UNIVERSITI TEKNOLOGI MARA

# INDUSTRIAL TRAINING REPORT

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The internship opportunity I had with Syarikat Air Negeri Sembilan Sdn. Bhd. (SAINS) was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it. I am so grateful for having a chance to meet so many wonderful people and professionals who led me through this internship period.

Thank you to my supervisor from department of production and M&E, ChM. Mohd Aszram Bin Ahmad for helping me during my internship session with abundance of information and helpful feedbacks to ease my journey during the internship. His dedication in helping me and sharing his experience in this field with me are highly appreciated.

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## 1.0 INTRODUCTION

Industrial training is important because it exposes the students to professional skills and experiences in engineering practices. Student is preparing for real working environment as engineers in industrial training. It also helps to produce engineering graduates with technical and soft skills competency. Industrial training is one of the requirements to fulfill this course to complete the diploma as well as graduated from university.

Universiti Teknologi MARA (UiTM) Kampus Pasir Gudang provides the industrial period for 17 weeks from 21st March 2021 to 15th July 2021. The objective for industrial training is to train students to practice actual engineering knowledge and skills at the industry. Students obtain hands-on experiences and know the real job scenarios. Students gained leadership skills and responsible to execute and perform the given task.

Next, industrial training is the platform to practice and implement soft skills in actual engineering working environment such as project manager skill, planning skill, designing skill, presentation skill and writing skill. Soft skills can be divided into six main groups which are problem solving ang critical thinking, communication, teamwork, ethical perspective, emotional intelligence, and creative thinking.

Furthermore, from industrial training, students have insights into the future professional life of engineers. This provides opportunities for students to learn from one another. When students are handling a project, students can work with his peers, building teamwork and group skills. Moreover, project management provides motivation and inspiring the team to do the best.

In conclusion, industrial training provides many advantages and benefits to student. During the period of industrial training, student was exposed to many activities in the field of duties. Students learns social skills such as communication and work in the real working environment.

## 2.0 COMPANY: SYARIKAT AIR NEGERI SEMBILAN SDN. BHD.

### 2.1 COMPANY BACKGROUND

Syarikat Air Negeri Sembilan Sdn Bhd (SAINS) was incorporated as a public company under Section 16 (4) of the Companies Act 1965 on 15 March 2007. SAINS was transformed into a private company on 19 September 2008. SAINS has been responsible for taking over the role and function of the supply system management in Negeri Sembilan from the Jabatan Bekalan Air Negeri Sembilan (JBANS) from 1 January 2009. SAINS is wholly owned by the Menteri Besar of Negeri Sembilan (Corporation) or Menteri Besar of Negeri Sembilan Incorporation (MBI). SAINS is licensed by the Suruhanjaya Perkhidmatan Air Negara (SPAN) under Section 9 of the Akta Industri Perkhidmatan Air 2006 (AIPA 2006). SAINS also ensuring quality water supply for all residents of Negeri Sembilan. SAINS will also continue to improve the quality of its services to all the residents in Negeri Sembilan. SAINS responsibilities include production and distribution of treated water to consumers in the distribution area, maintain each new infrastructure and operational improvements and develop raw water resources in accordance with the guidelines set by the State Government.

#### 2.1.1 Company Objective

The main objective of SAINS is to provide quality services to meet the needs of each customer and stakeholders. Each SAINS staff is committed to achieving the following key objectives:

**Optimal Operation**

- Ensure improvements in line with technological developments in every aspect of SAINS operations while controlling costs, reducing losses and impacts from day-to-day operations.

**Financial Position**

- As a business company, SAINS needs to ensure the efficient execution of operations while generating reasonable financial returns.

**Customer Satisfaction**

- SAINS will prioritize meeting the needs and exceeding customer expectations. Customer satisfaction is part of the Key Performance Indicator (KPI). SAINS needs to

provide services that are reliable, efficient and at an affordable rate. This company will also always be committed in getting feedback from customers to enable improvement efforts to be carried out in line with their expectations.

**Quality Water**

- SAINS needs to supply treated water that meets national standards and the Ministry of Health Malaysia, manages treated waste emissions in accordance with legislation in line with customer needs, community health and ecological systems. The full achievement of the Quality Assurance Program is the goal of SAINS.

### 2.1.2 Company Mission and Vision

**MISSION**

- Provide a continuous supply of water that meets national standards, economically.

**VISION**

- To be the best treated water operator through excellence, innovation and a responsible attitude towards the community and the environment.

### 2.1.3 COMPANY FUNCTION

Responsible of organization:

- Production and distribution of treated water to consumers in distribution areas
- Maintaining each new infrastructure and operational improvements
- Developing raw water resources in accordance with guidelines set by the State Government

