



WATER SAFETY PLAN

Revised 2023

Safe water for all...

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PREFACE

Executive Summary

Waterborne disease remains one of the major health concerns in the world. Diarrheal diseases, which are largely derived from contaminated water and inadequate sanitation, account for 2.4 million deaths each year and contribute to over 73 million Disability Adjusted Life Years (a measure of disease burden, WHO 1999). Based on present estimates, one-sixth of humanity lack access to any form of safe and improved water supply within 1 kilometer of their home, and one-fifth of humanity lack access to any form of adequate and improved excreta disposal (WHO and UNICEF 2000). Outbreaks of waterborne disease continue to occur in both developed and developing countries, leading to diseases, loss of life, and economic burden for individuals and communities. Strategies to improve water quality, in conjunction with improvements in excreta disposal and personal hygiene, can be expected to deliver substantial health gains in the population.

Bayawan Water District (BAWAD) greatly recognizes the right of individual to equal access to safe water. With this, BAWAD organized a multifaceted Water Safety Plan (WSP) Committee from its various operating units to assess and develop a WSP for its entire system. This WSP will cover the entire water system: water sources, conveyance system, water treatment, pumps and reservoir, and the distribution network up to its concessionaires.

The WSP of BAWAD is formulated in order to ensure that our vision and objectives are attained, that is, “changing people’s lives by providing sustainable potable water” and “to serve with expertise and technological advancement,” with consideration to sustain shared neighborhood faucets, increase hygiene awareness, and improve health situation to the target population of Bayawan City and the neighboring municipalities. The BAWAD WSP aims to provide extensive and standardized actions for eliminating water contamination risks, thereby ensuring and maintaining potable and safe drinking water for the people of Bayawan City and its neighboring municipalities.

The district’s operation covers water sources such as springs, groundwater, and surface water, various facilities, and a large and complex distribution system network traversing several barangays. BAWAD, through the WSP, is committed in ensuring that safe and potable drinking water is available to the consumers at all times and meets the health- based standards, and BAWAD management is in full support to the institutionalization of this WSP.

Scope and Coverage

BAWAD Water Safety Plan is comprised of the protection of water sources, conveyance system, water treatment, pumps and reservoir, and the distribution network from risks that will jeopardize the quality of water being supplied to the consumers and covers the operations of spring, groundwater, and surface water sources located in various barangays of the City where the raw water supply comes from. The use of a comprehensive risk assessment and management approach is an effective means in ensuring safety of the product from the source to the consumers’ tap in both normal operating conditions and emergency situations. The application

focuses on issues that may directly or indirectly affect public health caused by the use of potable water distributed and ensuring sound water supply practices.

Water District Profile

Bayawan Water District is a small water district located 100 km south of Dumaguete City, Negros Oriental, Philippines. It has its humble beginnings, from a defunct NAWASA turning into a Local Water District by virtue of Presidential Decree No. 198, otherwise known as the Local Water Utilities Act of 1973. It was born into a district under SB Resolution No. 79, dated May 26, 1982, by then Honorable Mayor Felix G. Gaudiel, Jr.



Figure 1. The building is the first home of Bayawan Water District, dedicated to consumers, clients, donors, and benefactors

A 400 cu. m. reinforced concrete ground reservoir located at Sitio Muyao, Banga, at an elevation of 50 meters above sea level, was constructed in 1940. About 5,800 lineal meters of 4"Ø C.I. pipes were laid in 1940. A 210 lineal meters 4"Ø G.I. pipe connects the intake dam to the 16 cu. m. auxiliary tank at Manampa watershed.

In 1956, additional 636 lineal meters transmission 6"Ø C.I. pipes were laid, and 490 lineal meters 6"Ø P.E. in 1979. In 1980, additional pipes were laid: around 2,366.50 meters 3"Ø G.I. pipes; 486.20 meters 2"Ø G.I. pipes; and 1,292.50 meters 1"–1½"Ø at the distribution area.

The water system had encountered problems, some of which are numerous leaks in its transmission and distribution pipelines and reduction of available water supply at the service area. Also, during heavy rains, Manampa spring is affected by surface run-off, thus making it turbid during these times.

The Local Government of Bayawan decided to create a water district under the law of PD 198 to address the meager resources of the government under the able leadership of Honorable Mayor Felix G. Gaudiel, Jr.

By October 4, 1982, it was formally recognized as a water utility and was correspondingly issued a Conditional Certificate of Conformance No. 221, thus operating under the rules and regulations of PD 198, otherwise known as the Local Water Utilities Act of 1973. More so, the generosity of the City Government of Bayawan through the leadership of the late

Honorable Mayor German P. Saraña, Jr. extended an additional 17 million pesos grant subsidy to BAWAD in year 2004.

Through this elegant and generous act of the LGU Bayawan, BAWAD was able to bring down its water tariff from 148.00 to 100.00 per 10 cubic meter consumption. A staggering 32% reduction in tariff redounds to greater economic benefit to Bayawanons.

In 2008, the LGU under the late Honorable German P. Saraña, Jr. also extended a 12 million interest-free loan to BAWAD to fund its water quality improvement projects.

In 2012, BAWAD received the 30 million pesos Non LWUA Initiated Funds-Presidential Social Fund (NLIF-PSF) which was converted into a regular Window I loan from LWUA. An 8.5 km transmission pipeline parallel to the existing one was installed. A 3.7 km distribution line was also part of the expansion project to fully serve up to Brgy. Caranoche, Santa Catalina, an annex municipality.

Today, BAWAD is categorized as Category C in the current Local Water District (LWD) Categorization of the Local Water Utilities Administration (LWUA). The district has 42 regular and casual employees and 26 Job Order personnel serving a total of 10,119 active service connections (as of December 2022) at more than 100,000 population. The service area includes nine (9) urban and sub-urban barangays and thirteen (13) hinterland barangays of Bayawan City. It already extended its service coverage to the neighboring barangay of the municipality of Santa Catalina, Barangay Caranoche.

Product water of BAWAD is intended for household and commercial use, is safe for drinking, and meets the standard for potable drinking water of the PNSDW.

The district maintains a regular random bacteriological testing and an annual raw water physical and chemical testing done by a DOH-accredited laboratory to ensure a safe and potable water.



Figure 2. BAWAD Vision, Mission and Core Values

1. THE WSP COMMITTEE

1.1. The Development of BAWAD WSP

The World Health Organization (WHO) has issued Guidelines for Drinking Water Quality in 2006, stating that all water supply providers are responsible for the development and implementation of a Water Safety Plan. Further in September 4, 2014, the Department of Health (DOH) issued the “National Policy on WSP” in compliance to Administrative Order No. 2014-0027 requiring all drinking water service providers to develop and implement a WSP. The Local Water Utilities [Date] 7 Administration (LWUA) issued Memorandum Circular (MC) No. 010.14 on December 1, 2014, reinforcing the requirement for all water districts to develop and implement WSPs to support the DOH issuance.

In compliance with these guidelines, Bayawan Water District has created its own Water Safety Plan. The BAWAD Board of Directors and management showed their commitment and support for the formulation of BAWAD Water Safety Plan through Board Resolution No. 026 series of 2023 (see Annex 1).

The BAWAD WSP aims the following:

1. Early observe, prevent, and minimize/diminish possible contamination of water sources and during water storage and distribution
2. Ensure the delivery and/or supply of safe water
3. Comply to established national and local regulations and standards on safe drinking water and health-based guidelines and targets
4. Integrate the community’s participation in water safety management

The major advantage in the adoption of the WSP with the commitment to its implementation is the systematic and detailed assessment of hazards as well as the provision of an organized and structured system to minimize the probability of failure due to mere oversight and management or implementation lapses. This process increases the consistency in ensuring that safe water is supplied and provides contingency plans to respond to system failures or unforeseeable hazardous events.

1.2. BAWAD Water Safety Plan Committee

Pursuant to Board Resolution No. 027 series of 2023 (Annex 2) with Office Memorandum No. 2023-01-025 dated December 26, 2022 (Annex 3), the Bayawan Water District formed a multidisciplinary WSP Committee where it is composed of diverse and experienced technical personnel from every facet of our water system. Every key department and sections are well represented to address all concerns, from the production, maintenance, administrative, finance, and commercial sections. All will be working together, hand in hand, to produce, implement, and maintain a comprehensive and effective Water Safety Plan.

The Committee is headed by a team leader who will be responsible in spearheading the implementation and sustainability of the Plan in fulfillment of the agency’s mandate to provide safe, affordable, and sustainable water supply to the populace. The team members were chosen according to relevant experience and the needed expertise in formulating this WSP. Team members shall identify and analyze water safety hazards throughout the water supply system as well as understand and determine the necessary control measures aimed to eliminate or reduce risk level of significant risk hazards associated to the water system from the catchment to the point of consumption.

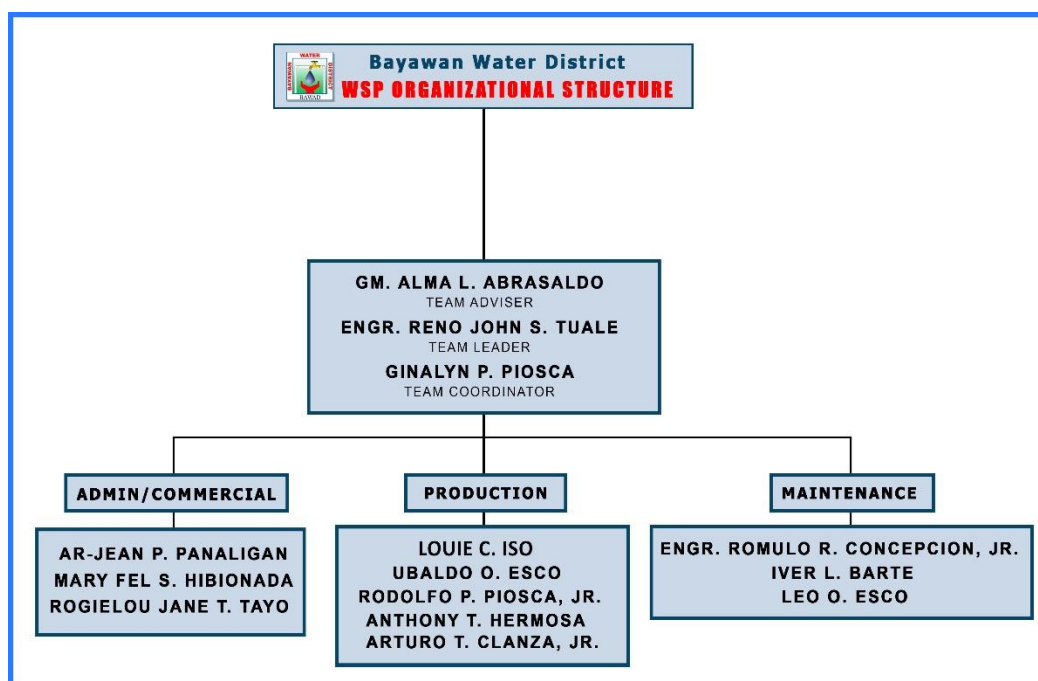


Figure 3. BAWAD WSP Organizational Structure

1.2.1. WSP Members, Roles, and Responsibilities

Table 1. Description of Expertise Rating

1	Technical expertise on operation and maintenance of	
	A	Source
	B	Storage
	C	Treatment
2	Distribution	
	Provide operational support for the WSP in terms of	
	A	Administrative
	B	Financing
3	Technical	
	Capable of communicating the WSP objectives and outcomes	
	A	Inside the water district
4	B Outside the water district	
	Understand water quality targets to be met	
5	Understand the impact of proposed water quality controls on the environment	
6	Familiar with training and awareness program	

Table 2. Key Personnel of BAWAD Water Safety Plan Committee

Name	Job Title	Role in the WSP Team	Contact Details	Expertise												Remarks
				1				2			3		4	5	6	
				a	b	c	d	a	b	c	a	b				
Alma L. Abrasaldo	General Manager	Team Adviser	09177016128	x	x	x	x	x	x	x	x	x	x	x	x	
Engr. Reno John S. Tuale	Division Manager	Team Leader	09175843722	x	x	x	x			x	x	x	x	x	x	
Ginalyn P. Piosca	Division Manager	Team Coordinator	09173258450					x	x		x	x	x	x	x	
Engr. Romulo R. Concepcion Jr.	Sr. Project Planning and Development Officer	Team Member/ Construction	09971660613	x	x	x	x			x	x	x	x	x	x	
Rodolfo P. Piosca, Jr.	Sr. Water/Sewerage Maintenance Man-A	Team Member/ Maintenance	09989599470				x			x	x		x	x		
Ar-Jean P. Panaligan	Sr. Corporate Budget Analyst	Team Member/ Admin/Commercial	09177182534						x		x		x	x	x	
Arturo T. Clanza, Jr.	Water/Sewerage Maintenance Man-A	Team Member/ Production	09679371110	x	x	x			x				x	x		
Iver L. Barte	Sr. Water/Sewerage Maintenance Man-A	Team Member/ Maintenance	09975066174	x	x	x	x			x	x		x	x		
Mary Fel S. Hibionada	Records Assistant	Team Member/ Admin/Commercial	09174145149								x	x	x	x	x	
Rogielou Jane T. Tayo	Admin/GSO-B/ HRMO	Team Member/Commercial	09173176023								x	x	x	x	x	
Leo O. Esco	Sr. Water/Sewerage Maintenance Man-A	Team Member/Maintenance	09269319266	x	x	x	x						x	x	x	
Anthony T. Hermosa	Sr. Water/Sewerage Maintenance Man-A	Team Member/ Production	09177978045	x	x	x	x			x			x	x		
Ubaldo O. Esco	Water/Sewerage Maintenance Man-A	Team Member/ Production	09171547312	x	x	x	x						x	x		
Louie C. Iso	Water/Sewerage Maintenance Man A	Team Member/New Connection	09950331626	x	x	x	x						x	x	x	

1.2.2. WSP Committee Schedule of Meetings

The BAWAD WSP Committee agreed to meet once every quarter to discuss the implementation of this Water Safety Plan and revise this Plan as necessary or immediately after an incident, in order to assess the progress, revision, and additional implementation of control measures and corrective actions.

1.3. WSP Stakeholder Identification and Interaction

Stakeholders play a vital role in delivering quality water to our concessionaires. They are external parties that may have a big direct or indirect impact or influence on the quality of water. These stakeholders are identified and chosen to be partners in ensuring that health-based targets are met in the production, transmission, and delivery of safe water from the source to consumers as embodied in this WSP.

The National Water Resources Board (NWRB) is the leading government agency for the water sector in the Philippines, regarding water resources and potable water. It coordinates and regulates all water-related activities in the country that impact the physical environment and economy. BAWAD submits quarterly production reports to the agency for the conformance of the water supply.

The BAWAD WSP Team also decided DENR to be one of the stakeholders for this agency promulgates and implements rules and regulations for the conservation, management, and development of the environment. It gives us security for the conservation of the watershed that holds water for the supply. These two agencies should be on the list in developing BAWAD Water Safety Plan because of their capabilities and knowledge that BAWAD WSP Team could guarantee an assistance in all aspects of the Water Safety Plan.

The Local Government Unit of Bayawan City in the process of developing a Water Safety Plan is much essential. The local government is the frontliner of the institution and the educator of the community. Through the different departments and sections of LGU Bayawan like the City Environment and Natural Resources Office and City Health Office, with their implemented local policies and programs and with some designated to the barangays, especially health services and subsidizing health workers in maintaining its objectives that water and sanitation are partners for healthy and strong citizenry, the possibility of risks is minimized, so the district has the assurance for safe quality water.

Obviously, the community should be part of the stakeholders because they are the ones who consume water. Though communities in Bayawan city are now exposed to safe water, there is still not enough assurance. The community should be updated for possible changes that will happen to the system. The community was identified as part of the stakeholders, for it is the one who will be the most affected when we don't have safe water because the community has the highest percentage of influence affecting the quality of water. BAWAD WSP Team endeavors to educate the community in the premises through education program, orientation/seminars, media advisories, or even outreach programs to enhance their knowledge in sustaining safe quality water.

Table 3 describes the complete list of the identified stakeholders and their roles and responsibilities, what component of the water supply the stakeholder is engaged, and the interaction mechanism with the water district.

