



Program Title: Grant-in-Aid
Project Title: Automatic Flood Monitoring System for Boac River
Project Leader/Sex: Edgardo R. Laririt / Male
lariritedgardo@gmail.com
Project Duration (number of months): 36 months / 3 years
Project Start Date: June 2023
Project End Date: June 2026
Implementing Agency: Marinduque State College
Address/Telephone/Fax/Email: Tanza, Boac, Marinduque
president@mscmarinduque.edu.ph

Marinduque State College – Tanza, Boac, Marinduque
DOST-MIMAROPA – PSTO Marinduque – Bangbangalon, Boac, Marinduque
LGU Boac – Isok 1, Boac, Marinduque

IMPLEMENTATION SITES NO.	COUNTRY	REGION	PROVINCE	DISTRICT	MUNICIPALITY	BARANGAY
1.	Philippines	MIMAROPA	MARINDUQUE		BOAC	Tanza
2.	Philippines	MIMAROPA	MARINDUQUE		BOAC	
3.	Philippines	MIMAROPA	MARINDUQUE		BOAC	

Basic
/ Applied

_____ Agriculture, Aquatic and Natural
Resources
Commodity: _____
_____ Health
Priority Topic: _____
_____ Industry, Energy and Emerging
Technology
Sector: _____
_____/_____ Disaster Risk Reduction and Climate
Change Adaptation
_____ Basic Research
Sector: _____

Strengthen Social Protection

(6) EXECUTIVE SUMMARY (not to exceed 200 words)

This project aims to install an Automatic Flood Monitoring System designed by Marinduque State College and will be infused with Lorawan Technology to avoid the frequent problem on data transmission when using GSM based communication.

The technology will help in reducing vulnerabilities and mitigate the impact and adverse effect of climate change related to hazard. It will also introduce climate-adaptive technologies and intensify and develop livelihood capacity of local communities.

The developed system will be installed along the Boac-River stretch and be used to monitor and evaluate the condition of the Boac river and coordinate with the concerned agencies in the event of adversity.

(7) INTRODUCTION

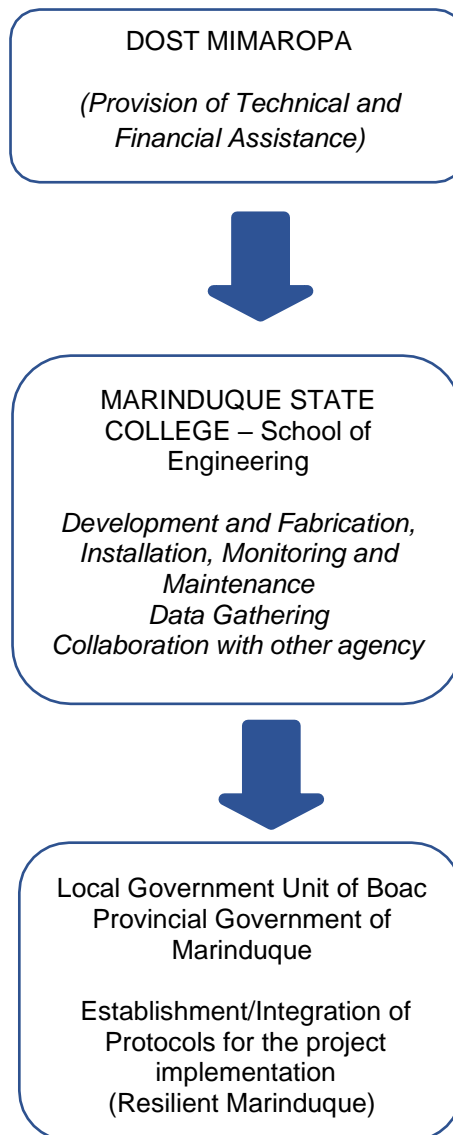
(7.1) RATIONALE/SIGNIFICANCE (not to exceed 300 words)

Flood Monitoring is a highly important adaptive measure wherein the protection to the public is alerted in advance and undertakes immediate responses to minimize the impact of the event. Based on R.A. 10121, Section 12. No. 5 "LDRRMO shall perform the following functions: operate a multi-hazard early warning system linked to disaster risk reduction to provide accurate and timely advice to national or local emergency response organizations and to the public, through diverse mass media, particularly radio, landline communications, and technologies for communication within rural communities." This is particularly important to the residents, for farmers, agricultural workers and other stakeholders who live in the flood prone areas so that concerned agencies can provide appropriate actions before the harmful effects.

