



December 20, 2024

**NOTICE OF AWARD**

**1REDDRAGON CONSTRUCTION SERVICES**

Unit 205 2<sup>nd</sup> Floor A&P Building Lazatin Blvd.  
Brgy. Dolores, San Fernando Pampanga  
Tel. No.: 09179432602  
Email: 1reddragonconstruction@gmail.com

Dear Sir/Madam,

Please be advised that as a result of **Public Bidding** conducted by National Center for Mental Health for the **Supply of Manpower, Equipment, Materials and Refurbishing of the Sewerage Treatment Plant (STP) CY 2024**, and is hereby **awarded** to your company the following:

ITEM CODE	ITEM DESCRIPTION	QTY	UOM	UNIT PRICE	TOTAL PRICE
STP-2024-01	<p><b>Supply of Manpower, Labor, Equipment, Materials and Refurbishment of the Sewerage Treatment Plant CY 2024</b></p> <p><b>EXPECTED OUTPUTS/DELIVERABLES</b></p> <ol style="list-style-type: none"> <li>1. Inception Report which shall include but will not be limited to the following:               <ol style="list-style-type: none"> <li>1.1. Organization Chart</li> <li>1.2. Schematic diagram based on existing site conditions</li> <li>1.3. Project Schedule</li> </ol> </li> <li>2. Design and Build Methodology.</li> <li>3. Detailed Architectural and Engineering Design (DAED), Detailed Cost Estimates &amp; Bill of Quantities (BOQ), Detailed Unit Price Analysis (DUPA), Technical Specifications, Scope of Works (SOW), Proposed &amp; As-built Plans (Signed &amp; Sealed).</li> </ol>	1	lot	₱ 6,900,000.00	₱ 6,900,000.00

	<p>4. Design and build of Sewage Treatment Plant including the equipment, electro-mechanical works, electrical works, mechanical works, civil works including STP housing, clearing and excavation works, formworks, concrete works, mobilization and demobilization;</p> <p>5. Training of STP operator/s to meet the minimum requirements.</p> <p>5.1. Understanding of the operations and technology of the STP</p> <p>5.2. Understanding of certain laboratory procedures to conduct the various tests on wastewater samples.</p> <p>5.3. Knowledge on working/operating procedures of electro-mechanical components installed in the treatment plant.</p> <p>5.4. Basic knowledge on preventive maintenance of the STP Facility</p> <p>5.5. Basic knowledge on health and safety in and around the STP Facility</p> <p>6. OTHERS:</p> <p>6.1. Provision of Operation and Maintenance Manual for the Sewage Treatment Plant;</p> <p>6.2. Two (2) year warranty on labor, parts and electro mechanical equipment;</p> <p>6.3. Two (2) month monitoring of start-up operations;</p> <p>6.4. Two (2) year quarterly preventive maintenance;</p> <p>6.5. Five (5) year guaranteed on effectivity on system treatment and equipment;</p> <p>6.6. Identification and general information of firms that would handle Preventive and Corrective Maintenance of the System;</p>				
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- 6.7. Identification and general information of the vendor of spare parts within the Philippines, preferably within Metro Manila or in local area.
- 6.8. Application and processing of necessary permits for the operation of the STP (e.g. Building permit, DENR Discharge permit, and etc.)
- 6.9. The water pump shall be of triplex system, soft starter, with manual alternation of pumps.

**SEWAGE TREATMENT PLANT REQUIREMENT**

**1. EFFLUENT STANDARD PARAMETERS**

The wastewater effluent from the Sewage Treatment Plant (STP) shall be able to meet the Water Quality Guidelines and General Effluent Standard set by DENR per Administrative Order No. 2016-08 dated May 04, 2016.

**2. PROCESS**

Oxidation is a process where a chemical substance or compound changes or breakdown because of the reaction of oxygen. This science fact is the foundation of Advanced Oxidation Process (AOP) Technology that we use in wastewater treatment where we use Ozone (O3) to oxidize organic and inorganic matter.