Table 3. BAWAD WSP Stakeholder Identification and Interaction

Stakeholders				Interaction Mechanism	Record of Interaction
Name	Relationship to drinking watersupply issues	Point of contactwith WSP Team	Issues with drinking watersupply		
Local Water Utilities Administration	Regulator and policymaker on water supply systems	LWUA Administrator/ Management Advisor	Compliance to regulations and policies on water system operations	Meeting/phone calls/emails	Issuances/memoranda/ monthly or annual reports/other compliances
National Water Resources Board (NWRB)	Create policy and regulate all water-related activities	NWRB Director	Water Allocation Permit	Meeting/phone calls/site visitation	Issuances/memoranda/ communications/quarterly reports
Department of Environment and Natural Resources	Responsible for conservation, management, and development of the environment	Regional/Provincial Director	Compliance to effluent standards	Meeting/phone calls/emails	Issuances/memoranda/ communications/monitoring reports
Local Government Unit – Bayawan City	Regulator on water quality/source of information related to diseases/ outbreaks in relation to water quality and otherrelated matters	City Mayor/ Department Heads/ Barangay Officials	Compliance towater quality standards andwater supply concerns	Meeting/phone calls/emails	Issuances/communications/ outreachprograms
Disaster Risk Reduction Management Office (DRRMO)	Assistance on disaster-related initiatives	Disaster Risk Reduction Management Officer	Safety of BAWAD assets including personnel	Meeting/phone calls/text/capacity building	Communications
Philippine National Police (PNP)	Assistance on safety-related issues	Local PNP Chief	Safety of BAWAD assets including personnel	Phone calls/text/meeting	Communications

Stakeholders				Interaction Mechanism	Record of Interaction
Name	Relationship to drinking watersupply issues	Point of contactwith WSP Team	Issues with drinking watersupply		
Bureau of Fire Protection (BFP)	Water consumer	City Fire Marshal	Safety of BAWAD assets; partner in water rationing needs	Phone calls/text/meeting	Communications
Department of Health	Provides national standards for drinking water and monitoring of water quality results	Local City Health Office and National	Compliance to thelatest PNSDW standards	Meeting/letters/compliance reports	Issuances/memoranda/water quality reports and test results
Department of Public Works and Highways (DPWH)	Regulation and monitoring of WD projects	District/Regional/ National Director	Water contamination and/or interruption	Meeting/letters/ phonecalls/emails	Letters/permits/Program of Works
Board of Directors	Policy-making in relation to the district's operations	General Manager/BOD	Policy-making and appropriation of funds	Meetings/letters/ phone calls	Minutes of meeting and Board Resolutions
Vitens Evides International	Partner in improving the operational and financial operations of BAWAD	Project Manager	Capacity building through PEWUP Project	Meetings/letters/ emails/phonecalls	Contracts/reports/outputs
Suppliers and Contractors	Source of chemicals, materials, and equipment	General Manager/Sales Personnel	Materials/ supplies provided met the standard specifications and delivery period is within the specified period to avoid interruption of district's operation	Letters/emails/ phone calls	Purchase orders/contract
Community	Consumers of supplied water		Possible water interruption/water quality/effluent contributor	Phone calls/messages	Complaints/concerns through walk-in, texts, or social media

Stakeholders				Interaction Mechanism	Record of Interaction
Name	Relationship to drinking watersupply issues	Point of contactwith WSP Team	Issues with drinking watersupply		
DOH-accredited laboratory	Conduct of water quality tests for compliance with PNSDW	Laboratory Technician/RMT	Proper handling of water samples for accurate and reliable laboratory results	Emails/phone calls	Test results
Power utilities	Source of power supply	General Manager	Lack of watersupply	Phone calls/dialogue	Publications

2. SYSTEM DESCRIPTION

2.1. Water Supply in Bayawan City

Bayawan Water District is currently providing potable water supply to the residents, government institutions, and commercial establishments in Bayawan City and some parts of Santa Catalina, covering a total of 23 barangays.

The BAWAD water supply comes from the main system in Brgy. Pagatban and sub-systems in various barangays of Bayawan City.

As of December 31, 2022, the total number of active service connections has reached 10,119, representing 50% of the total estimated household population of the district's service area.

2.1.1. The Main System

The catchment in Brgy. Pagatban, Bayawan City, is 330 hectares of virgin tropical forest, reforested, and some agro-forestal land. The DENR declared this area as a watershed reserve, and currently BAWAD is applying for a FLAg on the area with DENR.

Water from the spring is collected by a spring box, and monitoring is done for the turbidity and microbial content. It is then transported to the water treatment facility just a few hundred meters away, while coagulants and flocculants are injected; it is conveyed to the sedimentation tanks where settling and pre-chlorination are done and then goes to the filtration bay and to the clear well for post-chlorination, and inspection for water quality is performed, and then water is transported to the softener tank for softening and transported to fill the reservoir 8 km away and to the distribution to the service area and random water quality monitoring is done at the consumers' tap.



Figure 4. (Left) Spring Box; (Upper Center) Softener; (Lower Center) Muyoao Reservoir; (Right) Flocculation, Sedimentation, Filtration

2.1.2. Cambulo Sub-system

In the Cambulo Sub-system, water from the spring is stored in the dug wells, monitored for water quality, pumped, chlorinated, and transported to a 250 cu. m. tank reservoir. Water is inspected for chlorine residual and then distributed to the service area, and random bacteriological testing is conducted at the consumer's tap.



Figure 5. Cambulo Pumping Station and its facilities

2.1.3. Nangka Sub-system

In BAWAD's Nangka Sub-system, water is pumped from 70 meters below ground level, checked for microbial properties, chlorinated, transported to the reservoir, and distributed to the service area. Water quality is monitored at the consumer's tap.



Figure 6. Nangka Pumping Station and 30 cu. m. Reservoir

2.1.4. Omod Sub-system

From the spring box, water sample is taken to monitor its water quality, and then water is pumped and injected with chlorine to the distribution line and service tap for residual monitoring.



Figure 7. Omod Pumping Station Facilities and Spring Box

2.1.5. Ali-is and Dawis Sub-system

In Ali-is and Dawis Sub-system, from spring boxes, water is monitored in terms of quality, pumped and chlorinated, transported to the reservoir, and then distributed to the service area, and monitoring is done randomly in the consumer's tap for residual chlorine.



Figure 8. Ali-is Spring Box and Reservoir



Figure 9. Dawis Spring Box and Pumping Station and Reservoir

2.2. Service Area

Bayawan City is a second-class city located about 100 km southwest of Dumaguete City, the provincial capital of Negros Oriental. The City is divided into twenty-eight (28) barangays. As of December 2022, the Bayawan Water District has already covered 22 component barangays of Bayawan City and 1 barangay of Santa Catalina, Brgy. Caranoche. Main distribution lines have been already extended until Brgy. Poblacion, Santa Catalina, but the district is not yet fully operational in this area. As of December 2022, Bayawan Water District has a total of 10,119 active service connections. These connections include residential, commercial, and government accounts.

Table 4. BAWAD Service Coverage by Barangay

Bayawan City			Santa Catalina
Brgy. Malabugas	Brgy. Tinago	Brgy. Ali-is	Brgy. Caranoche
Brgy. Banga	Brgy. Cansumalig	Brgy. Dawis	
Brgy. Suba	Brgy. Villareal	Brgy. Bugay	
Brgy. Ubos	Brgy. Nangka	Brgy. Narra	
Brgy. Poblacion	Brgy. Maninohon	Brgy. San Jose	
Brgy. Boyco	Brgy. San Isidro	Brgy. Mandu-ao	
Brgy. Kalamtukan	Brgy. San Roque	Brgy. Villasol	
Brgy. Minaba			



Figure 10. Map of BAWAD Service Coverage Area

The unserved barangays have existing standalone point source water supply managed by local barangay officials, with the assistance of the Local Government Unit. The main limiting factor that constrained the expansion of BAWAD service coverage in these areas is political intervention. Taking into consideration the topography of Bayawan City, another limiting factor is the lack of funds to implement capital-intensive projects to interconnect far-flung barangays. Fund priorities are focused on addressing the non-revenue reduction programs and improvement of currently served barangays which are not adequately provided with water supply because of scarcity of water supply or due to the outdated and dilapidated water system transmission and distribution lines. Continuous collaboration and partnership with local barangays and the City Government are essential to further develop the water system.

2.3. Population Served

The BAWAD is presently serving twenty-two (22) barangays out of the twenty-eight (28) barangays of Bayawan City (namely, (1) Malabugas, (2) Banga, (3) Suba, (4) Ubos, (5) Poblacion, (6) Boyco, (7) Tinago, (8) Cansumalig, (9) Villareal, (10) Nangka, (11) Maninihon, (12) San Isidro, (13) Ali-is, (14) Dawis, (15) Bugay, (16) Narra, (17) San Jose, (18) Mandu-ao, (19) Kalamtukan, (20) Minaba, (21) San Roque, and (22) Villasol) and one (1) barangay in Santa Catalina (namely, Caranoche).

Table 5. Population Served as of December 2022

Projected Households Based on 2020 Census		HH Served as of Dec 2022	% of Served HH	Unserved HH as of Dec 2022	% of Unserved HH	
Served Barangays						
1	Malabugas	1225	792	65	433	35
2	Banga	1514	1117	74	397	26
3	Suba	482	479	99	3	1
4	Ubos	320	331	103	-	-
5	Poblacion	584	677	116	-	-
6	Boyco	281	330	117	-	-
7	Tinago	638	700	110	-	-
8	Cansumalig	343	77	22	266	78
9	Villareal	2146	2074	97	72	3
10	Nangka	2127	374	18	1753	82
11	Maninihon	1500	555	37	945	63
12	San Isidro	256	47	18	209	82
13	Ali-is	596	262	44	334	56
14	Dawis	937	788	84	149	16
15	Bugay	1121	121	11	1000	89
16	Narra	1321	248	19	1073	81
17	San Jose	490	79	16	411	84
18	Mandu-ao	956	190	20	766	80
19	Kalamtukan	724	191	26	533	74
20	Minaba	578	161	28	417	72
21	San Roque	290	151	52	139	48

22	Villasol	771	105	14	666	86
23	Caranoche	864	270	31	594	69
Total HH in Served Brgys		20064	10119	50	10160	50
Unservd Barangays						
1	Pagatban	430	0			
2	Tayawan	1284	0			
3	Kalumboyan	1401	0			
4	San Miguel	346	0			
5	Tabuan	908	0			
6	Banay-banay	979	0			
Total HH in Unservd Brgys		5348	0			

2.4. Water Sources

The Bayawan Water District relies mainly on springs, groundwater, and surface water as its water sources to supply the water needs of the City. Presently, the Water District has two (2) surface water, one (1) deep well, and nineteen (19) spring sources being maintained and operated.

Currently, BAWAD has eighteen (18) operational pumping stations, strategically located within the City of Bayawan. Five (5) of the stations are driven by gravity, namely, the Kalamtukan 1 and 2, Lapay 1, Cansumalig, and Tavera stations. These pumping stations are monitored by pump tenders to ensure that pump operation is running well. Standby generators are also installed and regularly maintained in several pumping stations to ensure continuous water supply especially during power interruptions.

Table 6. BAWAD Water Sources

No	Name of Water Source/Pumping station (PS)	Year operated	Type	Dimension (m)	Total depth (m)	Mode of distribution	Treatment
1	Manampa PS (main)	Turned over from NAWASA	Spring with complete treatment and reservoir	Box 4x2	2	Fill and draw/direct	Flocculation, sedimentation, filtration, softening, chlorination
2	Cambulo PS 1	2001	Spring with reservoir	Dug well	3	Fill and draw	Chlorination
3	Cambulo PS 2	2018	Deep well with reservoir	Well casing diameter: 8 inches	72	Fill and draw/direct	Chlorination
4	Nangka PS	2001	Deep well with reservoir	Well casing diameter: 10 inches	70	Fill and draw	Chlorination
5	Omod PS	2012	Spring with reservoir	Dug well	3	Fill and draw/direct	Chlorination

6	Kalamunggay PS	2016	Spring with reservoir	Dug well	2	Fill and draw	Chlorination
7	Lower Camandagan PS	2019	Spring with reservoir	Dug well	3	Fill and draw	Chlorination
8	San Roque PS	2020	Surface water with reservoir (w/out softener)	Dug well	3	Fill and draw	Flocculation, sedimentation, filtration, chlorination
9	Minaba PS	2019	Spring with reservoir	Dug well	8	Fill and draw	Chlorination
10	Kalamtukan 1	2018	Spring with reservoir	Dug well	3	Fill and draw	Chlorination
11	Kalamtukan 2	2018	Spring with reservoir	Dug well	1.5	Fill and draw	Chlorination
12	Lapay 1	2019	Spring with reservoir	Dug well	1	Fill and draw	Chlorination
13	Lapay 2 PS	2020	Surface water	Dug well	1	Direct supply	Chlorination
14	Dawis PS	2013	Spring with reservoir	Dug well	3	Fill and draw	Chlorination
15	Ali-is PS	2008	Spring with reservoir	Dug well	3	Fill and draw	Chlorination
16	Bugay-San Jose PS	2019	Surface water with reservoir (w/out softener)	Dug well	2	Fill and draw	Flocculation, sedimentation, filtration, chlorination
17	Manduaos PS	2019	Spring with reservoir	Dug well	1	Fill and draw	Chlorination
18	San Isidro PS	2018	Spring with reservoir	Dug well	3	Fill and draw	Chlorination
19	Villasol PS	2020	Spring with reservoir	Dug well	6	Fill and draw	Chlorination
20	Gamao/Nato PS	2022	Spring with reservoir	Dug well	3	Fill and draw	Chlorination

21	Cansumalig	2021	Spring with reservoir	Dug well	1	Fill and draw	Chlorination
22	Cayaocao PS	2021	Surface water	N.A.	2	Direct supply	Chlorination
23	Tavera	2019	Spring with reservoir	Box 2x2	1	Fill and draw	Chlorination

2.5. Transmission Facilities

Transmission lines of the district are made of PVC and GI pipes with sizes ranging from 14", 12", 8", and 6".

2.6. Distribution Lines

Bayawan Water District utilize PVC, GI, and HDPE pipes as distribution mains with varying sizes ranging from 8", 6", 3", and 2 1/2". These are laid along lot boundaries and edges of roads and pathways. PVC and HDPE pipes are embedded, while GI pipes are exposed.



Figure 11. Map of BAWAD Distribution Lines

2.7. Service Lines

Bayawan Water District use GI and HDPE pipes with sizes of 1/2"Ø diameter as service lines. Lengths of GI pipes are exposed, while undetermined lengths of HDPE pipes are embedded or buried under the ground.

2.8. Delivery Point

BAWAD operates and maintains a Level 3 water supply system within its service area. Water is supplied to the concessionaires through 1/2" water meters for residential and a higher diameter for some commercial connections installed at the tapping point, that is, standpipes, which are

located in various areas of the City with individual connections to the household or establishment.

2.9. Treatment Process

The water systems of the Bayawan Water District have different step-by-step treatment processes. Generally, BAWAD uses dosing chlorination as the primary means of disinfection.

In the main system, from the spring box, water is transmitted to the sedimentation tanks while coagulants and flocculants are injected. In the sedimentation tanks, settling and pre-chlorination are done. Water then goes to the filtration bay and then to the clear well tank for post-chlorination. Before filling the storage tank and distributed to the concessionaires, it passes through a softener tank since water from the source has high hardness. Moreover, the San Roque (spring) and Bugay-San Jose (surface water) pumping stations, though with different water sources, follow the same treatment process with the main system, but without the softening stage.









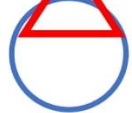




In the rest of the water system of the district, the disinfection process takes place during the delivery of water supply to the consumers where chlorine is injected along the transmission lines or as soon as water enters the storage tank.

BAWAD personnel assigned for water quality performs daily monitoring of chlorine residual at various consumer's taps within the service area to ensure that the level of chlorine present is within the required standard set by the PNSDW (see Annex 4).