## 2.2 ORGANIZATION CHART

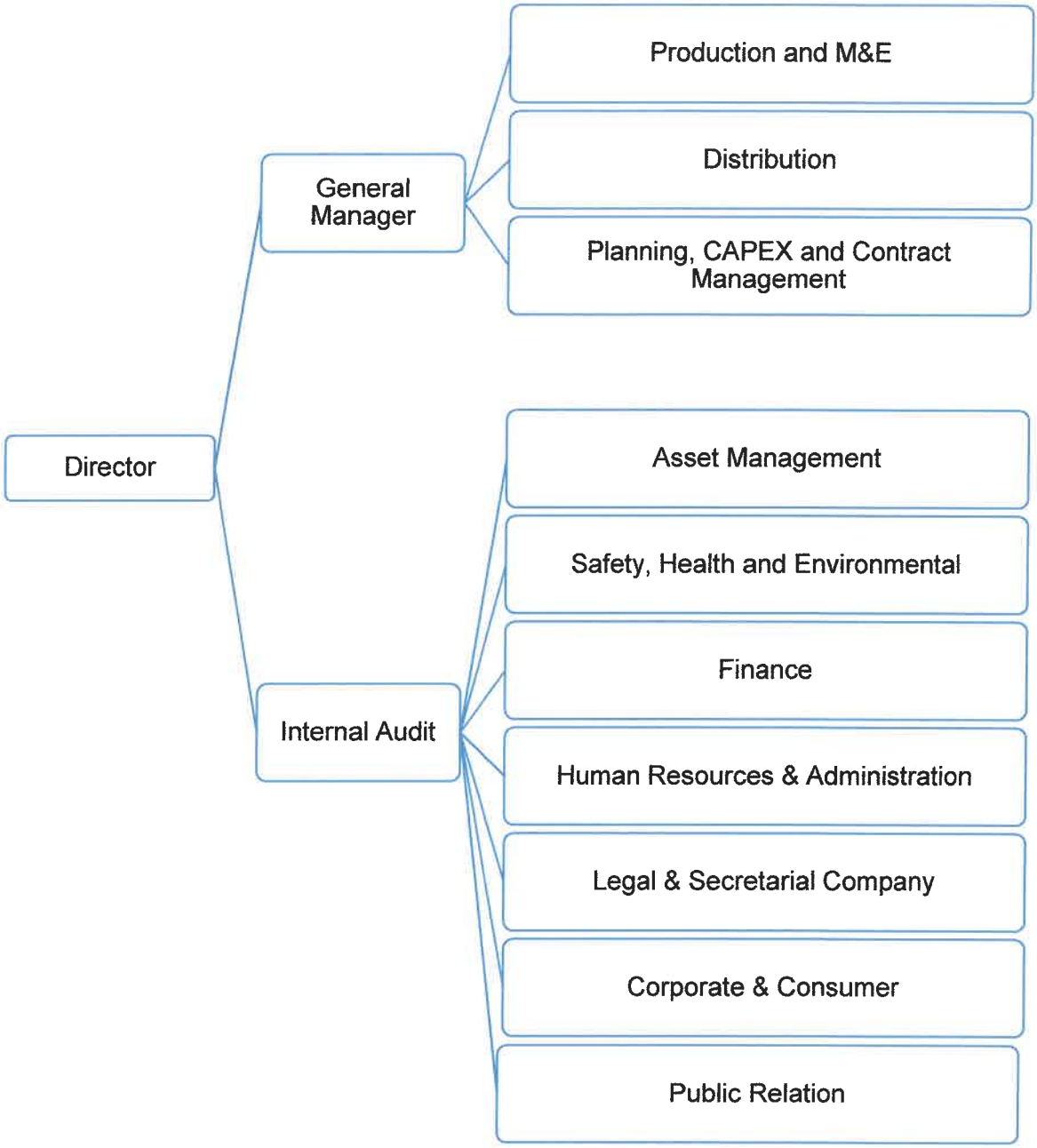


*Figure 2.2.1 SAINS Organizational Chart*

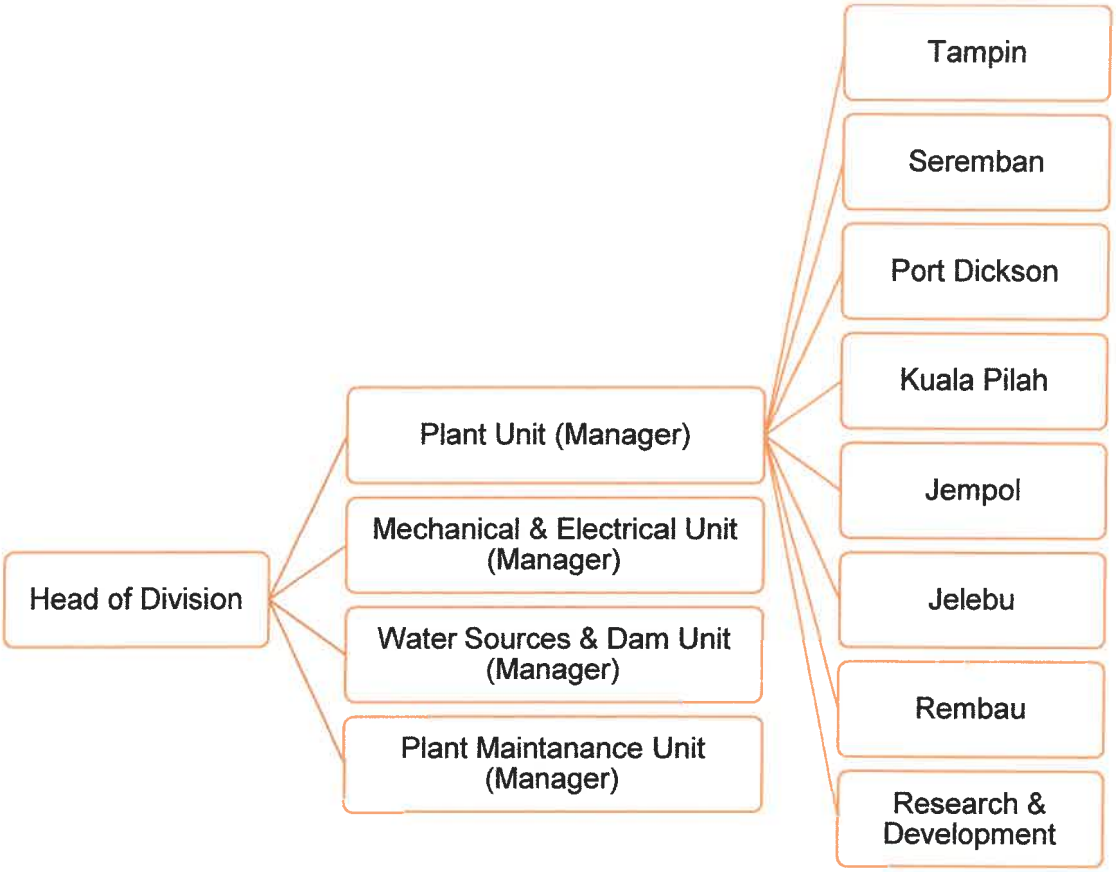


*Figure 2.2.2 Production and M&E Organizational Chart*

## 3.0 NATURE OF BUSINESS: WATER TREATMENT PLANT

The number of water treatment plants under the supervision of Syarikat Air Negeri Sembilan Sdn Bhd (SAINS) is twenty-three, located in seven districts of Negeri Sembilan which are Seremban, Jelebu, Rembau, Tampin, Kuala Pilah, Jempol, and Port Dickson. Twenty-one water treatment plant is fully operated by SAINS while the other two water treatment plant is operated by Hatimuda Sdn Bhd. Operator of Hatimuda Sdn Bhd is paid by SAINS. The water treatment plant that is operated by Hatimuda Sdn Bhd are Sungai Terip Water Treatment Plant and Ngoi-ngoi Water Treatment Plant which are in Seremban district. The list of the water treatment plant for the seven districts is shown in Table 3.0.1.

Water treatment is important to achieve the company mission which is to provide a continuous supply of water that meets national standards, economically. Each water treatment plant needs to comply with all process and procedure guided by MS ISO 9001:2015. The process flow includes raw water intake, aeration, flocculation, sedimentation, filtration, disinfection, clear water tank and lastly the treated water is pump to the balancing tank before being distribute to the consumers in the area.

