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Analysing Urban Sewage Sanitation system
(Using Technology)

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Abstract:- Everyone has the right to live in a healthy environment. Flooding due to obstructed drain is a very common phenomenon in India and many other developing countries that leads to unhygienic surroundings. Because of this, many health issues appear when the air gets poisoned due to sewage gas & soil, ground water gets polluted due to sewage water. As it ensures that the authority can get notified in time and also shows live data, the system can help people in the community live healthier lives. Due to this rapid growth, there is a huge demand on infrastructure maintenance and advancement in technology. This paper describes a smart drainage management system. The drainage system describes the design and mechanism of Whenever the level indicator identifies any blockage in between two manholes then it will trigger an alarm and inform the exact location to the user by highlighting/ message different colour depending upon the distance from the blockage.

Keywords:- *Healthy Environment, Flooding, Devloping Countries, Polluted Due to Sewage Water, Rapid Growth, Gas Sensor, Level Indicator, RIFD).*

I. INTRODUCTION

The idea behind smart drainage system is to replicate natural systems that use cost effective Solutions with low environmental impact to drain away dirty waste water before allowing it to back into the environment. This is to counter the smart drainage system that is often allowed for flooding and pollution of environment.

All successful civilizations throughout the history focused on developing efficient drainage system, diverting both waste water away from drinking water and rain water towards crops in agricultural use. The main changes come into materials and technologies used in drainage system monitoring from past ancient areas to present day. Where once drainage channels are crafted from clay, lead, wood, stone or even from bamboo, now they are constructed from durable materials, PVC, copper, brass, concert etc.

Again after analysis and realization lining the inside of drainage channels with smooth materials would aid the flow of waste water, and many drain clearance companies today specialize in upkeep and maintenance of these drains to ensure that these drains will stay in a good working order. Here the research paper give the solution with smart.

A. Aim of study

Everyone has the right to live in a healthy environment. Flooding due to obstructed drain is a very common phenomenon in India and many other developing countries that leads to unhygienic surroundings. The system can help people in the community live healthier lives.

B. Scope of work

For this governing the flow, collect database and alert of blockages when it's out of condition.

- System governing the flow of sewage from the pipes
- Forecast the database of sewage for new area with same environment
- Get the alerts of blockages and locate them using IOT
- Detect the location of over flow sewage
- Waist water management
- Design of smart sewerage system
- Roads and safety management
- Use the flow sensors to detect the level (variations)
- For New planning or Mapping of area, Sewage pipes data are required
- Health and wellbeing

C. Objective

The main objective is Required changes in the system because of rapid growth in population in urban cities so the infrastructure are effected. The project give knowlage about the mechanism of smart monitoring and blockage of drainage system and clog removal using Internet of Things (IOT).

- Design of smart sewerage system
- Analysis of sewerage network
- Analysis of condition of sewerage over flow
- Alert message to municipality
- The system can help people in the community live healthier lives(reduse manual cleaning)

II. PRIMARY SURVEY

Total 24662 complaints are recorded. From which 14810 complaints are redressed during 24 hours or next working day (data from Performance Assessment made by department in 2015-2016).

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Table 1 Primary Survey

Complaints	Redressed during 24 hours	Remain complaints
24662	14810 (60.16%)	9852 (39.83%)