2.10. Process Flow Diagram






2.10.1. Spring

2.10.1.1. Main System

MAIN SYSTEM - WITH COMPLETE TREATMENT AND RESERVOIR			
Process Flow Diagram	Description	Responsibility	
Spring box		<ul style="list-style-type: none"> Monthly bacteriological test Annual physical and chemical test 	Water Resource Operator/ Production Section
Transmission line		Daily monitoring of flow, pressure, leakages	Maintenance Section
Water treatment		Injection of coagulants and flocculants; rapid mixing	Water Resource Operator
Transmission line		Daily monitoring of flow, pressure, leakages	Maintenance Section
Water treatment		<ul style="list-style-type: none"> Monitoring of debris Flocculation, sedimentation, filtration Monitoring of water level, flow rate 	Water Resource Operator/ Pump Tender
Transmission line		Daily monitoring of flow, pressure, leakages	Maintenance section
Clear well tank		Post-chlorination	Water Resource Operator
Transmission line		Daily monitoring of flow, pressure, leakages	Maintenance Section
Softener tank		<ul style="list-style-type: none"> Softening Monitoring of hardness and chlorine residual 	Water Resource Operator
Transmission line		Daily monitoring of flow, pressure, leakages	Maintenance Section
Storage tank		Periodic flushing and tank clean-up	Maintenance/Production Section
Distribution line		Daily monitoring of flow, pressure, leakages, chlorine residual	Maintenance Section
Consumers		Daily monitoring of water quality, pressure, leakages	Maintenance/Production Section










2.10.1.2. Spring with Reservoir

SPRING – WITH RESERVOIR		
Process Flow Diagram	Description	Responsibility
Spring box 	<ul style="list-style-type: none"> Monthly bacteriological test Annual physical and chemical test 	Water Resource Operator/ Production Section
Transmission line 	Daily monitoring of flow, pressure, leakages	Maintenance Section
Water treatment 	<ul style="list-style-type: none"> Monitoring for turbidity Chlorination 	Water Resource Operator/ Pump Tender
Transmission line 	Daily monitoring of flow, pressure, leakages	Maintenance Section
Storage tank 	Periodic flushing and tank clean-up	Production Section
Distribution line 	Daily monitoring of flow, pressure, leakages, chlorine residual	Maintenance Section
Consumers 	Daily monitoring of water quality, pressure, leakages	Maintenance/Production Section

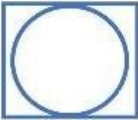
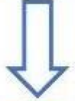



SPRING – WITH RESERVOIR		
Process Flow Diagram	Description	Responsibility
Spring box 	<ul style="list-style-type: none"> Monthly bacteriological test Annual physical and chemical test 	Water Resource Operator/ Production Section
Transmission line 	Daily monitoring of flow, pressure, leakages	Maintenance Section
Storage Tank 	<ul style="list-style-type: none"> Water treatment (chlorination) Periodic flushing and tank clean-up 	Water Resource Operator/ Production Section
Distribution line 	Daily monitoring of flow, pressure, leakages, chlorine residual	Maintenance Section
Consumers 	Daily monitoring of water quality, pressure, leakages	Maintenance/Production Section

2.10.2. Surface Water

2.10.2.1. With Reservoir



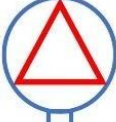

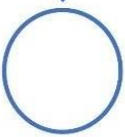


SURFACE WATER – WITH RESERVOIR (WITHOUT SOFTENER)		
Process Flow Diagram	Description	Responsibility
Catchment 	<ul style="list-style-type: none"> Monthly bacteriological test Annual physical and chemical test 	Water Resource Operator/ Production Section
Transmission line 	Daily monitoring of flow, pressure, leakages	Maintenance Section
Water treatment 	Injection of coagulants and flocculants; rapid mixing	Water Resource Operator/ Pump Tender
Transmission line 	Daily monitoring of flow, pressure, leakages	Maintenance Section
Water treatment 	Flocculation, sedimentation, chlorination, filtration	Water Resource Operator/ Pump Tender
Transmission line 	Daily monitoring of flow, pressure, leakages	Maintenance Section
Storage tank 	Periodic flushing and tank clean-up	Production Section
Distribution line 	Daily monitoring of flow, pressure, leakages, chlorine residual	Maintenance Section
Consumers 	Daily monitoring of water quality, pressure, leakages	Maintenance/Production Section

2.10.2.2. Direct Supply

SURFACE WATER – DIRECT SUPPLY		
Process Flow Diagram	Description	Responsibility
Catchment 	<ul style="list-style-type: none"> Monthly bacteriological test Annual physical and chemical test 	Water Resource Operator/ Production Section
Transmission line 	Daily monitoring of flow, pressure, leakages	Maintenance Section
Water treatment (Chlorination) 		Water Resource Operator/ Pump Tender
Distribution line 	Daily monitoring of flow, pressure, leakages, chlorine residual	Maintenance Section
Consumers 	Daily monitoring of water quality, pressure, leakages	Maintenance/Production Section

2.10.3. Deep Well

2.10.3.1. With Reservoir

DEEP WELL – WITH RESERVOIR		
Process Flow Diagram	Description	Responsibility
Production well 	<ul style="list-style-type: none"> Monthly bacteriological test Annual physical and chemical test 	Water Resource Operator/ Production section
Transmission line 	Daily monitoring of flow, pressure, leakages	Maintenance Section
Water treatment (Chlorination) 		Water Resource Operator
Transmission line 	Daily monitoring of flow, pressure, leakages, chlorine residual	Maintenance Section
Storage tank 	Periodic flushing and tank clean-up	Production Section
Distribution line 	Daily monitoring of flow, pressure, leakages, chlorine residual	Maintenance Section
Consumers 	Daily monitoring of water quality, pressure, and leakages	Maintenance/Production Section

2.11. Water Quality Standard

The BAWAD conducts monthly microbiological analysis and annual physical and chemical tests on water produced by its sources to ensure that water released for distribution to its consumers complies with the Philippine National Standards for Drinking Water which consecutively reflects the WHO Guidelines on Water Quality.

The Department of Health through the Local City Health Office regulates the compliance with drinking water quality standards. Water quality complaints received by the Customer Service Section and by field employees (meter readers/maintenance team) and those received through calls and messages are immediately attended to by Customer Service personnel. Concerns and complaints are then forwarded to and investigated by the Technical Division personnel. Corrective actions or measures are immediately undertaken after the inspection of the referred problem. Bayawan Water District assures the public that its water is intended for general consumption such as drinking and food preparation as well as domestic, commercial, and industrial purposes/uses. Conformance to standards mandated by the Philippine National Standards for Drinking Water ensures that BAWAD water is safe and potable for drinking.

The Bayawan Water District provides potable water extracted from springs, groundwater, and surface water sources. Water supply distributed to concessionaires meets the water quality standards set by the Department of Health (DOH) and Local Water Utilities Administration (LWUA). The water quality targets are based on the 2017 Philippine National Standards for Drinking Water. Disinfection and treatment chemicals are obtained from approved chemical manufacturers as prescribed by Republic Act (RA) No. 9184, otherwise known as the Government Procurement Reform Act.

Table 7. Target Product Water Specifications (PNSDW 2017)

Parameters	Watershed	Treatment Plant		Wells/ Reservoir	Distribution	Consumers Tap
		Raw	Finish			
Total Coliform (As LWUA)	100% samples Taken were positive	100% samples taken are positive	At least 95% of all samples taken must be negative	At least 95% of all samples taken must be negative	At least 95% of all samples taken must be negative	At least 95% of all samples taken must be negative
Fecal Coliform	>1.1 MPN / 100 ml	>1.1 MPN / 100 ml	>1.1 MPN / 100 ml	>1.1 MPN / 100 ml	>1.1 MPN / 100 ml	>1.1 MPN / 100 ml
Heterotrophic Plate count	>500 CFU ml	>500 CFU ml	Must be <500 CFU / ml	Must be <500 CFU / ml	Must be <500 CFU / ml	Must be <500 CFU / ml
Cadmium	<0.001 ppm	<0.001 ppm	<0.003 ppm	<0.003 ppm	<0.003 ppm	<0.003 ppm
Odor	Objectionable Odor	Objectionable Odor	Unobjectionable Odor	Unobjectionable Odor	Unobjectionable Odor	Unobjectionable Odor
Color (apparent)	9 color units	9 color units	10 color units	10 color units	10 color units	10 color units
Turbidity	600 NTU on heavy rain	600 NTU on heavy rain	5 NTU	5 NTU	5 NTU	5 NTU
Arsenic	< 0.005 ppm	< 0.005 ppm	< 0.01 ppm	< 0.01 ppm	< 0.01 ppm	< 0.01 ppm
Chloride	7 mg/L	7 mg/L	250 mg/L	250 mg/L	250 mg/L	250 mg/L
Hardness	850 mg/L as CaCO ₃	850 mg/L as CaCO ₃	300 mg/L as CaCO ₃	300 mg/L as CaCO ₃	300 mg/L as CaCO ₃	300 mg/L as CaCO ₃
Lead	< 0.005 ppm	< 0.005 ppm	< 0.01 ppm	< 0.01 ppm	< 0.01 ppm	< 0.01 ppm

Iron	0.10 ppm	0.10 ppm	1.0 ppm	1.0 ppm	1.0 ppm	1.0 ppm
PH	6.5 – 8.5	6.5 – 8.5	6.5 – 8.5	6.5 – 8.5	6.5 – 8.5	6.5 – 8.5
Sulfate	1.0 ppm	1.0 ppm	250 ppm	250 ppm	250 ppm	250 ppm
Total Dissolved Solids	650 mg/L	650 mg/L	600 mg/L	600 mg/L	600 mg/L	600 mg/L
Chlorine Residual	none	none	1.0 – 1.5mg/L	1.0 – 1.5mg/L	0.3 – 1.5mg/L	0.3 – 1.5mg/L
Manganese	0.4 ppm	0.4 ppm	0.4 mg/L	0.4 mg/L	0.4 mg/L	0.4 mg/L
Nitrate	< 0.01 ppm	< 0.01 ppm	< 50 ppm	< 50 ppm	< 50 ppm	< 50 ppm

Bacteriological test (see Annex 5) is conducted once a month where water samples are taken from water sources, reservoirs, and taps in pre-identified strategic locations. Water samples are then submitted for testing in a third-party laboratory duly accredited by the Department of Health.

Monitoring for chlorine residuals is also done daily at the distribution lines and the consumer’s tap.

2.12. Service Quality

BAWAD’s concessionaires are supplied with water 24/7. However, some service coverage areas will experience low pressure to no water supply anytime of the day due to certain factors, such as but not limited to:

- Scarcity of water supply due to extreme weather conditions (severe hot weather, heavy rains/typhoons, flooding)
- Power outage or low power voltage supply causing motor pumps to shut down
- Accumulation or build-up of small debris in pipelines, thus blocking water to pass through and/or causing clogging
- Scheduled and emergency repairs, of which the supply line valve is closed in preparation for the conduct of such activities

For payment and/or collection, BAWAD has two (2) designated Tellers at the district’s main office. Senior citizens, pregnant women, and persons with disabilities are given priority. On December 28, 2021, BAWAD opened its drive-thru payment kiosk, a COVID-19 initiative, at the BAWAD warehouse area. Moreover, BAWAD has also offered hassle-free and easy payment schemes such as online payment and monthly scheduled hinterland collection.

BAWAD website and social media accounts are also closely monitored to address queries, concerns, and/or complaints.

2.13. Resource Constraints

The following are various factors identified by the management constraining the effective and adequate delivery of water supply services to the district’s concessionaires:

- Limited financial resources/lack of funds: As a government owned and controlled corporation, BAWAD relies mainly on the revenue generated.

- Aging facilities/infrastructure: Outmoded and dilapidated infrastructures can no longer sustain adequate water distribution and pressure requirements of the service area. Maintenance activities on such infrastructures are highly needed.
- High water turbidity during periods of heavy rainfall
- Absence of laboratory personnel to regularly and consistently facilitate and monitor water quality

2.14. Customer Service Satisfaction

Aiming for quality service delivery and pursuing overall satisfaction with our constituents, the Bayawan Water District (BAWAD) strives to continuously systematize various agency

processes. As a service-oriented and government-owned and controlled corporation, BAWAD is constantly evaluating its clientele's satisfaction levels, which may help the agency in its day- to-day operations.

Recognizing the importance of customer feedback mechanism, BAWAD has been conducting the Citizen/Client Satisfaction Survey (CCSS) since 2009 to assess efficiency in the delivery of services. In compliance to the Anti-Red Tape Act (ARTA) of 2007, or the RA No. 11032: An Act Promoting Ease of Doing Business and Efficient Delivery of Government Services, forms are readily available at the office and are handed out to the customers, where they can freely express their insights (such as but not limited to concerns, complaints, comments, and suggestions). A "Customer and Complaints Suggestion Box" is also placed where they can conveniently drop such forms. Under Office Memorandum No. 2023-01-053 (see Annex 6), the Citizen/Client Satisfaction Survey (CCSS) Committee was established to oversee the evaluation and assessment of key findings.

In June 2021, BAWAD launched the "HappyOrNot Analytics" as a preventive measure for COVID-19 (see Annex 7). It is a convenient and simple feedback system composed of four smiley-faced buttons where clients can easily press, through the Smiley Terminal (coated with anti-COVID protected film) or their mobile phone, to indicate whether they are very happy, happy, unhappy, or very unhappy with the service they were provided. Customers can also input their overall experience and other insights through the Smiley Terminal.

Starting January 2023, the BAWAD implemented the Harmonized Client Satisfaction Measurement (CSM) pursuant to the ARTA MC No. 2022-05 series of 2022. Thru the Customer Services Section, a CSM survey (see Annex 8) is conducted after every completed service availed by each concessionaire. The target number of answered CSM forms is at least 50 pieces per month or 600 per year.

The BAWAD's CSM survey form consists of questions regarding its Citizen's Charter and Service Quality Dimensions (SQD) – Responsiveness, Reliability, Access and Facilities, Communication, Costs, Integrity, Assurance and Outcome. The 8 SQD questions were scored using a 5-point

Likert Scale. The simple average of the questions was used to get the Overall score.

After getting the Overall Score for each survey questions, an improvement action plan is set to bring progressive improvements to services and processes through regular evaluation and action. Client satisfaction is a major priority of Bayawan Water District. The agency is absolutely committed to continuously deliver efficient quality services. Actions taken and/or best practices derived from the CSM shall be institutionalized and incorporated in the Quality Management System policies and procedures.

3. HAZARD ANALYSIS AND RISK ASSESSMENT

3.1. Risk Assessment Methodology

Dealing with potentially hazardous agents in water is a big responsibility to handle with and immediate action should be executed. It triggers problems to safe drinking water that are dangerous or potentially harmful to our health. These hazards should be taken seriously and must be addressed accurately with correct methods of approach, whether it comes from the

source catchment, distribution lines, reservoir, at the treatment area or even at the concessionaire's tap.

The BAWAD WSP Team identifies correctly the possible hazards that can affect the safety of the drinking water and assess it carefully, then evaluated each identified hazards which has the higher risk and will be given the priority attention and potential control measures in order for the district to continuously provide quality safe drinking water. Furthermore, the existing control measures were also identified and assessed whether such control measures effectively diminish if not completely eliminate the hazards.

The Water District recognizes that an effective risk management program can only be achieved by undertaking a comprehensive hazards assessment and risk prioritization. The risk management program identifies hazards and hazardous events in every process of the distribution network. The risks are classified in levels of health significance with corresponding hazards using the semi-quantitative risk matrix to rate the likelihood or frequency and severity or consequence of the hazards when they occur.

Table 8. Likelihood and Severity Matrix

RANKING	LIKELIHOOD/FREQUENCY	SEVERITY/CONSEQUENCE
5	Almost Certain – once a day	Catastrophic – potentially lethal to a large population, likely to have very significant morbidity
4	Likely – once a week	Major – potentially lethal to a small population, likely to have significant morbidity
3	Moderate – once a month	Moderate – potentially harmful to a large population but without mortality
2	Unlikely – once a year	Minor - potentially harmful to a large population but without mortality

1	Rare – once every five years	Insignificant – insignificant impact in terms of severity of disease or numbers of people affected
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Table 9. Semi-Quantitative Risk Matrix

Risk Factor Matrix		Severity or Consequence				
		Insignificant	Minor	Moderate	Major	Catastrophic
		No impact / not detectable	Compliance Impact	Aesthetic Impact	Regulatory Impact	Public Health Impact
		Rating: 1	Rating: 2	Rating: 3	Rating: 4	Rating: 5
Likelihood or Frequency	Almost Certain	5	10	15	20	25
	Once a day Rating: 5					
	Likely	4	8	12	16	20
	Once a week Rating: 5					
	Moderate	3	6	9	12	15
	Once a month Rating: 3					
	Unlikely	2	4	6	8	10
	Once a year Rating: 2					
Rare	1	2	3	4	5	
Once every 5 years Rating: 1						
Priority Level				Action Type		
Very High (16-25)				Needs immediate action		
High (10-15)				Part of short-term Plan		
Moderate (6-9)				Part of long-term Plan		
Low (1-5)				For periodic review		

NOTE: Risk rating of ten (10) and above are given validated controls measures and mitigation while risk rating below ten (10) are documented and kept under review for long-term plans and future Water Safety Plan updates.

The BAWAD WSP Team identifies correctly the possible hazards that can affect the safety of the drinking water and assess it carefully, then evaluated each identified hazards which has the higher risk and will be given the priority attention and potential control measures in order for the district to continuously provide quality safe drinking water. Furthermore, the existing control measures were also identified and assessed whether such control measures effectively diminish if not completely eliminate the hazards.