Figure 3.0.1 shows a general process in every water treatment plant. The purpose of water treatment plant is to get the best treated water where the raw water will undergo the process before being distributed to all the consumers. There are two sources of raw water which are from river and dam. There are some differences between dam and river sources. Dam has low turbidity value than river. This is because river has the high chances of being polluted. Furthermore, the surface of the dam has the lower values of manganese and iron than the bottom of the dam but class I river has the lowest value of manganese and iron as the water is not polluted. There are 4 main rivers and 7 dams that are used for 23 water treatment plant in Negeri Sembilan. Most of the water sources for every plant are from river which needs to undergo water treatment process efficiently for obtaining the best quality treated water.

## 3.1 INTAKE

Water sources is treated with several processes. Raw water source is either from river or dam. Firstly, the process is started with intake or known as screener. This process is done to block foreign object such as rubbish, tree branches and leaves that can damage the pump system. From intake, raw water is sampled to do the in-situ test. The in-situ test is to test pH, turbidity and colour. The result will be recorded in worksheet after being tested. Before the test, the instrument is calibrated to ensure the result is accurate.

*Figure 3.1.1 Intake of Kuala Pilah Water Treatment Plant*

*Figure 3.1.2 Intake of Pedas Baru Water Treatment Plant*

*Figure 3.1.3 Rotary Drum Screening in Sawah Raja Water Treatment Plant*

### 3.2 GRIT CHAMBER

Next, it will undergo grit chamber which is used to remove suspended inorganic particles and grit which is consist of sand, cinder, gravel, or other dense solid particles with a high specific gravity than organic solids in raw water.

### 3.3 AERATION AND PRE-DOSING

The ventilation process or aerator takes place together with pre-dosing, where coagulant agent is added which are Aluminium Sulphate Liquid, Aluminium Chlorohydrate (ACH) or Polyaluminium Chloride (PACl). Aerator increases the oxygen to the raw water to change soluble substance such as iron and manganese to insoluble substance and releases soluble gas such as carbon dioxide and hydrogen sulphate. Moreover, the aerator reduces unwanted smell, taste, and color. There are two types of aeration process which are water to air and air to water. Water to air type are cascade aerator, circular cascade, and spray aerator while air to water are venturi aerator and draft tube aerator. Then, there are pre-chlorine and pre-lime process where pre-chlorine can control the smell, taste, and algae growth while pre-lime will optimize the pH value for coagulant agents.

*Figure 3.3.1 Aerator and pre-dosing of Pedas Baru Water Treatment Plant*

are two types of sedimentation tank which are horizontal type such as plain sedimentation tank and lovo tank, and vertical type such as conical clarifier. Both have the advantages and disadvantages. Horizontal type can overcome high turbidity and high sludge, but it requires a bigger space. Vertical type saves space and easy for sludge cleaning but cannot contain high content of sludge and keeps desludging.

*Figure 3.5.1 Sedimentation Tank in Kuala Klawang Water Treatment Plant*

*Figure 3.5.2 Sedimentation Tank in Kuala Pilah Water Treatment Plant*

## 3.6 INTERMEDIATE-DOSING

Intermediate dosing is where the hydrated lime is being added and dosed to the water after sedimentation process. The function of intermediate lime is to stabilize the pH of the water as the pH is lowered during the coagulation process because of the addition of coagulant.

*Figure 3.6.1 Intermediate dosing in Kuala Klawang Water Treatment Plant*

## 3.7 FILTRATION

Sediment water will be filtered out through sand filter to segregate floc and other foreign materials in filtering process. There are four types of filters which are slow sand filter, rapid sand filter, pressure filter and up-flow filter (dyna sand filter). Filter is cleaned after 72 hours or achieved head loss (which one come first). It needs to be cleaned to overcome bacteria and algae growth.

*Figure 3.7.1 Pressure Filter in Ulu Bendul Water Treatment Plant*

*Figure 3.7.2 Rapid Sand Filter in Lakai Water Treatment Plant*

### 3.8 POST-DOSING

Then, post dosing process is done which are post-chlorine, fluoridation, and post-lime. Post-chlorine helps to eradicate germs, fluoridation to strengthen teeth and prevent tooth damage and lastly, post-lime is to optimize the safe pH value for consumers.

*Figure 3.8.1 Fluoride Dosing in Kuala Klawang Water Treatment Plant*

### 3.9 CLEAR WATER TANK

Lastly, the treated water will be stored in a clear water tank and later to the balancing tank or service reservoir before being distribute to the consumers through distribution pipes.

*Figure 3.9.1 Clear Water Tank in Titi Water Treatment Plant*

The list of the water treatment plant for the seven districts is shown in the table below:

| Districts | No | Water Treatment Plant |
|---|---|---|
| Seremban | 1 | Pantai |
| | 2 | Sungai Terip |
| | 3 | Ngoi-ngoi |
| Jelebu | 4 | Kuala Klawang |
| | 5 | Titi |
| | 6 | Lakai |
| Rembau | 7 | Pedas Lama |
| | 8 | Pedas Baru |
| | 9 | Sawah Raja |
| Tampin | 10 | Gemencheh |
| | 11 | Dangi |
| | 12 | Pasir Besar |
| | 13 | Gemas Baru |
| Kuala Pilah | 14 | Ulu Bendul |
| | 15 | Talang |
| | 16 | Kuala Pilah |
| | 17 | Bukit |
| | 18 | Tengkek |
| | 19 | Kepis |
| Jempol | 20 | Bahau |
| | 21 | Jempol |
| | 22 | Kuala Jelai |
| Port Dickson | 23 | Sungai Linggi |