Marcopper Tragedy was considered the country's biggest mining disaster. It was more than two decades when this misfortune happened in the province of Marinduque but still, it is a threat to Marinduqueños. The liquid waste materials called mine tailings still find their way into Makulpnit-Boac River causing pollution to the province. The retaining wall of several dams of Marcopper after 20 years gradually weakened and might collapse that millions of cubic meter of liquid and hazardous wastes and other debris might escape through the dam that will surely cause damage along the way. This man-made disaster creates negative impacts to the whole province.

Reduction of vulnerabilities and mitigation of the impact and adverse effect of climate change related to hazard are the intentions of this project. With this risk reduction undertaking, it will also introduce climate-adaptive technologies and intensification of livelihood and capacity development for local communities.

(7.2) SCIENTIFIC BASIS/THEORETICAL FRAMEWORK



(7.3) OBJECTIVES

General: To establish a Disaster Risk Reduction Team and office in Marinduque State College.

Specific:

1. To develop an Automatic Flood Monitoring System that is simple, easy to install, maintain, and troubleshoot.
2. To install the developed system along the Boac-River stretch.
3. To monitor and evaluate the condition of the Boac river and coordinate with the concerned agencies in the event of adversity.

(8) REVIEW OF LITERATURE

- Installation and development of Wireless Sensor Network (WSN) on numerous applications areas such as transportation, logistics, environmental and habitat monitoring, security and surveillance, industrial automation, military, precision agriculture and healthcare, has been reported.
- The Advanced Remote Data- Acquisition Unit (ARQ) is an automated data transmission device that is used to send the measured value in the website <http://fmon.asti.dost.gov.ph/weather/predict> and is automatically connected to Philippine Atmospheric Geophysical and Astronomical Service Administration (PAGASA). ARQ is the instrument used in Project NOAH that is used to detect the water level.
- Dr. D. Basha of Bonsalove, India designs an Early Warning Flood Detection System for developing countries in 2007.
- Dr. C. Yuwat designed a disaster and alert system using WSN to send weather information and disaster alerts by a Zigbee module. This weather information was analyzed using decision tree techniques to announce the alerts.
- R. Morias implemented a wireless data acquisition network to collect climate data and soil moisture for a smart irrigation system in Portugal to enhance efficiency of irrigation.
- J. Windarto of Semarang, India proposed flood early warning system using SMS and web to record rainfall and water level data and SMS on flood status to attendants and stakeholders.

(9) METHODOLOGY

Marinduque State College-School of Engineering (MSC-SEng) shall lead the project as the technical agency that will handle the development, overall installation and maintenance of the Automatic Flood Monitoring System and coordinate with other concerned agencies for the implementation of the project.

As Research and Development part of the proposed project, MSC-SEng will develop a system. Control circuit will be installed by Electrical Engineering (EE) group, electronics and programming will be handled by Electronics and Communication Engineering (ECE), Computer Engineering (ComE) and the EE group including installation of Fame IoT Platform system for water level sensor data transmission and messaging. Mechanical parts such as assembly of poles and other steel works will be assigned to the Mechanical Engineering (ME) group. GIS mapping of flood and other parameters will be handled by the Civil Engineering (CE) group. Installation and testing of the system to the site will be a group effort in partnership with DOST-PSTO Marinduque.