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3.2. Hazard/Risk Table and Existing Controls

The hazard identification and risk assessment from water source to distribution lines including consumer premises and the existing control measures to address each identified risk are presented in Annex 9.

3.2.1. Main Risks in the System

The BAWAD WSP Committee identified the top risks from the catchment until the consumer and categorized them into three: physical, chemical, and microbial risks.

Table 10. Identified Leading Risks

Physical risk/s	Turbidity during severe rain
	Low water yield
	Presence of debris during flood
	Clogging in the service lines
	Shortage of impounding tank and pilferage
	Increase of complaints due to low pressure and no water
Chemical risk/s	High hardness of water
	Run-off chemicals from agricultural area
	Overloading of treatment facility
	Lack of instruments/equipment for water quality testing
	Increased hardness of raw water
	Saturation of contaminants in the raw water
Microbial risk/s	Contamination from upstream human activity during severe flood
	Overloading of treatment facility
	Increased hardness of raw water
	Overloaded water softener
	Treatment failure due to clogging of chlorine ejector and tubing
	Blocked filters causing inadequate particle removal
	Defective chlorinating system
	Lack of instruments/equipment for water quality testing
	Intermittent water supply causing ingress of contamination in some areas
	Ingress contamination due to low pressure

These leading risks have been given attention and were addressed through existing control measures. To further address and resolve existing and forthcoming risks and hazards, the BAWAD WSP team has proposed more control measures, as shown in Annex 9.

4. PRIORITIZED HAZARDOUS EVENTS

The BAWAD Water Safety Plan Team identifies all the hazardous events that can cause water contamination directly and indirectly. The identification of hazardous events starts from storage of materials, water sources, pumping stations, treatment

facilities, laying of distribution/transmission lines, service line tapping point from the distribution lines to the consumers.

5. IMPROVEMENT/UPGRADE PLANS

The district had identified activities which may or may not directly affect the quality of water but will ensure the delivery and distribution of adequate safe potable water to the consumers. These activities are meant to prevent potential additional hazards and/or risks from the surroundings and stakeholders to occur. The management is committed to constantly assess and monitor the effectiveness of the Water Safety Plan implementation, evaluate the impact of the existing programs and plan for new development based on the result of the assessment. These development plans will encourage all employees to support and be involved to attain the objectives of the WSP.

The improvement/upgrade plans are designed based on the significant risks identified during the risk assessment, without existing control measures or with existing but ineffective, considering that these control measures shall also address those less significant risks. The proposed improvement/upgrade plans must be integrated in the Annual Corporate Budget for appropriation especially those projects which need immediate implementation and short-term and long-term plans which will be prioritized for funding based on the rating on Risk Factor Matrix. Buildings and infrastructure or capital-intensive plans will be put under long-term plan for possible funding from grant or loan.

The Technical and Engineering Division headed by the Division Manager will be responsible for the implementation of the identified improvement/upgrade plan within the target timeline using the required amount budgeted to realize the project. The improvement/upgrade plans from catchment to distribution lines is shown in Annex 10. The WSP Team must properly and regularly monitor the said plans to ensure effectiveness and improvement. If there any changes made, the WSP must also be updated accordingly.

6. MONITORING OF CONTROL MEASURES (OPERATIONAL MONITORING)

Operational monitoring is a must in order to address the need of improvement and effectiveness of the existing control measures. A critical limit is set to monitor effectiveness of the control measures being followed. A critical limit is defined as the criterion that indicates whether the existing control measure is functioning as planned. How these critical limits are monitored was also identified side by side with the critical limit using a definite monitoring indicator. The corrective action is an important component in operational monitoring to ensure that timely steps are taken to prevent unsafe drinking water from being dispersed when there is a breach in the control measure.

The Water Safety Plan Team created a monitoring plan for the whole water supply system. Re-assessment of all measures are taken to ensure effectiveness of the controls. After validation and thorough examination, the team updates control measures in every incident that will risks the quality of water. The table below shows the Operational Monitoring and Corrective Actions being taken.

Table 11. Control Measures

Catchment							
Control Measure	Critical limit	What to monitor?	Where to monitor?	When to monitor	How to monitor?	Who will monitor?	Corrective Action
Increase of source capacity	≤110% of water demand	Flow rate	At the source	Once a year, every dry season	Volumetric method	Production Engineer	Reduction of NRW and increase of plant efficiency
Monitoring of raw water quality	PNSDW set standard	PhyChem	At the source	Once a year, every wet season	Random testing	Water Quality Technician	Dilution with other sources
Treatment Plant							
Control Measure	Critical limit	What to monitor?	Where to monitor?	When to monitor?	How to monitor?	Who will monitor?	Corrective Action
Expansion of water treatment facility to address turbidity	≥ 3ntu	Turbidity	After treatment	Daily	Use of turbidimeter	Water Quality Technician	Adjustment in the dosage of chemicals
Expansion of water softener	≥ 250 ppm	Hardness	After softener treatment	Weekly	Use of titrimetric method	Water Quality Technician	Regeneration of softener
Water Quality Monitoring	≥ 250 ppm	Hardness	At the outlet of softener	Daily	Calorimetric	Softener tender	Regeneration of softener
	Residual chlorine leaving the plant must be >0.5 and <1.5 mg/L	Chlorine residual	At entry point to distribution system	Daily	Comparator	WQ monitoring	Activate chlorine non-compliance exceedance protocol
Preventive maintenance of Sedimentation Tanks	Presence of Deposits	Aerator Water	Sedimentation Tank	Daily	Visual Inspection	Pump Operators	Cleaning
Regular Cleaning of Filters	< 10 lps / bay	Flow rate	Discharge of the filter bay	Twice daily	Manual	Pump Operators	Filter Cleaning
Regular Backwashing	<14 lps / bay	Flow rate	Discharge of the filter bay	Twice daily	Volumetric	Pump Operators	Further Backwashing
Transmission and Distribution Lines							
Control Measure	Critical limit	What to monitor?	Where to monitor?	When to monitor?	How to monitor?	Who will monitor?	Corrective Action
Leak detection and repair program	Establish a threshold level on the number of leaks per day; Chlorine	Chlorine residual monitoring	Vicinity of leaks	As reported	DPD - comparator	Production Manager	Review/modify details of control measure; Consider changing the control
Pipeline pressure management	≥ designed pipe working pressure	Pressure	Along pipeline critical areas	Annually	Use of pressure gauges	Maintenance Personnel	Installation of air release, PRV, and PSV
Prevention of water pilferage and illegal connection	One	Incident	Along pipelines	Monthly	Community involvement	Commercial Section and WQSSG	IEC on sanctions to violators
Storage							
Control Measure	Critical limit	What to monitor?	Where to monitor?	When to monitor ?	How to monitor?	Who will monitor?	Corrective Action
Expansion of water storage	≤25% of daily water demand	Water demand	After treatment and consumer's tap	Annually	Volumetric method	Production Engineer	Water rationing
Security and contamination of storage	PNSDW set standard; ≤1 occurrence	Incident	Storage area	Daily	Visual monitoring	Security Personnel	IEC on sanctions to violators
Consumer							
Control Measure	Critical limit	What to monitor?	Where to monitor?	When to monitor?	How to monitor?	Who will monitor?	Corrective Action

IEC to address all possible consumer complaints	≤ 3 rating scale matrix	Customer satisfaction rating (1-5)	BAWAD Office	Daily	Use of survey forms and Happy or Not App	Customer Service Personnel	Re-orientation seminar and massive information campaign thru social media platforms
Maintenance of service connections	Above normal average	Number of incidents of customer complaints	BAWAD Customer Service Section	Daily	Use of Nobel Service Order daily report	Customer Service Personnel	Implementation of battery stand

7. VERIFICATION PROCEDURE

As a guarantee that the overall system design and operation is efficient on delivering safe and potable water to concessionaires, verification procedures need to be performed which involves the three (3) activities:

1. Compliance Monitoring – confirmation of compliance with water quality targets;
2. Internal and external auditing of operation activities – it can have both an assessment and a compliance checking role. The frequency of audit depends on the level of confidence required by the water utility and the regulatory body;
3. Consumer Satisfaction – includes checking that consumers are satisfied with the water supplied to them.

The table below shows verification procedures being taken by the district.

Table 12. Compliance & Verification Monitoring Program

Verification Activity	PNSDW Parameters	Location of Activity	Type of Activity	Frequency of Activity	Analyst	Recipient of Analysis Result	Action on Unusual/ Failing Result	3rd-Party Recipient of Results
Physical/Chemical Testing	Turbidity, Apparent color, pH, total dissolved unit/iron, manganese sulfate nitrate chloride benzene arsenic cadmium lead total dissolved units	All water sources	Water Quality Testing	Once a year or as needed	DOH accredited laboratory Testing Center	Water Quality Section Chief & Production Manager	Protocol for water parameter permissible limits	LWUA
Microbiological Testing	Total Coliform Fecal Coliform	Consumers tap and sources randomly selected per designed sampling plan	Water Quality Testing	Once a month or asneeded	DOH accredited laboratory Testing Center	Water Quality Section Chief & Production Manager	Protocol for positive results	LWUA
Residual Chlorine Testing	Residual chlorine leaving the	Consumer's Taps	Water Quality Testing	Daily	Water Quality	Production Manager/ Laboratory	Increase/ Adjust	

	plant must be >0.5 and <1.5 mg/L				Monitoring Officer		Chlorine Dosage	
Equipment Calibration	N/A	Warehouse	Calibration & Maintenance	At least twice a year	Technical & Production Division	Technical & Production Division		
Records Verification on: 1. Pressure 2. Water Level 3. Volumetric 4. Flow Residual Chlorine	N/A	Pump Stations	Operations Audit Daily	Daily	Technical & Production Division	Technical & Production Division		GM, Concerned Personnel
Records Verification: 1. Pressure 2. Air Release Valves 3. Valves 4. Hydrants/ Blow-offs Maintenance/ Job Orders	N/A	Distribution System	Operations Audit Daily	Monthly	Technical & Production Division	Technical & Production Division		GM, Concerned Personnel
Leak Detection		Pipelines	Maintenance	Daily	Technical & Production Division	Technical & Production Division		
Customer Satisfaction Survey	N/A	Served Barangays	Random Survey	Quarterly or as needed	Commercial Division	Commercial Division Head		GM, Concerned Personnel
Customer Feedback		Collection Office	Random Survey	Quarterly	Commercial Division	Commercial Division Head		GM, Concerned Personnel

8. MANAGEMENT PROCEDURES

Management procedures are step by step sequence of activities that are being followed in order to perform the district's operations. These procedures are necessary to help in managing errors and create smooth work flow. Management procedures can be modified depending on the needs of the water district.

Regular Monitoring of these procedures which are also known as Standard Operating Procedures (SOPs) is a must in order to maintain the effectiveness and efficiency of the

Bayawan Water District's processes. These procedures are kept short and simple as much as possible so that all employees can easily perform the work.

The Water Safety Plan should be reviewed at least annually to determine whether procedures in place by management is still up to date and are carried out properly. Any necessary corrective actions for every deviation from operational limits and incident response reports are consistently recorded and kept for future reference.

8.1. Standard Operating Procedures (SOPs) for Normal Operation Activities

Below are different SOPs that are being followed in the day-to-day activities of the district. These procedures serve as a guide to every employee to assists in the successful completion of work assigned in a timely manner. In this way, it ensures executive control over the performance of employees.

8.1.1. Manampa Source

Manampa Filter Cleaning Procedure:

1. Close supply line valve from the sedimentation to filter bay.
2. Close filter discharge valve to the clear well tank.
3. Open drain valve to drain the chamber, and wait 30 minutes to allow formation of filtrate cake.
4. Scrape the formed cake, about 1 inch thick.
5. Scrape scaling in the walling.
6. Put outside the chamber scraped materials ready for cleaning.
7. Load additional filter sand from the stock of clean filter sand.
8. Level the sand properly, slightly inclined to the drain.
9. Perform backwashing procedure.
10. Close drain valve, and open supply valve from the sedimentation chamber.
11. When chamber is filled up, open discharge valve to the clear well.
12. Open the drip type chlorinator.
13. End.

Backwashing Procedure:

1. Close supply line valve from the sedimentation to filter bay.
2. Close filter discharge valve to the clear well tank.
3. Open drain valve to drain the chamber.
4. Open backwash valve to start backwashing until water flowing to drain is clear.
5. Close backwash and drain valve.
6. Open supply valve from the sedimentation chamber and wait until chamber is filled up.
7. Open discharge valve to the clear well tank.
8. End.

Chlorinating Procedure:

1. Fill up 200 liters of water to the chlorine mixing tank.
2. Weigh 6 kilos of chlorine on normal days and 9 kilos during rainy days.
3. Pour chlorine on the mixing tank.
4. Stir the solution for about 30 minutes or until granules fully melted and mixed.
5. Cover the mixing tank and wait for 24 hrs. to allow sediments and undissolved solids settle down the bottom of the tank.
6. When solution is already clear, yellowish in color, drain the mixture to the chlorinating tank.
7. Fill the syphon hose with water until air is out and put back to the chlorinating tank to start chlorination.
8. Check Residual Chlorine in the discharge of the Clear well tank <5 ppm but >1.5 ppm.
9. Check Residual chlorine, if do not conform, adjust flow rate and back to step 8.
10. End.

Filter Sand Cleaning:

1. Bagging of pulled out sand during filter cleaning (using empty cement sack).
2. Open supply line valve going to the cleaning chamber.
3. Sand screening at the cleaning chamber with running water.
4. Pour 30 bags of sand to be clean.
5. When loading is done, rinse the sand until water is clear.
6. Unload washed sand from the chamber to the storage area.
7. Cover the clean sand to protect from dirt.
8. End.

Cleaning of Spring Box:

1. Tender request for clean in the office to the production manager.
2. Production manager scheduled the cleaning and have it approved by the immediate supervisor.
3. Immediate supervisor approved the schedule.
4. Production Manager assigns personnel to execute the request.
5. Personnel go to site and production manager inform Cambulo pump operator for the interruption for the station to start when pressure drops below 50 psi.
6. In the site, close discharge valve to the treatment.
7. Open the drain valve.
8. Start cleaning the inside walling.
9. Unload debris, sand from the box.
10. Clear intake pipe screen form debris and other clogged materials.
11. When all sand is clear, all must move out and wait until water inside is clear.
12. Close drain valve.
13. Open discharge valve to the treatment.
14. Tender report to office via radio that cleaning is done.
15. Office informs Cambulo Pumping Station for shut down.
16. End.

Softener Regeneration Procedure:

1. Check hardness in the discharge of the softener
2. If Hardness reading above 300, do regeneration process
3. Close supply valve # 1 of the softener
4. Close discharge valve # 5 of the softener.
5. Open valve # 3 to drain.
6. Open valve # 4 to start backwashing for 15 minutes.
7. Close valve # 4 & 3 to stop backwashing.
8. Open valve # 5 to drain.
9. Open Brine supply valve # 2 slowly for until solution is consumed.
10. Close brine supply valve # 2.
11. Open supply valve # 1 to do rinsing for 15 minutes and test the taste of drain water if not salty anymore.
12. Close drain valve # 5.
13. Open discharge valve # 6 to go back operation.

Note: For every chamber to be regenerated, use one tank of brine solution. Regeneration should be done one chamber every day.

8.1.2. Cambulo Pumping Station

Pumping operation procedure:

1. Go to the control house, turn on control board main breaker and check voltage. Voltage must be 440 – 460 volts.
2. Go back to the pumping house, Turn on Panel board main breaker.
3. Check voltage in every line phase by turning knob to line 1, line 2 and line 3. Voltage should not be less than 440 volts.
4. When voltage is correct, proceed to starting procedure but if not correct proceed to genset operation procedure.
5. Open by pass valve.
6. Open priming valve to prime the pump.
7. Open suction line air release until all air trapped is released then close.
8. Close priming valve.
9. Start the pump by pushing start up button.
10. After 3 seconds, open discharge valve slowly and by pass for 5 – 10 minutes, maintain pressure not less than 25 psi.
11. Open valve going to the transmission line two rounds and slowly closed by pass valve.
12. Fully open valve to the transmission line.
13. Turn on chlorinator pump, when chlorinator tank is already $\frac{1}{4}$, fill it with solution from the mixing chamber.
14. Monitor chlorine residual, residual be $<.3$ but >1.5 ppm.
15. End.