*Table 3.0.1 Water Treatment Plant in Negeri Sembilan*

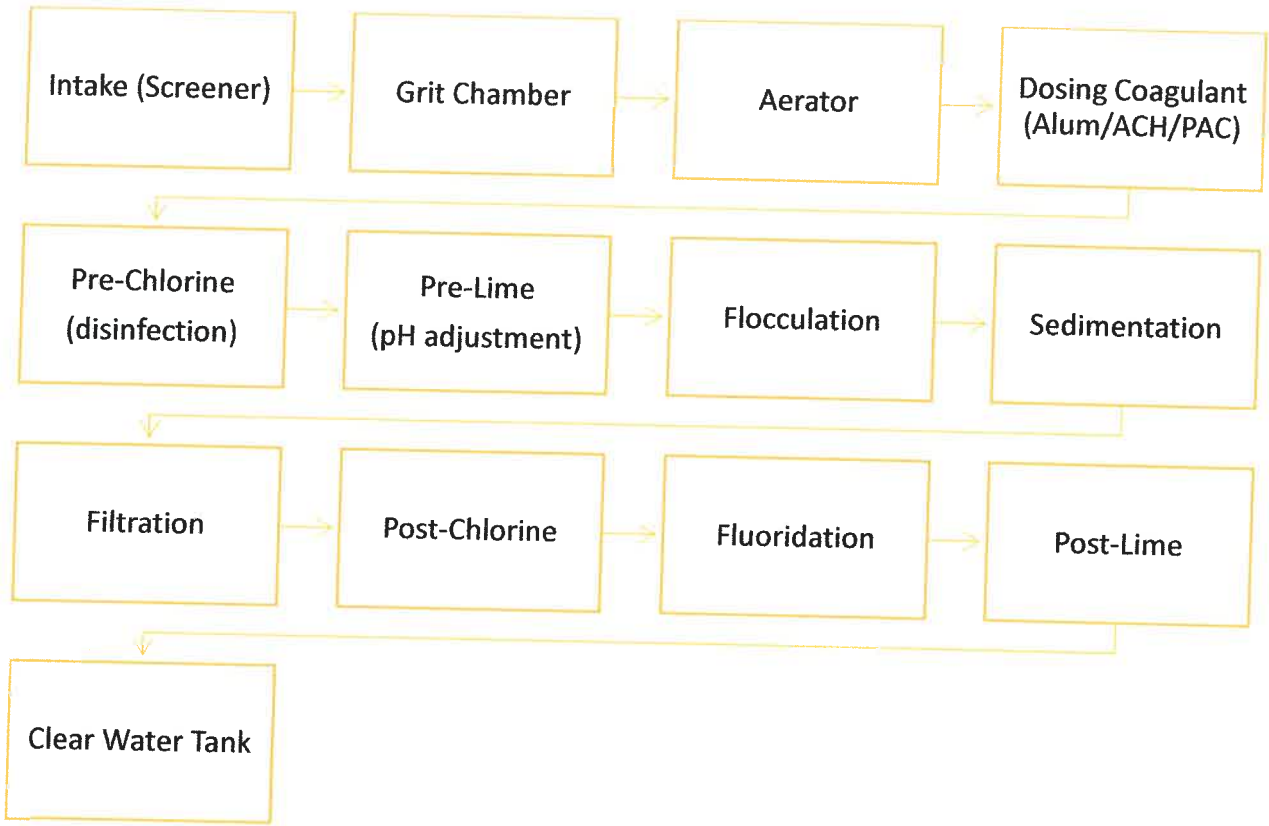


*Figure 3.0.11 Main Water Treatment Process Flow Chart*

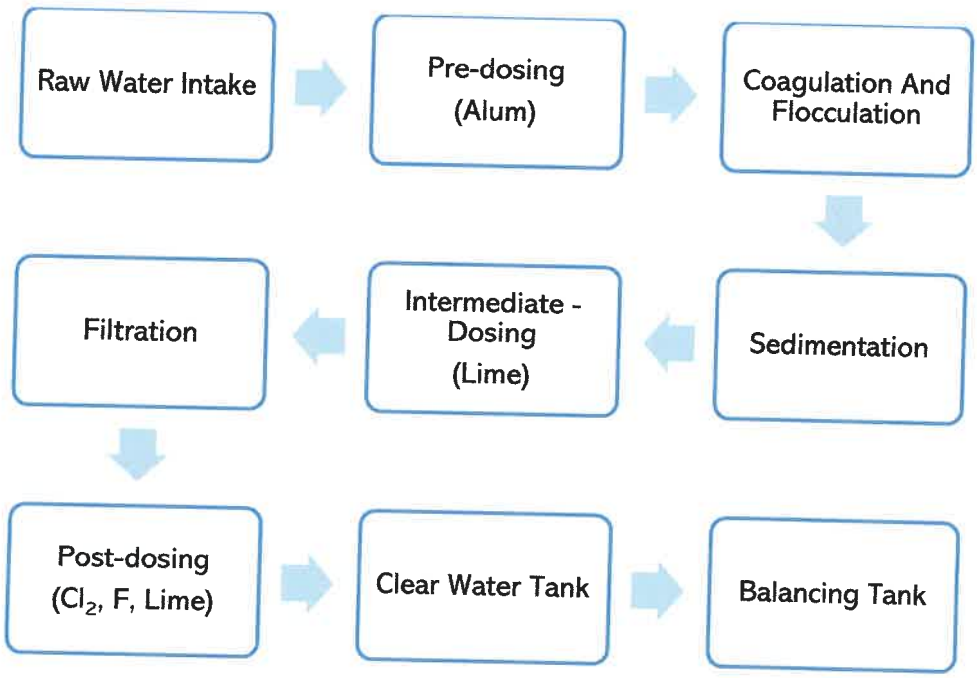


*Figure 3.0.2 Kuala Klawang Water Treatment Plant Flowchart*

## 4.0 ACTIVITIES

### 4.1 SANITARY SURVEY PROGRAM AND ANALYTICAL TESTING

Sanitary survey is an on-site inspection program and evaluation of the water source and its adequacy, facilities, equipment, operation and maintenance of a water-supply system, and its capability for producing and distributing safe drinking water. Sanitary survey will be conducted four times a year along Sungai Rembau, Sungai Teriang, Sungai Muar, and Sungai Linggi. Next, analytical testing is done for all the water sample. They are tested in eight parameters which are turbidity, pH, temperature, color, Aluminium, Ferum, Manganese and Ammonia. These tests are done to find out whether the water sample followed the specifications or not. Raw water has their own parameter except color, temperature, and Aluminium. The results of the analytical testing of the sanitary survey will be channelled to Badan Kawal Selia Air Negeri Sembilan and Suruhanjaya Perkhidmatan Air Negara (SPAN) for further action.

*Figure 4.1.1 Sanitary Survey along Sungai Rembau*

*Figure 4.1.2 Analytical testing*

*Figure 4.1.3 Instruments for Chemical Testing Analysis*

## 4.2 JAR TEST

Jar test's purpose is to determine the design of plant and optimum concentration of coagulant to be added to the source water. It consists of simulation of coagulation, flocculation, and sedimentation in water treatment process and lab scale of water treatment plant. Before the jar test is done, some parameters are tested which are pH, turbidity, iron, and manganese. Coagulation simulation is a rapid mix, 250 rpm for 1 minute, for flocculation is at slow mix, 50 rpm for 10 minutes, and then for sedimentation is at sediment, 0 rpm for 20 minutes. At the slow mix for 10 minutes, flocculation size and the turbidity can be observed. For sedimentation, the speed will decrease to 0 rpm, the speed of the floc to sediment and the color of the water sample will be observed. Next, from the jar test, some parameters also will be tested after the sedimentation process is done. The parameters are turbidity, iron, manganese, and aluminium analysis.