The project was planned to construct along Boac River Stretch to monitor and evaluate the condition of the said river and the danger of abandoned Marcopper Dam that may cause flash flood once the retaining wall collapsed. The areas possibly affected of those hazards are those communities along or near the said river. We stationed 5 monitoring system located on Barangay Hinapulan, Sitio Pinagsangahan, Barangay Tampus and 2 in between the mentioned barangay

which are considered as strategic locations for the project.

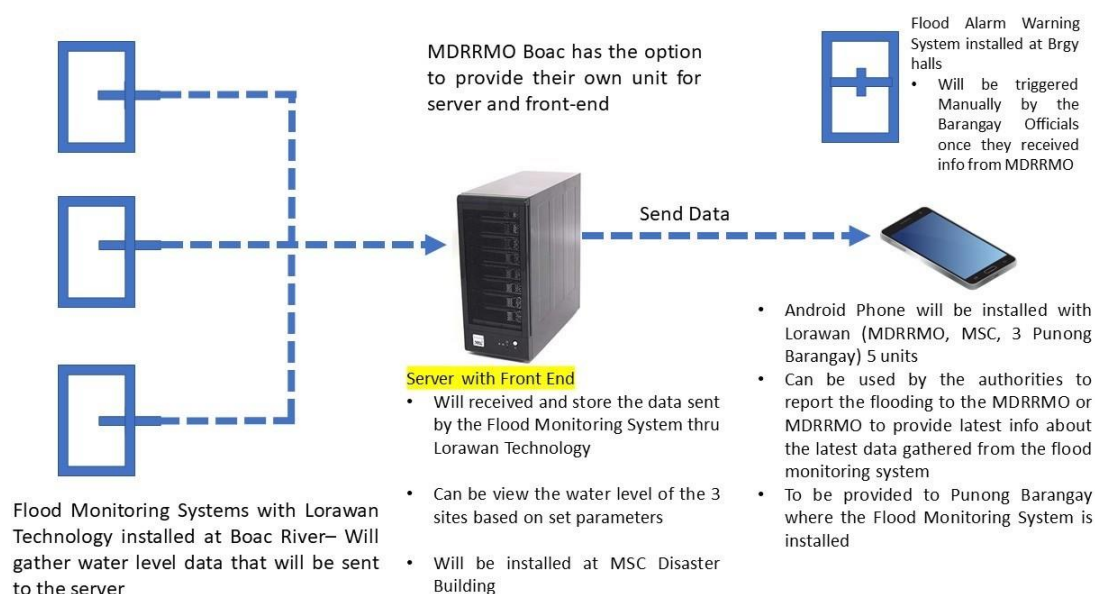
Based on the Marinduque Disaster Risk Reduction and Management Plan (2018), most of the community affected by flood are those barangays located near or along the Boac River and consider as High Flood Susceptible, they are the barangays of Malusak(Pob), Mercado (Pob.), Murallon(Pob.), Isok I (Pob.), Isok II(Pob.), San Miguel (Pob.), Tampus(Pob.), Balagasan, Balimbing, Balogo, Bamban, Bangbangalon, Bantay, Binunga Boi, Boton, Buliasnin, Catubugan, Daig, Lupac, Maiinit, Maligaya, Ogbac, Pili, Poctoy, Poras, Puyog, Santol, Sawi, Tabi, Tabigue, Tagwac, Tambunan and Tanza. The said barangays will also be considered as the target beneficiaries of the project.

DOST-MIMAROPA will provide technical assistance to Marinduque State College that includes the acquisition of technology for data transmission and messaging (Lorawan Technology) needed for the said project.

DOST-PSTO Marinduque together with MSC-SEng will be coordinating with concerned agencies regarding the project and implementation. Focal person from MSC SEng and DRR Officer will be assigned to monitor the system and coordinate with the corresponding agency in time of calamity. MDRRMO Boac and other possible relevant stakeholders will be convened for the establishment and integration of protocols to the project for smooth implementation.

We look forward to adopt these strategies in mitigating the adverse effect of nature by different LGUs, and if the fund permits, there are no hesitations to install it also in the municipality of Mogpog and to those low lying areas around the province.