Preparing chlorine solution:

1. Weigh 6 kilos of chlorine granules.
2. Fill the 200 liters mixing chamber.
3. Pour the 6 kilos chlorine.
4. Stir manually for 15 minutes or until granules is fully mixed.
5. Cover the mixing chamber, wait 24 hours to fully settle undissolved particle.
6. Open drain valve to the chlorinator tank, do it slowly without shaking the mixing chamber so as not to disturb settled particle.
7. Before mixing another batch, collect settle particle and put in an empty chlorine container for proper disposal.
8. Clean the chamber, ready for the next mixing.
9. End.

Generator set operation during low voltage / power failure procedure:

1. Turn off all breakers in the pump house.
2. In the control house, turn off all breaker.
3. In the generator house, check fuel level, make sure it is full tank.
4. Check oil level if below correct level, fill it up.
5. Open ventilating window.
6. Push on button to start the engine.
7. Warm up the engine for 2 – 3 minutes.

8. Turn on genset main breaker.
9. Turn on gen set breaker in the double throw breaker.
10. Turn on breaker in the control panel.
11. Proceed to pumping procedure.
12. Close door grills; tender should check genset at least every hour for fuel level.
13. When power from the cooperative comes back, turn off pump.
14. Turn off breaker in the panel and control board.
15. Turn off gen set breaker in the double throw breaker.
16. Turn on breaker in the cooperative power source.
17. Turn on control breaker, check for correct voltage; if voltage is correct proceed to pumping operation procedure.
18. If voltage is not correct, turn off control board breaker go back to step # 8.
19. End.

8.1.3. Transmission Pipelines

Transmission or distribution mainline leak repair procedure:

1. Commercial accept the request or report and make job order and have approved y authority.
2. Maintenance Manager accepts the job order and have it schedule.
3. Plumber receives the job order and conduct site inspection to assist the situation then caution signs is placed.
4. Plumber reports to the Maintenance Manager the situation via cellphone or radio.
5. Maintenance Manager assigns additional manpower to help the repair.
6. One assisting plumber process request and prepare materials needed while other go to site and starts clearing procedure.
7. Plumber who assists the situation then isolates the area if there is any. And if not, plumber goes to the PRV area in Moyao to close the main valve.
8. While commercial informs the I.T. for him to do immediate public announcement through radio and text blasts to the affected areas for the advisory of water interruption including estimated time of supply resumption.
9. When clearing of the pipe is done, plumber confirms the materials brought to site if correct, if not replacement should be done immediately.
10. Water pump is used to drain the water to prevent ingress contamination.
11. Cutting or pull-out of affected pipe or fitting done.
12. Chlorine about 200 grams is place inside the pipe of the to disinfect later the system.
13. Installation of new or fitting for repair is done.
14. Nearest blow-off is then open, and main supply valve is slowly open.
15. After flushing when water is already clear. Blow-off is close.

16. While pressure is building up, check the fitting for leaks, if there is any; tighten the bolts if none, proceed to next.
17. Backfilling and compaction are done.
18. Plumber then informs the maintenance Manager and commercial that repair is done.
19. If site is not safe for vehicle to pass; caution signs are placed on the area.
20. If the site is a concrete, restoration should be done next day after repair is made.

8.1.4. Service Lines Requests

Service line leaking before meter:

1. Commercial receives the requestor report for the leaking.
2. Maintenance Manager accepts the job order and have it scheduled.
3. Plumber receives the job order and conduct site inspection to assist the situation then caution signs is placed.
4. Plumber checks nearest water meter; opens a faucet to verify if the leak is on this connection.
5. Plumber looks for old condemned connection, if there is any plumber open to check if the leak is going to the connection.
6. Plumber clear / excavate the pipe.
7. Plumber will assess the leak and materials needed for the repair.
8. Plumber withdraws materials needed in bodega.
9. Plumber opens a faucet from the connection or opens the end of the connection.
10. Plumber will do the repair on the leak.
11. Flushing is made in the end or faucet until water is clear.
12. Hydro testing is done, check fitting for leaks, if there's any retighten or repair again.
13. Backfilling and compaction are done.
14. If site is not safe for vehicle to pass, caution signs are placed on the area.
15. The concessionaires then conform that the repair is made.
16. Accomplished Job order is forwarded to the commercial.
17. End.

Service line leaking after meter:

1. Commercial receives the requestor report for the leaking.
2. Maintenance Manager accepts the job order and have it scheduled.
3. Plumber visits the site to assess the leaking.
4. Plumber will excavate and clear the leaking.
5. Water meter lock wing is then closed.
6. Plumber identifies the materials needed for the repair.
7. Plumber will inform the concessionaire for the materials needed.
8. The concessionaire will produce the materials or pays to the office for the needed materials.
9. Plumber request needed materials in the bodega.
10. Plumber will do the repair.

11. Plumber opens a faucet and the lockwing in the standpipe.
12. Flushing is done until water is clear and faucet is closed.
13. Check the fitting installed for leaks, if there is any; tighten it or repair it again.
14. Backfill excavated materials and do compaction.
15. Have the owner conform job order that repair is done.
16. Plumber will now forward the job order to the commercial department for the accomplishment report.
17. End.

8.1.5. Service Connection – Related Requests

Stand pipe leak repair:

1. Commercial receives the request or report for the leaking.
2. Maintenance Manager accepts the job order for schedule.
3. Plumber visits the site and assess the leaking, if leak is after the meter the concessionaire provides the materials for repair if before the meter the WD provides the repair materials.
4. Plumber closed the standpipe lockwing.
5. Plumber will do repair and install repair materials.
6. Hydro testing is made, check for leaks if any, do repair again.
7. Have the concessionaire conform job order that repair is done.
8. Plumber will forward the job order to the commercial department for the accomplishment report.
9. End.

Change meter:

1. Commercial receives the request or report for the change meter.
2. Maintenance Manager accepts the J.O. and have it schedule.
3. Plumber visits the site, open a faucet and check if water meter is turning and dials is moving.
4. If abnormalities are observed, water meter is pulled out.
5. Water meter is then clean and install it and check if it functions correctly. If so, calibrate the water meter using a calibrating bucket. Error must be within +/- 5% only.
6. If water meter is proven broken the district will provide a replacement but if is intentionally broken the concessionaire will pay for the water meter. In case of thief, the concessionaire will secure police blotter and bring it to the office and the management will provide replacement for the first incident only, the following incident the concessionaire will pay already the water meter as the replacement.
7. Plumber will temporarily plug the connection.
8. Plumber request in the office for water meter and have it approved by the authority.
9. Plumber installs the new water meter.
10. Concessionaire conform the job order that repair is done.
11. Plumber will now forward the job order to the commercial department for the accomplishment report.
12. End.

New Service Connection:

1. Inquire at the Customer Service/Complaint Desk the requirements for application and schedule for the attendance of NSC Orientation.
2. Attend Orientation Seminar. (Orientation Schedule is every 1st and 3rd Saturday of the month. 8:00 a.m. at BAWAD office).
3. Fill-up and submit the Service Application Form C-1 together with other requirements needed to the Customer Service/ Complaint Desk for verification.
4. Plumber will do the investigation, inspection, and verification of the area to be installed and do estimates for additional materials needed.
5. Fill up and sign the Water Service Contract and have it signed by the Division Manager and General Manager. Afterward, have the Service Contract notarized.
6. Submit the notarized Service Contract together with the other documents to the Customer Service/Complaint Desk and pay installation fee and other applicable charges at the Teller.
7. Present your Official Receipt to the Customer Service/Complaint Desk and sign logbook for your service request.
8. Plumber receives the job order from the commercial.
9. Plumber request for connection materials in the bodega approved by the authority.
10. Plumber assembles standpipe assembly and faucet stand.
11. Plumber will go to the site.
12. Excavates for the mainline tapping.
13. Tap the service connection.
14. Connect to the stand pipe and to the faucet stand.
15. Backfilling and compaction for the mainline tapping.
16. Have the concessionaire conform job order that new connection is well done.
17. Plumber will now forward the job order to the commercial department for the accomplishment report.
18. End.

Reconnection:

1. Go to the Customer Service/Complaint Desk, verify the status of the Service connection and inquire on requirements.
2. Comply and Submit requirement/s to the Customer Service/Complaint Desk and receive assessment for corresponding fees.

Accounts disconnected for more than two (2) years should attend the Orientation Seminar before the Re-installation request be approved/granted. (Orientation Schedule is every 1st and 3rd Saturday of the month. 8:00 a.m. at BAWAD office).

If the requestor is the Account Holder:
-Please present a valid ID.

If the requestor is not the Account Holder:

-Please submit an authorization letter duly accomplished by the account holder.

-Photocopy of the account holder's valid ID and the authorized representative.

3. Pay corresponding dues and re-installation fees to the Teller.
4. Go back to the Customer Service/Complaint Desk and present Official Receipt.
5. Sign logbook for your service request and re-installation schedule at the Customer Service/Complaint Desk.
6. Commercial receives the request or report for the change meter.
7. Maintenance Manager accepts the job order and have it schedule.
8. Plumber will withdraw concessionaire's water meter in the bodega.
9. Plumber will find for the old connection tapping or standpipe.
10. Plumber will do flushing on the line until water is clear.
11. Plumber installs the water meter in the standpipe.
12. Plumber opens control valve.
13. Check for standpipe leaks; if any; do repair.
14. Have the concessionaire conform job order that reconnection is well done.
15. Plumber will now forward the job order to the commercial department and record it for accomplishment report.
16. End.

Disconnection:

1. Commercial receives the request or report for the disconnection.
2. Maintenance Manager accepts the J.O. and have it scheduled.
3. Plumber visit the site, pull out water meter.
4. Plug the service connection.

5. Have the concessionaire conform job order that disconnection is done.
6. Forward to the commercial the accomplished job order.
7. Deposit the pulled-out water meter.
8. Store keeper records the last reading, water meter serial number and the date disconnected.
9. End.

Re-routing procedure of Water Service Connection

1. Inquire at the Customer Service/Complaint Desk the requirements for application and status of the account.
2. Fill-up and submit the Service Application Form C-4 together with other requirements needed to the Customer Service/ Complaint Desk for verification.
3. Fill-up and submit the Service Application Form C-4 together with other requirements needed to the Customer Service/ Complaint Desk for verification.
4. Concessionaire will pay the re-routing fee.

5. Go back to the Customer Service/Complaint Desk and present Official Receipt.
6. Sign logbook for your service request at the Customer Service/Complaint Desk.
7. Commercial receives the request or report for the change meter.
8. Maintenance Manager accepts the job order and have it scheduled.
9. Plumber visit re-routing site and conduct estimate of materials needed.
10. Plumber visits the existing site and check materials that can be pulled out and still useable for the re-routing.
11. Inform the concessionaire on the additional materials to be used if there is any.
12. Concessionaire pays the excess materials.
13. Plumber pull-out standpipe assembly as well as the other materials that is still useable.
14. To the re-routing site plumber proceed with the new service connection procedure.
15. Have the concessionaire conform job order that re-routing is well done.
16. Plumber will now forward the job order to the commercial department and record it for accomplishment report.
17. End.

8.2. SOPs for Major Incident Operation Activities

Standard Operating Procedures (SOPs) for major incident operation is also important should there be any incident that is in deviation on the normal operating activities so as to provide continues service to all BAWAD concessionaires.

The district adopted some template which is shown in Annex 11, 12, and 13 that will be used to report any incident that may arise. The concern division or department makes a report of the incident that may arise affecting the Water Quality to the head of the agency, copy furnished the Water Safety Plan team. When the WSP team receives the report, the chairman thru the secretariat calls for a meeting. The team will discuss such report and take actions based on the WSP. During such meeting, the team can make recommendation for amendments of the WSP which will be taken during the annual review of the WSP if the existing WSP does not address a particular incident, or the planned action is not enough to solve and prevent such incident. After the meeting, the concern personnel should take action as soon as possible and make sure that the planned action is properly executed. And after that, the team should assess whether the action is effective or not. Any incidents will be properly recorded and will be discussed on the review and update of the WSP.

8.3. SOPS for Emergency Operation Activities

The Philippines is one of the countries that is most vulnerable to climate change impacts. For many parts of the country, a changing climate is

expected to increase the frequency and severity of extreme weather events, accompanied by increasing pressure on water utilities to supply water to customers.

Bayawan Water District faces increasing challenges related to the anticipated impacts of climate change, such as the following:

- Extreme rainfall conditions that lead to flooding and increase in turbidity
- Low-flow conditions arising from drought or extended dry periods, which affect water supply
- Typhoons and storm surges that may affect water infrastructure and other assets

With these impacts posing as real threats, Bayawan Water District should endeavor to become climate ready, which will allow us to adapt and be prepared to deal with climate variability, extreme climate events and climate change impacts. Thus, the establishment and implementation of an Emergency Response Plan (ERP) will allow us to develop the precision necessary to efficiently and effectively respond to emergency events that may be exacerbated by climate change impacts.

List of emergencies that would trigger plan activation:

Some of these emergencies expected to trigger the activation of the Water Safety Plan include, but not limited to, the following:

- Flash flood
- Drought
- Earthquake
- Landslide
- Increase in Turbidity (transforming forestall area into agricultural)
- Vandalism
- Biochemical
- Microbial

Persons/Agencies to Notify in case of emergencies:

The following are identified as the key persons/agencies to notify in case any of the aforesaid emergencies occur:

Table 13. Contact Information in Case of Emergencies

Planning Partners	Scope of Involvement	Contact Person	Phone Number
City Disaster Risk Reduction Management Office (CDRRMO)	Technical and Training Assistance	Engr. Edward Ryan C. Torreda	09364641233

Bureau of Fire Protection (BFP)	Technical and Training Assistance	SINSP. Marlon K. Chomling	09558173397
City Health Office (CHO)	Training and Medical Assistance	Dr. Kerwin R. Villarete, MD	(035) 430-0281 Extension No. 1050
Philippine Association of Water Districts (PAWD)	Financial Assistance	Engr. Manolito P. Mendoza	(02) 927-5053 (02) 920-5453
Vitens Evides International (VEI) / Performance Enhancement Water Utilities in the Philippines (PEWUP)	Financial and Training Assistance	Mr. Carl Kamstra	(032) 487-7787
Geonobel, Inc.	Financial Assistance	Mr. Michael Samuel	(02) 8470-7429
Partners	Mutual Aid Agreements	Contact Person	Phone Number
City Disaster Risk Reduction Management Office (CDRRMO)	Manpower	Engr. Edward Ryan C. Torreda	09364641233
Bureau of Fire Protection (BFP)	Water Tanker	SINSP. Marlon K. Chomling	09558173397
City General Services Office (GSO)	Water Tanker	Engr. Wifredo C. Tuale	(035) 430-0281 Extension No. 1070
City Engineering Office (CEO)	Heavy Equipment and Machineries	Engr. Eric O. Torres	(035) 430-0281 Extension No. 1080
Master Construction and Electrical Supply	Construction and Electrical Supplies	Mr. Jasper N. Nacita	09161943418
Mercury Drug Store	Groceries and Medicines	Manager	09175026093
Bayawan Mini Mart	Groceries	Mrs. Teresita Tijing	(035) 531 0087
BCC Caltex	Fuel	Mr. Felmar C. Orcullo	(035) 430-0934
NORECO II	Power Supply	Engr. John Hazel Quindo	09088642365
ACE Medical Center	Health Care Services	Dr. Fulgencita Rhea I. Dedal	09351832251

Emergency Response Plan Activation, Source of Information, Escalation Level and Communication Protocols

Activation of Emergency Operation

In an emergency, the Team Leader shall assess the emergency based on the sources of information (see Table 14) given, declare the level activation, and execute the escalation level (see Table 15) stages. Depending on the type of emergency, the Team Leader will determine if the response needs to be elevated to a higher level of emergency management. After a full response, from Level 1 to 3, the Team Leader will coordinate a major debriefing session with the Emergency Response Team and the relevant officers of the emergency teams.

Table 14. Sources of Information

#	SOURCES OF INFORMATION	WHAT INFORMATION DOES THIS SOURCE PROVIDE (wind signal, rainfall, typhoon track, etc.)
1	Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)	Wind signal, rainfall, typhoon track
2	National Disaster Risk Reduction and Management Council (NDRRMC)	Rainfall wind, signal, rainfall, typhoon track
3	Local Disaster Risk Reduction and Management Office (DRRMO)	Flood status, rainfall, road Status
4	Windy Apps	Typhoon track, rainfall, wind speed, weather forecast

Escalation Level

The ERT Leader or other senior Management members are responsible for assessing the incident. The purpose of this assessment is to determine the urgency of the current emergency situation. The actual assessment assigns an incident severity level to the current situation such as level 1, level 2, and level 3. Based on this assessment, other actions such as escalation may take place. The severity level may be based on extend of injury, possibility of containment, or other scenarios specific to the organization. Example severity levels are described below:

Table 15. Escalation Level

LEVEL	CONDITION
1	Yellow – rainfall (7.5-15mm) expected rainfall within one hour and likely to continue.
2	Orange – rainfall (15-30mm) expected rainfall within one hour.
3	Red – rainfall 30mm within one hour or if rainfall has continued for the past three hours and is more than 65mm.