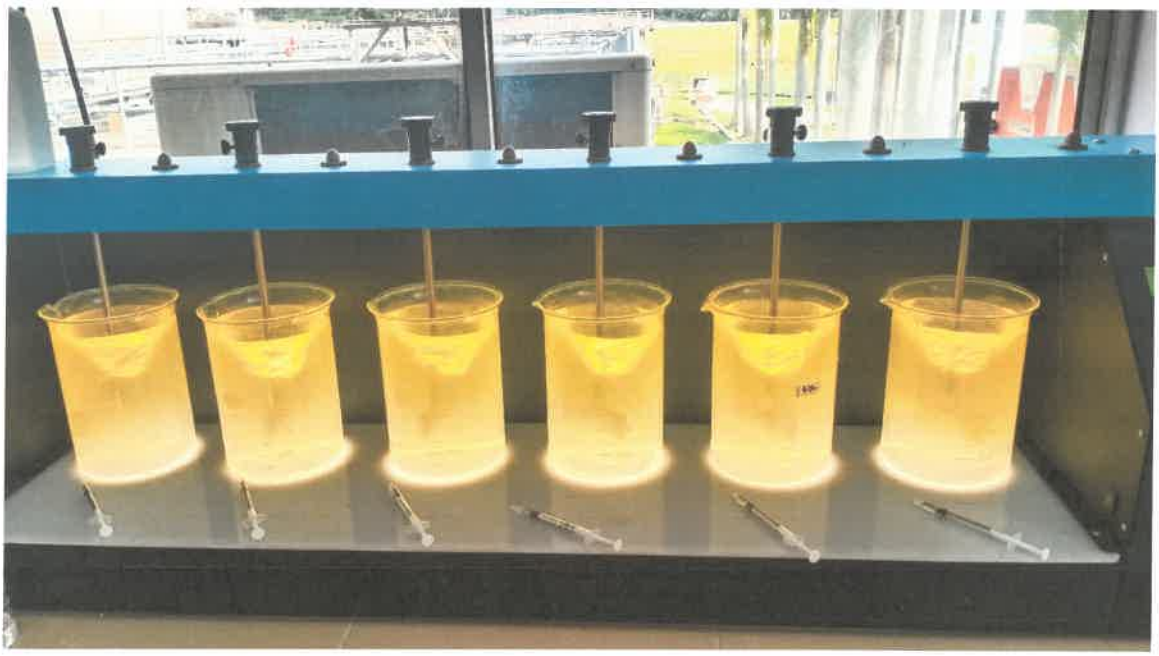

*Figure 4.2.1 Jar Test at Sungai Linggi Water Treatment Plant*

### 4.3 Chemical Oxygen Demand (COD) and Biological Oxygen Demand (BOD) test

Chemical Oxygen Demand (COD) and Biological Oxygen Demand (BOD) functions to check the wastewater to prevent water pollution. COD test is the amount of oxygen that is required to oxidize organic compounds in the wastewater while BOD test is the amount of oxygen required by microorganisms to degrade or break down organic microorganism present in the wastewater. This test is done once a month for 5 final effluent of sludge treatment samples which are from Sungai Linggi Water Treatment Plant effluent, Sungai Linggi Water Treatment Plant sludge landfill, Ngoi-Ngoi Water Treatment Plant, Sawah Raja Water Treatment Plant and Jempol Water Treatment Plant. The method that is used for COD test and BOD test is HACH method.

Chemical Oxygen Demand (COD) Procedure:

1. DRB200 Reactor was power on and preheat at 150°C.
2. The sample was prepared. The cap from a vial was removed for selected range. The vial was hold at 45° and 2mL of sample was pipetted to the vial.
3. The blank was prepared. The cap from a vial was removed for selected range. The vial was hold at 45° and 2mL of deionized water was pipetted to the vial.
4. The vial was tightly closed. The vial was rinsed with the water and wipe with paper towel.
5. The vials were hold by the cap, invert gently several times to mix and the vials get hot during the mixing.
6. The vial was put in the preheated DRB200 Reactor and the lid was closed.
7. The vials were heated for 2 hours.
8. The reactor was turned off. The vials were let cool in the reactor for 20 minutes.
9. Each vial was inverted several times while it still warm.
10. The vials were put in a tube rack to cool to room temperature.
11. Program 435 HR was started. The blank sample was cleaned.
12. The blank sample was inserted in cell holder and push 'ZERO'.
13. The prepared sample cell was cleaned and insert in the cell holder.
14. Push 'READ' and the result was recorded.

*Figure 4.3.1 LR Digestion Vial*

*Figure 4.3.2 Preparing Sample*

*Figure 4.3.3 Heat in DRB200 Reactor*


*Figure 4.3.4 Read the COD Reading*

Biochemical Oxygen Demand (BOD) Procedure:

1. 6 litre buffer solution was prepared and put in the incubator for 24 hours.
2. 3 sample volumes were identified to use in the test.
3. The sample was prepared and gently stir the sample.
4. Pipet was used to add the sample volumes to three 300mL BOD bottles.
5. Each of the bottle was filled with prepared buffer solution.
6. A stopper was inserted carefully in each bottle to prevent trapped air bubbles. The bottles were inverted several times to mix.
7. The blank sample was prepared. Another 300mL BOD bottle was filled with prepared buffer solution.
8. A probe was used to measure the dissolved oxygen concentration in each bottle.
9. Stopper was inserted in each bottle to prevent trapped air bubbles.
10. The prepared sample bottles were kept in an incubator for 5 days
11. After 5 days, the remaining dissolved oxygen was measured in each of the prepared samples.

