanced Public Awareness Programs:** Develop and implement comprehensive public awareness campaigns to educate residents about water emergencies, pollution control measures, and the importance of water conservation. These programs should utilize various communication channels such as community workshops, social media, and informational materials distributed door-to-door.
- **Strengthen Community Engagement:** Foster greater community involvement in water management initiatives by establishing community-based organizations or committees dedicated to water conservation and sustainability. Encourage active participation from residents in decision-making processes and encourage the sharing of best practices among households.
- **Invest in Infrastructure:** Allocate resources towards infrastructure improvements to enhance the efficiency and reliability of the Potable Water System (POWAS). This may include upgrading water treatment facilities, repairing aging pipelines, and investing in advanced monitoring technologies to detect leaks and reduce water loss.
- **Promote Sustainable Water Practices:** Promote sustainable water practices among residents, such as rainwater harvesting, greywater recycling, and xeriscaping techniques for landscaping. Provide incentives or subsidies for implementing water-saving measures, such as installing low-flow fixtures and water-efficient appliances.
- **Long-Term Planning and Monitoring:** Develop a long-term water management plan for Barangay Bagong Sikat that addresses future water demand, climate change impacts, and population growth. Implement regular monitoring and evaluation mechanisms to track progress towards water conservation goals and identify areas for improvement.
- **Collaboration with Stakeholders:** Foster collaboration between the local government, community organizations, NGOs, and other stakeholders to implement holistic water management strategies. Establish partnerships for funding opportunities, technical expertise, and knowledge sharing to support sustainable water management initiatives.

By implementing these recommendations, Barangay Bagong Sikat can further enhance its management system of the Potable water system to ensure access to clean and sustainable water resources for its residents, and contribute to the overall well-being and resilience of the community.

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