Schematic Diagram



(10) TECHNOLOGY ROADMAP (if applicable) (use the attached sheet)**(11) EXPECTED OUTPUTS (6Ps)**

Publications	Apply for IPOPHL registration
Patents/IP	Apply for IPOPHL registration
Products	Developed and deployed three (3) units Automatic Flood Monitoring System
People Services	This is particularly important to the residents, for farmers, agricultural workers and other stakeholders who live in the flood prone areas so that concerned agencies can provide appropriate actions before the harmful effects.
Places and Partnerships	1 MOA between DOST-MIMAROPA and Marinduque State College
Policy	N/A

(12) POTENTIAL OUTCOMES

Reduction of vulnerabilities and mitigation of the impact and adverse effect of climate change related to hazard are the intentions of this project. With this risk reduction undertaking, it will also introduce climate-adaptive technologies and intensification of livelihood and capacity development for local communities.

(13) POTENTIAL IMPACTS (2Is)**Social Impact:**

The output of the project may lead other government agencies and SUCs to adopt the project for their provincial and regional offices.

Economic Impact:

The project would benefit the community's economic sustainability considering that the project focuses on flood monitoring which aims to mitigate the impact of disaster.

(14) TARGET BENEFICIARIES

The following barangays under the municipality of Boac listed below are the target beneficiaries of the project.

Malusak(Pob)	Balogo	Daig	Tabi
Mercado (Pob.)	Bamban	Lupac	Tabigue
Murallon(Pob.)	Bangbangalon	Maiinit	Tagwac
Isok I (Pob.)	Bantay	Maligaya	Tambunan
Isok II(Pob.)	Binunga	Puyog	Tanza.
San Miguel (Pob.)	Boi	Santol	Poctoy
Tampus(Pob.)	Boton	Sawi	Poras
Balagasan	Buliasnin	Ogbac	Pili
Balimbing	Catubugan		

(15) SUSTAINABILITY PLAN (if applicable)

DOST-MIMAROPA will provide technical assistance to Marinduque State College for the development of the Automatic Flood Monitoring System.

MSC will procure the supplies and materials needed for the fabrication of the system.

MSC-School of Engineering will ensure the proper implementation of the above-mentioned project from manufacturing up to installation to the site following the submitted workplan.

Establishment/integration of protocols with MDRRMO Boac and other possible relevant stakeholders will be done to ensure that the project will be implemented accordingly.

To ensure the project's sustainability, MSC will allocate funds for project maintenance and monitoring.

After evaluating the project's results, MDRRMO Boac may decide to allocate cash for the establishment of their own server as well as further flood monitoring systems.

PSTO-Marinduque to monitor the progress of the project.

(16) GENDER AND DEVELOPMENT (GAD) SCORE (refer to the attached GAD checklist)

8.48 – Proposed proposal is gender-sensitive (proposal passes the GAD test).

(17) LIMITATIONS OF THE PROJECT

- The water level status can be visualized and heard using indicator lamps and sirens.
- Great volume of water rushing from the mountain such as flashflood together with debris limits the capability of the system. Increasing the number of larger motor pumps and controls are also recommended to catch up the huge volume of water.
- The system will be installed along Boac river stretch.

(18) LIST OF RISKS AND ASSUMPTIONS RISK MANAGEMENT PLAN (List possible risks and assumptions in attaining target outputs or objectives.)

(19) LITERATURE CITED

Zoysa, K.D., Keppitiyagama, C., Seneviratne, G.P., & Shihan, W. W. A. T. (2007). A public transport system based sensor network for road surface condition monitoring," in NSDR '07: *ACM SIGCOMM Workshop on Networked Systems for Developing Regions*.

Juang, P., Oki, H., Wang, Y., Martonosi, M., Peh, L.S., & Rubenstein, D. (2002). Energy-efficient computing for wildlife tracking: design tradeoffs and early experiences with ZebraNet," in ASPLOS '02: Proceedings of the 10th International Conference on Architectural Support for Programming Languages and Operating Systems. *ACM Press*, 96–107.