*Figure 4.3.5 Buffer Solution*

*Figure 4.3.8 Put Stopper to prevent trap air bubbles*

*Figure 4.3.9 Incubator*

## 4.4 SUNGAI LINGGI WATER TREATMENT PLANT SODIUM SILICO FLUORIDE STUDY

The objective for this study is to change the fluoride used from Sodium Fluoride to Sodium Silico Fluoride to reduce the cost used as the Sodium Silico Fluoride is much cheaper than Sodium Fluoride. This study consists of two phases for 3 different percentage study which are 0.69%, 0.86% and 1.03%. This study is run about 3 months to obtain the best result of fluoride dosing to the filtered water. From this study, spike sample is prepared to get the best solubility of Sodium Silico Fluoride with speed required and time taken to dissolve. From the Sodium Silico Fluoride solution, it is dosing at different volume to obtain the great dosing for the filtered water and is test and read to observe the best result. From the spike sample, it is run at the actual plant. Next, the fluoride is test for every hour or 2 hours. From the result, the data was analyzed for 3 different percentages. For this study, 0.86% is the best data than 0.69% and 1.03%. 0.86% is the most stable, most soluble, and optimum for Sungai Linggi water treatment plant. From this study, total cost reduction from Sodium Fluoride to Sodium Silico Fluoride for a year is RM 57,031.25.

*Figure 4.4.1 Weighing the Sodium Silico Fluoride Powder*

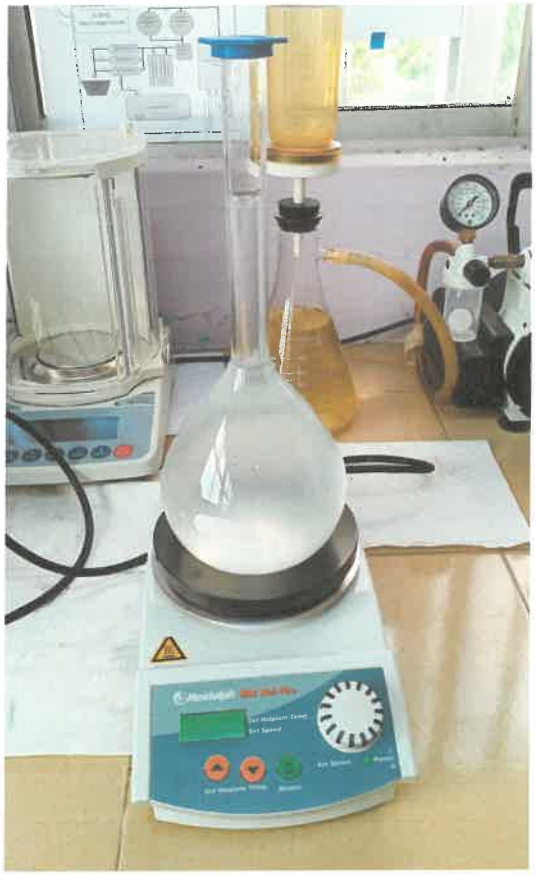

*Figure 4.4.2 Solubility of Sodium Silico Fluoride*

*Figure 4.4.3 Fluoride testing*

## 4.5 CHANGING OF RAW WATER SOURCE IN PEDAS BARU WATER TREATMENT PLANT

The purpose of this activity is to change the raw water source from river to dam water. This is because there is a leakage from the old water source and the construction is done for a month. This activity is done for a month to identify the suitability of dam water to be used in the water treatment plant. Next, jar test is conducted for a week and chemical lab analysis is done to get the best result before applying the raw water source at the actual plant. Next, from the jar test, the optimum dosage of coagulant was obtained which are aluminum chlorohydrate (ACH) at 30 ppm and at pH, 9.3. Then, ACH solution was prepared before pre-dosing at the aerator. Pump calibration was done using clock and bucket method and the aerator needs to be emptied to do the pump calibration. After that, dam water valve was opened to change the water source. Moreover, water sample pipe was tagged to indicate where the water sample is coming from. After changing the water source from river to dam, chemical lab analysis was done to check that the water quality follows the specification of National Drinking Water Quality Standard (NDWQS). The parameters that are monitored are turbidity, pH, iron, manganese, and aluminium. Based on the water analysis result, this activity is concluded successful as the sludge blanket is formed and the water quality follow the specifications.

*Figure 4.5.1 Water Sample for Jar Test*

*Figure 4.5.22 Jar test and Chemical lab analysis*

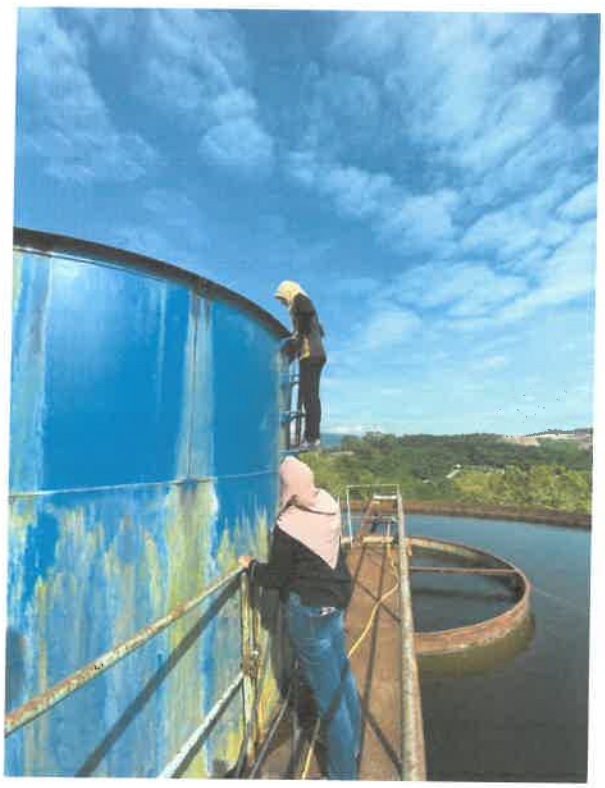

*Figure 4.5.3 Checking aerator before calibration*


*Figure 4.5.63 Tagging water sample pipe*


*Figure 4.5.7 Testing every 1 hour*

*Figure 4.5.8 Formation of sludge blanket*

## 4.6 FLUORIDE BREACH STUDY

This activity is done to analyze the data from the plants that have fluoride breach for January, February, and March 2021. Some data is collected which are Water Quality Analysis Records, Chemical Dosage Records, Chemical Preparation Records and Pump Calibration Records. From these records, the data is analyzed and calculated for every plant to know the problem. Next, the fluoride tank is measured as the measurement is used in the calculation to get the percentage of the fluoride solution. Then, after detecting the problems, we advised the water treatment plant to perform corrective measure and followed up with the water treatment plant about the fluoride reading to ensure that the plants obey the water specifications.

