

**PROJECT TITLE:**

SUPPLY AND DELIVERY OF MANPOWER, TOOLS AND EQUIPMENT FOR PEZA MEZ SEWERAGE TREATMENT PLANT (STP) AND WATER RECLAMATION PLANT (WRP) OPERATIONS AND MAINTENANCE  
*[MEZ STP AND WRP OPERATIONS AND MAINTENANCE MANAGEMENT]*

**LOCATION:**

MEZ, IBO, LAPU-LAPU CITY, CEBU

**DATE:**

October 17, 2019

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**A. OBJECTIVES**

- A.1. To efficiently and effectively operate the Sewerage Treatment Plant (STP) and Wastewater Reclamation Plant (WRP), as further defined below, to produce effluents that meet and comply with all pertinent standards set by the Environmental Management Bureau (DENR-EMB).
- A.2. To efficiently and effectively maintain the Sewerage Treatment Plant (STP) and Wastewater Reclamation Plant (WRP), as further defined below, to ensure efficient and effective operation.

**B. GENERAL SCOPE OF WORK**

- B.1. The service provider will perform routine and maintenance work on the various equipment components of the existing Sewerage Treatment Plant (STP) and Wastewater Reclamation Plant (WRP). The work shall also include the repair of reuse water distribution system and sewerage collection lines. **Annex “A”** shows the distribution/collection system of MEZ STP-WRP.
- B.2. The service provider shall provide service four-wheel vehicle to deploy personnel at MEZ Lift Stations, Manhole Station, Sewerage and Storm Lines inspection and connection, Water Reuse Line inspection and installation and for the servicing of maintenance works of pumps and distribution lines. The vehicle must have a load capacity of at least one (1) metric ton and able to carry 15 kilowatt submersible pumps among other tools and equipment (Minimum Requirement: Multicab).

- B.3. The service provider shall provide PEZA all the necessary personnel for the operation and maintenance of STP-WRP, its electro-mechanical components, equipment, safety devices, and control panel system on a twenty-four (24) hours basis daily for a maximum of three (3) shifts per day, seven (7) days a week, including holidays.
- B.4. The service provider shall provide PEZA with qualified technical personnel to operate and maintain the MEZ STP-WRP as follows:

<b>Job Title</b>	<b>No. of Personnel</b>
1. Plant Supervisor	1
2. Administrative Officer	1
3. Registered Electrical Engineer	1
4. Electrician	1
5. Mechanic Pipe Fitter	1
6. Driver - Mechanic	1
7. Welder	1
8. Operator	4
9. Utility Staff	5
<b>TOTAL</b>	<b>16</b>

- B.5. The service provider's head office shall also maintain a twenty-four (24) hours engineering and service back-up group to support the MEZ STP-WRP unit.
- B.6. The minimum qualifications of the technical personnel are as follows:

**B.6.1. Plant Supervisor**

- Licensed Mechanical Engineer
- With a minimum of two (2) years of experience involving sewage treatment and reclaimed water facilities or other similar position
- With twenty-four (24) hours of relevant training
- Computer literate with basic AutoCAD knowledge

**B.6.2. Administrative Officer**

- Completed any four (4) year college course relevant to the job
- Computer literate

**B.6.3. Electrical Engineer**

- Registered Electrical Engineer
- With a minimum of one (1) year of experience involving sewage treatment and reclaimed water facilities or other similar position
- Computer literate with basic AutoCAD knowledge

#### **B.6.4. Electrician**

- Graduate of Electrical Installation and Maintenance NC II
- With a minimum of two (2) years of experience in maintenance work as electrician (preferably in Motor Controls, Programmable Logic Controllers troubleshooting of Sewage Treatment Plant or similar plants)
- Willing to work on 24/7 on-call basis depending on the measures of necessity of the operation

#### **B.6.5. Mechanic Pipe Fitter**

- High School graduate or Vocational Course graduate related to mechanical
- Must have a minimum of two (2) years of experience in maintenance work as pipe fitter/mechanic
- Preferably with experience in centrifugal pumps, submersible pumps and cyclodrive motor repairs
- Willing to work on 24/7 on-call basis depending on the measures of necessity of the operation