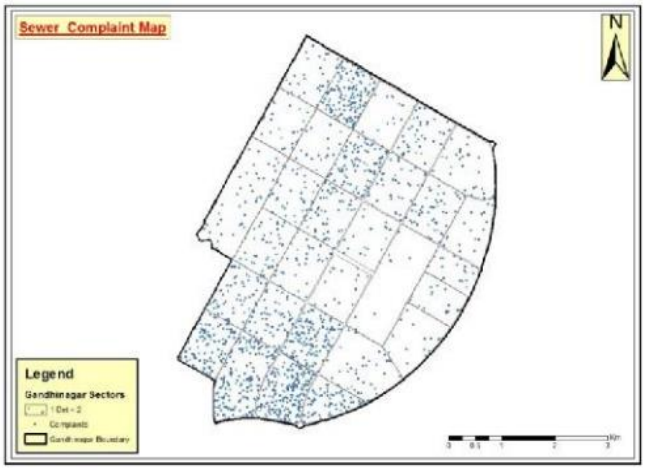

Fig. -1: Sewer complaint map of Gandhinagar

A. Study area (Gandhinagar)

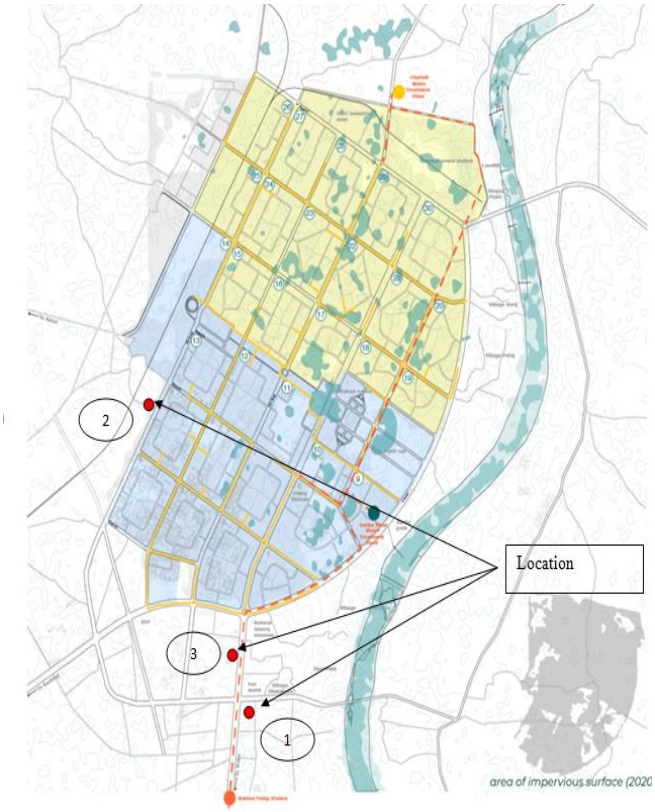

Fig. -2: location of over flow sewer

*Location1 : **Urjanagar 1**Randesan, Gandhinagar, Gujarat 382421, (23.184151, 72.641318)*
*Location2 : **Service Rd,** Infocity, Gandhinagar, Gujarat 382421, (23.187720, 72.638366)*
*Location3: **KH Rd,** Sector 4, Gandhinagar, Gujarat 382016 (23.215125, 72.621545) 19th oct '22*

B. Population forcasting

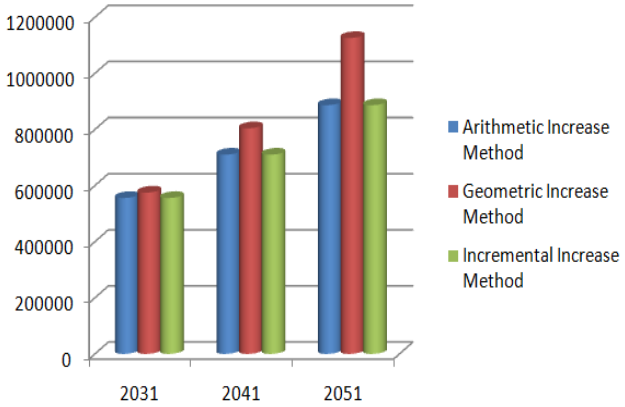

Chart -1: Forecast data from census of 2031, 2041, 2051

III. PROPOSED MODEL

Our project includes the Ultra-sonic sonar sensor, The ESP-8266 MOD , The water level sensor. All sensors here take the analog value and sends the analog value for processing to the microprocessor.

The block diagram given below;

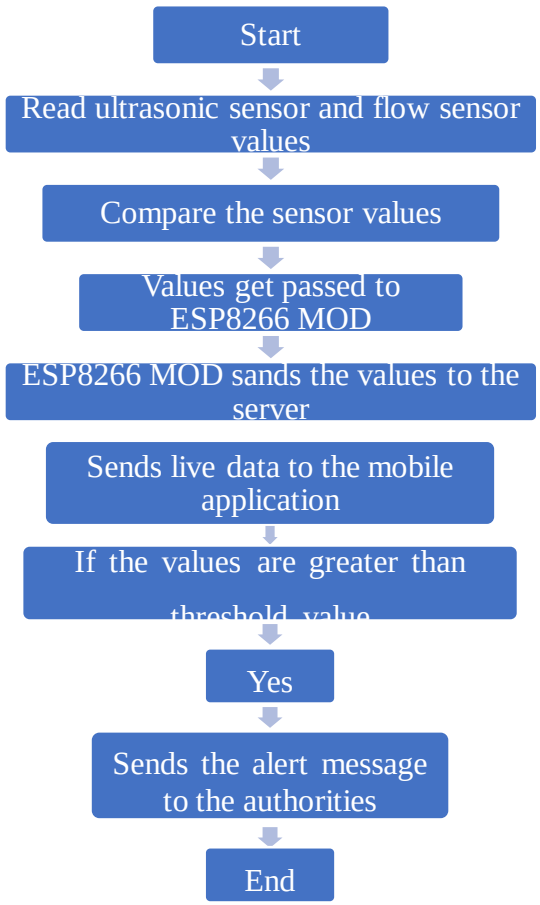

Fig. -3: Methodology of system

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IV. CODE

This code works in arduino

```
 #include <ESP8266WiFi.h>
#include <Wire.h>
#include <Adafruit_Sensor.h>
#include <Adafruit_HCSR04.h>

// WiFi credentials
const char* ssid = "your_SSID"; (change as per your id)
const char* password = "your_password";

// Ultrasonic Sensor
Adafruit_HCSR04 ultrasonic = Adafruit_HCSR04(4, 5);

// LED Pin
const int ledPin = 2;
void setup() {
  // Start serial communication
  Serial.begin(115200);

  // Connect to Wi-Fi
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(1000);
    Serial.println("Connecting to WiFi...");
  }
  Serial.println("Connected to WiFi");

  // Initialize LED pin
  pinMode(ledPin, OUTPUT);
}
void loop() {
  // Measure water level using Ultrasonic Sensor
  float waterLevel = ultrasonic.read();

  // Display the water level
  Serial.print("Water Level: ");
  Serial.print(waterLevel);
  Serial.println(" cm");

  // Control the LED based on the water level
  if (waterLevel < 10) {
    digitalWrite(ledPin, HIGH);
  }
  else {
    digitalWrite(ledPin, LOW);
  }

  // Wait for 1 second before next measurement
  delay(1000);
}
```

Note your ssid and password will change

V. CONCLUSION

This paper describes a smart drainage management system. The drainage system describes the design and mechanism of Whenever the level indicator identifies any blockage in between two manholes then it will trigger an alarm and inform the exact location to the user by highlighting/ message different colour depending upon the distance from the blockage.

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