Project Design Phase-I
Proposed Solution

Date	19 September 2022
Team ID	PNT2022TMID30308
Project Name	Real-time River Water quality monitoring and Control System
Maximum Marks	2 Marks

Proposed Solution:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Farmers put fertilizers and pesticides to improve crop growth. However, these fertilizers and pesticides can be washed out of the soil by rain and eventually washed into rivers. The concentration of nitrates and phosphates in water rises significantly when large amounts of fertilizer and agricultural wastes enter rivers. Algae use these substances to grow and multiply rapidly, turning the water green. This algae overgrowth, called eutrophication, leads to pollution. When algae die, they are decomposed by the action of bacteria. Bacteria multiply rapidly and use up all the oxygen in the water, causing many animals to die.
2.	Idea / Solution description	The Product can be placed in line to the water flow, so that the water can be easily monitored and washed-off with the flow, ease to maintain. Create a design which handles the river environment and works in moist situation. Collect the data from the water and store in the cloud for processing. Smart system to monitor the components and transmit the data without any errors. Set a threshold level for each component to identify harm or safe and notify at the instance of harm. 24/7 Monitoring with rechargeable battery system. All characteristics of water regarding should be noted and the set of data created can be used to predict the cause of the problem and provide a better solution.

		Use sensors like DO sensor (Dissolved Oxygen sensor), TDS (Total Dissolved Solid) Sensor and PH sensor. Microcontrollers like Raspberry pi can be control and efficiency. Use of RAS (Recirculatory Aquaculture System) technology to control the contamination of water. Better understandability in the application for user to understand. The user should be able to monitor and evaluate the level of minerals and chemical substances. End-user should have the data on time, the telecasting should be in sync. In end user application the data set should be represented graphically.
3.	Novelty / Uniqueness	The novelty of this project is that, the product is placed inline to river and thus has the advantage of not washing out with the steam. The product reads and stores the data in the cloud for further processing, completely wireless and deliver the alert as soon as possible. This product has potential to save both marine and human lives which depends on the water bodies.
4.	Social Impact / Customer Satisfaction	People who depend on water bodies are our customers. They will be very satisfied as our product helps them to identify any changes in the chemistry of water at the instance at live, so that actions can be taken. Also, the people like fisher-men are also benefited as they make their lives out of fishes and marine lives. The impact that this product can create is vast and can be implemented almost everywhere.
5.	Business Model (Revenue Model)	As your impact and customer satisfactions are high, we can market out product at ease, even government may contract us to help them monitor the water bodies to help out the people and marine lives. All human lives are dependent on the 3% drinkable water of all the water available on earth, also marine life conservation is importance because, all eco-systems are dependent on each other. So, the market for this product is on demand.
6.	Scalability of the Solution	The proposed solution is global, as all of us are dependent on water, which is very valuable resource, in need of conservation. Thus, the impact is around the globe. This way, the Solution is efficient that it can be implemented in almost every situation possible. Being the product of live conservation with sufficient awareness, this has the potential to save both marine and water bodies dependent lives.