#### **B.6.6. Driver / Mechanic**

- High School graduate or Vocational Course graduate related to mechanical or electrical
- Must have a minimum of two (2) years of experience in maintenance work as driver/mechanic
- Preferably with experience in centrifugal pumps, submersible pumps and cyclodrive motor repairs
- Must know how to drive and with driver's license
- Willing to work on 24/7 on-call basis depending on the measures of necessity of the operation

#### **B.6.7. Welder**

- Graduate of related Vocational Course
- Must have a minimum of two (2) years of experience in maintenance work as welder
- Preferably with experience in centrifugal pumps, submersible pumps and cyclodrive motor repairs
- Willing to work on 24/7 on-call basis depending on the measures of necessity of the operation

#### **B.6.8. Operator**

- Graduate of Vocational Course related to mechanical or electrical
- With work experience in Motor Controls, Programmable Logic Controllers (PLC) troubleshooting of Sewage Treatment Plant or similar plants
- Willing to be assigned in shifting schedules

### **B.6.9. Utility Staff**

- High School Graduate
- Willing to be assigned in shifting schedules

B.7. The service provider shall provide the following protective gear and safety equipment for the personnel:

- B.7.1. Safety Boots
- B.7.2. Rubber Gloves
- B.7.3. Working Hand Gloves
- B.7.4. Safety Goggles
- B.7.5. Hard Hat
- B.7.6. Reflectorized Coveralls
- B.7.7. Raincoat
- B.7.8. Face Masks
- B.7.9. Rechargeable Handheld Flashlight

B.8. Only STP-WRP operators and staff nominated by the service provider at the time of tender shall be assigned at the facilities. Substitution of personnel may only be allowed after prior evaluation and approval of PEZA.

B.9. PEZA reserves the right to increase/decrease the number of personnel and hours of duty, as it deems necessary.

B.10. PEZA MEZ Environment, Health and Safety Division (EHSD) shall be the entity that shall act as the Supervising Unit and Pollution Control Officer of the facility and as such be responsible with compliance requirements of concerned government agencies.

## **C. SPECIFIC SCOPE OF WORK**

PEZA, thru EHSD, shall designate a Supervising Officer/Pollution Control Officer that shall direct, check, monitor and coordinate the performance of the following operations/services that shall be undertaken by the service provider/contractor:

### **C.1. TECHNICAL ASPECT**

C.1.1. The service provider shall properly operate, maintain, and secure the MEZ STP-WRP twenty-four (24) hours daily in three (3) shifts, including weekends and holidays, to wit:

- C.1.1.1. Sewerage Treatment Plant
  - C.1.1.1.1. Lift Stations/Grit Chamber
  - C.1.1.1.2. Aerated Lagoons
    - Complete Mixing Aerated Lagoon (CMAL)
    - Partial Mixing Aerated Lagoon (PMAL)
  - C.1.1.1.3. Settling Tanks

- C.1.1.1.4. Chlorinator System
- C.1.1.1.5. Distribution Boxes
- C.1.1.1.6. By-pass with Sluice Gate Valve
- C.1.1.1.7. Chlorine Contact Chamber

- C.1.1.2. Water Reclamation Plant
  - C.1.1.2.1. Holding Tanks
  - C.1.1.2.2. Sump Pumps
  - C.1.1.2.3. Pressure Sand Filter Tanks
  - C.1.1.2.4. Booster Pumps
  - C.1.1.2.5. Chlorinator
  - C.1.1.2.6. Sludge Drying Bed

This includes the routinary desludging of the aerated lagoons (PMAL and CMAL), Settling Tanks and Sludge Drying Bed, the frequency of which shall be upon the evaluation of PEZA MEZ EHSD.

C.1.2. The service provider shall be responsible for the necessary minor repairs of the facilities and equipment. The service provider shall submit evaluation and recommendation reports to PEZA MEZ EHSD for repairs that requires job outsourcing, subject to the approval of PEZA MEZ EHSD.