| District | Place | Date | Fluoride Reading |
|---|---|---|---|
| Jempol | Loji Jempol | 27/1/2021 | 0.32 ppm |
| Kuala Pilah | TPO Kuala Pilah Inlet | 4/1/2021 | 0.17 ppm |
| | | 1/2/2021 | 0.23 ppm |
| | | 1/3/2021 | 0.22 ppm |
| | TPO Ulu Bendul | 11/1/2021 | 0.17 ppm |
| | | 8/2/2021 | 0.23 ppm |
| | | 8/3/2021 | 0.29 ppm |
| Tampin | TPO Pasir Besar | 11/1/2021 | 0.13 ppm |
| | | 10/2/2021 | 0.39 ppm |
| | TPO Gemas | 11/1/2021 | 0.10 ppm |
| | | 10/3/2021 | 0.25 ppm |
| Rembau | TPO Pedas Lama Sg. Beringin | 5/1/2021 | 0.14 ppm |
| Jelebu | TPO Ulu Kemin | 1/2/2021 | 0.36 ppm |
| | TPO Kenaboi | 4/1/2021 | 0.08 ppm |
| | TPO Lakai | 6/1/2021 | 0.21 ppm |
| | | 3/2/2021 | 0.29 ppm |
| | | 3/3/2021 | 0.27 ppm |

