Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	03 October 2022
Team ID	PNT2022TMID18285
Project Name	Efficient Water Quality Analysis and Prediction using Machine Learning
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Enter the input	Get the input values via form and check the data
FR-4	Executive administration	Two separate roles: Early warning/forecast monitoring - that are included in the regulation of monitoring the water environment state and regulatory compliance, such as pollution event emergency management
FR-5	User Requirements	The user needs an accurate and exact result
FR-6	Data Preprocessing	From the raw dataset, obtain the tested and trained data
FR-7	Data Handling	Metrics for the various water bodies' water quality included in the file
FR-8	Quality analysis	Use multiple models to analyse the data on the water's obtained PH, TDS, and temperature levels, among other water quality indicators
FR-9	Model prediction	Based on the water quality index, the confirmation displays the machine learning prediction (Good, Partially Good, Poor) and the proportion of each parameter that is present
FR-10	Remote Visualization	Visualisation of future forecasts using charts based on present and past values of all the parameters

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	A user-friendly web application, the system provides natural interaction with the users
NFR-2	**Security**	The website is virus-free and did not request any authorization. The model has a strong security system since the user's information won't be shared with any other sources
NFR-3	**Reliability**	A wide variety of water values are trained in the model, increasing forecast accuracy. The model may be greatly expanded by adding more datasets
NFR-4	**Performance**	Get the results quickly
NFR-5	**Availability**	Available on the internet at any moment. As long as the user has access to the system, it should be accessible until the user terminates it. The system responds to user requests more quickly, and recovery is completed faster
NFR-6	**Scalability**	It is a lightweight application, the users can access the website through mobile phones, tabs, desktop and laptop. It produces an effective result and has the capacity to alter the system's performance depending on the datasets