Zhang, P., Sadler, C.M., Lyon, S. A. & Martonosi, M. (2004). Hardware design experiences in ZebraNet," in SenSys '04: Proceedings of the 2nd International Conference on Embedded Networked Sensor Systems. *ACM Press*, 227–238.

Udo, E. N., & Isong, E. B., (2013) Flood Monitoring and Detection System using

Wireless Sensor Network. *Asian Journal of Computer and Information Systems*, 1, 4, 108-113

Wemer-Allen, G., Johnson, J., Ruize, M., Less, J. & Welsh, M. (2005) Monitoring Volcanic Eruptions with a Wireless sensor Network. *Proceedings of 2nd European Workshop on Wireless Sensor Network*.

Basha, D., & Rus, D. (2007) Design of Early Warning Flood Detection System for developing countries. *Proceeding of the conference on Information and Communication Technologies and Development, Bonsalove, India*, 1-10.

Wirawam, S., Pratoma, I., & Mita, N. (2008) Design of Low Cost Wireless Sensor Network-Based Environmental Monitoring System for Developing Country. *Proceedings of APCC*, 33-40.

Yuwat, C. & Kilaso, S. (2011) A Wireless Sensor Network for Weather and Disaster Alarm System. *Proceedings of International Conference on Information and Electronics Engineering, IPCSIT*, 6, 1 – 5.

Morias, R., Valente, A., & Serodo, C. (2005) A Wireless Sensor Network for Smart Irrigation and Environmental Monitoring. *EFTA/WCCA Joint Congress on IT in Agriculture*, 845 – 850.

Windarto, J. (2010) Flood Early Warning System Develop at Garang River Semarang Using Information Technology base on SMS and Web. *International Journal of Geomatics and Geosciences*, 1. 1-5.

(20) PERSONNEL REQUIREMENT

Position	Percent Time Devoted to the Project	Responsibilities
Project Leader	60%	To oversee all the components
Civil Engineer	30%	Civil works
Civil Engineer	30%	Civil work / Mapping
Electrical Engineer	30%	Electrical works / documentation
Electrical Engineer	30%	Electrical works / documentation
Electronics Engineer	30%	Electronics and Communication
Electronics Engineer	30%	Electronics and Communication
Mechanical Engineer	30%	Mechanical and Fabrication
Electrician	30%	Mechanical and Fabrication
Computer Engineer	30%	Computer programing

(21) BUDGET BY IMPLEMENTING AGENCY



IMPLEMENTING AGENCY	PS	MOOE	EO	Total
Year 1				
Year 2				
Year n				
TOTAL				

(22) OTHER ONGOING PROJECTS BEING HANDLED BY THE PROJECT LEADER: _____ (number)

Title of the Project	Funding Agency	Involvement in the
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		Project
(23) OTHER SUPPORTING DOCUMENTS (Please refer to page 2 for the additional necessary documents.)		

I hereby certify the truth of the foregoing and have no pending financial and/or technical obligations from the DOST and its attached Agencies. I further certify that the programs/projects being handled is within the prescribed number as stipulated in the DOST-GIA Guidelines. Any willful omission/false statement shall be a basis of disapproval and cancellation of the project.

	SUBMITTED BY (Project Leader)	ENDORSED BY (Head of the Agency)
Signature		
Printed Name	EDGARDO LARIRIT	BERNARDO T. QARINGAL
Designation/ Title	KTTO Director Marinduque State College	Provincial S&T Director PSTO Marinduque
Date		

