**Project Design Phase-I**

**Proposed Solution Template**

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| Date | 24 September 2022 |
| Team ID | PNT2022TMID36055 |
| Project Name | Efficient Water Quality Analysis and Prediction using Machine Learning |
| Maximum Marks | 2 Marks |

**Proposed Solution Template:**

Project team shall fill the following information in the proposed solution template.

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| **S.No.** | **Parameter** | **Description** |
| 1. | Problem Statement (Problem to be solved) | Water quality parameters like BOD, COD, alkalinity, salinity, TDS, etc. to be analysed to formulate WQI (Water Quality Index) for each attribute using a formula for which the proportionality constant value 'k' will be deduced.  Suitability for the usage of the water for different entities will be deduced based on the WQI calibrated. Change of 'k' values for different utilisation domains must be observed. This is done via machine learning techniques. |
| 2. | Idea / Solution description | Water quality parameters like BOD, COD, alkalinity, salinity, TDS, etc. to be analysed to formulate WQI (Water Quality Index) for each attribute using a formula for which the proportionality constant value 'k' will be deduced.  Suitability for the usage of the water for different entities will be deduced based on the WQI calibrated. Change of 'k' values for different utilisation domains must be observed. This is done via machine learning techniques. |
| 3. | Novelty / Uniqueness | In addition to just determining if the provided water sample is usable or not, we may perform much more processing to determine the water's level of usability and use it for the appropriate reasons. |
| 4. | Social Impact / Customer Satisfaction | The water is collected from the water body and analysed by means of its Water Quality Index (WQI). Thus, people can assess the cleanliness of the water bodies whose water they consume and become more proactive and alert towards this issue which can help avert many water-borne diseases like typhoid, cholera, diarrhoea, etc. Thus, there is a tremendous social impact and customer satisfaction that is achieved on testing and predicting the quality of water. |
| 5. | Business Model (Revenue Model) | Premium paid feature which enables the user to easily find out the harmful effects that can be caused by the water body and also categorises the nearby water bodies for different usage capabilities (Crop production, human consumption , marine life and so on) |
| 6. | Scalability of the Solution | The water which is initially collected from small water sources like wells and taps can be expanded to bigger water bodies like rivers, ponds, and other freshwater sources and readings can be taken at multiple areas of the water body and analysed thoroughly. |