Ozone is the most powerful known oxidizer that can almost react to anything it touches. It can also kill many microbiological matters efficiently by destroying their DNA. This powerful compound is highly unstable that makes it very effective to treating wastewater.  
The process

	<p>a. Mechanical Treatment - The wastewater will pass through the BAR SCREENS where it will separate solid waste (trash) from the wastewater, solid wastes are to be collected to be disposed in a Sanitary Landfill. The wastewater will also pass through the GREASE INTERCEPTOR where the FOGs will be separated from the wastewater by floatation and are also to be collected by a third-party hauler.</p> <p>b. Initial Oxidation and Biological Degradation - After mechanical treatment, the wastewater will be collected in an adequately sized EQUALIZATION TANK (EQT Chamber) where it will undergo BIOLOGICAL DEGRADATION by anaerobic digestion. Anaerobic bacteria (that lives without the presence of oxygen) will partially degrade organic and inorganic matter that will reduce BOD, COD, NITRATES and SURFACTANTS, this is called the SEPTIC state of wastewater. After the partial treatment of anaerobic microorganisms, we will now introduce OZONE in the wastewater to start the INITIAL OXIDATION of the wastewater as well as to KILL MICROOGANISMS (FECAL COLIFORM AND TOTAL COLIFORM PARAMETER) up to 90% to remove odour. INTITIAL OXIDATION will oxidize and effectively treats 60-70 percent of BOD, COD, SURFACTANTS, AMMONIA, NITRATES, PHOSPHATES.</p>				
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c. FINAL OXIDATION (ADVANCED OXIDATION PROCESS) - After the wastewater was treated biologically by anaerobic bacteria, and chemically by Ozone, the wastewater will now pass through the process of ADVANCED OXIDATION PROCESS where we increase the efficiency of OZONE reaction in the wastewater by a series of electromechanical components that our company designed based specifically on the type or characteristics of the wastewater. We have incorporated ADVANCED FILTRATION SYSTEM where it filters out residues that needs to be recirculated in the system for further oxidation, our filtration system can last up to 3-5 years before the filter media is in need of replacement. The AOP system ensures all parameters will be treated or oxidized and pass DAO2016-08.

3. CAPACITY

The proposed design is to treat wastewater with the estimated capacity of 60cubic meter per day.

4. PRE-PROCESS OPERATION

Before the conduct of actual process operation of the plant, the commissioning procedures have to be followed, including the commissioning and test run of equipment, pumps and other mechanical equipment. In all these procedures, the Firm shall be responsible up to the start-up

	<p>operation and will assist in the monitoring of parameters.</p> <p>5. PLANT MONITORING</p> <p>When the STP is in operation, the following parameters shall be monitored on a quarterly basis based on the DENR A.O. # 2016-08.</p> <ol style="list-style-type: none"> <li>1. pH</li> <li>2. Color, TCU</li> <li>3. Total Suspended Solids, mg/L</li> <li>4. Oil &amp; Grease, mg/L</li> <li>5. BOD, mg/L</li> <li>6. Ammonia as NH<sub>3</sub>-N, mg/L</li> <li>7. Nitrate as NO<sub>3</sub>-N, mg/L</li> <li>8. Phosphate, mg/L</li> <li>9. Surfactant (Methylene Blue Active Substances), mg/L</li> <li>10. Fecal Coliform</li> <li>11. Total Coliform</li> </ol> <p>For the purpose of compliance with the regulatory body of the government, DENR A.O. # 2016-08 stipulates quarterly monitoring. The corresponding report shall be submitted to EMB-NCR or other regulatory body in the area.</p> <p>6. PLANT MAINTENANCE</p> <p>There has to be a routine maintenance of equipment and items found in the STP including the electric motors, bearings, valves, seals, drives, generators, use of lubricants and protective coatings.</p> <p>7. SUBMITTALS</p> <p>Upon the submission of bids, the Contractor shall provide the following documents for evaluation:</p> <ol style="list-style-type: none"> <li>1. Design Narrative – Write-up on the design including rationale and justification,</li> <li>2. Horizontal and vertical process flow diagrams,</li> <li>3. Blow-up Plans,</li> </ol>				
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