GAD Checklists 2: For the Project Identification and Design Stages

Note: Put 'X' mark on appropriate box

Element and items/question (col.1)	Done? (col.2)			Score for an item/ element (col.3)	Comments/ gender issues identified (col.4)
	No (2a)	Partly (2b)	Yes (2c)		
1.0 Involvement of women and men (max score: 2; for each item, 1)				1	
1.1 Participation of women and men in beneficiary groups in the identification of the problem (possible scores: 0, 0.5, 1.0)		X		0.5	
1.2 Participation of women and men in beneficiary groups in project design (possible scores: 0, 0.5, 1.0)		X		0.5	
2.0 Collection of sex-disaggregated data and gender-related information (possible scores: 0, 1.0, 2.0)	X			0	
3.0 Conduct of gender analysis and identification of gender issues (max score: 2; for each item, 1)				0.5	
3.1 Analysis of gender gaps and inequalities related to gender roles, perspectives and needs, or access to and control of resources (possible scores: 0, 0.5, 1.0)	X			0	
3.2 Analysis of constraints and opportunities related to women's and men's participation in the project (possible scores: 0, 0.5, 1.0)		X		0.5	
4.0 Gender equality goals, outcomes, and outputs (possible scores: 0, 1.0, 2.0) Does the project have clearly stated gender equality goals, objectives, outcomes or outputs?		X		1	
5.0 Matching of strategies with gender issues (possible scores: 0, 1.0, 2.0) Do the strategies and activities match the gender issues and gender equality goals identified?		X		1	
6.0 Gender analysis of the likely impacts of the project (max score: 2, for each item, 0.67)				0.99	
6.1 Are women and girl children among the direct or indirect beneficiaries? (possible scores: 0, 0.33, 0.67)		X		0.33	
6.2 Has the project considered its long-term impact on women's socioeconomic status and Empowerment? (possible scores: 0, 0.33, 0.67)		X		0.33	
6.3 Has the project included strategies for avoiding or minimizing negative impacts on women's status and welfare? (possible scores: 0, 0.33, 0.66)		X		0.33	
7.0 Monitoring targets and indicators (possible scores: 0, 1.0, 2.0) Does the project include gender equality targets and indicators to measure gender equality outputs and outcomes?		X		1	
8.0 Sex-disaggregated database requirements (possible scores: 0, 1.0, 2.0) Does the project M&E system require the collection of sex-disaggregated data?		X		1	
9.0 Resources (max score: 2; for each item, 1)				1	
9.1 Is the budget allotted by the project sufficient for gender equality promotion or integration? OR, will the project tap counterpart funds from LGUs/ partners for its GAD efforts? (possible scores: 0, 0.5, 1.0)		X		0.5	
9.2 Does the project have the expertise to promote gender equality and women's empowerment? OR, is the project committed to investing project staff time in building capacities within the project to integrate GAD or promote gender equality? (possible scores: 0, 0.5, 1.0)		X		0.5	

10.0 Relationship with the agency's GAD efforts (max score: 2; for each item, 0.67)				0.99	
10.1 Will the project build on or strengthen the agency/ PCW/ government's commitment to the empowerment of women? (possible scores: 0, 0.33, 0.67) IF THE AGENCY HAS NO GAD PLAN: Will the project help in formulating the implementing agency's GAD plan?		X		0.33	
10.2 Will the project build on the initiatives or actions of other organization in the area? (possible scores: 0, 0.33, 0.67)		X		0.33	
10.3 Does the project have an exit plan that will ensure the sustainability of GAD efforts and benefits? (possible scores: 0, 0.33, 0.67)		X		0.33	
TOTAL GAD SCORE FOR THE PROJECT IDENTIFICATION AND DESIGN STAGES				8.48	

Interpretation of the GAD score

- 0 - 3.9 GAD is invisible in the project (proposal is returned).
- 4.0 - 7.9 Proposed project has promising GAD prospects (proposal earns a "conditional pass," pending identification of gender issues and strategies and activities to address these and inclusion of the collection of sex-disaggregated data in the monitoring and evaluation plan).
- 8.0 - 14.9 Proposed project is gender-sensitive (proposal passes the GAD test)
- 15.0 - 20.0 Proposed project is gender-responsive (proponent is commended).