Table 16. Communication Protocols

Within BAWAD	<p>Landlines and personal cell phones shall be used to communicate with water system staff and external responders. Handheld radios are also available to technical field staff. Base radios are in the Main office to receive and send messages to those concerned.</p> <p>The handheld radios should not be used for confidential messages as these units may be jammed or hacked resulting to leaking of vital information.</p>
With the Stakeholders	<p>Landline or cellular phones will be the first line of communication to reach the stakeholders involved in emergency response. Only the authorized Spokesperson shall be allowed to communicate with the stakeholders.</p>
With the consumers	<p>The consumers will be informed through available media like radio stations, local newspapers, social media, and local television networks. Advisories will be disseminated to the local barangay officials as necessary who will in turn disseminate the same to their respective jurisdiction. The District, thru its spokesperson, will meet with local reporters to share the information about the watersystem. A guideline for reporting information in an emergency shall be formulated. Only the authorized Spokesperson, who is a person of Authority and credibility, shall be allowed to communicate with the consumers.</p> <p>Staff will be assigned to answer customer questions and phone calls with a scripted message. The staff would defer questions from the media to the designated Official Spokesperson. All media communications will be documented for future reference.</p>

9. SUPPORTING PROGRAMS

Different support programs are in placed to provide knowledge and skills to all employees in the district. These programs include training and seminars design to enhance employees understanding in Water Safety Plan. BAWAD is making sure that standards are met in providing safe potable water to all. The district also implemented the Water Quality Support Group (WQSG) which consists of Barangay Health Workers who provides information, reports water-borne diseases and monitors mainline leaks. In this way, firsthand monitoring from the community will be of great help in maintaining the quality of water.

The water district has also planned an organization-wide activities that are indirectly connected to the activities for maintaining the standards of safe potable water but are meant to ensure that no additional source of potential hazards will come the surrounding environment, employees, equipment's used. Annex 14 shows the different programs which will help enhance the skill of BAWAD personnel in pursuit to the full implementation of the WSP.

Table 17. Supporting Programs

Program	Purpose	Activity
Training and Continuing Education	<p>To boost personnel understanding and ability to perform properly for the implementation of water safety practices and protection of water source to distribution lines.</p> <p>To ensure proper information dissemination and education campaign throughout the organization as well as the stakeholders to enrich their knowledge about water safety.</p>	<p>Water Safety Plan Training</p> <p>Skills and Competency Requirements</p> <p>Equipment and Process Training Programs</p>
Maintenance of Chemical Storage Facilities	To ensure safe keeping and proper storage of chemicals that potentially affects the quality of water in case of expiration and avoiding the contamination and spillage to its respective storage/container.	Proper Storage and Handling Check for Chemical Leakages
Preventive Maintenance	To ensure that all assets are in good working condition.	Regular check-up and monitoring and immediate repair of equipment.
Research and Development	<p>To upgrade and improve efficiency of operation.</p> <p>To develop and adapt new learnings and better understanding of possible hazards that could affect the whole water supply system</p>	As scheduled

Organization Culture	To enhance the organization's camaraderie between the employees and the management	Team Building
----------------------	--	---------------

10. WATER SAFETY PLAN REVIEW AND AUDIT

The BAWAD Water Safety Plan Team is committed to have an annual review of the existing Water Safety Plan which is to be done every December of the year. This is a whole day activity which focuses on the various incidents related to water safety that happens within the year. Results of post-incident conducted by WSP team meetings during every after major incident which may or may have affected water quality will serve as guide to upgrade the district's Water Safety Plan.

The review involves factual input from management, needs for improvement, assesses individual performance, determines the additional risks and employees training needs. A systematic technical review is to be undertaken to place responsibility on every personnel involved and gathers information on the level of conformance to the system in placed as indicated in the water safety plan.

Knowledge from trainings and capability building program of the Water District to the Water Safety Plan team undertaken within the year are also a factor to be considered in the Water Safety Plan upgrade. Every member sent to such training will echo to the team the key information and good practices of other Water District.

This annual upgrade should be done to assure concessionaires including the team that Bayawan Water District meets its mission in providing sustainable and potable water to the populace of Bayawan city and wherever the pipeline may reach.

Table 18. WSP Interim Review Plan

Purpose of Review	Schedule
Revised Procedures due to major incidents/emergency of new hazards identified	Anytime changes are made after the majorincident/emergency
Substantial Changes in Water Source, Storage or Distribution System or Treatment Process	Anytime that there are changes in the watersupply system
Factors affecting the size of population served and the quality of source watertreatment facilities	Periodically

11. REVISION OF WATER SAFETY PLAN FOLLOWING AN INCIDENT

In addition to the yearly review of the Water Safety Plan, a revision of the WSP following and incident/emergency is crucial to guarantee that similar incident/emergency will never happen again in the near future and determining whether response was effective or needs to be improved.

The results of a post-incident review will determine the areas for improvement of the WSP whether it is a new hazard, or revised risk for assessment, a revision for an operational procedure or a training issue. Clear documentation of incidents should also be given importance so that information is outlined clearly. This is particularly crucial as implementation of the Water Safety Plan should be revised and this therefore provides the basis for undertaking this activity.

Table 19. Incident Response Plans

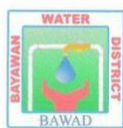
Purpose of Review	Schedule
Incident	After fortuitous event such as typhoon, earthquake, landslide & vandalism
Close -Call	After fortuitous event such as typhoon, earthquake, landslide & vandalism

BIBLIOGRAPHY

The key reference materials used to formulate this Water Safety Plan are the following:

- American Public Health Association, American Water Works Association, Standard Methods for the Examination of Water and Wastewater, 20th edition, 1998
- CFR Title 40 Part 136 Table II, Dated July 1, 1999
- Committee on Water Treatment Chemical, Food and Nutrition Board, Water Chemical Codex Connell, Gerald F., The Chlorination/Chloramination Handbook, AWWA, 1996 De Zuane, John, Handbook of Drinking Water Quality, 2nd edition
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- Fertilizer and Pesticide Authority Pesticide Circular No. 04, Series of 1989
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- Letterman, Raymond D., (Technical Editor), Water Quality and Treatment – A Handbook of Community Water Supplies, 5th edition, AWWA
- Sabandeja, Victor V., Development of 2006 Philippine National Standards for Drinking Water, Paper Presented at the National Convention of Philippine Society of Sanitary Engineers, Baguio City, June 8, 2006
- Sommerfield, Elmer O., Iron and Manganese Removal Handbook, AWWA, 1999
- WHO's Guidelines for Drinking-water Quality, 2004, Third Edition

Annex 2. Board Resolution No. 026, series of 2023 – Approving the Water Safety Plan Committee



Republic of the Philippines
BAYAWAN WATER DISTRICT
Lot 1, Block N, Don Gaspar Vicente Subdivision, Villareal,
Bayawan City, Negros Oriental
Telefax No. (035) 430-0361; (035) 531-3633
website: www.bayawanwd.gov.ph

EXCERPTS FROM THE MINUTES OF SPECIAL BOARD MEETING HELD BY THE BAWAD BOARD OF DIRECTORS ON APRIL 24, 2023 AT 2:00 PM AT BAWAD OFFICE, LOT 1, BLOCK N, DGV SUBDIVISION, BRGY. VILLAREAL, BAYAWAN CITY, NEGROS ORIENTAL.

PRESENT: *ENGR. PRECIOSA T. MATURAN* - *BOD Chairperson*
 TERESITA T. GIDAYA - *BOD Vice-Chairperson*
 AMADOR D. ANTIQUE - *BOD Secretary*
 RAFAEL E. LAZARO, JR. - *BOD PRO*
 PASTOR RENATO D. AVERGONZADO - *BOD Member*

OTHER PRESENT: *GINALYN P. PIOSCA* - *OIC - General Manager*

Board Resolution No. 027 Series of 2023

A RESOLUTION APPROVING THE BAYAWAN WATER DISTRICT WATER SAFETY PLAN COMMITTEE FOR FY 2023

WHEREAS, the Bayawan Water District is a Government-Owned and Controlled Corporation operating under the rules of Presidential Decree 198 as amended;

WHEREAS, there is a need to designate members for the Water Safety Plan Committee;

WHEREAS, the Water Safety Plan Committee is the one responsible for the crafting of the Bayawan Water District's Water Safety Plan;

WHEREAS, the Water Safety Plan is formulated in order to ensure that our vision and objectives are attained and to provide 24-hour filtered potable water supply with consideration to sustain shared neighborhood faucets, increase hygiene awareness and improved health situation to the target population of Bayawan City;

WHEREAS, hereunder is the composition of the BAWAD Water Safety Plan Committee to wit:

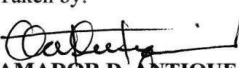
- | | | |
|------------------------------------|---|----------------------------|
| 1. GM Alma L. Abrasaldo | - | Team Adviser |
| 2. Engr. Reno John S. Tuale | - | Team Leader |
| 3. Ginalyn P. Piosca | - | Team Coordinator |
| 4. Mary Fel S. Hibionada | - | Team Member/Commercial |
| 5. Ar-Jean P. Panaligan | - | Team Member/Accounting |
| 6. Rogielou Jane T. Tayo | - | Team Member/Human Resource |
| 7. Engr. Romulo R. Concepcion, Jr. | - | Team Member/Construction |
| 8. Leo O. Esco | - | Team Member/Maintenance |
| 9. Iver L. Barte | - | Team Member/Maintenance |
| 10. Ubaldo O. Esco | - | Team Member/Production |
| 11. Arturo T. Clanza, Jr. | - | Team Member/Production |
| 12. Rodolfo P. Piosca, Jr. | - | Team Member/Production |
| 13. Anthony T. Hermosa | - | Team Member/Water Quality |
| 14. Louie C. Iso | - | Team Member/New Connection |

NOW THEREFORE, after a thorough discussion and deliberation and was moved by Director Renato D. Avergonzado and was duly seconded by Vice-Chairperson Teresita T. Gidaya;


NOW, BE IT RESOLVED, to approve the Bayawan Water District's Water Safety Plan Committee for FY 2023.

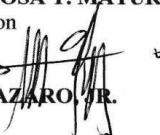
APPROVED

Taken by:


AMADOR D. ANTIQUE
Board Secretary

Approved by:

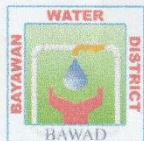

ENGR. PRECIOSA T. MATURAN
BOD Chairperson


RAFAEL E. LAZARO, JR.
BOD Member


TERESITA T. GIDAYA
BOD Vice-Chairperson


PTR. RENATO D. ASERGONZADO
BOD Member

Annex 3. Office Memorandum No. 2023-01-025 – Water Safety Plan Committee



BAYAWAN WATER DISTRICT
 Lot 1, Block N, Don Gaspar Subdivision, Villareal,
 Bayawan City, Negros Oriental, Philippines
 CCC-221

OFFICE MEMO NO. : 2023-01-025

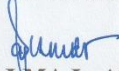
DATE : December 26, 2022
 FOR : **R. TUALE / G. PIOSSA / M. HIBIONADA / A. PANALIGAN / R. TAYO / R. CONCEPCION, JR. / L. ESCO / I. BARTE / U. ESCO / A. CLANZA, JR. / R. PIOSSA, JR. / A. HERMOSA / L. ISO**
 SUBJECT : **WATER SAFETY PLAN COMMITTEE**

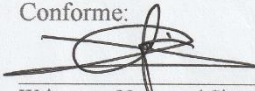
Hereunder are the members of the *WATER SAFETY PLAN COMMITTEE* of BAWAD for the year 2023.

- | | | |
|------------------------------------|---|----------------------------|
| 1. GM Alma L. Abrasaldo | - | Team Adviser |
| 2. Engr. Reno John S. Tuale | - | Team Leader |
| 3. Ginalyn P. Piozca | - | Team Coordinator |
| 4. Mary Fel S. Hibionada | - | Team Member/Commercial |
| 5. Ar-Jean P. Panaligan | - | Team Member/Accounting |
| 6. Rogielou Jane T. Tayo | - | Team Member/Human Resource |
| 7. Engr. Romulo R. Concepcion, Jr. | - | Team Member/Construction |
| 8. Leo O. Escó | - | Team Member/Maintenance |
| 9. Iver L. BarTE | - | Team Member/Maintenance |
| 10. Ubaldo O. Escó | - | Team Member/Production |
| 11. Arturo T. Clanza, Jr. | - | Team Member/Production |
| 12. Rodolfo P. Piozca, Jr. | - | Team Member/Production |
| 13. Anthony T. Hermosa | - | Team Member/Water Quality |
| 14. Louie C. Iso | - | Team Member/New Connection |

Moreover, quarterly meeting must be done and as often as the need arises.

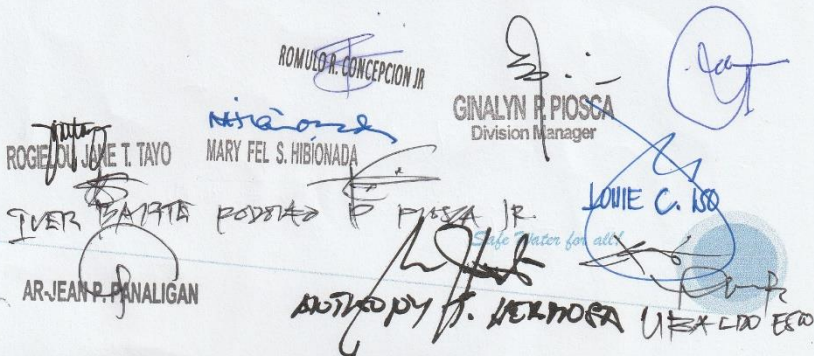
FOR YOUR GUIDANCE AND INFORMATION.


ALMA L. ABRASALDO
 General Manager

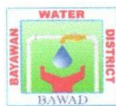
Conforme:

 Write your Name and Signature

cc: 201
 File

website: www.bayawanwd.gov.ph
 TeleFax # (035) 430-0361,
 Customer Service # (035) 531-3633


 ROMULO R. CONCEPCION JR.
 GINALYN P. PIOSSA
 Division Manager
 ROGIELOU JANE T. TAYO
 MARY FEL S. HIBIONADA
 IVER L. BARTE
 RODOLFO P. PIOSSA JR.
 LOUIE C. ISO
 AR-JEAN P. PANALIGAN
 ANTHONY T. HERMOSA
 UBALDO O. ESCO

Annex 4. Sample of Daily Chlorine Residual Monitoring Report



BAYAWAN WATER DISTRICT
 Lot 1, Blk. N, G.V. Subdivison, Brgy. Villareal
 Bayawan City

Initial Water Quality Test Result
 of random sampling for the month of March 2023


SUMMARY OF RESIDUAL CHLORINE TEST

#	SAMPLE SOURCE	CONCESSIONAIRE	DATE COLLECTED	TIME COLLECTED	RESIDUAL CHLORINE
1	BARANGAY CAMANDAGAN	JESUS TAPALES	03/14/2023	09:40AM	0.30
2	SITIO OMOD	BRGY.HALL	03/14/2023	09:55AM	1.00
3	BARANGAY CALAMUNGAY	MA.STELLA CUIZON	03/14/2023	10:05AM	0.40
4	BARANGAY SAN ISIDRO	BRGY.HALL SAN ISIDRO	03/14/2023	10:20AM	1.00
5	BARANGAY CANSUMALEG	FELIX BORNIA	03/14/2023	10:35AM	0.35
6	SITIO CAYAOCAL	SANDRO BIAJE	03/14/2023	10:50AM	0.35
7	SITIO GAMAO	LEIZEL LAGARDE	03/14/2023	11:10AM	1.55
8	BARANGAY ALI-IS	NARCISO ACABAL	03/14/2023	11:25am	0.75
9	BARANGAY DAWIS	HEMOCEDES CADIZ	03/14/2023	11:35AM	0.55
10	BARANGAY LAPAY	LOIDA PALALON	03/14/2023	11:45AM	0.30
11	BARANGAY SAN JOSE/BUGAY	EDWARLY CADELEG	03/14/2023	12:15PM	0.75
12	BARANGAY MANDU-AO	BRGY.HALL	03/14/2023	12:40PM	0.40
13	BARANGAY VILLASOL	MERLITA ENOLOS	03/14/2023	12:40PM	0.35
14	BARANGAY KALAMTUKAN	REMEDIOS BALASABAS	03/14/2023	01:18PM	0.65
15	BARANGAY MINABA	DIOSDADO SEGAYO	03/14/2023	02:17PM	0.50
16	BARANGAY SAN ROQUE	ARLENE GANAGANAG	03/14/2023	01:58PM	0.30
17	SITIO TAVERA	MARRY JOAN SEDELLO	03/14/2023	01:40PM	0.30
18					