C.1.3. The service provider shall provide the following basic tools in the performance of their duties:

Description	Quantity
1. Wrenches	1 set
• Socket Wrench with ratchet (assorted sizes)	
• Box Wrench (assorted sizes)	
• Open-end Wrench (assorted sizes)	
• Adjustable Wrench (assorted sizes)	
• Monkey Wrench (assorted sizes)	
• Torque Wrench (assorted sizes)	
2. Pliers	1 set
• Gripping	
• Needle Nose	
• Pinch Off	
• Diagonal Cutting	
3. Screwdrivers	1 set
• Philips (assorted sizes)	
• Standard Tip (assorted sizes)	
4. Clamp Meter	1 unit
5. Multi-meter Tester	1 unit
6. Lock Ring Remover	1 unit
7. Grease Gun	1 unit
8. Gear Puller	1 unit
9. Electric Drill with assorted Drill Bits	1 set
10. Angle Grinder	1 unit
11. Allen Wrench (assorted sizes)	1 set

12. Tool Box	1 unit
13. Chain Block (3 tons)	1 unit
14. Flashlight	2 units
15. Assorted Hammers (ball peen, claw, plastic tip, etc.)	1 set
16. Center Punch (assorted sizes)	1 set
17. Assorted Chisel (flat and pointed)	1 set
18. Pick Mattock	1 unit
19. Bolo	2 units
20. Caliper	1 unit
21. Side Cutter	1 unit
22. Air Compressor	1 unit
23. Bench Vise	1 unit
24. Weighing Scale (20-50 kgs)	1 unit
25. Pipe Vise	1 unit
26. Welding Machine	1 unit
27. Wheelbarrow	2 units
28. Insulation Resistance Tester (Megger Tester)	1 unit
29. Fusion Welding Machine	1 unit

C.1.4. PEZA shall not provide any tools or equipment to the service provider for its operations and maintenance of facilities. Based on the service provider assessment of the work at hand, the service provider may opt to provide additional tools and equipment other than the above listed basic tools at no cost to PEZA.

C.1.5. The service provider shall keep and maintain a logbook detailing the hourly activities in the STP-WRP. The service provider shall also monitor and keep record of the performance of the equipment/machineries as follows:

- C.5.1. Aerator Inspection Report (Daily)
- C.5.2. CMAL/PMAL Process Operation Report (Monthly)
- C.5.3. Pump Inspection Report
- C.5.4. Settling Tank Process Operation Report (Monthly)
- C.5.5. Reuse Water Chlorine Dosing Record (Weekly)
- C.5.6. Effluent Chlorine Dosing Record (Weekly)
- C.5.7. other reports as may be required

Any abnormal performance of the process/equipment/machineries shall be reported in writing (Incident Report and/or Investigation Report) to the PEZA MEZ EHSD within twenty-four (24) hours upon discovery.

C.1.6. In addition, the service provider shall submit to PEZA MEZ EHSD on a monthly basis the following reports / inventories:

- C.6.1. STP-WRP Activity Report
- C.6.2. STP-WRP Inventory of Consumables and Spares
- C.6.3. STP-WRP Usage of Spares/Consumables Monitoring
- C.6.4. STP-WRP Damaged Equipment Monitoring
- C.6.5. PEZA-Owned STP-WRP Tools Inventory
- C.6.6. other reports as may be required

C.1.7. The service provider shall conduct their own laboratory tests on a weekly basis to confirm the efficiency of the system for the following parameters:

C.7.1. Dissolved Oxygen (DO)

C.7.2. Biochemical Oxygen Demand (BOD)

C.7.3. pH

C.7.4. Total Suspended Solids (TSS)

C.7.5. Fecal Coliform

*Note: Samples shall be taken from the STP Influent and Effluent and WRP Effluent (3 samples)*

Hence, the service provider must have tied-up with a DENR-accredited laboratory. The service provider, through its assigned personnel, shall assist in the collection of effluent samples for testing by third-party laboratories. The PEZA MEZ EHSD shall be provided with the results of the tests within twenty-four (24) hours of its availability.

C.1.8. The service provider shall maintain the cleanliness and orderliness of the facilities so as to ensure a safe place to work. And shall also be responsible for the periodic clean-up of the distribution/collection system.

C.1.9. The service provider shall adhere with the existing PEZA Economic Zone's policies especially on security and wastes handling.

C.1.10. All repair works due to wear and tear shall be on the account of PEZA. Otherwise, the service provider shall pay for the repair works.