DOST Form 5
A – PROJECT WORKPLAN

(1) Program Title: **Grant-in-Aid Program**
(2) Project Title: **Automatic Flood Monitoring System for Boac River**
(3) Total Duration (in months): 36

(4) Planned Start Date: June 2023 (5) Planned End Date: June 2026

(6) OBJECTIVES	(7) TARGET ACTIVITIES	(8) TARGET ACCOMPLISHMENTS (quantify, if possible)	Y1				Y2					Y3					Y4		
			Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Total
Approval of the proposal and signed MOA for funding	Revisions and approval of project proposal and MOA signing	1 approved project proposal	/			1													
		1 approved MOA	/			1													
Procurement of the raw materials for Flood monitoring system and have a contract with LORAWAN service provider.	MSC SBAC to procure the raw materials for Flood monitoring system and secure contract with LORAWAN service provider.	Conduct of Government Procurement process.		/	/	1	/												
Fabricated Flood Monitoring system	MSC team to conduct the fabrication of the Flood Monitoring system	Fabricated three (3) flood monitoring system.			/	3	/	/	/	/	3								
Installation of the system	Installation of the system	Installed three (3) flood monitoring system to identified area.								/	3	/	/			3			
Monitoring & Evaluation	Monitoring & Evaluation	Monitored and evaluated the project outputs and outcomes.										/	/	/	/	1	/	/	1

DOST Form 5
B – EXPECTED OUTPUTS

(1) Program Title: Grant-in-Aid Program

(2) Project Title: Automatic Flood Monitoring System for Boac River

(3) Total Duration (in months): 36

(4) Planned Start Date: June 2023 (5) Planned End Date: June 2026

(9) EXPECTED OUTPUTS (6Ps)	Y1 Objectively Verifiable Indicators (OVIs)				Y2 Objectively Verifiable Indicators (OVIs)					Y3 Objectively Verifiable Indicators (OVIs)					Y4 Objectively Verifiable Indicators (OVIs)		
	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Total
Publications - Apply for IPOPHL registration)			/	1	/												
Patents/IP - Apply for IPOPHL registration			/	1	/												
Products - Developed and deployed three (3) units Automatic Flood Monitoring System			/	3	/	/	/	/	3								
People Services - This is particularly important to the residents, for farmers, agricultural workers and other stakeholders who live in the flood prone areas so that concerned agencies can provide appropriate actions before the harmful effects.								\	1	/	/	/	/	1	/	/	1
Places and Partnerships - 1 MOA between DOST-MIMAROPA and Marinduque State College	/								1								
Policy - N/A																	
(10) POTENTIAL IMPACTS (2Is)																	
Social Impact	The output of the project may lead other government agencies and SUCs to adopt the project for their provincial and regional offices.																
Economic Impact	The project would benefit the community's economic sustainability considering that the project focuses on flood monitoring which aims to mitigate the impact of disaster.																

DOST Form 5
C – RISKS AND ASSUMPTIONS

(1) Program Title: Grant-in-Aid Program

(2) Project Title: Automatic Flood Monitoring System for Boac River

(3) Total Duration (in months): 36

(4) Planned Start Date: June 2023 (5) Planned End Date: June 2026

OBJECTIVES	(11) RISKS AND ASSUMPTIONS	(12) ACTION PLAN (use separate sheet if necessary)
<p>To develop an Automatic Flood Monitoring System that is simple, easy to install, maintain, and troubleshoot.</p> <p>To install the developed system along the Boac-River stretch.</p>	<p>Failure of the procurement process may result in a delay in the delivery of raw materials to be used for the fabrication of . Automatic Flood Monitoring System.</p> <p>Delay on delivery and installation of LORAWAN may result in delay on commissioning for the project.</p> <p>Delay on commissioning of the project may result in delay on project implementation.</p> <p>Assumption: On time procurement process, delivery and installation of equipment, and commissioning of the project will lead to on time project implementation.</p>	<p>Monitoring the strict compliance on the Gantt chart for the conduct of government procurement system.</p> <p>Monitoring the strict compliance on the Gantt chart for the conduct of government procurement system.</p> <p>Monitoring the strict compliance on the Gantt chart for the conduct of government procurement system.</p>
<p>To monitor and evaluate the condition of the Boac river and coordinate with the concerned agencies in the event of adversity.</p>	<p>Failure to conduct monitoring and evaluation of the condition of Boac river and coordinate with MDDRMO Boac may result in heavy casualties in the community during disaster.</p> <p>Assumption: Real time monitoring and evaluation will lessen the probability of having casualties during disaster.</p>	<p>Close monitoring and evaluation in coordination with MDRRMO Boac and other concerned agencies</p>