SAMPLING SOURCE: Faucet (level III)

Remarks: *Recommending further investigation and rechecking of chlorine treatment for sample source who failed to pass the recommended residual chlorine level.*

Prepared by:


 ANTHONY T. HERMOSA
 SR.WSMM-A
 02/08/2023

Received by:


 Engr. Mica Joy Albia
 Engineering Assistant

Noted:


 Engr. Reno John S. Tuale
 Technical Division Manager

Annex 5. Sample of Water Bacteriological Test



NEGROS PRAWN PRODUCERS COOPERATIVE ANALYTICAL & DIAGNOSTIC LABORATORY

Door No.1 & 2., NOLKFI Bldg., 6th Street., Brgy. 7, Bacolod City
Tele/Fax 034-4332131 email address nppclab@gmail.com



WATER BACTERIOLOGY ANALYSIS TEST REPORT

Customer: Bayawan Water District
Address: Bayawan, Negros Oriental
Ref. No.: 23-58589
Sample Collected by: Customer
Water Supply: Local Water District
Sampling Point: Faucet

Date/Time of Collection: 01/09/23 (3:25pm)
Receipt : 01/10/23 (11:40am)
Examination : 01/10/23 (12:00pm)
Report : 01/14/23
Release : 01/14/23
Sample Description: Water in sterile bottle

BACTERIOLOGICAL EXAMINATION OF WATER SAMPLE

Sample Code	Control No.	Results of Analysis		
		Total Coliform (MPN/100 ml)	Thermotolerant Coliforms (MPN/100 ml)	HPC (CFU/ml)
Brgy. Banga Red Skin Gas Stn.	23-0501	< 1.1	< 1.1	< 10
Interpretation		Pass	Pass	Pass
Acceptable Values: PNSDW 2017 AO 2017-0010		< 1.1	< 1.1	< 500

Test method used (TC & FC): Multiple Tube Fermentation Technique, SMEWW 23rd Edition, 2017

Test method used (HPC): Spread Plate Method. 9215 C, SMEWW 23rd Edition, 2017

NOTE:

1. This report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results contained in this report relate only to the items received, coded and tested by the laboratory.
3. Measurement uncertainty is available upon request.
4. Statements of conformity (e.g. Pass/Fail) to specifications are made in this report without taking measurement uncertainty into account except when requested by the customer. Where statements of conformity are made in this report, the following decision rules are applied : PASS - Results within limits
FAIL - Results exceed limits

Analyzed by:

WENDY A. PAYSON
Approved Signatory (Micro)

Approved for Release:

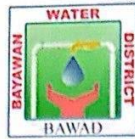
ROSELYN C. USERO, RCh, MEE
Manager/Laboratory Head
Approved Signatory (Micro)

Noted by:

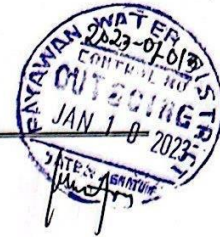
JASON JAMES R. LUSABIA, RMT
PRC License No. 72018

Test Report #: MICDW-53715
Laboratory DOH Accreditation # 01
NPPC-ADL LSP 7.8 FO5
Rev. 3/Issue 4
Effectivity Date: 06/15/22

Annex 6. Office Memorandum No. 2023-01-053 – Citizen/Client Satisfaction Survey (CCSS) Committee



BAYAWAN WATER DISTRICT
 Lot 1, Block N, Don Gaspar Subdivision, Villareal,
 Bayawan City, Negros Oriental, Philippines
 CCC-221




OFFICE MEMO NO. : 2023-01-053

DATE : January 9, 2023
 FOR : G. PIOSCA / R. TAYO / E. BRIONES / A. PANALIGAN / M. HIBIONADA
 SUBJECT : CITIZEN/CLIENT SATISFACTION SURVEY (CCSS) COMMITTEE

Effective **IMMEDIATELY**, hereunder is the composition of the agency's *CITIZEN/CLIENT SATISFACTION SURVEY (CCSS) COMMITTEE*. You shall be responsible in measuring and reporting the satisfaction level of citizens/clients that were served in FY 2023.

- | | | |
|--------------------------|---|-------------|
| 1. GINALYN P. PIOSCA | - | Chairperson |
| 2. ROGIELOU JANE T. TAYO | - | Member |
| 3. ETHEL S. BRIONES | - | Member |
| 4. AR-JEAN P. PANALIGAN | - | Member |
| 5. MARY FEL S. HIBIONADA | - | Member |

FOR YOUR GUIDANCE AND INFORMATION.


ALMA L. ABRASALDO
 General Manager

Conforme:

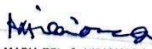
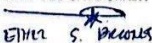

GINALYN P. PIOSCA
 Write your Name and Signature


ROGIELOU JANE T. TAYO

cc: 201
 File


AR-JEAN P. PANALIGAN

website: www.bayawanwd.gov.ph
 TeleFax # (035) 430-0361,
 Customer Service # (035) 531-3633


MARY FEL S. HIBIONADA

ETHEL S. BRIONES

Safe Water for all!



Annex 7. HappyOrNot Analytics



Annex 8. Client Satisfaction Measurement (CSM) Survey

Control No: _____



**BAYAWAN WATER DISTRICT
CCC-221
HELP US SERVE YOU BETTER!**

ANTI-RED TAPE AUTHORITY
CLIENT SATISFACTION MEASUREMENT
FORM
PSA Approval No.: ARTA-2242-3
Expires on 31 July 2023

This Client Satisfaction Measurement (CSM) tracks the customer experience of government offices. Your feedback on your recently concluded transaction will help this office provide a better service. Personal information shared will be kept confidential and you always have the option to not answer this form.

Client type: Citizen Business Government (Employee or another agency)

Date: _____ Sex: Male Female Age: _____

Region of residence: _____ Service Availed: _____

INSTRUCTIONS: Check mark (✓) your answer to the Citizen's Charter (CC) questions. The Citizen's Charter is an official document that reflects the services of a government agency/office including its requirements, fees, and processing times among others.






- CC1 Which of the following best describes your awareness of a CC?
- 1. I know what a CC is and I saw this office's CC.
 - 2. I know what a CC is but I did NOT see this office's CC.
 - 3. I learned of the CC only when I saw this office's CC.
 - 4. I do not know what a CC is and I did not see one in this office. (Answer 'N/A' on CC2 and CC3)

- CC2 If aware of CC (answered 1-3 in CC1), would you say that the CC of this office was ...?
- 1. Easy to see
 - 2. Somewhat easy to see
 - 3. Difficult to see
 - 4. Not visible at all
 - 5. N/A

- CC3 If aware of CC (answered codes 1-3 in CC1), how much did the CC help you in your transaction?
- 1. Helped very much
 - 2. Somewhat helped
 - 3. Did not help
 - 4. N/A

INSTRUCTIONS:

For SQD 0-8, please put a **check mark (✓)** on the column that best corresponds to your answer.

	 Strongly Disagree	 Disagree	 Neither Agree nor Disagree	 Agree	 Strongly Agree	N/A Not Applicable
SQD0. I am satisfied with the service that I availed.						
SQD1. I spent a reasonable amount of time for my transaction.						
SQD2. The office followed the transaction's requirements and steps based on the information provided.						
SQD3. The steps (including payment) I needed to do for my transaction were easy and simple.						
SQD4. I easily found information about my transaction from the office or its website.						
SQD5. I paid a reasonable amount of fees for my transaction.						
SQD6. I feel the office was fair to everyone, or " <i>walang palakasan</i> ", during my transaction.						
SQD7. I was treated courteously by the staff, and (if asked for help) the staff was helpful.						
SQD8. I got what I needed from the government office, or (if denied) denial of request was sufficiently explained to me.						

Suggestions on how we can further improve our services (optional):

Email address (optional): _____

THANK YOU!

Annex 9. Hazard Risk Table and Existing Controls

PROCESS STEP	HAZARDOUS EVENT	HAZARD	RAW RISK				Existing Control Measures	Effectiveness of Existing Control Measures	RESIDUAL RISK				Proposed Control Measures	
			Likelihood	Severity	Risk Score	Risk Rating			Likelihood	Severity	Risk Score	Risk Rating		
CATCHMENT	Turbidity during severe rain	Physical	5	3	15	High	Use of water treatment (flocculation, sedimentation and filtration)	Turbidity test result passed the PNSDW.	3	4	12	High	Expansion of filter bay to increase capacity and prevent filter overloading	
		Chemical	2	2	4	Low			2	2	4	Low		
	Presence of debris during flood	Physical	4	3	12	High	Screening of intake pipe	No floating debris in the treatment facility	3	3	9	Medium	Install self-cleaning screen at intake box	
	Run-off chemicals from agricultural area	Chemical	5	3	15	High	Bypass during floods	Controlled entry of run-off chemicals to the catchment facility	2	2	4	Low		
	Contamination from upstream human activity during severe flood	Microbial	5	5	25	High	Use of water treatment and chlorination	Microbial test results are negative. Physical and Chemical analysis is within the PNSDW.	2	5	10	Medium	Use of pre-chlorination and regular monitoring of chlorine residual in every source	
	Recreational activities and act of terrorism on the source	Microbial	2	5	10	Medium	Control of entry of outsiders in the water shed area		2	5	10	Medium	Perimeter fencing of the declared watershed to restrict outsiders	
	Manampa Source	Low water yield	Physical	5	3	15	High	Utilization of Manampa spring #2 as additional water source	Water supply met the customer water demand	3	3	9	Medium	Tapping of new additional source (Clanza Spring & Eddie Spring)
		High hardness of water	Chemical	5	3	15	High	Use of softener	Hardness test result passed the PNSDW.	2	2	4	Low	
	Cambulo Source	High hardness of water	Chemical	5	3	15	High	Chlorination		3	3	9	Medium	Construction of softener for Cambulo water source
	San Roque Source	Low water yield	Physical	5	3	15	High	Establishment of the water treatment plant	Water supply met the customer water demand	4	3	12	High	Utilization of Canabuan Source
		High hardness of water	Chemical	5	3	15	High			4	3	12	High	
	Minaba Source	Low water yield	Physical	5	3	15	High	Interconnection to San Roque water network		5	3	15	High	
	Kalamunggay Source	Low water yield	Physical	5	3	15	High	Water rationing		4	3	12	High	Interconnection to Omod water network and utilization of Omod deep well
	Omod Source	Low water yield	Physical	5	3	15	High	Interconnection to Camandagan water network and construction of reservoir		2	2	4	Low	None

	Mandua Source	Low water yield	Physical	5	3	15	High	Utilization of barangay-owned reservoir		5	3	15	High	Improvement of existing Mandua spring box and exploration of additional water source
	Lapay Source	Low water yield	Physical	5	3	15	High	Utilization of Lapay Proper water source		5	2	10	Medium	Improvement of transmission pipelines and interconnection to Dawis water network
	Dawis Source	Low water yield	Physical	5	3	15	High	Use of additional source at Cadusale area		5	2	10	Medium	Construction of water treatment plant utilizing surface water as source; utilization of Bahian source
TREATMENT	Manampa Source	Overloading of treatment facility	Physical	4	2	8	Medium	Frequent cleaning of filters	Water quality meets the standard	2	3	6	Medium	Additional filtration facility
			Chemical	4	3	12	High			2	5	10	Medium	
			Microbial	4	5	20	High			2	5	10	Medium	
		Under-/overdosed disinfection	Microbial	2	5	10	Medium	Random monitoring of residual chlorine		2	5	10	Medium	Acquire monitoring and testing equipment
		By-pass facility causing absence of / inadequate treatment	Physical	2	3	6	Medium	Condemned all bypass lines		1	3	3	Low	
			Chemical	2	3	6	Medium			1	3	3	Low	
			Microbial	2	5	10	Medium			1	5	5	Low	
		Insufficient water for backwashing and other operational uses	Physical	5	2	10	Medium	Construction of backwash tank	Improved down-time	5	2	10	Medium	Improvement of the backwash piping system and use of air blowers
		Increased hardness of raw water	Chemical	5	3	15	High	Use of water softener	Water quality meets the PNSDW standard	5	2	10	Medium	Improvement of water softener capacity
		Overloaded water softener	Chemical	5	3	15	High	Use of water softener		5	2	10	Medium	
		Treatment failure due to clogging of chlorine ejector and tubing	Physical	3	3	9	Medium	Periodic maintenance, de-clogging and monitoring of chlorine ejector and tubing	Resolved clogging issues of treatment chlorinators	1	2	2	Low	
			Chemical	3	3	9	Medium			1	3	3	Low	
Microbial	3		5	15	High	1	5			5	Low			
Blocked filters causing inadequate particle removal	Physical	4	2	8	Medium	Regular cleaning of filters	Efficient filtration	2	3	6	Medium	Increase pre-treatment to lower turbidity in the filter bay		
	Microbial	4	5	20	High			2	5	10	Medium			

		Defective chlorinating system	Microbial	4	5	20	High	Regular monitoring of chlorinators and conduct daily chlorine test	Obtained chlorine residual result within the critical limit. No positive result in physical and chemical test	2	5	10	Medium	Train pump operators/tenders on proper chlorination procedure and dosing
		Lack of instruments/equipment for water quality testing	Microbial	3	5	15	High	Sending of water samples to Bacolod City for monthly and quarterly water quality tests		2	5	10	Medium	Establishment of own laboratory
			Chemical	3	4	12	High			2	4	8	Medium	
	San Roque Source	Insufficient water for backwashing and other operational uses	Physical	4	2	8	Medium	Use of common air compressor to assess backwashing	Improved down-time	3	2	6	Medium	Use of air blowers to assess backwashing
		Increased hardness of raw water	Chemical	5	3	15	High	Chlorination	Water quality meets the PNSDW standard	5	2	10	Medium	Installation of water softener
Bugay WTP	Saturation of contaminants in the raw water	Chemical	5	4	20	High	Use of clarifier and disinfection			4	2	8	Medium	Improvement of pretreatment facility
STORAGE	Main System	Metal rusting of tank cover, contaminating water with rust particle	Physical	5	2	10	Medium	Cleaning and repainting of metal tank covers	Absence of rust particles inside the tank	2	2	4	Low	
		Security breach	Chemical	2	4	8	Medium	Fencing and locking of storage premises	Secured storage tanks premises	1	3	3	Low	
		Accumulation of scale in the walling (Calcium Carbonate)	Physical	5	2	10	Medium	Regular cleaning of storage tanks and reservoir	Presence of solids during flushing	4	2	8	Medium	Increase capacity of softener
		Falling debris/leaves	Physical	5	2	10	Medium	Regular removal of debris	Minimized reoccurrence of damages to pipelines	2	2	4	Low	
		Shortage of impounding tank and	Physical	5	3	15	High	Construction of 1000 cu.m. steel bolted tank reservoir at BAWAD warehouse and 500 cum	Meets peak hour water demand	3	1	3	Low	None