C.1.11. Trolleys, plastic bags, pails, drums, and other equipment for the safe handling and storage of non-hazardous solid wastes, chemicals, wet or dewatered sludge or scum, and the likes shall be provided by service provider.

## **C.2. ADMINISTRATIVE ASPECT**

C.2.1. The service provider shall be the sole employer of all the personnel assigned under this term of reference and shall be solely responsible and liable for strict compliance with all pertinent labor legislations, rules and regulations.

C.2.2. The service provider shall assume full responsibility for any loss or damage to PEZA properties or of third parties received by service provider when such loss or damage is due to the fault or negligence of the service provider or when such fault or negligence of the service provider contributed to the cause of, or aggravated the loss or damage, provided such loss or damage was not the result of a third party's negligence or malicious act.

C.2.3. The service provider shall submit the following documents to PEZA for each nominated personnel:

C.2.3.1. Police and NBI Clearance

C.2.3.2. Medical Certificate (Fit to Work)

C.2.3.3. Drug Test Result

### **C.3. SPECIFIC OPERATION DUTIES AND RESPONSIBILITIES**

- C.3.1 Conduct specific tests and measurements (related to routine operations) on the wastewater being treated.
- C.3.2. Make appropriate adjustments of valves and other control mechanisms of the STP-WRP to maintain, correct, and/or improve treatment operations.
- C.3.3. Keep a record of the operating conditions and settings of the STP-WRP using forms / logbooks to be provided by the service provider.
- C.3.4. Prepare chemicals and other items used up or consumed during the operation of the STP-WRP and replenish the same from the stocks of PEZA.
- C.3.5. Conduct routinary desludging of the aerated lagoons (PMAL and CMAL), Settling Tanks and Sludge Drying Bed.
- C.3.6. The service provider shall advise the designated Supervising Officer/Pollution Control Officer of PEZA-MEZ on specific requirements for chemicals, lubricants, other consumables, etc., normally through the Plant Supervisor.

### **C.4. SPECIFIC MAINTENANCE DUTIES AND RESPONSIBILITIES**

- C.4.1. Clean the STP-WRP and other above-specified equipment areas and components in accordance with good housekeeping procedures, including minor repainting as and when needed. Conduct necessary minor repairs to facilities and equipment.
- C.4.2. Periodically and regularly observe and inspect all STP-WRP equipment and facilities in accordance with preventive maintenance procedures, such as checking for any abnormalities in temperature, vibration, sound, etc., and reporting such in writing within twenty-four (24) hours to the designated Supervising Officer/Pollution Control Officer of PEZA-MEZ.
- C.4.3. Ensure the proper lubrication, maintenance of correct oil levels where needed, and timely oil change where required, of all STP-WRP equipment in accordance with the manufacturer's recommendations and routine maintenance procedures.
- C.4.4. Ensure that packing, glands, mechanical seals, bolts and nuts, and bearings, where required, are in good working condition. Attend to the replacement of such packing, glands, mechanical seals, bolts and nuts, and bearings when the need arises or in accordance with the preventive maintenance schedules.
- C.4.5. Ensure that all water and wastewater transport lines and tanks as well as gas transport lines are in good operating condition and leak-free. Employ and adopt immediate measures to arrest any such leaks where practicable and advise the designated Supervising Employee/Pollution Control Officer of PEZA-MEZ.

- C.4.6. Assist maintenance and operation personnel of PEZA-MEZ in any emergency problems related to environmental matters, such assistance to be rendered during the normal/routine shift period of the personnel.
- C.4.7. Maintain a record of routine and preventive maintenance work performed on the STP-WRP equipment.

**C.5. OTHER WORK CONDITIONS**

- C.5.1. The service provider shall, at all times, exercise due care to ensure the complete security, restriction, and confidentiality of all information made available by PEZA.
- C.5.2. The service provider may present recommendations on the operation and maintenance of the STP-WRP. The service provider shall leave the decision to PEZA-MEZ as to whether and/or when to implement such recommendations.
- C.5.3. PEZA shall provide chemicals/consumables for use in the operation of facilities. **Annex “B”** shows the list, tentative quantity and tentative frequency of issuance of the chemicals/consumables to the service provider/contractor.

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