ERD: ENTITY-RELATIONSHIP DIAGRAM

 **Entities:**

* **Regions:** Represents different regions or communities.
* **WaterSources:** Represents various sources of water available in each region.
* **WaterQuality:** Captures data on water quality tests conducted in each region.
* **HealthData:** Contains information on waterborne diseases reported in each region.

**Relationships:**

* **Regions** have multiple **WaterSources**.
* **WaterSources** have associated **WaterQuality** data.
* **Regions** have associated **HealthData**.

**ERD Structure:**

* **Regions**: RegionID, RegionName, Population, AccessToCleanWaterPercentage
* **WaterSources**: SourceID, RegionID, SourceType, WaterAvailability
* **WaterQuality**: QualityID, SourceID, TestDate, ContaminantLevel, SafetyStatus
* **HealthData**: HealthID, RegionID, DiseaseName, CasesReported, MortalityRate

 **Database Schema (SQL Statements):**

Sql code

CREATE TABLE Regions (

RegionID INT PRIMARY KEY,

RegionName VARCHAR(100),

Population INT,

AccessToCleanWaterPercentage DECIMAL(5,2)

);

CREATE TABLE WaterSources (

SourceID INT PRIMARY KEY,

RegionID INT,

SourceType VARCHAR(50),

WaterAvailability DECIMAL(10,2),

FOREIGN KEY (RegionID) REFERENCES Regions(RegionID)

);

CREATE TABLE WaterQuality (

QualityID INT PRIMARY KEY,

SourceID INT,

TestDate DATE,

ContaminantLevel DECIMAL(5,2),

SafetyStatus VARCHAR(50),

FOREIGN KEY (SourceID) REFERENCES WaterSources(SourceID)

);

CREATE TABLE HealthData (

HealthID INT PRIMARY KEY,

RegionID INT,

DiseaseName VARCHAR(100),

CasesReported INT,

MortalityRate DECIMAL(5,2),

FOREIGN KEY (RegionID) REFERENCES Regions(RegionID)

);

 **Sample Data Population:**

Sql code

-- Inserting sample data into Regions

INSERT INTO Regions (RegionID, RegionName, Population, AccessToCleanWaterPercentage)

VALUES

(1, 'Region A', 500000, 60.5),

(2, 'Region B', 300000, 45.0),

(3, 'Region C', 150000, 80.0);

-- Inserting sample data into WaterSources

INSERT INTO WaterSources (SourceID, RegionID, SourceType, WaterAvailability)

VALUES

(1, 1, 'River', 500.00),

(2, 1, 'Well', 200.00),

(3, 2, 'Lake', 300.00),

(4, 3, 'Spring', 150.00);

-- Inserting sample data into WaterQuality

INSERT INTO WaterQuality (QualityID, SourceID, TestDate, ContaminantLevel, SafetyStatus)

VALUES

(1, 1, '2024-01-01', 3.5, 'Safe'),

(2, 2, '2024-02-15', 10.2, 'Unsafe'),

(3, 3, '2024-03-10', 5.1, 'Safe'),

(4, 4, '2024-04-05', 1.5, 'Safe');

-- Inserting sample data into HealthData

INSERT INTO HealthData (HealthID, RegionID, DiseaseName, CasesReported, MortalityRate)

VALUES

(1, 1, 'Cholera', 150, 2.5),

(2, 2, 'Typhoid', 100, 1.8),

(3, 3, 'Diarrhea', 50, 0.9);