CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this chapter can be explained as well planning for a research from the beginning until the end of the research. This stage is important because the method will affects the results once the data was obtained. Knowing how the data was collected helps the researchers to evaluate the validity and reliability of the results. The methodology adapted in this research was based on theoretical and analysis of the method applied in this field of study. Thus, the methodology will be focus on investigate the status of water quality based on six parameters, selection of sampling locations, methods and defined the sources of pollutant discharge along the research to achieve the objectives. The methodology structure for this research had been modified and design according to the current condition of Tunggak River. The summary of the research methodology is shown schematically in figure 3.2.
3.2 THE STUDY AREA

The study area for this research is at Tunggak River where Tunggak River is a stream in region of Pahang Malaysia. This river has an average elevation of 6 meter above the sea level. The coordinate of Tunggak River is 3°57’0” North and 103°22’1” East in DMS (Degrees Minutes Seconds) or 3.95 and 103.367 in decimal degree. This river originated at the uphill of Gebeng area where the coordinate of Gebeng area is 3°55’0”N to 4°01’0”N and 103°22’0”E to 103°22’0”E. Plus, Tunggak river is joined with another river called Balok river and ultimately flow into South China Sea. The importance of Tunggak river to human and nature is the consideration of the chosen study area for this research. Plus, the location of Tunggak river that surrounded with industrial area which consider as the discharge place for wastewater. The figure 3.1 shows the map of Tunggak River.

Figure 3.1 The map of study area
Figure 3.2: Flowchart of research

1. **Survey for study area**
   - **Study area selection**
     - *(Tunggak River)*
   - **Selection of sampling station**
   - **Sampling**
     - **In situ**
     - **Laboratory Analysis**
       - 1) Biochemical Oxygen Demand
       - 2) Chemical Oxygen Demand
       - 3) Total Suspended Solid
       - 4) Ammoniacal Nitrate
       - 5) Sulphate
       - 6) Phosphate

2. **Data Analysis using NWQS and WQI**
   - **Result and discussion**
   - **Thesis writing**

- 1) pH
- 2) Dissolved Oxygen
- 3) Temperature
- 4) Turbidity

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**Legend**
- **Rectangles** represent processes or tasks.
- **Arrows** indicate the flow of the process.
- **Diamonds** represent decision points.
- **Text boxes** provide details about the tasks.

**Keywords**
- Study area selection
- Sampling
- In situ
- Laboratory Analysis
- Data Analysis using NWQS and WQI
- Result and discussion
- Thesis writing