		pilferage						concrete ground reservoir at Caranoche, Santa Catalina							
	San Roque Subsystem		Physical	5	3	15	High	None			5	3	15	High	Construction of 100 cu.m. concrete ground reservoir with security fence
	Kalamunggay Subsystem		Physical	5	3	15	High				5	3	15	High	
	Bugay Subsystem		Physical	5	3	15	High				5	3	15	High	
	Manduaog Subsystem		Physical	5	3	15	High				5	3	15	High	
DISTRIBUTION	Mains burst causing ingress of contamination	Microbial	2	5	10	Medium	Immediate repair of damaged pipes, proper pressure management, use of good quality pipes and use of sand bedding			1	5	5	Low		
		Physical	2	2	4	Low				1	2	2	Low		
	Pressure fluctuations causing - pipe bursts - ingress of contaminants	Microbial	2	5	10	Medium				1	5	5	Low		
		Chemical	2	3	6	Medium				1	3	3	Low		
		Physical	2	2	4	Low				1	2	2	Low		
	Intermittent water supply causing ingress of contamination in some areas	Microbial	3	5	15	High	Use of standby water supply	Lessen frequency of mainline repairs			2	5	10	Medium	Review or modify details of existing control measure and improve
		Chemical	3	3	9	Medium					2	3	6	Medium	
		Physical	3	2	6	Medium					2	2	4	Low	
	Opening/closing of valves causing the disturbance of sediments due to changing flow direction	Physical	3	3	9	Medium	Slow opening of valves	Zero incident of complaint on turbidity			2	2	4	Low	
	Third party access to hydrants causing the disturbance of sediments due to backflow	Physical	1	3	6	Low	Use of customized valve key	Secured hydrants			1	2	2	Low	
	Contamination due to security breach/vandalism	Microbial	2	5	10	Medium	Periodic survey on pipelines	Minimized incidence of distribution line leaking			2	5	10	Medium	Conduct weekly survey/leak testing and repair immediately any leaks observed
		Chemical	2	4	8	Medium					2	3	6	Medium	
		Physical	2	3	6	Medium					2	2	4	Low	
Pilferage and illegal connection	Physical	3	3	9	Medium	Strengthening of WQSSG as partners for leak reporting and strengthening the surveillance for illegal connections	Reduction of NRW			3	2	6	Medium	Strengthening and improvement of existing control measures	
Ingress contamination due to low pressure	Microbial	4	5	20	High	Immediate repair of reported leaks	Water quality meets the PNSDW standard			4	4	16	High	Rehabilitation of all old and dilapidated pipelines	
Need for an additional loading point for easy water rationing	Physical	4	2	8	Medium	Use of various blow-offs and hydrants as loading point for rationing for water tankers	Fast and accessible water rationing			4	1	4	Low	Installation of overhead hydrants to various strategic locations	
Increase of leak detection due to dry pipe surface cover	Physical	5	2	10	Medium	Conduct of regular leak detection activity	Reduction of NRW			5	1	5	Low	Investment on modern leak detecting equipment like infrared drone and additional	

														manpower to conduct repair activity
CONSUMER	Water meter tampering	Microbial	1	5	5	Low	Imposing sanctions to violators		1	5	5	Low		
		Chemical	1	3	3	Low		1	3	3	Low			
		Physical	1	2	2	Low		1	2	2	Low			
	Backflow of customer's overhead tank during lowpressure	Microbial	2	5	10	Medium	Install check valves and managing pressure to minimize negative pressureon the service lines	Minimized incident on negative/fluctuating watermeter reading	1	5	5	Low		
		Chemical	2	3	6	Medium			1	3	3	Low		
		Physical	2	2	4	Low			1	2	2	Low		
	Dual water source	Microbial	2	5	10	Medium		Decreased contamination	1	5	5	Low		
		Chemical	2	3	6	Medium			1	3	3	Low		
		Physical	2	2	4	Low			1	2	2	Low		
	Clogging in the service lines	Physical	3	4	12	High	De-clogging procedure and flushing	Decreased number on low pressure complaints	3	3	9	Medium	Install blow-offs	
Increase of complaints due to low pressure and no water	Physical	5	3	15	High	Information Education Campaign on the existing water supply project of the district Implementation of various water advisories through textblast, website, and social media Expansion of water rationing fleet	Customer satisfaction	3	3	9	Medium	Improvement of customer feedback mechanism Procurement of additional water tanker Use of existing 4 cu.m. tank as trailer tanker Partnership with the LGU for the provision of additional water tanker		
Increase of new connection applicants		5	2	10	Medium	Implementation of water supply augmentation project	Number of connections	5	1	5	Low	None		

Annex 10. Improvement/Upgrade Plan

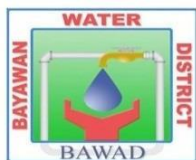
Process Step	Action		Arising from	Identified Specific Improvement Plan	Accountabilities	Cost	Source of Fund	Due	Status
CATCHMENT	Construction of additional filter bay to prevent filter overloading		Turbidity of water during severerain	Expansion of filter bay	Engineering & Construction Dept.	1.5M	Corporate funds	ASAP	For Proposal
	Use of other possible sources		From the assessment, water quality of the WD is high in hardness, thus causes clogging, scaling and some other physical hazard	Exploration of other possible sources with lower hardness	Technical	300,000	Corporate funds	2025	Done
	Design innovation on self-cleaning screen to filter floating debris in the spring/intake box		Risk assessment process indicates that debris causes clogging in the intake box	Installation of self-cleaning screen at intake box	Production Manager	25,000	Corporate funds	ASAP	Under study
	Perimeter fencing of the declared watershed to restrict outsiders		Risk assessment shows that the watershed has no barrier from intruders and legal ownership is not yet established which is needed in the protection and funding	Application for FLAG to DENR to allocate funds for the protection of the watershed	Engineering	50,000	Corporate funds	ASAP	On-going
	Manampa Source	Tapping of new additional source (Clanza Spring & Eddie Spring)	Low water yield	Construction of spring box and transmission pipelines to existing transmission line	Engineering & Construction Dept.	3.5M	BAWAD funds	2025	For funding
			High hardness of water		Technical				
	Cambulo Source	Construction of softener for Cambulo water source	High hardness of water	Construction of water softener with 25lps capacity	Engineering & Construction Dept.	20M	Loan	2027	For proposal

	San Roque Source	Utilization of Canabuan Source	Low water yield and high hardness of water	Construction of Canabuan, Minaba, water supply system, connecting San Roque	LGU Bayawan City	35M	LGU Fund	2024	Ongoing
	Minaba Source	Utilization of Canabuan Source	Low water yield	Construction of Canabuan, Minaba, water supply system					
	Kalamunggay Source	Interconnection to Omod water network and utilization of Omod deep well		Interconnection to Omod water network and construction of ground concrete tank reservoir	Engineering & Construction Dept.	600,000	BAWAD funds	2026	For funding
	Manduao Source	Improvement of existing Manduao spring box and exploration of additional water source		Construction of spring box		300,000	BAWAD funds	2025	For funding
	Lapay Source	Improvement of transmission pipelines and interconnection to Dawis water network		Interconnection of transmission pipelines from Dawis water network to Lapay water network		10M	BAWAD funds	2028	For funding
	Dawis Source	Construction of water treatment plant utilizing surface water as source; utilization of Bahian source		Install online monitoring and testing to some strategic point in the system	Construction of water treatment plant and transmission pipelines	3.5M	PEWUP Project	2024	For approval
TREATMENT	Acquisition of water quality monitoring and testing equipment		Unreliable disinfection due to lack of monitoring and testing equipment	Install online monitoring and testing to some strategic point in the system	Production Manager	3M	For Funding	2026	Planning
	Establishment WD laboratory		Lack of instruments/equipment for water quality testing	Create in-house WD laboratory, employ Med Tech and Chemist	Water Quality In-charge	5M	For Funding	2028	For assessment
	Manampa Source	Improvement of the backwash piping system and use of air blowers	Insufficient water for backwashing and other operational uses	Improvement of existing backwash piping system and procurement of air blowers	Engineering & Construction Dept.	1.5M	BAWAD funds	2026	For funding

		Improvement of water softener capacity	Increased hardness of raw water	Installation of additional water softener	Project contractor	15M	LWUA ADB	2023	Ongoing
		Improvement of water softener capacity	Overloaded water softener	Installation of additional water softener		15M	LWUA ADB	2023	Ongoing
	San Roque Source	Use of air blowers to assess backwashing	Insufficient water for backwashing and other operational uses	Procurement of air blowers	Engineering & Construction Dept.	1M	BAWAD funds	2024	For funding
		Installation of water softener	Increased hardness of raw water	Installation of water softener		5M	BAWAD funds	2025	For funding
	Bugay WTP	Improvement of pretreatment facility	Saturation of contaminants in the raw water	Expansion of clarifier tanks		3M	BAWAD funds	2025	For funding
STORAGE	Increase capacity of softener		Accumulation of scale in the walling (Calcium Carbonate)	Purchase of additional softener tank	Production Manager	70,000	Corporate funds	ASAP	For assessment
	San Roque Subsystem	Construction of 100 cu.m. concrete ground reservoir with security fence	Shortage of impounding tank and pilferage	Construction of 100 cu.m. concrete ground reservoir with security fence	Engineering & Construction Dept.	1.5M	BAWAD funds	ASAP	For funding
	Kalamunggay Subsystem	Construction of 30 cu.m. concrete ground reservoir with security fence		Construction of 30 cu.m. concrete ground reservoir with security fence		650,000	BAWAD funds	ASAP	For funding
	Bugay Subsystem	Construction of 30 cu.m. concrete elevated reservoir with security fence		Construction of 30 cu.m. concrete elevated reservoir with security fence		650,000	BAWAD funds	ASAP	For funding

	Mandua Subsystem	Construction of 30 cu.m. concrete ground reservoir with security fence		Construction of 30 cu.m. concrete ground reservoir with security fence		650,000	BAWAD funds	ASAP	For funding
DISTRIBUTION	Implementation of NRW Reduction Program		<ul style="list-style-type: none"> Mainline pipe burstscausing ingress of contamination Pressure fluctuation 	Implementation of NRW Reduction Program	Commercial and Production Dept.	8.5M	For Funding	ASAP	For assessment
	Strengthening and improvement of existing control measures	Pilferage and illegal connection		SCADA system and online monitoring	Engineering & Construction Dept.	10M	BAWAD funds	2028	For funding
	Rehabilitation of all old and dilapidated pipelines	Ingress contamination due to low pressure		Rehabilitation of all old and dilapidated pipelines		10M	BAWAD funds	2025	For funding
	Installation of overhead hydrants to various strategic locations	Need for an additional loading point for easy water rationing		Installation of overhead hydrants to various strategic locations		2M	BAWAD funds	2025	For funding
	Investment on modern leak detecting equipment like infrared drone and additional manpower to conduct repair activity	Increase of leak detection due to dry pipe surface cover		Investment on modern leak detecting equipment like infrared drone and additional manpower to conduct repair activity		5M	BAWAD funds	2025	For funding
CONSUMER	Improvement of customer feedback mechanism			Installation of a real-time and online feedback mechanism	Customer Service Section	5M		2026	For funding
	Expansion of water rationing fleet	Increase of complaints due to low pressure and no water		Procurement of additional water tanker	Engineering & Construction Dept.	8M	BAWAD funds	2026	
				Use of existing 4 cu.m. tank as trailer tanker		100,000		2023	
				Partnership with the LGU for the provision of additional water tanker	Management				

Annex 11. Incident Investigation & Evaluation Report Form



BAYAWAN WATER DISTRICT WATER SAFETY PLAN

INCIDENT INVESTIGATION & EVALUATION REPORT

Department : _____ Division : _____
Date of Investigation / Evaluation : _____ Alert Level Category : _____
Inclusive date of the Incident : _____ Affected Area : _____

A. Describe the nature of the incident :

B. Background Information and Checklist.

1] How was the problem detected or identified?

- Routine sanitary survey
 Complaints from concessionaire
 Others

2] What was the required response or action ?

- Stoppage of water service
 Public notification for Boil Water Order
 Increase frequency of monitoring for chemical and microbiological parameters
 Activate protocol for Incident / Emergency Response Plan
 Others

3] Was the communication with key personnel smoothly and clearly disseminated?

Yes No (pls. answer below)

What was the communication problem encountered? _____

4] Was the logistical support readily available for mobilization?

Yes No (pls. answer below)

What was the logistical problem encountered? _____

5] Was the technical information relevant and readily available?

Yes No (pls. answer below)

What was the problem encountered? _____

Annex 12. Incident/Emergency Response Plan Form



BAYAWAN WATER DISTRICT WATER SAFETY PLAN

INCIDENT / EMERGENCY RESPONSE PLAN

Alert Level : _____

Responsibility : _____

I. Incident arising from :

II. Situational Assessment

A. Population Affected : _____

B. Nature of Suspected Hazard : _____

C. Time to Effect : _____

III. Response Action / Activity (Describe in detail)

IV. Protocols

A. Communication

Internal _____ External _____

B. Public Notification (Boil Water Order)

Yes _____ Not necessary _____

C. Emergency Water Supply

Water Truck _____ Watering Points _____

D. Surveillance

Microbial _____ No. of Samples _____ Frequency _____

Chemical _____ No. of Samples _____ Frequency _____

HPC _____ No. of Samples _____ Frequency _____
 Residual Chlorine _____ No. of Samples _____ Frequency _____

E. Logistics

Generator set _____ Mud Pump _____
 Vehicle _____ Chain Saw _____
 Handset / Radio _____
 Others _____

V. Personnel Deployment

A. Internal (BAWAD)

	Name	Position	Department	Contact Number
1]	_____	_____	_____	_____
2]	_____	_____	_____	_____
3]	_____	_____	_____	_____
4]	_____	_____	_____	_____
5]	_____	_____	_____	_____

B. External

	Name	Position	Agency	Contact Number
1]	_____	_____	_____	_____
2]	_____	_____	_____	_____
3]	_____	_____	_____	_____
4]	_____	_____	_____	_____
5]	_____	_____	_____	_____

V. Recommendations

Annex 13. Action Plan Form



BAYAWAN WATER DISTRICT WATER SAFETY PLAN

ACTION PLAN

Process Step : _____
 Department : _____

Risk Matrix : CCP ____ QCP ____
 Division : _____

Personnel Responsible :

1] _____
 2] _____

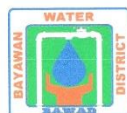
3] _____
 4] _____

Action	Arising from	Due	Status	Logistic / SOP

Reviewed by: _____
 Date: _____

Approved by: _____
 Date: _____

Annex 14. 2023 Learning and Development Plan



Republic of the Philippines
BAYAWAN WATER DISTRICT
 Lot 1, Block N, Don Gaspar Subdivision, Villareal,
 Bayawan City, Negros Oriental, Philippines
 Telefax No. (035) 228-3349, 430-0361
 website: www.bawad.gov.ph

2023 Learning & Development Plan

Program Title	Target No. of Participants	Target Date	Budget	Source of Funds	Target Participants
2022 COB Budget for Trainings					
In-House Seminars:					
Enhanced Plumbing Techniques	75	TBA	37,500.00	2023 COB	All Employees
Interpersonal Relationship Workshop	75	TBA	37,500.00	2023 COB	All Employees
Occupational Safety and Health Training	75	TBA	37,500.00	2023 COB	All Employees
External Trainings:					
Training for Plumbing	4	TBA	45,000.00	2023 COB	Iver L. Barte Rodolfo P. Piosca Louie C. Iso Ubaldo O. Esco
Training for Accounting	4	TBA	45,000.00	2023 COB	Sherlyn D. Mananquil Louanne D. Tuale Ar-Jean P. Panaligan Erma T. Laluyan
Training for Commercial	3	TBA	45,000.00	2023 COB	Mary Fel S. Hibionada Renato T. Rotante Daryl G. Balbon Redje Mark M. Espares
Training for Procurement	2	TBA	30,000.00	2023 COB	Ethel S. Briones Dave Algreg A. Gaga-a
Training for Admin	2	TBA	30,000.00	2023 COB	Rogielou Jane T. Tayo Mary Grace F. Lumactao
VEI Training	15	TBA	135,000.00	2023 COB	Depends on required office position


CSC Training	5	TBA	180,000.00	2023 COB	Ginalyn P. Piosca Engr. Reno John S. Tuale Engr. Romulo R. Concepcion, Jr. Rogielou Jane T. Tayo Sherlyn M. Enquilino
IHE Delft - Short Course	1	TBA	440,000.00	2023 COB	Sherlyn M. Enquilino
GAD Related Trainings	5	TBA	70,000.00	GAD	Depends on required office position
TOTAL			1,132,500.00		

Prepared by:



ROGIELOU JANE T. TAYO
HRMO Designate, PDC Member

Certified true and correct:



GINALYN P. PIOSCA
PDC Chairperson


ENGR. RENO JOHN S. TUALE
PDC Member


SHERLYN M. ENQUILINO
PDC Member


ENGR. ROMULO R. CONCEPCION, JR.
PDC Member

Approved by:


ALMA L. ABRASALDO
General Manager

Annex 15. Indorsement and Approval Sheet

INDORSEMENT AND APPROVAL SHEET

Reviewed and Recommended for Approval by:

ENGR. RENO JOHN S. TUALE
Team Leader

GINALYN P. PIOSCA
Team Coordinator

MARY FEL S. HIBIONADA
Team Member-Commercial

AR-JEAN P. PANALIGAN
Team Member-Accounting

ROGIELOU JANE T. TAYO
Team Member-Human Resource

ENGR. ROMULO R. CONCEPCION, JR.
Team Member-Construction

LEO O. ESCO
Team Member-Maintenance

IVER L. BARTE
Team Member-Maintenance

UBALDO O. ESCO
Team Member-Production

ARTURO T. CLANZA, JR.
Team Member-Production

RODOLFO P. PIOSCA, JR.
Team Member-Production

ANTHONY T. HERMOSA
Team Member-Water Quality

LOUIE C. ISO
Team Member-New Connection

Approved by:

ALMA L. ABRASALDO
General Manager