*Table 4.6.1 Fluoride Breach Study*


*Figure 4.6.1 Gemas Fluoride Study*


*Figure 4.6.2 Pasir Besar Fluoride Study*

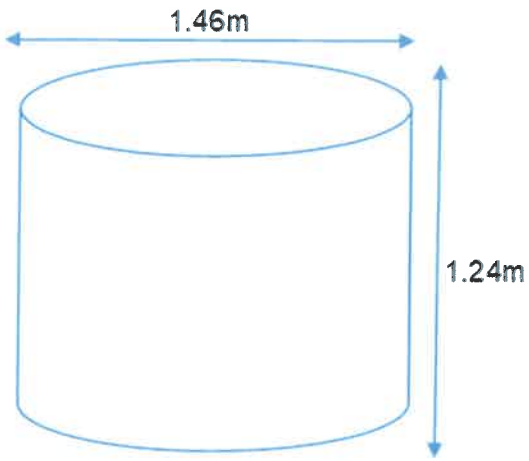


*Figure 5.1 Dimension of Fluoride Tank in Kuala Klawang Water Treatment Plant*

Volume

$= \pi$ X 1.24m X $((1.46m/2)^2)$

$= 2.07622\ m^3$

= 2076.22 L

Percentage of Sodium Silico Fluoride Mixture

= (12.5kg X 100) / 2076.22L

= 0.60 %

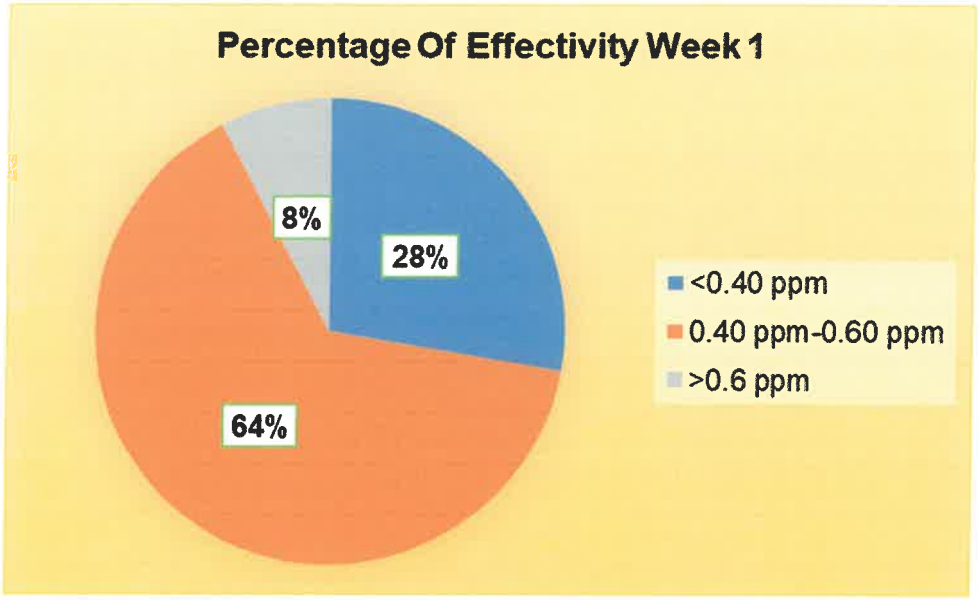


*Figure 5.2 Percentage of Effectivity Week 1*

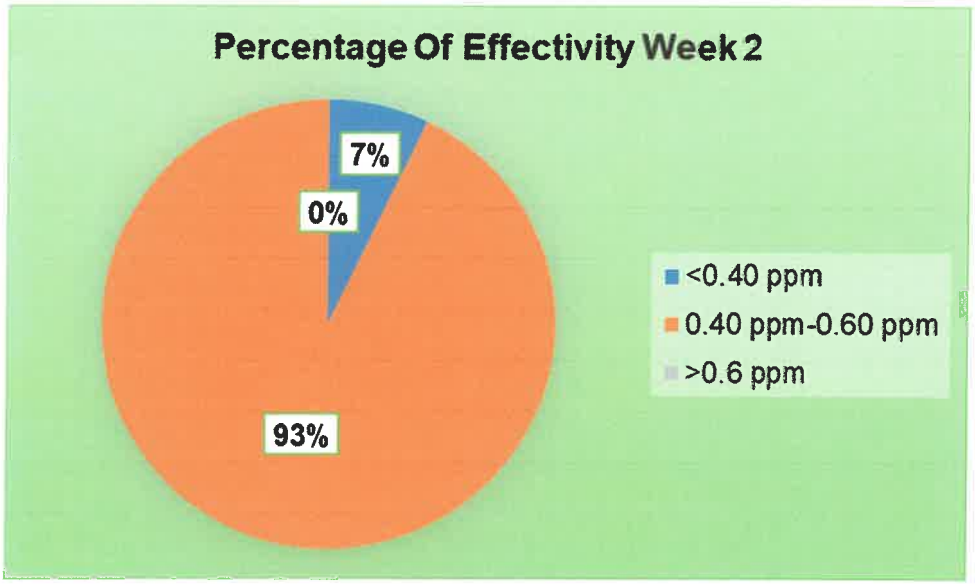


*Figure 5.34 Percentage of Effectivity Week 2*

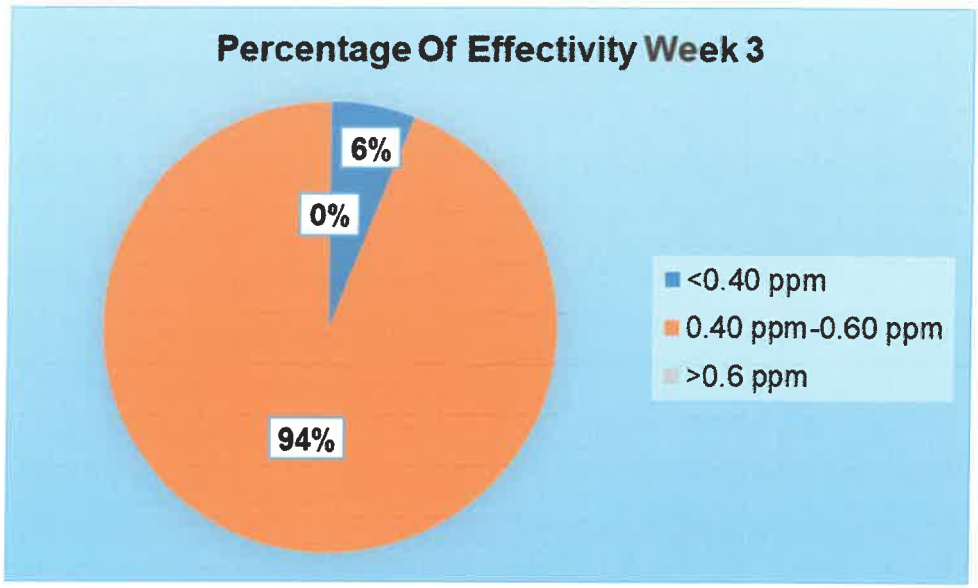


*Figure 5.4 Percentage of Effectivity Week 3*

| | Sodium Fluoride | Sodium Silico Fluoride |
|---|---|---|
| Cost/kg | RM 4.55 | RM 3.30 |
| Mass/day | 4.167 kg | 5.469 kg |
| Price/day | RM 19.00 | RM 18.00 |
| Price/year | RM 6,935.00 | RM 6,570.00 |

*Table 5.1 Comparison of Sodium Fluoride with Sodium Silico Fluoride*

| Percentage effectivity SSF per week (%) | | |
|---|---|---|
| Week 1 | Week 2 | Week 3 |
| **64 %** | **93 %** | **94 %** |

*Table 5.2 Summary of Percentage Effectivity*

## 6.0 CONCLUSION AND RECOMMENDATION

During my internship period, I gained so many new knowledge and new friends. I learned many new lab procedures, mostly by HACH method. Besides, I was introduced to the new chemicals, procedures and instruments. This activity provided chances for me to apply my laboratory skills. Some of the activity that I had learn in the university, such as jar test, chemical oxygen demand (COD) and biochemical oxygen demand (BOD). As in the university, this lab had done by e-lab because I cannot do lab in university due to the pandemic.

Next, I gained a real industry experience. I can apply my knowledge in the real plant. This is the great opportunity for me to identify, observe and practice how engineering is applicable in the real industry. It is not only getting the experiences on technical practices but also management practices and interact with the fellow staff. Also, I learnt the way of work in an organization, the importance of being punctual, the importance of maximum commitment and the importance of team spirit.

Moreover, I learn more about water treatment plant process. Every plant has the different process but with the same function. The design for every plant that I had went is difference to one another. The design is different, but the function is the same. It has the pros and cons for every design.

Lastly, I obtained technical skills and soft skills. Soft skills that I learnt using subjective approaches which is observation by observing how the staff communicates where can acquire communication skills. Furthermore, I learn presentation skill while briefing to the engineer about my project and presentation to the visiting lecturer about my industrial training. These experiences, knowledges and skills can be applied for my future career.

## 7.0 REFERENCES


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ii. Procedure and manual of water quality

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## 8.0 APPENDICES

WEEK 1:

| Range | 21/6/21 | 22/6/21 | 23/6/21 | 24/6/21 | 25/6/21 | 26/6/21 | 27/6/21 |
|---|---|---|---|---|---|---|---|
| **< 0.40** | 5 | 10 | 6 | 0 | 9 | 11 | 2 |
| **0.40-0.60** | 6 | 14 | 7 | 24 | 15 | 12 | 22 |
| **> 0.61** | 0 | 0 | 11 | 0 | 0 | 1 | 0 |

WEEK 2:

| Range | 28/6/21 | 29/6/21 | 30/6/21 | 1/7/21 | 2/7/21 | 3/7/21 | 4/7/21 |
|---|---|---|---|---|---|---|---|
| **< 0.40** | 3 | 4 | 0 | 2 | 0 | 3 | 0 |
| **0.40-0.60** | 21 | 20 | 24 | 22 | 24 | 21 | 24 |
| **> 0.61** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

WEEK 3:

| Range | 5/7/21 | 6/7/21 | 7/7/21 | 8/7/21 | 9/7/21 | 10/7/21 | 11/7/21 |
|---|---|---|---|---|---|---|---|
| **< 0.40** | 2 | 5 | 0 | 0 | 2 | 1 | 0 |
| **0.40-0.60** | 22 | 19 | 24 | 24 | 22 | 23 | 24 |
| **> 0.61** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

TEMPLATE FOR PROJECT:

**KEPUTUSAN UJIAN SODIUM SILICO FLUORIDE (SSF)**

**Tarikh :** _____

| Masa | Set pam (%) | Flow Pam (L/j) | Bacaan Fluorida (ppm) | Kadar Alir Air Mentah (m3/j) | Tangki | Catatan |
|---|---|---|---|---|---|---|
| 08:00 AM | | | | | | |
| 09:00 AM | | | | | | |
| 10:00 AM | | | | | | |
| 11:00 AM | | | | | | |
| 12:00 PM | | | | | | |
| 01:00 PM | | | | | | |
| 02:00 PM | | | | | | |
| 03:00 PM | | | | | | |
| 04:00 PM | | | | | | |
| 05:00 PM | | | | | | |
| 06:00 PM | | | | | | |
| 07:00 PM | | | | | | |
| 08:00 PM | | | | | | |
| 09:00 PM | | | | | | |
| 10:00 PM | | | | | | |
| 11:00 PM | | | | | | |
| 12:00 AM | | | | | | |
| 01:00 AM | | | | | | |
| 02:00 AM | | | | | | |
| 03:00 AM | | | | | | |
| 04:00 AM | | | | | | |
| 05:00 AM | | | | | | |
| 06:00 AM | | | | | | |
| 07:00 AM | | | | | | |