DEPARTMENT OF SCIENCE AND TECHNOLOGY

Project Line-Item Budget

CY 2023

Program Title : Grant-in-Aid
 Project Title : Automatic Flood Monitoring System for Boac River
 Implementing Agency : Marinduque State College
 Total Duration : 36 months
 Current Duration : 3 YEAR
 Cooperating Agency : DOST MIMAROPA / PSTO Marinduque
 Program Leader : Ma. Josefina P. Abilay
 Project Leader : Edgardo R. Laririt
 Monitoring Agency : DOST-MIMAROPA

		Counterpart Funding	
		Implementing Agency	DOST- MIMAROPA
		To be Transferred	To be Retained
I. Personal Services	P	P	
(Implementing Agency)			
Salaries		2,946,399.30	
Sub-total for PS	P	2,946,399.30	P -
II. Maintenance and Other Operating Expenses			
Traveling Expenses - local		100,000.00	
Repairs and Maintenance (for Buidling Renovation)		100,000.00	
(Monitoring Agency)			
Traveling Expenses (Local)			40,000.00
Supplies and Materials Expenses			
Semi-Expendable Furniture, Fixtures and Books			20,000.00
Expenses - Furniture and Fixtures			
Sub-Total for MOOE	P	200,000.00	P - P 60,000.00
III. Equipment Outlay			
Technical and Scientific Equipment			
3 units (Fabricated Flood Monitoring System)		1,080,000.00	
Information and Communication Technology Equipment			
GATEWAYS & TRANSPONDERS INCLUDING DELIVERY, INSTALLATION & TRAINING			
3 units (Gateway)			
* Includes setup and configuration			
* Includes Annual Maintenance Fee of P33,000 per unit for 3 years		1,197,056.00	
3 units (Transponder)			
Includes Integration with water level sensors			
* Includes setup and configuration			
* Data sending every 15 minutes			
* Includes THREE (3) year service subscription (P350/month x 36 months)			
TRANSPONDERS INCLUDING DELIVERY, INSTALLATION TRAINING			
5 units			
For messaging •		388,800.00	
* Includes WiFi module; with setup and configuration			
*With external antenna for stronger LoRaWAN connectivity			
Sub-Total for EO	P	2,665,856.00	P -
TOTAL	P	3,146,399.30	P 2,665,856.00 P 60,000.00
GRAND TOTAL		P3,146,399.30	P2,725,856.00

DOST Form A

DEPARTMENT OF SCIENCE AND TECHNOLOGY

Project Line-Item Budget

CY 2023

Program Title : Grant-in-Aid
Project Title : Automatic Flood Monitoring System for Boac River
Implementing Agency : Marinduque State College
Total Duration : 36 months
Current Duration : 3 YEAR
Cooperating Agency : DOST MIMAROPA / PSTO Marinduque
Program Leader : Ma. Josefina P. Abilay
Project Leader : Edgardo R. Laririt
Monitoring Agency : DOST-MIMAROPA

Counterpart Funding	
Implementing Agency	DOST- MIMAROPA
To be Transferred	To be Retained

Prepared by:


EDGARDO LARIRIT
KTTO Director
Marinduque State College

Endorsed by:


BERNARDO N. CARINGAL
Provincial S&T Director
PSTO Marinduque

Certified Funds Available:


JOMMEL LEAL
Budget Officer
Marinduque State College


XAVIER MAC DANIEL A. ORTIZ
Accountant III
DOST-MIMAROPA

Approved by:


DR. MA. JOSEFINA P. ABILAY
Regional Director
DOST-MIMAROPA